National Capital Region Transportation Planning Board

FY–2010 Network Documentation: Highway and Transit Network Development: DRAFT

June 30, 2010

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Agency

The National Capital Region Transportation Planning Board (NCRTPB or TPB).

The TPB is the designated Metropolitan Planning Organization (MPO) for transportation planning in the Washington region. Members of the TPB include representatives of local governments; state transportation agencies; the Maryland and Virginia General Assemblies; the Washington Metropolitan Area Transit Authority; and non-voting members from the Metropolitan Washington Airports Authority and federal agencies.

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Abstract

This report describes the development of highway and transit networks that represent the ground transportation system of the Washington, D.C. metropolitan area for the purposes of travel demand modeling. These networks are important inputs to the TPB travel demand models. TPB's Geographic Information System (GIS) has been employed to pre-process and manage network components, and is used to link the transportation network development process to other TPB planning activities, including Cooperative Forecasting, Corridor Studies, Models Development, Congestion Monitoring, and the Regional Transportation Data Clearinghouse. This work program represents a continuation of a multi-year networks and models development plan that was formulated in FY-93 under the direction of the Travel Forecasting Subcommittee, a subcommittee of the Transportation Planning Board's Technical Committee.

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Chapter 1 Introduction

The National Capital Region Transportation Planning Board (TPB) is the designated Metropolitan Planning Organization (MPO) which functions to coordinate transportation planning among the various federal, state, and local agencies in the Washington region. The Transportation Planning Board (TPB) is responsible for carrying out federally mandated long-range transportation and air quality planning activities using network-based transportation models. The models are used to evaluate a range of alternative future scenarios, some of which focus on transportation system changes: an added highway facility or a rail extension, for example. The network development process involves a team of individuals within the transportation department that handle a variety of activities. These include collecting and analyzing network updates and modifications from the local transportation agencies, implementing network edits to the transportation networks and the geographic highway database, verifying the edits, and preparing the final network inputs to the travel demand model.

The TPB maintains a four-step transportation planning model that is used to evaluate transportation plans and programs, including air quality planning, in accordance with federal requirements. The TPB's travel model is periodically refined. The transportation networks that inform TPB's travel model are also refined and updated on an annual basis in accordance with local plans and programs. This report documents transportation network development activities undertaken in FY-2010[1].

Network development activities primarily support transportation modeling that the TPB undertakes each year to ascertain how well the Constrained Long Range Plan (CLRP) and Transportation Improvement Plan (TIP) meet air quality objectives in accordance with federal requirements. This analysis is formally known as the Air Quality Conformity Determination. As part of these activities, base year transit and highway networks are updated annually with information provided by regional transit providers and transportation agencies.

The conformity cycle begins during winter and concludes in the summer or fall of the next year with TPB review and approval of public comments on the draft CLRP and TIP, and adoption of the Air Quality Conformity Determination. Since transportation networks that are inputs to the conformity analysis process are developed in one fiscal year and adopted by the TPB in the next, this report documents Version 2.2 model[2] networks and data files that were developed in early FY-2010 as inputs to the 2009 CLRP and FY2010-2015 TIP, approved by the TPB on October 21, 2009.

The remainder of this chapter provides overviews of the transportation network development program and network files supporting the Version 2.2 travel model. Chapter 2 presents project elements in the amended 2009 CLRP and FY2010-2015 TIP. Chapter 3 describes the network and fare development process, supporting the Version 2.2 model and detailed format descriptions for files required in the process.

[1] Element 4.A. in the FY-2010 Unified Planning Work Program (UPWP)
[2] TPB Travel Forecasting Model, Version 2.2 Specification, Validation, and User's Guide, January 18, 2008.

Also in FY-2010, the network development activities supported the development of calibration year highway and transit networks for use with a new 3,722-TAZ zone system and the Version 2.3 model process. Chapter 4 describes this effort.

1.1 Overview of the Network Development Program

Given the importance and regularity of the COG/TPB annual air quality conformity studies, network development has evolved into a cycle of activities around this yearly event. During late summer and fall, transit and highway network summaries from the previous conformity study are evaluated and network files are updated as per the latest transit schedules and reviews conducted by TPB staff and state and local transportation agencies. A solicitation of transit data from the local providers is also made during the fall to ensure that the base-year transit files are verified (or refreshed) with the most recent data. During winter, the development of planned improvements for the next TIP cycle is formulated through the TPB process. Network coding for the next conformity cycle normally occurs in March, in preparation for model executions commencing in the spring or summer.

In FY-2010, work activities focused on preparing inputs for the 2009 CLRP and FY2010 to 2015 TIP, and included the following tasks: Review of project submissions and their organization into appropriate forecast years, according to the project completion date as estimated by the programming agency; Update of the GIS-based highway database and generation of network link data for base and forecast year highway networks; Development of transit files for 2010, 2020, and 2030 informed with 2008 transit operations and projects contained in the 2009 CLRP; reviews of highway and transit networks for accuracy; and revising highway network toll assumptions and transit fares as necessary.

Transportation network development is a lengthy process involving the collection of data from a number of agencies in the region and updating of existing data sets to the appropriate years. The process also entails the application of ArcInfo, ArcGIS, ArcMap, SAS, FORTRAN, and CUBE/TP+ programs to update, generate, and build highway and transit network files. Automated checking procedures ensure that changes in network link attributes between years are reasonable. A number of intermediate development steps are not discussed in this report. Instead, the intention of this report is to provide information on the files that result at the end of the development process, which directly support travel modeling.

The network development process continues to be facilitated by improvements in communications technology and emerging software tools. Information transfer between agencies is increasingly being conducted in electronic form. There has been an increased reliance on using the Internet to obtain updated information in a timely manner. Staff has also been relying upon GIS-based applications to manage and develop highway network files in a more accurate and consistent manner, and has used

TPB's Regional Bus Subcommittee[3] as a forum to streamline the transfer of bus transit data between transit providers and TPB Staff.

1.2 Overview of Network Files Supporting the Version 2.2 Model

Transportation networks and supporting datasets were developed to meet specifications for TPB's currently adopted travel forecasting model, the Version 2.2 travel model. The model is applied on the TPB's 2191 transportation analysis zone (TAZ) system which is comprised of 22 jurisdictions[4] that include the District of Columbia, Northern Virginia, suburban Maryland, and one county in West Virginia, as shown in Figure 1. The typical highway network consists of approximately 20,000 directional highway links (excluding centroid connectors). Roads are classified into four major types: freeways, arterials, collectors, and locals. TPB highway networks typically include all freeways and arterials, most collectors, and some local roads.

Three highway networks are required representing weekday operations occurring in the AM peak period (6:00-9:00 AM), the PM peak period (4:00-7:00 PM), and the off-peak period (comprised of the remaining 18 hours). Highway network coding reflects operational differences between the three periods. Examples of operational differences may include directionality changes (alternating one-way/two-way operations), lane configuration changes, or vehicle prohibition changes (for example, facilities that are dedicated for HOV facilities during peak periods, but revert to general use operations during non-peak times).

Transit networks representing weekday operations in the peak and off-peak periods are also a required input to the model. The one-hour time period from 7:00 AM to 7:59 AM[5] is used to represent peak period conditions. Off-peak period conditions are represented by a five-hour time period from 10:00 AM to 2:59 PM.

Base year transit networks model approximately 1,000 routes during the AM peak period and 700 routes representing service during the Off-peak period. The travel model also requires zone-to-zone transit times and fares (known collectively as "skims") representing AM peak period conditions and off-

[3] The mission of the Regional Bus Subcommittee is to provide a permanent process for the coordination of bus planning throughout the Washington region, and for incorporating regional bus plans into the Constrained Long Range Plan (CLRP) and Transportation Improvement Program (TIP).

[4] The expanded cordon bisects one of the 22 jurisdictions, Spotsylvania County. Its northern portion (approximately north of VA 606) is within the modeled area and the remaining area is outside. The expanded cordon includes all other jurisdictions in their entirety.

[5] In the case of secondary local and secondary express commuter bus service, which generally originates in the outer reaches of the study area and begins much earlier than 7 AM, the AM peak period definition is relaxed to an earlier period for which service is most concentrated.

peak conditions. AM and off-peak transit networks are developed and are built directly over the highway networks. Transit paths are categorized into two access markets: walk-access and drive-access.

The files that result from the network development process are highway link files, transit line files, transit network support files that include rail (non-highway links) links, transfer links, and a rail station/Park-and-ride facility file. Because the transit fare estimation used by TPB models is derived from transit path-based information, transit fare development is implicitly considered as a component of the network building process. Therefore, files supporting the estimation of transit fares are also prepared in network development. The files that support network building and the fare development processes of the Version 2.2 model are described in greater detail in Chapter 3.

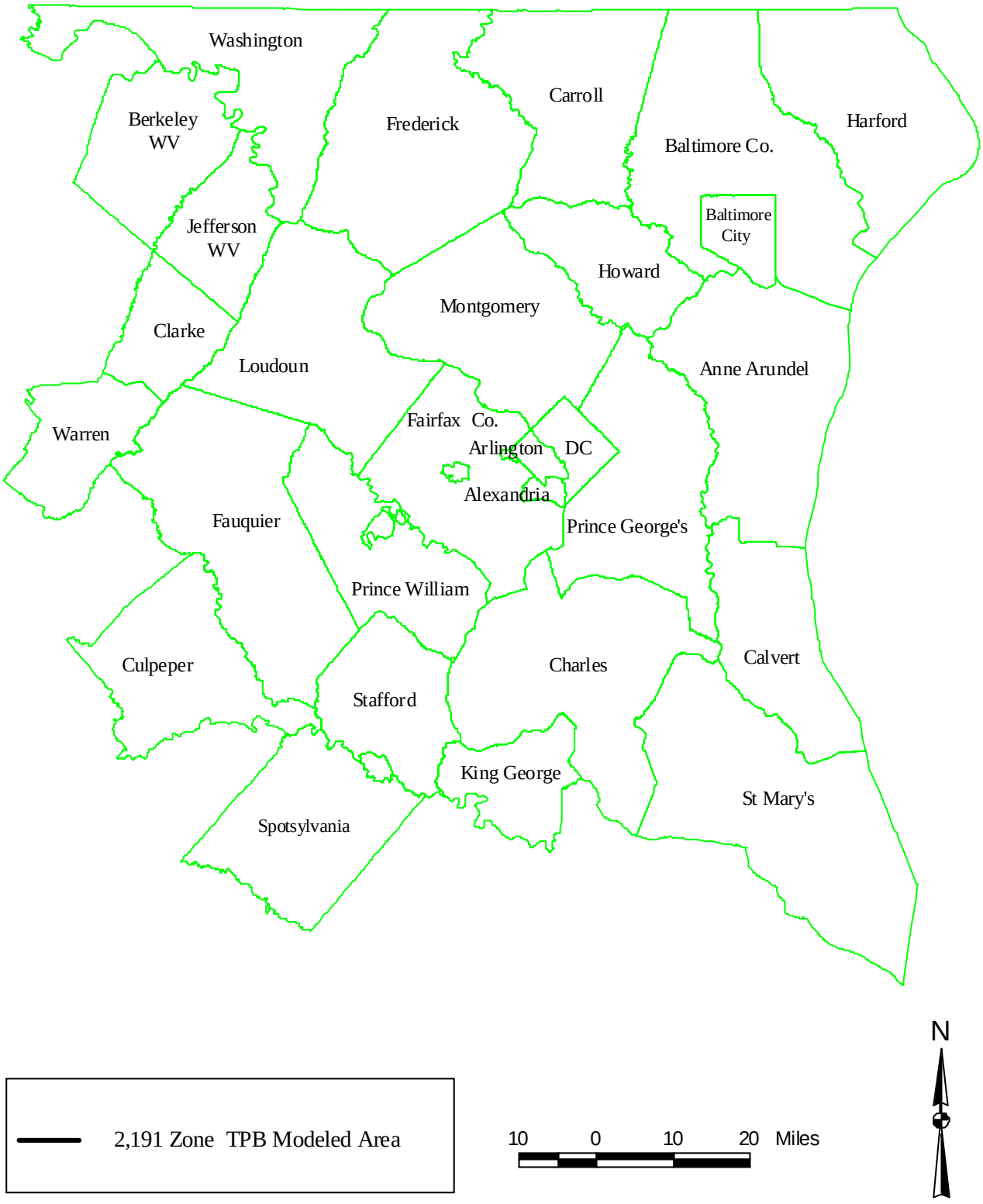


Figure 1 TPB Modeled Area - For both the 2,191-Zone and 3,722-Zone Area System

1.3 Network Numbering Systems

The current area system includes 2,191 TAZ's (transportation analysis zones). The area system includes both internal TAZ and external stations. Because the system provides for "spare" zones that may be utilized for future studies, the number of active internal TAZs is 1,972. The TAZ's are numbered sequentially in ranges corresponding to the modeled jurisdictions. An equivalence table indicating the relationship of TAZ to jurisdictions is shown in Table 1. The exhibit indicates that the TAZ range allocation for each jurisdiction is inclusive of both active and spare zones. The exhibit also indicates that the area system contains 47 external stations, numbered from 2145 to 2191. The locations of external stations are shown in Figure 2 and Figure 3.

A network node numbering system was established for the highway and transit networks in 1997 as a way to locate nodes and minimize the possibility of "tunnels". The node numbering system is revised yearly as nodes are added to highway and transit networks. Highway node ranges have been developed by jurisdiction, and are further distinguished as general use facilities, HOV facilities, interchange ramps, and variably priced lane facilities. Node ranges corresponding to transit network elements are also defined and represent Park-and-Ride (PNR) facilities and Metrorail, commuter rail, light rail, and bus rapid transit stations. Highway and transit network node ranges are summarized in Table 2, Table 3, Table 4, , and Table 5.

Table 1 Transportation Analysis Zone (TAZ) and Jurisdiction Equivalency Table

JURISDICTION	JURIS. CODE	TAZ RANGE	No. of TAZ	UNUSED TAZ
District of Columbia	0	1-319	319	----
Montgomery Co., Md.	1	320-627	308	628-639
Prince Georges Co., Md.	2	640-1020	381	1021-1029
Arlington Co., Va.	3	1230-1311	82	1312-1329
City of Alexandria, Va.	4	1330-1389	60	1390-1399
Fairfax Co., Va.	5	1400-1755	356	1756-1779
Loudoun Co., Va.	6	1780-1905	126	1906-1919
Prince William Co., Va.	7	1920-2061	142	2062-2069
----	8	----	----	----
Frederick Co., Md.	9	1030-1053	24	1054-1059
Howard Co., Md.	10	1080-1099	20	1100-1109
Anne Arundel Co., Md.	11	1110-1142	33	1143-1149
Charles Co., Md.	12	1200-1223	24	1224-1229
----	13	----	----	----
Carroll Co., Md.	14	1060-1073	14	1074-1079
Calvert Co., Md	15	1150-1163	14	1164-1169
St. Mary's Co., Md.	16	1170-1190	21	1191-1199
King George Co., Va.	17	2070-2074	5	2075-2079
City of Fredericksburg, Va.	18	2100-2101	2	2102-2104
Stafford Co., Va.	19	2080-2093	14	2094-2099
Spotsylvania Co., Va.	20	2105-2110	6	2111-2114
Fauquier Co., Va.	21	2115-2125	11	2126-2129
Clarke Co., Va.	22	2130-2132	3	2133-2134
Jefferson Co., WVa.	23	2135-2141	7	2142-2144
TOTAL INTERNAL ZONES			**1972**	
EXTERNAL STATIONS		**2145-2191**	**47**	
TOTAL ZONES & EXT. STATIONS			**2019**	
Total Used & Unused TAZs			**2191**	

Ref: ND10_TABLE 1.xls

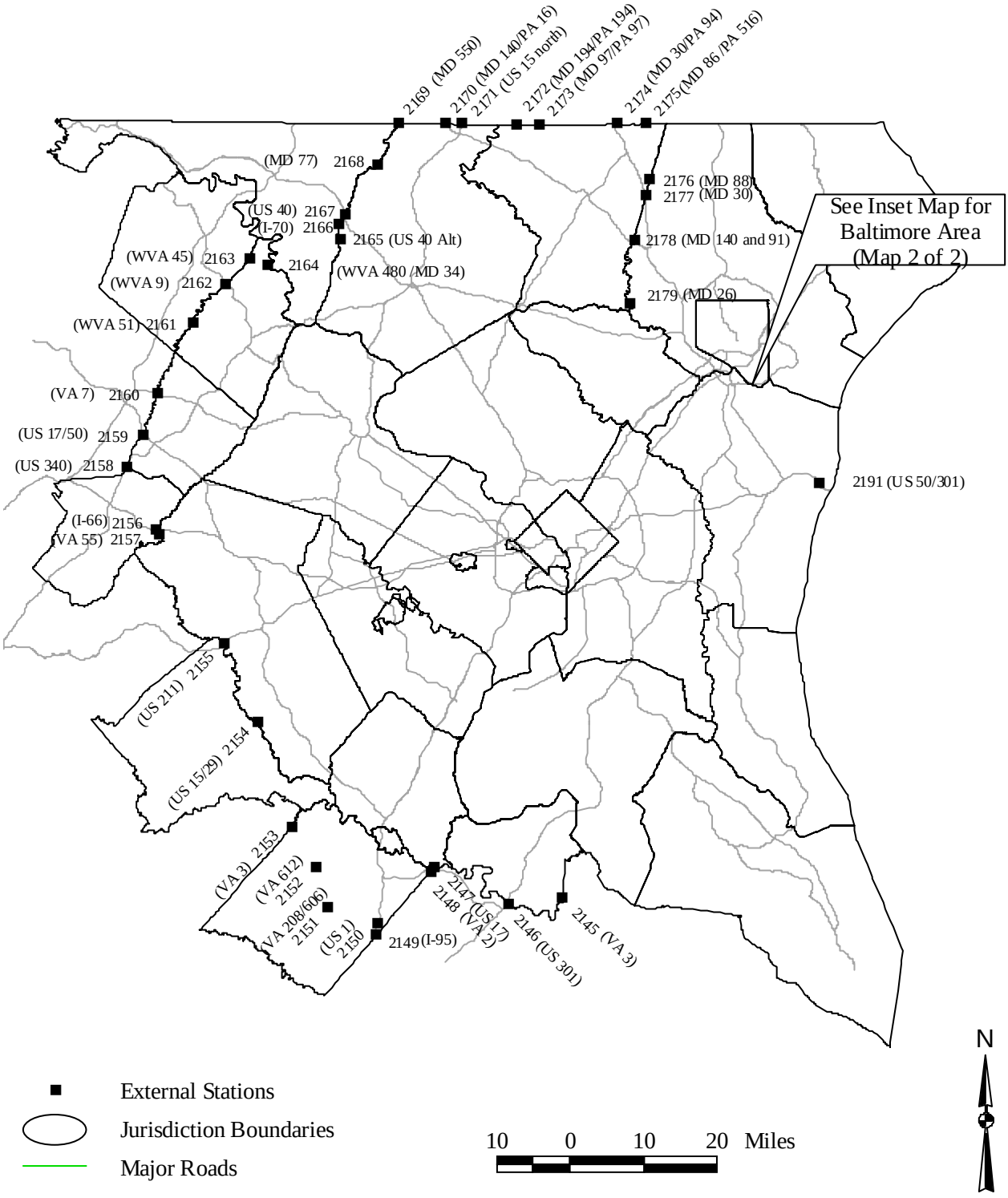


Figure 2 Location of External Stations in the Modeled Area Map 1 of 2

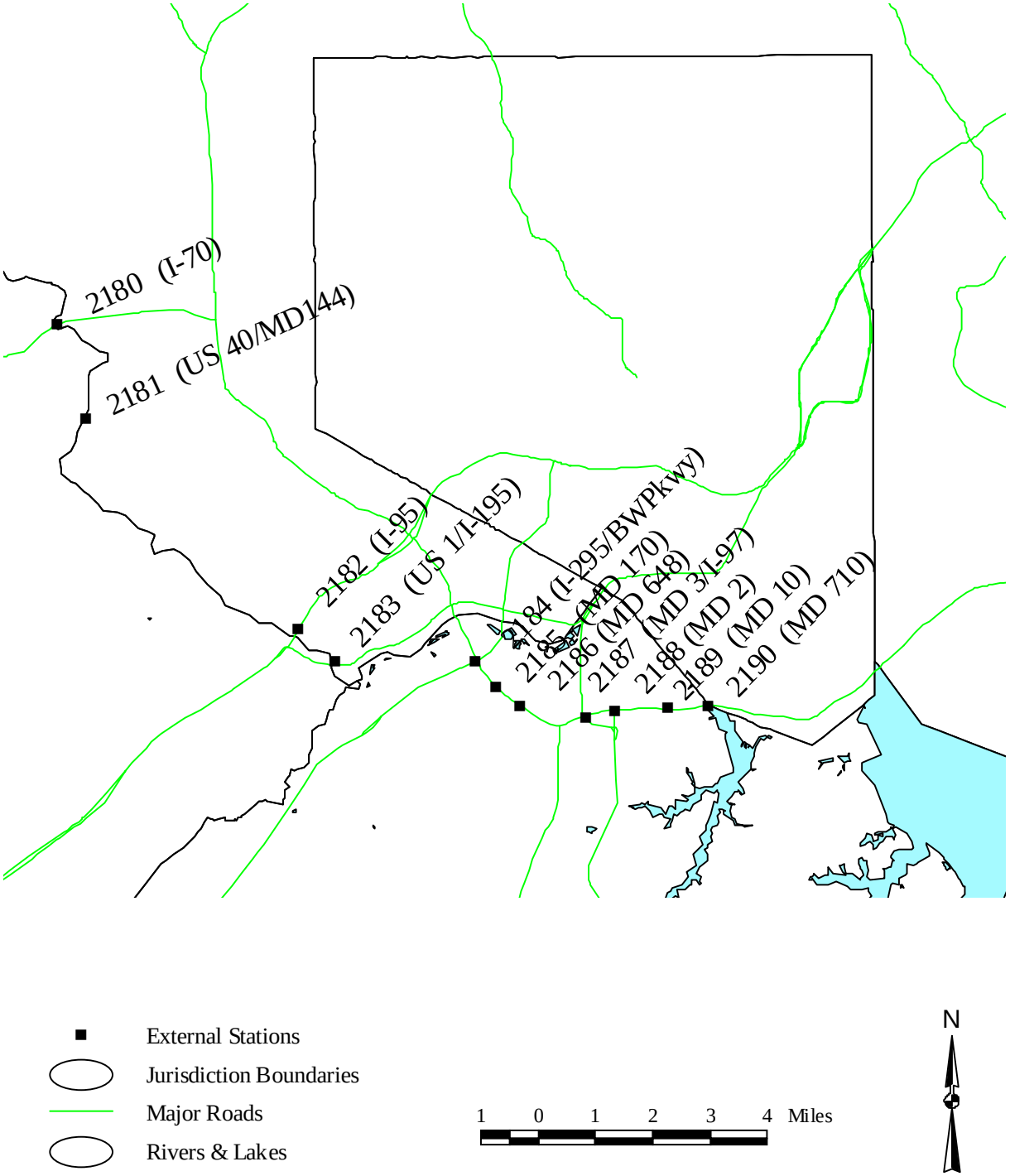


Figure 3 Location of External Stations in the Modeled Area (Inset Map for Baltimore Area) Map 2 of 2

Ref: ND10_FIGURE4.xls

Table 2 Ranges for Zone Centroids and Highway (Non-HOV) Nodes by Jurisdiction

I. Zone Centroids			
A. Zones	1	-	2191
II. Highway Nodes: General Use (Non-HOV) Facilities			
A. District of Columbia	8400	-	9999
B. Montgomery County	3000	-	3999
	15000	-	15299
C. Prince George's County	4000	-	4999
D. Arlington County	5000	-	5499
E. Alexandria	5500	-	5999
F. Fairfax County	6000	-	6385
	6500	-	6899
	10501	-	10900
G. Prince William County	6386	-	6499
	7000	-	7100
	10151	-	10200
	10401	-	10450
	16000	-	16199
H. Loudoun County	6900	-	6999
	7101	-	7299
	15600	-	15799
I. Frederick County	13200	-	13499
J. Carroll County	13500	-	13599
K. Howard County	13600	-	13799
L. Anne Arundel County	13000	-	13199
	13800	-	13999
M. Calvert County	14000	-	14099
N. Saint Mary's County	14100	-	14199
O. Charles County	14200	-	14399
P. King George County	14400	-	14499
Q. Stafford / City of Fredericksburg	14500	-	14699
R. Spotsylvania County	14700	-	14799
S. Fauquier County	14800	-	14899
T. Clarke County	14900	-	14949
U. Jefferson County	14950	-	14999

Ref:ND10_TABLE2.xls

Table 3 Node Ranges for Highway HOV Nodes and Interchange Ramps

III. Highway Nodes: HOV Facilities			
A. I-95 Fairfax Co., - Outside the Beltway	10000	-	10150
B. I-95 Stafford Co.	10201	-	10250
C. I-66 Fairfax Co., - Outside the Beltway	10251	-	10400
D. I-66 Fauquier Co.	10451	-	10500
E. I-267 Dulles Toll Road	10901	-	11550
F. I-95 Prince William Co.	11551	-	11650
G. US 50 (MD)	11651	-	11680
H. MD 4	11681	-	11694
I. US 50 (MD)	11695	-	11700
J. Maryland - HOV Alternatives	11701	-	11709
K. MD 210	11710	-	11753
L. Maryland ICC	11754	-	11835
M. Franconia-Springfield Parkway	11836	-	11843
N. Virginia - HOV Alternatives	11844	-	11884
O. US 1 (VA) Outside Beltway	11885	-	11893
P. Virginia - HOV Alternatives	11900	-	11999
Q. I-66 Inside the Beltway	12000	-	12099
R. District of Columbia - HOV Alternatives	12100	-	12200
S. I-395 Fairfax Co. - Inside the Beltway	12201	-	12300
T. I-395 Alexandria - Inside the Beltway	12301	-	12400
U. I-395 Arlington - Inside the Beltway	12401	-	12500
V. I-270 (MD)	12501	-	12700
W. I-495 Capital Beltway	12701	-	12882
X. US 1 (VA) Inside Beltway	12883	-	12899
Y. Maryland ICC	12900	-	12999
Z. Maryland ICC	15307	-	15449
AA. I-270 (MD)	15450	-	15475
AB. Maryland ICC	15476	-	15599
AC. Fairfax Parkway	15825	-	15860
AD. Maryland ICC	18500	-	18649
IV. Highway Nodes: Interchange Ramps			
A. Montgomery County	16500	-	16699
B. Prince George's County	16700	-	16899
C. Frederick County	16900	-	16999
D. Calvert County	17000	-	17099
E. Charles County	17100	-	17199
F. Alexandria	17200	-	17299
G. Arlington County	17300	-	17399
H. Fairfax County	17400	-	17599
I. Prince William County	17600	-	17799
J. Loudoun County	17800	-	17999
K. Stafford / City of Fredericksburg	18000	-	18199
L. District of Columbia	18200	-	18399

Table 4 Node Ranges for Highway Nodes (Regional Variably Priced Lanes)

V. Highway Nodes: Regional Variably Priced Lanes				
1. Capital Beltway (I-495/I-95) Inner Loop	23000			Hot-Toll Lanes
	23002			Hot-Toll Lanes
	23004			Hot-Toll Lanes
	23006	-	23093	Hot-Toll Lanes
1a. Capital Beltway (I-495/I-95) Outer Loop	23001			Hot-Toll Lanes
	23003			Hot-Toll Lanes
	23005			Hot-Toll Lanes
	23101	-	23196	Hot-Toll Lanes
2. I-270 (I-70 to Capital Beltway) South-bound	23300	-	23324	Toll Lanes
2a. I-270 (I-70 to Capital Beltway) North-bound	23350	-	23375	Toll Lanes
3. I-95 MD (Capital Beltway to Baltimore Beltway) South-bound	23400	-	23429	Toll Lanes
3a. I-95 MD (Capital Beltway to Baltimore Beltway) North-bound	23450	-	23473	Toll Lanes
4. US Route 50 (I-395 to Chesapeak Bay Bridge) East-bound	23500	-	23561	Toll Lanes
4a. US Route 50 (I-395 to Chesapeak Bay Bridge) East-bound	23580	-	23591	Parallel General Lanes
4b. US Route 50 (I-395 to Chesapeak Bay Bridge) West-bound	23600	-	23669	Toll Lanes
4c. US Route 50 (I-395 to Chesapeak Bay Bridge) West-bound	23669	-	23699	Parallel General Lanes
5. MD Route 5 (US 301 to MD Route 5 at I-495) North-bound	23700	-	23729	Toll Lanes
5a. MD Route 5 (US 301 to MD Route 5 at I-495) North-bound	23730	-	23749	Parallel General Lanes
5b. MD Route 5 (US 301 to MD Route 5 at I-495) South-bound	23750	-	23771	Toll Lanes
5c. MD Route 5 (US 301 to MD Route 5 at I-495) South-bound	23780	-	23799	Parallel General Lanes
6. Intercounty Connector (Entire Length)	12900	-	12999	Toll Facility
	15476	-	15599	Toll Facility
	18500	-	18649	Toll Facility
7. I-295/Anacostia Fwy./Kenilworth Ave/S. Capitol St. Bridge (Cap. Beltway to US 50) South-bound	23800	-	23824	Hot Lanes
7a. I-295/Anacostia Fwy./Kenilworth Ave/S. Capitol St. Bridge (Cap.Beltway to US 50) South-bound	23830	-	23849	Parallel General Lanes
7b. I-295/Anacostia Fwy./Kenilworth Ave/S. Capitol St. Bridge (Cap.Beltway to US 50) North-bound	23850	-	23874	Hot Lanes
7c. I-295/Anacostia Fwy./Kenilworth Ave/S. Capitol St. Bridge (Cap.Beltway to US 50) North-bound	23880	-	23899	Parallel General Lanes
8. I-95 (Caroline/Spotsylvania to Stafford/PW Line) North-bound	10202	-	10248	Hot Lanes (Even No's)
8a. I-95 (Caroline/Spotsylvania to Stafford/PW Line) South-bound	10201	-	10249	Hot Lanes (Odd No's)
9. I-395 (DC), 11th Street and Penn. Ave Bridge (14th St Bridge to I-295 and US Route 50) East-bound	29250	-	29270	Hot Lanes
9a. I-395 (DC), 11th Street and Penn. Ave Bridge (14th St Bridge to I-295 and US Route 50) East-bound	29350	-	29367	Parallel General Lanes
9b. I-395 (DC), 11th Street and Penn. Ave Bridge (14th St Bridge to I-295 and US Route 50) West-bound	29450	-	29471	Hot Lanes
9c. I-395 (DC), 11th Street and Penn. Ave Bridge (14th St Bridge to I-295 and US Route 50) West-bound	29550	-	29556	Parallel General Lanes
10. I-395 (Capital Beltway to 14th St Bridge) North-bound	29200	-	29249	Hot Lanes
10a. I-395 (Capital Beltway to 14th St Bridge) North-bound	29300	-	29349	Parallel General Lanes
10b. I-395 (Capital Beltway to 14th St Bridge) South-bound	29400	-	29449	Hot Lanes
10c. I-395 (Capital Beltway to 14th St Bridge) South-bound	29500	-	29549	Parallel General Lanes
11. MD Route 4 (US 301 to I-495) East-bound	23200	-	23225	Highway Nodes: Toll Lanes
11a. MD Route 4 (US 301 to I-495) East-bound	23230	-	23240	Parallel General Lanes
11b. MD Route 4 (US 301 to I-495) West-bound	23250	-	23271	Highway Nodes: Toll Lanes
11c. MD Route 4 (US 301 to I-495) West-bound	23280	-	23294	Parallel General Lanes
12. MD Route 210 (MD 228 to I-495) Southbound	24000	-	24031	Highway Nodes: Toll Lanes
12a. MD Route 210 (MD 228 to I-495) Southbound	24040	-	24047	Parallel General Lanes
12b. MD Route 210 (MD 228 to I-495) Northbound	24060	-	24091	Highway Nodes: Toll Lanes
12c. MD Route 210 (MD 228 to I-495) Northbound	24092	-	24094	Parallel General Lanes
13. US 301 (Nice Bridge to US50) South-bound	24100	-	24199	Highway Nodes: Toll Lanes
13a. US 301 (Nice Bridge to US50) South-bound	24200	-	24259	Parallel General Lanes
13b. US 301 (Nice Bridge to US50) North-bound	24300	-	24398	Highway Nodes: Toll Lanes
13c. US 301 (Nice Bridge to US50) North-bound	24400	-	24495	Parallel General Lanes

V. Highway Nodes: Regional Variably Priced Lanes continued				
14. I-66 (Warren/Fauquier Line to TR Bridge) West-bound and (SE/SW Freeway, Maine Ave, Indep Ave, and Rock Creek Pkwy)	25000	-	25041	Hot Lanes
14a. I-66 (Warren/Fauquier Line to TR Bridge) West-bound and (SE/SW Freeway, Maine Ave, Indep Ave, and Rock Creek Pkwy)	25100	-	25115	Parallel General Lanes
14b. I-66 (Warren/Fauquier Line to TR Bridge) East-bound and (SE/SW Freeway, Maine Ave, Indep Ave, and Rock Creek Pkwy)	25200	-	25241	Hot Lanes
14c. I-66 (Warren/Fauquier Line to TR Bridge) East-bound and (SE/SW Freeway, Maine Ave, Indep Ave, and Rock Creek Pkwy)	25300	-	25350	Parallel General Lanes
15. Dulles Toll Road (VA Route 28 to I-66) West-bound	26000	-	26007	Hot Lanes
15a. Dulles Toll Road (VA Route 28 to I-66) West-bound	26100		26199	Parallel General Lanes
15b. Dulles Toll Road (VA Route 28 to I-66) East-bound	26200	-	26207	Hot Lanes
15c. Dulles Toll Road (VA Route 28 to I-66) East-bound	26300		26399	Parallel General Lanes
16. VA Route 28 (I-66 to VA Route 7) South-bound	27000	-	27047	Hot Lanes
16a. VA Route 28 (I-66 to VA Route 7) South-bound	27100	-	27137	Parallel General Lanes
16b. VA Route 28 (I-66 to VA Route 7) North-bound	27200	-	27248	Hot Lanes
16c. VA Route 28 (I-66 to VA Route 7) North-bound	27160	-	27162	Parallel General Lanes
17. VA Route 7 (Dulles Toll Road to US Route 15) West-bound	27300	-	27372	Hot Lanes
17a. VA Route 7 (Dulles Toll Road to US Route 15) West-bound	27400	-	27464	Parallel General Lanes
17b. VA Route 7 (Dulles Toll Road to US Route 15) West-bound	27500	-	27572	Hot Lanes
17c. VA Route 7 (Dulles Toll Road to US Route 15) West-bound	27600	-	27649	Parallel General Lanes
18. Fairfax County Parkway (VA Route 7 to I-66) South-bound	28100	-	28154	Hot Lanes
18a. Fairfax County Parkway (VA Route 7 to I-66) South-bound	28200	-	28233	Parallel General Lanes
18b. Fairfax County Parkway (VA Route 7 to I-66) North-bound	28300	-	28353	Hot Lanes
18c. Fairfax County Parkway (VA Route 7 to I-66) North-bound	28400	-	28440	Parallel General Lanes
19. Fran/Sprfield Pkwy (Sydenstricker Rd to Frontier Dr.) W-bound	28170	-	28192	Hot Lanes
19a. Fran/Sprfield Pkwy (Sydenstricker Rd to Frontier Dr.) W-bound	28250	-	28262	Parallel General Lanes
19b. Fran/Sprfield Pkwy (Sydenstricker Rd to Frontier Dr.) E-bound	28370	-	28392	Hot Lanes
19c. Fran/Sprfield Pkwy (Sydenstricker Rd to Frontier Dr.) E-bound	28460	-	28473	Parallel General Lanes
20. Braddock Road (Burke Lake Road to I-95) West-bound	29000	-	29009	Hot Lanes
20a. Braddock Road (Burke Lake Road to I-95) West-bound	29050	-	29059	Parallel General Lanes
20b. Braddock Road (Burke Lake Road to I-95) East-bound	29100	-	29109	Hot Lanes
20c. Braddock Road (Burke Lake Road to I-95) East-bound	29150	-	29155	Parallel General Lanes
Bridges	**A-Node**	-	**B-Node**	
21. Chain Bridge	9074	-	9238	Hot Lanes
22. Key Bridge	9000	-	9338	Hot Lanes
23. Memorial Bridge	8692	-	9327	Hot Lanes
24. East Capitol St. Bridge (Whitney Young Memorial Bridge)	9376	-	9631	Hot Lanes
25. Benning Road Bridge	9380	-	9677	Hot Lanes
26. South Capitol St. Bridge (Frederick Douglass Bridge) W-bound	23873	-	23874	Hot Lanes
26a. South Capitol St. Bridge (Frederick Douglass Bridge) W-bound	23881	-	23882	Parallel General Lanes
26b. South Capitol St. Bridge (Frederick Douglass Bridge) E-bound	23824	-	23823	Hot Lanes
26c. South Capitol St. Bridge (Frederick Douglass Bridge) E-bound	9782	-	9844	Parallel General Lanes
27. Pennsylvania Ave. Bridge (John Phillip Sousa Bridge W-bound	29471	-	29470	Hot Lanes
27a. Pennsylvania Ave. Bridge (John Phillip Sousa Bridge W-bound	9372	-	18255	Parallel General Lanes
27b. Pennsylvania Ave. Bridge (John Phillip Sousa Bridge E-bound	29269	-	29270	Hot Lanes
27c. Pennsylvania Ave. Bridge (John Phillip Sousa Bridge E-bound	29365	-	29367	Parallel General Lanes

Table 5 Node Ranges for Transit Nodes

VI. Transit Nodes: Metrorail	
A. Stations	7301 - 7417
B. Reserved for Future Stations	7418 - 7449
	7470 - 7479
C. Parking Lots	7450 - 7469
	7500 - 7599
D. Reserved for Future Parking Lots	7480 - 7499
VII. Transit Nodes: Commuter Rail	
A. Stations	7600 - 7655
	7700 - 7739
B. Reserved for Future Stations	7740 - 7759
C. Parking Lots	7800 - 7855
	7900 - 7939
D. Reserved for Future Parking Lots	7760 - 7799
VIII. Transit Nodes: Light Rail	
A. Stations	7656 - 7699
B. Reserved Future Light Rail stations	20000 - 21500
C. Parking Lots	7856 - 7873
	8271 - 8298
D. Reserved for Future Parking Lots	7874 - 7899
IX. Transit Nodes: Bus Park-and-Ride Lots	
A. DC / MD	8000 - 8050
	8100 - 8113
B. Reserved for Future Parking Lots	8051 - 8099
	8114 - 8199
C. VA / WVA (Includes 17 MD lots)	8200 - 8298
D. Reserved for Future Parking Lots	8299 - 8399

Chapter 2 Project Elements in the 2009 Constrained Long-Range Transportation Plan

The Transportation Improvement Program (TIP) is a 6-year financial program that describes the schedule for obligating federal funds to state and local projects. The TIP contains funding information for all modes of transportation including highways and HOV as well as transit capital and operating costs. While estimated completion dates are given for projects in the plan, it should be noted that the TIP is not a Capital Improvement Program. The TIP represents an implementing agency's intent to construct or implement a specific project and the anticipated flow of federal funds and matching state or local contributions.

The first year of the TIP is called the Annual Element. Projects that have funds programmed in the Annual Element are eligible to receive federal funding in that fiscal year. State, regional and local transportation agencies update the program each year to reflect priority projects in the CLRP. The current TIP represents fiscal years 2010 to 2015. The CLRP must be updated at least once every four years. The practice has been to update the CLRP annually, since the TIP is being updated annually, and the TIP is a subset of the CLRP.

The Constrained Long-Range Transportation Plan (CLRP) is the long-term plan for transportation in the Washington metropolitan region. The plan is financially constrained to include only those projects that can be funded by revenues that are "reasonably expected to be available" as required by federal law and regulations. The 2009 CLRP identifies all regionally significant transportation projects and programs that are planned in the Washington metropolitan area between 2010 and 2030. Over 750 projects are included, ranging from simple highway landscaping to billion-dollar highway and transit projects. Some of the projects will be completed in the near future, while others are only in the initial planning stage.

The 2009 CLRP and FY2010-2015 TIP (http://www.mwcog.org/clrp/projects/tip/fy0915.asp) were approved by the TPB on November 19, 2008. Technical network development activities for the CLRP and TIP included the preparation of transportation networks for specified forecast years associated with the plan and program. This chapter details significant changes and additions to the 2008 CLRP that informed the 2009 Constrained Long-Range Transportation Plan (CLRP).

Geographic areas that are analyzed as a part of air quality conformity assessment are presented in Figure 4. The map delineates the current TPB modeled area, as well as the non-attainment or MSA area. To enable better simulation results within Montgomery and Prince George's Counties, members of the Baltimore Metropolitan Council (BMC) planning region, Carroll, Howard, and Anne Arundel counties are included within the TPB modeled area.

Transportation projects were included for these areas, provided through the coordination efforts within the Maryland Department of Transportation (MDOT) and the BMC. These counties are included in the travel demand, but emissions from counties outside the non-attainment area's boundary are excluded.

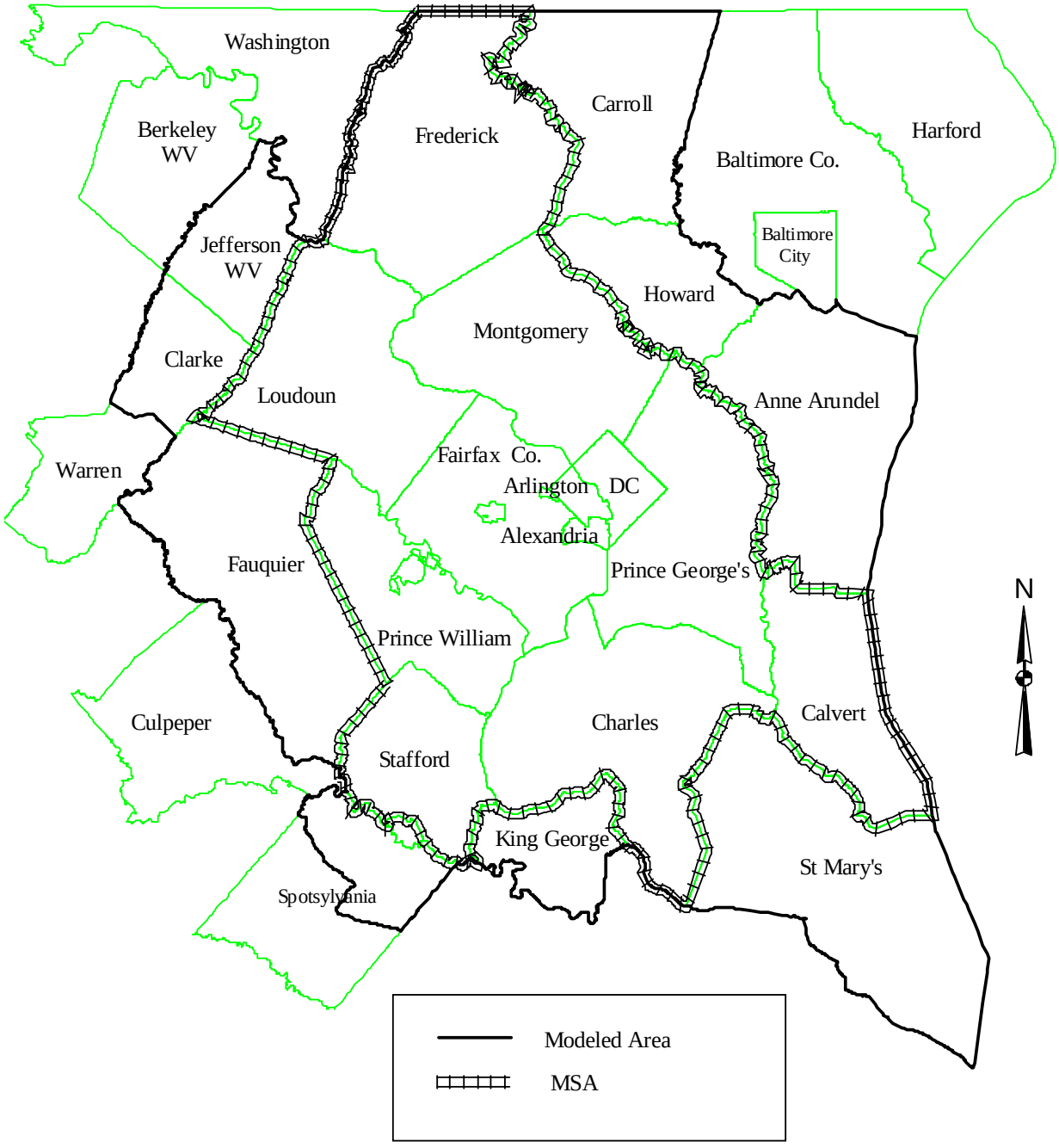


Figure 4 TPB Modeled Area for Air Quality Conformity Assessment

Ref: ND10_FIGURE5.xls

2.1 Changes to the 2009 Update to the CLRP

This chapter presents a list of significant changes that are reflected in the 2009 CLRP and the FY 2010-2015 TIP. The listing covers changes only to those projects that are considered to be regionally significant, i.e., interstates, principal arterials and some minor arterials, as well as transit facilities. A complete list of all projects planned is included in Appendix A and B of this report and in the Air Quality Conformity Assessment Report of July 15, 2009. In contrast to previous years, there are no significant new projects being added to this year's CLRP update. With state and local budgets facing shortfalls, most of the changes proposed will delay the completion dates of those projects and in some cases, remove projects from the plan altogether. Table 6 and Table 7 list projects in each jurisdiction and are grouped together based on the nature of the change; a delay of five to nine years, a delay of ten years or more, or removal from the Plan.

Table 6 Regionally Significant Changes 2009 CLRP for District of Columbia and Maryland

District of Columbia

Projects delayed five to nine years	Old Date	New Date
• K Street Busway	2010	2017
Maryland		
Projects delayed five to nine years	2010	2015
• I-95/I-495 Interchange at Greenbelt Metro	2010	2015
• MD 5 Branch Avenue, construct interchanges at Surratt's Road, Earnshaw Drive/Burch Hill Road, and MD 373/Brandywine Road	2010	2015
• US 29 Columbia Pike, upgrade interchange at Musgrove/Fairland Road	2010	2015
Projects delayed 10 years or more		
• I-270/US 15 Corridor, construct from Shady Grove Metro to I-70	2020	2030
• I-95/I-495 Branch Avenue Metro Access, construct eight lanes	2009	2020
• MD 2/4, construct three lanes from MD 765 to MD 2/4 at Lusby (Calvert County)	2010	2020
• MD 3 Crain Highway, construct four lanes from US 50 to Anne Arundel County Line	2020	2030
• US 29 Columbia Pike, upgrade six lanes from Musgrove Road to Fairland Road	2010	2030
• US 29 Columbia Pike, upgrade interchanges at Stewart Lane, Tech Road, Greencastle Road and Blackburn Road	2020	2030
• MD 97 Brookville Bypass, construct two lanes from south to north of Brookeville	2020	2030
Projects removed from the Plan		
• Randolph Road Bus Enhancement	2010	

Table 7 Regionally Significant Changes 2009 CLRP in Virginia

Virginia

Projects delayed five to nine years

• I-66 HOV, widen to six lanes from US 15 to US 29	2015	2020
• Dulles Airport Access Road, widen to six lanes from Dulles Airport to VA 123	2010	2017
• US 50, widen to six lanes from VA 659 to VA 742	2010	2015
• VA 28, construct interchange at VA 209	2009	2015
• VA 28, widen to eight lanes from I-66 to VA 7	2010	2015
• US 1, widen to six lanes from Blackburn Drive to Featherstone Road	2013	2020
• VA 28, widen to four lanes from VA 652 to VA 234	2012, 2013	2020
• VA 7, widen to six lanes from Route 9 to Market Street	2015	2020
• VA 7 Bypass, widen to six lanes from US 15 South to VA 7/US 15 East	2015	2020, 2025
• Tri-County Parkway, construct four lanes from I-66 to Loudoun County Line	2017	2025
• VA 28 Bypass, construct four lanes from I-66 to VA 620/VA 613	2020	2025

Projects delayed 10 years or more

• US 1, widen to six lanes from Brady's Hill Road to Cardinal Drive	2011	2020
• Fairfax County Parkway, widen to six lanes with two HOV lanes from Fair Lakes Parkway to I-66	2010	2020

Proposed changes to other regionally significant projects in Virginia

• I-95/I-395 HOT/HOV/Bus Lanes Project • New northbound ramp at Fairfax County Parkway • Southbound slip-ramp modifications and additions near Fairfax County Parkway, Lorton Road, Opitz Boulevard, Dumfries Road and Joplin Road • Previously planned 9 mile single-lane taper from VA 234 to VA 610 changed to two HOT lanes with new access ramps, extending from VA 234 to VA 17 in Stafford County (complete in 2014) • Capital Beltway HOT Lanes Project • Additional auxiliary lanes from Dulles Toll Road to VA 7, and from one mile east of I-95/395/495 to north of Hemming Avenue underpass • New ramp movements at I-66, US 29, Dulles Toll Road and Dulles Airport Access Road • Change lane configuration between VA 193 (Georgetown Pike) and south of Old Dominion Drive from eight general purpose + four HOT lanes to eight. + two HOT lanes • US 1 from VA 234 North to the Prince William Co. Line • Downgraded from 'widening to eight lanes' to 'reconstructing six lanes'	2010	2012, 2014
• Dulles Corridor Metrorail Project – Phase 1	2011	2014

2.2 Additions and Changes Adopted for the Amendment to the 2009 Update to the Long-Range Transportation Plan (CLRP)

In the spring of 2009, the Maryland Department of Transportation (MDOT) and the District of Columbia Department of Transportation (DDOT) each requested an amendment to the 2009 Constrained Long Range Plan (CLRP). MDOT requested the construction of the Purple Line Light Rail from New Carrollton to Bethesda. DDOT requested the addition of the "Return to L'Enfant" project, a proposed development in the air rights over I-395 between E St. and Massachusetts Ave. NW, as well as a modification to the K St., NW to accommodate current plans for the K St. Transitway.

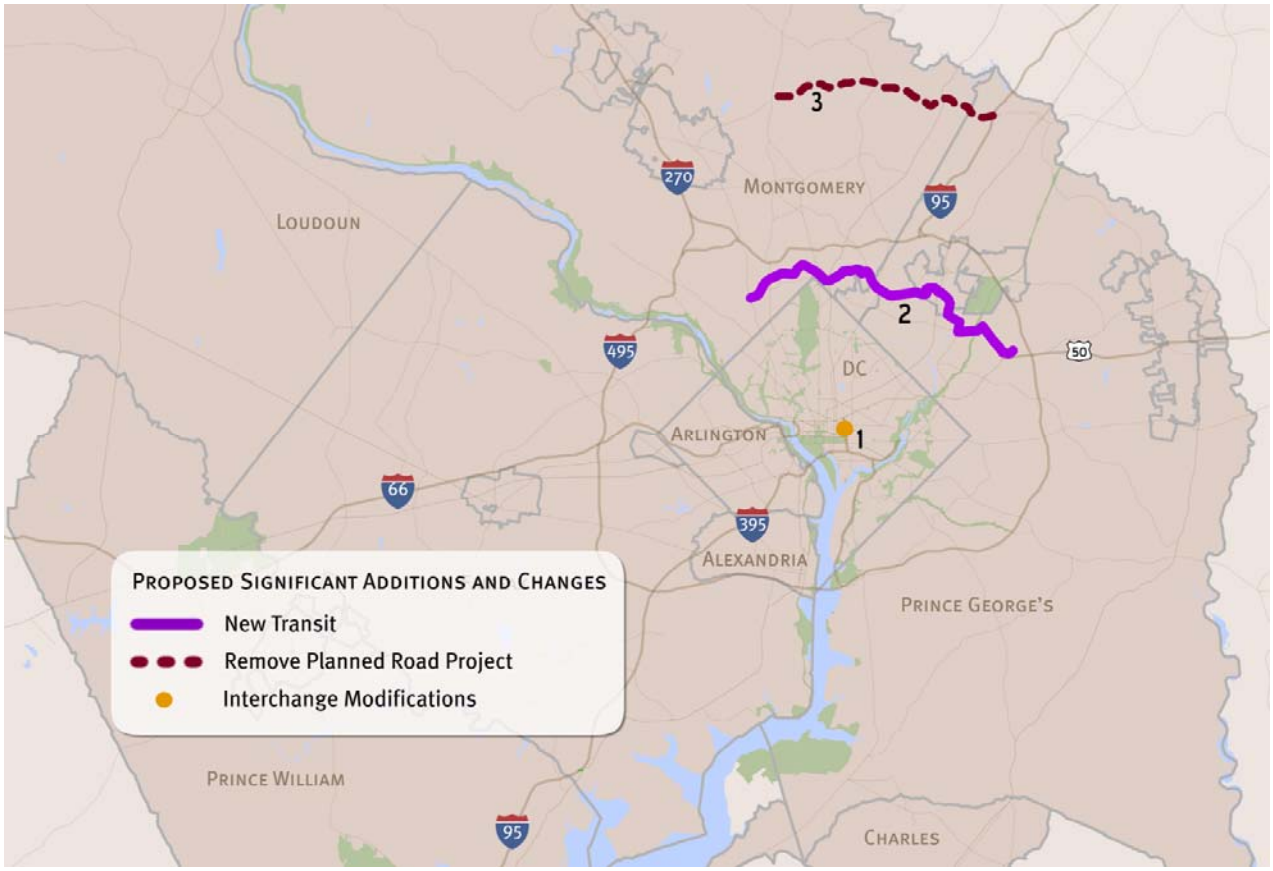
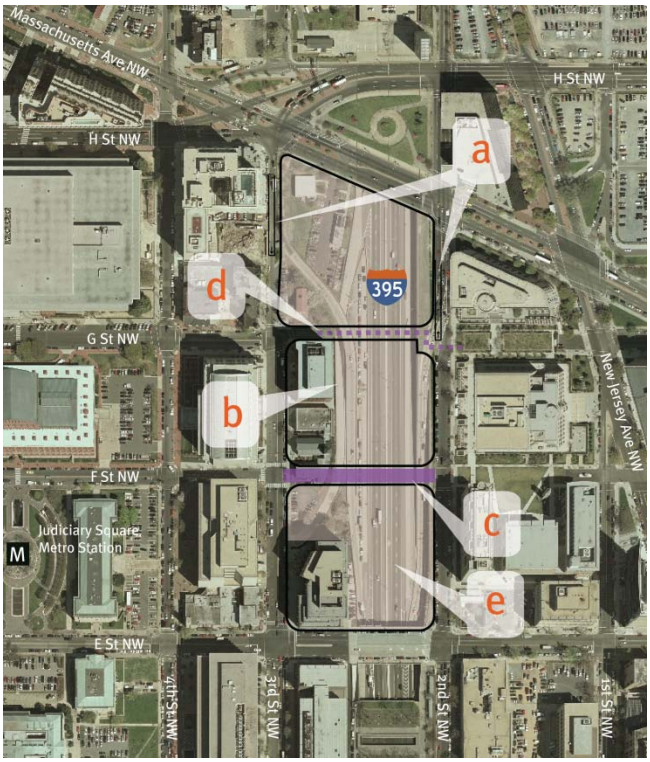


Figure 5 Significant Additions and Changes to the 2009 Update to the CLRP

1. Return to L'Enfant: Modifications to I-395 between E St. and Massachusetts Ave. NW
2. Purple Line from Bethesda to New Carrolton
3. Remove Planned Improvements to MD 28/198 – Norbeck Rd. /Spencerville Rd.

1. Return to L'Enfant: Modifications to I-395 between E St. and Massachusetts Ave. NW

This project will make modifications to three on/off ramps from and to I-395, including the closure of a seldom-used off-ramp to the 400 block of 3rd St. NW. After the ramp modifications are complete, the portion of I-395 between E St. and Massachusetts Ave. NW will be decked over and re-developed



a. Reconfigure existing on-ramp from 3rd St. and existing off-ramp to 2nd St.
b. Close existing off ramp from I-395 to the 400 block of 3rd St.
c. Reconnect F St. between 2nd and 3rd Streets for vehicular, bicycle, and pedestrian traffic.
d. Reconnect G St. between 2nd and 3rd Streets for bicycle and pedestrian traffic
e. Areas over I-395 between E St. NW and Massachusetts Ave. NW are to be decked over and re-developed with a mix of office, residential, retail and public space.

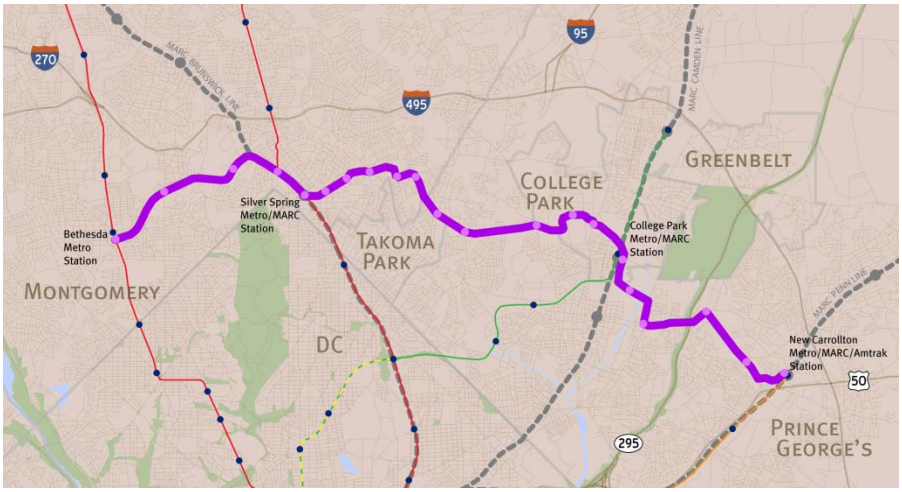
Complete: 2014

Cost: $27 million

Source: Private funding

2. Purple Line from Bethesda to New Carrolton

Design, construct and operate a light rail system in Montgomery and Prince George's Counties between Bethesda and New Carrolton. The 16-mile long facility features 21 stations and will connect to Metro stations on the Red Line (Bethesda, Silver Spring), the Green Line (College Park) and Orange Line (New Carrolton), as well as MARC and Amtrak rail stations.



Length: 16 miles

Complete: 2018

Cost: $1.423 billion

Source: Federal and state funding

3. Other Bus Service Improvements

Increase bus service on priority routes and purchase 35 new Fairfax Connector buses. Expand the West Ox Bus Operations Facility to accommodate new buses and increased service. Also includes bus stop access and safety improvements identified as part of the Bus Stop Inventory and Safety Study.

Complete: 2011

Cost: $91.9

Source: Local funding

2.3 General Use Highway Facilities

TPB highway networks include all regionally significant roads, i.e., all freeways, interstates, expressways, parkways, all arterials, most collectors, and some local roads. Projects identified in the CLRP and TIP that do not involve changes in capacity (e.g., highway rehabilitation, bridge reconstruction) or are not regionally significant (e.g., intersection improvements and/or improvements to a facilities that are below the grain of the network system) are not coded into regional networks.

Three transportation scenarios were modeled and analyzed for the 2009 Update to the CLRP and networks for 2010, 2020, and 2030 were developed. Table 8 and Table 9 present a short list of major highway improvements. Table 8 lists projects contained in the year 2002 and 2010 highway networks. For example, construction of the VA 234 (Manassas Bypass), widening of the Dulles Greenway (Westbound lanes), and sections of the Fairfax County Parkway are modeled in networks for 2002.

Significant highway projects slated for completion and modeled in 2010 networks are the Woodrow Wilson Bridge project, a new interchange and widening of the Capital Beltway at Arena Drive, widening of I-70 in Frederick County MD, the widening of I-66 to 8 lanes including HOV, between US 29 Gainesville and VA 234 (Prince William Parkway), widening of US 29 (Lee Highway), and the construction of the Fairfax County Parkway between VA 4600 (Fullerton Road) and Donegal Lane/Hooes Road.

Table 8 presents modeled in 2020 and 2030 networks. In 2020 networks, a sample of projects in Maryland are: the Intercounty Connector, construction of I-95/I-495 access to Branch Avenue Metrorail Station, construction of C-D roads on I-95 near the relocated Contee Road, MD 2/4 (Solomons Island Road), widen MD 4 (Pennsylvania) Ave and US 301 (Crain Hwy), and construction of the M-83 (Mid-County Highway extended.

Projects in Virginia include the construction of south and north bound auxiliary and HOT lanes on sections of I-495 (Capital Beltway VA) from Hemming Avenue to Route 193, HOT lanes in the I-395 and I-95 corridor from Eads Street to VA 610 (Garrisonville Road) in Stafford County. VA 28 (Sully Road) from I-66 to VA 7 (Harry Byrd Highway) is widened to 8 lanes and upgraded to freeway standards.

As noted earlier, state and local budgets are facing shortfalls and completion dates for projects have been delayed. The number of projects slated for completion between 2020 and 2030 increased this year. Projects added to 2030 networks include the construction of a Suitland Parkway interchange at Rena/Forrestville Roads, widening of VA 3000 (Prince William Parkway) for VA 776 (Liberia Road) to VA 640 (Minnieville Road), construction of the Tri-County Parkway (CTB alignment C&D), and I-495 HOT Lanes constructed between S. of Old Dominion Drive and S. of VA 193 (Georgetown Pike).

A complete list of highway projects that were modeled in the analysis of the 2009 CLRP and the FY 2010-2015 TIP is presented in Appendix A.

Table 8 Major Highway Improvements in the 2009 CLRP and FY2010-2015 TIP (2002-2010)

Network	Facility/Service	Improv.	From	To	Facil. Type	Lanes	Comp Year
2002	**Same as 2000, plus:**						
	Dulles Greenway Eastbound	(Completed)	VA 772 (Exit 6)	VA 28	1	5	2000
	Middlebrook Road	(Completed)	Great Seneca Highway	I-270	2	6	2000
	MD 228 (Berry Road)	(Completed)	W. of Mattawoman Creek	MD 210 (Indian Head Hwy.)	2	4	2000
	VA 234 (Manassas Bypass)	(Completed)	VA 28	VA 234/649 S. of Manassas	5	4	2001
	Dulles Greenway Westbound	(Completed)	VA 28	VA 772 (Exit 6)	1	6	2001
	VA 7100 (Fairfax County Parkway)	(Completed)	VA 606 (Baron Cameron Avenue)	VA 7 (Leesburg Pike)	5	4	2001
	VA 7100 (Fairfax County Parkway)	(Completed)	VA 675 (Sunset Hills Road)	VA 606 (Baron Cameron Avenue)	5	6	2001
	VA 7100 (Fairfax County Parkway)	(Completed)	VA 620 (Braddock Rd)	US 29/VA 608 (West Ox Rd)	5	5	2001
	VA 7 (Harry Byrd Highway)	(Completed)	VA 28	Algonkian Parkway	1	6	2002
2010	**Same as 2002, plus:**						
	I-95/I-495 (Capital Beltway)	(Completed)	Interchange at Ritchie Marlboro		1	8	2003
	US 50 (John Hanson Highway)	(Completed)	Columbia Park Road		1	3	2003
	VA 267 (Dulles Toll Road) Ramps	(Completed)	I-495 Interchange		1	-	2004
	I-95 interchange	(Completed)	at VA 627		1	-	2004
	I-270 (West Spur) Reconstr/Constr.	(Completed)	Interchanges at Democracy Blvd and Westlake Terrace		1	6	2004
	I-270 (East Spur) Reconstr/Constr.	(Completed)	Rockledge Dr. Connector / MD 187		1	6	2004
	Dulles Greenway Interchanges	Construct	VA 653 &Battlefield Pkwy.		1	-	2005
	MD 27 (Ridge Road)	Widen	MD 355 (Rockville Pike)	A-305	2	6	2006
	MD 5 Relocated at Hughesville	Construct	End of divided highway south of Hughesville	End of divided highway north of Hughesville	5	4	2007
	VA 234 (Dumfries Road)	(Completed)	I-95	US 1	5	4	2008
	I-95/I-495 Woodrow Wilson Bridge	Widen	MD 210 Interchange	Virginia Line	1	12	2009
	I-95/I-495/Arena Drive Interchange	Construct	MD 214	MD 202	1	8+2	2009
	I-66 (HOV during AM peak 5 lanes EB)	Widen	US 29 (Gainesville)	VA 234 (Prince William Pkwy.)	1	8	2009
	I-70 (Veterans Memorial Highway)	Widen	Mount Phillip Road	MD 144FA	1	6	2009
	US 15 (James Madison Highway)	Widen	I-66	VA 234	2	4	2009
	Battlefield Parkway	Construct	Kincaid Boulevard	Route 7	2	4	2009
	Father Hurley Boulevard	Widen	I-270	existing MD 27	2	6	2010
	I-270	Reconstruct	Interchange at MD 121		1	2	2010
	US 29 (Lee Highway)	Widen	US 50	I-66	2	6	2010
	VA 7100 (Fairfax County Pkwy)	Construct	Interchange at Rolling Rd/EPG Road		0	1	2010
	VA 7100 (Fairfax County Pkwy)	Construct	Interchange at Boudinat Drive		0	1	2010
	VA 7100 (Fairfax County Parkway)	Construct	VA 4600 (Fullerton Road)	Donegal Lane / Hooes Road	1	4-6	2010
	VA 635 (Cherry Hill VRE Access	Construct	US 1	Future VRE Station Site	4	2	2010
	Battlefield Parkway	Construct	Fort Evans Road	Edwards Ferry Road	2	4	2010
	MD 4 (Pennsylvania Avenue)	Construct	Interchange at Westphalia Road		5	6	2010

Ref: ND10_TABLE9_2002_2030_PROJ_LIST.xls

Table 9 Major Highway Improvements in the 2009 CLRP and FY2010-2015 TIP (2020-2030)

Network	Facility/Service	Improv.	From	To	Facil. Type	Lanes	Comp Year
2020	**Same as 2010, plus:**						
	I-95 (provide 4th lane)	Widen	Newington	VA 123	1	8	2011
	I-95 (Wilson Bridge)	Widen	VA 241 (Telegraph Rd.)	US 1	1	12	2011
	Inter County Connector	Construct	I-270	I-95 / US 1	1	6	2012
	I-395/I-95 HOT Lanes	Widen/Constr.	Eads St.	VA 234	1	3	2012
	I-95 HOT Lanes	Construct	VA 234	VA 610 Stafford Co.	1	2-1	2012
	I-495 HOT Lanes	Construct	1 mi east of I-395	Hemming Ave. Underpass	1	10+2	2013
	I-495 HOT Lanes	Construct	Hemming Ave. Underpass	S. of Old Dominion	1	8+4	2013
	US 29 (Lee Highway)	Widen	Virginia Oaks Drive	I-66	5	6	2014
	VA 7 (New Interchanges)	Upgrade	VA 7/15 (Leesburg Bypass)	VA 28	1	6	Removed
	US 50 (Arlington Blvd.)	Reconstruct	ARL/FFX Line	Washington Blvd.	2	6	2015
	US 50 (Arlington Blvd.)	Reconstruct	Pershing Dr.	Ft. Myer Dr.	2	6	2015
	VA 7100 (Fairfax County Parkway)	Widen	I-66	VA 123 (Ox Road)	5	6	2015
	VA 28 PPTA (Phase II)	Widen/Upgrd	I-66	VA 7	1	8	2015
	Dulles Airport Access Road	Widen	Dulles Airport	VA 123	1	6	2017
	VA 7900 (Franconia/Springfield Pkwy) HOV	Upgrade	VA 638 (Rolling Road)	VA 617 (Backlick Road)	1	6+2	2020
	VA 7900 (Franconia/Springfield Pkwy.)	Construct	Interchange at Neuman Street		1		2020
	I-95 (Collector/Distributor Roads)	Construct	Contee Road Relocated		1	8+4	2020
	US 29 (Columbia Pike)	Upgrade	Sligo Creek Parkway	South of MD 193	5	6	2020
	US 29 (Columbia Pike)	Upgrade	North of MD 193	South of MD 650	5	6	2020
	US 29 (Columbia Pike)	Upgrade	North of MD 650	Howard County Line	5	6	2020
	M-83 (Midcounty Hwy) Extended	Construct	MD 27 (Ridge Road)	Montgomery Village Ave.	2	4-6	2020
	I-270 (Interchange)	Construct	At Watkins Mill Road Extended		1	8+2	2020
	MD 4 (Pennsylvania Avenue)	Widen	MD 223	I-95/I-495	1	6	2020
	MD 450 (Annapolis Road)	Widen	Stonybrook Drive	West of MD 3	2	4	2020
	I-95/I-495 (Capital Beltway)	Construct	Branch Avenue Metro Access		1	8	2020
	VA 7 Bypass	Widen	US 15 South (South King ST.)	VA 7/US 15 East	1	6	2020
	VA 7100 (Fairfax County Parkway)	Construct	Donegal Lane / Hooes Road	VA 7900 (Franconia-Springfield	1	6	2020
	MD 2/4 at Lusby Southern Connector Road	Construct	MD 765	MD 2/4 at Lusby	2	3	2020
2030	**Same as 2020, plus:**						
	Suitland Pkwy. (Interchange)	Construct	At Rena/Forrestville Roads		5	1	2025
	VA 28 (Centrevill Rd.)	Widen	N.City Limits of Manassas Pk.	Old Centreville Road	2	6	2025
	VA 3000 (Prince William Pkwy.)	Widen	VA 776 (Liberia Road)	VA 640 (Minnieville Rd.)	2	6	2025
	Tri-County Parkway (CTB alignment C&D)	Construct	I-66	Loudoun County Line	2	4	2025
	VA 7 Bypass	Widen	VA 7 West	US 15 South (South King ST.)	1	6	2025
	I-66 EB Auxillary Lanes	Widen	South of Gallows Road	Off Ramp I-495 SB	1	3+1+2	2030
	I-66 WB Auxillary Lanes	Widen	On Ramp from SB I-495	South of Gallows Road	1	3+1+2	2030
	I-66 EB Auxillary Lanes	Widen	Cedar Lane	South of Gallows Road	1	3+1+2	2030
	I-66 WB Auxillary Lanes	Widen	South of Gallows Road	Cedar Lane	1	3+1+2	2030
	VA 234 (Manassas Bypass)	Upgrade	VA 234 S. of Manassas	I-66	1	6	2030
	US. 1 (Jefferson Davis Hwy.)	Widen	VA 212 (Butler Road)	Princess Anne Street	2	6	2030
	US 301 (Crain Highway)	Upgrd/Widen	North of Mount Oak Road	US 50	5	6+2	2030
	MD 3 (Robert Crain Highway)	Construct	US 50	Anne Arundel Co. Line	2	6	2030
	MD 5 (Branch Avenue)	Upgrd/Widen	US 301	North of Capital Beltway	5	6	2030
	MD 28 (Norbeck Rd) / MD 198	Construct	MD 97	I-95	2	4-6	2030
	US 29 (Columbia Pike)	Widen	I-70	MD 100	5	8	2030
	MD 32	Widen	I-70	Carroll County	2	4	2030
	MD 210 (Indian Head Highway)	Upgrade	MD 228	I-495 (Capital Beltway)	5	6	2030
	VA 234 (Manassas Bypass)	Upgrade	VA 234 S. of Manassas	I-66	1	6	2030

Ref: ND10_TABLE9_2002_2030_PROJ_LIST.xls

2.4 HOV/HOT/Toll Facilities

Operational and planned HOV and HOT lane facilities are discussed in this section and presented in Table 10. Base year networks for 2002 include peak period HOV operations on I-95/I-395 from Quantico Creek (Prince William County) to the Potomac River (exclusive right-of-way 3+ minimum occupancy requirement). HOV lanes on I-66 from Route 234 to the Potomac River operate as combination diamond lanes and exclusive right-of-way with 2+ minimum occupancy requirements. Diamond HOV lane operations also existed on I-270 from MD 121 to the Capital Beltway, and on the Dulles Toll Road (VA267) from VA 28 to the Capital Beltway, both requiring a 2+ minimum occupancy.

Networks for 2010 include diamond lane HOV operations on US 50 in Maryland from US 301 to the Capital Beltway with 2+ minimum occupancy, that was completed in 2003 and in 2006, HOV lanes were opened on I-66 from VA 234 (Prince William Parkway) to VA 234 Business (Sudley Road). The networks also include an extension of HOV lanes on I-66 from VA 234 (Prince William Parkway) to US 29 (Gainesville) and on VA 7100 (Fairfax Parkway) and VA 7900 (Franconia-Springfield Parkway).

In 2020 networks, HOT lanes are constructed on I-95/I-395 between Eads Street (Arlington) to VA Route 610 (Garrisonville Road) in Stafford County. The expansion of HOV and HOT lane facilities continues with the construction of HOT lanes on I-495 (Capital Beltway) from east of I-395/I-95 to south of Old Dominion Drive. I-66 is widened for HOV lanes between US 15 and US 29 (Gainesville). It is important to note that the minimum occupancy requirement for all future HOV facilities will be 3+ beginning in 2020.

Networks for 2030 include the extension of I-495 (Capital Beltway) HOV and HOT lanes from south of Old Dominion Drive to the American Legion Bridge. HOV lanes are also constructed on I-270 from Shady Grove Metro to and I-70.

Table 10 HOV/HOT/Toll Facilities

	FACILITY	IMPROVEMENT	LIMITS	DEFINITION
2010:				
	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+
	I-95 Wilson Bridge	Construct	US 1 (VA) to MD 210	2+
	I-66	Widen	US 29 (Gainesville) to VA 234 (Prince William Parkway)	2+
	Fairfax Co. Pkwy.	Construct	US 50 to VA 7735 (Fair Lakes Parkway)	2+
	Fran./Sprfld. Pkwy.	Construct	Ffx. County Pkwy. to Frontier Drive	3+
2020:				
			SAME AS 2010, PLUS	
	I-66	Widen	US 15 to US 29 (Gainesville)	3+
	I-95/I-395	Widen/Construct	Eads St to VA 610 in Stafford Co. (HOT lanes)	3+
	I-495	Construct	1mi.east of I-395/I-95 to S. of Old Dominion Dr. (HOT)	3+
	Fairfax Co. Pkwy.	Construct	VA 7735 (Fair Lakes Parkway) to I-66	3+
	Fairfax Co. Pkwy	Construct	VA 267 (Dulles Toll Rd) to US 50	3+
	Fairfax Co. Pkwy	Construct	VA 640 (Sydenstricker Rd) to Franconia/ Springfield Pkwy	3+
2030:				
			SAME AS 2020, PLUS	
	I-270	Const./Re-sign	Shady Grove Metro to I-70	3+
	I-495	Construct	American Legion Bridge to S. of Old Dominion Dr. (HOT)	3+

NOTE: All HOV facilites assumed HOV 3+ by 2020

Ref: ND10_TABLE11_HOV_HOT_TOLL.XLS

2.5 Transit Service

Major transit improvements programmed for completion in the 2009 CLRP and FY-2010-2015 TIP are described in this section. A sample of transit improvements programmed for completion is listed in Table 12, Table 13 and Table 14. Base year networks for year 2002 include the full 103-mile Metrorail system, three MARC commuter rail lines in Maryland (Penn, Camden, and Brunswick Lines), and two VRE commuter rail lines in Virginia (Fredericksburg and Manassas Lines.

During the period between years 2002 and 2010, the Metrorail Blue Line was extended from Addison Road to Largo, a new Red Line Metrorail station was added at New York Avenue between Union Station and Rhode Island Avenue Stations, and new MARC service was added from Point of Rocks to the City of Frederick in Maryland. Rapid Bus services were added in the Georgia and Pennsylvania Avenue corridors in the District of Columbia. Corridor service improvements were added for PRTC/Omni Bus service.

Transit projects in 2010 networks include changes in service patterns on WMATA's Blue and Orange lines, to optimize passenger loads through Rosslyn. The Blue line is reconfigured so that half the trains follow the Green line alignment to Greenbelt; diverted some Orange line trains to Largo. Table 11 displays Metrorail Service Changes.

Table 11 Metrorail Service Changes

O-Station	D-Station	2010 network		2020 & 2030 networks	
		am hdwy	op hdwy	am hdwy	op hdwy
Shady Grove (1)	Glenmont (26)	6	12	2.5	6
Grosvenor (5)	Silver Spring (23)	6	12	--	--
Greenbelt (27)	Branch (45)	6	12	7	12
Mt. Vn Sq.-UDC (35)	Huntington (48)	7	12	7	12
FranSpgfld (47)	Largo (87)	14	12	14	12
FranSpgfld (47)	Greenbelt (27)	14	--	14	--
Vienna (57)	New Carrollton (80)	7	12	7	12
Dulles GrnWay (98)	Stadium-Armory (75)	--	--	7	12
Vienna (57)	Largo (87)	14	--	14	--

Ref: ND10_TABLE13_METRO_SERV_CHG.XLS

Additional 2010 transit projects include Phase I of the Anacostia Streetcar project (replaces the CSX Shepherd Branch project), Crystal City/Potomac Yards Busway and Glebe Road extension to Crystal City Metro, and service improvements for PRTC/Omni Bus and VRE commuter rail.

Table 12 Major Transit Service Improvements in 2010 Networks

	SERVICE	LIMIT
2010:		
	MARC	Frederick to Pt. of Rocks
	Metrorail	Addison Road to Largo
	Metrorail	NY Avenue Station
	Metrorail	Revised Operating Plan
	MARC	Extend evening/wk end service on Penn Line; mid-day on Camden/First phase of new MARC plan
	Streetcar	Anacostia Streetcar Phase 1 (Firth Sterling/S. Capitol St. to Howard Rd/MLK Jr. Ave.)
	Busway	Crystal City/Potomac Yards Busway (Glebe Road Extension to Crystal City Metro)
	Bus	Georgia Avenue Rapid Bus (Eastern Ave./Silver Spring Metro Station to Archives Navy Memorial Metro Station)

Transit networks for 2020 include a majority of the new projects and include the Dulles Corridor rail line between East Falls Church and VA 772 (Ryan Road) in Loudoun County, Purple Line Transitway between Bethesda and New Carrollton Metro, Silver Spring Intermodal Transit Facility/Phase II, Columbia Pike Streetcar line, the Corridor Cities Transit-way from the COMSAT Station to Shady Grove Metrorail Station in Montgomery County, a new VRE Station at Cherryhill, K Street Busway project, Crystal City/Potomac Yards Busway, K Street Busway, and ICC corridor Bus improvements.

Table 13 Major Transit Service Improvements in 2020 Networks

	SERVICE	LIMIT
2020:		
		SAME AS 2010, PLUS
	Metrorail	Revised Operating Plan
	Metrorail	Dulles Corridor (East Falls Church to VA 772)
	MetroRail / Marc	Silver Spring Intermodal Transit Facility/Phase II
	Rail	Purple Line Transitway (New Carrollton to Bethesda)
	Streetcar	Columbia Pike (Skyline Center to Pentagon City)
	Corridor Cities Transitway	Shady Grove to Comsat
	VRE	Cherry Hill Commuter Rail Station
	VRE	Manassas & Fredericksburg lines Service Improvements
	Bus	Transit Development Plan (Fairfax Connector Service Enhancements)
	Bus	ICC Corridor Bus Improvements
	Bus	K - St. Busway (Mt. Vernon Sq. to Washington Circle)
	Bus	Pennsylvania Avenue Rapid Bus (Archives Navy Memorial Metro Station to Naylor Rd Metro Station)
	Busway	Potomac Yard Transit Bus Lanes (Four Mile Run to Braddock Road)
	Bus	New and Modified Service for Beltway HOT lanes-2020 level
	Bus	New and Modified Service for I-95/I-395 /HOT lanes-2020 level

Ref: ND10_TABLE12_MAJOR_TRN.XLS

The 2030 networks include a new Metrorail Station in Potomac Yards, modified bus service for Beltway and I-95/I-395 HOT lanes, and on Route 1 between Route 235 north and I-95 Capital Beltway in Virginia bus\right-turn lanes become operational.

A complete list of the transit projects included in the 2009 CLRP and the FY 2010-2015 TIP is shown in Appendix B.

Table 14 Major Transit Service Improvements in 2030 Networks

	SERVICE	LIMIT
2030		
		SAME AS 2020, PLUS
	Metrorail	Potomac Yards Station
	Bus	New and Modified Service for Beltway HOT lanes-2030 level
	Bus	New and Modified Service for I-95/I-395 /HOT lanes-2030 level

Ref: ND10_TABLE12_MAJOR_TRN.XLS

2.6 Highway and Rail Statistics for Improvements Coded in 2009 CLRP Transportation Networks

Base-year networks for 2002 are comprised of 20,500 directional (one-way) links, excluding centroid connectors. Networks for 2010, 2020 and 2030 contain 20,400 links, 21,100 links, and 21,200 links respectively. Table 15 provides a summary of inputs for regional transit service modeled. Line totals for 2008 represent transit service as of December 30, 2008. Forecast year transit networks for 2010, 2020, and 2030 transit networks employ 2008 transit service as their base. Networks for 2008 are not modeled for conformity assessment. Table 16 presents mileage summaries for LOV and HOV/HOT lane miles, and rail miles for light and heavy rail service.

Table 15 AM and Off-Peak Transit Line Summaries

Network Year	AM Transit Line TOTAL	Off-Peak Transit Line TOTAL	Transit Line TOTAL
2002	987	717	1704
2008	1,030	772	1802
2010	1,037	774	1811
2020	1,092	824	1916
2030	1,092	824	1916

Ref: ND10_TABLE14_AM_OFF-PK_TRNSUM.XLS

Table 16 Highway and Rail Network Statistics (Modeled Area)

	LOV	HOV/HOT	METRORAIL	MD/DC*	VA**
				NON-METRO	NON-METRO
	LANE MILES	LANE MILES	MILES	RAIL MILES	RAIL MILES
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
2002	19,203	187	103	116	95
2010	19,957	225	106	132	95
2020	21,628	344	131	149	100
2030	22,063	387	131	149	100

Ref: ND10_TABLE15_RAIL_ROAD_MILES.XLS

Notes: Includes MARC, Bi-County Transitway, Corridor Cities Transitway in Maryland, and Anacostia Street Car in the District of Columbia
Includes VRE and Arlington Streetcar (Columbia Pike)

Chapter 3 Version 2.2 Model Network Development

The TPB regional travel demand forecasting processes were employed in the air quality conformity assessment of the 2009 CLRP and FY2010-2015 TIP. The latest version of these procedures (referred to as the Version 2.2 model) is documented in the TPB Travel Forecasting Model, Version 2.2, Specification, Validation, and Users' Guide. The TPB's approach to models development is one that favors incremental change to currently adopted application methods.

The model requires the development of a single highway network file containing attributes that represent three time periods: the AM peak period (6:00-9:00 AM), the PM peak period (4:00-7:00 PM), and the off-peak period (comprised of the remaining 18 hours). Highway network coding reflects operational differences between the three periods. The model also requires peak and off-peak transit networks.

Transit networks are built "over" highway network links and are designed to represent service conditions during the two time periods. The AM peak-hour is defined service occurring between 7 AM-7:59 AM[6]. The off-peak period frequencies are based on service occurring between 10:00 AM-2:59 PM. Although the off-peak period covers 5 hours, the maximum headway coded on the transit line files is 60 minutes. Transit in-vehicle times are controlled by the RUNTIME parameter coded on each transit line. This means that bus running times are not computed on the basis of highway link-coded speeds over which lines are coded, but rather, are based on actual bus schedule times.

The transit fare computation process, sometimes referred to as the *MFARE1/2* process, serves to compute transit fares used in the mode choice process. The process ultimately produces four total fare files representing walk/drive-access transit fares for the AM peak period, and walk/drive-access transit fares for the off-peak period.

This chapter describes files that support network building and fare development in greater detail. The network and fare development process, supporting the Version 2.2 model, requires files in text format, which are necessary for highway and transit network building/skimming and transit fare development. The following section describes the model's network building process and is followed by a section containing detailed format descriptions of each file. A list of network files and their input types filenames, and descriptions are shown in Table 17, and further discussion is provided in the Version 2.2 model User's Guide.

[6] In the case of express bus service, which generally originates in the outer reaches of the study area and begins much earlier than 7 AM, the AM peak period definition is relaxed to an earlier period for which service is most concentrated.

Table 17 List of Network and Fare Files Prepared for the Version 2.2 Model

Input Type	Filename	Description	Text or Binary
Land use	ZONE.ASC	Zonal Land Use	Text
Network, highway	LINK.ASC	Highway Links	Text
Network, highway	NODE.ASC	Highway Node File	Text
Network, transit	MODE1-9AM.TP	AM Mode 1-9 Transit Lines	Text
Network, transit	MODE1-9OP.TP	Off-Pk Mode 1-9 Transit Lines	Text
Network, transit	STA_TPP.BSE	Rail Station/PNR File	Text
Network, transit	RAIL_LNK.BSE	Rail Links	Text
Network, transit	GISWKAAM.ASC	GIS AM Zonal Transit Access File	Text
Network, transit	GISWKAOP.ASC	GIS Off-Peak Zonal Transit Access File	Text
Network, transit	GISWKLAM.ASC	GIS AM Walk Link File	Text
Network, transit	GISWKLOP.ASC	GIS Off-Peak Walk Link File	Text
Network, transit	TAZFRZN.ASC	TAZ/Bus Fare Zone Equivalency	Text
Network, transit	BUSFARAM.ASC	MFARE2 AM Bus Fare Zone Matrix	Text
Network, transit	BUSFAROP.ASC	MFARE2 Off-Peak Fare Zone Matrix	Text
Network, transit	TARIFF.TXT	WMATA Tariff Policy Control File	Text

Ref: ND10_TABLE16_NETWK_FARE_FILES.XLS

3.1 Highway Network Building Overview

The network building process begins with the creation of a single binary highway network containing AM, PM, and off-peak highway network attributes that is developed from a single highway link file. The link file includes directional link attributes that vary in accordance with actual highway operations in effect for each time period. Network building also requires a node file containing the x/y coordinate units of each highway node (Maryland State Plane, NAD83, in whole feet).

Highway network files are managed and pre-processed in TPB's GIS. The application consists of the master highway network database and GIS application tools. The coverage-based database and the GIS application tools are intended to integrate the TPB transportation planning procedures with CUBE/TP+, TPB. A two-stage integration process for transportation network modeling is used. In the first stage, ArcInfo is used for highway network development and maintenance.

The GIS-based master highway network (MAN) consists of a coverage of links and nodes. Each link represents a roadway facility with the roadway attributes of that facility coded on the link. The node coverage consists of X and Y coordinates for each junction/intersection. The link and node coverage's are maintained separately. The system consists of a year 2000 base highway network and a database of all future link changes. Generally, the base network remains unchanged and the database file is updated as needed to reflect CLRP and TIP inputs.

Within the process, the following applications exist: 1) a conformity table and highway link comparison procedure that relates a modified conformity table (see Table 18) to the database and updates the database with project completion dates, facility types, and number of lanes, 2) GIS-based application tools that provide a graphical means for users to add or delete nodes and links and to edit the attributes of these features, and 3) capability to generate highway link and node files for any specified year beyond the base year (i.e. 2001 or beyond).

During the second stage of the process, a set of conversion tools and export procedure are used to export network link and node ASCII files, for any year specified by the user, as TP+ format text files that meet coding specifications employed by CUBE TP+ and Version 2.2 Model specifications.

Table 18 Example of CLRP/TIP Project List

Project ID	Improv.	Facility		Lanes		Completion Date or Status
		From	To	From	To	
MI2q	Construct	1	1	8	8+2	2020
MI4	Widen	1	1	4	6	2009
MI1f	Construct	1	1	8	8+4	2020
MI1p	Construct	1	1	8	8+2	2015
MI1m	Construct	1	1	8	8+2	2009
MP12	Construct	0	1	0	6	2012
MP10a	Reconstruct	2	2	4	4	2020
MP10b	Widen	2	2	4	6	2010
MP9b	Construct	0	2	0	3	2020
MP9c	Construct	2	2	4	6+2	2010
MP2c	Construct	2	2	4	6	2030
MP3a	Upgrade/ Widen	2	1	4	6	2020
MP4f	Upgrade/ Widen	2	5	4	6	2030
MP4k	Construct	2	2	3	3	2007

Ref: ND10_TABLE_17.xls

3.2 Highway Network Link Attributes

The highway network files that result from the GIS network conversion and export procedures are a set of nodes (ASCII input file node.asc) and a set of links (ASCII input file link.asc) that represent connections between those nodes. Each record represents one direction of the link containing directional link characteristics or attributes such as distance, number of lanes, operational codes, and functional classification. These highway network link attributes are described in the following chapter.

Highway network link distances are developed from arcs built on TIGER centerline files and calculated (in feet). However, link distances are coded in whole miles with an explicit decimal. The speed class, capacity class, and TAZ are added to the highway network during the highway network building phase, so they are not present in the ASCII input file (link.asc). Unused columns have been defined for these three attributes and their subsequent population.

Highway operations are represented in networks using link attributes corresponding to AM peak, PM peak, and off-peak time periods. Two link attributes used to represent physical and operational differences between each time period: "lanes" and "limit" codes. Lanes describe the number of through lanes and the limit code describes special vehicle prohibitions. During network development process, each link is assigned three lane codes and three limit codes, corresponding to each modeled time period. Operational changes of regional significance are represented in the highway networks and include facilities that convert from two-way to one-way operations and/or facilities that change in lane configuration during peak traffic periods. Limit codes are presented in Table 19.

Table 19 Limit Codes

Limit Code	Vehicles Allowed	Vehicles Disallowed
0	All Vehicles	No Vehicles
2	HOV 2+ Occ. Vehicles	1-Occ. Vehicles, Trucks
3	HOV 3+ Occ. Vehicles	1, 2 Occ. Vehicles, Trucks
4	All Vehicles, other than trucks	Trucks
5	Airport Passenger Auto Driver Trips	All other Vehicles
9	Transit Only	All other Vehicles

Limit codes are also used to model HOV operations, truck prohibitions (primarily on Parkways), and I-66 inside the beltway. Other designated facilities and streets are added to the networks to enable transit routes to be coded accurately relative to zonal activity centers. For these links, a Limit code 9 ('Transit Only') is used to more accurately depict coded transit routes, that are below the grain of the zone system; these links are not included in the highway assignment process).

There are numerous cases in the Washington region where through traffic is prohibited from entering into residential neighborhoods during peak periods. These types of prohibitions are typically not of regional significance, and therefore, are not explicitly coded in the highway network. Figure 6 displays HOV/HOT lane facilities coded in 2030 networks and Figure 7 shows truck prohibited links.

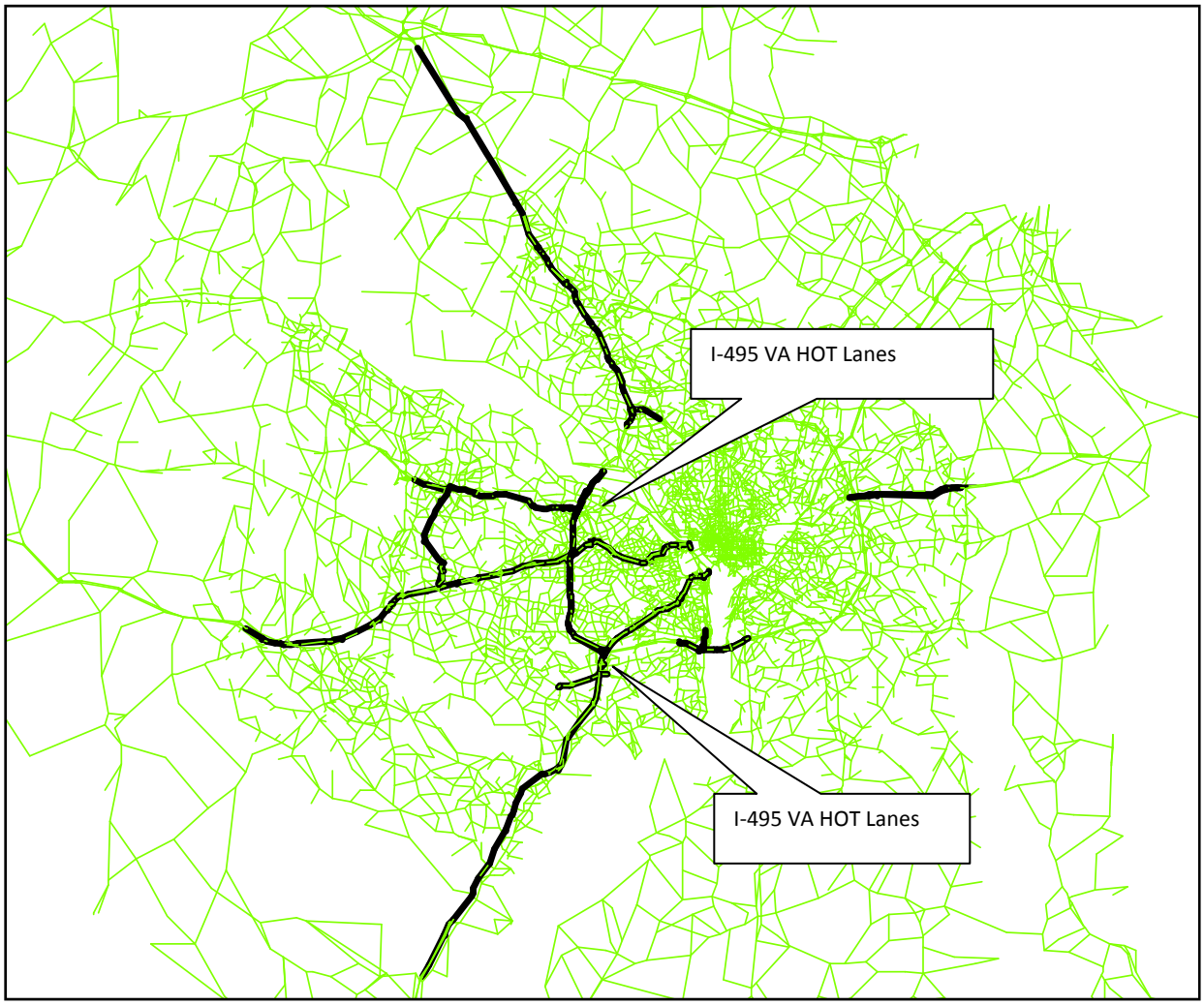


Figure 6 HOV and HOT-Lane Facilities – 2030 AM Highway Network

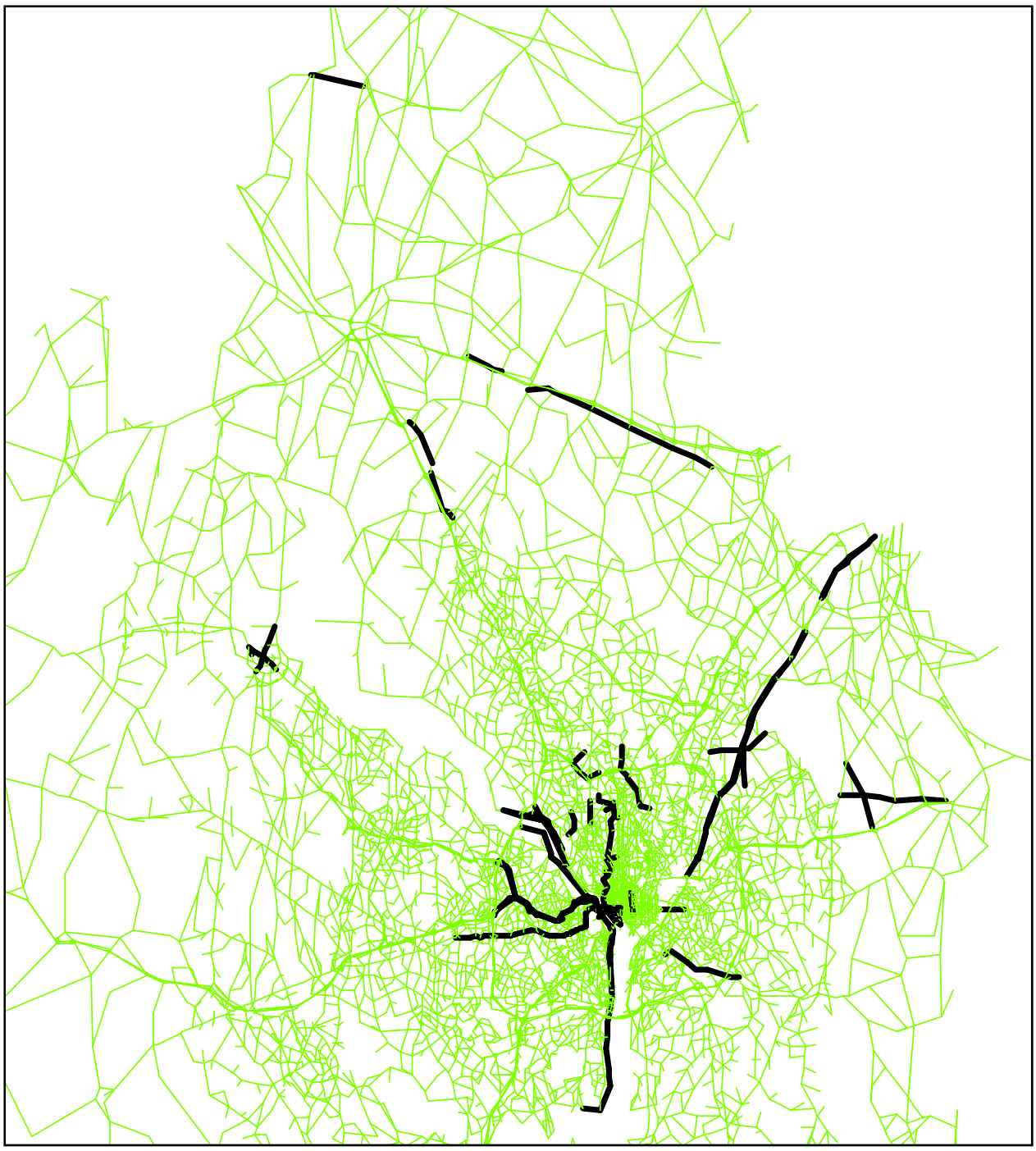


Figure 7 Truck Prohibited Network Links (Limit Code 4)

Figure 8 displays an example of specialized network coding for HOV facilities. During non-peak periods, 8 conventional lanes are provided on the I-66 segment from the Fairfax County Parkway to VA Route 645 Stringfellow Road. During the peak periods, the median lane operates as a concurrent HOV lane in the peak direction. The schematic diagram shows lane configuration for the AM peak period.

Link 15867-10299 operates with 4 LOV lanes eastbound and Limit Code 0 (all vehicles permitted) and link 10294-10292 operates as 1 HOV lane and Limit Code 2 (HOV 2+ vehicles only). Westbound, link 10754-15866 operates with 4 LOV lanes and Limit Code 0 (all vehicles permitted) and link 10291-10293 as 1 HOV lane and Limit Code 9 (all vehicles prohibited). Although transit service is permitted on links with Limit Code 9, transit service is not coded on I-66's westbound HOV links.

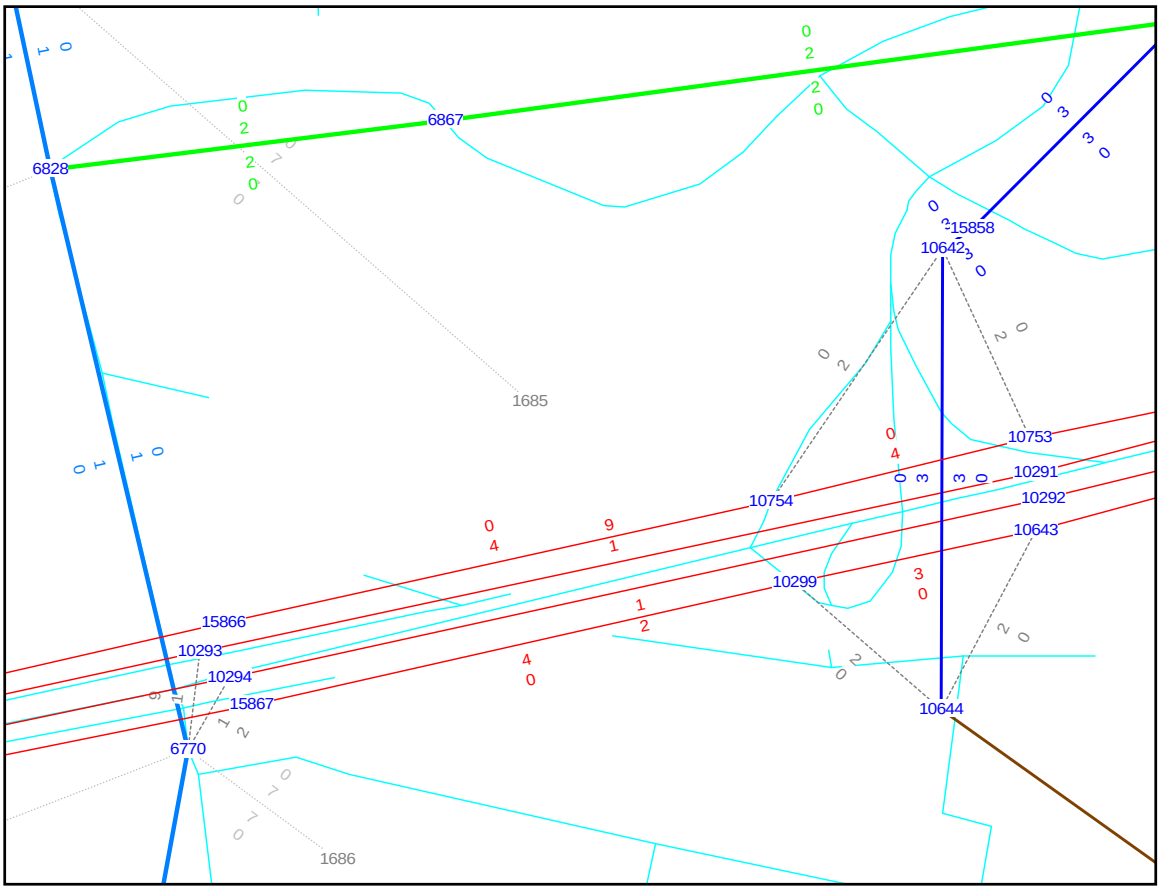


Figure 8 Year 2000 Highway Network (AM Peak Period)

Link attributes "FTYPE" and "AREATP" (facility type and area type) are used to determine the free-flow speed and hourly capacity of each link. Facility type codes are based on 7 categories (0/centroid connectors, 1/freeways, 2/major arterials, 3/minor arterials, 4/ collectors, 5/expressways, and 6/freeway-arterial ramps) and are manually coded into networks on a link-by-link basis.

A facility type 6 was added to networks in FY2003 to represent freeway-arterial ramps. The code was assigned to meet an Air Quality model requirement for the calculation of ramp-specific emissions for freeways. The ramp designation is presently used for accounting purposes in the air quality emissions calculations of ramps. It has no relevance with respect to capacity or speed in the current travel model. The existing freeway capacities and free flow speeds are presently used for ramps.

Free-flow speeds (speed class) and hourly capacities (capacity class) are established during traffic assignments based upon facility type and area type codes. Area type values are assigned during the network building process, on the basis of employment and population density of the TAZ centroid that is nearest to the link. Area type codes range in value from 1 to 7, as indicated in Table 20.

The determination of the nearest TAZ, the density calculations, and subsequent area type value assignment are undertaken with a series of computer programs. The program first determines the nearest zone centroid associated with each link in the highway network.[7] It then determines the area type of each zone in the region based on land activity density. The density measure is defined jointly by population and employment densities for a one-mile 'floating' radius about each zone. Therefore, a zonal land use file containing land area and land activity information must be provided. A coordinate file is also necessary in order to enable graphical viewing of the network and to perform a number of other modeling tasks, which require information regarding network node positions.

Table 20 Area Type Definitions

One-Mile 'Floating' Pop. Density (Pop/Sq mi.)	One-Mile 'Floating' Emp. Density (Emp/Sq mi.)						
	0-100	101-500	501-1,500	1,501-5,000	5,001-15,0000	15,001-35,000	35,001+
0-100	7	7	5	5	2	2	2
101-350	7	5	5	5	2	2	2
351-1,500	6	6	5	5	2	2	2
1,501-3,500	6	6	4	3	2	2	2
3,501-6,500	4	4	3	3	2	2	1
6,501-10,000	4	3	3	3	2	2	1
10,001+	3	3	3	2	2	2	1

[7] Each link is associated with one zone, but there is no guarantee that each zone is associated with a link.

Tolls are coded in the highway network by utilizing two highway link attributes: TOLL and TOLLGRP. TOLL is the monetary value of the fee charged at the link location in current year cents. The Dulles Toll Road (VA 267) is an example of a facility where Tolls/Fees are charged at specific link locations. The current year should be consistent with the transit fare tariff year assumed in the development of transit fares. TOLLGRP is a 4-digit facility type index. The TOLLGRP value should be coded with a non-zero value if the TOLL value is non-zero. (If the TOLL value of a given link is non-zero and the TOLLGRP value equals zero, the highway network building process automatically imposes a TOLLGRP override value of '1'). TOLLGRP codes are employed for variably priced links representing I-95, I-395, and I-495 HOT/HOV-lanes.

If there is a desire to reflect a per-mile TOLL value on a link, there is no need to code a manually calculated TOLL value on the link. In this instance, the TOLL value should not be coded, but a unique TOLLGRP code should be assigned to the link and an associated per-mile rate should be specified in the TOLL.ESC file (described below). The highway building process ultimately creates six period-specific toll attributes: AMTOLL, PMTOLL, OPTOLL (tolls by time-of-day on all toll facilities) and AMTOLL_VP, PMTOLL_VP, OPTOLL_VP (tolls by time-of-day on variable priced facilities only).

Three toll facilities are modeled in base year highway networks: the Dulles Toll Road (VA 267), the Dulles Greenway, and the Harry W. Nice Memorial Bridge (between Charles County, Maryland and King George County, Virginia). Although a toll is levied on the Chesapeake Bay Bridge (Eastbound), no toll has been coded since the facility is located at an external station.

The Dulles Toll Road involves both access and egress tolls which vary by location. In 2005, tolls were increased on the Dulles Toll Road (VA 267). The entry and exit charge at the Main Toll Plaza end of the facility is increased from 50 cents to 75 cents, levied in both directions. A toll charge of 50 (from 25 cents) cents is now charged at all westbound off-ramps and eastbound on-ramps and at the Sully Road (Route 28) Toll Plaza. Dulles Greenway tolls are coded in COG networks based on the *average* of the cash rates and "SmartTag" rates. This assumes that the "SmartTag" and "E-ZPass" markets account for roughly half of all Greenway users.

The 14-mile Greenway connects to the Dulles Toll Road at Route 28 at the Dulles International Airport and extends west to Route 15 at Leesburg. The main toll facility is represented north of the Route 28 interchange with a toll of $1.88. This toll applies to cars only and represents an average of $2.00 cash and $1.75 for Smart Tag. A toll of $1.53 is used for all westbound and eastbound on-ramps at Routes 28, 606, and 607. A toll of $1.00 is coded for all westbound and eastbound on-ramps at Routes 772, 659, and Claiborne Parkway. A toll of $1.00 is coded on the Harry W. Nice Bridge, in both directions. A list of the toll values coded on base network links is presented in Table 21. Toll information is reviewed every year and furnished by state DOT's. The remaining fixed toll facilities in the region, the Dulles Toll Road (VA 267), the Dulles Greenway, and the Harry W. Nice Memorial Bridge, are modeled as TOLLGRP code 1

Table 21 Highway Network Toll Links

Seg	Anode	Bnode	Facility	Limits	Direction	Operation	2000	2005	2010	2015	2020	2025	2030	Notes
1	10701	10704	Dulles Toll Road	Main Toll Plaza - Rt 684 Interchange	Inbound	LOV	50	75	75	75	75	75	75	
2	10707	10700	Dulles Toll Road	Main Toll Plaza - Rt 684 Interchange	Outbound	LOV	50	75	75	75	75	75	75	
3	10917	10918	Dulles Toll Road	Main Toll Plaza - Rt 684 Interchange	Inbound	HOV	50	75	75	75	75	75	75	
4	11004	11006	Dulles Toll Road	Main Toll Plaza - Rt 684 Interchange	Outbound	HOV	50	75	75	75	75	75	75	
5	10701	10703	Dulles Toll Road	Spring Hill Rd - Off Ramp	Inbound	LOV	25	50	50	50	50	50	50	
6	10702	10700	Dulles Toll Road	Spring Hill Rd - On Ramp	Outbound	LOV	25	50	50	50	50	50	50	
7	10703	10704	Dulles Toll Road	Spring Hill Rd - On Ramp	Inbound	LOV	25	50	50	50	50	50	50	
8	10707	10702	Dulles Toll Road	Spring Hill Rd - Off Ramp	Outbound	LOV	25	50	50	50	50	50	50	
9	10667	10666	Dulles Toll Road	Hunter Mill Rd - Off Ramp	Inbound	LOV	25	50	50	50	50	50	50	
10	10765	10665	Dulles Toll Road	Hunter Mill Rd - On Ramp	Outbound	LOV	25	50	50	50	50	50	50	
11	10671	10670	Dulles Toll Road	Wiehle Rd - On Ramp	Inbound	LOV	25	50	50	50	50	50	50	
12	10767	10669	Dulles Toll Road	Wiehle Rd - Off Ramp	Outbound	LOV	25	50	50	50	50	50	50	
13	10675	10674	Dulles Toll Road	Reston Pkwy - On Ramp	Inbound	LOV	25	50	50	50	50	50	50	
14	10769	10673	Dulles Toll Road	Reston Pkwy - Off Ramp	Outbound	LOV	25	50	50	50	50	50	50	
15	10679	10678	Dulles Toll Road	Centerville Rd - On Ramp	Inbound	LOV	25	50	50	50	50	50	50	
16	10771	10677	Dulles Toll Road	Centerville Rd - Off Ramp	Outbound	LOV	25	50	50	50	50	50	50	
17	10862	10866	Dulles Toll Road	Fairfax Pkwy - On Ramp	Inbound	LOV	25	50	50	50	50	50	50	
18	10864	10861	Dulles Toll Road	Fairfax Pkwy - Off Ramp	Outbound	LOV	25	50	50	50	50	50	50	
19	6921	6913	Dulles Toll Road	Rt 28 Toll Plaza - On Ramp	Inbound	LOV	35	50	50	50	50	50	50	
20	6942	6914	Dulles Toll Road	Rt 28 Toll Plaza - Off Ramp	Outbound	LOV	35	50	50	50	50	50	50	
21	14400	14200	Govenor Nice Bridge	Virginia - Maryland	Inbound	LOV	100	100	100	100	100	100	100	
22	14200	14400	Govenor Nice Bridge	Virginia - Maryland	Outbound	LOV	100	100	100	100	100	100	100	
23	6942	6995	Dulles Greenway	Rt 28	Outbound	LOV	188	188	188	188	188	188	188	
24	15601	6913	Dulles Greenway	Rt 28	Inbound	LOV	188	188	188	188	188	188	188	
25	6939	6995	Dulles Greenway	Dulles Greenway to Airport Ramp	Outbound	LOV	153	153	153	153	153	153	153	
26	15601	6943	Dulles Greenway	Airport to Dulles Greenway Ramp	Inbound	LOV	153	153	153	153	153	153	153	
27	6961	6995	Dulles Greenway	Rt 28 to Dulles Greenway On-Ramp	Outbound	LOV	153	153	153	153	153	153	153	
28	15601	6961	Dulles Greenway	Dulles Greenway to Rt 28 Off-Ramp	Inbound	LOV	153	153	153	153	153	153	153	
29	6925	15606	Dulles Greenway	Rt 606 On-Ramp	Outbound	LOV	153	153	153	153	153	153	153	
30	15607	15608	Dulles Greenway	Rt 606 Off-Ramp	Inbound	LOV	153	153	153	153	153	153	153	
31	6962	15616	Dulles Greenway	Rt 772 On-Ramp	Outbound	LOV	100	100	100	100	100	100	100	
32	15617	15618	Dulles Greenway	Rt 772 Off-Ramp	Inbound	LOV	100	100	100	100	100	100	100	
33	15625	15626	Dulles Greenway	Claiborn Pkwy On-Ramp	Outbound	LOV	153	153	153	153	153	153	153	
34	6966	15624	Dulles Greenway	Claiborn Pkwy Off-Ramp	Inbound	LOV	153	153	153	153	153	153	153	
35	6967	15629	Dulles Greenway	Belmont Rd On-Ramp	Outbound	LOV	100	100	100	100	100	100	100	
36	15630	15631	Dulles Greenway	Belmont Rd Off-Ramp	Inbound	LOV	100	100	100	100	100	100	100	
37	6997	15611	Dulles Greenway	Rt 607 (LDN Co Pkwy) On-Ramp	Outbound	LOV	-	153	153	153	153	153	153	VSL39
38	15612	15613	Dulles Greenway	Rt 607 (LDN Co Pkwy) Off-Ramp	Inbound	LOV	-	153	153	153	153	153	153	VSL39
39	6969	15639	Dulles Greenway	Battlefield Pkwy On-Ramp	Outbound	LOV	-	100	100	100	100	100	100	VP21b
40	15640	15641	Dulles Greenway	Battlefield Pkwy Off-Ramp	Inbound	LOV	-	100	100	100	100	100	100	VP21b
41	6968	15634	Dulles Greenway	Rt 653 (Shreve Mill Rd) On-Ramp	Inbound	LOV	-	100	100	100	100	100	100	VP21b
42	15635	15636	Dulles Greenway	Rt 653 (Shreve Mill Rd) Off-Ramp	Outbound	LOV	-	100	100	100	100	100	100	VP21b

Ref: ND10_TABLE_22_TOLLNK07.xls

One toll facility and two variably priced (HOT) lane facilities are added to forecast year networks. In 2012, the Inter-County Connector in Maryland is added to 2012 networks. In 2012, I-95 and I-395, in Virginia are being widened/constructed for HOT/HOV-lanes between Eads Street in Arlington to VA 610 (Garrisonville Road) in Stafford County and HOV/HOT lane operations begin on I-495 (Capital Beltway) in Virginia, from I-95/I 395 to south of Old Dominion Drive, in 2013.

The ICC in Maryland is modeled as TOLLGRP code 2 with fixed tolls of 15 and 20 cents for the peak and off-peak periods respectively, in 2010 cents.

For the variably priced lane facilities, I-95/I-395 Shirley Highway and I-495 Capital Beltway, the network link toll value (TOLL) is left blank and the toll facility type variable (TOLLGRP) is used to access lookup tables of fixed fees and per-mile rates. TOLLGRP codes 30-60 are used for I-95 and I 395 (Shirley Highway) and TOLLGRP codes 3-26 are used for I-495 (Capital Beltway).

Table 22, Table 23, and Table 24 display tolls per mile (in 2010 cents) for I-95/I-395 (Shirley Highway) and I-495 (Capital Beltway) HOT Lanes.

Table 22 Hot Lane Tolls on Shirley Highway (in 2010 cents) in 2009 CLRP

(A) Northbound			2020		2030	
No.	**HOT Lane Segment**	**Toll Group**	**AM Peak**	**Off Peak**	**AM Peak**	**Off Peak**
1	Pentagon Ramp --> S. Eads St.	67	20	15	20	15
2	VA 27 --> Pentagon Ramp	65	20	15	20	15
3	Shirlington Rd. --> VA 27	63	70	15	100	15
4	Seminary Rd. --> Shirlington Rd.	61	150	15	150	15
5	S. of VA 236 (Duke St.) --> Seminary	59	60	15	70	15
6	I-495 --> S. of VA 236 (Duke St.)	57	20	15	20	15
7	I-495 Ramp	55	20	15	20	15
8	N. of Franconia Rd. --> S. of I-495	53	760	15	760	15
9	S. of Franconia Rd. --> N. of Franconia Rd.	51	210	15	210	15
10	Franconia SF Pkwy Ramp	49	110	15	60	15
11	N. of Backlink Rd. --> Franconia SF Pkwy	47	20	15	20	15
12	N. of Rolling Rd. --> N. of Backlick Rd.	45	120	15	110	15
13	N. of Lorton Rd. --> N. of Rolling Rd.	43	100	15	110	15
14	US 1 --> N. of Lorton Rd.	41	120	15	160	15
15	VA 123 (Ox Rd.) --> US 1	39	120	15	120	15
16	PW Pkwy -->VA 123 (Ox Rd.)	37	60	15	70	15
17	N. of Dale Blvd. --> PK Pkwy	35	20	15	60	15
18	S. of Dale Blvd. --> N. of Dale Blvd	33	20	15	20	15
19	S. of Dumfries Rd. --> S. of]Dale Blvd.	31	20	15	20	15

(B) Southbound			2020		2030	
No.	**HOT Lane Segment**	**Toll Group**	**PM Peak**	**Off Peak**	**PM Peak**	**Off Peak**
1	S. Eads St. --> VA 27	30	20	15	20	15
2	VA 27 --> Pentagon Ramp	32	20	15	20	15
3	Pentagon Ramp --> Shirlington Rd	34	210	15	210	15
4	Shirlington Rd. -->Seminary Rd.	36	350	15	310	15
5	Seminary Rd. --> S. of VA 236	38	170	15	170	15
6	S. of VA 236. -->I-495	40	220	15	260	15
7	I-495 Ramp	42	210	15	220	15
8	I-495 -->Franconia Rd.	44	880	15	900	15
9	Franconia Rd. Ramp	46	250	15	350	15
10	Franconia Rd. --> Franconia S.F. Pkwy	48	20	15	20	15
11	Franconia S.F. Pkwy -->N. of Backlick Rd.	50	20	15	20	15
12	N. of Backlick Rd. --> Rolling Rd. (Phoick Rd.)	52	60	15	60	15
13	Rolling Rd. --> US 1	54	210	15	170	15
14	US 1 --> VA 123 (Ox Rd.)	56	170	15	220	15
15	VA 123 (Ox Rd.) --> PW Pkwy	58	70	15	160	15
16	PW Pkwy --> S. of Russel Rd.	60	20	15	20	15

Table 23 HOT Lane Tolls on the Virginia Beltway (in 2010 cents) in 2009 CLRP

(A) Northbound

No.	HOT Lane Segment	Toll Group	AM Peak	PM Peak	Off Peak
1	Hemming Ave. --> Braddock Rd.	7	20	20	15
2	Braddock Rd. --> Gallows Rd.	9	20	20	15
3	Gallows Rd. --> Lee Hwy	11	160	100	15
4	Lee Hwy --> I-66	13	20	20	15
5	I-66 --> Leesburg Pike	15	120	60	15
6	Leesburg Pike --> S. of VA 123	17	20	20	15
7	S. of VA 123 --> S. of Dulles Toll Rd.	19	20	20	15
8	S. of Dulles Toll Rd. --> Dulles Toll Rd.	21	20	20	15
9	Dulles Toll Rd. --> GW Pkwy	23	20	20	15

(B) Southbound

No.	HOT Lane Segment	Toll Group	AM Peak	PM Peak	Off Peak
3	VA 193 (Georgetown Pike) --> Dulles Toll Rd.	8	20	20	15
4	Dulles Toll Rd. --> S. of Dulles Toll Rd.	10	20	20	15
5	S. of Dulles Toll Rd. --> VA 123	12	20	20	15
6	VA 123 --> Leesburg Pike	14	20	60	15
7	Leesburg Pike --> I-66	16	20	220	15
8	I-66 --> Lee Hwy	18	20	160	15
9	Lee Hwy --> Gallows Rd.	20	20	490	15
10	Gallows Rd. --> Braddock Rd.	22	20	170	15
11	Braddock Rd. --> Hemming Ave.	24	20	20	15

Table 24 HOT Lane Tolls on the Virginia Beltway (in 2010 cents) in 2009 CLRP

(A) Northbound

No.	HOT Lane Segment	Toll Group	AM Peak	PM Peak	Off Peak
1	Hemming Ave. --> Braddock Rd.	3	20	20	15
2	Braddock Rd. --> Gallows Rd.	5	20	20	15
3	Gallows Rd. --> Lee Hwy	7	170	100	15
4	Lee Hwy --> I-66	9	20	20	15
5	I-66 --> Leesburg Pike	11	210	110	15
6	Leesburg Pike --> S. of VA 123	13	20	20	15
7	S. of VA 123 --> S. of Dulles Toll Rd.	15	20	20	15
8	S. of Dulles Toll Rd. --> Dulles Toll Rd.	17	20	20	15
9	At Dulles Toll Rd.	19	20	110	15
10	Dulles Toll Rd. --> VA 193	21	60	220	15
11	N. of VA 193 --> S. of GW Pkwy	23	20	220	15
12	GW Pkwy --> Am. Legion Bridge	25	20	220	15

(B) Southbound

No.	HOT Lane Segment	Toll Group	AM Peak	PM Peak	Off Peak
1	Am. Legion Bridge --> GW Pkwy	4	20	310	15
2	GW Pkwy --> VA 193 (Georgetown Pike)	6	20	450	15
3	VA 193 (Georgetown Pike) --> Dulles Toll Rd.	8	20	110	15
4	Dulles Toll Rd. --> S. of Dulles Toll Rd.	10	20	20	15
5	S. of Dulles Toll Rd. --> VA 123	12	20	20	15
6	VA 123 --> Leesburg Pike	14	20	120	15
7	Leesburg Pike --> I-66	16	20	310	15
8	I-66 --> Lee Hwy	18	20	170	15
9	Lee Hwy --> Gallows Rd.	20	20	580	15
10	Gallows Rd. --> Braddock Rd.	22	20	160	15
11	Braddock Rd. --> Hemming Ave.	24	20	20	15

Ref: ND10_TABLE_23_24_25_TOLLSUMMARY_7_12_10.xls

Highway network link attributes includes 38 Screenline codes that are used for comparing trip and vehicle crossings during model calibration and validation purposes. Screenlines 21 and 30 are not used. The screenline locations currently analyzed by TPB staff are provided in Figure 9 and Figure 10.

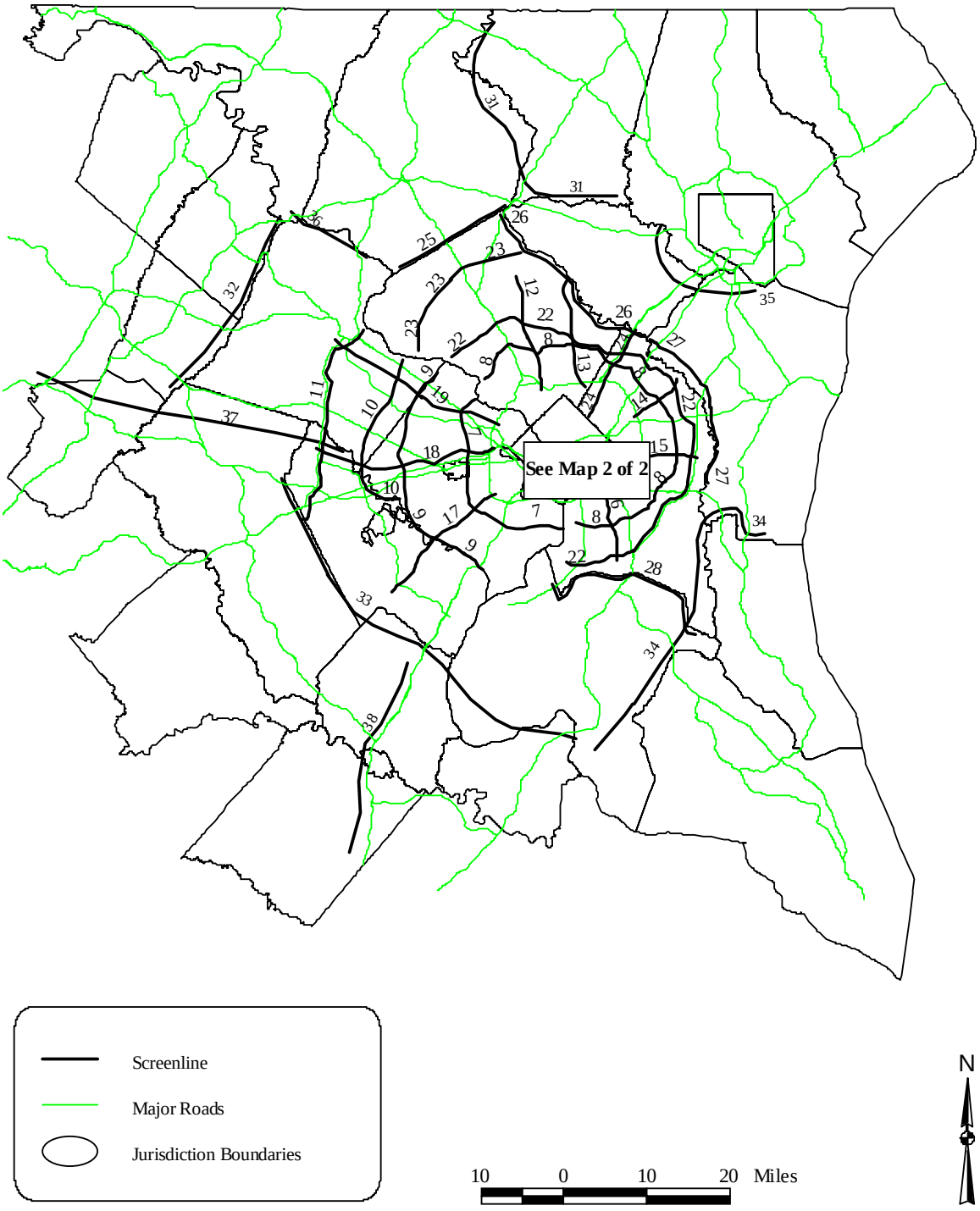


Figure 9 Highway Network Screen lines: Map 1 of 2

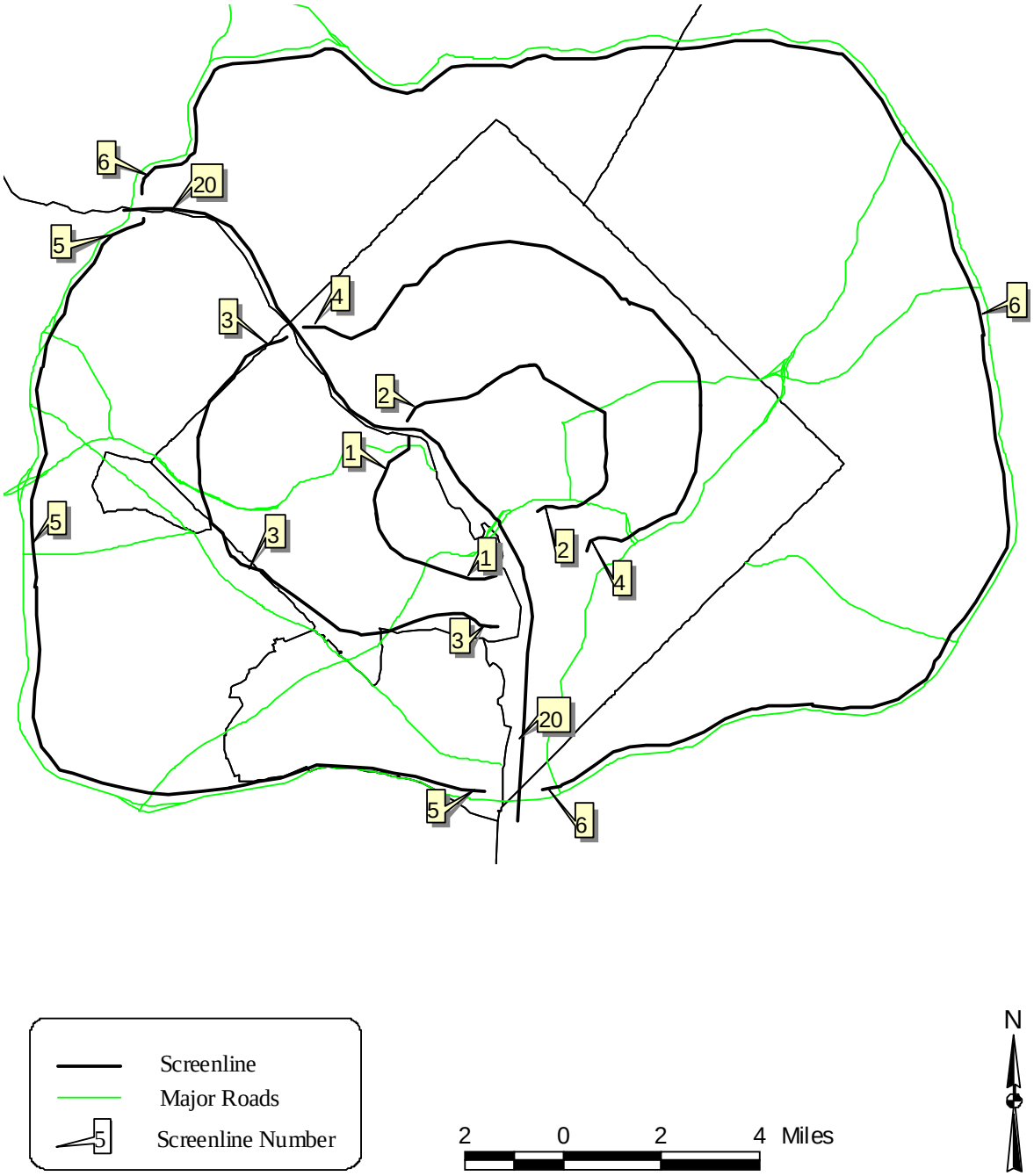


Figure 10 Highway Network Screen lines (Inside the Capital Beltway) Map 2 of 2

3.3 Transit Network Building Overview

The development of bus and rail inputs for CLRP networks begins with the compilation of local and commuter bus, and rail service data for all regional transit providers in the Metropolitan Washington region. Although transit service is changing throughout the year, we update our transit networks in the fall of each year. This updated information informs both our base-year network (e.g. 2008) and forecast-year networks (e.g. 2010, 2020, and 2030).

Two types of data are needed to model transit service: schedule data and spatial data (the path each route takes). We obtain these two types of data by collecting paper schedules provided by the transit providers and manually calculating headways and run times and coding changes in transit line routes. "Headway" is the time between successive arrivals (or departures) of transit vehicles on a given route and "Run time" is the time in minutes that it takes for the transit vehicle to go from the start to the finish of its route and is a measure of the average speed of the vehicle on that route.

Since 1999, we have obtained schedule information from WMATA (and later Ride On) in a computer-readable format. WMATA bus routes and Ride On bus routes, represent the lion's share of transit routes in a given transit network. Although the data provided by WMATA and Montgomery County contain more detail than we need, we use SAS programs to calculate, for each route, the average headway and average run time during the AM peak period and the off peak period. Examples of WMATA's text file, Ride On's comma delimited text file, and an internet-based paper schedule for Fairfax Connector are presented in Table 25 and Table 26, respectively.

This automated process has ensured consistency of transit networks across network years for WMATA bus routes and Ride On bus routes. The headways and run times for the twenty remaining transit providers in the Metropolitan Washington region are calculated manually using published transit provider information. Transit files employed in assessment of the 2009 CLRP and FY2010-2015 TIP are based on 2008 transit data.

Staff has made presentations to the Regional Bus Subcommittee that focused on facilitating the transfer of information from regional transit providers to TPB and revolved around the following topics,

- What GIS systems are used by the providers?
- What other software is used to manage bus routes (e.g. Trapeze)
- Are there or could we come up with standards for transmitting schedule data and spatial data about transit routes?

In response, members of the subcommittee, who represent state and local transit agencies, provided transit schedule data in two formats; excel spread sheets and as computer-readable comma delimited files generated by trapeze programs. The later format was most desirable. In a new development WMATA made schedule and route data available via Web.

WMATA has posted information about WMATA transit routes in the open Google Transit Feed Specification (GTFS). Staff imagines that future programs written to summarize bus run times and headways by time-of-day period would be written to take advantage of these files. If other transit providers also provide their schedule data in GTFS format, we would have a common format across providers and could develop one program which could handle all of the transit providers (instead of a separate program for each provider). TPB staff will monitor advancements in this subject area. dataTAFF

Table 25 Example of WMATA's Text File

DAY OF	THE WEEK: WEEKDY HUNTING TOWERS	KING & WASHINGTON STS	PENDLETON & COLUMBUS
?10A*2A	-	-	4:54
?10A*2A	-	-	5:24
?10A*2A	-	-	5:54
?10A*2A	-	-	6:15
10E A	-	-	-
?10E A	-	-	-
?10A A	6:38	6:42	6:45
?10E A	-	-	-
10E A	-	-	-
?10A A	7:08	7:12	7:15
?10E A	-	-	-
?10E A	-	-	-
?10A A	7:38	7:42	7:45
10E A	-	-	-
?10A A	7:56	8:01	8:05
?10E A	-	-	-
?10A A	8:30	8:35	8:39
?10A A	9:00	9:05	9:09
?10A A	9:30	9:35	9:39
?10A A	10:00	10:05	10:09
?10A A	10:29	10:34	10:38
?10A A	11:00	11:05	11:09
?10A A	11:30	11:35	11:39
?10A P	12:00	12:05	12:09
?10A P	12:30	12:35	12:39
?10A P	1:00	1:05	1:09
?10A P	1:30	1:35	1:39
?10A P	2:00	2:05	2:09
?10A P	2:32	2:37	2:41
?10A P	3:00	3:05	3:09
?10A P	3:30	3:35	3:39
?10A P	4:00	4:05	4:09
?10A P	4:30	4:34	4:39
?10A P	5:00	5:04	5:09
?10A P	5:31	5:35	5:41
?10A P	6:00	6:04	6:10
?10A P	6:30	6:34	6:39
?10A P	7:00	7:04	7:09
?10A P	7:30	7:34	7:39
?10A P	8:00	8:04	8:09
?10A P	9:00	9:04	9:07
?10A P	10:00	10:04	10:07
?10A P	11:00	11:04	11:07
?10A X	12:00	12:04	12:07

Ref: c9exh3-13.xls

Table 26 Example of RideOn Text File

Block Name	Departure Terminal	Route Number	Departure Time	Arrival Time	Arrival Terminal	Direction Code	Run Number
A6,	SS,	1C,	507,	526,	FH,	I,	16 X
E5,	SS,	1C,	537,	556,	FH,	I,	23 X
A7,	SS,	11 ,	552,	609,	FH,	I,	8 X
A3,	SS,	1C,	603,	624,	FH,	I,	21 X
D9,	SS,	11 ,	613,	630,	FH,	I,	403 X
B6,	SS,	1C,	623,	646,	FH,	I,	11 X
C4,	SS,	11 ,	633,	652,	FH,	I,	12 X
B1,	SS,	11 ,	640,	659,	FH,	I,	3 X
H3,	SS,	11 ,	646,	705,	FH,	I,	54SX
D8,	SS,	1 ,	652,	718,	FH,	I,	40SX
D4,	SS,	11 ,	658,	720,	FH,	I,	38 X
B5,	SS,	11 ,	704,	726,	FH,	I,	14 X
E9,	SS,	11 ,	710,	732,	FH,	I,	42SX
E4,	SS,	1 ,	716,	744,	FH,	I,	68SX
I4,	SS,	11 ,	722,	747,	FH,	I,	408 X
C7,	SS,	11 ,	728,	754,	FH,	I,	1 X
A1,	SS,	11 ,	734,	801,	FH,	I,	20 X
J9,	SS,	1 ,	740,	811,	FH,	I,	76SX
D3,	SS,	11 ,	746,	813,	FH,	I,	13 X
A7,	SS,	11 ,	752,	819,	FH,	I,	8 X
I8,	SS,	11 ,	759,	826,	FH,	I,	74SX
G3,	SS,	1 ,	807,	838,	FH,	I,	52SX
B2,	SS,	11 ,	815,	842,	FH,	I,	25 X
F4,	SS,	11 ,	823,	850,	FH,	I,	48SX
I3,	SS,	1 ,	832,	901,	FH,	I,	79SX
J7,	SS,	11 ,	841,	907,	FH,	I,	81SX
J2,	SS,	1 ,	850,	917,	FH,	I,	78SX
J4,	SS,	11 ,	900,	922,	FH,	I,	80SX
K2,	SS,	1 ,	910,	936,	FH,	I,	89SX
A6,	SS,	11 ,	920,	942,	FH,	I,	16 X
H4,	SS,	1 ,	930,	956,	FH,	I,	71SX
F5,	SS,	11 ,	940,	1002,	FH,	I,	84 X
C1,	SS,	1 ,	951,	1017,	FH,	I,	15 X
B4,	SS,	1 ,	1005,	1031,	FH,	I,	93 X
H7,	SS,	1 ,	1021,	1047,	FH,	I,	65SX
E6,	SS,	1 ,	1041,	1107,	FH,	I,	43 X
I5,	SS,	1 ,	1101,	1127,	FH,	I,	61 X
A6,	SS,	1 ,	1121,	1147,	FH,	I,	16 X
K3,	SS,	1 ,	1151,	1217,	FH,	I,	96 X
B2,	SS,	1 ,	1221,	1247,	FH,	I,	25 X
F1,	SS,	1 ,	1251,	1317,	FH,	I,	97 X
A8,	SS,	1 ,	1321,	1347,	FH,	I,	10 X
D6,	SS,	1 ,	1351,	1417,	FH,	I,	32 /
D5,	SS,	1 ,	1421,	1447,	FH,	I,	37 X
C8,	SS,	1 ,	1451,	1520,	FH,	I,	422 X
K4,	SS,	1C,	1521,	1549,	FH,	I,	101 X

Ref:c9exh3-14.xls

The AM Peak and Off-Peak transit line files are text files containing operational information about transit lines, such as the headway, the run time, and the itinerary (i.e., the sequence of nodes taken by the transit vehicle as it travels its route). Line files are time-of-day specific, so there is one set of line files for the AM peak period and one set for the off-peak period. These bus line files are established 'over' the AM and off-peak highway networks, respectively.

The highway network contains some links that are coded below the grain of the TAZ system, so that the proximity of transit service to zonal activity centers can be more accurately represented[8]. In accordance with the requirements of the mode choice model, both 'walk access' and 'drive access' versions of both the AM and off-peak networks are prepared. The AM peak period is represented by the headways and run times in effect from 7-8 AM,[9] and transit service in the off-peak period is represented by the headways and run times in effect from 10 AM - 3 PM.

TPB transit line files are developed using mode codes, which designate a specific provider (or provider group) and represent operations for twenty-three transit service providers. Nine mode codes are employed: 1) local Metrobus routes, 2) Express Metrobus routes that traverse HOV lanes, 3) Metrorail lines, 4) Commuter Rail lines, 5) Light Rail and Transitway-based service, 6) Primary local bus lines and 7) Primary express bus lines for the inner jurisdictions, and 8) Secondary local bus lines for the outer jurisdictions and 9) Secondary express commuter bus lines. Table 27 presents a summary of in-vehicle and out-of-vehicle mode conventions used in coding transit line files.

Light rail and transit systems using transitways are represented using Mode code "5". Transit services coded as mode 5 are not modeled as premium rail (Metrorail and Commuter Rail). However, in the TPB travel model, each transit line is unique and independent, so there are different operating characteristics by transit line, not simply by transit mode. For example, we can have a transit network with two LRT lines that have maximum cruise speeds of 35 mph and a third LRT line with a maximum cruise speed of 65 mph. Or you could have an LRT line coded with exactly the same operating characteristics as a BRT line. Table 28 describes some of the planning guidelines for transit vehicles that are used in cases where TPB staff lack detailed coding instructions.

The prospect of manually coding the various access-to-transit and transfer links associated with transit networks is especially onerous, because of the size and complexity of the TPB transit networks. To facilitate coding requirements, several automated procedures are used as part of the transit network building process to enable automatic generation of auxiliary transit links, including walk-connect links, auto-connect links, transfer links, and downtown walk links.

[8] The sub-zonal highway links used to more accurately reflect transit route alignments are disallowed from use during normal highway path building and highway assignments, however.

[9] This peak period definition is relaxed, however, to reflect earlier hourly periods for some express services that originate in the outer fringes of the study area.

Table 27 Transit Network Mode Codes

In-Vehicle Mode Codes			
Mode No.	**Mode Description**	**Abbreviation/ Prefix**	**Transit Service**
1	Local Metrobus	"WM01 - 97, A - Z"	WMATA (DC, Alex., Falls Church, & MTG, PG, ARL, FFX Counties)
		"DCC"	District of Columbia Circulator
2	Express Metrobus	"WM05 - 29"	WMATA (ARL, ALEX, FFX)
		"REX"	WMATA (FFX. Co.)
3	Metrorail	"MRED"	RED Line
		"MBLU"	BLUE Line
		"MGRN"	GREEN Line
		"MORN"	ORANGE Line
		"MYEL"	YELLOW Line
		"MDULL"	DULLES Line
4	Commuter Rail	"VFRED"	Frederick Line (VRE)
		"VMASS"	Manassas Line (VRE)
		"MBRU"	Brunswick Line (MARC)
		"MCAM"	Camden Line (MARC)
		"MPENN"	Penn Line (MARC)
		"MFRED"	Frederick City Line (MARC)
		"AMTK"	AMTRAK Service
5	Light Rail	"PURLRT"	Purple Line Light Rail (MTA)
		"DCSTCAR"	District od Columbia Trolley Line (DDOT / WMATA)
		"CCPY2"	Arlington/Alexandria Transitway
		"RTCP1A"	Columbia Pike Light Rail
		"CCTLRT"	Montgomery Co. Corridor Cities Light Rail Line (MTA)
6	Other Primary - Local Bus	"ART"	Arlington County Bus
		"DAT"	City of Alexandria Bus
		"F"	Fairfax County Bus
		"GO"	Prince Georges County Bus
		"RO"	Montgomery Co. Ride On Bus
		"SG"	Fairfax City Bus
		"TYSL"	Tyson's Circulator
7	Other Primary - Express Bus	"DAT"	City of Alexandria Bus
		"F"	Fairfax County Bus
8	Other Secondary - Local Bus	"CC"	Calvert County Bus
		"FT"	Frederick County Bus
		"HT"	Howard County Bus
		"L"	City of Laurel Bus
		"LT"	Loudoun County Local Bus
		"OL"	OMNI-LINK (PrinceWilliam Co. Local)
		"VG"	Charles County Bus (VanGO)
		"ST"	St Mary's County Bus
9	Other Secondary - Express Bus	"LC"	Lee Coaches Commuter Bus
		"LCS"	Loudoun Co. Commuter Bus
		"LINK"	Washington Flyer- Dulles/WFC
		"MT"	Maryland MTA Bus (Frederick, Howard, Anne Arundel, Calvert, St Mary's, &
			Charles Counties)
		"OR"	OMNI-RIDE (Prince William Co. Commuter Bus)
		"PQ"	Quicks Commuter Bus (Fredericksburg, Spotsylvania & Stafford Counties)
		"SDC"	Nat'l Coach Commuter Bus (Fredericksburg, Spotsylvania & Stafford Co's)
Out-of-Vehicle Mode Codes			
10	(Unused)		
11	Drive Access Links		
12	Bus/Rail Walk Link		
13	Downtown Walk Link		
14	(Unused)		
15	PNR/Rail Walk Link		
16	Zonal Walk Access/Egress Link		

Ref: ND10_TABLE_28_ModeAbrevFY10.xls

Table 28 Planning Guidelines for Transit Vehicles, U.S. Averages

	Bus	BRT	Light Rail	Heavy Rail	Commuter Rail
Speed, max. operational	65 mph	65 mph	50 to 60 mph	55 to 65 mph	70 to 125 mph
Speed, average operating (stops included)	13 mph	Freeway: * Non-stop: 40-50 mph * All-stop: 25-35 mph Arterial: 15 mph	21 mph	28 to 33 mph	36 mph
Acceleration rate	2.5 to 2.7 mph/s (2.9 to 4.0 ft/s^2)	2.5 to 2.7 mph/s (2.9 to 4.0 ft/s^2)	2.5 to 3.0 mph/s (2.9 to 4.3 ft/s^2)	2.5 to 3.0 mph/s (2.9 to 4.3 ft/s^2)	2.5 to 3.0 mph/s (2.9 to 4.3 ft/s^2)
Deceleration rate	2.5 to 2.7 mph/s (2.9 to 4.0 ft/s^2)	2.5 to 2.7 mph/s (2.9 to 4.0 ft/s^2)	2.5 to 3.0 mph/s (2.9 to 4.3 ft/s^2)	2.5 to 3.0 mph/s (2.9 to 4.3 ft/s^2)	2.5 to 3.0 mph/s (2.9 to 4.3 ft/s^2)
Vehicle capacity, crush (persons/vehicle)	60 to 85	60 to 130	100 to 175	175 to 187	132 to 255
Dwell time	35 to 45 s	35 to 45 s	35 to 45 s	35 to 45 s	35 to 45 s
Capital costs: Total	N/A	21.2 million $/mi for a Busway (4, 8)	25.4 million $/mi (4, 9)	158.8 million $/mi (4, 9)	N/A
Theoretical line capacity (persons/hour)	60,600 per freeway lane (4, 10)	60,600 per freeway lane (4, 10)	36,000 (4, 10)	69,000 (4, 10)	46,000 (4, 10)

Notes:

1. Dollar values are for 2002, unless otherwise stated.
2. N/A: Not applicable or not available.

Sources:

1. Light rail: The Urban Transportation Monitor, September 3, 2004.
2. Heavy rail: The Urban Transportation Monitor, January 23, 2004.
3. Commuter rail: The Urban Transportation Monitor, April 4, 2003.
4. Modal Master Table, The Urban Transportation Monitor, May 2, 2003.
5. Bus rapid transit: Bus Rapid Transit, Volume 1: Case Studies in Bus Rapid Transit, TCRP Report 90, Transportation Research Board, 2003.
6. Bus rapid transit: Characteristics of Bus Rapid Transit for Decision-Making, Roderick B. Diaz (editor), prepared for the Federal Transit Administration, August 2004.
7. Acceleration/deceleration rates: Transit Capacity and Quality of Service Manual, 2nd Edition, Transit Cooperative Research Program (TCRP) Report 100, Transportation Research Board, 2003. Part 4: Bus Transit Capacity (pp 4-39 to 4-53) and Part 5: Rail Transit Capacity (p 5-50).
8. Characteristics of Urban Transportation Systems, Federal Transit Administration, 1992.
9. Includes guideway elements, yards and shops systems, stations, vehicles, special conditions, right of way, soft costs. Source: No. 8 above.
10. Obtained by taking the minimum headway and the maximum seating/standing capacity into account. This capacity is generally not obtained in actual operations of buses. Assumes 6 cars per train for LRT, 10 for rapid rail, and 6 for commuter rail.

Two file types, transit line files and a single station/PNR file are required for the automatic generation of auxiliary transit links. The station/PNR file contains a list of all rail stations and park-and-ride lots (both existing and future) included in the transit network. It also contains an array of information that is associated with each station, including bus transfer nodes and the nearest TAZ. An example of a Station and Park-and-ride file is displayed in Table 29. A description of the station/PNR file format can be found in Table 43.

It is assumed that travelers access the transit system by either walking or driving, so zone centroids are connected to the transit system via a series of walk-access links and drive-access links. If a traveler accesses the transit system by auto, the traveler must go via a designated park-and-ride (PNR) lot, so these drive-access links are also called PNR access links.

An automated procedure is used to generate drive-access links for both the peak and off-peak time periods. In the past, such as for the Version 2.0/TP+ model, we generated up to four drive-access links, for each zone, to the four "closest" rail or bus station's park-and-ride lot. However, using such a procedure ("best N stations") can lead to a phenomenon known as the "transit paradox," when one applies the procedure to multiple network scenarios (years).

An example of the transit paradox is a case where a major rail extension is added to a network, but the extension results in a *loss* in transit trips for some zones, instead of the increase that would be expected. The paradox is caused by inconsistent coding of transit access links, usually drive-access links, where, instead of simply adding new drive-access links that are associated with the rail extension, the modeler both adds some drive-access links and removes some existing drive-access links. The removal of some links usually occurs at end-of-the-line stations that, because of the extension, are no longer end-of-the-line stations.

Thus, in adding the new rail extension, some drive-access links that existed in the base scenario were removed by the modeler (or modeler's software) as the rail line is extended, instead of simply adding new drive-access links in addition to the existing ones. The result is that, for some interchanges, the drive-access transit travel time goes up and transit trips are reduced, despite the addition of the transit service.

To minimize the occurrence of the transit paradox, we developed a new routine for generating drive-access links that is based on one or more set distances from each zone. Specifically, two conditions apply:

1. The straight-line distance from a zone to a PNR lot must be: (1) within 4 miles for DC, Arlington Co., and Alexandria; (2) within 5 miles for Montgomery Co., Fairfax Co., and Prince George's Co.; and (3) within 8 miles for all remaining jurisdictions.

2. Zone to PNR connections will not cross the Potomac River, except for origin zones in Loudoun Co. and Jefferson Co., since the MARC commuter rail system in Maryland does serve commuters from those jurisdictions.

Table 29 Station/Park-and Ride File

Seq. No.	Mode	PNR Y/N	Sta Y/N	Station / Park-n-Ride	Sta. Cent.	Zone	Station No.	PNR No.	Stop Node#1	Stop Node#2	Stop Node#3	Stop Node#4	X Coord.	Y Coord.	Operation
81	M	Y	Y	Shady Grove	2331	482	7301	7501	3402	3404			1265612	529165	1990
82	M	Y	Y	Rockville	2332	478	7302	7502	3358	7605	3377		1270634	516535	1990
83	M	Y	Y	Twinbrook	2333	413	7303	7503	3351	3684			1278226	508219	1990
84	M	Y	Y	White Flint	2334	405	7304	7504	3339	3682			1280534	503092	1990
85	M	Y	Y	Grosvenor	2335	403	7305	7505	3334				1282836	496371	1990
86	M		Y	Medical Center	2336	346	7306		3054				1284770	485106	1990
87	M	Y	Y	Bethesda	2337	344	7307	7507	3048				1285562	479783	1990
88	M		Y	Friendship Heights	2338	204	7308		9140				1288006	471198	1990
89	M		Y	Tenleytown	2339	207	7309		9117				1289640	466682	1990
90	M		Y	Van Ness-UDC	2340	122	7310		9153				1294409	464951	1990
91	M		Y	Cleveland Park	2341	117	7311		9156				1295609	462324	1990
92	M		Y	Woodley Park-Zoo	2342	117	7312		9163				1297352	458473	1990
93	M		Y	Dupont Circle	2343	46	7313		8901	8905			1299825	453021	1990
94	M		Y	Farragut North	2344	9	7314		8440				1301031	450307	1990
95	M		Y	Metro Center	2345	19	7315		8912	8919			1304332	448558	1990
96	M		Y	Gallery Place	2346	23	7316		8955				1306089	448605	1990
97	M		Y	Judiciary Square	2347	26	7317		8474				1307581	447815	1990
98	M		Y	Union Station	2348	64	7318		8656	8654	7601		1310220	448408	1990
99	M	Y	Y	Rhode Island Ave	2349	145	7319	7519	9422				1313227	456640	1990
100	M		Y	Brookland-CUA	2350	139	7320		9575				1313751	461393	1990
101	M	Y	Y	Fort Totten	2351	248	7321	7521	9544				1311788	467989	1990
102	M		Y	Takoma	2352	242	7322		9273				1307187	476759	1990
103	M	Y	Y	Silver Spring	2353	361	7323	7523	3178	7602	3900	3901	1303398	483452	1990
104	M	Y	Y	Forest Glen	2354	429	7324	7524	3605				1300177	491390	1990
105	M	Y	Y	Wheaton	2355	425	7325	7525	3607				1297955	499408	1990
106	M		Y	Archives	2356	25	7336		8458	8494			1306106	446727	1990
107	M		Y	L'Enfant Plaza	2357	77	7337		8444	8445	7701		1306103	443645	1990
108	M	Y	Y	Huntington	2358	1468	7348	7548	6121				1290877	410419	1990
109	M		Y	Eisenhower Avenue	2359	1366	7349		5678				1291897	413065	1990
110	M		Y	King Street	2360	1364	7350		5660	7704			1294645	414996	1990
111	M		Y	Braddock Road	2361	1336	7351		5661				1296953	417688	1990
112	M		Y	National Airport	2362	1240	7352		5200				1299828	432187	1990
113	M		Y	Crystal City	2363	1242	7353		5304	5307	7702		1298129	433637	1990
114	M		Y	Pentagon City	2364	1243	7354		5211				1295342	435270	1990
115	M		Y	Pentagon	2365	1230	7355		5225	5389	5390		1297011	437934	1990

Ref: c9exh3-17.x

One other enhancement used in automated coding of drive-access links in the model involves the time and distance coded on drive-access links. Although drive-access links were always coded with a time and distance representing the over-the-road travel between the zone and the PNR, in the past, this time and distance were based on a lookup table of speeds. Now, however, the time and distance values are updated based on the output speeds from the initial "pump prime" traffic assignment. This means that the times and speeds on drive-access links should reflect the fact that they will congest as roadway links congest. Further details can be found in the Version 2.2 model User's Guide, which discusses the automatic generation of both auto-access links and walk-access links.

Transit network data is shown for the Metrorail system in Table 30. Metrorail system information is displayed for conformity analysis base year 2002, and forecast 2010, 2020, and 2030 networks. The exhibit lists COG's transit route name, origin and destination stations, headways, run-times, line distances, and average line speed for service during the AM peak hour and Off-peak period. Note, Metrorail runtimes were revised by TPB staff in FY2007 for the following lines: Green Line (Greenbelt-Branch Ave.) 47 minutes, Blue-B Line (Franconia/Springfield-Greenbelt) 60 minutes, and Orange-C Line (Vienna-Largo) 65 minutes.

Transit line operational data for Commuter rail, Light rail, and Trolley is based on schedule information obtained in the fall/winter of 2008 and projects in the 2009 CLRP. Rail line characteristics are displayed for base year 2002, 2008, 2010, 2020, and 2030 in Table 31, Table 32, and Table 33. The tables display transit route name, origin and destination stations, headways, run-times, line distances, and average line speed for service during the AM peak hour and Off-peak period.

As a note, MARC commuter rail's Brunswick line MBRU2O was re-designated as MBRU1O, Penn Line MPEN3I was merged with MPEN1I, lines MPEN2O (Local service) and MPEN4O (Limited service) were re-designated as MPEN1O and MPEN2O, in all transit networks developed for and after 2004. AMTRAC routes are also modeled and are designated with the line prefix identifier "AMTK".

The file named "rail_lnk.bse" is required in the transit building process and contains link data for Metrorail, commuter rail, and light rail services. Rail link attributes consist of simply the a-node, b-node, distance and average speed. Table 47 displays a rail link file format description. Rail link data for Metrorail and Commuter rail service is supplied by the Washington Metropolitan Area Transit Authority (WMATA), Maryland Transit Administration (MTA), and Virginia Department of Rail and Public Transportation (VDRPT). Data for light rail service is provided by implementing agencies.

Table 30 Metrorail Data for 2009 CLRP and FY2010-2015 TIP Transit Networks

	2002						
Line	**O-Sta.**	**D-Sta.**	**am hdwy**	**op hdwy**	**time (min)**	**dist (mi)**	**spd (mph)**
Red-A	Shady Grove (1)	Glenmont (26)	6	12	62	31.38	30.37
Red-B	Grosvenor (5)	Silver Spring (23)	6	12	40	19.27	28.91
Grn-A	Greenbelt (27)	Branch (45)	6	12	47	22.45	28.66
Yel-A	Mt. Vn Sq.-UDC (35)	Huntington (48)	6	12	26	10.6	24.46
Blu-A	FranSpgfld (47)	Addison Rd. (83)	6	12	60	26.85	26.9
Oran-A	Vienna (57)	New Carrollton (80)	6	12	57	25.8	27.16
	Year 2010						
Line	**O-Sta.**	**D-Sta.**	**am hdwy**	**op hdwy**	**time (min)**	**dist (mi)**	**spd (mph)**
Red-A	Shady Grove (1)	Glenmont (26)	6	12	62	31.38	30.37
Red-B	Grosvenor (5)	Silver Spring (23)	6	12	40	19.29	28.94
Grn-A	Greenbelt (27)	Branch (45)	6	12	47	22.45	28.66
Yel-A	Mt. Vn Sq.-UDC (35)	Huntington (48)	7	12	26	10.6	24.46
Blu-A	FranSpgfld (47)	Largo (87)	14	12	62	29.27	28.33
Blu-B	FranSpgfld (47)	Greenbelt (27)	14	--	60	28.19	28.19
Oran-A	Vienna (57)	New Carrollton (80)	7	12	57	25.8	27.16
Oran-C	Vienna (57)	Largo (87)	14	--	65	26.37	24.34
	Year 2020						
Line	**O-Sta.**	**D-Sta.**	**am hdwy**	**op hdwy**	**time (min)**	**dist (mi)**	**spd (mph)**
Red-A	Shady Grove (1)	Glenmont (26)	2.5	6	62	31.38	30.37
Red-B	Grosvenor (5)	Silver Spring (23)	--	--	--	--	--
Grn-A	Greenbelt (27)	Branch (45)	7	12	47	22.45	28.66
Yel-A	Mt. Vn Sq.-UDC (35)	Huntington (48)	7	12	26	10.6	24.46
Blu-A	Franconia (47)	Largo (87)	14	12	62	29.27	28.33
Blu-B	Franconia (47)	Greenbelt (27)	14	--	60	28.19	28.2
Oran-A	Vienna (57)	New Carrollton (80)	7	12	57	25.8	27.16
Oran-B	Dulles GrnWay (98)	Stadium-Armory (75)	7	12	75	34.74	27.79
Oran-C	Vienna (57)	Largo (87)	14	--	65	26.37	24.34
	Year 2030						
Line	**O-Sta.**	**D-Sta.**	**am hdwy**	**op hdwy**	**time (min)**	**dist (mi)**	**spd (mph)**
Red-A	Shady Grove (1)	Glenmont (26)	2.5	6	62	31.38	30.37
Red-B	Grosvenor (5)	Silver Spring (23)	--	--	--	--	--
Grn-A	Greenbelt (27)	Branch (45)	7	12	47	22.45	28.66
Yel-A	Mt. Vn Sq.-UDC (35)	Huntington (48)	7	12	26	10.6	24.46
Blu-A	FranSpgfld (47)	Largo (87)	14	12	62	29.27	28.33
Blu-B	FranSpgfld (47)	Greenbelt (27)	14	--	60	28.16	28.16
Oran-A	Vienna (57)	New Carrollton (80)	7	12	57	25.8	27.16
Oran-B	Dulles GrnWay (98)	Stadium-Armory (75)	7	12	75	34.74	27.79
Oran-C	Vienna (57)	Largo (87)	14	--	65	26.37	24.34

Table 31 Commuter Rail Network Data for 2002

Line			*Year 2002*						
* Express	**Origin Station**	**Destination Station**	am	op	amRT	opRT	dist	amspd	opspd
** Limited Stops			hdwy	hdwy	(min)	(min)	(mi)	(mph)	(mph)
FRED1I	Fredericksburg	Union Station (01)	30	--	88	--	53.92	36.76	--
FRED1O	Union Station (01)	Fredericksburg	--	60	--	86	53.92		37.62
FRED2I	Fredericksburg	Union Station (01)	60	60	75	75	53.92	43.14	43.14
FRED3O**	Union Station (01)	Fredericksburg	--	60	--	67	53.92	--	48.29
FRED4O	Union Station (01)	Fredericksburg	--	60	--	70	53.92	--	46.22
MASS1I	Broad Run Airport	Union Station (01)	30	60	75	75	34.34	27.47	27.47
MASS1O	Union Station (01)	Broad Run Airport	--	60	--	73	34.34	--	28.22
MASS2I**	Broad Run Airport	Union Station (01)	--	--	--	--	--	--	--
MASS2O**	Union Station (01)	Broad Run Airport	60	--	75	--	34.34	27.47	--
MFREDI	Frederick City (18)	Union Station (01)	--	--	--	--	--	--	--
AMTK1I**	Fredericksburg	Union Station (01)	--	--	--	--	--	--	--
AMTK1O**	Union Station (01)	Fredericksburg	--	--	--	--	--	--	--
AMTK2I**	Fredericksburg	Union Station (01)	--	--	--	--	--	--	--
AMTK2O**	Union Station (01)	Fredericksburg	--	--	--	--	--	--	--
AMTK3O**	Union Station (01)	Manassas	--	--	--	--	--	--	--
AMTK4O**	Union Station (01)	Manassas	--	--	--	--	--	--	--
MBRU1I	Duffields (16)	Union Station (01)	--	--	--	--	--	--	--
MBRU1O	Union Station (01)	Brunswick (14)	--	--	--	--	--	--	--
MBRU2O	Union Station (01)	Brunswick (14)	--	60	--	78	47.02	--	36.17
MBRU2I	Brunswick (14)	Union Station (01)	60	--	78	--	47.02	36.17	--
MBRU3I**	Brunswick (14)	Union Station (01)	60	--	87	--	47.02	32.43	--
MBRU4I**	Brunswick (14)	Union Station (01)	60	--	81	--	47.02	34.83	--
MCAM1I	Elkridge (32)	Union Station (01)	60	--	55	--	26.80	29.24	--
MCAM1I	Dorsey (34)	Union Station (01)	--	--	--	--	--	--	--
MCAM1O**	Union Station (01)	Dorsey (34)	60	--	39	--	26.80	41.23	--
MCAM2I	Elkridge (32)	Union Station (01)	60	--	50	--	26.80	32.16	--
MCAM2I	Dorsey (34)	Union Station (01)	--	--	--	--	--	--	--
MCAM3I**	Dorsey (34)	Union Station (01)	60	--	43	--	26.80	37.40	--
MCAM1I	Elkridge (32)	Union Station (01)	--	--	--	--	--	--	--
MCAM3O	Union Station (01)	Elkridge (32)	--	60	--	80	26.80	--	20.10
MCAM3O**	Union Station (01)	Dorsey (34)	--	--	--	--	--	--	--
MCAM4O	Union Station (01)	Laurel Race Tk. (36)	--	60	--	50	18.70	--	22.44
MFREDI**	Frederick City (18)	Union Station (01)	--	--	--	--	--	--	--
MPEN1I	BWI Station (55)	Union Station (01)	60	60	41	39	27.03	39.56	41.58
MPEN1O	Union Station (01)	BWI Station (55)	--	--	--	--	--	--	--
MPEN2I	BWI Station (55)	Union Station (01)	--	--	--	--	--	--	--
MPEN2O	Union Station (01)	BWI Station (55)	60	60	26	36	27.03	62.38	45.05
MPEN3I *	BWI Station (55)	Union Station (01)	60	--	40	--	27.03	40.55	--
MPEN4O *	Union Station (01)	BWI Station (55)	60	--	33	--	27.03	49.15	--
Light Rail/Trolley									
CCTLRT	Metro Grove	Shady Grove	--	--	--	--	--	--	--
CCTPY1	Crystal City Metro	Glebe Rd Ext.	--	--	--	--	--	--	--
CCTPY2	Crystal City Metro	Braddock Rd Metro	--	--	--	--	--	--	--
DCSTCAR	Anacostia	Bolling AFB	--	--	--	--	--	--	--
LRTMTG	Bethesda(70)	Silver Spring (73)	--	--	--	--	--	--	--

Ref: ND10_TABLE33_ComRailData.xls

Table 32 Commuter Rail and Light Rail Network Data for 2008 and 2010

Line			*Year 2008*							*Year 2010*						
* Express	**Origin Station**	**Destination Station**	am	op	amRT	opRT	dist	amspd	opspd	am	op	amRT	opRT	dist	amspd	opspd
** Limited Stops				hdwy	(min)	(min)	(mi)	(mph)	(mph)	hdwy	hdwy	(min)	(min)	(mi)	(mph)	(mph)
VFRED1I	Fredericksburg	Union Station (01)	30	--	91	--	53.92	35.55	--	30	--	91	--	53.92	35.55	--
VFRED1O	Union Station (01)	Fredericksburg	--	60	--	91	53.92	--	35.55	--	60	--	91	53.92	--	35.55
AMTK86I**	Fredericksburg	Union Station (01)	60	--	75	--	53.92	43.14	--	60	--	75	--	53.92	43.14	--
AMTK67O**	Union Station (01)	Fredericksburg	60	60	65	65	53.92	49.77	49.77	60	60	65	65	53.92	49.77	49.77
AMTK94I**	Fredericksburg	Union Station (01)	--	60	--	91	53.92	--	35.55	--	60	--	91	53.92	--	35.55
AMTK79O**	Union Station (01)	Fredericksburg	--	60	--	62	53.92	--	52.18	--	60	--	62	53.92	--	52.18
AMTK95O**	Union Station (01)	Fredericksburg	--	60	--	69	53.92	--	46.89	--	60	--	69	53.92	--	46.89
VMASS1I	Broad Run Airport	Union Station (01)	30	--	75	--	34.34	27.47	--	30	--	75	--	34.34	27.47	--
VMASS1O	Union Station (01)	Broad Run Airport	--	60	--	73	34.34	--	28.22	--	60	--	73	34.34	--	28.22
VMASS2I**	Broad Run Airport	Union Station (01)	--	60	--	70	34.34	--	29.43	--	60	--	70	34.34	--	29.43
VMASS2O**	Union Station (01)	Broad Run Airport	60	--	75	--	34.34	27.47	--	60	--	75	--	34.34	27.47	--
AMTK3O**	Union Station (01)	Manassas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AMTK51O**	Union Station (01)	Manassas	--	60	--	52	31.82		36.72	--	60	--	52	31.82		36.72
MBRU1I	Brunswick (14)	Union Station (01)	60	--	92	--	47.02	30.67	--	60	--	92	--	47.02	30.67	--
MBRU1O	Union Station (01)	Brunswick (14)	--	60	--	83	47.02	--	33.99	--	60	--	83	47.02	--	33.99
MBRU2O	Union Station (01)	Brunswick (14)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MBRU2I**	Duffields (16)	Union Station (01)	60	--	104	--	58.62	33.82	--	60	--	104	--	58.62	33.82	--
MCAM1I	Dorsey (34)	Union Station (01)	60	--	60	--	26.80	26.80	--	60	--	60	--	26.80	26.80	--
MCAM1O	Union Station (01)	Dorsey (34)	60	--	42	--	26.80	38.29	--	60	--	42	--	26.80	38.29	--
MCAM2I**	Dorsey (34)	Union Station (01)	60	--	55	--	26.80	29.24	--	60	--	55	--	26.80	29.24	--
MCAM3I**	Dorsey (34)	Union Station (01)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MCAM3O**	Union Station (01)	Dorsey (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MCAM4O	Union Station (01)	Laurel Race Tk. (36)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MFREDI**	Frederick City (18)	Union Station (01)	60	--	100	--	55.15	33.09	--	60	--	100	--	55.15	33.09	--
MPEN1I	BWI Station (55)	Union Station (01)	30	50	40	39	27.03	40.55	41.58	30	60	40	39	27.03	40.55	41.58
MPEN1O	Union Station (01)	BWI Station (55)	60	60	34	34	27.03	47.70	47.70	60	60	34	34	27.03	47.70	47.70
MPEN2I*	BWI Station (55)	Union Station (01)	60	--	30	--	27.03	54.06	--	60	--	30	--	27.03	54.06	--
MPEN2O**	Union Station (01)	BWI Station (55)	60	--	30	--	27.03	54.06	--	60	--	30	--	27.03	54.06	--
Light Rail/Trolley																
CCTLRT	Metro Grove	Shady Grove	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CCTPY1	Crystal City Metro	Glebe Rd Ext.	--	--	--	--	--	--	--	6	12	10	10	1.10	6.60	6.60
CCTPY2	Crystal City Metro	Braddock Rd Metro	--	--	--	--	--	--	--	--	--	--	--	--	--	--
DCSTCAR	Anacostia	Bolling AFB	--	--	--	--	--	--	--	15	30	7	7	0.3	2.57	2.57
COLUMBIA PIKE LRT	Pentagon City	Skyline Center	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PURPLELRT	Bethesda(70)	New Carrollton	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 33 Commuter Rail and Light Rail Network Data for 2020 and 2030

Line			Year 2020							Year 2030						
* Express	Origin Station	Destination Station	am	op	amRT	opRT	dist	amspd	opspd	am	op	amRT	opRT	dist	amspd	opspd
** Limited Stops			hdwy	hdwy	(min)	(min)	(mi)	(mph)	(mph)	hdwy	hdwy	(min)	(min)	(mi)	(mph)	(mph)
VFRED1I	Fredericksburg	Union Station (01)	30	--	91	--	53.92	35.55	--	30	--	91	--	53.92	35.55	--
VFRED1O	Union Station (01)	Fredericksburg	--	60	--	91	53.92	--	35.55	--	60	--	91	53.92	--	35.55
AMTK86I**	Fredericksburg	Union Station (01)	60	--	75	--	53.92	43.14	--	60	--	75	--	53.92	43.14	--
AMTK67O**	Union Station (01)	Fredericksburg	60	60	65	65	53.92	49.77	49.77	60	60	65	65	53.92	49.77	49.77
AMTK94I**	Fredericksburg	Union Station (01)	--	60	--	91	53.92	--	35.55	--	60	--	91	53.92	--	35.55
AMTK79O**	Union Station (01)	Fredericksburg	--	60	--	62	53.92	--	52.18	--	60	--	62	53.92	--	52.18
AMTK95O**	Union Station (01)	Fredericksburg	--	60	--	69	53.92	--	46.89	--	60	--	69	53.92	--	46.89
VMASS1I	Broad Run Airport	Union Station (01)	30	--	75	--	34.34	27.47	--	30	--	75	--	34.34	27.47	--
VMASS1O	Union Station (01)	Broad Run Airport	--	60	--	73	34.34	--	28.22	--	60	--	73	34.34	--	28.22
VMASS2I**	Broad Run Airport	Union Station (01)	--	60	--	70	34.34	--	29.43	--	60	--	70	34.34	--	29.43
VMASS2O**	Union Station (01)	Broad Run Airport	60	--	75	--	34.34	27.47	--	60	--	75	--	34.34	27.47	--
AMTK3O**	Union Station (01)	Manassas	--	--	--	--	--	--	--	--	--	--	--	--	--	--
AMTK51O**	Union Station (01)	Manassas	--	60	--	52	31.82		36.72	--	60	--	52	31.82		36.72
MBRU1I	Brunswick (14)	Union Station (01)	60	--	92	--	47.02	30.67	--	60	--	92	--	47.02	30.67	--
MBRU1O	Union Station (01)	Brunswick (14)	--	60	--	83	47.02	--	33.99	--	60	--	83	47.02	--	33.99
MBRU2O	Union Station (01)	Brunswick (14)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MBRU2I**	Duffields (16)	Union Station (01)	60	--	104	--	58.62	33.82	--	60	--	104	--	58.62	33.82	--
MCAM1I	Dorsey (34)	Union Station (01)	60	--	60	--	26.80	26.80	--	60	--	60	--	26.80	26.80	--
MCAM1O	Union Station (01)	Dorsey (34)	60	--	42	--	26.80	38.29	--	60	--	42	--	26.80	38.29	--
MCAM2I**	Dorsey (34)	Union Station (01)	60	--	55	--	26.80	29.24	--	60	--	55	--	26.80	29.24	--
MCAM3I**	Dorsey (34)	Union Station (01)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MCAM3O**	Union Station (01)	Dorsey (34)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MCAM4O	Union Station (01)	Laurel Race Tk. (36)	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MFREDI**	Frederick City (18)	Union Station (01)	60	--	100	--	55.15	33.09	--	60	--	100	--	55.15	33.09	--
MPEN1I	BWI Station (55)	Union Station (01)	30	50	40	39	27.03	40.55	41.58	30	60	40	39	27.03	40.55	41.58
MPEN1O	Union Station (01)	BWI Station (55)	60	60	34	34	27.03	47.70	47.70	60	60	34	34	27.03	47.70	47.70
MPEN2I*	BWI Station (55)	Union Station (01)	60	--	30	--	27.03	54.06	--	60	--	30	--	27.03	54.06	--
MPEN2O**	Union Station (01)	BWI Station (55)	60	--	30	--	27.03	54.06	--	60	--	30	--	27.03	54.06	--
Light Rail/Trolley																
CCTLRT	Metro Grove	Shady Grove	6	10	40	40	13.31	19.97	19.97	6	10	40	40	13.3	19.95	19.95
CCTPY1	Crystal City Metro	Glebe Rd Ext.	--	--	--	--	--	--	--	--	--	--	--	--	--	--
CCTPY2	Crystal City Metro	Braddock Rd Metro	6	12	21	21	3.55	10.14	10.14	6	12	21	21	3.55	10.14	10.14
DCSTCAR	Anacostia	Bolling AFB	15	30	7	7	0.30	2.57	2.57	15	30	7	7	0.3	2.57	2.57
COLUMBIA PIKE LRT	Pentagon City	Skyline Center	6	6	23	23	4.87	12.70	12.70	6	6	23	23	4.87	12.70	12.70
PURPLE LRT	Bethesda(70)	New Carrollton	6	10	59	59	14.95	15.20	15.20	6	12	59	12	14.95	15.20	74.75

3.4 Transit Fare Building Overview

A series of files is needed to support the fare building process. COG's transit fare process consists of two programs known as MFARE1 and MFARE2, which operate in sequence to estimate Metrorail station-to-station fares and to estimate total (bus and rail) fares between TAZs. A more rigorous description of the MFARE1 and 2 processes can be found in Chapter 15 (Transit Fare Development) of the Version 2.2 model User's Guide.

The files needed to support the fare building process include a transit walk area percentage file, a zone file indicating the equivalence between each TAZ and its associated bus fare zone, a Metrorail network link file and coordinate file, and a bus fare matrix indicating fares between large pre-defined super zones (bus-fare-zone to bus-fare-zone fare matrix). Descriptions of the assumptions employed in the development of bus fare matrices are presented in the following pages.

The year 2002 served as the base year for the air quality conformity assessment of the 2009 CLRP and FY2010-2015 TIP. So, fare matrices are based on WMATA tariffs in effect for base years and the current tariff in effect at the time of network development. The WMATA fare tariffs used for FY2010 follows: year 2002 (Tariff Number 19, effective June 1999), and in forecast years 2010-2030 (Tariff Number 25 effective January 2008). Table 34 displays WMATA's Metrorail and bus fare policy for the peak and off-peak periods and control parameters for the MWCOG's transit fare computation process.

Fares for service outside the WMATA compact area are developed using passenger costs for transit available in each area. Currently, fares for MARC, VRE, MTA, PRTC/Omni, and other transit providers are the same for the peak and off-peak periods. These fares are provided in cents for the year that the Tariff was in effect. The least expensive fares available are used to reflect what the majority of regular work trip commuters would pay and are averaged for areas with multiple services and fare structures.

Areas with multiple services and fare structures are represented as being in a primary and secondary fare zone. For example, S.E. Fairfax County is served by Fairfax Connector (bus fare zone 1) and VRE commuter rail service (bus fare zone 18). Therefore in this area, each TAZ would have two bus fare zones (a primary and a secondary) listed in the TAZ/bus fare equivalence file. MFARE2 would calculate the cost of a trip from a TAZ in this area to downtown D.C. (bus fare zone 1) by averaging the cost of a trip from bus fare zone 1 to bus fare zone 1 with the cost of a trip from bus fare zone 18 to bus fare zone 1.

TPB's bus fare zones are designed to reflect transit service areas. These areas are based on WMATA tariffs, fares for MARC, VRE, and remaining transit providers. The numbering scheme for bus fare zones was revised for use with the Version 2.2 model. Bus fare zones are now numbered 1 - 21 as opposed to 1, 1 – 3, 7.

Table 34 Metrorail and Bus Fare Policy* and MFARE1/2 Control Parameters

Process	Time Period	Control	Name	Policy Variable	Tariff #19 6/20/1999	Tariff #25 1/6/2008
MFARE1	**AM**	**MFARE1**				
			UPARMS (7)	Boarding Distance	3 miles	3 miles
			UPARMS (8)	Secondary Distance	3 miles	3 miles
			UPARMS (1)	Boarding Fare	$1.10	$1.65
			UPARMS (3)	Maximum Fare	$3.25	$4.50
			UPARMS (2)	Secondary Fare	$0.19	$0.27
			UPARMS (9)	Tertiary Fare	$0.165	$0.240
MFARE1	**OFF-PEAK**	**MFARE1OP**				
			UPARMS (7)	Boarding Distance	7 miles	7 miles
			UPARMS (8)	Secondary Distance	3 miles	3 miles
			UPARMS (1)	Boarding Fare	$1.10	$1.35
			UPARMS (3)	Maximum Fare	$2.10	$2.35
			UPARMS (2)	Secondary Fare	$0.50	$0.50
			UPARMS (9)	Tertiary Fare	$0.50	$0.50
MFARE2	**AM/OFF-PEAK**	**MFARE2TP**				
			UPARMS (2)	Deflator		
			UPARMS (4)	DC Rail-Bus Discount	$0.85	$0.90
			UPARMS (5)	MD Rail-Bus Discount	$0.85	$0.90
			UPARMS (6)	Va/1 Rail-Bus Discount	$0.85	$0.90
			UPARMS (7)	Va/2 Rail-Bus Discount	$0.85	$0.90

Ref: ND10_TABLE36_WMATAFarePolicy.xls

The WMATA Metrorail and bus fare policy and control parameters are taken from the Tariff of the Washington Metropolitan Area Transit Authority for the Metrorail and Metrobus operations within the Washington Area, Tariff 19 (effective June 1999), and Tariff 25 (effective January 2008).

The following sections describe the development of bus fare zones and service areas for various tariff and fare scenarios. Bus fare zones/service areas and fare matrices for year 2002 networks (WMATA's Tariff #19) are described in Figure 11, Figure 12, Table 35, and Table 34. Information is displayed for forecast year networks (Tariff #23) in Figure 13, Figure 14, Table 38, and Table 39.

In June of 1999, the Washington Metropolitan Area Transit Authority published a new tariff #19 for Metrorail and Metrobus operations. The Metrobus fare structure was changed to integrate the Metrobus and Metrorail system and foster seamless travel with other local transit providers. The Metrorail fare structure featured regular fares and reduced fares by time-of-day, based on composite miles. Fares are provided in year 1999 cents (or the year that the tariff was in effect).

A flat fare of $1.10 for Metrobus trips was created by eliminating all zone charges in Maryland and Virginia as well as eliminating interstate charges for trips traversing the region's major jurisdictions. The tariff also eliminated the 10-cent Metrobus transfer fee, reduced fares on regular and express Metrobus routes, and cut most local bus fares. In addition, transfers from Metrorail to Metrobus cost 25 cents and Metrobus transfers on Montgomery County's Ride-On bus system, as well as other local bus systems such as DASH, Fairfax Connector, CUE, ART, Connect-A-Ride, and PRTC OmniRide were honored.

Fares for MARC, VRE and other transit providers are the same for the peak and off-peak. These fares are based on those in effect during 1999. The least expensive fares available were used to reflect what the majority of regular work trip commuters would pay. Fares were averaged for areas with multiple services. Table 35 shows the basic peak and off-peak period fare policies addressed in the modeling procedures for tariff #19.

Bus fare zones/service areas were redesigned to reflect the new Metrobus fare tariff and changes in fares for the remaining transit providers in the modeled area. In addition to new bus fare zones/service areas, the new regional fare structure removed the need for separate matrices for peak period fares and off-peak period fares. This was made possible by creating a flat fare of $1.10 for Metrobus trips by eliminating all zone charges in Maryland and Virginia as well as eliminating interstate charges for trips traversing the region's major jurisdictions.

Bus fare zones/service areas for WMATA Tariff #19 are defined in Table 35. Regional bus fare zone maps showing primary and secondary fare zones are displayed in Figure 11 and Figure 12, respectively. The bus fare matrix is shown in Table 36.

Table 35 Bus Fare Zones/Service Areas for WMATA Tariff #19

1st Fare Zone	Bus/Rail Service	Approximate Service Area
Fare Zone 1	WMATA Regular Service	DC, MTG, PG, ALEX, ARL, & FFX
Fare Zone 2	WMATA Express & Special Fare Service, & OMNI	Inner Maryland, Fairfax Suburbs, & Prince William County
Fare Zone 3	Loudoun Commuter Bus Service	Loudoun County
Fare Zone 4	MTA Commuter Bus	Charles / St Mary's Counties
Fare Zone 5	MTA Commuter Bus	S. Anne Arundel / Calvert Counties
Fare Zone 6	MTA Commuter Bus	Howard County
Fare Zone 7	MTA Commuter Bus	Frederick County
Fare Zone 8	Frederick Co Local Bus	Frederick County
Fare Zone 9	MARC Rail / Brunswick Line	W. Frederick / N. Loudoun Counties
Fare Zone 10	MARC Rail / Brunswick Line	MTG. Co. (Ring 8) / E. Frederick & W. Carroll Counties
Fare Zone 11	MARC Rail / Brunswick Line	MTG. Co. (Mid County) /W. Howard Co. & E. Carroll Co.
Fare Zone 12	MARC Rail / Brunswick Line	Montgomery Co. (Inner County)
Fare Zone 13	MARC / Penn, Camden Lines	NE. Howard /NW Anne Arundel Co.
Fare Zone 14	MARC / Penn, Camden Lines	SE. Howard/Anne Arundel Co. & NE. Prince Georges Co.
Fare Zone 15	MARC / Penn, Camden Lines	N. Central Prince Georges Co. & SW. Anne Arundel Co.
Fare Zone 16	MARC/Brunswick Line	Jefferson W.VA. & Clarke Co. VA.
Fare Zone 17	VRE Rail Zones 1&2	Inside Beltway
Fare Zone 18	VRE Rail Zones 3&4	Fairfax & Prince William Counties
Fare Zone 19	VRE Rail Zones 5&6	Prince William & Fauquier Counties
Fare Zone 20	VRE Rail Zones 7&8	Stafford & King George Counties
Fare Zone 21	VRE Rail Zone 9	City of Fredericksburg & Spotsylvania Co.

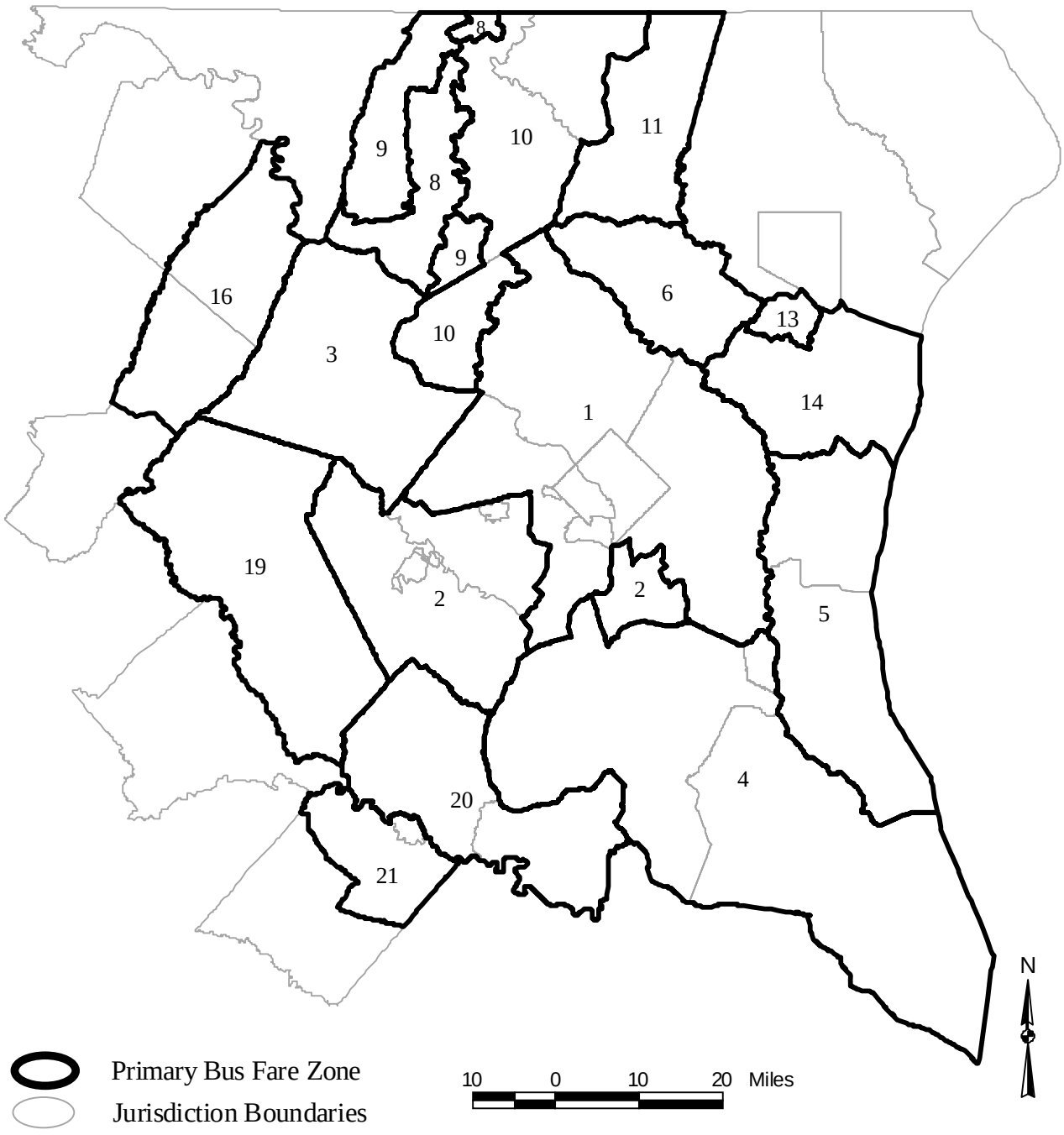


Figure 11 Primary Bus Fare Zone Map for Tariff #19

Ref: 2002_primary_bfzn_#19.wmf
WMATA's Tariff Number 19 (effective June 1999)

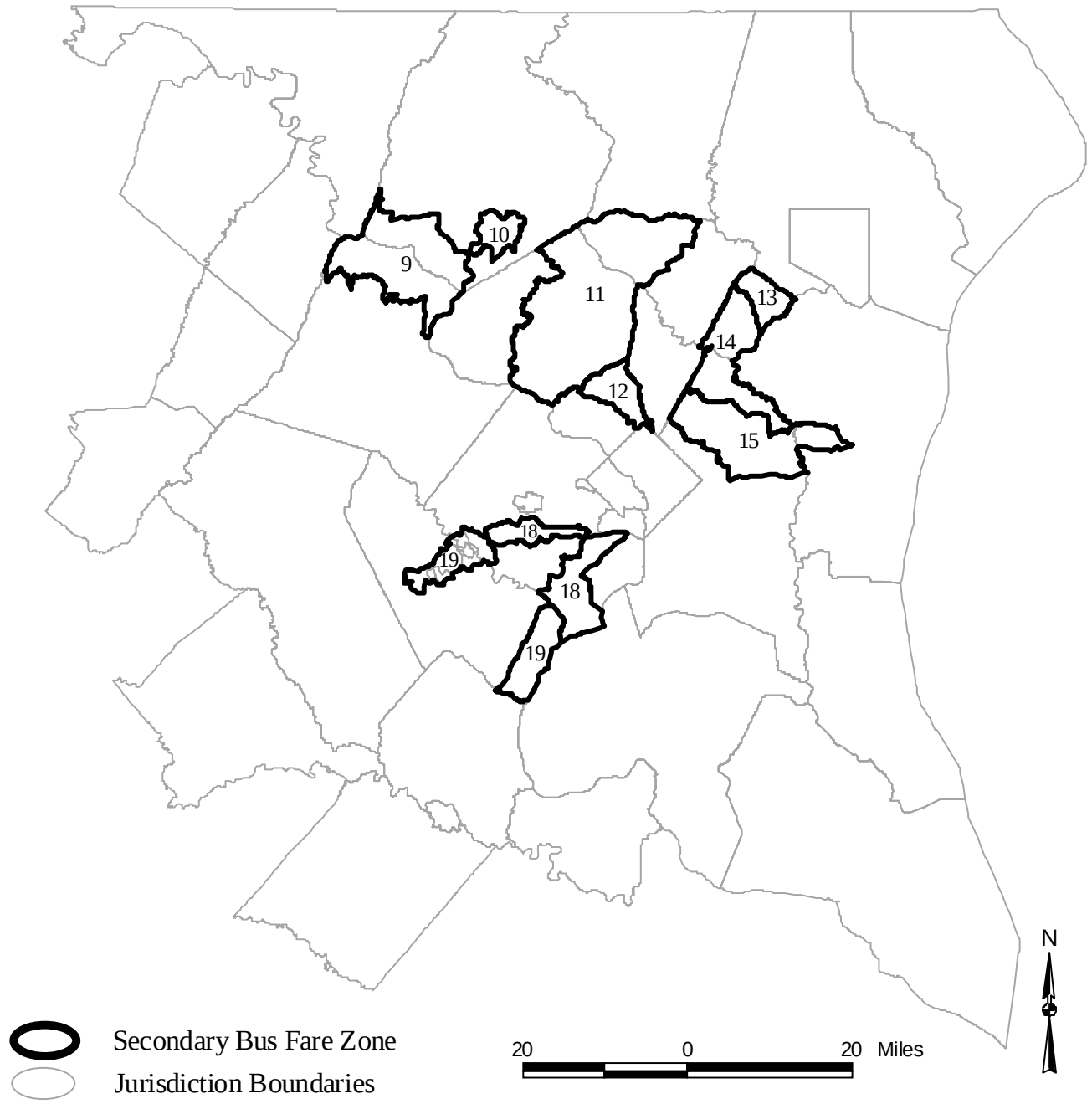


Figure 12 Secondary Bus Fare Zone Map for Tariff #19

Ref: 2002_secondary_bfzn_#19.wmf
WMATA's Tariff Number 19 (effective June 1999)

Table 36 Regional AM Peak and Off-Peak Bus Fare Matrix for 2002 between MWCOG Fare Zones (Expressed in 1999 cents)

	WMATA Regular Service	WMATA Express Ser.&Internal Metrobus Special Fare Service	Loudoun Com. Bus	Charles&St. Mary's Com. Bus (MTA)	Calvert & Southern AA Com. Bus (MTA)	Howard Com. Bus (MTA)	Frederick Com. Bus (MTA)	Frederick Internal Bus	MARC Rail Brunswick (Frederick)	MARC Rail Brunswick (Mont. R8)	MARC Rail Brunswick (Mid Mont.)	MARC Rail Brunswick (Inner)	MARC Rail Penn/ Camden (Outer)	MARC Rail Penn/Camden (Mid)	MARC Rail Penn/Camden (Inner)	MARC Rail Brunswick (WVA&Clark Auto Conn.)	VRE Zones 1&2 (Inside Beltway)
Zones	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**
1	110	200	400	278	276	259	279	433	349	279	234	186	280	234	186	434	248
2	200	50	600	478	476	459	479	633	549	479	434	386	480	434	386	634	448
3	400	600	100	678	676	629	679	833	749	679	634	586	680	634	586	834	648
4	278	478	678	278	554	537	557	711	627	557	512	464	558	512	464	712	526
5	276	476	676	554	276	535	555	709	625	555	510	462	556	510	462	710	524
6	259	459	629	537	535	259	538	692	608	538	493	445	539	493	445	693	507
7	279	479	679	557	555	538	204	204	204	204	204	234	559	513	465	713	527
8	433	633	833	711	709	692	204	84	84	294	341	619	713	667	619	867	681
9	349	549	749	627	625	608	204	84	186	210	257	303	629	583	535	210	597
10	279	479	679	557	555	538	204	294	210	186	186	234	559	513	465	294	527
11	234	434	634	512	510	493	204	341	257	186	186	420	514	468	420	340	482
12	186	386	586	464	462	445	234	619	303	234	420	186	466	420	372	373	434
13	280	480	680	558	556	539	559	713	629	559	514	466	186	186	234	714	528
14	234	434	634	512	510	493	513	667	583	513	468	420	186	186	420	668	482
15	186	386	586	464	462	445	465	619	535	465	420	372	234	420	186	620	434
16	434	634	834	712	710	693	713	867	210	294	340	373	714	668	620	186	682
17	248	448	648	526	524	507	527	681	597	527	482	434	528	482	434	682	248
18	285	485	685	563	561	544	564	718	634	564	519	471	565	519	471	719	285
19	344	544	744	622	620	603	623	777	693	623	578	530	624	578	530	778	285
20	372	572	772	650	648	631	651	805	721	651	606	558	652	606	558	806	372
21	379	579	779	657	655	638	658	812	728	658	613	565	659	613	565	813	379

Ref: BF19MTX.XLS
WMATA fares are based on Tariff #19 effective 6/20/99.
Remaining transit provider fares are based on 1999 information.

Tariff #25 effective in January 2008 is used for all model years beyond 2008. The tariff included an increase in the peak base boarding charge, which covers the first 3 composite miles by $0.30 from $1.35 to $1.65. The peak period mileage charge, covering travel over 3 composite miles and up to 6 composite miles increased by 0.05/composite mile from $0.22/composite mile to $0.27/composite mile. An increase in the peak period mileage charge, covering travel over 6 composite miles by $0.045/composite mile from $0.195/composite mile to $0.24/composite mile and an increase the maximum peak period fare by $0.60 from $3.90 to $4.50. No changes have been made to the off-peak Metrorail fare parameters. The rail-to-bus discount (90 cents, globally) has not changed, but there is language in documentation that in one year it will be available *only* to Smartcard users (something to keep in mind). It is also suspected that the rail-to-bus discount may increase by 10 cents (i.e., change to 1.00) but this is not yet formalized by the WMATA board. For the time being, the 90 cent discount will be maintained.

Please note these increases are not made to other fare inputs, i.e. the bus fare matrix or the TAZ-to-bus fare zone equivalency files, used in the fare modeling process. The tariff.txt file contains the base Metrorail fares (peak and off-peak) and the rail-to-bus discounts by jurisdiction. The Metrorail fares are calculated using a combination of base fares and incremental fare charges based on the composite distance of the trip, i.e., the average of the over-the-rail and airline distance between on/off stations. The Metrorail fares are computed as follows:

Table 37 Metrorail Fares

Peak Hour Metrorail Fares

Trip Length	**General Fare Calculation**
0- 3 composite miles	Base peak period fare
3- 6 composite miles	Base peak period fare + 1st fare rate per mile, beyond 3 miles
> 6 composite miles	Base peak period fare + 1st fare rate per mile, beyond 3 miles + 2nd fare rate per mile, beyond 6 miles, subject to a maximum fare

Off Peak Metrorail Fares

Trip Length	**General Fare Calculation**
0- 7 composite miles	Base off-peak period fare
7-10 composite miles	Base off-peak period fare + 1st fare increment
>10 composite miles	Base off-peak period fare + 1st fare increment + 2nd fare increment

The base fares, fare rates, and fare increments are expressed in the tariff.txt file as variables that are called in the TP+ scripts. The basic peak and off-peak period fare policies addressed in the modeling procedures are shown in Table 38. Future transit improvements in Montgomery County have been reflected in the COG fare zone system. Fare zones 1 and 7 now represent the addition of the Corridor Cities Transit-way service, and Metrorail and bus fares in that corridor.

The bus fare matrix remains comprised of 21 fare zones and are defined in Table 38. Regional bus fare zone maps showing primary and secondary fare zones are displayed in Figure 13 and Figure 14. The bus fare matrix for Tariff #25 is shown in Table 39.

Table 38 Bus Fare Zone/Service Areas for WMATA Tariff #25

1st Fare Zone	Bus/Rail Service	Approximate Service Area
Fare Zone 1	WMATA Regular Service	DC, MTG, PG, ALEX, ARL, & FFX
Fare Zone 2	WMATA Express & Special	Inner Maryland, Fairfax Suburbs, &
Fare Service, & OMNI		Prince William County
Fare Zone 3	Loudoun Commuter Bus Service	Loudoun County
Fare Zone 4	MTA Commuter Bus	Charles / St Mary's Counties
Fare Zone 5	MTA Commuter Bus	S. Anne Arundel / Calvert Counties
Fare Zone 6	MTA Commuter Bus	Howard County
Fare Zone 7	Corridor Cities Transit-way	Montgomery County
Fare Zone 8	Frederick Co Local Bus	Frederick County
Fare Zone 9	MARC Rail / Brunswick Line	W. Frederick / N. Loudoun Counties
Fare Zone 10	MARC Rail / Brunswick Line	MTG. Co. (Ring 8) / E. Frederick & W. Carroll Co.
Fare Zone 11	MARC Rail / Brunswick Line	MTG. Co. (Mid County) / W. Howard Co.& E. Carroll Co.
Fare Zone 12	MARC Rail / Brunswick Line	Montgomery Co. (Inner County)
Fare Zone 13	MARC / Penn, Camden Lines	NE. Howard /NW Anne Arundel Co.
Fare Zone 14	MARC / Penn, Camden Lines	SE. Howard/Anne Arundel Co. & NE. Prince Georges Co.
Fare Zone 15	MARC / Penn, Camden Lines	N. Central Prince Georges Co. & SW. Anne Arundel Co.
Fare Zone 16	MARC/Brunswick Line	Jefferson W.VA. & Clarke Co. VA.
Fare Zone 17	VRE Rail Zones 1&2	Inside Beltway
Fare Zone 18	VRE Rail Zones 3&4	Fairfax & Prince William Counties
Fare Zone 19	VRE Rail Zones 5&6	Prince William & Fauquier Counties
Fare Zone 20	VRE Rail Zones 7&8	Stafford & King George Counties
Fare Zone 21	VRE Rail Zone 9	City of Fredericksburg & Spotsylvania Co.

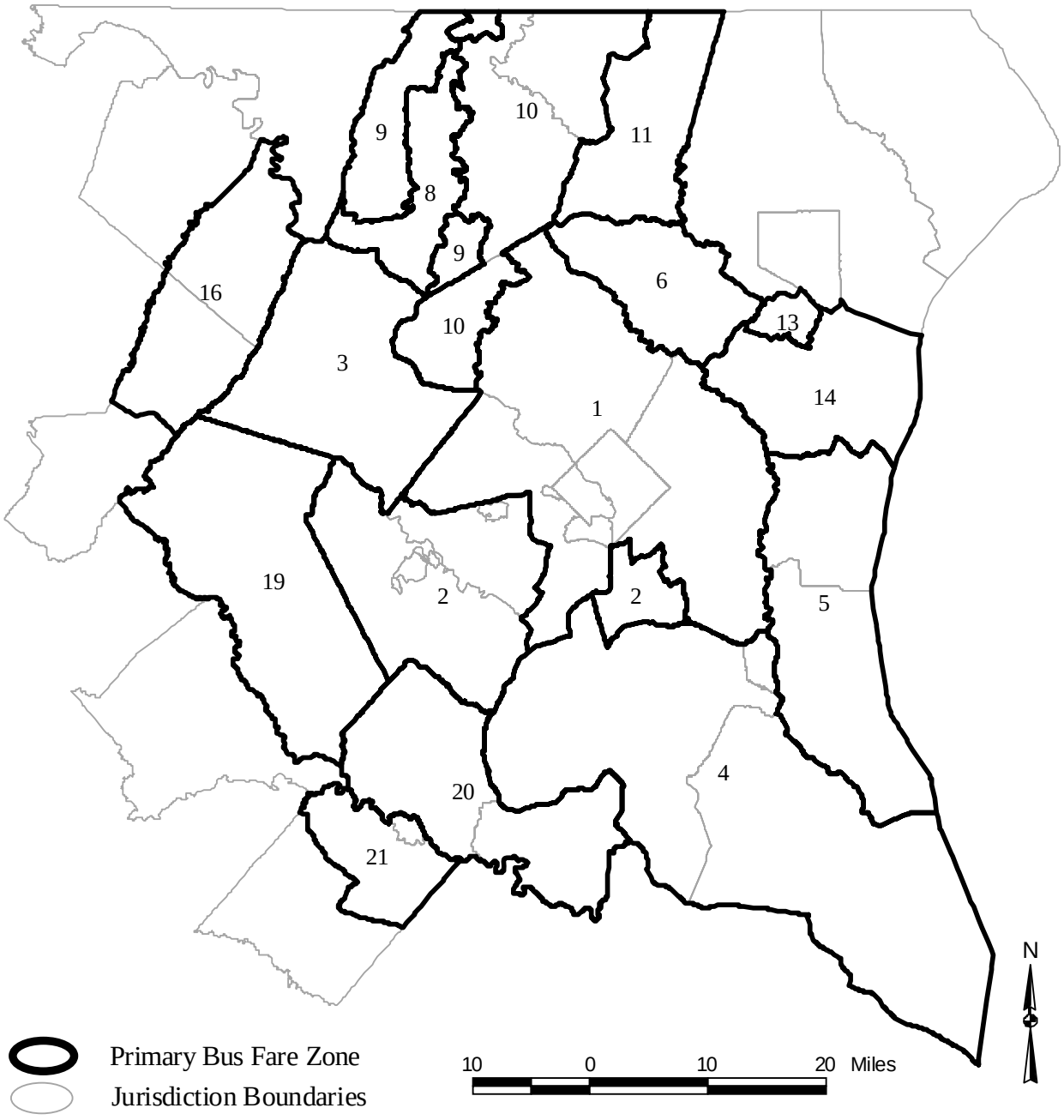


Figure 13 Regional Primary Bus Fare Zone Map for Tariff #25

Ref: 2030_primary_bfzn_#25.wmf
WMATA's Tariff Number 25 (effective January 2008)

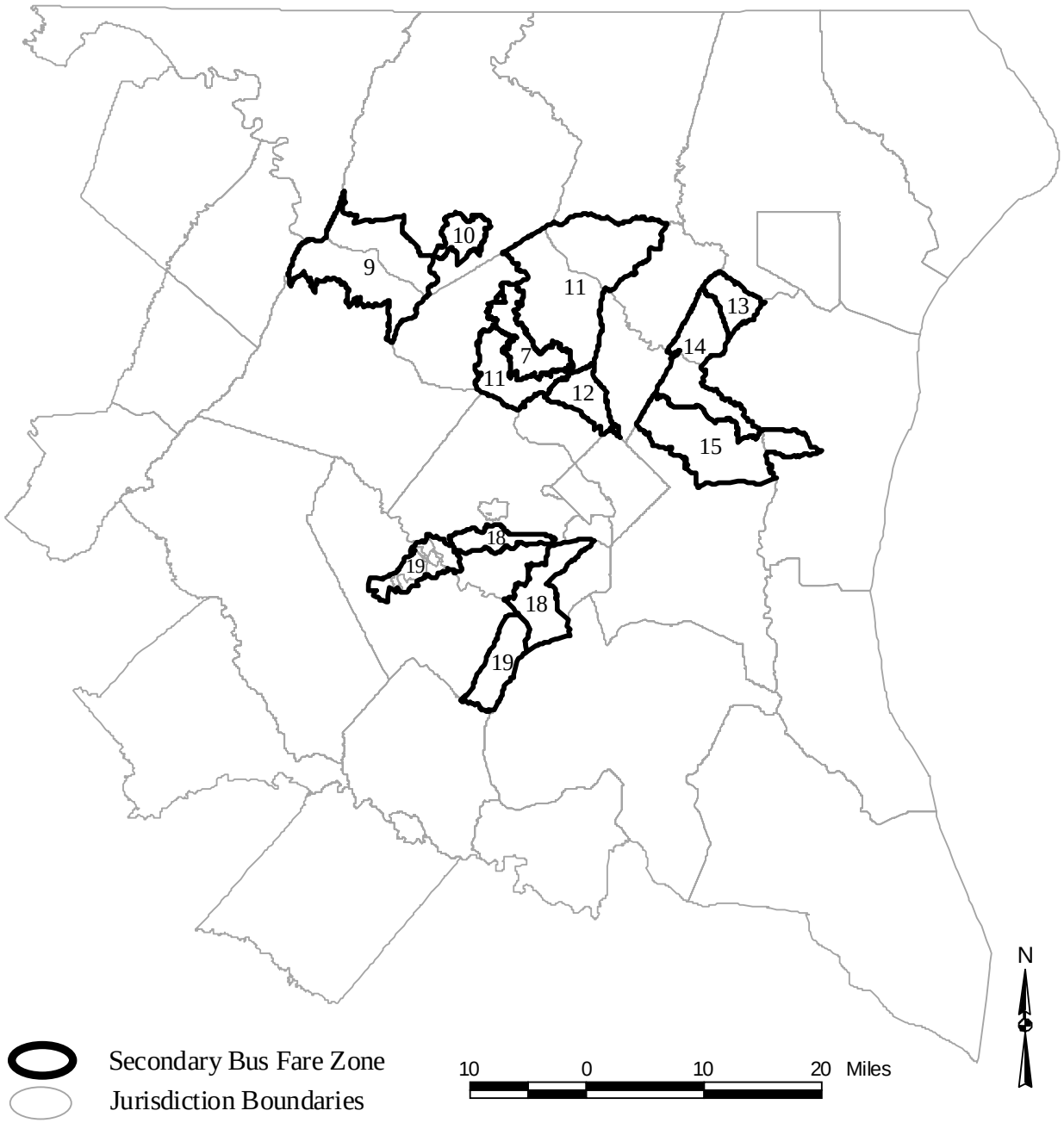


Figure 14 Regional Secondary Bus Fare Zone Map for Tariff #25

Ref: 2030_secondary_bfzn_#25.wmf
WMATA's Tariff Number 25 (effective January 2008)

Table 39 AM Peak and Off-Peak Bus Fare Matrix for 2009-2030 between MWCOG Fare Zones (Expressed in 2004 cents)

	WMATA Regular Service	WMATA Express & Internal Metrobus Fare Service	Loudoun Comm. Bus	Charles & St. Mary's Comm. Bus (MTA)	Calvert and Southern AA Comm Bus (MTA)	Howard Comm. Bus (MTA)	NOT USED Corridor Cities Transitway (Mont. Co)	Frederick Internal Bus	MARC Rail Brunswick (Frederick)	MARC Rail Brunswick (Mont. R8)	MARC Rail Brunswick (Mid. Mont)	MARC Rail Brunswick (Inner)	MARC Rail Penn/ Camden (Outer)	MARC Rail Penn/ Camden (Mid)	MARC Rail Penn/ Camden (Inner)	MARC Rail Brunswick (W.VA and Clark auto Connect)	VRE Zones 1 & 2 (Inside Beltway)	VRE Zones 3 & 4 (FFX and PW)	VRE Zones 5 & 6 (PW & FAUQ Auto Connect)	VRE Zones 7 & 8 (Staff. & KG Auto Connect)	VRE Zone 9 (Spots. & Fred'brg)
Fare Zone	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**
1	125	388	700	357	328	328	414	386	427	341	284	227	341	284	227	511	336	410	484	558	614
2	388	118	818	475	446	446	532	504	545	459	402	345	459	402	345	629	575	270	110	353	408
3	700	818	50	1057	1028	1028	1114	1086	1127	1041	984	927	1041	984	927	1211	1371	1110	1184	1258	1314
4	357	475	1057	100	685	685	771	743	784	698	641	584	698	641	584	868	693	767	841	915	971
5	328	446	1028	685	357	656	742	714	755	669	612	555	669	612	555	839	664	738	812	886	942
6	328	446	1028	685	656	299	742	714	755	669	612	555	669	612	555	839	664	738	812	886	942
7	414	532	1114	771	742	742	130	769	557	471	130	414	755	698	641	641	750	824	898	972	1028
8	386	504	1086	743	714	714	769	102	102	529	529	529	657	670	613	502	722	796	870	944	1000
9	427	545	1127	784	755	755	557	102	400	427	427	427	768	711	654	399	763	837	911	985	1041
10	341	459	1041	698	669	669	471	529	427	341	341	341	682	625	568	341	677	751	825	899	955
11	284	402	984	641	612	612	130	529	427	341	284	284	909	568	511	511	620	694	768	842	898
12	227	345	927	584	555	555	414	529	427	341	284	227	568	511	454	511	563	637	711	785	868
13	341	459	1041	698	669	669	755	657	768	682	909	568	341	341	341	852	677	751	825	899	955
14	284	402	984	641	612	612	698	670	711	625	568	511	341	284	284	795	620	694	768	842	898
15	227	345	927	584	555	555	641	613	654	568	511	454	341	284	227	738	563	637	711	785	841
16	511	629	1211	868	839	839	641	502	399	341	511	511	852	795	738	400	847	921	995	1069	1125
17	336	575	1371	693	664	664	750	722	763	677	620	563	677	620	563	847	336	391	465	539	595
18	410	270	1110	767	738	738	824	796	837	751	694	637	751	694	637	921	391	193	243	317	373
19	484	110	1184	841	812	812	898	870	911	825	768	711	825	768	711	995	465	243	187	243	298
20	558	353	1258	915	886	886	972	944	985	899	842	785	899	842	785	1069	539	317	243	187	224
21	614	408	1314	971	942	942	1028	1000	1041	955	898	868	955	898	841	1125	595	373	298	224	187

Ref: ND10_TABLE_41_BusfareMTX_T#25.xls
WMATA fares are based on Tariff #25 effective 1/06/08.
Remaining transit provider fares are based on 2008 information.

3.5 Version 2.2 Model Network File Format Descriptions

This section presents file format descriptions used in the network and fare building process. Table 40, Table 41, Table 42, Table 43, Table 44, Table 46, Table 47, Table 47,, and Table 49 detail land-use, highway and transit network, and fare input file formats. A summary of network files that were developed as inputs to the assessment of the 2009 CLRP and FY2010-2015 TIP is shown in Table 50. Filenames are generically named for each year. Therefore, it is the subdirectory, rather than the filename itself, that establishes the year or alternative that a given file represents. Schematic flowcharts of the steps employed to develop the network files are presented in Figure 15, Figure 16, and Figure 17. The user should reference Chapter 10.1 of the Version 2.2 model User's Guide for more detail on subdirectory and filename specifications required in the model application.

Table 40 Format Description of the Land Use File (zone.asc)

Columns	Format	Field Description
1- 4	I4	TAZ (1-2191)
8- 15	I8	Households
16- 23	I8	Household Population
24- 31	I8	Grouped Quarters Population
32- 39	I8	Total Population
40- 47	I8	Total Employment
48- 55	I8	Industrial Employment
56- 63	I8	Retail Employment
64- 71	I8	Office Employment
72- 79	I8	Other Employment
80- 81	I2	Jurisdiction Code (0-23) *0/dc, 1/mtg, 2/pg, 3/Arl/, 4/alx,5, ffx, 6/ldn, 7/ pw, 8/(unused), 9/ frd, 10/how, 11/aa, 12/chs, 13/(unused), 14/car, 15/cal, 16/stm, 17/ kg, 18/fbg, 19/stf, 20/spts, 21/fau, 22/clk, 23/jef*
83- 92	F10.4	Gross Land Area (in sq. miles)
94- 95	I2	Ratio of zonal HH median income to regional median HH income in tenths (e.g., a value of *10* indicates a ratio of 1.0), based on the 1990 CTPP.
97- 98	I2	Airline distance from the TAZ centroid to the nearest external station in whole miles.

Table 41 Format Description of the Node Coordinate File (node.asc)

Columns	Format	Field Description
1-6	I6	Highway Node Number
7-14	I8	X-Coordinate (NAD 83) in whole feet
15-22	I8	Y-Coordinate (NAD 83) in whole feet

Table 42 Base Highway Link File Format Description (link.asc)

Columns	Format	Field Description
1-5	I5	A node
6-10	I5	B node
13-17	F5.2	Link Distance (in whole miles with explicit decimal)
23-24	I2	Unused (place marker for Speed Class)*
26-27	I2	Unused (place marker for Capacity Class)*
30-33	I4	Daily Ground Count in thousands
35-36	I2	Daily Ground Count Quality Code
39-40	I2	Jurisdiction Code (0-23) *0/dc, 1/mtg, 2/pg, 3/Arl/, 4/alx,5, ffx, 6/ldn, 7/ pw, 8/(unused), 9/ frd, 10/how, 11/aa, 12/chs, 13/(unused), 14/car, 15/cal, 16/stm, 17/ kg, 18/fbg, 19/stf, 20/spts, 21/fau, 22/clk, 23/jef*
51-52	I2	Screenline Code
54-55	I2	Link Facility Type Code (0-6) *0/centroids, 1/Freeways, 2/Major Art., 3/Minor Art, 4/ Collector, 5/ Expressway, 6/ Ramp (future use)*
61-64	I4	Toll Value in current year dollars
66-69	I4	Toll Group Code (1-9999)
81-82	I2	AM Peak No. of Lanes
84-85	I2	AM Peak Limit Code (0-9)
87-88	I2	PM Peak No. of Lanes
90-91	I2	PM Peak Limit Code (0-9)
93-94	I2	Off-Peak No. of Lanes
96-97	I2	Off-Peak Limit Code (0-9)
99-102	I4	Unused (place marker for TAZ)*
107-116	A/N	Project ID

Notes:
The mode choice model requires that all costs be in 1994 dollars.
Limit Codes are 0, 1 = General Use, 2 = HOV2, 3+ only, 3 = HOV 3+ Only, 4 = Truck Prohibited, 5 = Non-Airport Vehicles Prohibited, 6-8 = (unused), 9 = 'Transit Only' link (links used to more accurately depict coded transit routes, but are below the grain of the zone system; these links are not included in the highway assignment process).
* The speed class, capacity class, and TAZ are added to the highway network during the highway network building phase, so they are not used in the ASCII input file link.asc.

Table 43 Station/PNR Lot File Format Description (sta.tpp.bse)

Columns	Format	Field Description
1-5	I5	Sequence Number
10	A1	Mode Code (M=Metrorail, C=Commuter rail, B=Bus, L=Light rail, N= BRT/street car)
15	A1	Parking Available? (Y/N)
18	A1	Station Active? (Y/N)
21-45	A25	Station Name/PNR lot name
46-50	I5	Network Centroid (2251-2500)
51-55	I5	TAZ location of Station/PNR lot (1-2191)
56-60	I5	Rail Station Node (7301-7399, 7600-7733)
61-65	I5	Parking lot node
66-70	I5	1st Bus Node
71-75	I5	2nd Bus Node
76-80	I5	3rd Bus Node
81-85	I5	4th Bus Node
91-100	I10	X Coordinate of Station / PNR lot (NAD83-based in ft.)
101-110	I10	Y Coordinate of Station / PNR lot (NAD83-based in ft.)
111-140		(Unused)
141-145	I5	Year of Station/PNR lot Opening (unused)

Table 44 Rail Link File Format Description (rail_lnk.bse)

Columns	Format	Field Description
1-5	I5	A Node
6-10	I5	B Node
15-19	I5	Distance in 1/100ths of miles
21-25	F5.2	Speed (mph)
37-37	I1	Rail Mode Number (3-5)

Table 45 "Raw" GIS Based Transit Walk Area File Format Description (GISWKA??.ASC)

Columns	Format	Field Description
4-8	I5	TAZ Number
9-17	I9	Total Land Area
24-30	I7	'short' walk area to rail (Metrorail, commuter rail)
36-42	I7	'long' walk area to rail (Metrorail, commuter rail)
49-55	I7	'short' walk area to non-rail transit
61-67	I7	'long' walk area to non-rail transit
73-81	I9	Non-walking area to ANY transit
85-91	I7	Average 'Short' Walk Distance to Metrorail (in miles)
95-101	I7	Average 'Long' Walk Distance to Metrorail (in miles)
106-112	I7	Average 'Short' Walk Distance to Commuter Rail (in miles)
116-122	I7	Average 'Long' Walk Distance to Commuter Rail (in miles)
127-133	I7	Average 'Short' Walk Distance to Bus (in miles)
137-143	I7	Average 'Long' Walk Distance to Bus (in miles)
149-155	I7	Average 'Short' Walk Distance to ANY Transit (in miles)
161-167	I7	Average 'Long' Walk Distance to ANY Transit (in miles)
170-174	I5	Nearest Rail Station (Metrorail or Commuter Rail) w/in 1.0 mi
176-180	I5	Nearest Bus Stop Node w/in 1.0 mi

Note: area measurements are in square miles and do not include major bodies of water;
'short' references below are defined as within 1/3 mile; 'long' walk areas are those beyond 1/3 of a mile and within 1.0 mile

Table 46 GIS-Walk Link File Format Description (GISWKL??.ASC)

Columns	Format	Field Description
1-5	I5	TAZ Number
6-10	I5	Transit Stop nodes within 1.0 mile
11-15	F5.2	Distance from TAZ centroid to stop node in miles

Table 47 Station Coordinate File Format Description (MFARE1.A1)

Columns	Format	Field Description
9-13	I5	Station Number (1-150)
19-26	I8	Station X Coordinate
32-39	I8	Station Y Coordinate

Table 48 Fare Matrix File Format Description (BUSFAR??.ASC)

Columns are Space-delimited	Field Description
	Origin Bus Zone No. (1-21)
	Bus Fare value from Origin Zone to Destination Zone 1
	Bus Fare value from Origin Zone to Destination Zone 2
	Bus Fare value from Origin Zone to Destination Zone 3
	…
	Bus Fare value from Origin Zone to Destination Zone 21

Table 49 TAZ / Bus Fare Zone Equivalency File Format Description (FARE_A2.ASC)

Columns are Space-delimited	Field Description
	TAZ (1-2191)
	Bus Fare value Zone 1 associated with TAZ
	Bus Fare value Zone 2 associated with TAZ
	TAZ Origin Walk Pct to Metrorail in 10ths of Pcts
	TAZ Destination Walk Pct to Metrorail in 10ths of Pcts
	Bus Fare Zone 1 associated with Metrorail station (TAZ 1-150)
	Bus Fare Zone 2 associated with Metrorail station (TAZ 1-150)
	Jur. Code (0/DC, 1/MD, 2/VA-Area1, 3/VA-Area2)
	Origin-end Bus fare override value (default=0)
	Destination-end Bus fare override value (default=0)

Table 50 Summary of Version 2.2 Model/TP+ Transportation Network Filenames

Transportation Network / Inputs	
SubDirectory: CGV2.2	**Scenario Year**
Zone Net	Link.ASC
Zone Xys	Node.ASC
Transit Networks AM Peak Line Files (Mode)	
1	mode1am.tp
2	mode2am.tp
3	mode3am.tp
4	mode4am.tp
5	mode5am.tp
6	mode6am.tp
7	mode7am.tp
8	mode8am.tp
9	mode9am.tp
Off Peak Line Files (Mode)	
1	mode1op.tp
2	mode2op.tp
3	mode3op.tp
4	mode4op.tp
5	mode5op.tp
6	mode6op.tp
7	mode7op.tp
8	mode8op.tp
9	mode9op.tp
Station File	STA_TPP.BSE
Rail Link File	RAIL_LNK.BSE
FARES **Bus Fares (MFARE2S)**	
TAZ/Bus Fare Equivalency	FARE_A2.ASC.
Bus Fare Matrix - AM	BUSFARAM.ASC
Bus Fare Matrix - OP	BUSFAROP.ASC

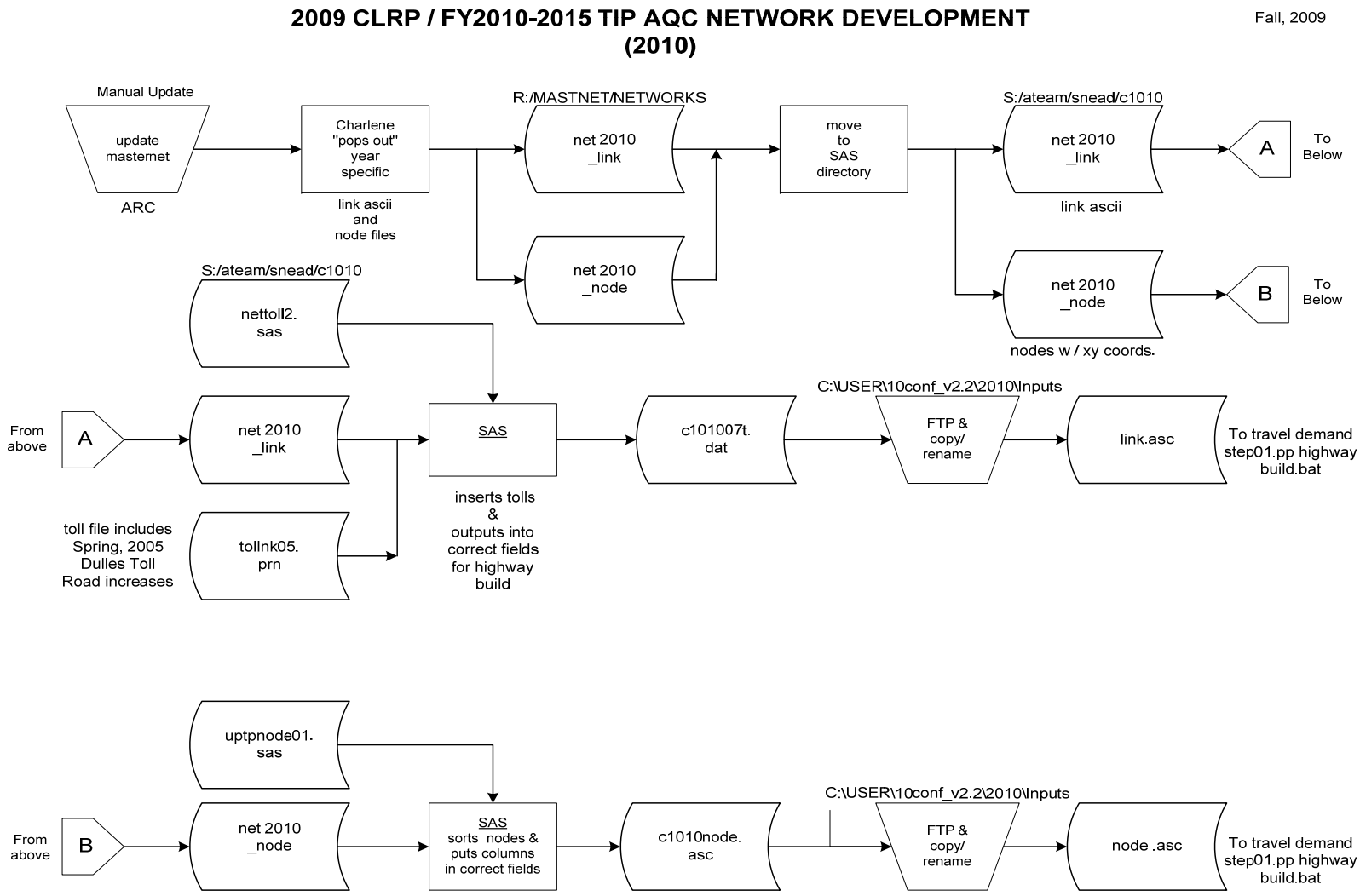


Figure 15 2009 CLRP / FY2010-2015 TIP AQC Network Development for 2010

Ref: FIGURE_16_C1010inputs.vsd

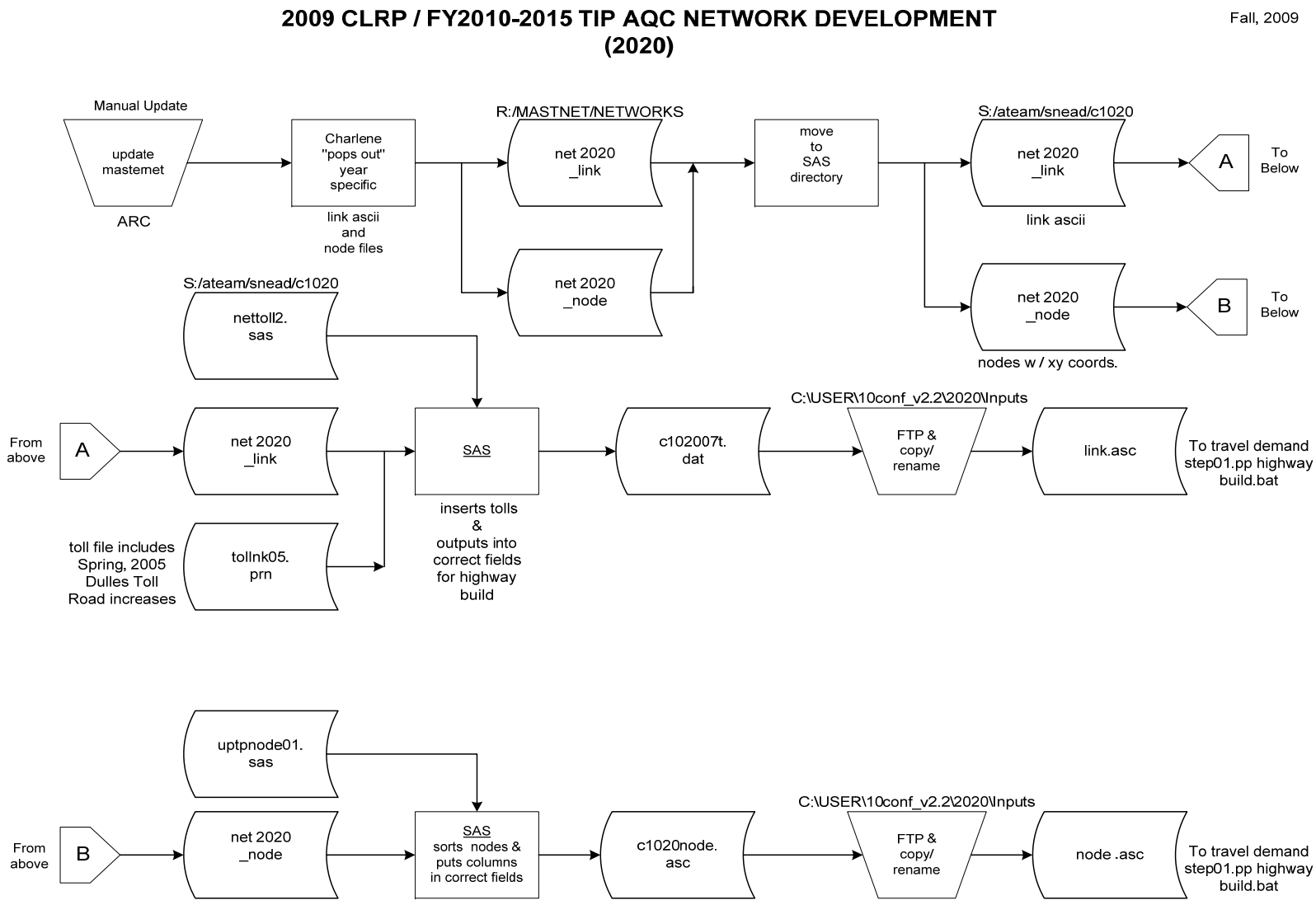


Figure 16 2009 CLRP / FY2010-2015 TIP AQC Network Development for 2020

Ref: FIGURE_17_C1020inputs.vsd

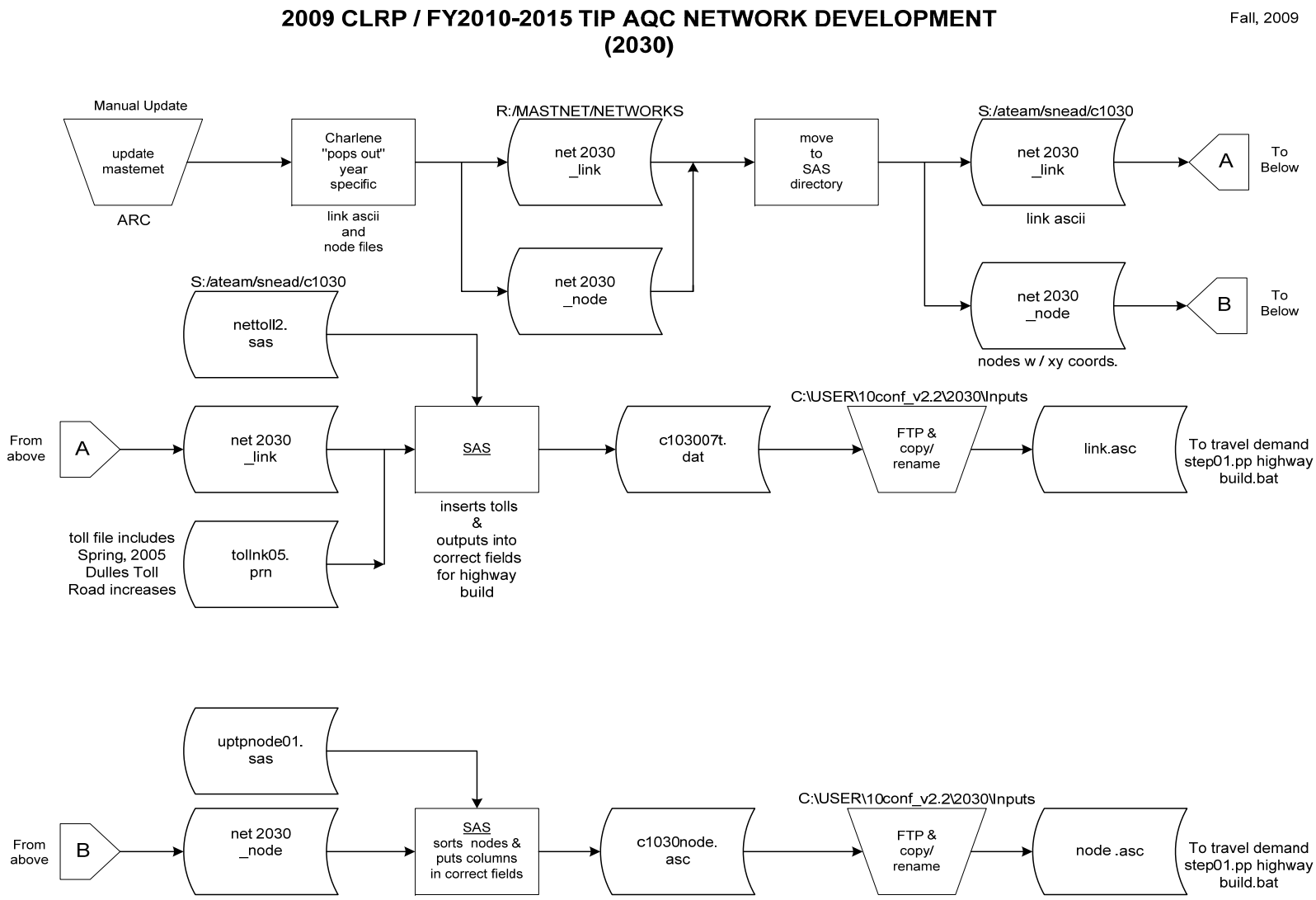


Figure 17 2008 CLRP / FY2009-2014 TIP AQC Network Development for 2030

Ref: FIGURE_18_C1030inputs.vsd

FY-2010 Network Documentation: Highway and Transit Network Development

Chapter 4 Version 2.3 Network Development

FY-2010 network development activities included the development of networks for use with a new 3,722-TAZ zone system and the Version 2.3 model process. The draft Version 2.3 model that was released in draft two years ago[10] on the 2,191 TAZ system remained in development due to TPB's decision in FY-2009 to re-calibrate the model using the new 3,722-TAZ zone system, and to re-calibrate the model using several updated survey data.

The revised TAZ system maintained the same geographic extent as the existing modeled study area, but is comprised of 3,662 internal zones. This is a substantial increase over 1,972 internal TAZs that comprise the existing study area. The new zone system was refined late in FY-2010 and is discussed in section 4.1.

A new node numbering scheme for the TPB's highway and transit networks was developed to support the new TAZ system and is discussed in section 4.2. The scheme was developed based on a review of the existing highway/transit node numbering system, knowledge of the Version 2.3 model currently in development, and expectations regarding future planning needs.

Section 4.3 documents revisions made to the definitions of area types that will be used for the Version 2.3 travel demand model. This analysis was done to ensure that the area type designation were reasonable with respect to the new zone system and land use.

The TPB has made steady progress in adapting GIS technology to manage and facilitate transportation network development. A discussion of TPB's effort to improve the use of GIS in support of network development is featured in section 4.4.

Section 4.5 discusses the export of 2007 highway network inputs from the TPBMAN geodatabase and highway network building in CUBE base, using geodatabase line and point feature classes. TP+/Voyager scripts were also developed and used to extensively check the accuracy of network attributes and identify previous year network links that needed to be removed from the TPBMAN database.

The TPBMAN-based COGTools application provides an 'Export Transit Network' function that exports 30 tables for transit (bus) modes, metro/commuter rail links and nodes, and other link and node files associated with PNR facilities.

This function was used to generate transit files for use in the calibration of the 2007 networks. The exported line files were imported into CUBE and built for further review. The processes used to complete this task are described in Section 4.6 "Transit Network Inputs".

[10] Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.3: Specification, Validation, and User's Guide*, Draft report (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board (COG/TPB), June 30, 2008)

When an effort was made to move to a new GIS-based system to edit and manage highway and transit networks (currently called TPBMAN), it was decided that this would be a good time to add a screenline entity to the data model used for the highway network. Section 4.7 documents the screenline adjustment procedure. TPB currently uses about 35 screenlines (numbered 1-38, with some unused numbers) to validate the travel demand model to observed traffic counts.

4.1 3,722-TAZ Area System

The new 3,722 TAZ system was initially developed by the land use planners, as part of COG's Cooperative Forecasting process. It was influenced by local land use plans and region activity centers/corridors map adopted by TPB and COG Board. It is comprised of 3,675 internal and 47 external zones ("external stations"). Boundaries of the new TAZs were reviewed. 99% of these TAZs are acceptable for regional transportation purposes. The remaining 1% (about 20 out of the 3,675 internal TAZs) had boundaries that are problematic for regional transportation modeling. These problematic TAZs include TAZs that are entirely water bodies, peninsula with no road access, and irregularly shaped polygons created because of land ownership issues. This review was presented in detail at the January 22, 2010 meeting of the Travel Forecasting Subcommittee (TFS).[11]

TAZs that are entirely water/ island/ peninsula are handled by not connecting them to the transportation network and are shown in Table 51. TPB staff had contacted local jurisdictions to determine if there is any land activity in the land ownership "slivers". Based on the findings, irregular shaped polygons caused by land ownership slivers were modified. Table 52 shows TAZs with Redefined Boundaries.

Some TAZs were merged because they were well below the grain of the highway system and are shown in Table 53. A total of 13 TAZs were found to be "Unused" for regional transportation purposes (see Table 54). In the 3,722-TAZ system, there are unused zones that can be used for project planning, however they are called "reserved zones" and their zone range comes at the end of the highest external station number (i.e., 3723-5000). Table 55 shows jurisdictional summary of 3,722 zones.

[11] Meseret Seifu, "Review of New Zone System: 3722 Transportation Analysis Zones (TAZ)" (presented at the Travel Forecasting Subcommittee of the TPB Technical Committee of the National Capital Region Transportation Planning Board, held at the Metropolitan Washington Council of Governments, Washington, D.C., January 22, 2010).

Table 51 TAZs with NO centroid connector/ "Unused" by Jurisdiction

Jurisdiction	TAZ	Description
DC	61	Roosevelt Island
	382	Water body
Prince George's	770	Water body
	777	Water body
Carroll	3266	Peninsula
	3267	Water body
Spotsylvania	3544	Water body

Table 52 TAZs with Redefined Boundaries by jurisdiction

Jurisdiction	TAZ	Changes Made
DC	255	sliver merged with TAZ 254
Montgomery Co., Md.	726	sliver merged with TAZ 725
	2636	sliver merged with TAZ 2644
Prince William Co., Va.	2551	sliver merged with TAZ 2549
	2555	sliver merged with TAZ 2553
Spotsylvania	3558	sliver merged with TAZ 3555
	3568	sliver merged with TAZ 3569

Table 53 Merged TAZs

Jurisdiction	TAZ	Description
Prince William Co., VA	2555	Aggregated to TAZ 2554
	2629	Aggregated to TAZ 2630
Stafford Co., VA	3482/3478	Aggregated to TAZ 3489
	3495	Aggregated to TAZ 3494

Table 54 Listing of Unused TAZs

Jurisdiction	TAZ	Description
District of Columbia	61	Island
	382	Water body
Prince George's Co., MD	770	Water body
	777	Water body
Prince William Co., VA	2555	Aggregated to TAZ 2554
	2629	Aggregated to TAZ 2630
Anne Arundel Co., MD	3103	Polygon removed
Carroll Co., MD	3266	A peninsula with no road access
	3267	Water body
Stafford Co., VA	3482	Aggregated to TAZ 3489
	3478	Aggregated to TAZ 3489
	3495	Aggregated to TAZ 3494
Spotsylvania, Co., VA	3544	Water body

Table 55 Jurisdictional Summary of 3,722 Zones

JURISDICTION	JURIS. CODE	ZONE RANGE	No. of ZONES	UNUSED ZONES	No. of UNUSED ZONES
District of Columbia	0	1-393	393	61, 382	2
Montgomery Co., Md.	1	394-769	376	----	
Prince Georges Co., Md.	2	770-1404	635	770, 777	2
Arlington Co., Va.	3	1405-1545	141	----	
City of Alexandria, Va.	4	1546-1610	65	----	
Fairfax Co., Va.	5	1611-2159	549	----	
Loudoun Co., Va.	6	2160-2441	282	----	
Prince William Co., Va.	7	2442-2819	378	2555, 2629	2
----	8			----	
Frederick Co., Md.	9	2820-2949	130	----	
Howard Co., Md.	10	2950-3017	68	----	
Anne Arundel Co., Md.	11	3018-3116	99	3103	1
Charles Co., Md.	12	3117-3229	113	----	
----	13			----	
Carroll Co., Md.	14	3230-3287	58	3266, 3267	2
Calvert Co., Md	15	3288-3334	47	----	
St. Mary's Co., Md.	16	3335-3409	75	----	
King George Co., Va.	17	3410-3434	25	----	
City of Fredericksburg, Va.	18	3435-3448	14	----	
Stafford Co., Va.	19	3449-3541	93	3478, 3482, 3495	3
Spotsylvania Co., Va.	20	3542-3603	62	3544	1
Fauquier Co., Va.	21	3604-3653	50	----	
Clark Co., Va.	22	3654-3662	9	----	
Jefferson Co., WVa.	23	3663-3675	13	----	
TOTAL INTERNAL ZONES			3675		13
EXTERNAL STATIONS		3676-3722	47		
Reserved TAZs		3723-5000			1278
TOTAL ZONES / STATIONS (Total Used & Unused)			**3722**		

As a result of the review, two sets of TAZ boundaries were established, one for land activity forecasts (COGTAZ3722_TPBMOD) and another for regional transportation modeling (TPBTAZ3722_TPBMOD). In the future, COG's Cooperative Forecasting program will develop land activity forecasts on the COG TAZ 3,722 system and, prior to use in the travel model, the land activity forecasts will be post-processed by TPB staff, so that the forecasts conform to the TPB TAZ 3,722 system.

4.2 Node Numbering System

The node numbering system that has been adopted in the development of new highway and transit networks on the 3,722-TAZ system is shown in Table 56. The numbering system allocates nodes from lowest to highest beginning with TAZs, followed by station centroids, station nodes, PNR lot nodes, and highway nodes. Highway nodes are further allocated by jurisdiction. The table also indicates that a reserve of TAZ numbers is available for the purpose of sub-zone work.

Table 56 TAZ/Node Numbering System for the 3,722 TAZ System (3,675 Internal TAZs and 47 External Stations)

Node Type	Jurisdiction	TAZ / Node Count	Beginning TAZ / Node	Ending TAZ / Node
TAZs	District of Columbia	393	1	393
	Montgomery Co., Md.	376	394	769
	Prince George's Co., Md.	635	770	1404
	Arlington Co., Va.	141	1405	1545
	City of Alexandria, Va.	65	1546	1610
	Fairfax Co.. Va.	549	1611	2159
	Loudoun Co., Va.	282	2160	2441
	Prince William Co., Va.	378	2442	2819
	Frederick Co., Md.	130	2820	2949
	Howard Co., Md.	68	2950	3017
	Anne Arundel Co., Md.	99	3018	3116
	Charles Co., Md.	113	3117	3229
	Carroll Co., Md.	58	3230	3287
	Calvert Co., Md	47	3288	3334
	St. Mary's Co., Md.	75	3335	3409
	King George Co., Va.	25	3410	3434
	City of Fredericksburg, Va.	14	3435	3448
	Stafford Co., Va.	93	3449	3541
	Spotsylvania Co., Va.	62	3542	3603
	Fauquier Co., Va.	50	3604	3653
	Clarke Co., Va.	9	3654	3662
	Jefferson Co., WVa.	13	3663	3675
	External Stations:	47	3676	3722
	Reserved TAZ numbers	1,278	3723	5000
Station Centroids	Metrorail PNR Centroids:	1,000	5001	5999
	Commuter Rail PNR Centroids:	1,000	6000	6999
	Light Rail/BRT PNR Centroids:	1,000	7000	7999
Station Nodes	Metrorail Station Node:	1,000	8000	8999
	Commuter Rail Station Node:	1,000	9000	9999
	Bus/Light Rail Station Node:	1,000	10000	10999
PNR Lot Nodes	Metrorail PNR Lot Node:	1,000	11000	11999
	Commuter PNR Lot Node:	1,000	12000	12999
	Bus/Light PNR Lot Node:	1,000	13000	13999
	Reserved Transit Nodes	6,000	14000	19999
Highway Nodes	District of Columbia	2,000	20000	21999
	Montgomery Co., Md.	4,000	22000	25999
	Prince George's Co., Md.	4,000	26000	29999
	Arlington Co., Va.	2,000	30000	31999
	City of Alexandria, Va.	2,000	32000	33999
	Fairfax Co.. Va.	4,000	34000	37999
	Loudoun Co., Va.	2,000	38000	39999
	Prince William Co., Va.	2,000	40000	41999
	Frederick Co., Md.	2,000	42000	43999
	Howard Co., Md.	1,500	44000	45499
	Anne Arundel Co., Md.	1,500	45500	46999
	Charles Co., Md.	1,000	47000	47999
	Carroll Co., Md.	1,000	48000	48999
	Calvert Co., Md	500	49000	49499
	St. Mary's Co., Md.	500	49500	49999
	King George Co., Va.	500	50000	50499
	City of Fredericksburg, Va.	500	50500	50999
	Stafford Co., Va.	1,000	51000	51999
	Spotsylvania Co., Va.	1,000	52000	52999
	Fauquier Co., Va.	1,000	53000	53999
	Clarke Co., Va.	500	54000	54499
	Jefferson Co., WVa.	500	54500	54999

4.3 Area Type Development

This section of the report documents the revisions made to the definitions of area types that will be used for the Version 2.3 travel demand model. In Version 2.2 of the travel demand model, area type is an important parameter that is used as a basis for determining link free-flow speed and link capacity, and is also used in a number of models, including the vehicle ownership, trip generation models, and the non-motorized HBW trip end model. While the extent to which area types will be used in Version 2.3 model is still unclear, it is important to ensure that the area type definition is consistent with the new zone system and land use forecasts.

The area type parameter aims to classify TAZs into homogeneous groups based on their employment and population densities. In Version 2.2 of the model, area type is defined based on a one-mile "floating" employment and population density. The one-mile floating density for a specified TAZ is calculated by separately summing the land activity and land area of the given TAZ to the land activity and land area of the other TAZs whose centroids lie within a one-mile radius of the given TAZ's centroid, and then calculating the density from the combined land activity and land area (this aggregation technique is sometimes referred to as "geographic centroid aggregation"). The current definitions of area types are shown in Table 57.

Since Version 2.3 model is undergoing recalibration, modifications were considered to the area type definitions. These included:

- Using the actual TAZ employment and population densities instead of floating densities
- Varying the radius used for the floating density: from the existing 1-mile to 0.5-mile and 1.5-mile
- Increasing the number of area types to 8 or reducing it to 6
- Modifying thresholds for population and employment density categories

All the aforementioned changes were considered by plotting the resulting area types in ArcGIS and comparing them to the "expected" area types based on local area knowledge. The scheme for area types that was selected is based on a modified KPMG approach[12] and is described in Table 58. This area type scheme is different than the existing scheme used in the Version 2.2 model. Changes to the previous definitions included combining area types 6 and 7, changing the employment and population category thresholds, as well as reclassifying some area types. For example, in the old scheme, area type 2 covered two entire categories/columns (employment density of 5001-15,000 and 15,001-35,000), but was also to be found in only the last four of the seven employment density categories/columns. By contrast, in the new scheme, area type 2 can be found in all seven of the employment density categories/columns, but it does not entirely fill any one category/column. Also, the new scheme has generally a smoother transition from one area type to the next.

[12] KPMG Peat Marwick. *Northern Virginia Regional Travel Model: Model Update and Validation Report* (Virginia Department of Rail and Public Transportation, Virginia Department of Transportation, 1997).

Table 57 Area Type Definitions used in the Version 2.2 Travel Model[13]

One-Mile "Floating" Population Density (Pop/Sq mi)	One- mile "Floating" Employment Density (Emp/Sqmi)						
	0-100	101-500	501-1,500	1,501-5,000	5001-15,000	15,001-35,000	35,001+
0-100	7	7	5	5	2	2	2
101-350	7	5	5	5	2	2	2
351-1,500	6	6	5	5	2	2	2
1,501-3,500	6	6	4	3	2	2	2
3,501-6,500	4	4	3	3	2	2	1
6,501-10,000	4	3	3	3	2	2	1
10,001+	3	3	3	2	2	2	1

Table 58 New Area Type Definitions

One-Mile "Floating" Population Density (Pop/Sqmi)	One- mile "Floating" Employment Density (Emp/Sqmi)						
	0-100	101-350	351-1,500	1,501-3,550	3,551-13,750	13,751-15,000	15,001+
0-750	6	6	5	3	3	3	2
751-1,500	6	5	5	3	3	3	2
1,501-3,500	6	5	5	3	3	2	2
3,501-6,000	6	4	4	3	2	2	1
6,001-10,000	4	4	4	2	2	2	1
10,000-15,000	4	4	4	2	2	2	1
15,001+	2	2	2	2	2	1	1

A map of the modeled region with area types is shown in Figure 18 and Figure 19. In addition to a number associated with each area type, names were assigned as described in Table 59.

[13] Ronald Milone et al., *TPB Travel Forecasting Model, Version 2.3: Specification, Validation, and User's Guide*, Draft report (Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, June 30, 2008).

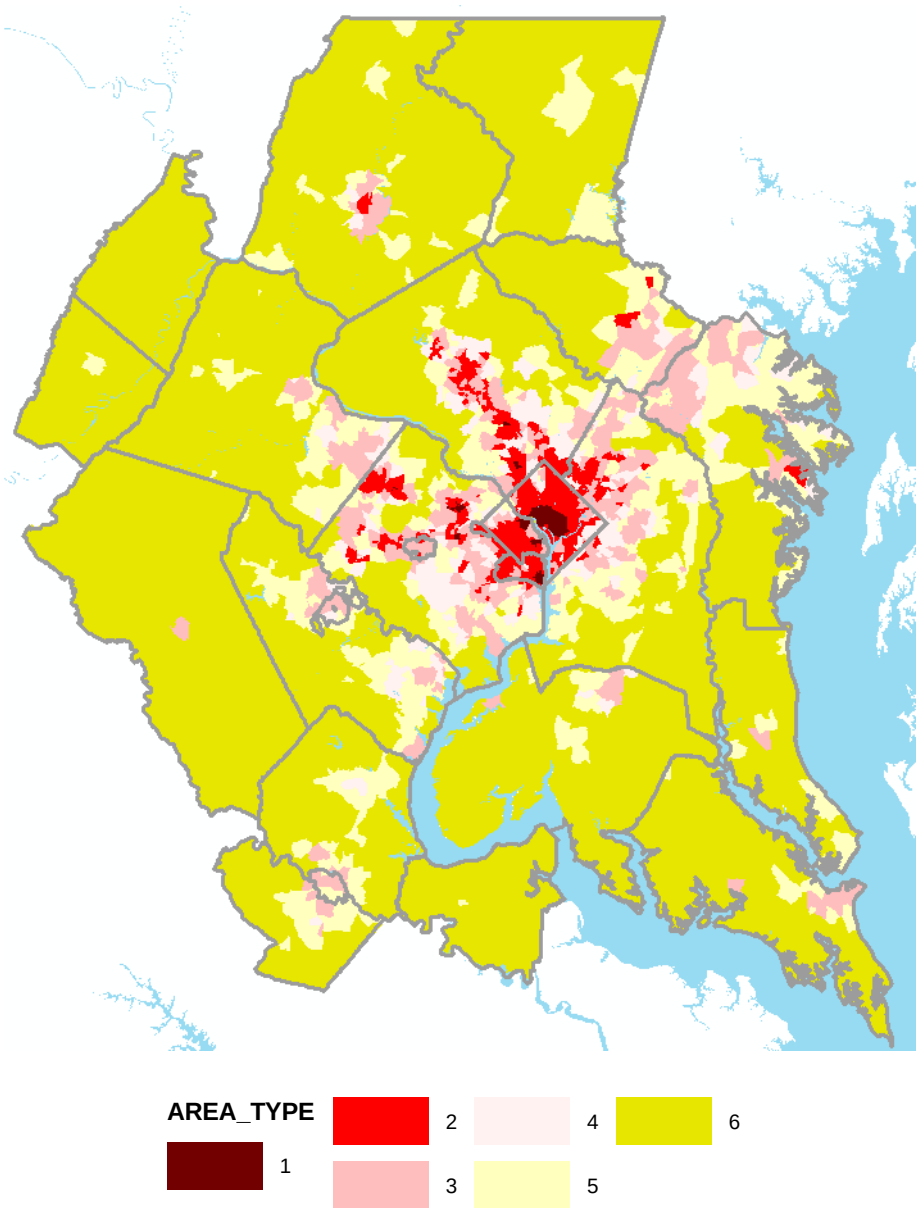


Figure 18 Map of the Region with New Area Type Definitions

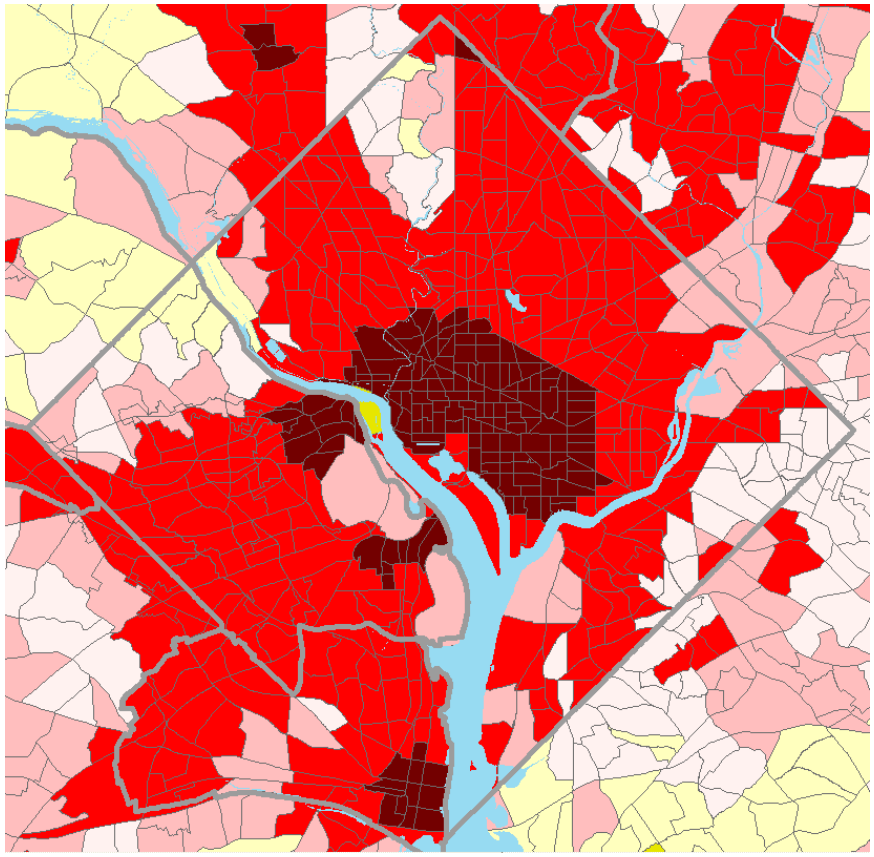


Figure 19 Map of the Region with New Area Type Definitions

Table 59 Area Type Names

Area Type	Name	Examples
1	High mixed employment and population density	1. Downtown DC, between Georgetown, Florida Ave., and 11th St. NE & SE 2. Old Town Alexandria 3. The Rosslyn/Court House area of Arlington Co. 4. Pentagon City area of Arlington Co. 5. Downtown Bethesda, Maryland 6. Center of Tysons Corner, Virginia
2	Medium/high mixed density	1. A majority of DC outside the downtown core 2. A majority of Arlington Co., south of Lee Highway 3. A majority of Alexandria 4. Areas of Tysons Corner just beyond the center 5. Annapolis, Maryland 6. Downtown Frederick, Maryland 7. Parts of Reston and Herndon, Virginia, along the Dulles Access/Toll Road
3	Medium employment density	1. Parts of upper NW DC near Rock Creek Park 2. Parts of Arlington along Lee Highway 3. National Airport 4. The Pentagon 5. Arlington Cemetery 6. BWI Airport 7. Potomac Mills mall in Woodbridge, Virginia
4	Medium population density	1. Parts of upper NW DC near Rock Creek Park 2. Parts of north Arlington 3. SE DC near the Capitol Heights Metrorail station 4. Chevy Chase, Maryland, near the DC border
5	Low density	1. Area along McArthur Boulevard in DC 2. Upper north Arlington Co. 3. Fort Hunt section of Fairfax Co. 4. Dulles Airport 5. Andrews Air Force Base
6	Rural	1. Great Falls, Virginia 2. Much of Loudoun Co., Virginia 3. Most of Fauquier Co., Virginia 4. Much of Charles, St. Mary's, and Calvert Counties, Maryland 5. Most of Frederick and Carroll Co., Maryland

Note that the Pentagon and Arlington Cemetery are area type 3 ("medium employment density"). This is due to the use of the one-mile floating density. Arlington Cemetery should probably be categorized as "rural" (area type 6) and the Pentagon should probably be area type 2 ("medium/high mixed density"). These, and other similar cases, will be reset using the area-type override capability that currently exists in the travel model.

4.4 Status of GIS-Based Network Management and Editing Capability

During FY-2010, TPB continued a work program that sought to improve the use of GIS in support of network development. This course of action was initiated in FY-2007, and involved the support of a consultant who was conversant with travel modeling needs and the development of GIS applications. Daniel Consultants, Inc. (DCI) was selected during the summer of 2007[14] and began the first phase of a two-phase effort to improve the TPB's existing GIS technology and practices for improving network database development procedures. The first phase essentially involved: 1) evaluating existing network development procedures, 2) identifying user needs, 3) developing a list of functional requirements, and 4) developing a multi-year highway geodatabase and an ArcGIS-based custom tool which met many of the formulated requirements.

Phase 2 began during FY-2009 and included tasks that were to further improve the software application developed in Phase 1, including: 1) the refinement of the ArcGIS application tool developed in Phase 1 based on the TPB's testing and evaluation of the software, 2) the incorporation of transit network elements into the multi-year geodatabase and the enhancement of the custom ArcGIS toolbar to include transit editing, and 3) the preparation of documentation and training materials. This effort was documented in a report entitled "MWCOG GIS Database Application Project Report (Second Phase)" by Daniel Consultants (DCI), dated July 20, 2009. The schedule for Phase 2 activities was envisioned to occur over six months, from August 2008 to January 2009.

Due to some other unanticipated issues related to the functionality of COGTools and the TPBMAN geodatabase, the timeframe for this phase was extended. The additional issues resolved during this extended timeframe included minor bug fixes related to software version compatibility with the COGTools toolbar, and transit network export routine refinement. All outstanding work tasks related to Phase 2 have since been completed and signoff on completed tasks occurred in October 2009.

The complexity of several significant network enhancements occurring simultaneously (described below) warranted continued activity to improve and refine the COGTools application and TPBMAN database. As a result, TPB and DCI extended their relationship with a third phase [15] that emphasized specific technical assistance requests related to the functionality and maintenance of the COGTools toolbar and TPBMAN geodatabase. The contract period originally ran from January through May 2010, but was later extended to the end June 2010.

In FY-2010, staff began the development of highway and transit network geodatabase utilizing the new 3722 zone system and TPB's Version 2.3 travel model specifications. Staff populated the 2008 CLRP-

[14] RFP #18-07 was released on June 8, 2007 (entitled, "Improving GIS Based Applications and Protocols Used to Develop and Manage Transportation Networks")

[15] COG Contract #10-042 was released on January 26, 2010 (entitled, "Maintenance of Enhanced GIS-Based Transportation Network Management and Editing Software GIS Based Transportation Software Maintenance")

based TPBMAN geodatabase with highway and transit projects contained in the 2009 CLRP and FY2010-2015 TIP. In further preparation for this endeavor, two significant upgrades occurred. The network editing environment wholly migrated from the personal geodatabase platform to an ArcSDE multi-user environment to allow a greater number of staff to participate in network development activities. Additionally, network facilities (highway and transit) contained in the TPBMAN master transportation geodatabase were conflated to the NAVTEQ street dataset in order to improve the geographic accuracy of the network.

In developing the multi-year network geodatabase, TPB staff incorporated a number of significant network enhancements. New node ranges were established and a look-up table created to accommodate the increased number of nodes needed for network refinement. Node numbers in all relevant datasets were then adjusted in the TPBMAN geodatabase per the new ranges. Staff then populated the TPBMAN geodatabase with additional centroid connectors in each jurisdiction to accommodate TAZ3722 area system. Upon completion of the new centroid connectors, TPB provided maps to local and state agencies and consultants for review and comment. The feedback received on network facility and centroid placement was considered and changes were made to the network where appropriate.

Final highway and transit networks for years 2007 and 2030 were exported from the TPBMAN geodatabase and brought into Cube for review by the models development team. Staff performed extensive comparisons between the 2007 exported networks and existing Cube 2007 year network. Staff made corrections to the Cube network and TPBMAN geodatabase independently in an attempt to speed delivery of the final 2007 network.

The third phase has officially concluded at the end of FY-2010. However, some outstanding issues remain, primarily involving additional application testing/debugging, including the delivery of any new tools and tables as deemed necessary. A new maintenance contract could address application enhancements initially identified in the original needs document, issues found through the course of this current application review, as well as any unforeseen matters uncovered in the future.

Areas for refinement identified during application review include the following:

- Ability to 'undo' certain operations that are currently not possible automatically
- Additional batch update capabilities not currently available in COGTools
- Additional network editing capabilities that facilitate ease-of-use by network coding staff
- Optimization of conditions to improve performance (database design, application programming, workflow design)
- Code compliance for COGTools to be operational at any version of ArcGIS
- Implementation of items previously identified in the original project needs matrix

In conclusion, the ArcGIS-based COGTools application tool and TPBMAN geodatabase are planned to be phased in production for use in carrying out the network development work program. The application

is currently being employed in the development of year 2040 highway and transit networks and files for use in Version 2.3 calibration.

As FY-2011 begins, new bus and rail inputs are under development for use with the 3722 zone area system. Activities include the compilation of local and commuter bus, and rail service data for 2010 for all regional transit providers in the Metropolitan Washington region. Once developed, these new transit inputs will be incorporated into relevant transit tables in the TPBMAN geodatabase. This updated information will inform both our base-year network (e.g. 2010) and forecast-year networks (e.g. 2010, 2020, 2030, and 2040).

4.5 Highway Network Inputs

The 2007 calibration year highway network inputs to the regional travel model were exported from the TPB multi-modal and multi-year master highway network geodatabase (TPBMAN). This geodatabase is accessed using an ArcGIS add-in, developed by DCI, Inc., called COGTools. During this work, due to unforeseen software bugs in TPBMAN/COGTools, as a work-around, Cube Base software was used to build and make final corrections to the highway network. Corrections were made in parallel in the two systems, Cube Base network and TPBMAN geodatabase.

There are two ways to export Cube highway network inputs from the TPBMAN geodatabase:

- TP+ Input File (Link.ASC and Node.ASC)
- Personal Geodatabase (Link and Node Feature classes)

The personal geodatabase format was used to export the 2007 highway network inputs from the TPBMAN geodatabase. The 2007 highway network was built in Cube base, using geodatabase line and point feature classes. TP+/Voyager scripts were developed and used to extensively check the accuracy of network attributes and identify previous year network links that needed to be removed from the TPBMAN database. The following three attributes are now included in the highway network, in addition to existing link attributes:

- EDGEID: geometry network link identifier
- LINKID: highway network link identifier
- Shape_Length : "True Shape" geometry length (in feet)- this attribute was used to compute distance in hundredths of miles

The 2007 highway network contained "True Shape" geometry information that shows road links alignment or curvature, which can be seen visually in the geodatabase network or in a network exported to Cube .NET format, if "true shape display" is turned on.

Comparisons were done between the new year-2007 3722-TAZ highway network and the existing year-2010 2191-TAZ highway network from the 2009 CLRP and FY 2010-2015 TIP. Results are shown in Table 60. As expected, due to the increase in number of zones, there were significant increase in the number of centroid connectors and highway links.

Table 60 Comparisons of the 2007 and 2010 Highway Networks

			Percent
	2010 Conformity Network	2007 Highway Network	Increase
Internal/used TAZs	1,972	3,662	86%
Centroid Connectors and Highway Links	28,209	45,988	63%
Centroid Connectors	7,780	15,192	95%

Further comparisons were done between the two networks, the existing 2010 and the new 2007 highway networks, by facility type (see Table 61).

Table 61 Comparisons of the 2007 and 2010 Highway Networks by Facility Type

Facility Type	Existing 2,191 Network (2010)	Updated 3,722 Network (2007)	Percent Change
Freeways	2,584	2,574	-0.4%
Major Arterials	6,764	9,467	40.0%
Minor Arterials	4,337	6,874	58.5%
Collectors	5,696	10,827	90.1%
Expressway	334	336	0.6%
Ramps	714	718	0.6%
Total	**20,429**	**30,796**	**50.7%**

As shown in Table 61, the number of freeway links is essentially unchanged. The moderate increase in the number of arterial links is due to added links needed to maintain consistency with the greater number of TAZs. The large increase in the number of collector links is due to:

- added links due to finer zone grain , and
- added transit station PNR centroid connectors are coded as collectors

TPB staff will continue highway path building, to check the connectivity of the network.

4.6 Transit Network Inputs

The 2007 transit network inputs to the regional travel model were exported from the TPBMAN geodatabase using COGTools. As mentioned in section 4.5, due to software bugs in TPBMAN/COGTools, Cube Base software was used to make final corrections to the transit network inputs. TPB staff has developed transit network building/skimming scripts. This work involved converting AEMS- based FORTRAN programs to Cube /Voyager scripts. These include development of:

- PNR to transit station links
- Walk access links, and
- Auto access link

Standard transit network building scripts developed from 2,191 TAZ based travel model version were preserved with minor modifications. These include transit network skimming for Commuter rail, Metrorail, bus-only, and bus plus rail.

Currently, network path verification work is underway. All transit support files for transit building will utilize what's produced from the TPBMAN geodatabase.

4.7 Screenline Layer Development

A screenline is an imaginary line, usually along a physical barrier, such as a river or railroad tracks, splitting a study area into two or more parts. The term screenline is sometimes used generically to refer to three different types of imaginary lines: cordons, screenlines, and cutlines. This section of the report documents the screenline adjustment procedure. TPB currently uses about 35 screenlines (numbered 1-38, with some unused numbers) to validate the travel demand model to observed traffic counts. These are shown in Figure 20 and Figure 21.[16]

Highway networks used in the TPB travel model do not include an explicit entity representing screenlines. Instead, each road link that would have been intersected by a screenline carries a screenline code, from 1 to 38. TP+ summary scripts use this screenline code to sum up the estimated volumes from the model and the observed ground counts, so that a comparison can be made for how well the estimated traffic is matching the observed counts, screenline by screenline. There is a problem, however, with this set-up. In the process of network editing, if an analyst needs to split a link that carries a screenline count, the two new links will automatically carry the preexisting screenline code, even though only one of them should (whichever one actually is intersected by the screenline). The analyst is supposed to remove the screenline code from one of the two new links. If this is not done, summary programs will double count both the estimated volume and the observed count at that location. Similarly, if an analyst is adding a new link, the burden is on the analyst to notice whether or not the link would be intercepted by a screenline (which does not exist in the highway network) and add the appropriate screenline code to the link. If the analyst fails to do so, then that link is left out of the screenline summaries.

When an effort was made to move to a new GIS-based system to edit and manage highway and transit networks (currently called TPBMAN), it was decided that this would be a good time to add a screenline entity to the data model used for the highway network. With the new screenline entity, the analyst would no longer have to add or remove screenline codes from road links. There would be an automated GIS process (spatial overlay) that would determine which screenlines intersected which links and then add (or remove) the appropriate screenline code.[17] Of course, to make this new process work, this requires that the screenline entity (layer) be made very accurate, so that the screenlines truly intersect the intended road links. Furthermore, the screenlines that are currently used in the travel demand modeling process were "drawn" in ArcGIS with their location selected based on the year-2000 TIGER network. Recently, the model network was conflated to the NAVTEQ street network thereby changing the geometry of some highway links. This was yet another reason why the screenline layer needed to be adjusted to the highway network.

[16] Robert Snead, *FY-2009 Network Documentation: Highway and Transit Network Development.* (Draft report, Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board (COG/TPB)), 2008.

[17] The automated process is still being developed.

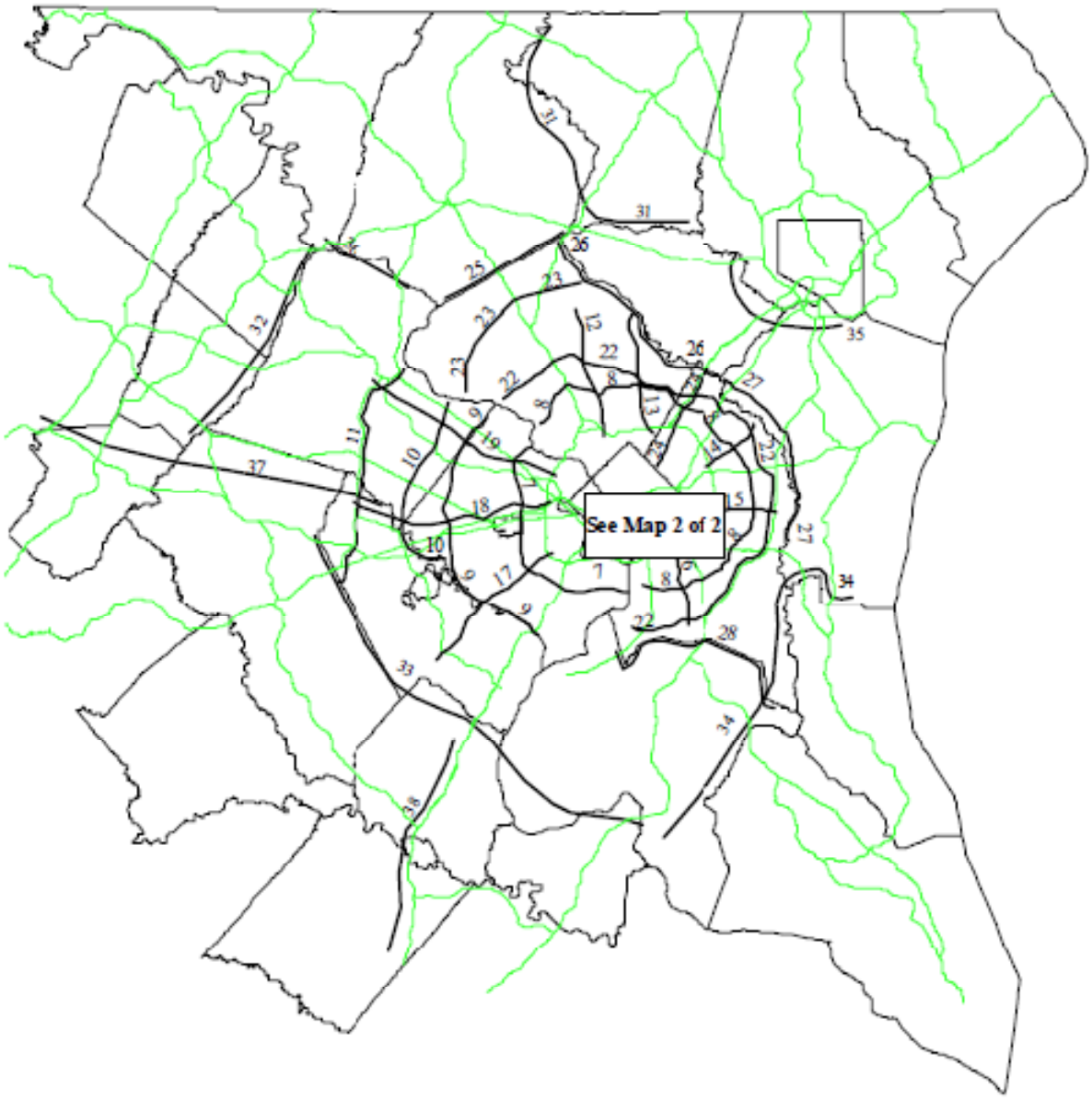


Figure 20 Highway Network Screenlines: Map 1 of 2

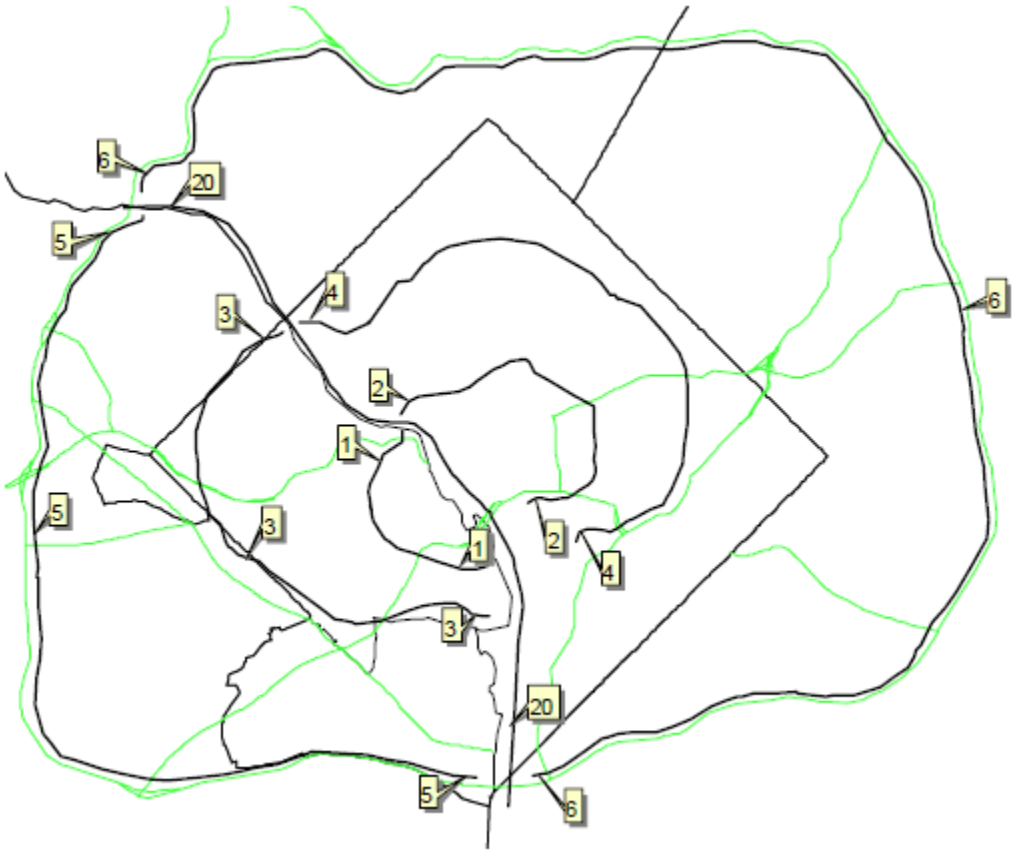


Figure 21 Highway Network Screenlines: Map 2 of 2

For the purposes of screenline adjustment, the conflated network and the screenline layer were exported into ArcGIS from the TPBMAN database[18]. In addition to the network layer, files containing TPB jurisdictions, TPB zone system, and so-called "rings" were considered in relocation of the screenlines. Although the ring area system is no longer used as much as it was in the past, it is still implicitly used, since, for example, "DC core" and "Arlington core" together are equivalent to the combined area of the Ring 0 and Ring 1 (See Figure 22).[19]

[18] Daniel Consultants, Inc., *User's Guide for the CogTools Network Management System,* 2009.
[19] Mark S. Moran to Ronald Milone, "The definition of the DC and Arlington core in the 3,722-TAZ area system," Memorandum, June 1, 2010.

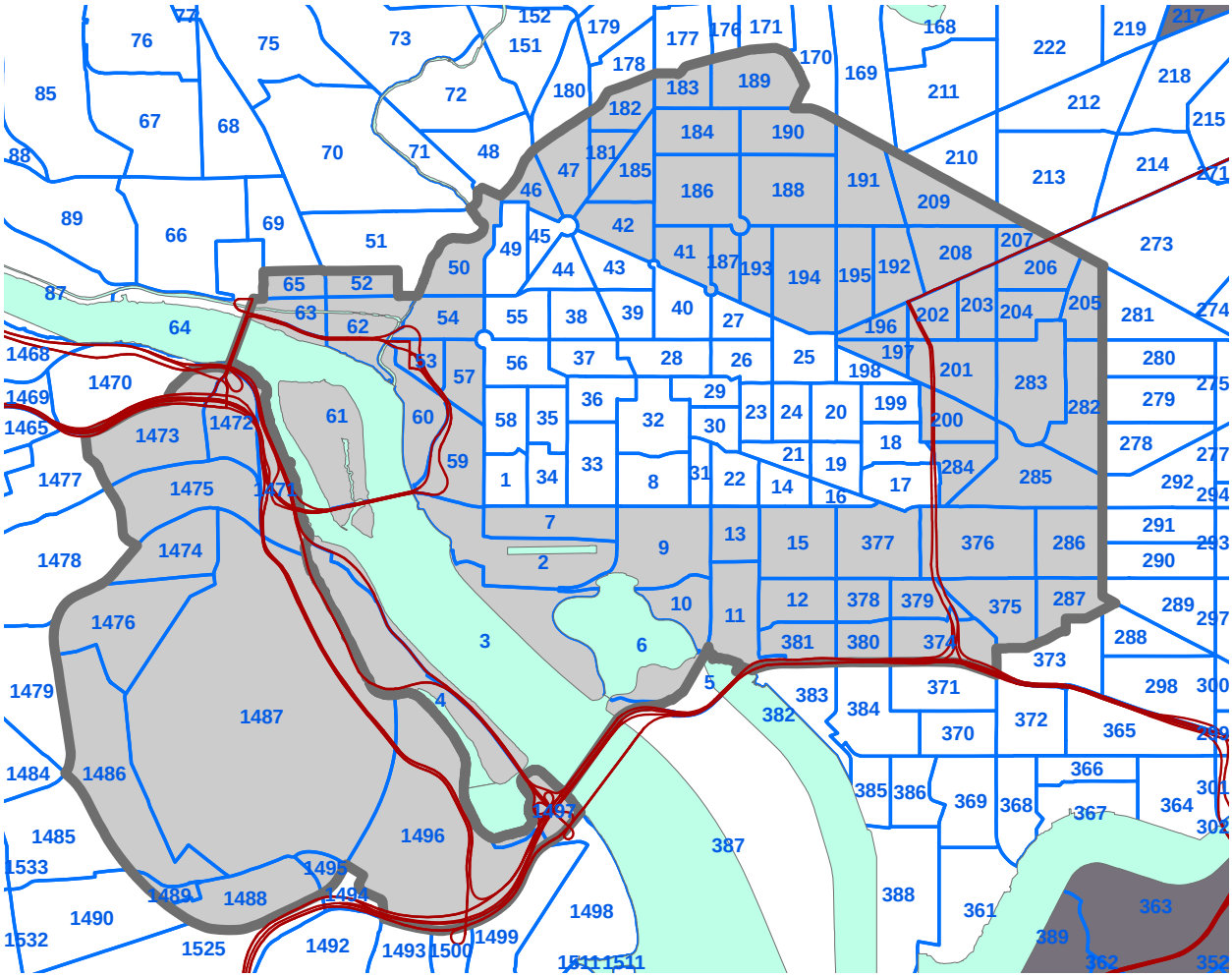


Figure 22 Map of the TAZs in the DC core and Arlington Core (3,722-TAZ system)

In the first step of the process, the screenlines were modified to ensure that they do not intersect freeway ramps. Very few counts are available on ramps and thus it would be undesirable to include them in the calibration process. An example is shown in Figure 23, where the blue line corresponds to old screenline and red corresponds to the new screenline.

Next, screenlines that appeared to go "through" network nodes were shifted to make it easier for the user (and eventually the automated process) to identify which link the screenline actually intersects. Figure 24 shows an example.

Screenlines that intersected the same highway in two or more locations that were closely spaced were rerouted to avoid multiple crossings. Figure 25 shows an example where the old (blue) screenline intersects the highway in 3 locations, while the new alignment allows for only one intersection.

In addition, screenlines 5 and 6 were re-aligned to ensure that they are located just inside the Beltway (not crossing it or deviating too far from it).

The northern portion of screenline 3 was moved inside the Arlington County jurisdictional boundary. In addition, the northern end of screenline 3 was extended to cross Chain Bridge Rd.

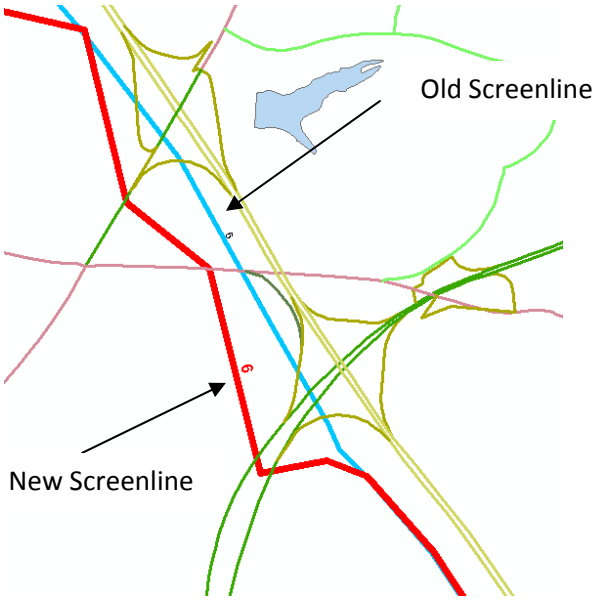


Figure 23 Screenline Adjustment: Avoiding Ramps

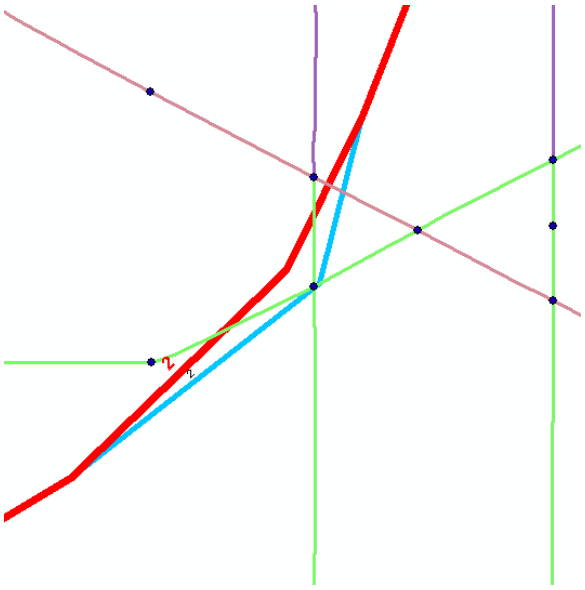


Figure 24 Screenline Adjustment: Avoiding Nodes

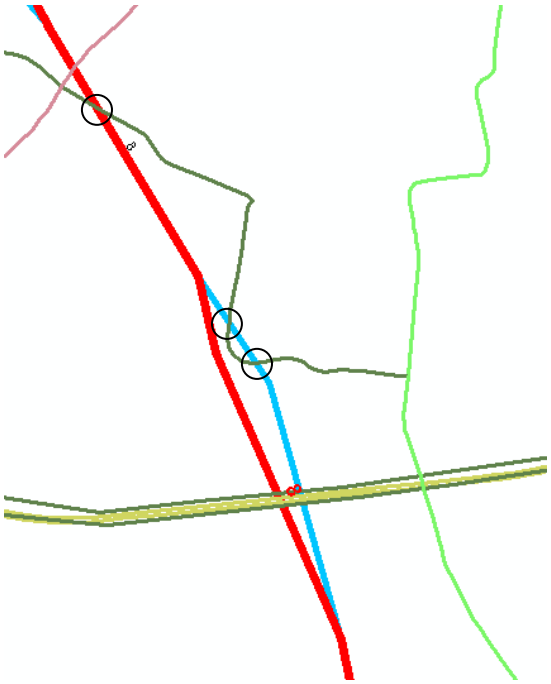


Figure 25 Screenline Adjustment: Avoiding Screenline Crossing a Highway Facility in Many Locations

Appendix A 2009 CLRP and FY2010-2015 TIP Air Quality Conformity Inputs (Highway and HOV)

FY-2010 Network Documentation: Highway and Transit Network Development

Appendix A
2009 CLRP AND FY2010-2015 TIP AIR QUALITY CONFORMITY INPUTS
(Highway and HOV)

Agency	Project ID	Improv.	Facility	From	To	Facility from	Facility to	Lanes from	Lanes to	Under Const. or ROW acquired?	Complt. Date or Status
District of Columbia											
DDOT			New York Avenue	Bladensburg Road							beyond 2010
DDOT			New York Avenue	Florida Avenue							beyond 2010
~~DDOT~~			~~Southeast/Southwest Frwy Reversible Lanes~~	~~14th Street Bridges~~	~~Pennsylvania Ave. SE~~						
DDOT		Construct	Foxhall Road, N.W.	W Place	Calvert Street						Complete
DDOT	nrs	Construct	Klingle Road Reconstruction	Porter Street	Woodley Road						2012
DDOT		Construct	Minnesota Ave. NE ext.	Sheriff Rd	Meade St. N.E.						2013
DDOT	DP9A	Widen / Realign	South Capitol St. Corridor: Frederick Douglass Bridge	S. Capitol St. (east)	Potomac Ave. (west)	2	2	5	6		2015
DDOT	DP9B	Widen	South Capitol St. Corridor: S. Capitol St.	O St.	Potomac Ave.	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							2015
DDOT	DI7A	Reconstruct/Widen	11th St. Bridges (2 spans)	I-295	Southeast Freeway			8	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
Maryland											
MDOT Freeway											
MDSHA	MI2q	Construct	I-270	Interchange at Watkins Mill Road Extended		1	1	8	8+2	No	2020
MDSHA	MI2SHOV MI2S	Construct	I-270/US 15 Corridor	Shady Grove Metro	I-70	1	1	varies		No	2030
MDSHA		Reconstruct	I-270	Interchange at MD 121		1	1	1	2	No	2010
MDSHA	MI4	Widen	I-70	Mount Phillip Road	MD 144FA	1	1	4	6	No	2009
MDSHA	MI1f	Construct	I-95	Contee Road Relocated w/ CD Roads		1	1	8	8+4	No	2020

Note: Shaded areas represent changes from the 2008 CLRP and the FY2009-2014 TIP

Appendix A
2009 CLRP AND FY2010-2015 TIP AIR QUALITY CONFORMITY INPUTS
(Highway and HOV)

Agency	Project ID	Improv.	Facility	From	To	Facility from	Facility to	Lanes from	Lanes to	Under Const. or ROW acquired?	Complt. Date or Status
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	Construct	I-95/I-495 (Capital Beltway)	Interchange at Greenbelt Metro		1	1	8	8+2	No	2015
MDSHA	VA	Widen	I-95/I-495 Woodrow Wilson Bridge (see Virginia listing)	MD 210 Interchange	Virginia Line	1	1	6	12	Yes	VI2K 2009
MDSHA	MI1m	Construct	I-95/I-495/Arena Drive Interchange	MD 214	MD 202	1	1	8	8+2	Yes	2009
MDSHA	MP12	Construct	Intercounty Connector	I-270	I-95 / US 1	0	1	0	6	Yes	2012
MDOT Primary											
MDSHA	MP10a	Reconstruct	US 1 (Baltimore Avenue)	College Avenue	Cherry Hill Road	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
MDSHA	MP9b	Construct	MD 2/4 at Lusby Southern Conn. Rd.	MD 765	MD 2/4 at Lusby	0	2	0	3	No	2020
MDSHA	MP9c	Construct	MD 2/4	MD 231 Intersection Improvs.		2	2	4	6+2	No	2010
MDSHA	MP2c	Construct	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	2010
MDSA		Construct	MD 4 (Pennsylvania Avenue)	Interchange at Suitland Pkwy		2	5	4	6	No	2011
MDSHA	MP3a	Upgrade/ Widen	MD 4	MD 223	I-95/I-495	2	1	4	6	No	2020
MDSHA		Construct	MD 5 (Branch Avenue)	Interchange at Earnshaw/Burch Hill Roads		2	5	4	6	No	2015
MDSHA	MP4f	Upgrade/ Widen	MD 5 (Branch Avenue)	US 301 at T.B.	North of the Capital Beltway	2	5	4	6	No	2030
MDSHA		Construct	MD 5 (Branch Avenue)	Interchange at MD 373/Brandywine Road Rel.		2	5	4	6	No	2015
MDSHA		Construct	MD 5 (Branch Avenue)	Interchange at Surratts Road		2	5	4	6	No	2015
MDSHA	MP4k	Construct	MD 5 Relocated at Hughesville	End of divided highway south of Hughesville	End of divided highway north of Hughesville	2	2	3	3	complete	2007
MDSHA	MP15		US 15 Catoctin Mountain Highway	@ Monocacy Blvd		1	1	4	4	No	2010
MDSHA		Upgrade	US 29 (Columbia Pike)	Musgrove/Fairland Road		2	5	6	6	No	2015

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						from	to	from	to		
MDSHA		Upgrade	US 29 (Columbia Pike)	Stewart Lane, Tech Rd., Greencastle Road, and Blackburn Road		2	5	6	6	No	2030
MDSHA	MP5a	Upgrade	US 29 (Columbia Pike)	Sligo Creek Parkway	south of MD 193	2	5	6	6	No	2020
MDSHA	MP5c	Upgrade	US 29 (Columbia Pike)	north of MD 193	south of MD 650	2	5	6	6	No	2020
MDSHA	MP5e	Upgrade	US 29, Columbia Pike	north of MD 650	Howard County Line	2	5	6	6	No	2020
MDSHA		Construct	MD 75 Relocated	MD 80		0	4	0	4	No	2020
MDSHA	FP1B	Construct	MD 80/MD 355 Relocated	South of Urbana	North of Urbana	0	2	0	4	Yes	2010
MDSHA	FP2	Widen	MD 85 (Buckeystown Pike)	English Muffin Way	north of Grove Road	2	2	2/4	4/6	No	2020
MDSHA	MP12c	Construct	MD 97 (Brookeville Bypass)	South of Brookeville	North of Brookeville	0	2	0	2	No	2030
MDSHA		Upgrade	MD 97 (Georgia Avenue)	interchange @ MD 28 (Norbeck Road)		2	2	6	6	No	2020
MDSHA		Upgrade	MD 97 (Georgia Avenue)	interchange @ Randolph Road		2	2	6	6	No	2015
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
MDSHA	MP8e	Widen	US 301	North of Mount Oak Road	US 50	2	5	4/6	6+2	No	2020
MDSHA	MP16	Construct	US 340 Interchange	@US 340 at Jefferson Tech Park		1	1	4	4	No	2010

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MDSHA	BRAC	Reconstruct	BRAC Intersection Improvements near the National Naval Medical Center, Bethesda								2011
MDSHA		Construct	MD 355	Montrose/Randolph Rds.	CSX RR	2	2	6	6	No	2010
MDSHA		Reconstruct	MD 450	CSX grade separation at Peace Cross		2	2	4	4	Yes	2009
MDOT Secondary											
MDSHA	MS33	Widen	MD 27	MD 355	A 305	2	2	4	6	Yes	2010
MDSHA	MS3e	Construct	MD 28/ West Montgomery Ave.	MD 586/MD 911		2	2	2	4	No	2020
MDSHA	MS2f	Construct	MD 28 (Norbeck Road) / MD 198 (Spencerville Road)	MD 97	I-95	2	2	2/4	4/6	No	2020
MDSHA	MS32	Widen	MD 117	I-270	Great Seneca Park	2	2	2	4	No	2020
MDSHA	MS34	Widen	MD 121	I-270	W. Old Baltimore Rd.	3	3	4	6	No	2010
MDSHA	MS6b	Widen	MD 124 (Woodfield Road)	Midcounty Highway	S. of Airpark Dr.	2	2	2	6	No	2020
MDSHA	MS6c	Widen	MD 124 (Woodfield Road)	S. of Airpark Dr.	N. of Fieldcrest Rd.	2	2	2	6	Yes	2010
MDSHA	MS6d	Widen	MD 124 (Woodfield Road)	N. of Fieldcrest Rd.	Warfield Road	2	2	2	6	No	2020
MDSHA	MS10b	Widen	MD 201 (Kenilworth Ave.)	Rittenhouse Road	Pontiac St.	2	2	4	6	No	2020
MDSHA	PGS6	Construct	MD 212 Relocated (Ammendale/Virginia Manor	US 1	I-95	3	2	2	4	Yes	2008
MDSHA	MS30	Widen/ Construct	MD 414 Extended	MD 210	I-295	0	3	0	4	Yes	2009
MDSHA	MS18d	Widen	MD 450 (Annapolis Road)	Stonybrook Drive	West of MD 3	2	2	2	4	No	2020
MDSHA	MS20c	Construct	MD 475 (East Street Extended)	South Street	proposed Monocacy Boulevard	0	3	0	4	Yes	2010
Montgomery County											
~~Mont.Co.~~	~~MC11b~~	~~Construct~~	~~A-305 - MidCounty Highway Extended~~	~~Stringtown Road~~	~~MD 27 (Ridge Road)~~	~~0~~	~~3~~	~~0~~	~~4~~	~~No~~	~~2010~~

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Mont.Co.	MC11c	Construct	A-305 - MidCounty Highway Extended	MD 355	Stringtown Road	0	3	0	2	No	2012
Mont.Co.	nrs	Construct	Burtonsville Access Rd.	MD 198	School Success Rd.	0	4	0	2		2011
Mont.Co.	nrs		Century Blvd./Crystal Rock Loop	existing Century Blvd.	Crystal Rock Drive		3		4	No	2010
Mont.Co.	nrs	Construct	Chapman Avenue	Randolph Road	Old Georgetown Road	0	3	0	2	No	2013
Mont.Co.	MC38a	Construct	Citadel Avenue Extended	dead end of existing road south of Marinelli Road	Nicholson Lane	0	4	0	2	No	2010
Mont.Co.	MC44	Widen	Fairland Rd.	US 29	Briggs Chaney Rd.	3	3	2	3	Complete	2008
Mont.Co.	MC5d	Construct	Father Hurley Blvd.	Wisteria	Germantown Road	0	2	0	4	No	2011
Mont.Co.	MC5c	Widen	Father Hurley/ Ridge Rd.	I-270	existing MD 27	2	2	4	6	No	2010
Mont.Co.	MC7a	Widen	Goshen Rd. South	South of Girard Street	1000 feet north of Warfield Road	3	3	2	~~4~~	No	2015
Mont.Co.	MC43	Construct	I-4 Bridge over I-270	Century Boulevard	Milestone Center Drive	0	3	0	4	No	2015
~~Mont.Co.~~	~~MC41~~	~~Widen~~	~~Longdraft Road~~	~~MD 124~~	~~MD 117~~	~~3~~	~~3~~	~~2~~	~~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	6	No	2020
Mont.Co.	MC14g	Widen	Middlebrook Road Ext. Widening	MD 355	M-83	2	2	3	6	No	2015
Mont.Co.	MC15b	Construct	Montrose Parkway East	Parklawn Drive	MD 586 - Veirs Mill Road	0	2	0	4	No	2015
Mont.Co.	MC15	Construct	Montrose Parkway West	Montrose Road (Tower Oaks Blvd.)	old' Old Georgetown Road	0	2	0	4	No	2009
Mont.Co.	nrs	Construct	Nebel St Extended	Randolph Rd	Target Store Site	0	3	0	4		2010
Mont.Co.	MC18a	Widen	Norbeck Rd. Ext.	MD 28	MD 198	3	3	2	4	No	2020
Mont.Co.	nrs	Construct	Observation Drive Extended	existing terminus	MD 355 Bypass	0	3	0	2	No	2020

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Mont.Co.	MC42	Construct	Randolph Road	Parklawn Drive	Rock Creek Park	2	2	4	5	No	2011
Mont.Co.	MC34	Widen	Snouffer School Rd. Fac. Planning	Goshen Rd.	MD 124	3	3	2	4	No	2015
~~Mont.Co.~~	~~MC28a~~	~~Widen~~	~~Stringtown Rd. Ext.~~	~~MD 355~~	~~Piedmont Road~~	~~3~~	~~3~~	~~2~~	~~4~~	~~No~~	~~2015~~
Mont.Co.	MC28	Construct	Stringtown Rd. Ext.	I270/ MD 121 int.	existing Stringtown Rd. @ MD 355	0	3	0	4	No	2009
Mont.Co.	MC23a	Construct	Watkins Mill Rd. ext.	I 270 (future interchange)	MD 355	0	2	0	6	No	2010
Mont.Co.	MC13	Construct	Woodfield Rd.(MD 124 Ext.)	1200' North of MD 108	MD 27	0	2	0	2		2010
Prince Georges County											
PG Co.	PGS3a	Widen	Addison Road	MD 214	Walker Mill Road	3	3	2	4	Yes	2014
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.	PGS6	Widen	Ammendale/Virginia Manor Road	I-95	west of US 1	3	3	2	6	Yes	2008
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.	PGS74b	Construct	Bell Station Road	Annapolis Road (MD 450)	Church Road	0	4	0	4	Yes	2006
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)	Old Chapel Road	4	4	2	4	No	2015
PG Co.	PGS10	Widen	Brandywine Road	north of Piscataway Road (MD 223)	Thrift Road	4	4	2	4	No	2020
PG Co.	PGS76	Widen	Briggs Chaney Road	Montgomery County line	Old Gunpowder Road	4	4	2	4	Yes	2010
PG Co.	PGS11	Widen	Brightseat Road	Sheriff road	MD 214	4	4	2	4	Yes	2004

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						from	to	from	to		
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	2004
PG Co.	PGS16b	Construct	Campus Way North Extended	south of Lottsford Road	Evarts Drive	0	4	0	4	No	2020
PG Co.	PGS17	Widen	Cherry Hill Road	Montgomery County line	Baltimore Avenue (US 1)	3	3	2	4	No	2020
PG Co.	PGS18	Widen	Church Road	Oak Grove Road	Annapolis Road (MD 450)	4	4	2	4	No	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	2025
PG Co.	PGS21b	Widen	Contee Road	Briarwood Drive	US 1	4	4	2	4	No	2000
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	2015
PG Co.	PGS25	Widen	Fisher road	Brinkley Road	Holton Lane	4	4	2	4	No	2025
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	Indian Head Highway (MD 210)	4	4	2	4	No	2025
PG Co.	PGS30a	Widen	Good Luck Road	east of Kenliworth Avenue (MD 201)	Cipriano Road	4	4	2	4	No	2025
PG Co.	PGS30b	Widen	Good Luck Road	Cipriano Road	Greenbelt Road (MD 193)	4	4	2	4	No	2025

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PG Co.	PGS87	Widen	Governor Bridge Road	US301	Anne arundel County	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	2013
PG Co.	PGS34b	Construct	Hill Road	ML King Jr Highway (MD 704)	Sheriff Road	0	4	0	2	No	2018
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	Indian Head Highway (MD 210) at Eastover	Kerby Hill Rd.	4	3/4	2	4	No	2015
PG Co.	PGS38b	Widen	Livingston Road	Piscataway Creek	Farmington Road	4	4	2	4	No	2020
PG Co.	PGS40a	Widen	Lottsford Road	Archer Lane	Enterprise Road (MD 193)	3	3	2	4	No	2011
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
PG Co.	PGS45	Widen	Mitchellville Road	Mount Oak Road	Collington Road (MD 197)	4	4	2	6	Yes	2000
PG Co.	PGS89	Widen	Mt. Oak	Church Road	Mitchellville Road	3	3	2	4	No	2009
PG Co.	PGS46	Widen	Murkirk Road	west of Baltimore Avenue (US 1)	Odell Road	4	4	2	4	No	2020
PG Co.	nrs	Construct	National Harbor Main Circulation Roads	I-95/I-295 Interchange	Waterfront Parcel, National Harbor	0	4	0	4/6		2008
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	2010

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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	4	4	2	4	No	2010
PG Co.		Widen	Oxon Hill Road	National Harbor Entrance	Fort Foote Rd - North	4	4	2	4	Yes	2011
PG Co.	PGS81	Construct	Presidential Parkway	Suitland Parkway	Melwood Road	0	3	0	6	No	2025
PG Co.		Construct	Regency Parkway/ Regency Lane	Regency Lane	Hil-Mar Drive	0	4	0	4	Complete	2007
PG Co.	PGS54	Widen	Rhode Island Avenue	University Boulevard (MD 193)	Baltimore Avenue (US 1)	4	4	2	4	No	2015
PG Co.	PGS55a	Widen	Ritchie Marlboro Road	Ritchie Rd	White House Road	3	3	2	4	No	2003
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	4	4	2	4	Yes	2020
PG Co.	PGS56e	Widen	Ritchie Road/Forestville Road	Alberta Drive	Edgeworth Drive	4	4	2	4	Complete	2004
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)	4	4	2	4	No	2020
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

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PG Co.	PGS65	Widen	Temple Hill Road	Piscataway Road (MD 223)	St. Barnabas Road (MD 414)	4	4	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
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	4	4	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
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	Livingston Road	3	3	2	4	No	2020
City of Frederick											
City of Frederi	FS2	Construct	Monocacy Blvd	Hughes Ford Rd.	Gas House Pike	0	3	0	4	Yes	2009
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

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						from	to	from	to		
BMC	AA15a	Widen	I-295	I-195	MD 100	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	AA/Prince George Co. Line	2	2	4	6		2030
BMC	AA5c	Widen	MD 32	BW Parkway	Howard County Line		1	4	8		2020
BMC	AA14C	Widen	US50 / MD 301	AA / PG line	Bay Bridge	1	1	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
BMC	AA29	Widen	MD 177	MD 100	South Carolina Avenue	2	2	3/2	5		2020
BMC	AA30	Widen	MD 198	MD 32	BW Parkway	2	2	2	4		2015
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		2020

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Agency	Project ID	Improv.	Facility	From	To	Facility from	Facility to	Lanes from	Lanes to	Under Const. or ROW acquired?	Complt. Date or Status
BMC	nrs	Construct	MD 140 (3 new interchange)	@ MD 97S, Center St. & Englar Rd			1	-	-		2020
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
Howard County											
BMC	HW1b	Widen	I-70	US 29	US 40	1	1	4	6		2020
BMC	HW1a	Reconstruct	I-70 (partial to full interchange)	@ Marriotsville Road		1	1				2020
BMC	HW19	Widen	I-95	Howard / PG line	Balt. / Howard line	1	1	8	10		2020
BMC	nrs	Reconstruct	US 1 (interchange)	@ MD 175							2015
BMC	HW10d	Widen	US 29	I-70	MD 100		5	6	8		2030
BMC	HW10b	Widen	US 29 NB	S. of MD 175	Middle Patuxent River		5	4	6		2010
BMC	HW3c	Widen	MD 32	Cedar Lane	Anne Arundel County Line		1	4/6	8		2015
BMC	HW3b	Widen	MD 32	MD 108	I-70		1	2	4		2015
BMC	HW3d	Widen	MD 32	I-70	Carroll County Line		2	2	4		2030
BMC	HW3e	construct/ reconstruct	MD 32 (interchanges)	@ I-70/ @ MD 144 @ Linden Church Rd/Dayton Shop @Rosemary Lane							2015
BMC		Construct	MD 32 (interchange)	@ Burntwoods Rd.							2009
BMC	HW6c	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		2011
BMC	HW6e	Widen	MD 108	MD 104	MD 175	2	2	2	4		2020

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BMC	HW7d	Widen	MD 175	US 1	Anne Arundel County Line		2	2	5		2020
BMC	HW8b	Widen	MD 216	West of US 29	Sanner Road		3	2	4		2020
BMC	nrs	Construct	Dorsey Run Rd., North	MD 103	MD 175			0	4		2011
BMC	nrs	Construct	Dorsey Run Rd., South	MD 175	Gulford Rd.			0	4		2010
BMC	HW16C	Widen	Gorman Road	Stephens Road	US 1		3	2	3		2025
BMC	HW18a	Widen	Marriottsville Road	MD 99	US 40		3	2	6		2015
BMC	nrs	Widen	Patuxent Range Road	US 1	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
BMC	HW14c	Widen	Snowden River Parkway	MD 100	Broken Land Parkway		3	4	6		2020
Federal Lands											
Fed. Lands	FED2	Widen	Old Mill Rd.(future Mulligan Rd.)	US 1	VA 611 (Telegraph Rd.)	4	4	2	4	Yes	2012
Virginia											
VDOT Freeway											
VDOT	VI1w	Widen	I-66 HOV during peak	US 15 (includes intch. reconst.)	US 29 (Gainesville)	1	1	4	6	No	2020
VDOT	VI1z	Reconstruct	I-66 Interchange	@ US 29 (Gainesville)		1	1	-	-	No	2014
VDOT	VI1ca	Widen	I-66 HOV during peak	US 29 (Gainesville)	VA 234 (Prince William Parkway)	1	1	4	8	Yes	2009
VDOT	VI1ab	Reconstruct	I-66 Interchange	@ I-495 (Capital Beltway)		1	1	-	-	Yes	2013
VDOT	VI1aj	Construct	I-66 Vienna Metro Station HOV Ramp	Transit Ramps - from EB to WB	at Vaden Drive	1	1	0	1	No	2014
VDOT		Widen	I-66 EB Auxiliary Lanes	South of Gallows Road	Off Ramp I-495 SB	1	1	3+1	3+1 +2	No	2030

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						from	to	from	to		
VDOT		Widen	I-66 WB Auxiliary Lanes	On Ramp from SB I-495	South of Gallows Road	1	1	3+1	3+1 +2	No	2030
VDOT	VI1ah	Widen	I-66 EB Auxiliary Lanes	Cedar Lane	South of Gallows Road	1	1	3+1	3+1 +1	No	2030
VDOT	VI1ai	Widen	I-66 WB Auxiliary Lanes	South of Gallows Road	Cedar Lane	1	1	3+1	3+1 +1	No	2030
VDOT	VI1ae	Reconstruct	I-66 WB Operational/ Spot Improvements- extend acceleration/deceleration lanes	Fairfax Dr.	Sycamore St.	1	1	2	3	No	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	2013
VDOT	VI1ag	Reconstruct	I-66 WB Operational/ Spot Improvements	Lee Hwy. / Spout Run	Glebe Rd.	1	1	2	3	No	2013
VDOT	VI2ka	Widen	I-95 (Wilson Bridge and approaches)	VA 241 (Telegraph Rd.)	US 1	1	1	6	12	Yes	2011
VDOT	VI2k	Widen	I-95 (Wilson Bridge and approaches)	US 1	MD 210	1	1	6	12	Yes	2009
VDOT	VI2ac	Reconstruct	I-95 Interchange	@ VA 613 (Van Dorn Street)		1	1	-	-	No	2015
VDOT	VI2p	Widen	I-95 (provide 4th lane)	Newington	VA 123	1	1	6	8	Yes	2011
VDOT	VI2ab	Reconstruct	I-95 Interchange	@ VA 642 (Lorton Road)		1	1	-	-	No	2010
VDOT	VI2d	Construct	I-95 Interchange	@ VA 7900 (Franconia-Springfield Parkway)	LOV Access to & from West/from & to North	-	1	-	-	No	2015
VDOT	VI2r	Widen / Construct	I-395/I-95 HOV/ BUS/ HOT Lanes	Eads St.	VA 234 (Dumfries Rd.)	1	1	2	3	No	2012
VDOT	VI2r	Construct	I-395/I-95 HOV/ BUS/ HOT Lanes	VA 234 (Dumfries Rd.)	VA 610 (Garrisonville Rd.) in Stafford Co.	1	1	0	2	No	2012
VDOT	VI2r	Widen	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT lanes	Eads Street	1	1	1	2	No	2012
VDOT	VI2r	Widen	I 95: HOV / Bus / HOT Ramp:	Eads Street	SB HOV/Bus/HOT Lanes	1	1	1	2	No	2012

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VDOT	VI2r	Remove	I 95: HOV / Bus / HOT Ramp:	SB Express to SB Gen. use lanes	Between S Hayes St. & Washington Blvd.	1	-	1	0	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT Lanes	Shirlington Circle	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	Shirlington Circle	SB HOV/Bus/HOT Lanes	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95 : HOV / Bus / HOT Bus Only Ramp:	NB HOV/Bus/HOT Lanes	VA 420 (Seminary Road) (bus only)	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	VA 420 (Seminary Road) (bus only)	SB HOV/Bus/HOT Lanes	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT to Gen. use lanes	Between VA 236 (Duke St.) and VA 648 (Edsall Rd.)	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT Lanes	VA 7100 (Fairfax Co. Pkwy) (Alban Rd.)	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	VA 7100 (Fairfax Co. Pkwy) (Alban Rd.)	SB HOV/Bus/HOT Lanes	-	1	0	1	No	2012
FFx Co.	BRAC / 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	EPG Southern Loop Road. - AM Only	1	1	0	1	No	2013
FFx Co.	BRAC / VI2rb	Construct	I-95 Reversible Ramp (Colocated w/ existing slip ramp from HOV to GP lanes)	EPG Southern Loop Road. - PM Only	SB HOV/BUS/HOT Lanes - N of Rte. 7100/I 95 I/C	1	1	0	1	No	2011
FFx Co.	BRAC / VI2rc	Construct	I-95 Ramp (Colocated w/ existing slip ramp from HOV to GP lanes)	EPG Southern Loop Road. - PM Only	NB I 95 GP Lanes	1	1	0	1	No	2011
FFx Co.	BRAC / VI2rd	Widen	I-95 Ramp	SB General Purpose Lanes	NB Fairfax Co. Parkway / EPG Southern Loop Road	1	1	1	2	No	2011
~~VDOT~~	~~VI2r~~	~~Delete~~	~~I 95: HOV / Bus / HOT Ramp:~~	~~SB HOV/Bus/HOT to Gen. use lanes~~	~~Between VA 7100 (Fairfax Co. Pkwy.) and VA 638 (Pohick Rd.)~~	~~1~~	~~-~~	~~1~~	~~0~~	~~No~~	~~2010~~
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOT lanes to new bus station, back to NB HOT lanes (bus only)	Between VA 7100 (Fairfax Co. Pkwy.) and VA 642 (Lorton Rd.)	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	SB HOT lanes to new bus station, back to SB HOT lanes (bus only)	Between VA 7100 (Fairfax Co. Pkwy.) and VA 642 (Lorton Rd.)	-	1	0	1	No	2012

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VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT to Gen. use lanes	Between VA 7100 (Fairfax Co. Pkwy.) and VA 642 (Lorton Rd.)	0	1	0	1	No	2012
~~VDOT~~	~~VI2r~~	~~Construct~~	~~I 95: HOV / Bus / HOT Ramp:~~	~~SB HOV/Bus/HOT to Gen. use lanes~~	~~Between VA 123 (Gordon Rd.) & VA 3000 (Prince William Pkwy.)~~	~~-~~	~~1~~	~~0~~	~~1~~	~~No~~	~~2010~~
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	SB Gen Purpose Lanes to SB HOV/Bus/HOT lanes	Between VA 642 (Lorton Rd) and US 1	-	1	0	1	No	2012
VDOT	VI2r	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	2012
VDOT	VI2r	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	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	NB HOV/Bus/HOT to Gen. use lanes	Between VA 610 (Cardinal Rd.) & VA 234 (Dumfries Rd.)	-	1	0	1	No	2012
VDOT	VI2r	Construct	I 95: HOV / Bus / HOT Ramp:	SB Gen Purpose Lanes to SB HOV/Bus/HOT lanes	Between Dumfried Rd. and Joplin Rd.	-	1	0	1	No	2014
VDOT	VI2r	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	2014
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	-	-	No	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
VDOT	VI4Iaux	Widen	I-495 SB Auxiliary Lane	North of Hemming Ave. Underpass	1. mi. East of I-95/395/495	1	1	4+2	5+1	Yes	2013
VDOT	VI4Iaux	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	VI4Iaux	Widen	I-495 SB Auxiliary Lane	On Ramp from Braddock Rd	North of Hemming Ave. Underpass	1	1	4+2	5+2	Yes	2030

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						from	to	from	to		
VDOT	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	Widen	I-495 NB Auxiliary Lane	On Ramp from Route 50	Off Ramp to I-66	1	1	4+2	5+2	Yes	2013
VDOT	VI4Iaux	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	VI4Iaux	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	VI4Iaux	Widen	I-495 NB	On ramp from EB I 66	Off Ramp to Rte 7	1	1	4+2	5+2	Yes	2013
VDOT	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	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	VI4Iaux	Widen	I-495 SB Auxiliary Lane	On Ramp from Route 267	Off Ramp to Route 123	1	1	4+2	5+4	Yes	2013
VDOT	VI4Iaux	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 VA 193 (Georgetown Pike)	1	1	8	8+2	Yes	2030
VDOT	VI4ia	Construct	I-495 HOT	S. of VA 193 (Georgetown Pike)	S. of Old Dominion Dr.	1	1	8	8+2	Yes	2030
VDOT	VI4IHOT	Construct	I-495 HOT	S. of Old Dominion Dr.	Hemming Ave. Underpass	1	1	8	8+4	Yes	2013

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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 movements	@ VA 267 (Dulles Toll Road)	1	1	-	-	Yes	2013
VDOT	part of VI4IHOTa	Construct	I-495 HOT Lanes Interchange	Provides SB HOT to EB HOV & WB HOV to NB HOT movement	@ VA 267 (Dulles Toll Road)	1	1	-	-	Yes	2030
VDOT	part of VI4IHOTa	Relocate / Reconstruct	I-495 HOT Lanes Interchange	Move ramps from left side to right side: NB GP lanes to WB DTR; SB GP lanes to EB DTR	@ VA 267 (Dulles Toll Road)	1	1	1	1	Yes	2030
VDOT		Construct	I-495 Interchange Ramp	SB I-495	WB Dulles Airport Access Highway (DAAH)	0	1	0	1	Yes	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	-	-	No	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 to NB, & EB to NB	@ 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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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 combine with right side off ramp from NB I 495 to WB I 66	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	2030
VDOT	nrs	Reconstruct	VA 267 (Dulles Toll Road) Interchange	@ VA 674 (Hunter Mill Road)		-	-	-	-	No	2012
VDOT	MW1	Widen	Dulles Airport Access Road	Dulles Airport	VA 123	1	1	4	6	No	***2017***
VDOT	VP21d	Widen	Dulles Greenway	Goose Creek Bridge	VA 901 (Claiborne Parkway)	1	1	4	6	No	2005
VDOT	VP21e	Widen	Dulles Greenway	VA7/15 Bypass	Goose Creek Bridge	1	1	4	6	No	2007
VDOT	VP21b	Construct	Dulles Greenway Interchanges	@ VA 653 & @ Battlefield Parkway		1	1	-	-	No	2007
VDOT Primary											
VDOT	VP1ac	Widen	US 1	Stafford County Line	Joplin Rd.	2	2	4	6	No	2016
VDOT	VP1ab	Widen	US 1	Joplin Rd.	Brady's Hill Road	2	2	4	6	No	2011
VDOT		Widen	US 1	Brady's Hill Road	Cardinal Drive	2	2	4	6	No	2020
VDOT		Widen	US 1	Cardinal Drive	Blackburn Dr/Neabsco Mills Rd	2	2	4	6	Yes	2010
VDOT		Widen	US 1	Blackburn Dr/Neabsco Mills Rd	Featherstone Road	2	2	4	6	No	2020
VDOT	VP1a	Widen	US 1	Featherstone Rd.	VA 235 South	2	2	4	6	No	2015
VDOT	VP1u	Widen	US 1	VA 235 South	VA 235 North	2	2	4	6	No	2015

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Agency	Project ID	Improv.	Facility	From	To	Facility from	Facility to	Lanes from	Lanes to	Under Const. or ROW acquired?	Complt. Date or Status
VDOT	VP1t	Reconstruct	US 1 (bus/right-turn lanes)	VA 235 North	SCL Alexandria (I-95 Capital Beltway)	2	2	6	6	No	2025
VDOT	VP1o	Widen	US 1 (Neabsco Creek Bridge)	Cardinal Dr.	Blackburn Rd.	2	2	4	6	No	2009
VDOT	VP1p	Widen	US 1 (part of 1/123 interchange)	Occoquan Rd.	Annapolis Way	2	2	4	6	Yes	2017
VDOT	nrs	Reconstruct	US 1 Interchange	@ Russell Road		1	1	-	-	No	2010
VDOT	VP2s	Widen / Upgrade	VA 7	Route 9	Market Street (Leesburg)	2	1	4	6	No	2020
VDOT	VP2ja	Widen	VA 7 Bypass	VA 7 West	US 15 South (South King St)	5	1	4	6	No	2025
VDOT	VP2j	Widen	VA 7 Bypass	US 15 South (South King St)	VA 7/US 15 East	5	1	4	6	No	2020
~~VDOT~~	~~VP2g~~	~~Upgrade~~	~~VA 7 (new interchanges)~~	~~VA 7/15 (Leesburg Bypass)~~	~~VA 28~~	~~2~~	~~1~~	~~6~~	~~6~~	~~No~~	~~2015~~
VDOT	VP2m	Widen	VA 7	Reston Avenue	Lewinsville Road	2	2	4	6	No	2020
VDOT		Construct	VA 7	Bridge over Dulles Toll Road				4	6	No	2030
VDOT	VP2ma		VA 7	Rolling Holly Drive	Reston Avenue			4	6	No	2012
VDOT	VP2L	Widen	VA 7	Dulles Toll Rd.	I-495	2	2	6	8	No	2013
VDOT	VP2b	Widen	VA 7	Seven Corners	Bailey's Crossroads	2	2	4	6	No	2020
VDOT	nrs	Reconstruct	VA 7	@ VA 606 (Baron Cameron Ave.)		-	-	-	-	No	2005
VDOT	VP2t	Construct	VA 7 interchange	@ Claiborne Pkwy./West Spine Rd.		-	-	-	-	No	2006
VDOT		Construct	VA 7 interchange	@ Ashburn Villiage Blvd.		-	-	-	-	No	2010
VDOT		Construct	VA 7 interchange	@ Loudoun County Parkway		-	-	-	-	Yes	2010
VDOT		Construct	VA 7 interchange	@ River Creek Parkway / Crosstrail Blvd.		-	-	-	-	Yes	2009
VDOT		Construct	VA 7 interchange	@ VA 659 (Belmont Ridge Rd.)		-	-	-	-	No	2020
~~VDOT~~	~~nrs~~	~~Reconstruct~~	~~VA 7~~	~~@ VA 711 (Williams Gap Road)~~		~~2~~	~~2~~	~~4~~	~~4~~	~~No~~	~~2006~~

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VDOT	nrs	Reconstruct	VA 9	@ VA 662 (Clarks Gap Road)		3	3	-	-	Complete	2008
VDOT	VP4e	Widen	US 15 (James Madison Highway)	US 29	I-66	2	2	2	4	No	2030
VDOT	VP4fa	Widen	US 15 (James Madison Highway)	I-66	VA 234	2	2	2	4	No	2009
VDOT	VP4fb	Widen	US 15 (James Madison Highway)	VA 234	Loudoun County Line	2	2	2	4	No	2030
VDOT	nrs	Reconstruct	US 15 (James Monroe Highway)	Whites Ferry Rd.	Maryland State Line	3	3	2	2	No	2020
VDOT	nrs	Reconstruct	VA 27 Interchange	@ VA 244 (Columbia Pike)		-	-	-	-	No	2013
VDOT	VP6h	Widen	VA 28	Fauquier County Line	VA 652 (Fitzwater Dr.)	3	3	2	4	No	2020
VDOT	VP6ka	Widen	VA 28	VA 652 (Fitzwater Dr.)	VA 619 (Linton Hall Road)	3	3	2	4	No	2020
VDOT	VP6k	Upgrade/ Widen	VA 28	VA 619 (Linton Hall Road)	VA 234 Bypass	3	2	4	6	No	2020
VDOT	nrs	Recons/ Widen	VA 28	Bridge over Broad Run	Replace / Widen to ultimate width	3	3	2	6	Complete	2008
VDOT	VP6b	Widen	VA 28 (Centreville Road)	N. City Limits of Manassas Park	Old Centreville Rd.	2	2	4	6	No	2025
VDOT	VP6e	Widen/ Upgrade	VA 28 PPTA (Phase II)	I-66	VA 7	2	1	6	8	No	2015
VDOT	VP6ea	Widen/ Upgrade	VA 28	Dulles Toll Rd.	VA 606 (Old Ox Rd.)	2	1	6	6	No	2008
VDOT	VP6eb	Construct	VA 28 Interchange	@ VA 209 (Innovation Ave.)		-	-	-	-	Yes	2015
VDOT		Reconst.	VA 28 Interchange	@ New Braddock Rd.		-	-	-	-	No	2008
VDOT	VP6v	Construct/ Upgrade	VA 28 PPTA (Phase I) Interchange	@ VA 668 (McLearen Road)	SASM Interchange to VA 668 upgrade	2	1	6	6	Complete	2006
VDOT	VP6w	Construct/ Upgrade	VA 28 PPTA (Phase I) Interchange	@ Sterling Park	VA 606 to VA 625 upgrade	2	1	6	6	Complete	2008
VDOT	VP6x	Construct	VA 28 PPTA (Phase I) Interchange	@ VA 625 (Church & Waxpool Rds.)		2	2	6	6	Complete	2008
VDOT	VP6y	Construct	VA 28 PPTA Interchange	@Nokes Boulevard		-	-	-	-	No	2009

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VDOT		Reconstruct	VA 28 Intersection	@ Braddock Rd./ Walney Rd.	eliminate left turns from EB Braddock to NB VA 28, eliminate left turns from VA 28 SB to Walney, and from WB Walney to SB VA 28, eliminate through movement from Braddock to/from Walney					Complete	2008
VDOT	VI1bb	Remove	VA 28 SB ramp	at I-66	eliminate left turn movement-EB I-66 off-ramp to SB VA 28					No	2008
VDOT	VI1cc	Remove	VA 28 NB ramp	at I-66	eliminate turn movement-NB VA 28 to WB I-66					No	2008
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	Widen	US 29	US 50	I-66	2	2	4	6	No	2010
VDOT	VP7aa	Widen	US 29	ECL City of Fairfax (vic. Nutley St.)	Espana Court	2	2	4	6	No	2020
VDOT	VP7ab	Complete	US 29	Espana Court	I-495	2	2	4	6	No	2015
VDOT	VSP57a	Construct	Route 29 (Parallel)	US 29 (Lee Highway) (near US 15)	Sommerset Crossing Drive	0	4	0	4	No	2030
VDOT	nrs	Construct	US 50 Traffic Circle	@ US 15 (Gilbert's Corner)		-	-	-	-	Yes	2010
VDOT	VP8q	Widen	US 50	VA 659 Relocated	VA 742 (Poland Rd.)	2	2	4/5	6	No	2015
VDOT	VP8c	Widen	US 50	VA 742 (Poland Rd.)	VA 609 (Pleasant Valley)	2	2	4/5	6	No	2012
VDOT	VP8r	Widen	US 50	VA 609 (Pleasant Valley)	VA 661 (Lee Rd.)	2	2	4/5	6	No	2012
VDOT	VP8n	Widen	US 50 (WBL)	I-66	Waples Mill Road	2	2	2	3	No	2020
VDOT	VP8g	Widen	US 50	I-66	WCL Fairfax City	2	2	6	8	No	2020
VDOT	VP8h	Widen	US 50	ECL City of Fairfax	Arlington County Line	2	2	4	6	No	2020

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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.	Ft. Myer Dr.	2	2	6	6	No	2015
VDOT	nrs	Reconstruct	US 50 Interchange	@Jaguar Trail		2	2	-	-	Complete	2008
VDOT	nrs	Reconstruct	US 50 Interchange	@ VA 120 (Glebe Road)		-	-	-	-	No	2010
VDOT	nrs	Reconstruct	US 50 Interchange	@ VA 27 (Washington Blvd.)		-	-	-	-	No	2015
VDOT	VP8o	Reconstruct	US 50 Interchange	@ Courthouse Road / 10th Street		1	1	6	8	Yes	2012
VDOT		Construct	US 50 Interchange	VA 606 (Loudoun County Parkway)		-	-	-	-	No	2020
~~VDOT~~	~~nrs~~	~~Reconstruct~~	~~US 50 Interchange~~	~~@ VA 110 (N. Scott St.)~~		~~1~~	~~1~~	~~-~~	~~-~~	~~No~~	~~2020~~
~~VDOT~~	~~VP23a~~	~~Widen~~	~~VA 55 (John Marshall Highway)~~	~~Gainesville UM Church~~	~~US 29 @ VA 619~~	~~3~~	~~3~~	~~2~~	~~4~~	~~No~~	~~2014~~
VDOT	nrs	Reconstruct	VA 120 (Glebe Road)	@ VA 244 (Columbia Pike)		-	-	-	-	Complete	2008
VDOT	nrs	Reconstruct	VA 120 (Glebe Road)	@ Arlington Ridge Rd.	left turn lanes	-	-	-	-	No	2005
VDOT	nrs	Reconstruct	VA 120 (Glebe Road)	Military Rd.	DC line	2	2	2	2	No	2020
VDOT	nrs	Reconstruct	VA 120 (Glebe Road)	Quebec St.	2nd St.	2	2	-	-	Complete	2008
VDOT	nrs	Reconstruct	VA 120 (Glebe Road)	W. Glebe Rd.	24th Rd.	2	2	4	4	No	2010
VDOT	nrs	Construct	VA 123 Interchange	@ US 1		-	-	-	-	No	2017
VDOT	VP10g	Widen	VA 123	Route 1	Horner Road	2	2	4	6	No	2008
VDOT	VP10s	Widen	VA 123	Horner Road	Devil's Reach Road	2	2	4	6	No	2015
VDOT	VP10ea	Widen	VA 123 (Ox Road)	VA 722 North	Hooes Rd.	2	2	2	6	Complete	2008
VDOT	VP10h	Widen	VA 123 (Ox Road)	Hooes Rd.	Fairfax Co. Parkway	2	2	4	6	No	2015
VDOT	VP10f	Widen	VA 123 (Ox Road)	Fairfax Co. Parkway	Burke Center Parkway	2	2	4	6	No	2015

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VDOT	VP10r	Widen	VA 123	Burke Center Parkway	Braddock Road	2	2	4	6	No	2020
VDOT	VP10j	Widen	VA 123	I-495	VA 123	2	2	6	8	No	2013
VDOT	VP10l	Widen	VA 123 (Occoquan River Bridge)	South Approach	VA 722 North	2	2	2	6	Complete	2009
VDOT	VP24a	Relocate/ Widen	VA 215	0.5 mi. west of VA 28 intersection	VA 28	4	3	2	4	No	2011
VDOT	nrs	Construct	VA 234 Interchange	@ US 1		-	1	-	-	No	2016
VDOT	VP12d	Widen/ Upgrade	VA 234 (Dumfries Road)	I-95	US 1	2	5	2	4	Complete	2008
VDOT	VP12k	Widen/ Upgrade	VA 234 (Manassas Bypass)	VA 234 S. of Manassas	I-66	5	1	4	6	No	2030
VDOT	VP12o	Construct	Tri-County Parkway (CTB alignment C & D)	I-66	Loudoun County Line	0	2	0	4	No	2025
VDOT	VP13a	Widen	VA 236	Pickett Road	I-395	2	2	4	6	No	2020
VDOT	VP26a	Construct	VA 28 Bypass	VA 234 (Sudley Road) @ Godwin Drive	I-66	0	5	0	6	No	2020
VDOT	VP26b	Construct	VA 28 Bypass	I-66	VA 620 (Braddock Road) @ VA 613	0	2	0	4	No	2025
VDOT Urban											
VDOT	VU28b	Construct	Battlefield Parkway	US 15 south of Leesburg	Dulles Greenway	0	2	0	4	No	2005
VDOT	VU28c	Construct	Battlefield Parkway	Dulles Greenway	Sycolin Road	0	2	0	4	Yes	2007
VDOT	VU28d	Widen/ Upgrade	Battlefield Parkway / Lawson Rd.	Sycolin Road	Kincaid Boulevard	4	2	2	4	Yes	2007
VDOT	VU28da	Construct	Battlefield Parkway	Kincaid Boulevard	Route 7	0	2	0	4	Yes	2009
VDOT	VU28e	Construct	Battlefield Parkway	Route 7	Fort Evans Road	0	2	0	4	Complete	2008
VDOT	VU28f	Construct	Battlefield Parkway	Fort Evans Road	Edwards Ferry Road	0	2	0	4	Yes	2010
VDOT	VU2b	Construct	Clermont Ave.	Eisenhower Ave.	Duke St.	-	3	-	4	No	2015
VDOT	VU30f	Widen	East Elden Street	Herndon Parkway East	Fairfax County Parkway	3	3	4	6	No	2012
VDOT	VU52	Widen	Eisenhower Ave.	Stovall St.	Holland Lane	3	3	4	6	No	2011

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VDOT	nrs	Construct	George Mason Blvd.	Univer. Dr @ Armstrong St.	Univ. Dr. @ Parking Entr.	0	4	0	2	Yes	2009
VDOT	VU35b	Construct	Mill Road Extension	Telegraph Rd.	DMV complex	-	3	-	2	No	2010
VDOT	VU51a	Construct	Potomac Yard Spine Road	US Route 1	Crystal Dr.	0	4	0	4	No	2009
VDOT	VU10b	Widen	Spring Street	Herndon Parkway East	Fairfax County Parkway	3	3	4	6	No	2011
VDOT	VU33	Widen	Sycolin Road	VA 7/US 15 Bypass	SCL of Leesburg	3	3	2	4	No	2015
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	2020
VDOT	nrs	Construct	VA 28 Overpass & Interchg.	Overpass Norfolk-Southern RR B line	Interchange w/Wellington Rd.	2	2	4	4	No	2009
VDOT	VU40	Widen	US 29 (Lee Highway)	US 50	Chain Bridge Road	2	2	4	6	No	2030
VDOT	VU6b	Widen	US 29 (Lee Highway)/US 50	VA 123 (Chain Bridge Road)	Eaton Place	2	2	4	6	No	2010
VDOT	VU29	Construct	VA 123 (Chain Bridge Road)	US 50	I-66	2	2	5	6	No	2010
VDOT		Reconstruct	Chain Bridge Road/Eaton Place Intersection Improvements	New "Right in/Right out" intersection at NB Chain Bridge Rd. & Willow Crescent Dr.		2	2			No	2011
VDOT	VU45	Widen	VA 234 (Dumfries Road)	South Corporate Limits	Hastings Drive	3	3	2	4	No	2011
VDOT	nrs	Widen	VA 234 (Sudley Road) 3rd NB lane	Dorsey Circle	Godwin Dr.	2	2	4	5	No	2010
VDOT	VU48b	Widen	Wellington Road	Godwin Drive	VA 28 (Nokesville Road)	3	3	2	4	No	2010
Arlington Secondary											
VDOT	AR28b	Widen	N. Quincy St.	Wilson Blvd.	VA 237	3	3	2	3	complete	2008
VDOT	AR17a	Widen	Washington Blvd.	Wilson	Kirkwood	3	3	3	4	No	2015
VDOT	nrs	Reconstruct	Wilson Blvd.	N. Quincy	Washington Blvd.	2	2	4	4	No	2010
Fairfax Secondary											

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						from	to	from	to		
VDOT	FFX2a	Construct	VA 602 (Reston Pkwy.)	VA 5320 (Sunrise Valley Dr.)	VA 606 (Baron Cameron Avenue)	3	3	4	6	No	2015
VDOT	VSF2a	Widen	VA 608 (West Ox Road)	VA 6558 (Penderbrook Drive)	VA 6985 (Ox Trail)	3	3	2	4	Yes	2008
VDOT	VSF4f	Widen	VA 611 (Furnace Road)	VA 123 (Ox Road)	VA 642 (Lorton Road)	3	3	2	4	No	2013
VDOT	VSF4c	Widen	VA 611 (Telegraph Road)	VA 613 (Beulah St.)	Leaf Road North	3	3	2	4	Yes	2011
VDOT	VSF4ca	Widen	VA 611 (Telegraph Road)	Leaf Road North	VA 635 (Hayfield Road)	3	3	2	4	No	2011
VDOT	VSF4i	Widen	VA 611 (Telegraph Road)	VA 635 (Hayfield Road)	VA 633 (S. Kings Hwy.)	3	3	2	4	No	2020
VDOT	VSF4h	Widen	VA 611 (Telegraph Road)	VA 633 (S. Kings Hwy.)	VA 644 (Franconia Road)	3	3	2	3	No	2030
VDOT	VSF15b	Construct	VA 613 (Van Dorn Street)	@ VA 644 (Franconia Road)	interchange	0	0	0	0	No	2013
~~VDOT~~	~~VSF7~~	~~Widen~~	~~VA 618 (Woodlawn Road)~~	~~US 1 (Richmond Highway)~~	~~VA 613 (Beulah Road)~~	~~3~~	~~3~~	~~2~~	~~4~~	~~No~~	~~2015~~
VDOT	VSF8g	Widen	VA 620 (Braddock Rd)	VA 7100 (Fairfax Co. Pkwy.)	VA 123 (Ox Road)	3	3	4	6	No	2015
VDOT	VSF8j	Construct/ Widen	VA 620 (New Braddock Rd.)	VA 28	US 29 @ VA 662 (Stone Rd.)	0/4	3	0/2	4	No	2015
VDOT	VSF10c	Widen	VA 638 (Pohick Road)	US 1	I-95	3	3	2	4	No	2020
VDOT	VSF10e	Widen	VA 638 (Rolling Road)	VA 5297 (Delong Dr.)	VA 6922 (Odell Street) / Fairfax County Parkway	3	3	2	4	No	2015
VDOT	VSF10a	Widen	VA 638 (Rolling Road)	VA 7100 (Fairfax County Parkway)	VA 644 (Old Keene Mill Road)	3	3	2	4	No	2012
VDOT	VSF13d	Widen	VA 642 (Lorton Road)	VA 123 (Ox Road)	VA 600 (Silverbrook Road)	3	3	2	4	No	2013
VDOT	VSF15	Widen	VA 644 (Franconia Road)	VA 3290 (Craft Road)	VA 611 (Telegraph Road)	3	3	2	4	No	2015
VDOT	FFX11a	Widen	VA 645 (Stringfellow Rd.)	US 50	VA 7100 (Fairfax County Parkway)	3	3	2	4	No	2014
VDOT	VSF16g	Widen	VA 645 (Stringfellow Road)	VA 7735 (Fair Lakes Blvd.)	US 50	3	3	2	4	No	2013
VDOT	VSF37	Widen	VA 650 (Gallows Road)	Gatehouse Road	Providence Forest Dr.	3	3	4	6	Yes	2013
VDOT	VSF33d	Widen	VA 651 (Guinea Road)	VA 620 (Braddock Road)	VA 2430 (Braeburn Road)	3	3	2	4	No	2015

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VDOT	VSF33a	Widen	VA 651 (Guinea Road)	VA 6197 (Roberts Parkway)	VA 4807 (Pommeroy Drive)	3	3	2	4	No	2015
VDOT	FFX12a	Construct	VA 651 (New Guinea Rd.)	VA 123 (Ox Road)	Roberts Rd.	0	3	0	4	No	2015
VDOT	VSF17b	Construct	VA 655 (Shirley Gate Road)	VA 7100 (Fairfax County Parkway)	VA 620 (Braddock Road)	0	3	0	4	No	2015
VDOT	VSF18c	Widen	VA 657 (Centreville Road)	VA 8390 (Metrotech Dr.)	VA 668 (McLearen Road)	3	3	4	6	No	2020
VDOT	VSF18b	Widen	VA 657 (Centreville Road)	VA 8390 (Metrotech Dr.)	VA 668 (McLearen Road)	3	3	2	4	Yes	*complete*
VDOT	VSF18h	Widen	VA 657 (Centreville Road)	VA 608 (West Ox Rd)	VA 608 (Frying Pan Rd)	3	3	2	4	Yes	2010
VDOT	FFX17b	Widen	VA 666 (Monroe St.)	VA 665 (Fox Mill)	Herndon	3	3	2	6	No	2010
VDOT	FFX18	Widen	VA 668 (McLearen Rd.)	VA 28	VA 657 (Centreville Rd.)	3	3	2/4	6	Yes	2020
VDOT	VSf21c	Construct	VA 673 (McLearen Rd)	VA 608	VA 602/Interchange at Fairfax Co. Parkway	0	3	0	4	No	2015
VDOT	VSF21b	Widen	VA 673 (McLearen Rd)	VA 657 (Centreville Road)	VA 608	3	3	2	4	No	2015
VDOT	VSF36	Relocate	VA 675 (Sunset Hills Rd.)	West of Edlin School	VA 675 (Crowell Road)	3	3	4	4	No	2012
VDOT	VSF24	Widen	VA 684 (Spring Hill Road)	VA 7 (Leesburg Pike)	VA 6034 (International Drive)	3	3	2	4	Yes	2010
VDOT	VSF25aa	Convert	VA 7100 (Fairfax Co Pkwy HOV)	VA 267 (Dulles Toll Road)	Sunrise Valley Dr.	5	5	6	4+2	No	2015
VDOT	VSF25ea	Widen	VA 7100 (Fairfax Co Pkwy HOV)	Sunrise Valley	Rugby Rd.	5	5	4	4+2	No	2015
VDOT	VSF25e	Widen	VA 7100 (Fairfax Co Pkwy HOV)	Rugby Rd.	US 50	5	5	4	4+2	No	2015
VDOT	VSF25y	Upgrade/ Widen	VA 7100 (Fairfax Co Pkwy HOV)	US 50	VA 7735 (Fair Lakes Pkwy)	2	5	4	4+2	No	2010
VDOT	VSF25z	Upgrade /Widen	VA 7100 (Fairfax Co Pkwy HOV)	VA 7735 (Fair Lakes Pkwy)	I-66	2	5	6	6+2	No	*2020*
VDOT	VSF25g	Widen	VA 7100 (Fairfax Co Pkwy)	I-66	VA 123 (Ox Road)	5	5	4	6	No	2015
VDOT	VSF25j	Widen	VA 7100 (Fairfax County Parkway)	VA 636 (Hooes Road)	VA 640 (Sydenstricker Road)	2	2	4	6	No	2015
VDOT	VSF25l	Construct	VA 7100 (Fairfax Co Pkwy HOV)	VA 640 (Sydenstricker Road)	VA 7900 (Franconia-Springfield Parkway)	0	2	0	2	No	2015

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VDOT	VSF25n	Construct	VA 7100 (Fairfax County Parkway)	VA 4600 (Fullerton Road)	Donegal La. / Hooes Rd.	0	1	0	4/6	Yes	2010
VDOT	VSF25na	Construct	VA 7100 (Fairfax County Parkway)	Donegal La. / Hooes Rd.	VA 7900 (Franconia-Springfield Parkway)	0	1	0	6	No	2020
VDOT	BRAC	Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Franconia Springfield Parkway	Various movements; includes relocated Rolling Rd.	-	-	-	-	No	2020
VDOT	BRAC / VSF25nc	Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Rolling Rd. / EPG Access Road	Ramp movements: EB F.C.Pkwy to NB & SB Rolling Rd. via one ramp; NB Rolling Rd. to EB F.C.Pkwy; NB Rolling Rd. to WB F.C.Pkwy; WB F.C.Pkwy to NB & SB Rolling Rd. via one ramp;	-	-	-	-	Yes	2010
VDOT	BRAC / VSF25nd	Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Rolling Rd. / EPG Southern Loop Road (SLR)	Ramp movements: EPG (SLR) to NB F.C.Pkwy.; EPG (SLR) to SB F.C.Pkwy.	1	1	0	1/2	Yes	2010
VDOT	BRAC / VSF25nb	Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Boudinat Drive (BD)	Ramp movements: EB F.C.Pkwy. To SB BD; WB F.C.Pkwy to SB BD; NB BD to WB F.C.Pkwy.	-	-	-	-	No	2020
VDOT		Construct	VA 7100 (Fairfax County Parkway) Interchange	@ Boudinat Drive (BD)	Ramp movements:NB BD to EB F. C. Parkway	-	-	0	1	Yes	2010
VDOT		Construct	VA 7100 Interchange	@ VA 7700 (Fair Lakes Pkwy) & Monument Dr.		2	5	4	6	No	2011
VDOT	VSF39	Widen	VA 7735 (Fair Lakes Pkwy) (3rd EB Lane)	VA 7100	Fair Lakes Circle	4	4	4	5	No	2010
VDOT	VSF26	Construct	VA 7900 HOV (Franconia-Springfield Parkway)	VA 7100 (Fairfax County Parkway)	VA 2677 (Frontier Drive)	5	5	-	2	No	2010
VDOT	VSF26a	Construct	VA 7900 HOV (Franconia-Springfield Parkway)	Interchange @ Neuman St.		1	1	-	-	No	2020
VDOT	VSF26b	Upgrade	VA 7900 HOV (Franconia-Springfield Parkway)	VA 638 (Rolling Rd.)	VA 617 (Backlick Rd.)	5	1	6+2	6+2	No	2020

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VDOT	FFX24c	Widen	VA 8460 (Stonecroft Blvd.)	VA 661 (Old Lee Rd.)	Willard Rd.	3	3	4	6	No	2010
FHWA/VDOT	FED2	Widen	Old Mill Rd.	US 1	VA 611 (Telegraph Road)	4	4	2	4	Yes	2012
~~FHWA/VDOT~~	~~FED3~~	~~Construct~~	~~Old Mill Rd. extended~~	~~Pole Rd.~~	~~Telegraph~~	~~0~~	~~3~~	~~0~~	~~4~~	~~Yes~~	~~2009~~
Loudoun Secondary											
VDOT	VSL51	Construct	Atlantic Boulevard	VA 625 (Church Road)	VA 7	-	3	-	4	No	2010
VDOT	VSL39	Construct	Broadlands Boulevard (Ryan Bypass)	VA 659	VA 625	0	3	0	4	No	2010
VDOT	VSL1b	Widen/ Upgrade	VA 606 (Ldn Co. Pkwy) (nee Old Ox Rd.)	VA 634	VA 621	4	3	2	4	No	2015
VDOT		Widen	VA 606 (Dulles Greenway Interchange)	within Greenway R/W		1	1	2	6	No	2004
VDOT	VSL10c	Construct	VA 607 (Loudoun County Pkwy)	VA 606 / VA 842	VA 772 / VA 607	-	3	-	4	Yes	2010
VDOT	VSL10d	Widen/ Construct	VA 607 (Loudoun County Pkwy) (nee VA 28 Bypass)	VA 620 @ VA 613	Edgewater St.		3		4	Yes	2005
VDOT	VSL10ba	Widen	VA 607 (Loudoun County Pkwy)	VA 625 (Waxpool Road)	W&OD Trail	3	3	4	6	No	2020
VDOT	VSL10bb	Widen/ Upgrade	VA 607 (Loudoun County Pkwy)	W&OD Trail	Redskin Park Drive	4	3	2	6	No	2020
VDOT	VSL10bf	Widen/ Upgrade	VA 607 (Loudoun County Pkwy) (dirt road)	Redskin Park Drive	Gloucester Parkway	4	3	2	4	No	2015
VDOT	VSL10bc	Widen	VA 607 (Loudoun County Pkwy)	Redskin Park Drive	Gloucester Parkway	3	3	4	6	No	2020
VDOT	VSL10bd	Widen/ Upgrade	VA 607 (Loudoun County Pkwy)	Gloucester Parkway	VA 7	4	3	2	4	No	2005
VDOT	VSL12	Widen	VA 625 (Church Rd.)	VA 28	VA 637	3	3	2	4	complete	2008
VDOT	VSL12b	Widen	VA 625 (Waxpool Rd.)	Loudoun County Parkway	Broad Run	3	3	4	6	complete	2008
VDOT	VSL12c	Widen	VA 625 (Waxpool Rd.)	Broad Run	VA 28	3	3	4	6	Yes	2005
VDOT	VSL12d	Construct	VA 625 (Waxpool Rd.)	Faulkner Parkway	VA 2175 (Regency Dr)	4	3	2	4	No	2010
VDOT	VSL45	Widen/ Upgrade	VA 643 (Sycolin Road) Phase II	Leesburg Town Limits	VA 659 (Belmont Ridge Road)	4	3	2	4	No	2025
VDOT	VSL4a	Widen/ Upgrade	VA 659 (Belmont Ridge Rd.)	National Rec. & Park Ent.	Dulles Greenway	4	3	2	4	No	2015

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VDOT	VSL4ab	Widen/ Upgrade	VA 659 (Belmont Ridge Road)/VA 659 Relocated	Dulles Greenway	VA 7	4	3	2	4	No	2020
VDOT	VSL4d	Widen/ Upgrade	VA 659 (Belmont RidgeRoad)	VA 659 Relocated	National Rec. & Park Ent.	4	3	2	4	Yes	2007
VDOT	VSL4e	Widen/ Upgrade	VA 659 (Gum Spring Rd.)	VA 620 (Braddock Road)	US 50	4	3	2	4	No	2015
VDOT	VSL4f	Widen/ Upgrade	VA 659 (Gum Spring Rd.)	Prince William County Line	VA 620 (Braddock Road)	4	3	2	4	No	2025
VDOT	VSL4c	Construct	VA 659 Relocated	PWCL / VA 234 Bypass	US 50	0	3	0	4	No	2020
VDOT	VSL4b	Construct	VA 659 Relocated	US 50	VA 659 (Belmont Ridge Rd.)	0	3	0	4	No	2020
VDOT	VSL44	Widen/ Upgrade	VA 772 (Ryan Road)	VA 659 (Belmont Ridge Rd.)	Dulles Greenway @ exit #6	4	3	2	4	Yes	**2004**
VDOT	VSL50	Widen/ Upgrade	VA 773 (Fort Evans Road)	Leesburg Town Limits	River Creek Parkway	4	3	2	4	No	2009
VDOT	nrs	Construct	VA 868 (Davis Dr.)	VA 606 (Old Ox Road)	VA 846 (Sterling Blvd)	-	4	-	4	No	2020
VDOT	nrs	Construct	VA 868 (Davis Dr.)	VA 846 (Sterling Blvd)	VA 625 (Church Road)	-	4	-	4	Yes	2007
VDOT	VSL40a	Widen	VA 901 (Claiborne Parkway)	VA 640 (Ashburn Farm Pkwy)	W&OD Trail	4	3	2	4	Yes	2007
VDOT	VSL40b	Construct	VA 901 (Claiborne Parkway)	W&OD Trail	VA 7	0	3	0	4	Yes	2006
VDOT	VSL46	Construct	VA 1036 (Pacific Boulevard)	Sterling Blvd.	Gloucester Parkway	-	3	-	4	No	2015
VDOT	VSL47	Widen/ Upgrade	River Creek Parkway	Riverside Parkway	VA 773 (Edwards Ferry Road)	4	3	2	4	Yes	2007
VDOT	VSL49	Construct	Russell Branch Parkway	VA 659 (Belmont Ridge Road)	Loudoun County Parkway	-	3	-	4	No	2015
VDOT	nrs	Construct	Southern Collector Rd. (Purcellville)	VA 690	VA 7	0	4	0	2	No	2020
Prince William Secondary											
VDOT	BRAC	Construct	Bypass Rd.	Russell Rd.	MDIA site entrance	0	3	0	2	No	2011
VDOT	VSP49b	Construct	Heathcote Boulevard	VA 625 (Old Carolina Rd.)	US 15 (James Madison Highway)	0	3	0	4	No	2009
VDOT	VSP49	Construct	Heathcote Boulevard	US 29	VA 676 (Catharpin Road)	0	3	0	4	Yes	2009
VDOT	VSP60	Construct	Neabsco Mills Rd.	Dale Blvd.	Opitz Blvd.	0	3	0	4	Complete	2008

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VDOT	nrs	Construct	North/South Road at Innovation	VA 840 (University Blvd.)	VA 674 (Wellington Road)/VA 660 (Bethlehem	0	3	0	4	No	2020
VDOT	VSP59	Construct	Peaks Mill (Purcell Road east)	Route 643 (Purcell Road)	Route 3000 (Prince William Parkway)	0	4	0	2	No	2025
VDOT	VSP39	Widen	Russell Road	I-95	Ponderosa Y-Gate	3	3	2	4	No	2011
VDOT	VSP46	Construct	VA 1566 (Sudley Manor Drive Extension)	VA 234 Bypass	Chatsworth Drive	0	3	0	4	Complete	2008
VDOT	nrs	Construct	VA 1596 (Williamson Blvd)	Sudley Manor Dr.	Portsmouth Rd.	0	4	0	4	No	2020
VDOT	VSP21c	Widen	VA 1600 (Ashton Ave.)	Coverstone Dr.	VA 621 (Balls Ford Rd.)	3	3	2	4	No	2020
VDOT	VSP25b	Widen	VA 1781 (NewTelegraph Rd/Summit School Road)	VA 849 (Caton Hill Road)	VA 640 (Minnieville Rd.)	4	4	2	4	No	2015
VDOT	VSP25c	Widen	VA 1781 (Telegraph Rd.)	VA 3000 (Prince William Parkway)	VA 849 (Caton Hill Rd.)	4	4	2	4	No	2015
VDOT	VSP23d	Widen	VA 3000 (Prince William Pkwy.)	VA 776 (Liberia Ave.)	Minnieville Rd.	2	2	4	6	No	2020
VDOT	VSP2ea	Widen/ Upgrade	VA 619 (Linton Hall Road)	VA 1566 (Sudley Manor Dr.)	VA 28 (Nokesville Road)	4	3	2	4	Yes	2009
VDOT	VSP3a	Widen/ Upgrade	VA 621 (Balls Ford Road)	VA 234 (Sudley Road)	Bethlehem Road	4	3	2	4	No	2025
VDOT	VSP3b	Widen/ Upgrade	VA 621 (Balls Ford Road)	Bethlehem Road	VA 234 Bypass	4	3	2	4	No	2025
VDOT	VSP3d	Widen	VA 621 (Devlin Road)	Route 674 (Wellington Road)	Route 619 (Linton Hall Road)	3	3	2	4	No	2025
VDOT	VSP3e	Widen	VA 621 (Devlin Road)	Route 674 (Wellington Road)	VA 234	3	3	2	4	No	2015
VDOT	nrs	Widen	VA 625 (Old Carolina Rd.)	I-66 Underpass	Piedmont Vista Dr.			2	4	No	2009
VDOT	VSP40a	Construct	VA 635 (Cherry Hill VRE Access Road)	US 1	Future VRE Station site	0	4	0	2	No	2010
VDOT	VSP5d	Widen	VA 640 (Minnieville Road)	VA 610 (Cardinal Drive)	VA 643 (Spriggs Road)	3	3	2	4	Yes	2009
VDOT	VSP5e	Widen	VA 640 (Minnieville Road)	VA 643 (Spriggs Road)	VA 234	3	3	2	4	No	2020
VDOT	VSP15c	Widen	VA 640 (Minnieville Road)	VA 849 (Caton Hill Road)	VA 641 (Old Bridge Road)	3	3	2	4	Yes	2008
VDOT	VSP8a	Widen	VA 643 (Purcell Rd.)	VA 234 (Dumfries Rd.)	VA 642 (Hoadly Rd.)	3	3	2	4	No	2020

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VDOT	VSP17b	Widen	VA 674 (Wellington Rd.)	VA 621 (Devlin Road)	VA 668 (Rixlew Lane)	3	3	2	4	No	2020
VDOT	VSP18	Widen	VA 676 (Catharpin Rd.)	VA 55 (John Marshall Highway)	Heathcote Blvd.	3	3	2	4	No	2020
VDOT	VSP20b	Widen	VA 784 (Dale Blvd.)	I-95	VA 640 (Minnieville Rd.)		3	4	6	No	2020
VDOT	VSP20c	Widen/ Upgrade	VA 1392 (Rippon Boulevard Extension)	West of Wigeon Way	Rippon VRE Station	4	3	2	4	No	2020
VDOT	VSP47d	Construct	VA 840 (University Blvd.) (nee East-West Connector)	Route 660 (Hornbaker Road)	Sudley Manor Dr.	0	3	0	4	No	2020
VDOT	VSP62	Construct	Rollins Ford Rd.	Songsparrow Dr.	VA 215 (Vint Hill Rd.)	0		0	4	No	2012
FAMPO											
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	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Telegraph Road (North of Aquia Creek)	SB GP Lanes to SB HOT Lar	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	South of Telegraph Road (North of Aquia Creek)	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	North of Garrisonville Road (south of Aquia Creek)	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Garrisonsville Road and Courthouse Road	SB GP Lanes to SB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Garrisonsville Road and Courthouse Road	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Garrisonsville Road and Courthouse Road	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Garrisonsville Road and Courthouse Road	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	South of Rt 628 (North of Stafford Regional Airport)	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	South of Rt 628 (North of Stafford Regional Airport)	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Centerpoint Road (St.Co.Airport Access Rd.)	SB GP Lanes to SB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Centerpoint Road (St.Co.Airport Access Rd.)	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Centerpoint Road (St.Co.Airport Access Rd.)	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2014

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FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Centerpoint Road (St.Co.Airport Access Rd.)	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	South of Rt 17 (North of Rappahannock River)	NB HOT Lanes to NB GP Lanes	1	1	0	1	No	2014
FAMPO		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	2014
FAMPO		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	2014
FAMPO		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	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Rt 620 and Rt 208	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Rt 1 and Rt 17	NB GP Lanes to NB HOT Lanes	1	1	0	1	No	2014
FAMPO		Construct	I 95 : HOV / Bus / HOT Lanes: I	Between Rt 1 and Rt 17	SB HOT Lanes to SB GP Lanes	1	1	0	1	No	2014
~~FAMPO~~		~~Reconst/ Construct~~	~~I-95 interchange~~	~~at VA 627~~		~~-~~	~~-~~	~~-~~	~~-~~	~~No~~	~~2030~~
	~~FAI1E~~	~~Construct~~	~~I-95 CD lanes~~	~~VA 630~~	~~VA 627~~	~~1~~	~~1~~	~~6~~	~~6+4~~	~~No~~	~~2025~~
FAMPO	nrs	Reconstruct	I-95 interchange	at VA 630 (Relocate VA 630 from US 1 to Cedar Lane)		1	1	0	0	No	2015
FAMPO	nrs	reconstruct	I-95 interchange	@Route 3 (Plank Road)							2020
FAMPO	FAI1D	Reconstruct	I-95 interchange	at Mills Drive (US 17 Bypass)/Spotsylvania Parkway		1	1	0	0	No	2020
FAMPO	FAP5F	Widen	US 1	Prince William County Line	US 17(Warrenton Rd)/VA 218	2	2	4	6	No	2020
FAMPO	FAP5I	Widen	US 1(Bridge Replacement)	US 17 (Butler Rd.)	Fredericksburg N. City Limit	2	2	4	6	No	2020
FAMPO	FAP5B	Widen	US 1	Princess Anne St.	VA 3 (Plank Rd.)	2	2	4	6	No	2025
~~FAMPO~~	~~FAP5~~	~~Widen~~	~~US 1~~	~~VA 3 interchange~~	~~SCL~~	~~3~~	~~3~~	~~4~~	~~6~~	~~No~~	~~2030~~
FAMPO	FAP5E	Widen	US 1	VA 620 (Harrison Road)	Spotsylvania Parkway	2	2	4	8	No	2020
FAMPO	FAP5H	Widen	US 1	Spotsylvania Parkway	VA 608 (Massaponax Church Rd)	2	2	4	6		2015

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FAMPO	FAP5G	Widen	US 1	Rt 610	Rt 630	2	2	4	6	No	2025
FAMPO		Reconstruct	US 1 interchange	at US 17						No	2015
FAMPO	FAP6A	Widen	US 17 Bypass (Mills Dr.)	I-95	VA 2 (Tidewater Trail)	2	2	2	4	No	2015
FAMPO	FAP6E	Widen	US 17 Business/VA 2	SCL Frederickburg	US 17 Bypass (Mills Dr.)	2	2	2	4		2035
FAMPO	FAP6C	Widen	US 17 (Warrenton Rd.)	McLane Drive	VA 654 (Bera Church Rd)	2	2	4	6	No	2015
FAMPO	FAP6D	Widen	US 17 (Warrenton Rd.)	VA 654 (Bera Church Rd)	VA 612 (Hartwood Road)	2	2	4	6		2030
FAMPO	FAP7	Widen	VA 212 (Butler Rd)	US 1	VA 212 / VA 218 Connection	4	4	2	4	No	2025
FAMPO	FAS23A	Construct	VA 208 Bypass (Spotsylvania)*	West of Ta River	East of Po River	0	3	0	2	ROW	2009
FAMPO	FAS23B	Construct	VA 208 Bypass (Spotsylvania)*	East of Po River	West of Ni River	0	3	0	4	Complete	2008
FAMPO		Widen	VA 208 (Courthouse Road)	US 1 (Jefferson Davis Hwy)	VA 628 (Station Road)	3	3	4	6		2035
STAFFORD COUNTY SECONDARY											
FAMPO	Stafford# 17E11/19C3 nrs	Upgrade/ Intersection improvements	VA 606 (Ferry Rd)	VA 3 (Kings Highway)	VA 608 (Brook Rd)	4	3				2030
FAMPO	FAS7c	Widen	VA 607 (Cool Spring Rd.)	VA 218	VA 3			0	4	Complete	2008
FAMPO		Upgrade	VA 608 (Brooke Rd.)	VA 605 (New Hope Ch. Rd.)	Dead End	4	3			No	2035
FAMPO	FAS3c	Widen	VA 610 (Garrisonville Rd.)	VA 610 (existing 4 lane section)	VA 643	4	4	2	4		2015
FAMPO		Upgrade/ Intersection improvements	VA 610 (Garrisonville Rd.)	VA 643 (Joshua Road)	Fauquier County Line	4	3				2035
FAMPO		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
FAMPO	FAS3e	Widen	VA 610 (Garrisonville Rd.)	VA 648 (Shelton Shop Rd.)	VA 641(Onville Rd)	4	3	4	6	No	2030

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FAMPO	FAS3d	Widen	VA 610 (Garrisonville Rd.)	VA 641(Onville Rd)	VA 684 (Mine Rd)	4	3	4	6	No	2015
FAMPO	FAS3db	Widen	VA 610 (Garrisonville Rd.)	VA 684 (Mine Rd.)	I-95 SB ramp	4	3	6	6	Complete	2008
~~FAMPO~~	~~FAS3da~~	~~Widen~~	~~VA 610 (Garrisonville Rd.)~~	~~I-95 SB ramp~~	~~US 1~~	~~4~~	~~3~~	~~6~~	~~8~~	~~No~~	~~2020~~
~~FAMPO~~	~~FAS8~~	~~Reconstruct~~	~~VA 624~~	~~US 1~~	~~VA 626~~	~~4~~	~~4~~	~~2~~	~~4~~	~~No~~	~~2010~~
~~FAMPO~~	~~FAS29~~	~~Widen~~	~~VA 626 (Leeland Rd.)~~	~~new conn. With VA 624~~	~~VA 607~~	~~4~~	~~4~~	~~2~~	~~4~~	~~No~~	~~2015~~
FAMPO		upgrade	VA 616 (Poplar Rd.)	VA 652 (Truslow Rd.)	Fauquier County Line	4	3			No	2035
FAMPO		upgrade	VA 627 (Mountainview Rd.)	VA 648 (Stefaniga Rd.)	Centreport Pkwy.	4	3			No	2035
FAMPO		upgrade	VA 627	VA 616	Choptank Rd.	4	3			No	2035
FAMPO	FAS5b	Widen	VA 630 (Courthouse Rd)	VA 732 (Cedar Lane)	VA 648 (Shelton Shop Rd)	4	4	2	4	No	2025
FAMPO	nrs	Widen/ Construct	VA 630 (Courthouse Rd)	Brooke Point H.S.	VA 629	4	4	0	2	No	2010
FAMPO		upgrade	VA 637	I-95	Woodstock Ln.	4	3			No	2035
FAMPO	nrs	Widen	VA 641 (Onville Rd.)	VA 610	Quantico MCB			2	4		2030
FAMPO		upgrade	VA 644	VA 627	VA 610	4	3			No	2035
FAMPO	FAS13	Reconstruct	VA 648 (Shelton Shop Rd.)	VA 610 (Garrisonville Rd)	VA 627 (Mountainvie Rd)	4	4	2	4	No	2025
~~FAMPO~~	~~FAS11a~~	~~Construct~~	~~VA 684 Extension (Mine Rd.)~~	~~Existing Mine Rd.~~	~~VA 628~~	~~0~~	~~4~~	~~0~~	~~4~~	~~No~~	~~2020~~
~~FAMPO~~	~~FAS11b~~	~~Construct~~	~~VA 684 Extension (Mine Rd.)~~	~~VA 628~~	~~VA 652~~	~~0~~	~~4~~	~~0~~	~~4~~	~~No~~	~~2030~~
FAMPO	nrs	Construct	Widewater Parkway	US 1	VA 658			0	4		2025
CITY OF FREDERICKSBURG											
FAMPO	nrs	Widen	US 1 Bus. (Lafayette Blvd.)	Blue-Gray Pkwy	US 1 at Four Mile Fork			2	4		2015
~~FAMPO~~	~~FAS16~~	~~Widen~~	~~VA 3 (William St.) (fredericksbu~~	~~Mahone Dr.~~	~~US 1~~	~~3~~	~~3~~	~~4~~	~~6~~	~~No~~	~~2020~~

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Agency	Project ID	Improv.	Facility	From	To	Facility from	Facility to	Lanes from	Lanes to	Under Const. or ROW acquired?	Complt. Date or Status
FAMPO	nrs	Construct	Cowan Blvd.	Jeff Davis Hwy.	Carl D. Silver Blvd			0	4		2025
FAMPO	nrs	widen	Fall Hill Ave.	Carl D. Parkway	Mary Wash. Blvd. Ext.			2	4		2015
FAMPO	nrs	Construct	Gateway Blvd.	Existing Gateway Blvd.	Jeff Davis Hwy.			0	4		2025
FAMPO	nrs	Construct	Mahone Dr.	Plank Rd.	Fall Hill Ave.			0	4		2025
~~FAMPO~~	~~FAS25~~	~~Widen~~	~~Princess Anne St.~~	~~US 1~~	~~Herndon St.~~	~~3~~	~~3~~	~~2~~	~~4~~	~~No~~	~~2010~~
SPOTSYLVANIA COUNTY SECONDARY											
FAMPO	FAS22	Widen	VA 3 (Spotsylvania)	Chewing Lane	VA 627 (Gordon Rd.)	2	2	3	6	No	2015
~~FAMPO~~	~~FAS26a~~	~~Widen~~	~~VA 606 (Mudd Tavern Rd.)~~	~~US 1~~	~~I-95~~	~~3~~	~~3~~	~~2~~	~~4~~	~~No~~	~~2030~~
~~FAMPO~~	~~FAS26b~~	~~Widen~~	~~VA 606 (Morris Rd)~~	~~US 1~~	~~VA 208~~	~~3~~	~~3~~	~~2~~	~~4~~	~~No~~	~~2030~~
FAMPO	nrs	Construct	VA 607 (Guinea Station Rd.)	VA 608	US 1			0	2		2025
FAMPO	FAS27	Widen	VA 608 (Massaponax Church R	VA 628	I-95	3	3	2	4	No	2025
FAMPO	nrs	Construct	VA 608 (Massaponax Church R	VA 648	VA 208			0	2		2025
FAMPO	FAS31	Widen	VA 610 (Old Plank Rd.)	VA 627	VA 612	4	4	2	4	No	2030
~~FAMPO~~	~~FAS17~~	~~Widen~~	~~VA 612 (Catharpin Rd.)~~	~~Ni River Reservoir~~	~~VA 610~~	~~4~~	~~4~~	~~2~~	~~4~~	~~No~~	~~2030~~
~~FAMPO~~	~~FAS18a~~	~~Widen~~	~~VA 620 (Harrison Rd)~~	~~VA 639~~	~~US 1 Bypass~~	~~4~~	~~4~~	~~2~~	~~4~~	~~No~~	~~2020~~
FAMPO	FAS18c	Widen	VA 620 (Harrison Rd)	VA 3 (Plank Road)	VA 627 (Gordon Rd.)	4	4	2	4		2015
FAMPO	FAS9b	Widen	VA 627 (Gordon Rd.)	VA 628	VA 620	4	4	2	4	No	2015
FAMPO		Widen	VA 627 (Gordon Rd.)	VA 628 (Smith Station Rd)	VA 613 (Brock Road)	4	4	2	4		2035
FAMPO	FAS28	Widen	VA 628 (Smith Station Rd)	VA 608	VA 627	4	4	2	4	No	2025
FAMPO	FAS19	Widen	VA 636 (Mine Rd.)	VA 208 (Courthouse Rd.)	VA 638	4	4	2	4	No	2025

Note: Shaded areas represent changes from the 2008 CLRP and the FY2009-2014 TIP

Appendix A
2009 CLRP AND FY2010-2015 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		
FAMPO		Widen	VA 638 (Lansdowne Rd)	SCL Frederickburg	VA 636 (Mine Rd)	3	3	2	4		2035
FAMPO	FAS20a	Widen	VA 639 (Leavells Rd.)	VA 620	VA 208	4	4	2	4	Complete	2005
FAMPO	FAS20b	Widen	VA 639 (Leavells Rd.)	VA 208	VA 628	4	4	2	4	Yes	2025
FAMPO	FAS20c	Widen	VA 639 (Bragg Rd.)	VA 618	VA 3	4	4	2	4	No	2015
FAMPO		Widen	VA 674 (Chancellor Rd.)	VA 610 (Old Plank Rd)	VA 627 (Gordon Rd.)	4	4	2	4		2035
FAMPO	nrs	Construct	Market St. Ext.	VA 636	US 1			0	4		2025
FAMPO	nrs	Construct	Wakeman Dr. Ext.	US 1	VA 208			0	4		2025
~~FAMPO~~	~~FAS21~~	~~Construct~~	~~Parallel Facility to I-95 (Spotsylvania)~~	~~US 1~~	~~VA 620~~	~~0~~	~~4~~	~~0~~	~~4~~	~~No~~	~~2020~~

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FY-2010 Network Documentation: Highway and Transit Network Development

Appendix B 2009 CLRP and FY2010-2015 TIP Air Quality Conformity Inputs (Transit)

FY-2010 Network Documentation: Highway and Transit Network Development

Appendix B

2009 CLRP AND FY2010-2015 TIP AIR QUALITY CONFORMITY INPUTS

(Transit)

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				2010
WMATA		Modify	Revised Metrorail Operating Plan				2011
WMATA		Modify	Revised Metrorail Operating Plan				2015
District of Columbia							
DDOT		Construct	Anacostia Streetcar project Phase I (replaces CSX Shepherd Branch project)	Firth Sterling and S. Capitol St.	Howard Rd. and MLK Jr. Ave.		2010
DDOT		Construct	Banneker Circle Parking	1200 spaces			2011
DDOT		Operational Improvements	Georgia Ave. Rapid Bus (Operation Enhancements)	Eastern Ave. / Silver Spring Metro Station	Archives Navy Memorial Metro Station		complete
DDOT		Operational Improvements	Pennsylvania Rapid Bus (Operation Enhancements)	Archives Navy Memorial Metro Station	Naylor Road Metrorail Station		2011
DDOT		Reconstruct	K St. Busway	Mt. Vernon Sq./7th St. NW	Wash.Circle / 23rd St. NW		2017
Maryland							
MTA		Construct	Purple Line Transitway	Bethesda	Silver Spring	No	2015
MTA		Construct	Silver Spring Transit Center	Phase II		Yes	2011
MTA		Construct	Corridor Cities Transitway	Shady Grove	COMSAT		2016
MTA		Construct	Southern MD Commuter Bus Initiative	Park-and-Ride lots and increase bus service	Waldorf		2010
MTA		Implement	ICC Corridor Bus Service Improvements			No	2012
MTA		Implement	Extend evening/wk end service on Penn Line; mid-day on Camden	First phase of new MARC plan		No	2010

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Appendix B

2009 CLRP AND FY2010-2015 TIP AIR QUALITY CONFORMITY INPUTS

(Transit)

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
MTA		Construct	Takoma/ Langley Park Transit Center	Intersection New Hampshire Ave and University Blvd.	Takoma / Langley Park	No	2011
Montgomery County							
Mont.Co.			Clarksburg Transit Center	Clarksburg			2015
Mont.Co.	MCT4	Construct	Four Corners Transit Center	US 29/MD 193		No	2015
Mont.Co.			Metropolitan Grove Transit Center	Vicinity of Watkins Mill Road and MD 117			2015
Mont.Co.	MCT16		NIH Naval Medical Transportation Management	Bethesda			
Mont.Co.			Norbeck Road Bus Enhancement				2020
Mont.Co.			Norbeck Road Park and Ride	Norbeck Road at Georgia Avenue			2015
Mont.Co.	MCT7	Construct	Olney Transit Center	adjacent to or north of MD 108		No	2015
Mont.Co.			Randolph Road Bus Enhancement				2010
Mont.Co.		Construct	University Blvd Bus Enhancement	Kensington	Silver Spring	No	2020
Mont.Co.	MCT22	Construct	Veirs Mill Road Bus Enhancement	Rockville	Wheaton	No	2020
Virginia							
VDOT		Widen	US 1 (bus/right-turn lanes)	VA 235 North	SCL Alexandria (I-95 Capital Beltway)	No	2025
Arlington Co.		Construct	Crystal City / Potomac Yard Busway (2-lane)	Vicinity of Glebe Rd. Ext.-City/County line	Crystal City Metro Station	ROW acquired	2010
VDOT		Construct	Potomac Yard Transit Bus lanes (2 lanes)	Four Mile Run	Braddock Rd.	No	2013
VDOT		Construct	Metro Station (Proposed)	@ Potomac Yards		No	2030
VDOT		Implement	VA 244 (Columbia Pike) Streetcar	Skyline Center	Pentagon City	No	2016

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Appendix B

2009 CLRP AND FY2010-2015 TIP AIR QUALITY CONFORMITY INPUTS

(Transit)

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
VDOT		Construct	Transit Center (Bradlee Shopping Center)	King St. and Braddock Rd.		No	2011
VDOT		Construct	Transit Center (Seven Corners)	Seven Corners Shopping Center		No	2008
VDOT		Construct	Park-and-Ride Lot	Reston East Parking Structure	@ Reston East Park-and-Ride Lot	No	2011
VDOT		Construct	Park-and-Ride Lot	VA 7900 (F-S Pkwy.) PnR	@ Backlick Road North	Yes	2007
VDOT		Construct	Park-and-Ride Lot	Springfield CBD	vic. I-95 & Old Keene Mill Road	No	2014
VDOT		Relocate/ Construct	Park-and-Ride Lot (Leesburg)	Relocate to vic. of Leesburg Bypass and / or the Dulles	700 Spaces	Yes	2009
VDOT		Construct	Park-and-Ride Lot	Purcellville	100 Space Park & Ride Lot	No	2015
VDOT		Implement	Loudoun County Commuter Bus Service.	Town of Leesburg -Harrison St & Catoctin Circle	400 Space Park & Ride Lot		2005
VDOT		Implement	Loudoun County Commuter Bus Service.	VA 772 (Ryan) Station	300 Space Park & Ride Lot		2015
VDOT		Construct	Park-and-Ride Lot	Dulles Town Center	300 Spaces	Proffered	2015
VDOT		~~Construct~~	~~Park-and-Ride Lot~~	~~VA 643 east of Leesburg~~	~~700 spaces~~	~~No~~	~~2009~~
VDOT		Construct	Park-and-Ride Lot	US 50 at Stone Ridge	250 spaces	Proffered	2015
VDOT		Construct	Park-and-Ride Lot	US 50 Dulles at East Gate		Yes	2010
VDOT		Construct	Park-and-Ride Lot	VA 234 (vicinity of I-66)	at Cushing Road	No	2011
VDOT		Construct	Park-and-Ride Lot	Sterling / Ashburn	270 Spaces	Yes	2009
VDOT		Construct	Park & Ride Facility	Round Hill	75 Spaces	ROW acquired	2015
VDOT		Construct	Park & Ride Facility	Brambleton	100 Spaces	No	2015

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2009 CLRP AND FY2010-2015 TIP AIR QUALITY CONFORMITY INPUTS

(Transit)

Agency	Project ID	Improv.	Facility	From	To	Under Const. or ROW acquired?	Complt. Date or Status
VDOT		Construct	Park & Ride Facility	Arcola Center	300 Spaces	Proffer	2015
VDOT		Construct	Park-and-Ride Lot	at EPG			2013
VDRPT		Construct	Dulles Corridor Metrorail	East Falls Church Metrorail Station	Wiehle Ave.	No	2014
VDRPT		Construct	Dulles Corridor Metrorail	Wiehle Ave. Station	Route 772	No	2015
VRE		Construct	VRE - Cherry Hill Commuter Rail Station	Cherry Hill	Prince William County	No	2012
VRE		Implement	Service Improvements (Reduce Headways)	Fredericksburg and Manassas lines		No	2015
		Implement	Beltway HOT lanes transit service			No	2013
		Implement	Beltway HOT lanes transit service			No	2020
		Implement	Beltway HOT lanes transit service			No	2030
VDOT		Implement	I-95/I-395 HOV /BUS / HOT lanes: TAC transit service	Buses and additional VRE railcars		No	2012
VDOT		Implement	I-95/I-395 HOV /BUS / HOT lanes: TAC transit service	Buses and additional VRE railcars		No	2020
VDOT		Implement	I-95/I-395 HOV /BUS / HOT lanes: TAC transit service	Buses and additional VRE railcars		No	2030
VDOT		Implement	Transit Development Plan (Fairfax Connector Service Enhancements)			No	2011

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