ITEM 8 - Action
October 21, 2015

Approval of Air Quality Conformity Determination
of the 2015 CLRP Amendment and the FY2015-2020 TIP

Staff Recommendation: Adopt Resolution R2-2016 finding that the 2015 CLRP Amendment and the FY2015-2020 TIP conform with the requirements of the Clean Air Act Amendments of 1990.

Issues: None

Background: At the September 16 meeting, the Board was briefed on the air quality conformity analysis of the 2015 CLRP Amendment and the FY2015-2020 TIP.

TPB R2-2016
October 21, 2015

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

RESOLUTION FINDING THAT THE 2015 CONSTRAINED LONG RANGE PLAN AMENDMENT AND FY2015-2020 TRANSPORTATION IMPROVEMENT PROGRAM CONFORM WITH THE REQUIREMENTS OF
THE CLEAN AIR ACT AMENDMENTS OF 1990

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

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

WHEREAS, a scope of work was developed to address all procedures and requirements, including public and interagency consultation, and the scope was released for public comment on January 15, 2015, approved by the TPB at its February 18, 2015 meeting, and amended to include the use of EPA's new MOtor Vehicle Emissions Model (MOVES 2014) on April 15, 2015; and

WHEREAS, highway and transit project inputs submitted for inclusion in the air quality conformity analysis of the 2015 CLRP Amendment and FY2015-2020 TIP were released for public comment on January 15, 2015, and approved by the TPB at its February 18, 2015 meeting; and

WHEREAS, on September 10, 2015, the draft results of the Air Quality Conformity Analysis of the 2015 CLRP Amendment and the FY2015-2020 TIP were released for a 30-day public comment period and inter-agency review; and

WHEREAS, the analysis reported in *Air Quality Conformity Analysis of the 2015 Constrained Long Range Plan Amendment and the FY2015-2020 Transportation Improvement Program*

for the Washington Metropolitan Region, dated October 21, 2015, demonstrates adherence to all mobile source emissions budgets for all pollutants analyzed: (1) ground level ozone precursors- Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx), (2) fine particulate matter – $PM_{2.5}$ direct and $PM_{2.5}$ Precursor NOx, and (3) Wintertime Carbon Monoxide (CO), meets all regulatory, planning and interagency consultation requirements, and therefore provides the basis for a finding of conformity of the plan with the requirements of the CAAA; and

WHEREAS, in the attached letter of September 29, 2015, the Metropolitan Washington Air Quality Committee (MWAQC) has provided favorable comments on the *Air Quality Conformity Analysis of the 2015 Constrained Long Range Plan Amendment and the FY2015-2020 Transportation Improvement Program for the Washington Metropolitan Region*;

NOW, THEREFORE, BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD determines that the 2015 Constrained Long Range Plan Amendment and the FY2015-2020 Transportation Improvement Program conform to all requirements of the Clean Air Act Amendments of 1990.

Metropolitan Washington Air Quality Committee

777 North Capitol Street, N.E., Suite 300, Washington, D.C. 20002-4239 202-962-3200 Fax: 202-962-3203

September 29, 2015

Honorable Philip Mendelson, Chair
National Capital Region Transportation Planning Board
777 North Capitol Street, NE, Suite 300
Washington, D.C. 20002

Dear Chair Mendelson:

Thank you for providing an opportunity to the Metropolitan Washington Air Quality Committee (MWAQC) to comment on the draft 2015 Constrained Long Range Plan (CLRP) and the FY2015-2020 Transportation Improvement Program (TIP). MWAQC has reviewed the draft Air Quality Conformity assessment and concurs that the transportation sector emissions associated with the proposed transportation plans meet the approved motor vehicle emissions budgets (MVEBs) for the 1997 8-hour ozone national ambient air quality standard (NAAQS), the 1997 annual fine particulate matter ($PM_{2.5}$) NAAQS; and the 1971 carbon monoxide (CO) NAAQS.

The Washington region is currently working toward meeting the 2008 ozone standard of 75 parts per billion (ppb). Data for the period 2012 through 2014 showed the region's design value for ozone at 76 ppb, which indicated that the region did not attain the above NAAQS by the deadline (July 20, 2015). However, the region requested the U.S. Environmental Protection Agency (EPA) to extend the above attainment deadline by one year to July 20, 2016 based on the Clean Air Act provisions. EPA has proposed the approval of the extension request. Draft data (as of September 22, 2015) for the period 2013 through 2015 shows the region's ozone design value is now at 70 ppb, has made significant progress and is likely to meet the current ozone NAAQS of 75ppb.

However, MWAQC also notes that EPA recently proposed a revision to the ozone NAAQS in the range of 65-70 ppb. EPA is expected to publish the final NAAQS by October 1, 2015. The region may need to reduce its emissions even further in order to meet the tougher standard. While the recently adopted Tier 3 program will provide significant emissions reduction benefits from the transportation sector, MWAQC will need the support and consultation with TPB to examine emissions and to identify new cost-effective strategies and opportunities to reduce onroad mobile emissions further in order to attain a lower standard. In that respect, MWAQC appreciates the efforts of the Multi-Sector Greenhouse Gas Work-Group to reduce greenhouse gas and ozone precursors, such as nitrogen oxides (NO_x), from transportation and non-transportation sectors.

In its $PM_{2.5}$ Maintenance Plan submitted in May 2013 to the EPA, the Washington region committed to update MVEBs for $PM_{2.5}$ and NO_x using the latest models. EPA released a new

version of the mobile emissions model called MOVES2014 in July 2014. This model includes the recently published Tier 3 vehicle emission and fuel standards rule as well as two greenhouse gas rules for motor vehicles. MWAQC appreciates that TPB is using MOVES2014, the 2014 motor vehicle registration data, and the most current version of TPB's Travel Demand Model to update the annual $PM_{2.5}$ and NO_x MVEBs.

MWAQC is encouraged to learn that the region is actually achieving reductions in per capita vehicle miles travelled (VMT), even with an increase in employment. We urge TPB's continued investment in VMT and emission reduction strategies such as public transit and ride-sharing, to continue to mitigate future growth in vehicle emissions. MWAQC strongly urges TPB to maintain its commitments to Transportation Emission Reduction Measures and other emission reduction measures. All of these efforts are essential to meet the 2008 ozone standard and potentially more stringent ozone standard expected in October this year and to maintain the attainment status for the 2012 annual PM2.5 standard.

Thank you again for the opportunity to comment on the draft conformity analysis.

Sincerely,

Hon. David Snyder
Chair, Metropolitan Washington Air Quality Committee

National Capital Region
Transportation Planning Board

MEMORANDUM

October 15, 2015

To: Transportation Planning Board

From: Jane Posey
Senior Transportation Engineer

Subject: Air Quality Conformity Analysis for the 2015 Constrained Long Range Plan (CLRP) Amendment and the FY2015-2020 Transportation Improvement Program (TIP)

INTRODUCTION

This memo documents summary results of the air quality conformity analysis of the 2015 CLRP Amendment and FY2015-2020 TIP with respect to the following pollutants: (1) ground level ozone precursors- Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx), (2) fine particulate matter – $PM_{2.5}$ direct and $PM_{2.5}$ Precursor NOx, and (3) Wintertime Carbon Monoxide (CO). A summary description of the emissions threshold (budgets) for these pollutants is provided below.

- **Ozone Season VOC and NOx.** On May 21, 2012 EPA designated the Metropolitan Washington, DC, (DC-MD-VA) region as 'marginal' nonattainment for the 2008 ozone National Ambient Air Quality Standards (NAAQS). Under a 'marginal' designation it is not necessary to develop updated mobile budgets; however, the region must still adhere to those currently approved by EPA under the old 1997 standard. The currently approved budgets for VOC and NOx were submitted to the EPA by the Metropolitan Washington Air Quality Committee (MWAQC) in 2007, as part of an 8-hour ozone SIP, responding to the 1997 Ozone Standard, under which the region was designated as 'moderate'. On February 7, 2013 EPA found adequate the 2009 Attainment and 2010 Contingency budgets included in this SIP. The budgets are 66.5 tons/day of Volatile Organic Compounds (VOC) and 146.1 tons/day of Nitrogen Oxides (NOx) for the 2009 Attainment Plan and 144.3 tons/day of NOx for the 2010 Contingency Plan.

- **Fine Particles ($PM_{2.5}$).** On December 17, 2004 EPA designated the Metropolitan Washington, DC, (DC-MD-VA) region as nonattainment for the 1997 Fine Particles NAAQS. On May 22, 2013 MWAQC approved a $PM_{2.5}$ Redesignation Request and a Maintenance Plan for the Washington region. This Maintenance Plan includes forecast year mobile budgets for $PM_{2.5}$ direct and $PM_{2.5}$ Precursor NOx for 2017 and 2025. On April 28, 2014, EPA found these mobile budgets adequate for use in conformity analyses, with an effective date of May 13, 2014. On November 5, 2014, EPA approved the Maintenance Plan. The Maintenance Plan includes two tiers of mobile budgets. Tier 1 budgets were based on mobile emission inventory projections for 2017 and 2025, and are applicable with EPA's adequacy finding. Tier 2 budgets were developed by adding a 20% buffer to the mobile emission inventory projections for 2017 and 2025. The Tier 2 mobile budgets will become

effective if it is determined that technical uncertainties primarily due to model changes and to vehicle fleet turnover, which may affect future motor vehicle emissions inventories, lead to motor vehicle emissions estimates above the Tier 1 budgets. The determination to use the Tier 2 budgets will be made through the interagency consultation process. Tier 1 mobile budgets are 1,787 tons/year for 2017 $PM_{2.5}$ direct, 1,350 tons/year for 2025 $PM_{2.5}$ direct, 41,709 tons/year for 2017 $PM_{2.5}$ Precursor NOx, and 27,400 tons/year for 2025 $PM_{2.5}$ Precursor NOx. Tier 2 mobile budgets are 2,144 tons/year for 2017 $PM_{2.5}$ direct, 1,586 tons/year for 2025 $PM_{2.5}$ direct, 50,051 tons/year for 2017 $PM_{2.5}$ Precursor NOx, and 32,880 tons/year for 2025 $PM_{2.5}$ Precursor NOx.

- **Wintertime CO.** The region is designated as a Maintenance Area for mobile source wintertime CO, and is required to show that CO emissions from on-road mobile sources do not exceed the approved budget of 1671.5 tons/day.

The regional air quality conformity analysis of the projects and programs in the 2015 CLRP Amendment and FY2015-2020 TIP shows that mobile emissions are within the mobile budgets for all analysis years for all pollutants.

The results, based upon analyses contained in the full technical report, of the Air Quality Conformity Analysis of the 2015 Constrained Long Range Plan Amendment and FY2015-2020 Transportation Improvement Program for the Washington Metropolitan Region, were released for public comment and interagency consultation on September 10, 2015. The public comment period ended on October 10, 2015.

BACKGROUND

The Transportation Planning Board (TPB) approved the Scope of Work and project submissions for the 2015 CLRP Amendment and FY2015-2020 TIP air quality conformity analysis on February 18, 2015. The TPB approved an updated scope of work on April 15, 2015.

Key technical inputs and tools include:

- New Cooperative Land Activity Forecasts- Round 8.4
- New Project and Updates to Existing Project Submissions
- New 2014 Vehicle Registration Data
- New EPA's MOVES 2014 Emissions Estimation Model
- The Version 2.3.57 Travel Demand Model including a 3722 Transportation Analysis Zones (TAZ) area system

WORK ACTIVITIES

Inventories were developed for each pollutant for five forecast years (2015, 2017, 2025, 2030 and 2040). Ozone season pollutants (VOC and NOx) and wintertime CO are inventoried for average weekday conditions, and $PM_{2.5}$ precursor NOx and $PM_{2.5}$ direct are inventoried to

reflect emissions on a yearly total basis. These inventories address a primary conformity assessment criterion to demonstrate that emissions associated with the plan do not exceed the SIP budgets approved or found adequate for use in regional air quality conformity analyses.

CLRP Projects

Attachment A lists the major changes to the conformity project inputs since the 2014 CLRP. A complete list of highway and transit projects with updates as approved by the TPB included in the conformity analysis is shown in Appendix B of the full technical report.

VDOT Alternatives

The Virginia Department of Transportation (VDOT) requested that two alternatives, A and B, for an I-66 HOT lanes project be included in this air quality conformity analysis. A description of the alternatives is included in Attachment A. Generally, for the purpose of the conformity assessment, the difference between the alternatives is variation in access points on the facility.

Concurrent with the conformity assessment VDOT continued with project development activities and has substantially completed project level environmental and traffic studies. VDOT has also conducted an extensive series of public informational meetings, hearings and stakeholder consultations with local jurisdictions in Northern Virginia. Based on the results of the analyses and in response to input from local jurisdictions, the public, and stakeholders, VDOT has developed a draft locally preferred alternative for the I-66 multi-modal improvements outside the Capital Beltway.

VDOT compared the draft locally preferred alternative with the two alternatives included in the conformity analysis and determined that it most closely matches alternative B in terms of traffic access and operations, which are the main considerations for the regional air quality conformity analysis. Therefore VDOT has requested that the project definition as outlined under Alternative B be included in the 2015 amendment to the CLRP. A letter from VDOT to the TPB discussing the I-66 alternatives, and including the request that VDOT select alternative B, is included in Attachment B. The letter also highlights the differences between the locally preferred alternative that is currently under development and alternative B proposed to be included in the CLRP.

VDOT's schedule included a presentation of the draft locally preferred alternative to the Commonwealth Transportation Board (CTB) on September 11, and the CTB is expected to select the final alternative at the end of October. Following the CTB action, VDOT plans to seek FHWA approval of the NEPA document for the project before proceeding with the design phase. Upon finalization of the project designs, any changes to the project relative to alternative B will be reflected in a future update of the TPB's CLRP and its air quality conformity analysis.

Land Activity Forecasts

The COG Board approved the draft Round 8.4 Cooperative Forecasts for use in the air quality conformity analysis of the 2015 CLRP Amendment and FY2015-2020 TIP in February, 2015. This update from Round 8.3 includes changes in Alexandria, Arlington, Fairfax, and Prince William, as well as in Anne Arundel, Carroll, and Howard in the Baltimore region. Round 8.4 is very similar to Round 8.3, with the largest changes including decreases in employment in Arlington County and decreases in households and population in Prince William County. Attachment C shows a summary of the Round 8.4 data.

Travel Modeling Process

Travel demand forecasts were developed for each of the analysis years using the Version 2.3.57 travel demand model. Exhibit 1 presents the geographic areas for travel modeling and for emissions reporting for each pollutant. Exhibit 2 presents the resulting average weekday transit trips, vehicle trips, and Vehicle Miles Travelled (VMT) results through time for each conformity analysis year, for the full modeled area.

MOVES

The US Environmental Protection Agency **(**EPA**)** released a new version of their mobile emissions model, MOtor Vehicle Emissions Simulator **(**MOVES2014**),** in July 2014, for use in transportation conformity and State Implementation Plan activities. MOVES2014 allows users to benefit from new regulations promulgated since the release of the previous version of the software, MOVES2010. These include:

- Tier 3 emission standards that phase in beginning in 2017 for cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty trucks, and Tier 3 fuel standards that require lower sulfur gasoline beginning in 2017
- Heavy-duty engine and vehicle greenhouse gas (GHG) regulations that phase in during model years 2014-2018.
- The second phase of light-duty vehicle GHG regulations that phase in for model years 2017-2025 cars and light trucks.

The TPB approved the use of the MOVES2014 model in April, 2015 for the conformity analysis of the 2015 CLRP Amendment.

MOVES Inputs

Inputs to the MOVES model include both transportation and environmental data. Transportation data include travel information from the travel demand model, such as VMT and speed distributions. They also include vehicle population data, which is derived from Vehicle Identification Number (VIN) based registration records from the District, Maryland, and Virginia Departments of Motor Vehicles (DMV). Environmental data include fuel supply and formulation, meteorology data, and state Inspection and Maintenance (I/M) program information.

Mobile Emissions Inventories

Ozone Season and Wintertime CO – Daily Emissions

Ozone season emissions totals are illustrated in Exhibits 3 and 4. Wintertime CO emissions totals are shown in Exhibit 7. The emissions are shown in relation to the approved mobile budget for each pollutant. Ozone Season emissions reductions through time are attributed to cleaner vehicles and fuel standards, including those from Tier 2 and Tier 3 federal programs.

$PM_{2.5}$ – Yearly Emissions

$PM_{2.5}$ direct and $PM_{2.5}$ Precursor NO_x emissions totals are illustrated in Exhibits 5 and 6. The $PM_{2.5}$ direct and $PM_{2.5}$ Precursor NOx emissions are shown in relation to the Tier 1 level mobile budgets contained in the region's $PM_{2.5}$ Maintenance SIP. The Tier 2 level mobile budgets for these pollutants are available for conformity on an as/if needed basis. Current analysis indicates no such need and, as such, Tier 1 level budgets are in effect and are the only ones included on the graphs. The emissions reductions through time are attributed to cleaner vehicles and fuel standards, including Tier 2 and Tier 3 federal programs, as well as the heavy duty engine rule.

Emissions Inventories vs. Budgets

Exhibits 3-7 display net emissions for each forecast year. The charts show that the mobile emissions are within the mobile budgets for ozone season pollutants, fine particles pollutants, and Wintertime CO for all forecast years.

TERMs

Transportation Emission Reduction Measures (TERMs) are strategies or actions that the TPB and/or its member agencies can employ to offset increases in emissions from mobile sources. All TERMs are intended to reduce motor vehicle emissions by reducing either the number of vehicle trips (VT), vehicle miles traveled (VMT), or both. These strategies may include ridesharing and telecommuting programs, improved transit and bicycling facilities, clean fuel vehicle programs or other possible actions.

TERMs analyzed for the 2015 CLRP Amendment conformity analysis were grouped into four categories:

- TPB Commuter Connections Program
- Regional Incident Management Program
- Pedestrian Facilities Expansions & Enhancements
- Freeform Carpooling (Slug Lots)

Exhibit 7 lists the emission reduction potential of these TERMs, by pollutant, for each analysis year. The benefits of these projects are not included in the emissions totals in this report, but are available, if necessary, to ensure that regional emissions stay below the approved motor vehicle emissions budgets and also help offset future growth in mobile emissions.

COMMENTS / RESPONSE TO COMMENTS

Comment: The Metropolitan Washington Air Quality Committee (MWAQC) provided written comment in its September 29, 2015 letter. The letter states that MWAQC concurs that the transportation-sector emissions associated with the transportation plans meet the motor vehicle emissions budgets for ozone season pollutants, fine particles pollutants, and carbon monoxide, as is necessary to meet conformity requirements. The Committee points out that with a level of 76 parts per billion (ppb) the region did not attain the 2008 ozone standard of 75 ppb by the deadline at the end of the 2014 ozone season. EPA granted the region a one year extension, and currently the monitors show design value levels of 70 ppb, indicating that the region has made significant progress. MWAQC notes that the EPA recently proposed a revised ozone standard with a range of 65-70 ppb, and warns that the region may need to reduce its emissions even further to meet the new standard. MWAQC acknowledges the benefits of the recently adopted Tier 3 program, but states that it will need TPB's support in examining mobile sector emissions, and to identify new cost-effective strategies to reduce emissions to meet the new standard. The Committee appreciates that TPB has started using the MOVES2014 emissions model, and reminds the Board that the region committed to developing new motor vehicle emissions budgets for fine particles pollutants using the latest models. MWAQC comments positively on the recent VMT per capita reductions in the region, and urges TPB's continued investment in programs to mitigate future growth in vehicle emissions. The Committee also urges the TPB to maintain its commitments to TERMs and other emissions reduction measures.

Response: The TPB appreciates MWAQC's concurrence that the air quality conformity analysis of the 2015 CLRP Amendment and FY2015-2020 TIP meets all of the required emissions tests. The TPB agrees that there should be a continued effort to reduce emissions across all sectors to meet current and future standards. The Board looks forward to working with MWAQC in the development of plans to assist with the continued improvement of air quality in the region. The TPB also agrees with MWAQC on the need for continued investment in public transit, ridesharing, and other programs to reduce emissions. The TPB supports maintenance of commitments to TERMs and other cost-effective emissions reduction measures.

SUMMARY

The analytical results described in this air quality analysis provide a basis for a determination by the TPB of conformity of the 2015 CLRP Amendment and FY2015-2020 TIP.

Following: Exhibits 1- 8
Attachments A - C

EXHIBIT 1
TPB Transportation Planning Area and Washington, DC-MD-VA Nonattainment & Maintenance Areas

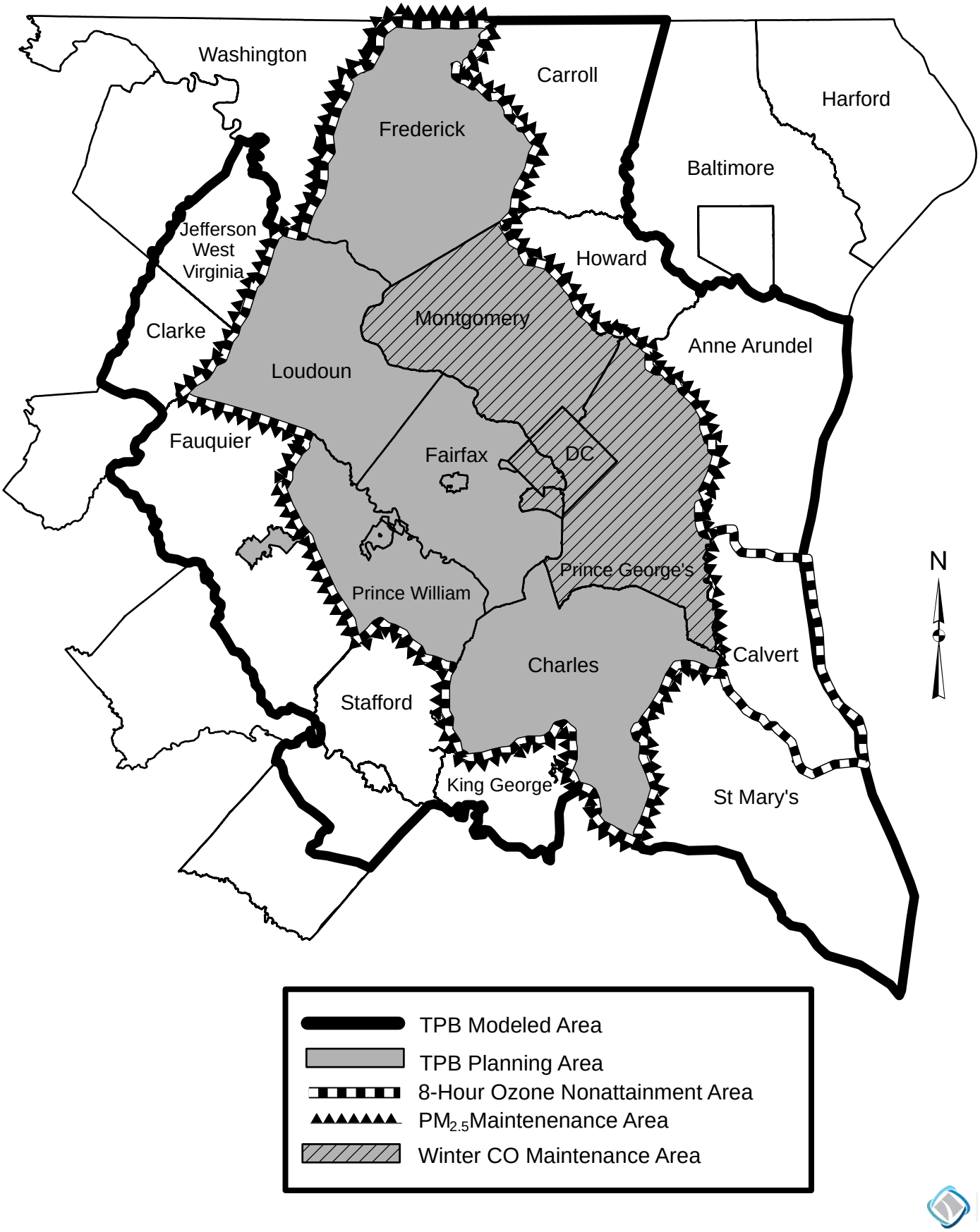


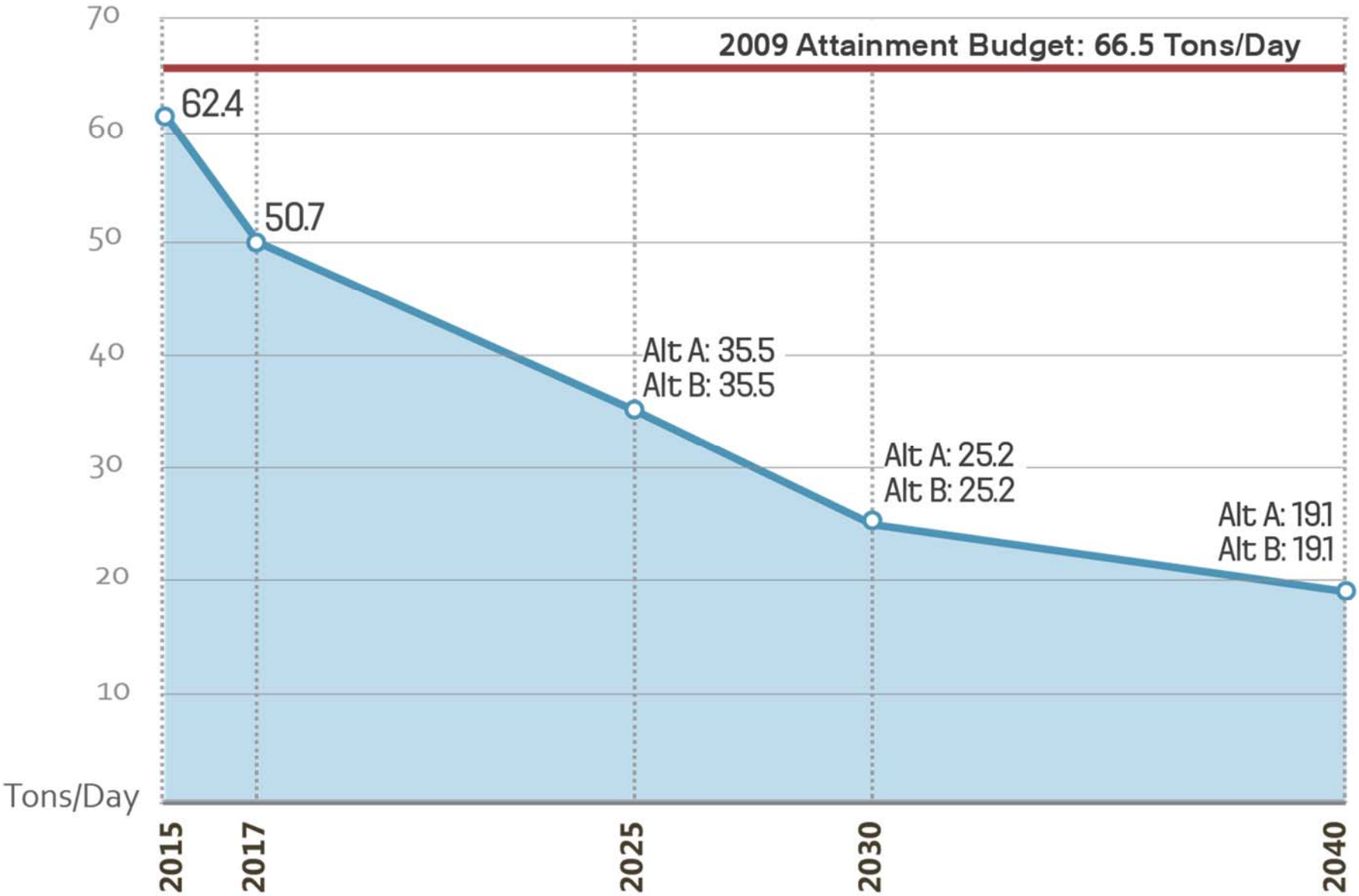
EXHIBIT 2

AIR QUALITY CONFORMITY
2015 CLRP & FY2015-2020 TIP
Travel Demand Summary
Modeled Area Trips and Vehicle Miles Traveled (000's)
Average Weekday Traffic (AWDT)

YEAR	TRANSIT TRIPS	VEHICLE TRIPS	VEHICLE MILES TRAVELED
2015	1,158.4	16,851.6	166,671.6
2017	1,213.8	17,184.7	170,199.4
2025 (Alt A)	1,386.2	18,485.1	185,271.7
2025 (Alt B)	1,386.0	18,485.7	185,329.8
2030 (Alt A)	1,441.5	19,208.1	194,151.4
2030 (Alt B)	1,442.7	19,206.6	194,139.8
2040 (Alt A)	1,555.2	20,352.9	206,656.7
2040 (Alt B)	1,555.5	20,350.5	206,596.3

NOTE: The Mobile Budget shown was developed in 2007, as part of the 8-Hour Ozone SIP, in response to the 1997 Ozone Standard. This budget, as the most current approved by EPA, is required for use in any conformity analysis assessing ozone season pollutants.

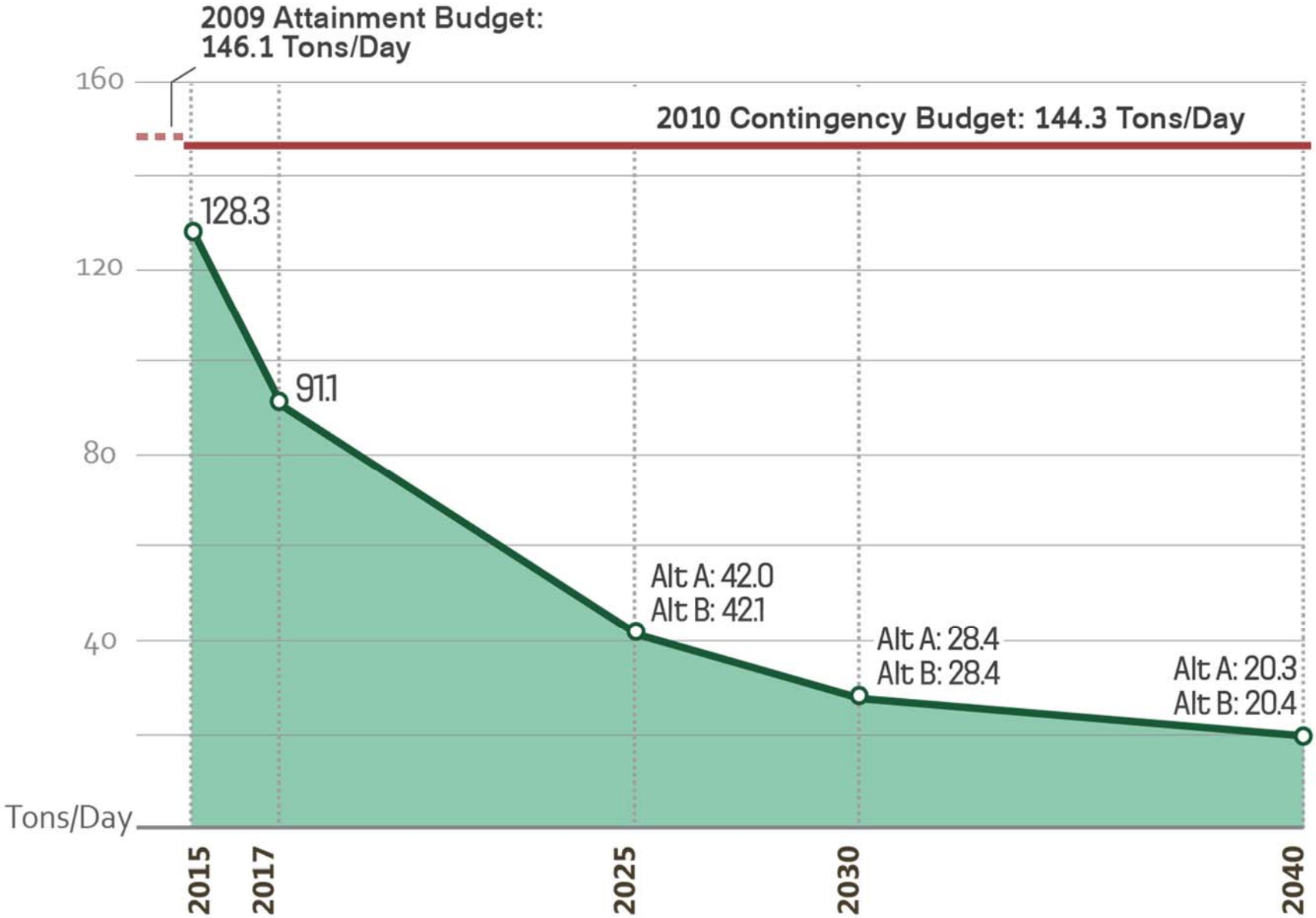
EXHIBIT 3
AIR QUALITY CONFORMITY
2015 CLRP & FY2015-2020 TIP
Mobile Source Emissions
Ozone Season VOC



TCMs and TERMS are not included in totals.

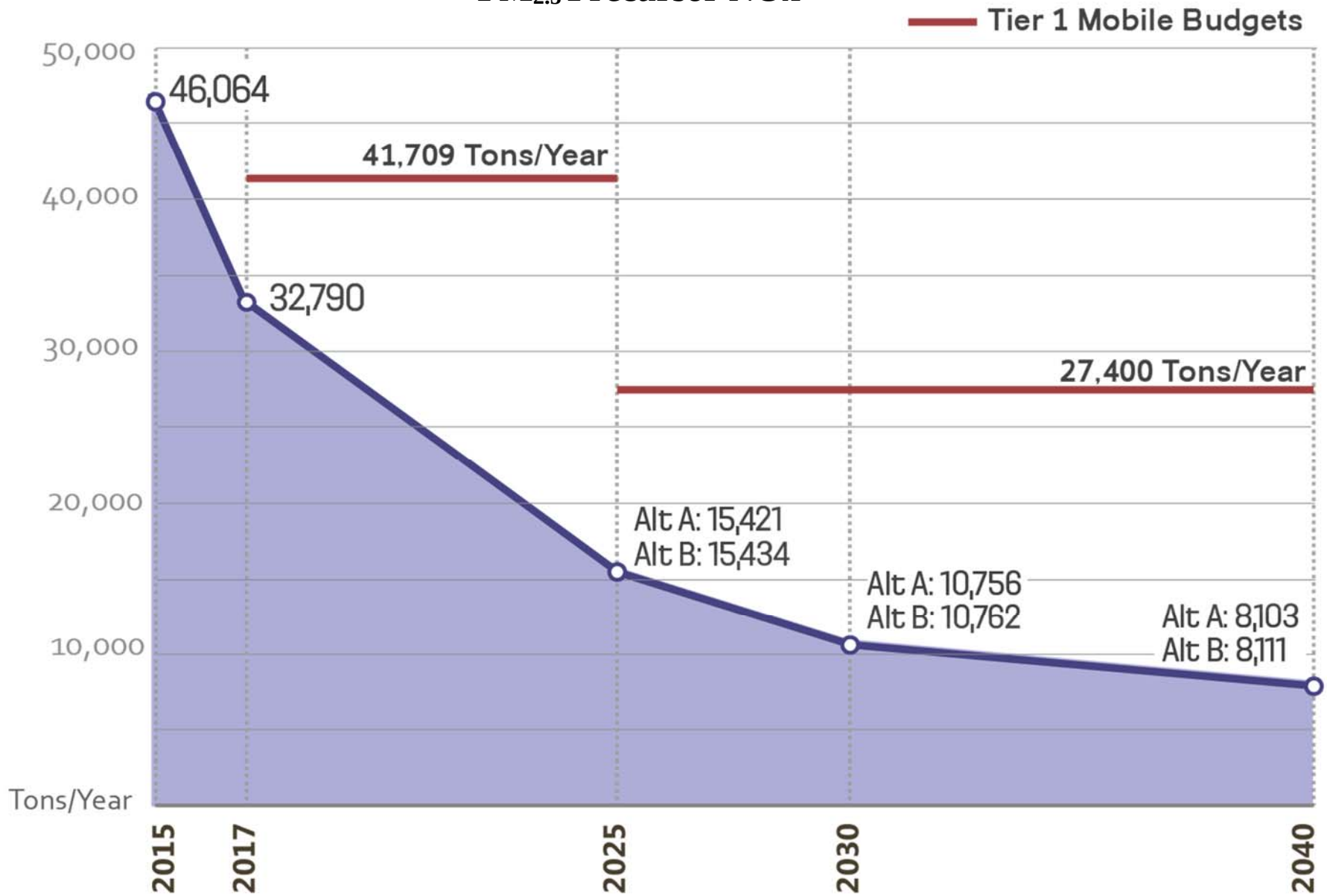
NOTE: The Mobile Budgets shown were developed in 2007, as part of the 8-Hour Ozone SIP, in response to the 1997 Ozone Standard. These budgets, as the most current approved by EPA, are required for use in any conformity analysis assessing ozone season pollutants.

EXHIBIT 4
AIR QUALITY CONFORMITY
2015 CLRP & FY2015-2020 TIP
Mobile Source Emissions
Ozone Season NOx



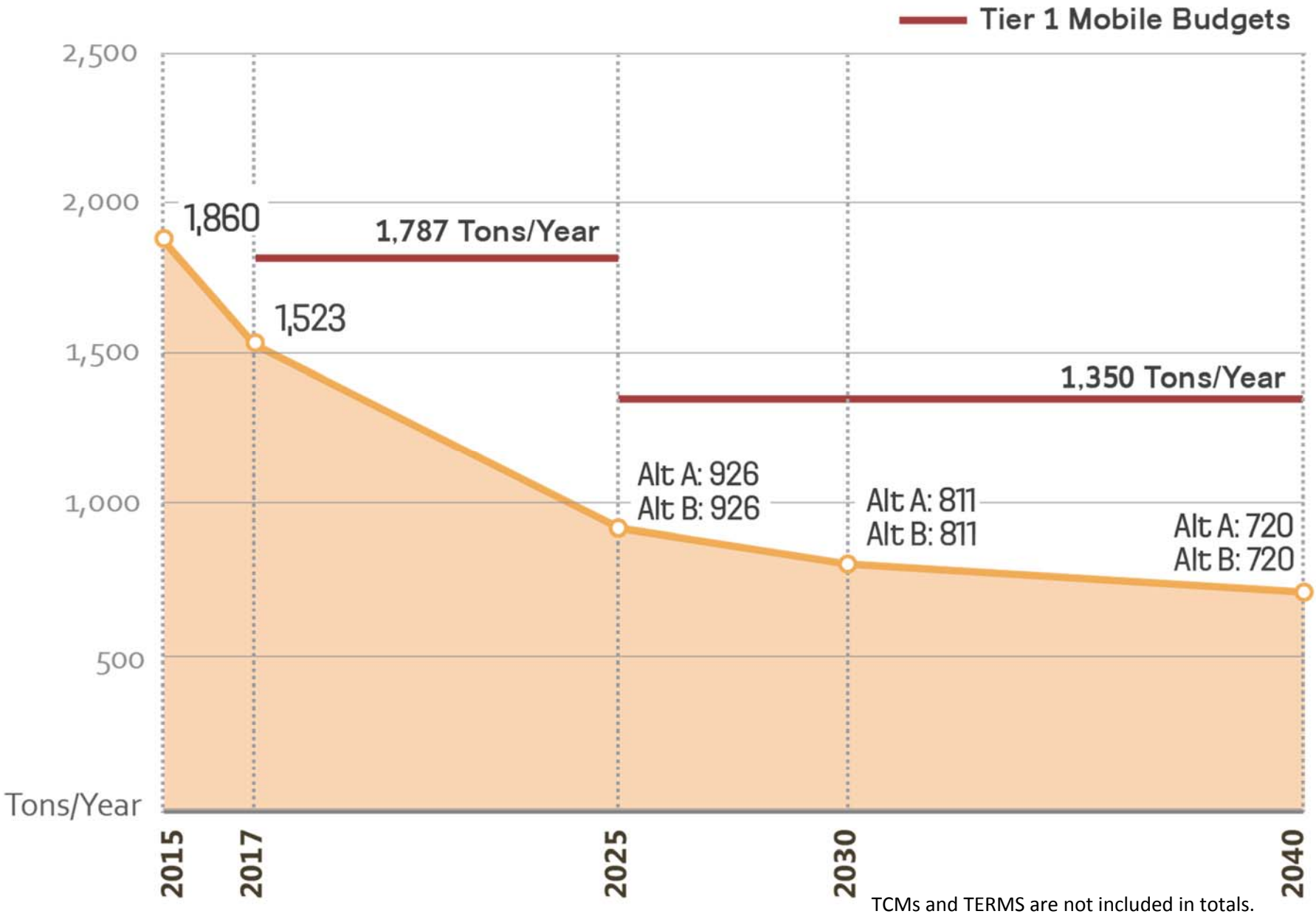
TCMs and TERMS are not included in totals.

EXHIBIT 5
AIR QUALITY CONFORMITY
2015 CLRP & FY2015-2020 TIP
Mobile Source Emissions
$PM_{2.5}$ Precursor NOx



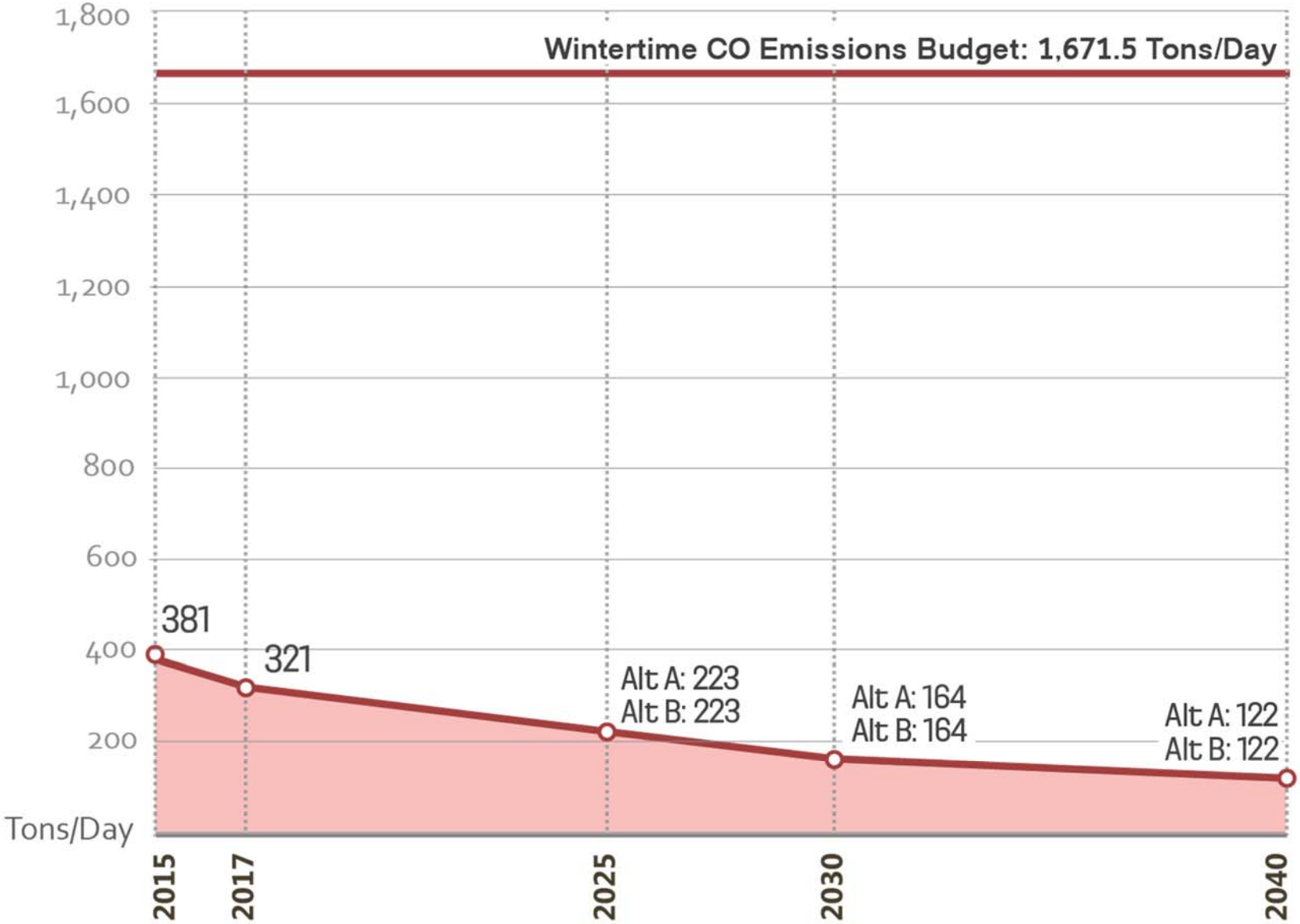
TCMs and TERMS are not included in totals.

EXHIBIT 6
AIR QUALITY CONFORMITY
2015 CLRP & FY2015-2020 TIP
Mobile Source Emissions
$PM_{2.5}$ Direct



TCMs and TERMS are not included in totals.

EXHIBIT 7
AIR QUALITY CONFORMITY
2015 CLRP & FY2015-2020 TIP
Mobile Source Emissions
Wintertime CO



TCMs and TERMS are not included in totals.

EXHIBIT 8

2015 CLRP
TRANSPORTATION EMISSIONS REDUCTION MEASURES
SUMMARY TABLE

ADDITIONAL EMISSIONS REDUCTIONS – ALL TERMs COMBINED					
Years	**Ozone - VOC**	**Ozone - NOx**	**PM2.5 Direct**	**Precursor NOx**	**Winter CO**
	(tons/day)	**(tons/day)**	**(tons/year)**	**(tons/year)**	**(tons/day)**
2015	0.06	0.08	0.88	24.16	0.71
2017	0.07	0.08	1.06	22.64	0.92
2025 Alt A	0.09	0.07	1.46	19.80	1.26
2025 Alt B	0.09	0.07	1.46	19.77	1.26
2030 Alt A	0.08	0.05	1.69	15.81	1.19
2030 Alt B	0.08	0.05	1.69	15.79	1.19
2040 Alt A	0.09	0.04	2.18	14.37	1.28
2040 Alt B	0.09	0.04	2.17	14.35	1.28

ATTACHMENT A

Summary of Major Additions and Changes for the 2015 Financially Constrained Long-Range Transportation Plan

District of Columbia

Dedicated Bike Lanes, Citywide

Length: 9 miles
Complete: 2015
Cost: $470,000

The District Department of Transportation (DDOT) proposes to add a series of dedicated bike lane projects that will remove one or more lanes for vehicular traffic on 10 different roadways by reducing lanes as follows:

a. 4th St. SW, M St. to P St.
4 to 2 lanes

b. 6th St. NE, Florida Ave. to K St.
2 to 1 lane

c. 7th St. NW, New York Ave. to N St.
4 to 2 lanes

d. 12th St. NW, Pennsylvania Ave. to Massachusetts Ave.
4 to 3 lanes

e. 14th St. NW, Florida Ave. to Columbia Rd.
4 to 2 lanes

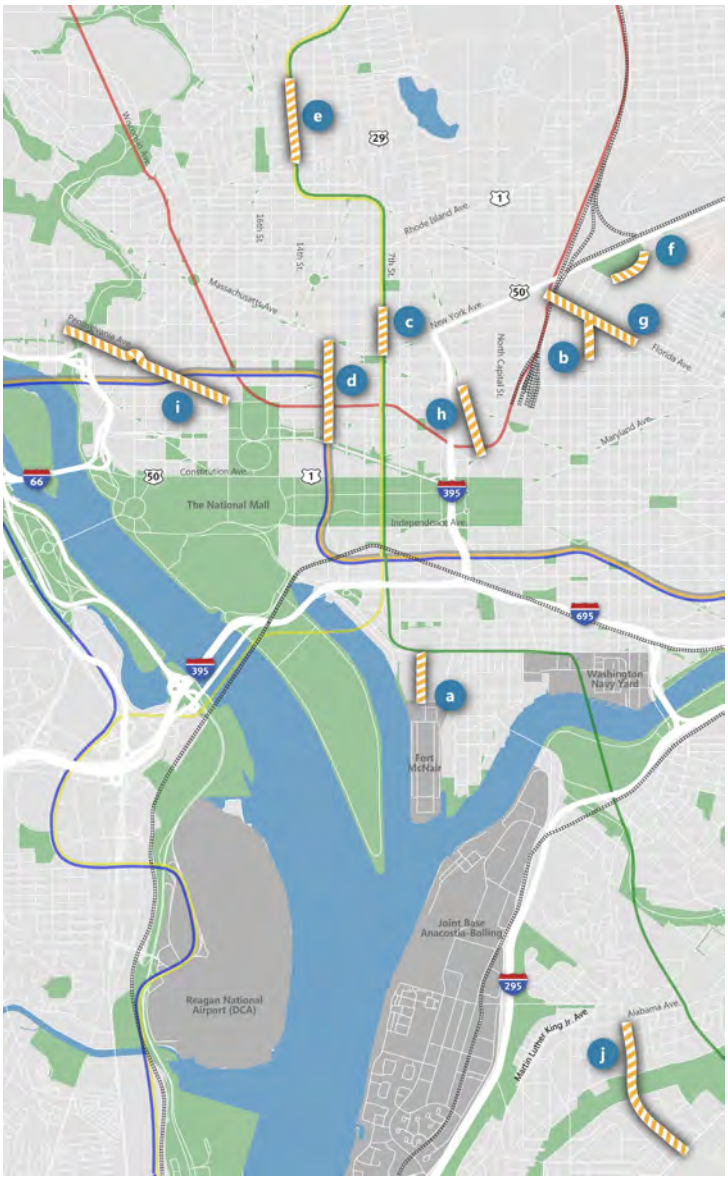
f. Brentwood Pkwy. NE, 6th St./Penn St. to 9th St.
4 to 2 lanes

g. Florida Ave. NE, 2nd St. to West Virginia Ave.
6 to 4 or 5 lanes

h. New Jersey Ave. NW, H St. to Louisiana Ave.
4 to 2 lanes

i. Pennsylvania Ave. NW, 17th St. to 29th St.
4/6 to 2 or 4 lanes

j. Wheeler Rd. SE, Alabama Ave. to Southern Ave.
4 to 2 lanes



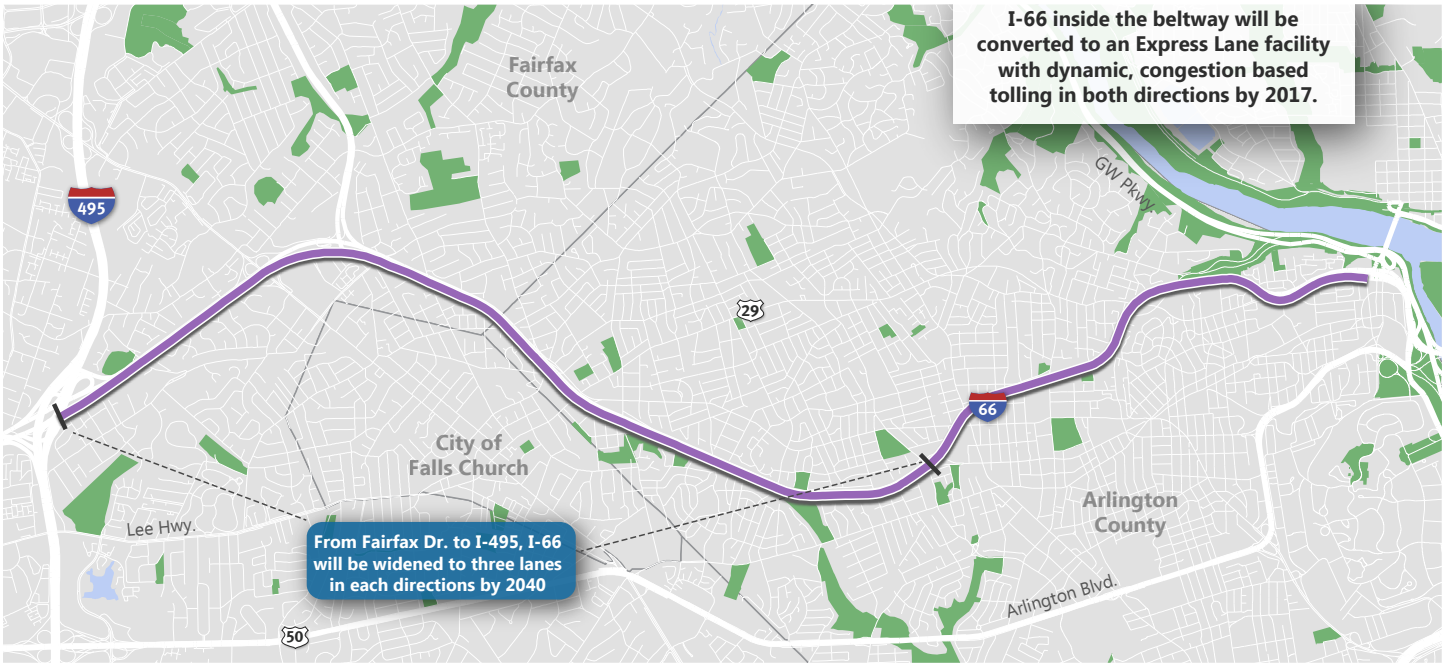
Remove: Benning Road Streetcar Spur

The 2014 Update to the CLRP included the addition of a streetcar spur line running from Benning Rd. along Minnesota Ave. to the Minnesota Ave. Metro Station. This project is being withdrawn from the CLRP.

VIRGINIA

I-66 Multimodal Improvement Project, Inside the Beltway US Route 29 in Rosslyn to I-495

Length: 10 miles
Complete: 2017, 2040
Cost: $350 million



The Virginia Department of Transportation (VDOT) proposes to convert I-66 inside the Capital Beltway into a managed express lanes facility with dynamic, congestion-based tolling for all vehicles with less than three occupants, in both directions during the morning and evening peak periods. VDOT plans to implement this conversion by 2017. VDOT also proposes widening I-66 to 3 lanes in both directions between Fairfax Dr. and I-495 (and from 3 to 4 lanes on eastbound I-66 from the Dulles Toll Road to Washington Blvd.) The widening is projected to be complete by 2040.

VDOT proposes to implement a number of multimodal improvements with this project, including enhanced bus service and completion of elements of the bicycle and pedestrian network around the corridor. Tolls from the managed express lanes will be used to fund further transit enhancements.

The currently approved CLRP includes an assumption that the existing HOV requirement on I-66 inside the Beltway would increase from 2 to 3 occupants in 2020. This proposed project would advance that requirement to 2017 inside the Beltway. The CLRP also currently includes two spot improvement projects that provide additional lanes on westbound I-66 between Westmoreland Dr./Washington Blvd. and Haycock Rd./Dulless Access Highway (complete in 2015), and between Lee Highway/Spout Run and Glebe Rd. (complete in 2020).

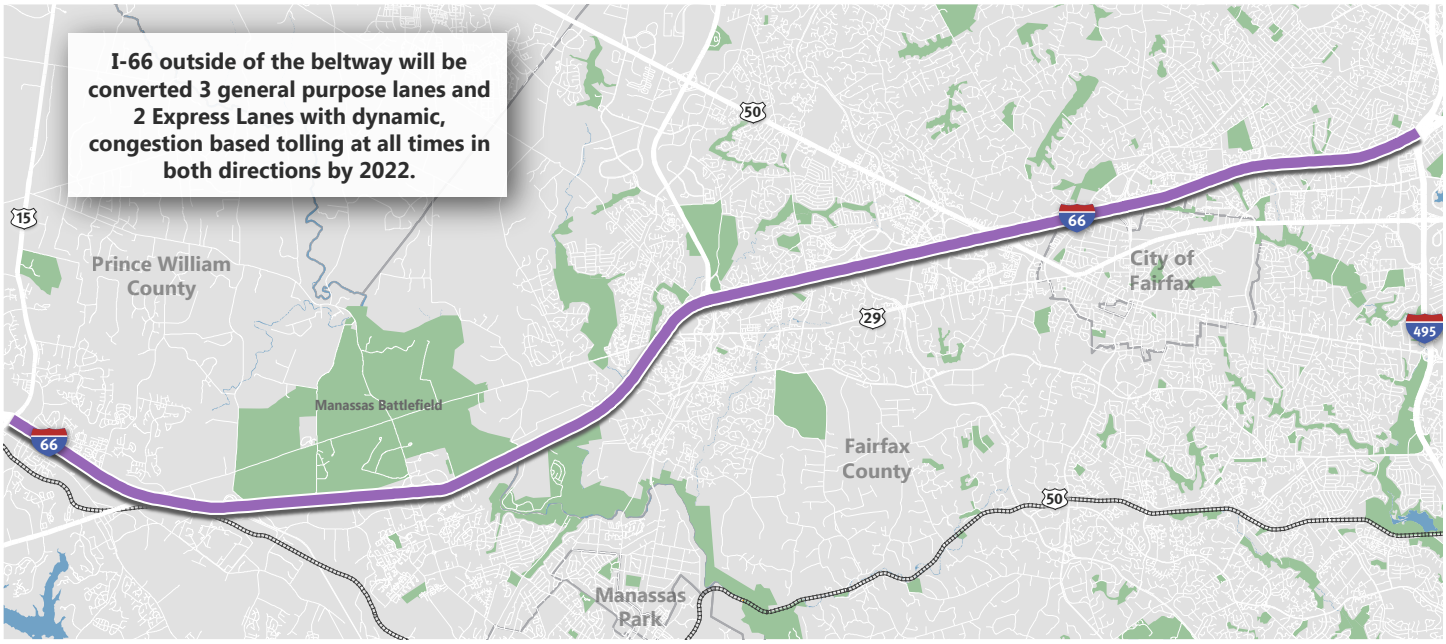
See the CLRP Project Description Form and supplemental materials provided by VDOT in Attachment A for more information.

I-66 Corridor Improvements outside the Capital Beltway
I-495 to US Route 15 in Prince William County

Length: 25 miles

Complete: 2022

Cost: $2-3 billion



VDOT proposes to reconfigure I-66 outside the Capital Beltway to have two managed express lanes and three general purpose lanes in each direction. Please see the 2015 CLRP Air Quality Conformity Inputs table for further details on lane configurations. The managed express lanes would use dynamic, congestion-based tolling for vehicles with less than 3 occupants at all times to maintain free-flow conditions.

VDOT has proposed two alternative sets of access and egress points between the express lanes and the general purpose lanes. Both alternatives (A and B) are detailed in the Air Quality Conformity Inputs table and will be analyzed separately.

Multimodal aspects of the proposed project include implementation of a new high-frequency bus service and the construction of new, and expansion of existing commuter park-and-ride lots.

See the CLRP Project Description Form and supplemental materials provided by VDOT in Attachment A for more information.

Remove: Columbia Pike Streetcar and Crystal City Streetcar Projects

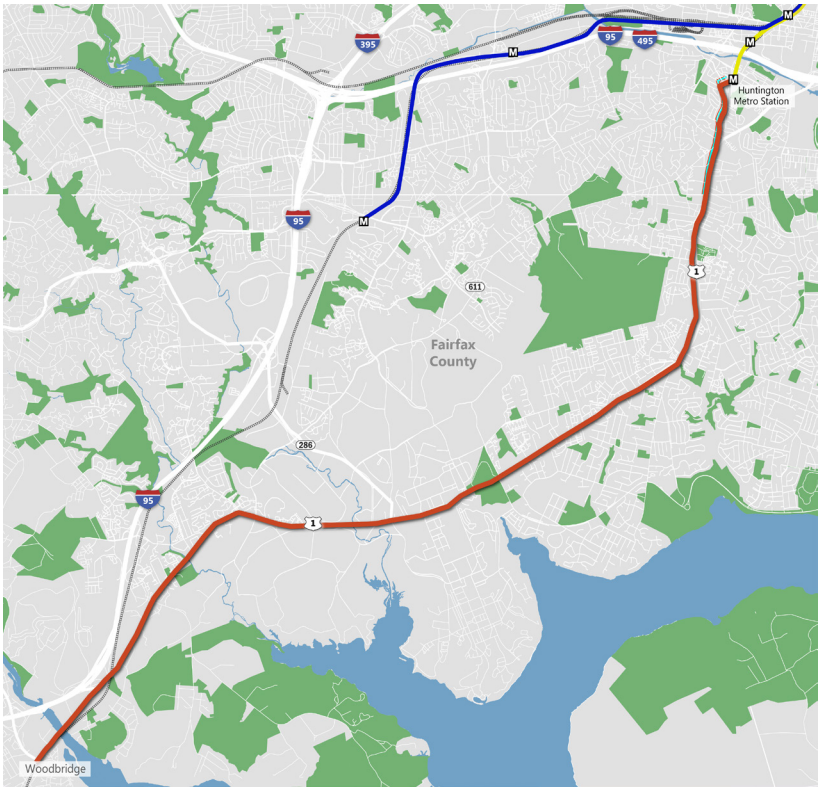
The Columbia Pike Streetcar project between Skyline Center and Pentagon City was added to the CLRP in 2008 and was scheduled to be complete in 2017. The Crystal City Streetcar from the Pentagon City Metro Station to Four Mile Run at the Alexandria city line was added in 2011 and was projected to be complete by 2019. Due to recent policy and funding changes in Arlington County, both projects are proposed for removal.

Exhibit 1: Summary of Major Additions and Changes for the 2015 CLRP Amendment

US 1, Richmond Highway Bus Rapid Transit
Huntington Metro Station to Woodbridge VRE Station

Length: 15 miles
Complete: 2032
Cost: $1 billion

VDOT is proposing to implement a Bus Rapid Transit (BRT) system in three phases. The first phase will run from the Huntington Metro Station via North Kings Highway to US 1, Richmond Highway where it will run on a dedicated transitway located in the median to Hybla Valley. This phase is scheduled to be complete in 2026. The second phase would extend BRT service on a dedicated, median transitway to Fort Belvoir by 2028. The third phase extends the dedicated transitway and BRT service to the Woodbridge VRE Station. This segment is expected to be complete in 2032. The project will also include a 10-foot shared use path on both sides of US Route 1.



Transit Service Enhancements for I-66 Inside the Beltway 2015 CLRP Submission (placeholder subject to change**)

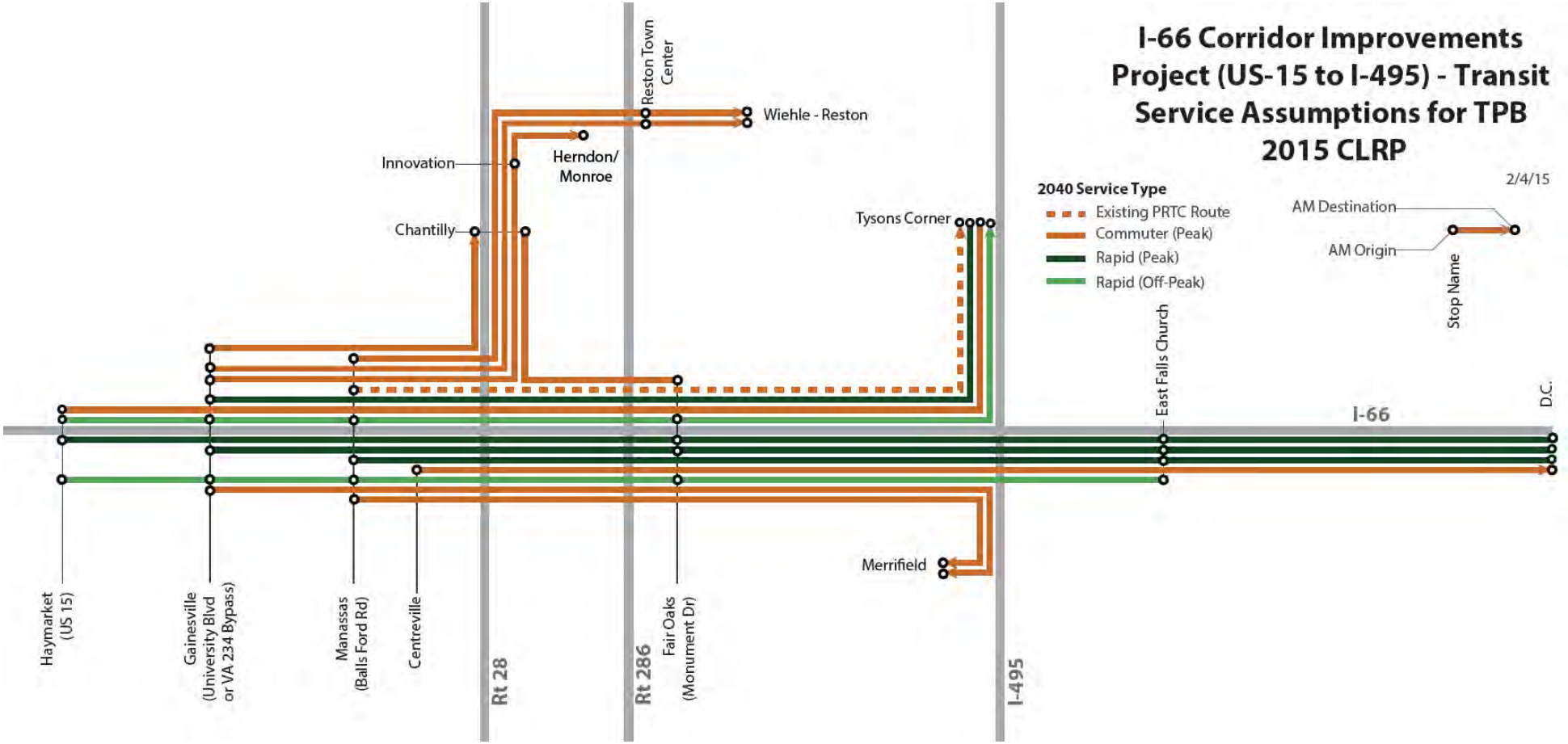
Route	Change
New Outside the Beltway Services	
Rapid Bus Service from outside the Beltway: Haymarket to Arlington/DC Gainesville to Arlington/DC Manassas to Arlington/DC	Bi-directonal, all day + weekend
New Priority Bus Services	
U.S. 29 Priority Bus	Bi-directional, all day service
U.S. 50 Priority Bus – via Ballston	Bi-directional, all day service
U.S. 50 Priority Bus – via U.S. 50	Add route from Fair Lakes to D.C. core along U.S. 50
U.S. 50 Priority Bus – Tysons	Add route from Tysons Corner along U.S. 50 and Wilson Boulevard
Local Routes in Study Area:	
Metrobus 1B	Increase peak-period frequency; improve inbound runtime
Metrobus 1C	Increase peak and off-peak frequencies
Metrobus 1E	Improve runtime
Metrobus 2C	Increase peak and off-peak frequencies
Metrobus 3A	Extend routing to NVCC and East Falls Church and increase frequency
Metrobus 3E	Add reverse-peak direction service and increase peak-direction service frequency; add off-peak service
Metrobus 3T	Increase off-peak-period frequency
Metrobus 4A	Reroute to end at Seven Corners; increase frequency
Metrobus 4E	Increase peak-period frequency, improve runtime
Metrobus 4H	Improve runtime
Metrobus 10B	Increase peak-period frequency
Metrobus 15L	Increase peak-period frequency
Metrobus 22A	Increase peak-period frequency
Metrobus 23A	Increase peak-period frequency
Metrobus 23C	Increase peak-period frequency
Metrobus 25A	Increase peak and off-peak frequencies
Metrobus 25B	Increase northbound off-peak frequency and peak frequencies in both directions
Metrobus 28A	Increase peak-period frequency, improve runtime
Metrobus 28E	New route between Skyline Plaza and East Falls Church
Metrobus 38B	Increase frequency
ART	
ART 42	Increase the reverse-peak direction, peak-period frequency
ART 45	Increase peak-period frequency, improve run time
ART 52	Increase peak and off-peak frequencies
ART #75	Extend routing to Shirlington and Virginia Square; add off-peak service
ART #77	Extend to Rosslyn and increase frequency
New ART1	Add route between Arlington Hall and Crystal City
New ART2	Add route between Court House and Pentagon City

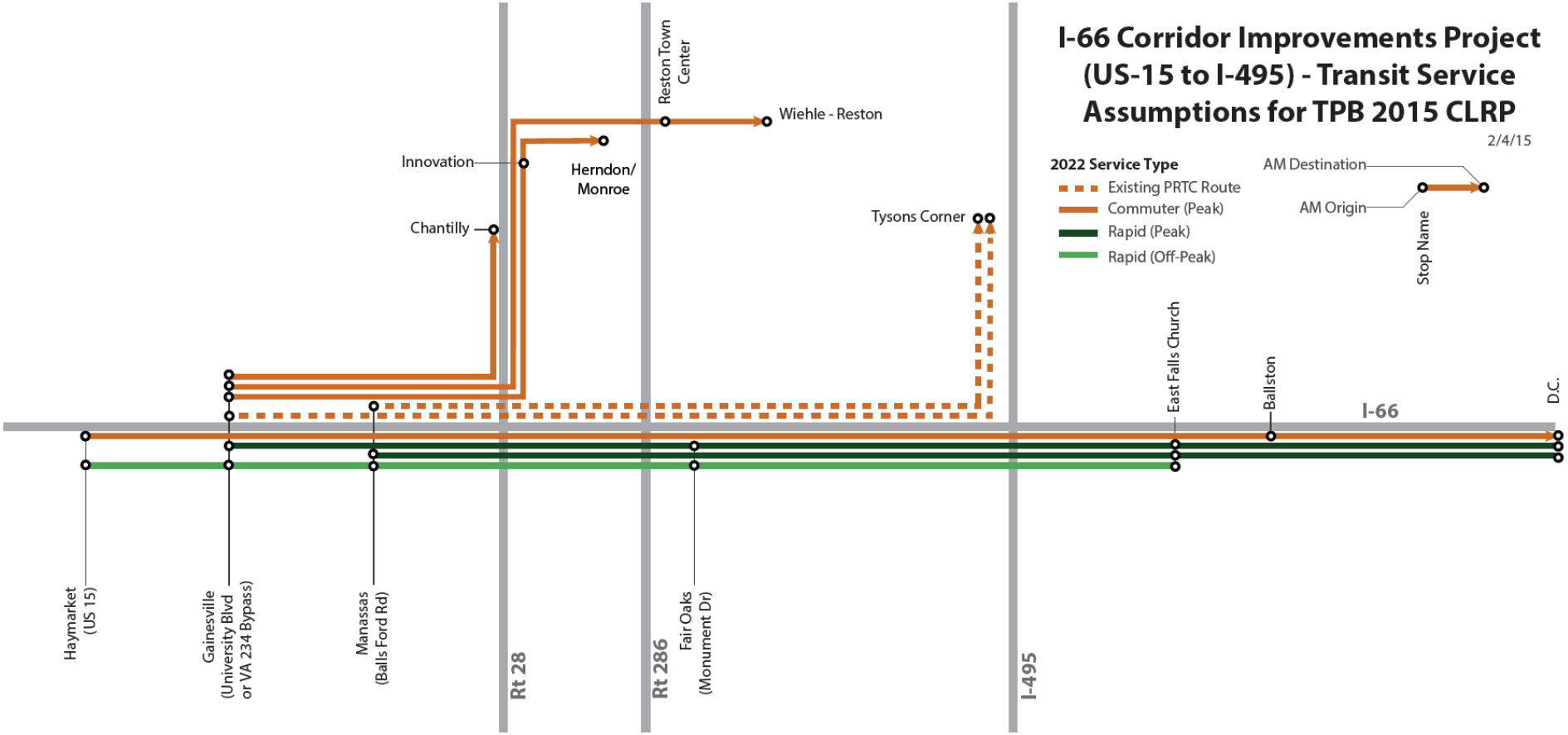
**Services subject to change based on environmental study, public outreach, and stakeholder working group inputs.

Draft 2/11/15

I-66 Corridor Improvements Project (US 15 to I-495) - Transit Service Assumptions for TPB 2015 CLRP									
Route	**New/ Existing**	**Year**	**Notes**	**Direction**	**Times**	**2022 Average Peak Frequency (minutes)**	**2022 Average Off-Peak Frequency (minutes)**	**2040 Average Peak Frequency (minutes)**	**2040 Average Off-Peak Frequency (minutes)**
Haymarket to Arlington/Downtown DC Commuter Bus	New	2022		Peak Only	Peak Only	60	-	Replaced by Rapid Bus Service	
Haymarket to Arlington/Downtown Rapid Bus	New	2040	Stop at Monument; One off-peak route serves Haymarket, Gainesville & Manassas and terminates at E. Falls Church.	Bi-directional	All-day + Weekend	-	-	30	30
Haymarket to Tysons Corner Commuter Bus	New	2040		Peak Only	Peak Only	-	-	45	-
Gainesville to East Falls Church/ Downtown DC Rapid Bus		2022	Stop at Monument; One off-peak route serves Haymarket, Gainesville & Manassas and terminates at E. Falls Church.	Bi-directional	All-day + Weekend	25	60	10	30
Gainesville to Tysons Corner Commuter Bus	*Existing*		*PRTC's Linton Hall Metro Direct*	*Peak Only*	*Peak Only*	*30*	-	*Continued operation of existing service at the discretion of PRTC with Rapid Bus in place.*	
Gainesville to Tysons Corner Rapid Bus		2040	One off-peak route serves Haymarket, Gainesville & Manassas.	Bi-directional	All-day + Weekend	-	-	25	60
Gainesville to Merrifield Commuter Bus		2040		Peak Only	Peak Only	-	-	35	-
Gainesville to Reston Commuter Bus		2022		Peak Only	Peak Only	45	-	25	-
Gainesville to Innovation/Herndon Commuter Bus		2022		Peak Only	Peak Only	60	-	30	-
Gainesville to Chantilly Commuter Bus		2022		Peak Only	Peak Only	60	-	25	-
Manassas to East Falls Church/Downtown DC Rapid Bus		2022	One off-peak route serves Haymarket, Gainesville & Manassas and terminates at E. Falls Church.	Bi-directional	All-day + Weekend	45	60	25	30
Manassas to Tysons Corner Commuter Bus	*Existing*		*PRTC's Manassas Metro Direct*	*Peak Only*	*Limited mid-day*	*30*	*60*	*30*	*60*
Manassas to Merrifield Commuter Bus		2040		Peak Only	Peak Only	-	-	45	-
Manassas to Reston Commuter Bus		2040		Peak Only	Peak Only	-	-	60	-
Centerville to Downtown DC Commuter Bus		2040		Peak Only	Peak Only	-	-	25	-
Fair Oaks to Chantilly Commuter Bus		2040		Bi-directional	Peak Only	-	-	60	-

**Existing PRTC Metro Direct services shown for informational purposes only*


I-66 Corridor Improvements Project (US-15 to I-495) - Transit Service Assumptions for TPB 2015 CLRP
2/4/15
2040 Service Type
Existing PRTC Route
Commuter (Peak)
Rapid (Peak)
Rapid (Off-Peak)
AM Destination
AM Origin
Stop Name
Reston Town Center
Wiehle - Reston
Herndon/ Monroe
Innovation
Chantilly
Tysons Corner
East Falls Church
I-66
D.C.
Haymarket (US 15)
Gainesville (University Blvd or VA 234 Bypass)
Manassas (Balls Ford Rd)
Centreville
Rt 28
Rt 286
Fair Oaks (Monument Dr)
I-495
Merrifield


I-66 Corridor Improvements Project (US-15 to I-495) - Transit Service Assumptions for TPB 2015 CLRP
2/4/15
2022 Service Type
Existing PRTC Route
Commuter (Peak)
Rapid (Peak)
Rapid (Off-Peak)
AM Destination
AM Origin
Stop Name
Reston Town Center
Wiehle - Reston
Innovation
Herndon/ Monroe
Chantilly
Tysons Corner
East Falls Church
Ballston
I-66
D.C.
Haymarket (US 15)
Gainesville (University Blvd or VA 234 Bypass)
Manassas (Balls Ford Rd)
Rt 28
Rt 286
Fair Oaks (Monument Dr)
I-495

Transit and Transportation Demand Management (TDM) Definition for I-66 Corridor Improvements Project

Introduction

A transit and transportation demand management (TDM) planning process is underway by VDOT and DRPT in coordination with the development of the I-66 Corridor Improvements Project (Project). It is anticipated that the planning will result in an I-66 Transit and TDM Implementation Plan with recommendations that will be integrated with the proposed elements of the I-66 Project. The transit/TDM recommendations will support the overall purpose and need of the Project, seeking to achieve the following objectives:

- Efficient use of public transportation infrastructure and services
- Reduction in congestion
- Increase in the availability and reliability of travel choices
- Improvement in the attractiveness, reliability, and quality of transit
- Increase in park-and-ride space supply, convenience, and availability
- Effective use of the region's developed and emerging managed lanes network including I-66, I-495, I-395, and I-95 through Integrated Corridor Management (ICM)

The following sections briefly define the primary elements of the transit and TDM Implementation Plan, which include:

- Park-and-ride facilities
- Transit services
- TDM programs

Park-and-Ride Facilities

Park-and-ride facilities are an essential part of the transit, TDM, and ICM support infrastructure in the I-66 corridor. These facilities will offer people direct access to transit services, perform a role in people's transition from one mode to another, and support carpooling, vanpooling and casual carpooling/slugging. The nature of existing and future development along the I-66 corridor is such that much of the transit demand in the corridor will be generated by park-and-ride activity and through coordinated local transit and corridor rapid bus services.

Given the role of park-and-ride facilities in the corridor, it is anticipated that the Transit and TDM Implementation Plan will recommend an increase in the number of these facilities and in the supply of parking in the corridor. The plan will also likely recommend improved amenities at park-and-ride facilities, as well as more direct access between the facilities and I-66. The following locations are currently being recommended for proposed park-and-ride lots as part of the I-66 Project:

- Haymarket, west of the I-66/Route 15 interchange (new facility)
- Gainesville, off of University Boulevard (new facility)
- Route 234 Bypass (Cushing Road), east of the I-66 interchange (expansion of existing facility)
- Balls Ford Road, west of Route 234 Business (new facility)
- Stringfellow Road (expansion of existing facility, currently underway by Fairfax County)
- Monument Drive/Fairfax Corner (new facility, likely structured parking)
- Vienna Metrorail Station (possible improvements of access to existing facility)

It is anticipated that the I-66 Transit/TDM Implementation Plan will recommend the following services and amenities at the existing proposed park-and-ride facilities:

- Park-and-ride parking for privately-owned vehicles
- Real-time parking availability information
- Kiss-and-ride accommodation
- Dedicated space for transit operations (bus bays and station/stop facilities)
- Waiting area for buses (shelters, sidewalk, plaza area, etc.)
- Waiting/queuing area for casual carpooling/slugging (depending on anticipated demand)
- Pick-up space for vehicles picking up/dropping off casual carpoolers/sluggers
- Lighting (at bus stations and in lots)
- Static and real-time transit service information
- Landscaping
- Pedestrian walkways
- Bicycle racks, lockers, and/or shelters
- Interconnecting transit service (e.g., local feeder services and rapid bus service on I-66)
- Direct or nearly direct access to/from I-66 managed lanes via new ramps
- Multimodal access from arterial street network (including pedestrian and bicycle access)

Working in coordination with VDOT operations of the corridor, including intelligent transportation system (ITS) elements of the I-66 Corridor Improvements Project, transit and TDM recommendations for park-and-ride facilities will also likely include the development of infrastructure to support the provision of real-time information about park-and-ride facility utilization and transit service information and vanpool and carpool matching to travelers utilizing ICM applications (possibly a mixture of publically-provided information and private applications).

Transit Services

It is anticipated that a combination of existing local and new or expanded corridor-focused transit services will serve weekday and weekend peak and off-peak hour demand intersecting with and along the I-66 corridor. The I-66 Transit/TDM Implementation Plan will likely introduce a new I-66 rapid bus service that will increase service efficiency and effectiveness, while increasing its convenience and utility for many trip purposes and travel periods. The Implementation Plan will also consider increased commuter bus service that will offer peak period service. The transit and TDM plan recommends a mixture of the following transit services:

- **Commuter Bus Services:** Services focused on one-seat rides. The Transit and TDM Implementation Plan will likely recommend strategic routes and other commuter service in the corridor to enhance connectivity to major destinations in DC, Arlington, Vienna, Merrifield, Tysons, Fair Lakes, Reston, Herndon, Centreville, and Manassas. The plan will likely encourage service and facility coordination with these services to enable operators to take advantage of new park-and-ride facilities and their improved access to the corridor.

- **I-66 Rapid Bus Service (RBS):** Service specifically for the I-66 corridor operating as a bus extension/compliment of the Metrorail Orange Line. It is anticipated that the I-66 RBS will operate on several route patterns to offer frequent headways and all-day service to and from key park-and-ride lots (with direct ramp access to/from managed lanes). RBS will operate in the managed lanes with the intention of providing users more daily, reliable rides to and from their destinations.

TDM Programs

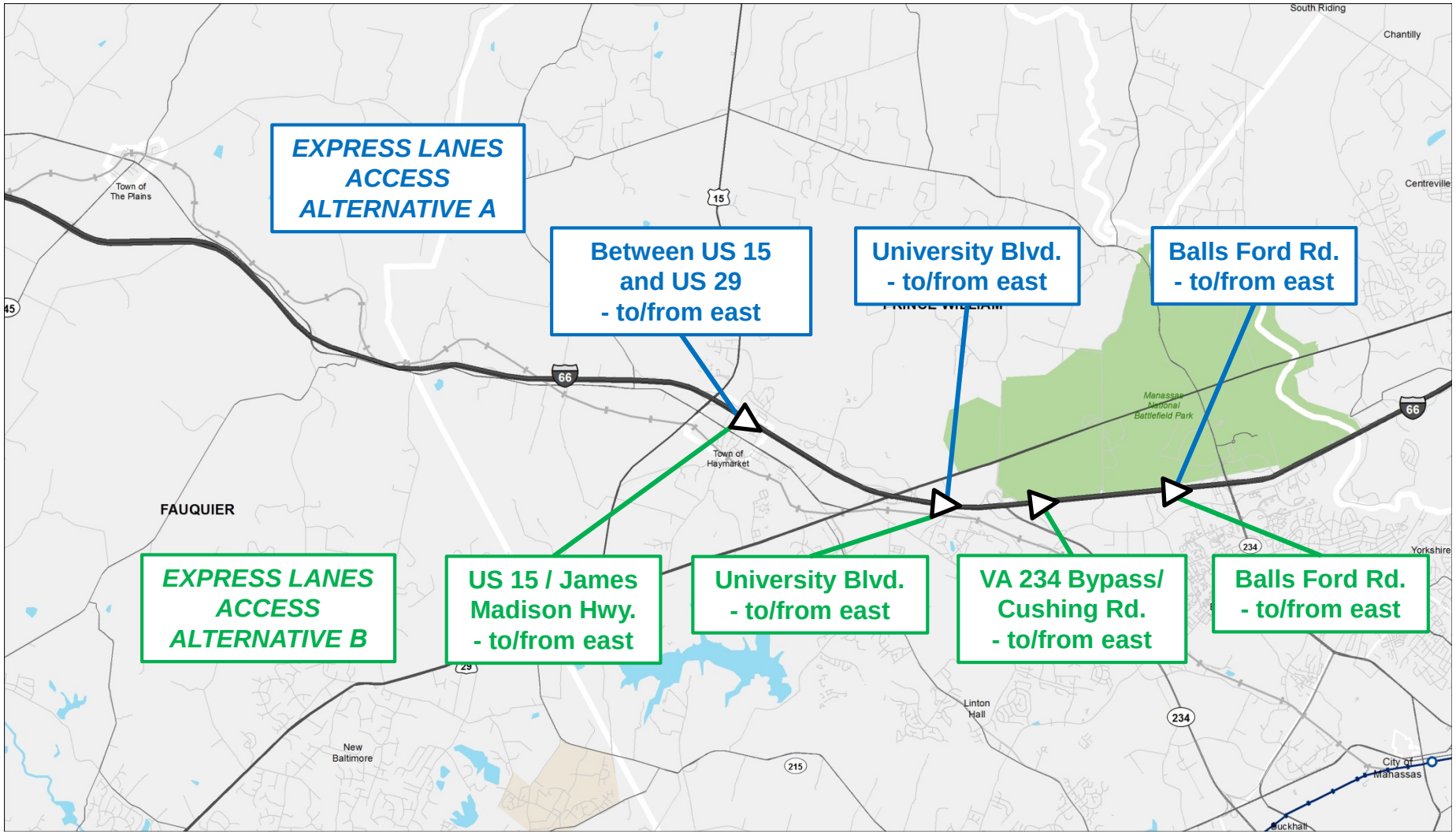
TDM programs at several levels of investment and market penetration will likely be recommended as a part of the pending I-66 Transit and TDM Implementation Plan. TDM programs will be designed to complement and support transit facility, infrastructure, and service recommendations. TDM recommendations will be focused on increasing the number, convenience, and effectiveness of travel choices in the I-66 corridor, as well as on managing travel demand during construction and post construction. TDM recommendations will include the following strategies:

- Carpool formation assistance and incentives
- Vanpool formation assistance and incentives
- Employer and destination outreach, services and information
- Home-based outreach
- Promotion of transit, vanpooling and carpooling
- Enhancement of web-based and mobile app ridematching service
- Support for casual carpooling (slugging)

Summary

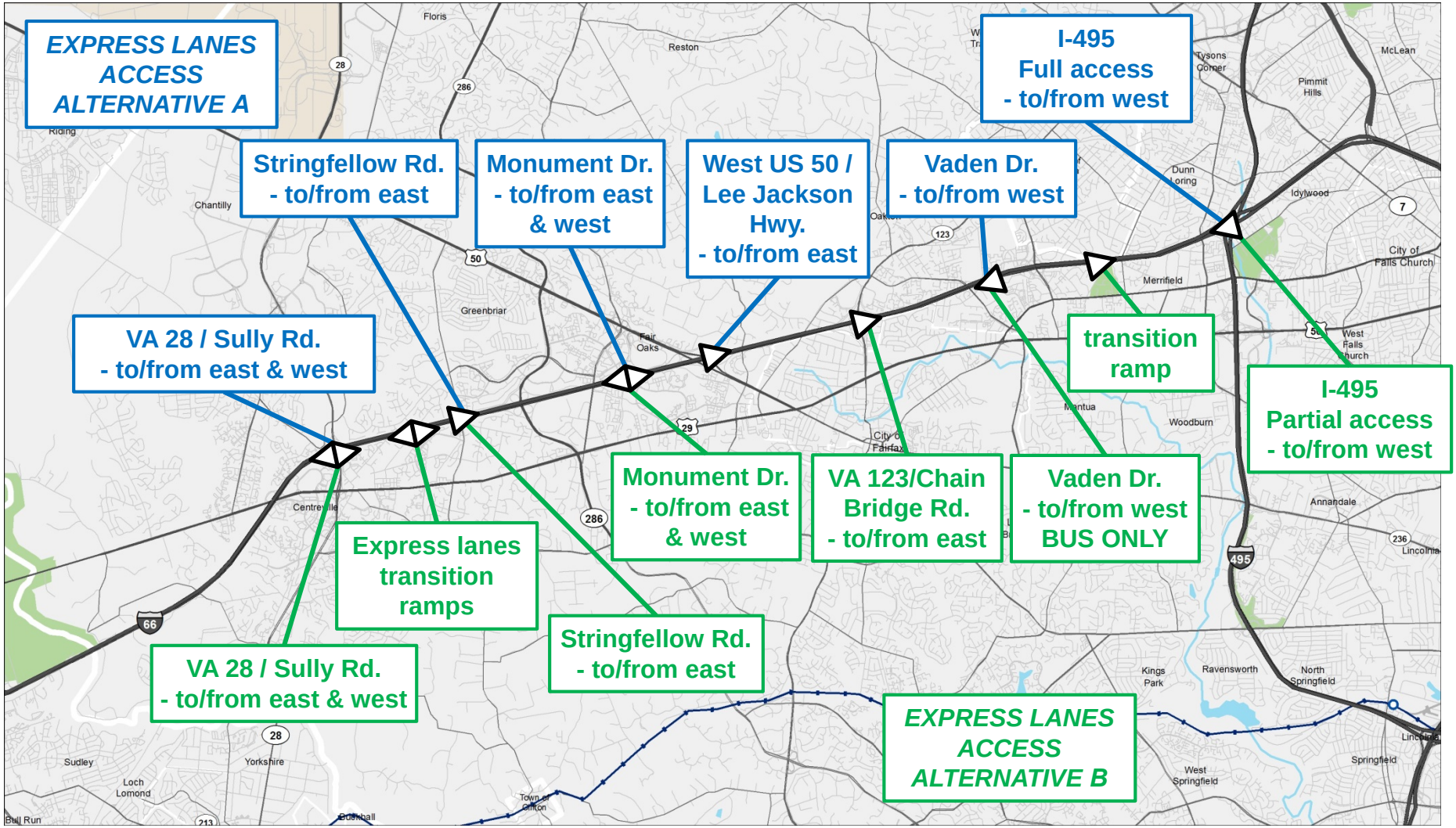
The current I-66 Transit and TDM planning by VDOT and DRPT will complement the development of the I-66 Corridor Improvements Project. It is anticipated that the planning will be completed in mid-2015 with the primary outcome being an I-66 Transit and TDM Implementation Plan. The plan will include recommendations to be integrated with the proposed I-66 Project, such as park-and-ride lot locations and sizes, enhancement and expansion of transit services, and implementation of TDM programs.

Preliminary Access Alternatives (Prince William County)



Excerpted from January 9, 2015 VDOT presentation to TPB.

Preliminary Access Alternatives (Fairfax County)



Excerpted from January 9, 2015 VDOT presentation to TPB.

ATTACHMENT B

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
4975 Alliance Drive
Fairfax, VA 22030

CHARLES A. KILPATRICK, P.E.
COMMISSIONER

September 3, 2015

The Honorable Phil Mendelson, Chairman
National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300
Washington DC 20002

Subject: I-66 Corridor Improvements Outside the Beltway

Dear Chairman Mendelson:

Since February 2015, when VDOT submitted Alternatives 2A and 2B for air quality conformity analysis, VDOT has continued with project development activities and has substantially completed project level environmental and traffic studies. VDOT has also conducted an extensive series of public informational meetings, hearings and stakeholder consultations with local jurisdictions in Northern Virginia. Based on the results of the analyses and in response to input from local jurisdictions, the public, and stakeholders, VDOT has developed a draft locally preferred alternative for the I-66 multi-modal improvements outside the Capital Beltway. Robust transit services are key elements of both Alternative 2A and Alternative 2B. Bothe alternatives include the same array of transit services, which have been developed in collaboration with transit providers. The same robust transit services are a component of the draft locally preferred alternative. Similarly, the bicycle and pedestrian improvements and Transportation Demand Management (TDM) programs developed for Alternatives 2A and 2B are included in the draft locally preferred alternative.

We are writing to request that the Transportation Planning Board (TPB), upon completion of its public comment period and review of the 2015 Constrained Long Range Plan (CLRP) Air Quality Analysis, approve the analysis and adopt the 2015 CLRP amendment with the inclusion of Alternative 2B for the I-66 Corridor Improvements Outside the Beltway project. This action by the TPB is needed to allow the Virginia Department of Transportation (VDOT) to complete its environmental assessment study and secure federal approval before proceeding to the design and programming stages of project development. Any difference between Alternative 2B and the final design of the project will be reflected in a future update of the TPB's CLRP.

The draft locally preferred alternative draws on the most promising elements of alternatives 2A and 2B, which will collectively provide the most benefit for safe and efficient travel in the I-66 corridor. To date, the draft locally preferred alternative differs from Alternative 2B as originally

submitted in three locations. At VA 234 Bypass/Gainesville and at US 50 West/north of I-66/Fairfax, ramp configurations from Alternative 2A were substituted for the Alternative 2B configurations. Additionally, at the US 28 Interchange, mainline express transition ramps connecting express lanes to general purpose lanes have been added to the locally preferred alternative. The draft locally preferred alternative most closely matches Alternative 2B in terms of traffic access and operations, but it also retains an important feature of Alternative 2A: the preservation of right-of-way in the median of I-66, so as not to preclude the future extension of the Metrorail Orange Line or other transit options in the median.

VDOT project staff has consulted with appropriate representatives of the Virginia office of the Federal Highway Administration (FHWA) regarding the draft locally preferred alternative. FHWA staff reviewed the draft locally preferred alternative relative to Alternative 2B and concurred with VDOT's plan to proceed with including Alternative 2B in the TPB's 2015 amendment to the CLRP and regional air quality conformity analysis, with the understanding that any difference between Alternative 2B and the final design of the project would be reflected in a future update of the TPB's CLRP. VDOT subsequently briefed TPB staff on elements of the draft preferred alternative, VDOT's determination that operationally it closely matches Alternative 2B, and the feedback received from the Virginia FHWA office.

VDOT will be presenting the draft preferred alternative to the Commonwealth Transportation Board (CTB) on September 16, 2015. Public meetings are scheduled for October 19, 20, and 21, and the CTB is scheduled to take final action on the draft preferred alternative on October 28, 2015. Following the CTB action, VDOT plans to seek FHWA approval of the NEPA document for the project before proceeding with the design phase.

VDOT remains committed to keeping the TPB and its member jurisdictions informed about the various milestones of ongoing project development and implementation, including the finalization of the project delivery mechanism. VDOT also remains committed to working with the TPB to ensure that any differences in the operational elements of the project's final design and Alternative 2B will be reflected in subsequent amendments of the CLRP and updates of the regional air quality conformity analysis.

We thank you and the Board for accommodating VDOT's earlier request to evaluate both alternatives 2A and 2B for the I-66 Outside the Beltway project as part of the regional air quality conformity analysis, and request inclusion of Alternative 2B in the 2015 CLRP Amendment. As always, please let me know if I can be of further assistance in addressing any questions or comments members of the Board may have on this matter.

Sincerely,

Helen Cuervo

Helen Cuervo, P.E.
District Administrator - VDOT Northern Virginia

Cc: Rene'e Hamilton
Deputy District Administrator, VDOT Northern Virginia

ATTACHMENT C

HOUSEHOLD DATA

MODELED AREA:	2015	2017	2020	2025	2030	2040
D.C.	287112	294489	305550	323191	340307	370758
MONTGOMERY	377524	385296	396955	414873	434767	460161
PR.GEORGES	323364	328465	336107	348307	359878	379020
ARLINGTON	104317	106349	109394	116624	122230	133319
ALEXANDRIA	71202	73658	77352	82624	85830	93188
FAIRFAX	417625	425070	436288	461808	486298	528472
LOUDOUN	122644	129391	139505	151558	158142	164297
PR. WILLIAM	157614	164681	175294	186253	195251	208220
FAUQUIER	25337	25981	26954	28616	30272	33801
FREDERICK	89935	92546	96471	103944	111118	123247
CHARLES	57528	60235	64299	70833	75847	85901
HOWARD	112173	116866	123899	130948	135517	139497
ANNE ARUNDEL	206441	209268	213504	220565	227626	241542
CALVERT	34298	34991	36027	37374	38348	40301
CARROLL	64142	64972	66219	68025	69692	72853
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	47742	49894	53122	57878	62604	69306
CLARKE&JEFFERSON	29378	30455	32064	34783	37347	42371
K. GEORGE	9,808	10379	11237	12808	14366	17142
ST. MARY'S	44443	46408	49352	53960	58143	66509
STAFFORD	49673	52815	57533	65473	73367	87670
TOTAL	2,632,300	2,702,209	2,807,126	2,970,445	3,116,950	3,357,575

SOURCES:
MWCOG Round 8.4 Cooperative Forecasts
BMC Round 8A Cooperative Forecasts
George Washington Regional Commission / Federicksburg Area MPO February 2013
TAZ Refinements of the January 2012 GWRC/FAMPO Long-Range Transportation Plan: Updated Control Estimates and Forecasts for City of Fredericksburg, King George, Spotsylvania and Stafford Counties.
Tri-County Council for Southern Maryland data for Calvert, Charles and St. Mary's
COG/TPB Staff used West Virginia University population projections, February 2013 for Clark and Fauquier Counties .
COG/TPB Staff used West Virginia University population projections, February 2013 for Jefferson County

EMPLOYMENT DATA

MODELED AREA:	2015	2017	2020	2025	2030	2040
D.C.	814957	833701	861814	905846	944096	1001814
MONTGOMERY	532004	544949	564377	598824	635264	715121
PR.GEORGES	356958	365324	377879	403134	427514	497652
ARLINGTON	219147	223039	228892	243562	265677	301276
ALEXANDRIA	108712	111250	115060	130585	145288	163401
FAIRFAX	693803	719557	758260	814740	866739	930665
LOUDOUN	163850	177217	197265	224249	248803	278216
PR. WILLIAM	162143	170594	183305	205101	227276	273954
FAUQUIER	29270	30016	31135	33071	34996	39086
FREDERICK	102014	103707	106242	109802	114558	125556
CHARLES	68439	69758	71731	74731	77537	83138
HOWARD	172812	178092	186016	199220	212423	229077
ANNE ARUNDEL	321497	328898	339999	353540	367849	398624
CALVERT	41059	42422	44457	46258	47159	48955
CARROLL	67955	69087	70782	72937	75227	79379
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	78759	81609	85881	92897	99865	116175
CLARKE & JEFFERSON	27533	28329	29530	31348	33052	36300
K. GEORGE	17804	18433	19377	20947	22490	25747
ST. MARY'S	64083	65350	67268	70093	71969	75862
STAFFORD	52681	54970	58399	64304	70170	84159
TOTAL	4,095,480	4,216,302	4,397,669	4,695,189	4,987,952	5,504,157

SOURCES:
MWCOG Round 8.4 Cooperative Forecasts
BMC Round 8A Cooperative Forecasts
George Washington Regional Commission / Fredericksburg Area MPO February 2013
TAZ Refinements of the January 2012 GWRC/FAMPO Long-Range Transportation Plan: Updated Control Estimates and Forecasts for City of Fredericksburg, King George, Spotsylvania and Stafford Counties.
Tri-County Council for Southern Maryland data for Calvert, Charles and St. Mary's
COG/TPB Staff used West Virginia University population projections, February 2013 for Clark and Fauquier Counties .
COG/TPB Staff used West Virginia University population projections, February 2013 for Jefferson County

NOTE: Includes Census Adjustment

POPULATION DATA

MODELED AREA:	2015	2017	2020	2025	2030	2040
D.C.	660,528	682,499	715,494	764,267	808,718	883,568
MONTGOMERY	1,020,036	1,038,835	1,067,030	1,109,953	1,153,912	1,202,769
PR.GEORGES	881,379	888,788	899,912	926,944	950,030	995,503
ARLINGTON	222,213	226,387	232,650	247,357	259,757	282,998
ALEXANDRIA	147,669	153,677	162,681	171,292	176,259	191,405
FAIRFAX	1,158,653	1,174,744	1,198,897	1,255,627	1,310,772	1,406,187
LOUDOUN	367,957	387,970	417,986	452,242	468,664	484,498
PR. WILLIAM	481,855	500,504	528,485	557,549	581,616	617,427
FAUQUIER	69,658	71,440	74,114	78,710	83,306	93,022
FREDERICK	241,616	248,507	258,849	278,654	297,708	329,955
CHARLES	160,098	166,434	175,953	191,475	202,552	224,871
HOWARD	309,043	318,338	332,273	346,517	357,094	366,352
ANNE ARUNDEL	559,618	567,770	580,006	593,594	606,688	628,047
CALVERT	96,500	98,081	100,450	103,253	105,099	108,882
CARROLL	170,549	172,687	175,900	179,437	183,258	189,574
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	133,403	138,651	146,515	158,276	169,994	189,052
CLARKE&JEFFERSON	72,419	74,540	77,714	82,518	87,075	95,697
K. GEORGE	26,911	28,237	30,226	34,029	37,819	44,707
ST. MARY'S	118,184	122,945	130,098	141,135	151,403	173,832
STAFFORD	149,386	157,536	169,774	191,249	212,671	251,851
TOTAL	7,047,675	7,218,570	7,475,007	7,864,078	8,204,395	8,760,197

SOURCES:

MWCOG Round 8.4 Cooperative Forecasts
BMC Round 8A Cooperative Forecasts
George Washington Regional Commission / Federicksburg Area MPO February 2013
TAZ Refinements of the January 2012 GWRC/FAMPO Long-Range Transportation Plan: Updated Control Estimates and Forecasts for City of Fredericksburg, King George, Spotsylvania and Stafford Counties.
Tri-County Council for Southern Maryland data for Calvert, Charles and St. Mary's
COG/TPB Staff used West Virginia University population projections, February 2013 for Clark and Fauquier Counties .
COG/TPB Staff used West Virginia University population projections, February 2013 for Jefferson County