visualize2045

A LONG-RANGE TRANSPORTATION PLAN FOR THE NATIONAL CAPITAL REGION

AIR QUALITY CONFORMITY ANALYSIS OF THE 2020 AMENDMENT TO VISUALIZE 2045

Full Report

March 18, 2020

National Capital Region
Transportation Planning Board

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ABOUT VISUALIZE 2045 & THE TPB
Visualize 2045 is the federally required long-range transportation plan for the National Capital Region. It identifies and analyzes all regionally significant transportation investments planned through 2045 to help decision makers and the public "visualize" the region's future. This report documents the 2020 Amendment to Visualize 2045.

Visualize 2045 was developed by the National Capital Region Transportation Planning Board (TPB), the federally designated metropolitan planning organization (MPO) for metropolitan Washington. The TPB is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the Washington metropolitan region. Members of the TPB include representatives of the transportation agencies of the states of Maryland and Virginia and the District of Columbia, 24 local governments, the Washington Metropolitan Area Transit Authority, the Maryland and Virginia General Assemblies, and nonvoting members from the Metropolitan Washington Airports Authority and federal agencies. The TPB is staffed by the Department of Transportation Planning at the Metropolitan Washington Council of Governments (COG).

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ACKNOWLEDGEMENTS
The preparation of this report was financially aided through grants from the District of Columbia Department of Transportation, the Maryland Department of Transportation, the Virginia Department of Rail & Public Transportation, the Virginia Department of Transportation, the U.S. Department of Transportation, the Federal Highway Administration, and the Federal Transit Administration.

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EXECUTIVE SUMMARY

This report documents the air quality conformity analysis of the 2020 Amendment to Visualize 2045, the region's long-range transportation plan, and the FY 2021-2024 Transportation Improvement Program (TIP). The analysis is carried out under the regulations contained in the Environmental Protection Agency's final rule, published in the November 24, 1993 *Federal Register,* with subsequent amendments and additional federal guidance published by the Environmental Protection Agency (EPA), the Federal Highway Administration (FHWA), and the Federal Transit Administration (FTA). The process involved consultation with affected agencies such as the EPA, the FHWA, the FTA, and the Metropolitan Washington Air Quality Committee (MWAQC), as well as with the public. The analysis is a responsibility of the National Capital Region Transportation Planning Board.

"Conformity" is a requirement of the Federal Clean Air Act to ensure that transportation plans and transportation improvement programs are consistent with air quality goals, and progress towards achieving and maintaining Federal air quality standards is being made. A conformity determination is undertaken to forecast mobile source emissions that will result from an area's transportation system. The analysis must demonstrate that those emissions are within limits outlined in state air quality implementation plans.

For the 2020 amendment to the Visualize 2045 plan, emissions for ozone season Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx) were estimated for 2019, 2021, 2025, 2030, 2040, and 2045 forecast years. The Metropolitan Washington Air Quality Committee (MWAQC) developed mobile emissions budgets for Volatile Organic Compound (VOC) and Nitrogen Oxides (NOx) in the 2008 Ozone Maintenance Plan. In August 2018 EPA found these budgets adequate for use in conformity determinations.

The results of this analysis show that the 2020 amendment to the Visualize 2045 plan and FY 2021-2024 TIP mobile emissions are within the mobile emissions budgets for ozone season VOC and NOx for all forecast years. This analysis provides a basis for a determination of conformity for the 2020 amendment to the Visualize 2045 plan and the FY 2021-2024 TIP.

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EXHIBITS

ATTACHMENTS

LIST OF ACRONYMS

AWDT	Average Weekday Traffic
BMC	Baltimore Metropolitan Council
CAAA	Clean Air Act Amendments of 1990
CAC	Citizens Advisory Committee
CLRP	Constrained Long Range Plan
CMAQ	Congestion Mitigation & Air Quality
CO	Carbon Monoxide
C-SMMPO	Calvert-St. Mary's Metropolitan Planning Organization
DDOT	District of Columbia Department of Transportation
DTP	(COG's) Department of Transportation Planning
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
I/M	Inspection and Maintenance
LOV	Low Occupancy Vehicle
LRTP	Long Range Transportation Plan
MDOT	Maryland Department of Transportation
MPO	Metropolitan Planning Organization
MOVES	MOtor Vehicle Emissions Simulator
MVEB	Motor Vehicle Emissions Budget
MWAQC	Metropolitan Washington Air Quality Committee
MWCOG	Metropolitan Washington Council of Governments
NAAQS	National Ambient Air Quality Standards
NOx	Nitrogen Oxides

$PM_{2.5}$	Particulate Matter, 2.5 micrometers in diameter and smaller
PNR	Park and Ride Lot
SIP	State Implementation Plan
TAZ	Transportation Analysis Zone
TCM	Transportation Control Measure
TERM	Transportation Emission Reduction Measure
TIP	Transportation Improvement Program
TPB	Transportation Planning Board
US DOT	United States Department of Transportation
US EPA	United States Environmental Protection Agency
VDOT	Virginia Department of Transportation
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WMATA	Washington Metropolitan Area Transit Authority

TPB R14 -2020
March 18, 2020

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

RESOLUTION FINDING THAT THE 2020 AMENDMENT TO THE VISUALIZE 2045 LONG-RANGE TRANSPORTATION PLAN AND THE FY 2021-2024 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 the TPB to make a determination of conformity of its financially constrained long-range transportation plan and Transportation Improvement Program (TIP) with the State Implementation Plan (SIP) for air quality maintenance within the Metropolitan Washington non-attainment area; and

WHEREAS, on May 3, 2019, the TPB staff released the Technical Inputs Solicitation Submission Guide and asked for inputs to the 2020 Amendment to the Visualize 2045 plan and the FY 2021-2024 TIP; and

WHEREAS, a scope of work was developed to address all procedures and requirements, including public and interagency consultation, and the scope was approved by the TPB at its July 24, 2019 meeting; and

WHEREAS, highway and transit project inputs submitted for inclusion in the air quality conformity analysis of the 2020 Amendment to Visualize 2045 transportation plan and FY 2021-2024 TIP were approved by the TPB at its July 24, 2019 meeting; and

WHEREAS, on January 31, 2020, the draft results of the air quality conformity analysis of the Visualize 2045 transportation plan and FY 2019-2024 TIP were released for a 30-day public comment period with inter-agency consultation; and

WHEREAS, the analysis reported in the Summary Report: Air Quality Conformity Analysis of the 2020 Amendment to Visualize 2045, dated March 18, 2020, demonstrates adherence to all mobile source emissions budgets for ground level ozone precursors Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx), and meets all regulatory, planning and interagency consultation requirements, and therefore provides the basis for a finding of conformity of the 2020 Amendment to the Visualize 2045 transportation plan and the TIP with the requirements of the CAAA; and

WHEREAS, as part of the TPB's interagency consultation process, the Metropolitan Washington Air Quality Committee (MWAQC) concurs with the regional air quality conformity determination of the 2020 Amendment to the Visualize 2045 plan and the TIP, and provided other comments relating to the region's air quality;

NOW, THEREFORE, BE IT RESOLVED THAT the National Capital Region Transportation Planning Board determines that the 2020 Amendment to the Visualize 2045 long-range transportation plan and the FY 2021-2024 Transportation Improvement Program conform to all requirements of the Clean Air Act Amendm ents of 1990.

Adopted by the Transportation Planning Board at its regular meeting on March 18, 2020

Metropolitan Washington
Council of Governments

February 26, 2020

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

Dear Chair Russell:

Thank you for providing an opportunity to comment on the draft air quality conformity analysis for the 2020 amendment to the Visualize 2045 plan. MWAQC has reviewed the above analysis and concurs that the transportation sector emissions associated with the proposed transportation plans meet the motor vehicle emissions budgets (MVEBs) in the 2008 Ozone National Ambient Air Quality Standard (NAAQS) Maintenance Plan.

However, the 2020 amendment to the Visualize 2045 plan continues to require use of Tier 2 transportation buffers for 2025 and 2030. Therefore, TPB had to use the Tier 2 MVEBs buffers for demonstrating conformity in those two years. MWAQC urges TPB and its members to give particular focus to projects that would reduce air pollution emissions from the transportation sector so that future mobile emission budgets remain within Tier 1 MVEBs to fully protect the health of our residents.

This is particularly important as the Washington region faces continuing challenges related to air quality. The region needs to attain the 2015 ozone standard of 70 ppb by August 2021. The draft data for the period 2017 through 2019 shows the region's design value for ozone at 72 ppb. The draft base year 2017 emissions inventory recently developed and approved for public hearing and comments by MWAQC shows on-road sources constitute 39% of total NOx emissions in the region. This evidence shows that even though the region has made significant progress in reducing emissions, it needs to continue its efforts to further reduce emissions to meet the 2015 ozone NAAQS, including on-road mobile sources.

MWAQC notes that the region also is experiencing an increase in total VMT along with an increase in population and job growth. Therefore, we urge TPB's continued investment in VMT and emission reduction strategies such as public transit, ride-sharing, pedestrian and bike infrastructure, other travel demand management strategies, and Transportation Emission Reduction Measures (TERMS) to reduce future growth in vehicle emissions.

Thank you again for the opportunity to comment on the draft conformity analysis for the 2020 amendment to the Visualize 2045 plan.

Sincerely,

Hon. Brandon Todd
Chair, Metropolitan Washington Air Quality Committee

1. INTRODUCTION

The Washington region is currently designated as non-attainment for the federal health standards for ozone. Clean air legislation in 1977 mandated that a Metropolitan Planning Organization (MPO) may not approve any transportation project that did not conform to the approved state implementation plan (SIP) for the attainment of clean air standards. This established the responsibility on the part of COG/TPB to review transportation plans and programs and affirm that they conform to air quality state implementation plans for the region.

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

This report documents the air quality conformity analysis of the 2020 Amendment to the Visualize 2045 Long-Range Transportation Plan and the FY 2021-2024 Transportation Improvement Program (TIP) with respect to ozone season pollutants, specifically, Volatile Organic Compounds (VOC) and Nitrogen Oxides (NOx). The results of the analysis provide a basis for a determination of conformity of the 2020 Amendment to Visualize 2045 and the FY 2021-2024 TIP.

2. BACKGROUND

Conformity Regulations

On November 15, 1990, President Bush signed into law the Clean Air Act Amendments (CAAA) of 1990. The CAAA establishes standards and procedures for reducing human and environmental exposure to a range of pollutants generated by industry and transportation. The law allows the EPA to define the boundaries of “non-attainment” areas for various common pollutants known as “criteria pollutants.” These boundaries outline geographic areas where air quality does not meet Federal air quality standards. The law also established non-attainment area classifications ranked according to the severity of the area’s air pollution problem. These classifications are marginal, moderate, serious, severe, and extreme. EPA assigns each non-attainment area one of these categories, thus triggering various requirements the area must comply with in order to meet a particular standard. The Washington region is currently designated “marginal” non-attainment for the federal health standards for ozone. Once a non-attainment area attains a standard for a pollutant, the area must progress through a series of steps in order to be reclassified from “non-attainment” to “maintenance.” The “maintenance” designation includes its own set of requirements that assure that the standard for that pollutant is maintained.

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

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

Pollutants

The Clean Air Act requires EPA to set National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants, also known as "criteria pollutants," are found throughout the United States. The six pollutants are: particle pollution, ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. EPA calls these pollutants "criteria" air pollutants because it sets standards for them based on human health-based and/or environmentally-based criteria. The Clean Air Act identifies two types of national ambient air quality standards. ***Primary standards*** provide public health protection, including protecting the health of "sensitive" populations such as asthma patients, children, and the elderly. ***Secondary standards*** provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

Ozone Season Pollutants

1979 Standard

The Washington, DC-MD-VA region was originally classified in 1990 as “serious” non-attainment for the 1979 (124 parts per billion – ppb) 1-hour ozone standard, with an attainment date of 1999. The region did not attain the standard by 1999 and was subsequently reclassified as “severe” non-attainment, with a new attainment date of 2005.

1997 Standard

In 2004 the Washington, DC-MD-VA region was designated as “moderate” non-attainment for the 1997 (84 ppb) 8-hour ozone standard, with an attainment date of 2010. In 2007, the Metropolitan Washington Air Quality Committee (MWAQC) developed an 8-hour ozone SIP (Reference 2) to reduce ozone-causing emissions of VOCs and NOx with the goal of attaining the 1997 standard. As part of this SIP, MWAQC developed Motor Vehicle Emissions Budgets (MVEBs or “mobile emissions budgets”) for VOC and NOx. As required by federal guidance, MWAQC established 2008 budgets to show “reasonable further progress” in addition to the 2009 and 2010 attainment year budgets. On February 7, 2013 EPA found adequate the 2009 Attainment and 2010 Contingency budgets included in the 2007 SIP, and the TPB was subsequently required to use those budgets to meet conformity requirements. These budgets were used to assess conformity of the Washington region’s transportation plans from 2013 through 2017.

2008 Standard

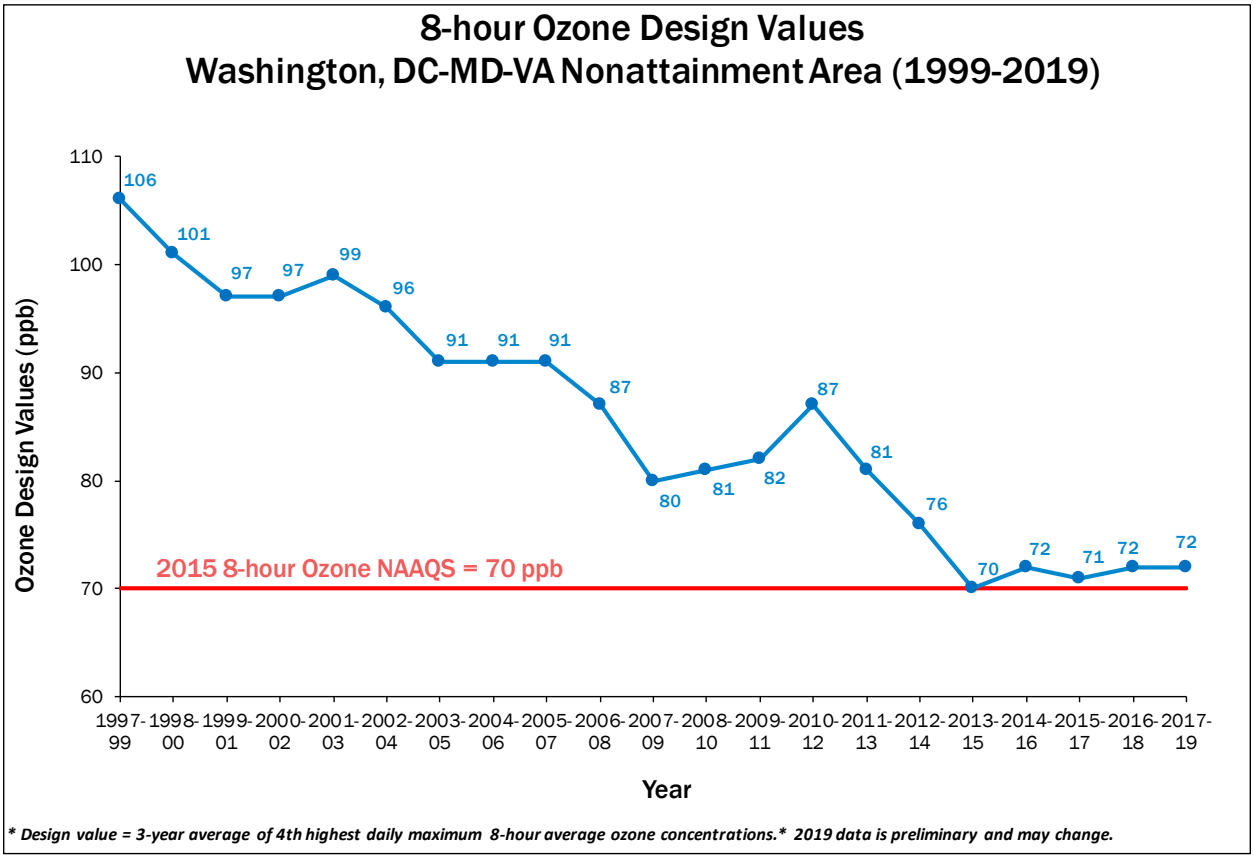
In 2012, EPA designated the Metropolitan Washington, DC, (DC-MD-VA) region as “marginal” non-attainment for the 2008 Ozone Standard. With this designation, EPA regulations do not require the development of MVEBs. Instead, as per EPA regulations, conformity analyses for the region’s Plan and TIP were being demonstrated to previously approved MVEBs from the older 1997 Ozone Standard. In 2015, the region attained the 2008 Ozone Standard, based on the readings from ambient air quality monitors. MWAQC developed a Redesignation Request and Maintenance Plan (Reference 3), which the State Air Agencies submitted to the EPA in early 2018. The 2008 Ozone Maintenance Plan included MVEBs for VOC and NOx. In August 2018, EPA found these mobile emissions budgets adequate for use in the region’s conformity analyses. As such, these 2008 Ozone Maintenance Plan mobile emissions budgets were first used in the conformity assessment of the Visualize 2045 plan and FY 2019-2024 TIP, adopted on October 17, 2018. Details about these budgets are discussed in the *Emissions Forecasts* (Chapter 5) section of this report.

2015 Standard

Effective August 3, 2018 EPA designated the Metropolitan Washington, DC, (DC-MD-VA) region as "marginal" non-attainment for the 2015 Ozone Standard. Under a "marginal" designation, it is not necessary to develop MVEBs. Consequently, there are no MVEBs specific to the 2015 Ozone Standard. Provisions of the conformity regulations, however, require that emissions from the Plan and TIP conform to previously approved (or "found adequate for conformity purposes") MVEBs. The current MVEBs for the DC-MD-VA non-attainment area are those developed for the Maintenance Plan for the 2008 Ozone Standard. The emissions from the 2020 amendment to the Visualize 2045 Plan and FY 2021-2024 TIP adhere to these MVEBs.

Marginal non-attainment areas have three years from the date of designation to achieve the 2015 Ozone Standard. Accordingly, the DC-MD-VA area would have an attainment year of 2021 (i.e., three years following the August 3, 2018 designation). Exhibit 1 shows the current (2015) ozone standard compared to the actual monitored ozone levels through time from 1999 to 2019.

EXHIBIT 1



Conformity to the 1997 Ozone Standard

Effective April 6, 2015 EPA revoked the 1997 Ozone Standard and eliminated conformity requirements associated with that standard. However, on February 16, 2018, the United States Court of Appeals for the District of Columbia ruled that the revocation of the 1997 Ozone Standard does not waive transportation conformity requirements for all areas. A May 9, 2018 EPA response letter to an inquiry by American Association of State Highway and Transportation Officials (AASHTO) clarifies that areas

such as ours, which are designated as non-attainment or maintenance for the 2008 ozone NAAQS, are not affected by the lawsuit.

Fine Particles ($PM_{2.5}$) Pollutants

1997 Standard

In 2004 the EPA designated the Washington, DC-MD-VA region as non-attainment for the 1997 (15 $\mu g/m^3$) fine particles ($PM_{2.5}$) standard. $PM_{2.5}$ standards refer to particulate matter less than or equal to 2.5 micrometers in diameter. In 2009 the EPA, using local monitored data, determined that the region had attained the 1997 $PM_{2.5}$ standard and issued a clean data determination for the area. The region subsequently withdrew the $PM_{2.5}$ Attainment SIP and decided to seek redesignation as a maintenance area for the 1997 $PM_{2.5}$ NAAQS.

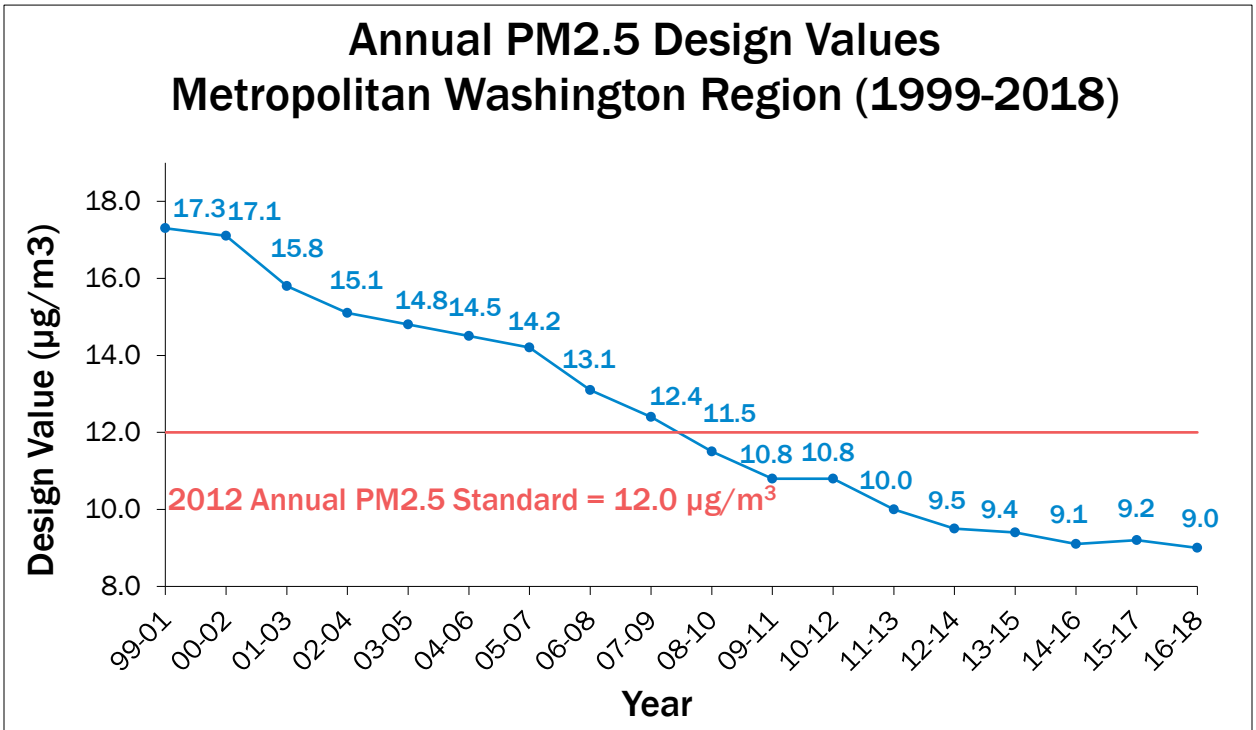
In 2013 MWAQC approved a $PM_{2.5}$ redesignation request and a maintenance plan (Reference 4) for the Washington region. This maintenance plan includes forecast year mobile emissions budgets for $PM_{2.5}$ direct and $PM_{2.5}$ Precursor NOx for 2017 and 2025. On April 28, 2014, EPA found these mobile emissions budgets adequate for use in conformity analyses, with an effective date of May 13, 2014. These budgets were subsequently used for the first time officially in the conformity analysis of the 2014 CLRP. On October 6, 2014 EPA approved the requests from the District of Columbia, Maryland, and Virginia to redesignate to attainment the Washington DC-MD-VA area for the 1997 NAAQS with an effective date of November 5, 2014.

2012 Standard

In 2012 the EPA set a new, tougher, annual $PM_{2.5}$ Standard of 12 $\mu g/m^3$. The Washington region, with its steadily downward trend in the level of fine particles pollutants based on the readings from ambient air quality monitors, was already in attainment of that standard at the time it was set. Therefore, there were no new requirements for the Washington region related to the 2012 Standard.

Exhibit 2 shows the two fine particles standards (1997 and 2012) compared to the actual monitored $PM_{2.5}$ levels through time from 1999 to 2018.

EXHIBIT 2



A measure called design value is used by the EPA to evaluate the region's attainment status for air pollutants. It is based on an average data for three consecutive years.

Revocation of 1997 Standard

On August 24, 2016, EPA published a final rule (Reference 5) that resulted in the region no longer being required to demonstrate transportation conformity for any fine particles standard. As part of the rule, EPA revoked the 1997 fine particles standard since more stringent 2012 standard had been put in place. The revocation, combined with the decreasing levels of fine particles in our region always remaining below the 2012 standard, resulted in our region no longer being required to analyze fine particles in the air quality conformity determinations of our transportation plans and TIPs. Since the region is no longer required to demonstrate transportation conformity for the $PM_{2.5}$ standard, there will no longer be any charts or graphs associated with $PM_{2.5}$–related pollutants in this, or any future, air quality conformity reports, as long as the region remains in attainment of EPA's standard.

Wintertime CO

The Metropolitan Washington DC-MD-VA region attained the federal carbon monoxide standard in the 1990s and submitted a CO maintenance plan covering the 1996-2007 period. The maintenance plan included a mobile budget of 1671.5 tons/day. EPA approved this maintenance plan effective March 16, 1996. The region was required to submit a second maintenance plan within eight years of its redesignation as an attainment area. This revised plan (Reference 6) was completed on February 19, 2004, and provided for attainment of the CO standard in the Washington DC-MD-VA attainment area

through March 16, 2016. After March 2016 the region no longer has to include Wintertime CO in any conformity analysis as long as it remains in attainment of EPA's standard.

3. WORK ACTIVITIES AND TECHNICAL INPUTS

In developing the work program for this year's conformity analysis, contained as Attachment A of this report, staff identified latest planning assumptions and modeling techniques, and considered requirements of the conformity regulations, as well as requirements associated with, and comments received upon, past conformity analyses. Staff presented the work program to regional technical and policy committees starting in June 2019. Staff also coordinated the draft work program with EPA, FHWA, FTA, and the state and local air management agencies through the TPB consultation procedures (Reference 7). This scope was adopted by the TPB on July 17, 2019.

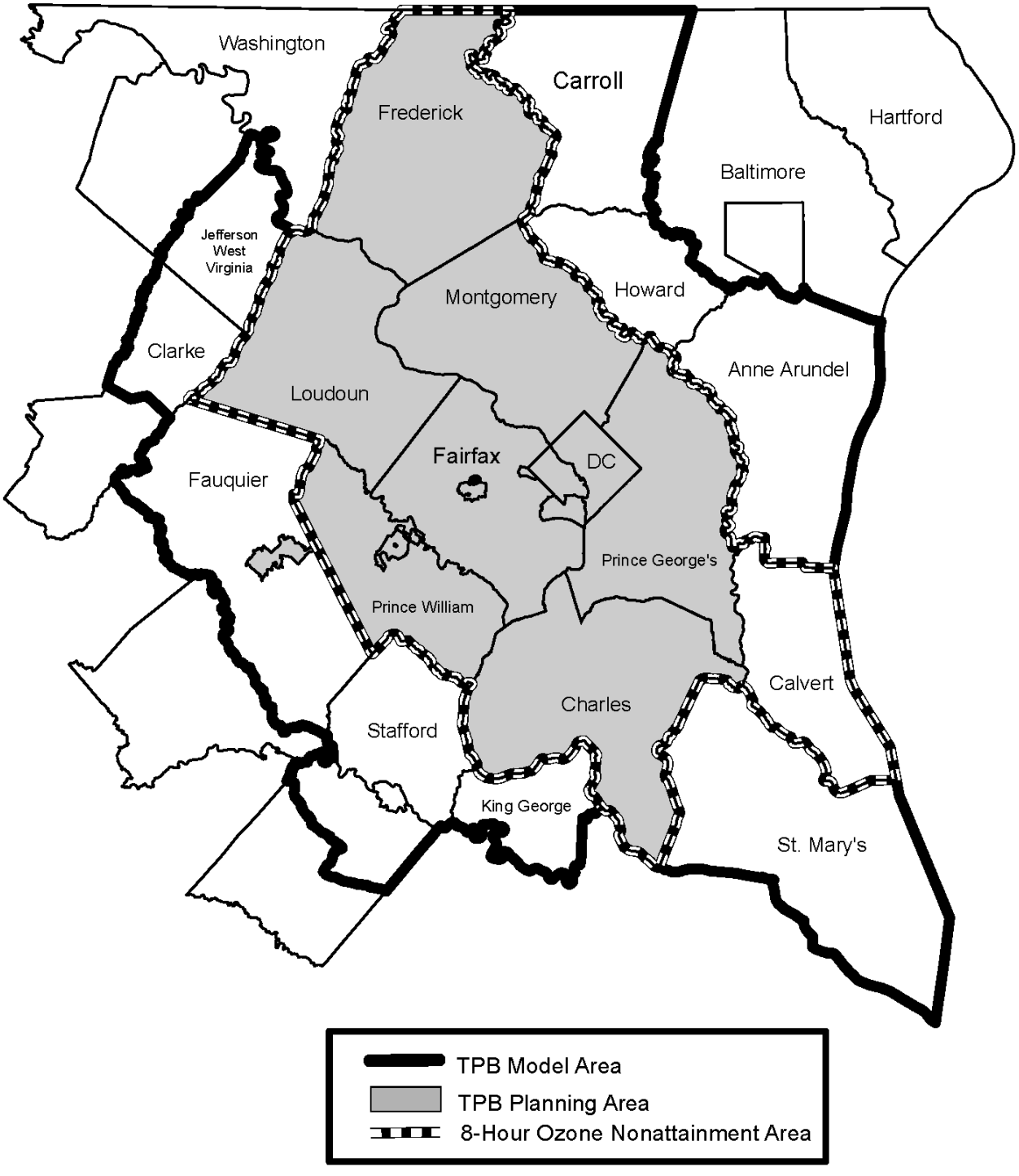
Key technical planning assumptions and methods include:

- New Cooperative Land Activity Forecasts- Round 9.1a
- Dec. 2016/Jan. 2017 Vehicle Registration Data (with District of Columbia corrections)
- New Projects and Updates to Existing Project Submissions
- No "core" Metrorail capacity constraint assumption within the travel demand model
- Version 2.3.78 Travel Demand Model including a 3,722 Transportation Analysis Zones (TAZ) area system
- EPA's MOVES 2014b Mobile Emissions Model

Mobile emissions inventories were developed for ozone season VOC and NOx for six forecast years (2019, 2021, 2025, 2030, 2040, and 2045). These inventories address a primary conformity requirement to demonstrate that emissions associated with the long-range transportation plan do not exceed the EPA-approved mobile emissions budgets. Exhibit 3 depicts the geographic areas for travel modeling and for emissions reporting.

EXHIBIT 3

TPB Transportation Planning Areas Map



Cooperative Forecasts

The COG Board approved the draft Round 9.1 Cooperative Forecasts for use in the air quality conformity analysis of the Visualize 2045 Plan and FY 2019-2024 TIP in January 2018. In the spring of 2019 staff received updated land activity forecasts from the Baltimore Metropolitan Council (BMC) and the Fredericksburg Area Metropolitan Planning Organization (FAMPO). COG's Department of Community Planning Services staff developed the Round 9.1a Cooperative Forecasts by combining the Round 9.1 Cooperative Forecasts with the updated data from BMC and FAMPO. The Round 9.1a data were used for the conformity analysis of the 2020 amendment to the Visualize 2045 plan.

Round 9.1a shows a steady growth in households and jobs through the 2045 out-year of the Plan. Exhibit 4 presents Round 9.1a household data for each of the years in the conformity analysis. Exhibit 5 presents similar data for the employment assumptions, and Exhibit 6 presents population assumptions. The employment data reflect census adjustments, which were recently updated for this analysis (References 8 & 9).

EXHIBIT 4

Household Data

TPB PLANNING AREA:	2019	2021	2025	2030	2040	2045
DISTRICT OF COLUMBIA	314,851	323,641	341,019	362,524	396,233	411,872
MONTGOMERY	387,908	394,058	405,654	422,320	450,916	461,916
PRINCE GEORGE'S	331,644	336,187	343,865	355,494	370,023	376,787
ARLINGTON	110,386	113,207	117,866	123,857	135,599	141,843
ALEXANDRIA	74,769	76,687	80,779	84,118	92,898	107,082
FAIRFAX	427,945	435,212	454,799	482,927	529,819	549,768
LOUDOUN	134,528	140,323	150,085	157,982	166,952	168,671
PRINCE WILLIAM	170,729	175,919	187,128	197,449	212,999	218,599
FAUQUIER	26,081	26,809	28,270	30,096	33,748	35,574
FREDERICK	97,099	100,797	107,934	115,066	126,539	131,167
CHARLES	58,985	61,336	65,529	72,911	83,426	92,163
HOWARD	119,553	123,285	130,432	136,125	139,686	139,851
ANNE ARUNDEL	210,237	212,284	217,564	224,577	237,952	245,000
CALVERT	33,500	34,262	35,703	36,946	37,650	37,912
CARROLL	62,349	63,019	64,394	66,521	69,119	70,330
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	45,350	46,518	49,550	53,339	64,888	72,601
CLARKE&JEFFERSON	28,782	29,558	31,078	32,892	36,249	37,868
KING GEORGE	8,723	8,796	8,961	9,226	9,976	10,497
ST. MARY'S	42,950	44,345	47,217	51,768	57,956	61,060
STAFFORD	48,570	50,581	54,686	60,892	78,234	90,824
TOTAL	2,734,939	2,796,824	2,922,513	3,077,030	3,330,862	3,461,385

SOURCE:

-MWCOG Round 9.1a Cooperative Forecasts

-Baltimore Metropolitan Council, Round 9. (Endorsed by the Baltimore Regional Transportation Board on June 26, 2018)

-George Washington Regional Commission / Fredericksburg Area MPO, 2050 Socioeconomic Data Projections (Revised in November 2018)

-MD Department of Planning, Historical and Projected Total Population, August 2017 for Calvert and St. Mary's Counties

-COG/TPB Staff used Updated COG Round 9.1 for Clark and Fauquier Counties

EXHIBIT 5

Employment Data

TPB PLANNING AREA:	2019	2021	2025	2030	2040	2045
DISTRICT OF COLUMBIA	836,693	856,048	895,120	937,854	1,011,806	1,045,390
MONTGOMERY	538,814	549,269	572,497	604,516	653,865	678,753
PRINCE GEORGE'S	350,310	355,909	369,867	379,379	397,152	406,041
ARLINGTON	208,984	211,674	216,851	231,251	253,168	261,010
ALEXANDRIA	109,348	112,445	121,772	127,266	142,735	155,095
FAIRFAX	728,824	747,995	784,676	827,977	899,356	931,892
LOUDOUN	189,580	200,024	219,395	243,375	277,790	291,165
PRINCE WILLIAM	191,815	200,648	217,578	237,589	276,260	293,261
FAUQUIER	25,484	26,113	27,358	28,917	32,035	33,593
FREDERICK	116,205	118,471	123,176	128,627	141,075	145,526
CHARLES	47,348	47,878	49,687	52,685	59,315	62,082
HOWARD	198,770	204,293	215,335	229,126	247,531	256,724
ANNE ARUNDEL	319,324	323,963	333,679	346,959	379,167	398,579
CALVERT	28,633	29,504	31,206	32,318	34,050	34,996
CARROLL	69,882	70,876	72,587	74,864	79,004	81,250
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	64,022	65,631	68,796	72,878	83,602	90,779
CLARKE&JEFFERSON	22,685	23,327	24,673	26,263	29,405	30,926
KING GEORGE	12,133	12,395	13,029	13,808	15,984	17,542
ST. MARY'S	55,614	56,943	59,445	61,199	65,438	67,601
STAFFORD	46,058	47,386	50,837	54,571	65,755	74,883
TOTAL	4,160,526	4,260,792	4,467,564	4,711,422	5,144,493	5,357,088

SOURCE:

-MWCOG Round 9.1a Cooperative Forecasts

-Baltimore Metropolitan Council, Round 9. (Endorsed by the Baltimore Regional Transportation Board on June 26, 2018)

-George Washington Regional Commission / Fredericksburg Area MPO, 2050 Socioeconomic Data Projections (Revised in November 2018)

-MD Department of Planning, Historical and Projected Total Population, August 2017 for Calvert and St. Mary's Counties

-COG/TPB Staff used Updated COG Round 9.1 for Clark and Fauquier Counties

Note: Employment in non-COG member counties is affected by Employment Definition Adjustment Factors

EXHIBIT 6

Population Data

MODELED AREA:	2019	2021	2025	2030	2040	2045
DISTRICT OF COLUMBIA	718,047	741,027	787,116	842,154	940,687	987,213
MONTGOMERY	1,044,630	1,059,047	1,087,292	1,128,792	1,197,147	1,223,345
PRINCE GEORGE'S	919,398	926,110	938,023	952,955	982,767	995,874
ARLINGTON	234,818	240,530	249,462	261,792	287,563	301,167
ALEXANDRIA	156,868	160,836	167,515	172,781	190,824	208,451
FAIRFAX	1,193,756	1,212,350	1,255,535	1,319,169	1,424,946	1,469,595
LOUDOUN	412,891	431,085	459,579	480,173	502,398	507,398
PRINCE WILLIAM	522,395	535,065	564,961	592,938	635,785	652,038
FAUQUIER	71,833	73,842	77,845	82,853	92,871	97,881
FREDERICK	263,527	271,960	288,690	303,583	332,151	344,138
CHARLES	163,787	169,277	178,238	194,671	218,575	236,479
HOWARD	332,208	340,675	355,696	366,818	371,846	372,358
ANNE ARUNDEL	570,447	574,387	582,565	594,303	621,771	643,979
CALVERT	93,812	95,148	97,350	99,200	100,450	100,850
CARROLL	168,870	169,699	171,704	175,152	181,802	185,150
FREDERICKSBURG (VA) & N. SPOTSYLVANIA	133,677	137,088	145,636	156,204	184,350	206,817
CLARKE&JEFFERSON	76,037	77,995	81,872	86,469	95,030	99,145
KING GEORGE	25,715	26,063	26,826	27,950	30,909	32,866
ST. MARY'S	118,558	121,958	129,199	140,749	155,349	162,899
STAFFORD	152,083	156,792	165,497	178,743	216,138	243,407
TOTAL	7,373,357	7,520,934	7,810,601	8,157,449	8,763,359	9,071,050

SOURCE:
-MWCOG Round 9.1a Cooperative Forecasts
-Baltimore Metropolitan Council, Round 9. (Endorsed by the Baltimore Regional Transportation Board on June 26, 2018)
-George Washington Regional Commission / Fredericksburg Area MPO, 2050 Socioeconomic Data Projections (Revised in November 2018)
-MD Department of Planning, Historical and Projected Total Population, August 2017 for Calvert and St. Mary's Counties
-COG/TPB Staff used Updated COG Round 9.1 for Clark and Fauquier Counties

Note: Includes Household and Group Quarters Population

Vehicle Registration Data

TPB staff has analyzed the region's vehicle fleet inventory on a regular basis since 2005. This information is used to understand the vehicle type composition and vehicle age distributions, which are important determinants of mobile emissions. Periodic inventory reviews enable staff to refresh mobile emissions modeling inputs with the most currently available information. The current data are from December 2016 (January 2017 for DC). TPB staff analyzed the December 2016 VIN data and the analysis was reviewed by the MWCOG/TPB technical oversight committees prior to being approved

for use in transportation planning applications. The December 2016 data were used for the first time in 2018 for the air quality conformity analysis of Visualize 2045. The DC Department of Energy and Environment (DOEE) found an error in the District's data and provided updated 2016 VIN data for the city in June 2018 (Reference 10). The updated data were used in the air quality conformity analysis of the 2020 Amendment to the Visualize 2045 plan.

Exhibits 7 and 8 show characteristics of the region's vehicle fleet through time. The exhibits indicate that the fleet is continuing to grow, and that light duty trucks (SUVs) are growing at the fastest rate relative to other vehicle types. Light duty trucks have a higher emissions rate than light duty cars. Also, for the first time since the TPB has collected fleet data, the average vehicle fleet age has decreased, as seen when comparing 2014 to 2016 statistics in Exhibit 8. Typically, such trends favor reduced emissions because of better emissions controls on newer vehicles.

EXHIBIT 7

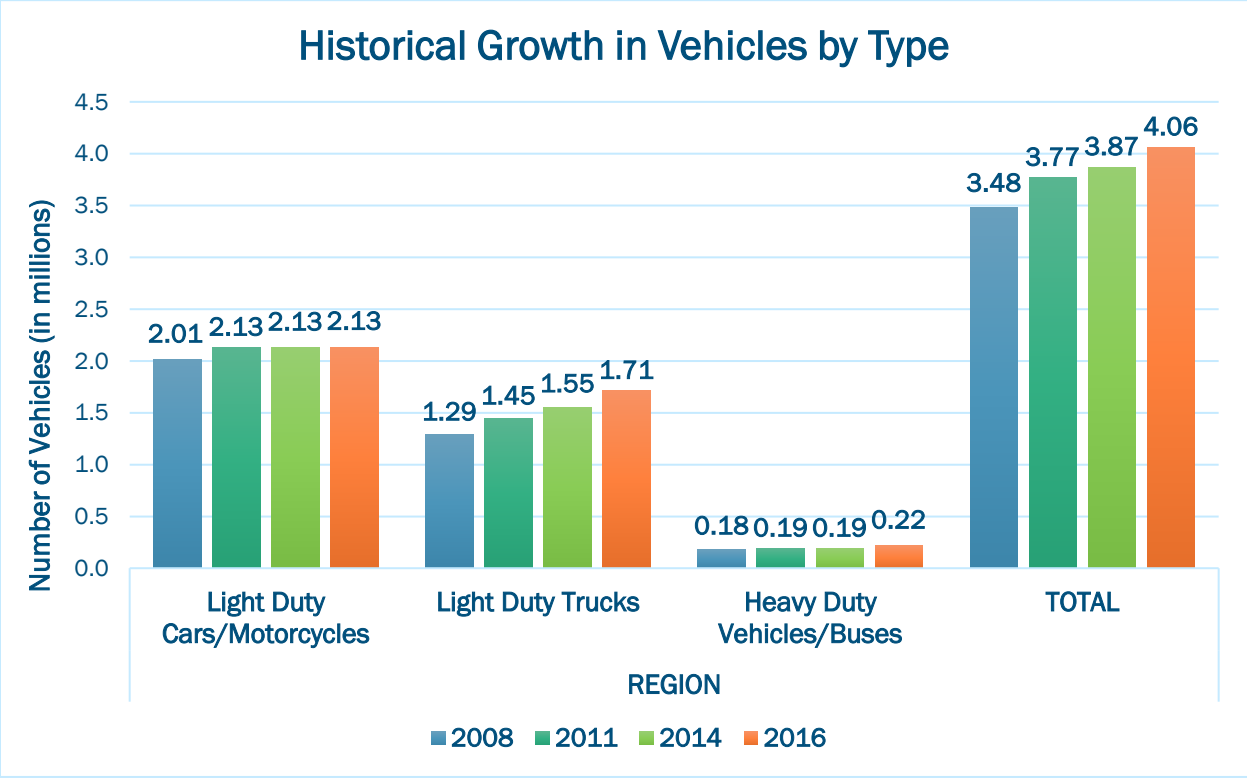


EXHIBIT 8

Average Age of the Regional Vehicle Fleet by VIN Year

Year	Light Duty Vehicles* (LDV)	Light Duty Trucks (LDT)	Heavy Duty Vehicles (HDV)	All Vehicle Types
2008	8.51	7.53	9.21	8.18
2011	9.25	8.55	10.56	9.05
2014	9.62	9.09	11.30	9.49
2016	**9.32**	**8.68**	**11.29**	**9.16**

*Motorcycles are included

Project Inputs

Attachment B contains a complete list of highway and transit projects analyzed in the 2020 amendment to the Visualize 2045 plan and the FY 2021-2024 TIP conformity analysis. It highlights changes to the project list that have occurred since Visualize 2045. The list contains transit, highway, and HOV/HOT projects, all summarized by state, agency, project characteristics and completion date. The projects are also displayed on an on-line interactive map on the COG website here: https://www.mwcog.org/maps/map-listing/visualize-2045-2020_amendment_projects_map/

The listed projects are coded in highway and transit networks which are used as inputs to the travel model in the analysis. The 2020 Amendment to the Visualize 2045 plan and FY 2021-2024 TIP include other projects which are not included in the list. These other projects are not included in the regional networks since they do not involve changes in capacity (e.g., transit operating assistance, highway rehabilitation, bridge reconstruction) or were too small to influence the modeling results at the regional level (e.g., intersection improvements, improvements to a facility which is not contained in the regional networks). Exhibit 9 presents mileage summaries for the rail and highway system.

EXHIBIT 9

RAIL AND ROAD MILES

(modeled area)

	LOV LANE MILES TOTAL	HOV/HOT LANE MILES TOTAL	METRORAIL MILES TOTAL	COMMUTER RAIL * MILES TOTAL	BRT ** MILES TOTAL	STREETCAR, LIGHT RAIL *** MILES TOTAL
2019	22,980	304	119	220	5	2
2021	23,237	349	119	220	18	18
2025	23,965	391	131	231	18	20
2030	24,114	391	131	231	49	23
2040	24,493	418	131	231	62	23
2045	24,676	418	131	231	95	23

* Includes MARC & VRE

** Includes Metroway, US29, CCT, US1 (VA), Veirs Mill, Randolph Rd, Bethesda, New Hamp. Av., MD355 BRT

(MD355 has three alignments. For calculation purpose only largest alignment is considered

*** Includes Purple Line, & DC Streetcar (Benning Road, H St., Union Station/Georgetown)

NOTE: If a lane operates as HOV/HOT during any part of the day, it is counted in the HOV/HOT column.

The COG travel model area includes counties outside the non-attainment area to enable better simulation results within the non-attainment area. Project inputs from these outer counties are provided by their respective MPOs, state DOTs, or county DOTs, and are coded, when appropriate, into the highway and transit networks. While travel demand estimates include all counties in the modeled area, emissions estimates are only tabulated for the defined non-attainment area for Ozone season pollutants.

Metrorail Capacity Constraint

In March 2018, lawmakers from the District of Columbia, Maryland, and Virginia jointly agreed to provide an additional $500 million annually for regional transit service operated by the Washington Metropolitan Area Transit Authority (WMATA). All three governments passed legislation to provide dedicated funding sources to support the transit agency. This money will fund WMATA's capital improvements to ensure the system is in a state of good repair, which will include investments such as the infrastructure and equipment needed to support a 100% 8-car train system.

Since 2000, due to the lack of such a funding commitment for WMATA's capital needs, the TPB's air quality conformity analysis had included a technical adjustment to travel forecasts to account for the expectation that future peak period Metrorail ridership in the region's "core" downtown area will be subject to capacity limitations of the Metrorail system. This so-called "Metrorail transit constraint" was used to account for WMATA's expressed concern that the Metrorail ridership would exceed peak period capacity in the regional core unless the rail fleet and station infrastructure were expanded to allow for 8-car trains. This legislation establishing stable long-term funding will support WMATA's plans to implement all 8-car trains during peak periods in the Visualize 2045 Plan and subsequent plans and amendments. Consequently, the transit constraint was removed from the travel model process.

4. TRAVEL FORECASTS

Travel Model

The preparation of travel forecasts for each of the conformity alternatives was carried out using the Version 2.3.78 Travel Model (Reference 11 is for the previous version of the model, Ver. 2.3.75). The 2.3 Travel Model operates on a 3722-zone area system. It was initially calibrated (Reference 12) using the 2007/08 Household Travel Survey and many other data sources, including numerous transit on-board surveys, 2007 American Community Survey data, and the 2007 Air Passenger Survey. It was subsequently validated (Reference 13) using 2010 data including traffic counts, Metrorail electronic counts, the American Community Survey, and the Geographically Focused Household Travel Survey. Most recently, the model was re-validated using the 2014 data that included traffic counts, Metrorail electronic counts, and other data sources (Reference 14).

In addition to existing toll facilities, the 2020 Amendment to the Visualize 2045 plan includes portions of I-95, I-66, and the northern part of the Capital Beltway in Virginia, the entire Beltway in Maryland, and I-270 as managed facilities. These facilities have time-of-day tolls used to ensure that an acceptable level of service is maintained throughout the day. The Version 2.3 Travel Model Calibration Report and two HOT Lanes modeling memos (References 15 & 16) document these procedures.

Networks

Highway and transit networks, incorporating all project inputs, were coded for each analysis year. Transit fares include the latest assumptions for all coded transit service and reflect policies such as price differentials for those riders who use SmarTrip versus those who use cash. Highway tolls reflect current costs for tolled facilities.

Travel Model Forecasts

Travel demand forecasts were developed for each of the analysis years. Summary mode choice results are shown in Exhibits 10A and 10B. VMT summaries are shown in Exhibit 11.

EXHIBIT 10A

AMENDMENT TO VISUALIZE 2045 AIR QUALITY CONFORMITY
DAILY REGIONAL HOME BASED WORK PURPOSE MODE ANALYSIS BY YEAR
(Based on Mode Choice Output - 4th Iteration)

YEAR	HBW MOTORIZED PERSON	TOTAL HBW AUTO PSN	HBW SINGLE OCCUPANT AUTO PSN	HBW MULTIPLE OCCUPANT AUTO PSN	TOTAL HBW AUTO DRV	HBW CAR OCC.	HBW TRANSIT	HBW TRANSIT (%)
2019	4,140,739	3,283,719	2,800,453	483,266	3,017,532	1.09	857,020	20.70%
2021	4,222,011	3,318,151	2,830,707	487,444	3,046,891	1.09	903,859	21.41%
2025	4,388,088	3,443,265	2,906,405	536,860	3,140,106	1.10	944,823	21.53%
2030	4,594,206	3,572,568	3,001,816	570,752	3,246,532	1.10	1,021,638	22.24%
2040	4,942,601	3,816,779	3,181,951	634,829	3,448,645	1.11	1,125,822	22.78%
2045	5,115,640	3,940,369	3,272,120	668,249	3,550,275	1.11	1,175,271	22.97%

EXHIBIT 10B

AMENDMENT TO VISUALIZE 2045 AIR QUALITY CONFORMITY
DAILY REGIONAL ALL TRIP PURPOSES MODE ANALYSIS BY YEAR
(Based on Mode Choice Output - 4th Iteration)

YEAR	TOTAL MOTORIZED PERSON	TOTAL AUTO PSN	SINGLE OCCUPANT AUTO PSN	MULTIPLE OCCUPANT AUTO PSN	TOTAL AUTO DRV	TOTAL CAR OCC.	TOTAL TRANSIT	TRANSIT (%)
2019	20,044,853	18,860,226	9,752,851	9,107,375	13,419,831	1.41	1,184,627	5.91%
2021	20,377,331	19,125,245	9,861,504	9,263,740	13,585,372	1.41	1,252,086	6.14%
2025	21,054,668	19,737,903	10,103,578	9,634,326	13,967,958	1.41	1,316,765	6.25%
2030	21,858,214	20,436,095	10,397,585	10,038,510	14,415,441	1.42	1,422,119	6.51%
2040	23,217,370	21,656,176	10,900,373	10,755,803	15,190,855	1.43	1,561,194	6.72%
2045	23,895,287	22,263,868	11,146,292	11,117,576	15,573,689	1.43	1,631,420	6.83%

EXHIBIT 11

AMENDMENT TO VISUALIZE 2045 AIR QUALITY CONFORMITY
MODELED AREA TRIPS AND VEHICLE MILES TRAVELED
AVERAGE WEEKDAY TRAFFIC (AAWDT)
(Based on Final Iteration)

YEAR	WORK AND NON-WORK AUTO DRV	TRUCKS (Med + Hvy)	MISC + THRU TRIPS	COMMERCIAL VEHICLES	TOTAL VEH. TRIPS	TOTAL VMT
2019	14,475,086	695,601	889,003	1,420,178	17,479,868	172,562,230
2021	14,671,479	707,364	911,657	1,447,707	17,738,207	176,021,156
2025	15,119,446	731,972	958,253	1,506,803	18,316,474	183,787,742
2030	15,624,987	760,693	1,013,885	1,575,727	18,975,292	190,623,702
2040	16,515,816	810,926	1,115,172	1,693,447	20,135,361	203,540,252
2045	16,954,732	837,923	1,167,499	1,751,399	20,711,553	210,031,809

5. EMISSIONS FORECASTS

Mobile Emissions Budgets

When the region achieved the 2008 Ozone Standard, MWAQC developed a Redesignation Request and Maintenance Plan, which the State Air Agencies submitted to the EPA in early 2018. The 2008 Ozone Maintenance Plan included MVEBs for VOC and NOx. In August 2018, EPA found these mobile emissions budgets adequate for use in the region's conformity analyses.

The 2008 Ozone Maintenance Plan established VOC and NOx emissions budgets for three specific periods: the attainment year (2014), an intermediate year (2025), and for the final year (2030) of the Maintenance Plan. The plan includes two sets of mobile emissions budgets for each pollutant. The first set of budgets, referred to as "Tier 1 budgets", were based on projected emissions developed as part of the Maintenance Plan, and were set at the inventory level for each year. The second set of budgets, referred to as "Tier 2 budgets", were developed by adding a 20% transportation buffer to the mobile emissions inventories for VOC and NOx in 2025 and 2030. Tier 1 and Tier 2 mobile emissions budgets for VOC and NOx are shown in Exhibit 12 and Exhibit 13, below.

The maintenance plan provides for using the Tier 2 budgets in situations "where the conformity analysis must be based on different data, models, or planning assumptions, including but not limited to updates to demographic, land use, or project-related assumptions, than were used to create the [mobile emissions budgets] in the Maintenance Plan".

Exhibit 12: Tier 1 Mobile Emissions Budgets[1]

Year	NOx On-Road Emissions (tpd)	VOC On-Road Emissions (tpd)
Attainment Year 2014 Emission & Budget	136.8	61.3
Intermediate Year 2025 Emission & Budget	40.7	33.2
Final Year 2030 Emission & Budget	27.4	24.1

Exhibit 13: Tier 2 Mobile Emissions Budgets[1]

Year	NOx On-Road Emissions (tpd)	VOC On-Road Emissions (tpd)
Attainment Year 2014 Emission & Budget	**136.8**	**61.3**
Predicted 2025 Emission	40.7	33.2
Transportation Buffer	8.1	6.6
Intermediate Year 2025 Budget	**48.8**	**39.8**
Predicted 2030 Emission	27.4	24.1
Transportation Buffer	5.5	4.8
Final Year 2030 Budget	**32.9**	**28.9**

Note:
[1]The MVEBs with transportation buffers will be used only as needed in situations where the conformity analysis must be based on different data, models, or planning assumptions, including but not limited to updates to demographic, land use, or project-related assumptions, than were used to create the first set of MVEBs in the maintenance plan.

Budget Setting versus Conformity

An air quality conformity analysis is conducted to formally demonstrate that projected motor vehicle emissions associated with the regional transportation plan and TIP are less than or equal to the mobile emissions budgets for each analysis year. The conformity regulations require the use of the "latest planning assumptions", which means that each conformity analysis must incorporate the most up-to-date planning inputs and technical methods available at the beginning of the process. Therefore, the inputs used in regional air quality conformity analyses change with time. Mobile emissions budgets in air quality plans are established based on analyses that incorporate the "latest planning assumptions" when the air quality plan is developed, and do not change with time.

Changes to inputs used in air quality conformity analysis are not limited to transportation projects. They include other assumptions such as vehicle fleet mix and demographics. Such changes to inputs in conformity analysis relative to inputs used to establish mobile emissions will inevitably yield mobile emissions differences that are not strictly attributable to the transportation plan itself.

Anticipating such situations, federal air quality conformity regulations (Reference 1) allow air quality (Attainment and Maintenance) plans to provide a "conformity buffer" while establishing MVEBs. Accordingly, the DC-MD-VA 2008 Ozone Maintenance Plan established the Tier 2 mobile emissions budgets with a 20% buffer to address uncertainty that is introduced when inconsistent assumptions are used between budget-setting and the conformity analysis.

Exhibit 14 below lists the contrasting assumptions used in the development of the mobile emissions budgets and in the current air quality conformity analysis of the 2020 Amendment to the Visualize 2045 plan and FY 2021-2024 TIP. Details related to these inputs were discussed in the Work Activities and Technical Inputs section earlier in this report.

EXHIBIT 14

INPUT ASSUMPTIONS

	Maintenance SIP Mobile Emissions Budgets	2020 Amendment to the Visualize 2045 Conformity Emissions
Cooperative Forecasts	Round 9.0	Round 9.1a
Vehicle Fleet	2014 VIN	2016 VIN
Travel Demand Model	Version 2.3.66	Version 2.3.78
Project Inputs	2016 CLRP	2020 Amendment
Metrorail Constraint	Yes	No

MOVES Inputs

Emissions estimates were developed using the MOVES2014b model which was released by EPA in 2018. Input data from ten broad categories were used in the MOVES County Manager in order to generate the mobile emissions inventories for each analysis year. Five of these categories are travel-related (i.e., derived from the regional travel demand model), and the remaining five are obtained either directly from state agencies (i.e., air agencies and Department of Motor Vehicles), or developed based on actual meteorological data. Exhibit 15 summarizes these categories, and indicates the methodology used to develop these data.

EXHIBIT 15

Local Input Data Categories

No	Data Category	Data Table Name	Locality	Methodology
1	Age Distribution	**sourceTypeAgeDistribution**	County	based on VIN
2	Average Speed Distribution	**avgSpeedDistribution**	County	based on travel demand model's post-processor outputs + school bus/refuse truck data from Fairfax Co. + transit bus from WMATA
3	Road Type Distribution	**roadTypeDistribution**	County	based on travel demand model's post-processor outputs
4	Source Type Population	**sourceTypeYear**	County	based on CLRP Vehicle Projection & VIN
5	Vehicle Type VMT	**HPMSVTypeYear**	County	based on TDM's post-processor outputs
		monthVMTFraction	Region	based on Regional Data
		dayVMTFraction	Region	based on Regional Data
		hourVMTFraction	Region	based on Regional Data
6	Ramp Fraction	**roadType**	Region	8% of the urban/rural restricted access roads
7	Fuel	**FuelSupply**	State	from state air agency (state-wide data)
8		**FuelFormulation**	State	from state air agency (state-wide data)
9	I/M Programs	**IMCoverage**	State	from state air agency (state-wide data)
10	Meteorology Data	**zoneMonthHour**	State	from DEP (region-wide data)

Age Distribution and Source Type Population refer to vehicle fleet characteristics and are developed using regional vehicle registration (VIN) data. Age Distribution refers to the age of the vehicle fleet by vehicle type. For Age Distribution, registered vehicles are divided into 13 vehicle classes and 31 age categories in a series of steps, using a commercial decoding software program and an EPA-developed converter. Source Type Population refers to the specific types of vehicles in the fleet. Trendlines (Reference 17) derived from actual vehicle population data from the 1975-2016 analysis timeframe serve as the basis for developing total vehicle population projections by jurisdiction for each analysis year. For each forecast year, the population is then converted into 13 vehicle types using a population mapping table included in EPA's technical guidance.

Average Speed Distribution refers to average vehicle speeds stratified by vehicle type, road type, time of day, and type of day (i.e., weekday vs. weekend). Average vehicle speed data are used to derive Vehicle Hours of Travel (VHT). Speed data from the travel demand model are stratified, using a post processor, into hourly VHT for each jurisdiction by 3 vehicle types, 4 road types, and 16 speed bins. VHT distribution for trash trucks, school buses, and transit buses is derived using locally observed data.

Road Type Distribution is the percentage of VMT allocated to each road type by vehicle type. The VMT by road type is stratified into 13 vehicle types and 4 road types.

The average annual weekday VMT by five HPMS vehicle types from the travel demand model is input into the EPA-provided annual VMT converter with local monthly adjustment factors and weekend-day adjustment factors. The converter develops annual VMT for five HPMS vehicle types as required for MOVES and provides two additional outputs, "monthVMTfraction" and "dayVMTfraction". The local "hourlyVMTfraction" is also provided as part of the annual VMT input.

With the MOVES model, local data are used to provide bus VMT estimates. Local bus VMT is substituted for heavy duty vehicle VMT from the travel model. With the MOVES model, auto access to transit VMT is added to the travel model VMT. In order to develop auto access VMT, TPB staff gathered capacity information for current and future parking lots. Parking lot capacities were kept constant through all forecast years because quality historic data is not currently available to develop future growth trends. However, in subsequent conformity analyses this assumption may change if reliable data become available. A regional average home-to-transit travel distance of 4.5 miles was assumed for most parking lots. This assumption was based on findings from Commuter Connections surveys and a 2012 Geographically Focused Travel Survey. An average home-to-transit travel distance of 7.5 miles was used for certain parking lots where longer commuting distances apply. The parking capacity was multiplied by twice the average travel distance to provide auto access to transit VMT.

Ramp Fraction is the percentage of driving time on ramps by road type. Local data indicate that ramp time represents 8 percent of VHT. This, coincidentally, is the same as the national default value.

Attachment E includes a detailed description of how the MOVES inputs were developed. TPB staff developed the travel-related MOVES inputs based on the regional travel demand model (Version 2.3.78). COG's Department of Environmental Programs (DEP) staff provided inputs related to Fuel Supply and Formulation and Inspection and Maintenance (I/M) programs, as well as Meteorology Data. Fuel and I/M program data were supplied directly from DC, Maryland, and Virginia air agencies in MOVES ready formats. Meteorology data were developed by DEP staff and supplied as hourly records of temperature and relative humidity in MOVES format.

Mobile Emissions Inventories

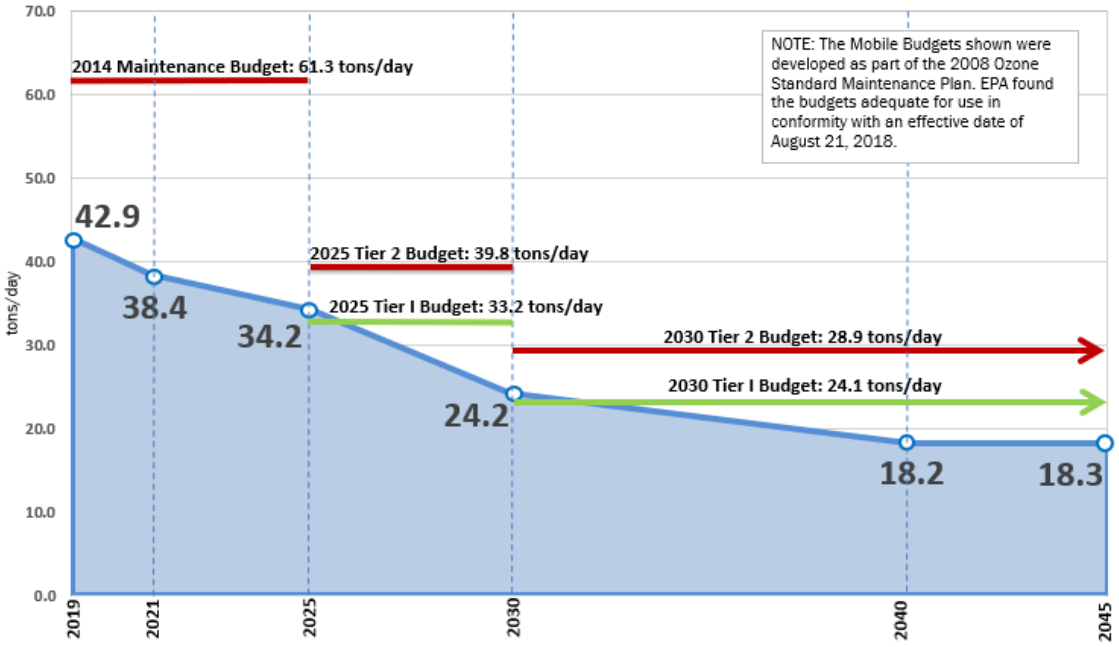
The estimates for ozone season pollutants are summarized in Exhibits 16 and 17, and indicate total VOC and NOx mobile emissions for each analysis year. The emissions are shown in relation to the Tier 1 and Tier 2 mobile emissions budgets for each pollutant. Ozone season emissions show reductions through time despite steady increases in vehicle trips and VMT in the forecast years. The emissions reductions are attributed to cleaner vehicles and fuel standards, including Tier 2 and Tier 3 federal standards, and related emissions reductions/control programs. As programs are put into place, emissions reductions are realized, and decreases continue through time as fleet turnover replaces older vehicles.

Emissions levels for VOC and NOx are slightly above the Tier 1 mobile emissions budgets for the 2025 and 2030 analysis years. For the 2025 analysis year, the VOC emissions level is 1 ton/day above the 34.2 tons/day Tier 1 budget, and the NOx emissions level is 1.8 tons/day above the 40.7 tons/day Tier 1 budget. For the 2030 analysis year, the VOC emissions level is 0.1 tons/day above the 24.1 tons/day Tier 1 budget, and the NOx emissions level is 0.4 tons/day above the 27.4 tons/day Tier 1 budget. These emissions are marginally higher than Tier 1 budget levels due to the differences in the inputs and methods used in this conformity analysis relative to those used in the 2008 Ozone Maintenance Plan.

The transportation buffers established in the Tier 2 Mobile Emissions Budgets were implemented to account for changes in data, models, or planning assumptions used in the conformity analysis. As outlined earlier in this report, there were numerous input changes between the conformity analysis and the analysis used to set the mobile emissions budgets. Therefore, the Tier 2 budgets are used to demonstrate conformity of the 2020 Amendment to the Visualize 2045 transportation plan and FY 2021-2024 TIP with respect to VOC and NOx. Emissions levels for VOC and NOx are well below the Tier 2 mobile emissions budgets for all analysis years, as shown in Exhibits 16 and 17.

EXHIBIT 16

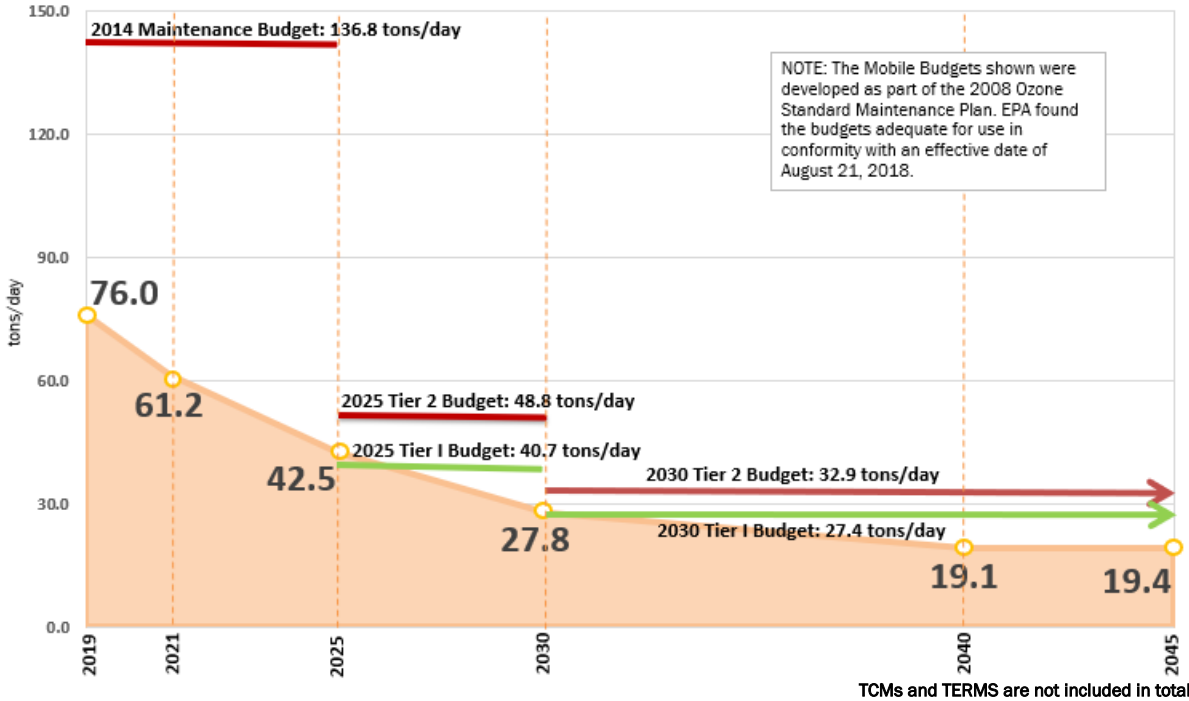
Mobile Source Emissions
OZONE SEASON VOC



TCMs and TERMS are not included in totals.

EXHIBIT 17

Mobile Source Emissions
OZONE SEASON NOx



TCMs and TERMS are not included in totals.

TERMs

Transportation Emission Reduction Measures (TERMs) are strategies or actions that the TPB can employ to further reduce emissions from mobile sources. TERMs are generally intended to reduce 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. These types of considerations, while not explicitly accounted for in the travel demand model, will continue to reduce the emissions levels in the region.

TERMs were analyzed using emissions rates generated in a post-processing environment using MOVES outputs from the conformity analysis. This approach ensured consistency of assumptions, inputs, and methodologies with conformity.

TERMs benefits were calculated for the Visualize 2045 plan and FY 2019-2024 TIP conformity analysis (adopted on October 17, 2018) and were not updated for the 2020 Amendment to the Visualize 2045 plan, because the amendment is considered a minor update to the plan and the changes in emissions benefits would be minimal. Also, the benefits of these projects are not included in the emissions totals in this report, but they are available, if necessary, to offset future growth in mobile emissions.

TERMs were grouped into four broad categories. Each category consisted of a grouping of several similar and related activities:

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

Exhibit 18 lists the emission reduction potential of these TERMs, by pollutant, for each analysis year. Attachment F contains detailed information about the TERMs analysis.

EXHIBIT 18

TRANSPORTATION EMISSIONS REDUCTION MEASURES

ADDITIONAL EMISSIONS REDUCTIONS: ALL TERMS COMBINED		
Years/Pollutants	Ozone - VOC (tons/day)	Ozone - NOx (tons/day)
2019	0.228	0.214
2021	0.223	0.191
2025	0.229	0.162
2030	0.177	0.106
2040	0.162	0.074
2045	0.172	0.076

NOTE: Benefits from these TERMs are not included in the emissions totals in this conformity analysis.

Transportation Control Measures (TCMs)

A Transportation Control Measure, or TCM, is any measure that is specifically identified in a SIP for the purpose of reducing emissions or concentrations of air pollutants from transportation sources. These on-road mobile source measures typically reduce vehicle use or change traffic flow or congestion conditions. A few examples of TCMs are: programs for improved public transit, employer-based transportation management plans, trip-reduction ordinances, programs to control extended idling of vehicles, reducing emissions from extreme cold-start conditions, employer-sponsored programs to permit flexible work schedules, programs to encourage removal of pre-1980 vehicles.

Section 93.113 of the conformity regulations requires the timely implementation of TCMs. All adopted TCMs for this region were included in the 1-Hour Ozone SIP and the 8-Hour Ozone Attainment SIP. The 1-Hour Ozone SIP was adopted by MWAQC on February 19, 2004. The 8-Hour Ozone Attainment SIP was adopted by MWAQC on May 23, 2007, and replaced the 1-Hour Ozone SIP when EPA found the Reasonable Further Progress (RFP) mobile emissions budgets adequate for use in conformity in September, 2009. All TCMs included in these SIPs were implemented in a timely manner, as documented in Attachment G of this report.

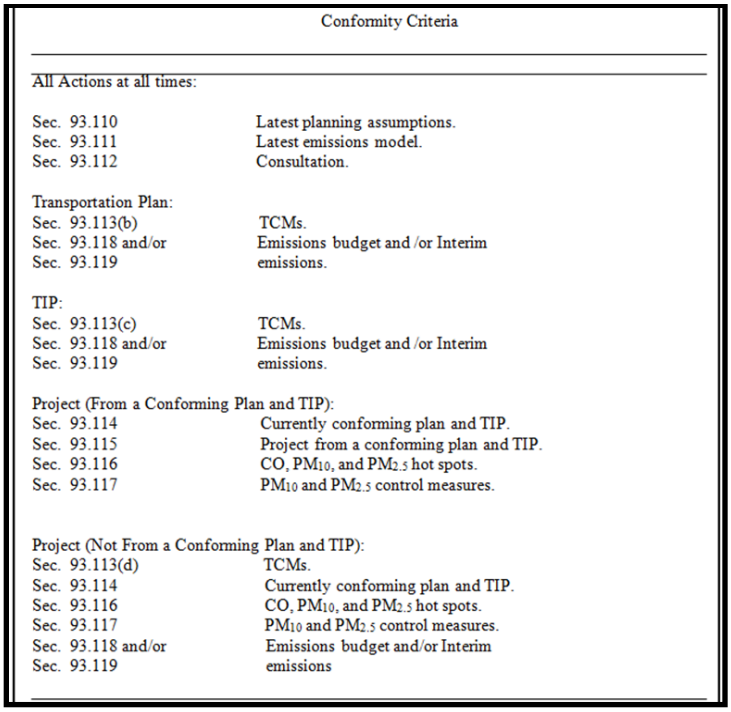
6. CONFORMITY CRITERIA AND PROCEDURES

EPA's conformity regulations identify criteria and procedures for the determination of conformity. The April 2012 amendments to EPA's regulations represent the current transportation conformity requirements. The following sections indicate: (1) the appropriate sections of the regulations which must be adhered to in this conformity analysis, and (2) the manner in which the regulations have been met.

Conformity Criteria

This section identifies the criteria (sections of the regulations) which the LRTP must meet in order to conform to current implementation plans in the District of Columbia, Maryland and Virginia. Exhibit 19 lists the sections of the regulations relevant for the analysis of the 2020 Amendment to the Visualize 2045 plan and FY 2021-2024 TIP. The following discussion indicates the manner in which each criterion was met.

EXHIBIT 19



Conformity Criteria

All Actions at all times:	
Sec. 93.110	Latest planning assumptions.
Sec. 93.111	Latest emissions model.
Sec. 93.112	Consultation.
Transportation Plan:	
Sec. 93.113(b)	TCMs.
Sec. 93.118 and/or Sec. 93.119	Emissions budget and /or Interim emissions.
TIP:	
Sec. 93.113(c)	TCMs.
Sec. 93.118 and/or Sec. 93.119	Emissions budget and /or Interim emissions.
Project (From a Conforming Plan and TIP):	
Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.115	Project from a conforming plan and TIP.
Sec. 93.116	CO, PM_{10}, and $PM_{2.5}$ hot spots.
Sec. 93.117	PM_{10} and $PM_{2.5}$ control measures.
Project (Not From a Conforming Plan and TIP):	
Sec. 93.113(d)	TCMs.
Sec. 93.114	Currently conforming plan and TIP.
Sec. 93.116	CO, PM_{10}, and $PM_{2.5}$ hot spots.
Sec. 93.117	PM_{10} and $PM_{2.5}$ control measures.
Sec. 93.118 and/or Sec. 93.119	Emissions budget and/or Interim emissions

Sec. 93.110 Criteria and procedures: Latest planning assumptions.

The conformity analysis is based upon the most current planning assumptions available for the Washington region. Round 9.1a Cooperative Forecasts were approved for use in the conformity analysis of the 2020 Amendment to the Visualize 2045 plan and FY 2021-2024 TIP. These forecasts were developed and reviewed taking into consideration transportation and land use interaction.

Travel demand modeling methods incorporating the latest available data were used in this study. The refinements include development and use of a comprehensive set of transit and HOV networks. As with previous conformity analyses, transit fares are modeled explicitly in the modal choice process. The analysis includes actual fares for the base year simulation, with forecast year fares based on current (July 2019) fares with increases through time as a function of increases in the consumer price index. Base year fares are modeled to reflect the WMATA tariff and other actual charges levied by each transit provider; the updated fare tariffs provided the basis for future analysis years. Transit operating policies, such as hours and frequency of service, are updated annually and modeled explicitly to reflect actual conditions in the peak and off-peak hours. The overall travel demand modeling process is continually monitored and refined as new data become available.

Sec. 93.111 Criteria and procedures: Latest emissions model.

The current analysis used MOVES2014b, the latest emission factor model specified by EPA for use in preparation of state implementation plans and conformity assessments.

Sec. 93.112 Criteria and procedures: Consultation.

The TPB offers many opportunities for public comment. Since the initial consultation procedures were developed, TPB has expanded the opportunities for public involvement through a series of initiatives. Examples include: the public comment period at the start of each TPB meeting; regular public forums and workshops on major topics; and the institution of the Citizens Advisory Committee and the Access For All Committee, website posts, and Twitter and Facebook postings. Details relating to public involvement for this conformity analysis are included above, and in Attachment C of this document. General information is summarized in a report called the TPB Participation Plan (Reference 18).

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

Transportation Control Measures were included in both the 1-Hour Ozone SIP, the 8-Hour Ozone Attainment SIP, and the $PM_{2.5}$ SIP. Documentation regarding the timely implementation of each project is included as Attachment G of this document.

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

There is a currently conforming plan and program in the Washington region. This current conformity analysis is designed to update and supersede the (conforming) Visualize 2045 plan (Reference 19), adopted by the TPB in October, 2018 and approved by the FHWA on December 13, 2018.

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

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

Sec. 93.116 Criteria and procedures: Localized CO and PM_{10} violations (hot spots).

Projects advancing to the current TIP have met this criterion as an element of their environmental study prior to being included in the TIP. (The Washington area is now in attainment for both carbon monoxide and PM_{10}.)

Sec. 93.117 Criteria and procedures: Compliance with PM_{10} and $PM_{2.5}$ control measures.

The Washington area is in attainment for PM_{10}. Prior to the region attaining the 1997 $PM_{2.5}$ NAAQS, a SIP for the Washington non-attainment area was developed and submitted to EPA in April, 2008. That SIP was never approved. After attaining the 1997 $PM_{2.5}$ NAAQS, MWAQC submitted, and EPA approved, a $PM_{2.5}$ Redesignation Request and Maintenance Plan for the Washington region. The On-Road control measures in that Maintenance Plan include only measures directly impacting vehicles and fuels which would not be pertinent for project level conformity determinations. These are: the 2007 heavy duty engine rule, Tier 1 federal motor vehicle emissions standards, Tier 2 vehicle and gasoline sulfur program, and enhanced motor vehicle emissions and maintenance programs.

93.118 Motor vehicle emissions budget

As discussed earlier in this report, this analysis includes use of the existing budgets developed as part of the 8-hour ozone maintenance SIP that were found adequate for use in conformity analyses by EPA in August 2018. Approved budgets exist for ozone season VOC and NOx. The mobile emissions inventories for all analysis years were compared to these budgets. Total VOC and NOx emissions for all plan milestone analysis years are within their respective emissions budgets.

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

All assessed pollutants have motor vehicle budgets.

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

7. CONSULTATION AND PUBLIC PARTICIPATION

Consultation

The conformity regulations require that Metropolitan Planning Organizations (MPOs) make Transportation Plans, TIPs, and conformity determinations available to the public, and accept and respond to public comment. The Transportation Planning Board (TPB) staff went through a lengthy process involving EPA and state and local air quality agencies to develop the region's transportation and air quality conformity consultation procedures. These procedures have been organized into a report, Transportation Planning Board Consultation Procedures with Respect to Transportation Conformity Regulations Governing TPB Plans and Programs (Reference 7). They were adopted by the Board initially on September 21, 1994 and subsequently updated in response to EPA's August 15, 1997 amendments, and formally adopted by the TPB on May 20, 1998. The procedures seek early involvement of the air agencies in the transportation planning process through concurrent mailings to the TPB and consultation agencies of all material relevant to transportation conformity, including announcements of work sessions and public forums in which the materials will be discussed.

Public Participation

Public participation is a federal requirement initially outlined in the Intermodal Surface Transportation Efficiency Act of 1991, included in subsequent legislation, and most recently reaffirmed in the federal transportation reauthorization bill, Fixing America's Surface Transportation (FAST) Act, signed into law in 2015. Public participation is recognized as an integral part of the planning process.

The Region's fourth *Participation Plan* (Reference 18), adopted by the TPB on September 17, 2014, provides an overall framework for participation in the TPB process. The *Participation Plan* describes the policies of the TPB regarding public involvement activities relating to the development of TPB Plans and Programs, including the air quality conformity analysis. The *Participation Plan* ensures that the TPB follows federal requirements for public involvement, by including the following procedures:

- A public comment period of at least 30 days precedes the approval of documents
- Consideration is given and written responses are prepared to comments received
- TPB provides an additional opportunity for public comment, if the final Plan or TIP differs significantly from the version that was made available for public comment by the TPB and

raises new material issues, which interested parties could not reasonably have foreseen from the public involvement efforts

- When significant written and oral comments are received on the draft Plan and TIP (including financial plans) as a result of the participation process in the interagency consultation process required under the transportation conformity regulations (40 CFR part 93), a summary, analysis, and report on the disposition of comments shall be made as part of the final Plan and TIP
- A period of time at the beginning of each TPB meeting is provided for public comment by interested citizens and groups on transportation issues under consideration by the TPB, and provide follow-up acknowledgement and response (as appropriate)
- Opportunities for public comment are offered on the TPB website
- Access to the technical and policy activities of the TPB is offered through open attendance at meetings of the TPB, and its Technical Committee and Subcommittees
- All publicly available TPB documents are posted on the TPB website, and otherwise opportunities are sought to make reports and technical information widely available through the website
- Reports and technical information material are distributed at TPB, technical committee and subcommittee' meetings free of charge
- At least one formal public meeting is provided during the TIP development process.

The TPB maintains and supports two public advisory committees, The Citizens Advisory Committee (CAC) and the Access for All Advisory Committee (AFA). These committees are intended to promote public involvement and represent the opinions of a variety of communities and interests. The CAC includes individual citizens and representatives of environmental, business, and civic interests concerned with regional transportation matters. The AFA advises the TPB on transportation issues, programs, policies, and services that are important to low-income communities, minority communities, and people with disabilities. Participants in the AFA include individuals and organizations that represent traditionally unrepresented populations.

The TPB also maintains a comprehensive website as well as Facebook and Twitter accounts. Staff uses Facebook and Twitter to announce meetings, events, public comment periods, and release of key publications and reports.

Since 2015 TPB has live-streamed audio of each TPB and TPB Technical Committee meeting, and provides audio recordings at www.mwcog.org/TPBmtgLIVE.

The TPB uses and e-newsletter, *TPB News*, to deliver important TPB news and information to the public. The *TPB News* is delivered directly to recipients via email twice a month. The e-newsletter contains key upcoming board actions and recaps the previous month's board meeting. It announces important events, funding opportunities, and public comment periods. It also contains articles that highlight and summarize recent TPB research, analysis, outreach, and planning.

The TPB held a TIP Forum on January 16, 2020. At the TIP Forum planners presented highlights from the FY 2021-2024 TIP, and representatives from the state-level Departments of Transportation were available to answer questions. The event was streamed on Facebook Live.

The TPB provided a 30-day comment period before the TPB approval of the conformity analysis, the 2020 Amendment to the Visualize 2045 plan, and the FY 2021-2024 TIP. The TPB website announced the comment opportunities. The *Washington Post*, the *Afro-American*, and the *Washington Hispanic* posted ads publicizing the comment period information. The TPB provides a comment opportunity at the beginning of each monthly meeting. The schedule in Exhibit 20 lists these opportunities.

EXHIBIT 20

CONFORMITY SCHEDULE

DRAFT

SCHEDULE FOR DEVELOPMENT & ADOPTION OF FY2021-2024 TIP AND PLAN

May 3, 2019	Technical Committee is briefed on request for plan and TIP updates; solicitation opens
May 31, 2019	Solicitation closes; all air quality conformity project inputs are due
June 7, 2019	Technical Committee briefed on draft project inputs and draft air quality conformity Scope of Work
June 19, 2019	TPB briefed on draft project inputs and draft air quality conformity Scope of Work
June 2019	TPB staff briefs Metropolitan Washington Air Quality Committee Technical Advisory Committee (MWAQC TAC) on inputs and Scope of Work
July 17, 2019	TPB is asked to approve inputs and draft Scope of Work
December 20, 2019	Financial updates for the FY 2021-2024 TIP are due
January 16, 2020	Public Forum on the FY 2021-2024 TIP
January 31, 2020	Draft Visualize 2045 update, TIP, and Conformity Analysis are released for 30-day comment period
February 7, 2020	Technical Committee reviews draft Visualize 2045 update, TIP, and Conformity Analysis
February 2020	TPB staff briefs MWAQC TAC on the draft Visualize 2045 update, TIP, and Conformity Analysis
February 19, 2020	TPB is briefed on draft Visualize 2045 update, TIP, and Conformity Analysis
March 1, 2020	Comment period ends
March 18, 2020	TPB reviews comments and responses to comments, and is presented with the draft Visualize 2045 plan update, FY 2021-2024 TIP, and Conformity Analysis for approval

Additional materials including a sample consultation letter, website announcements, Twitter and Facebook postings, and copies of the newspaper notifications are contained in Attachment C. Additional information about public comment procedures as well as a detailed listing of all TPB consultation and public comment opportunities associated with the conformity assessment of the 2020 Amendment to the Visualize 2045 plan and FY 2021-2024 TIP are also included in Attachment C.

Coordination with Calvert-St. Mary's Metropolitan Planning Organization (C-SMMPO)

Calvert County, Maryland is in the Washington D.C. region's ozone non-attainment area, and is also a member of the southern Maryland MPO, C-SMMPO. Projects in Calvert County have always been included in the TPB's conformity analysis, but with the establishment of the C-SMMPO, it was necessary to formalize coordination between the TPB and the C-SMMPO. On January 20, 2016 the TPB approved a resolution with the C-SMMPO and Calvert County where all parties agreed upon procedures for ensuring that transportation plans, programs, and projects in Calvert County are assessed for regional air quality conformity. The TPB/C-SMMPO agreement, and documentation about how each task in the agreement was completed, is included in Attachment D.

8. FISCAL CONSTRAINT

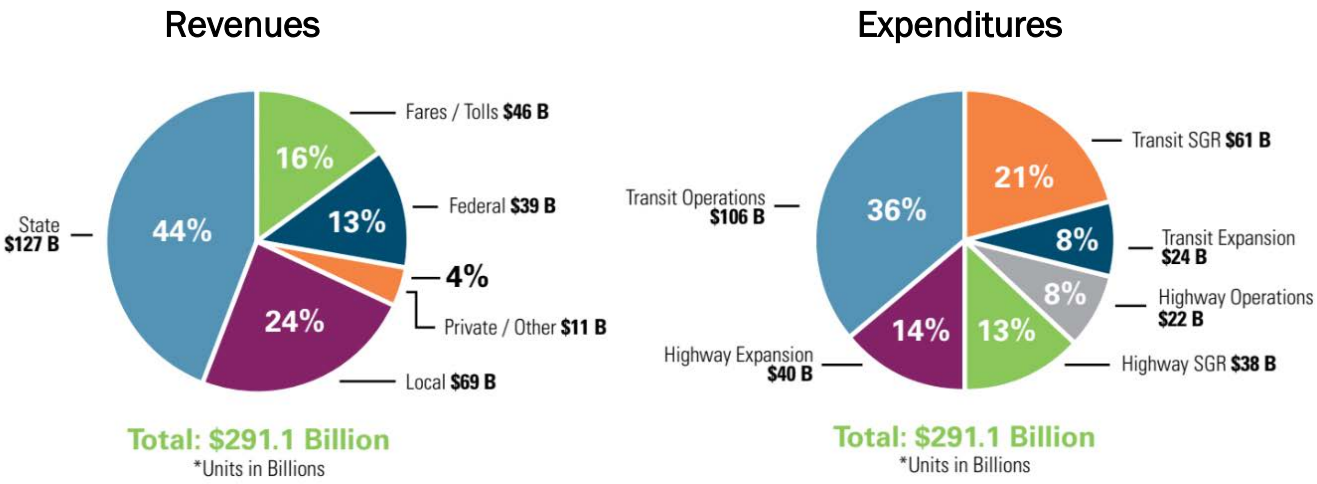
EPA's conformity regulations require that transportation plans and TIPs must be fiscally constrained in order to be found in conformity. The Visualize 2045 plan, originally adopted on October 18, 2018, represents the "major" update which occurs every four years. Visualize 2045 includes a full financial analysis of the constrained regional transportation plan and program. Appendix A of the Visualize 2045 report (Reference 19), which documents this financial plan, is available on the COG website. The financial plan demonstrates that the Visualize 2045 plan, covering the period through 2045, is financially constrained. The plan is fiscally realistic, balancing all proposed new project investments and system maintenance and operating costs with reasonable revenue expectations. The plan demonstrates that the forecast revenues reasonably expected to be available cover the estimated costs of expanding and adequately maintaining and operating the highway and transit system in the region.

A total of $291 billion in transportation expenditures is projected for the Washington Metropolitan Region for through 2045. Transit expenditures constitute 65 percent and highway expenditures constitute 35 percent of funds in the Visualize 2045 plan. The majority of future transportation revenues will be devoted to the operations and maintenance of the current transit and highway systems. However, funding is identified for significant capital projects, including the South Capitol Street Corridor project and the DC Streetcar East-West line in the District of Columbia; the I-270 and I-495 Traffic Relief Plan, the replacement of the Nice Bridge, the construction of the Purple Line, and the MARC Growth and Investment Plan for commuter rail in Maryland; and construction of the I-66 HOT lanes, the I-395 HOT lanes, the US 1 BRT, and Phase two of the Metrorail Silver Line in Virginia. The plan also demonstrates full funding for WMATA's forecast needs for both Operations and State of Good Repair through 2045. Exhibit 21 shows the balanced revenue and expenditures graphs for the Visualize 2045 plan. Given that the 2020 Amendment to Visualize 2045 incorporates only minor updates, the financial analysis has not been redone.

EXHIBIT 21

VISUALIZE 2045 TRANSPORTATION PLAN

REVENUES & EXPENDITURES



9. CONCLUSION

The analytical results described above provide a basis, in relation to US EPA conformity regulations, for a determination by the TPB of conformity of the 2020 Amendment to the Visualize 2045 long-range transportation plan and the FY 2021-2024 Transportation Improvement Program for the National Capital Region, with requirements of the Clean Air Act Amendments of 1990.

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APPENDIX A

Scope of Work

MEMORANDUM

TO: Transportation Planning Board

FROM: Jane Posey, Transportation Engineer

SUBJECT: Project Inputs and Scope of Work for the Air Quality Conformity Analysis of the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan

DATE: July 18, 2019

The project submissions and the Scope of Work for the air quality conformity analysis of the FY 2021-2024 Transportation Improvement Program (TIP) and the 2020 Amendment to the Visualize 2045 Plan were reviewed by the Technical Committee in June and July and shared with the TPB at its June meeting. The board will be asked to approve the project submissions for inclusion in the air quality conformity analysis of the FY 2021-2024 Transportation Improvement Program (TIP) and the 2020 Amendment to the Visualize 2045 Plan, and the corresponding Scope of Work.

Attachment A lists the proposed inputs to the FY 2021-2024 TIP and changes to the Visualize 2045 Plan for inclusion in the air quality conformity analysis.

Attachment B documents the air quality conformity analysis Scope of Work, which presents an outline of the work tasks required to address all regulations currently applicable.

CHANGES AND CORRECTIONS MADE TO PROJECT INPUTS AND SCOPE OF WORK

The attached conformity project input tables and the Scope of Work for the upcoming air quality conformity analysis are identical to the materials shared with the TPB in June, with the exception of the following minor corrections/updates:

<u>In project inputs table (Attachment A):</u>

Page A-1 Added K St. NW Transitway project with transit projects (was mentioned in significant changes list and included with the highway projects)

Page A-1 Changed completion date of Corridor Cities Transitway from 2022 to 2028

Page A-1 Changed completion date of VRE Service Improvements from 2020 to 2028

Page A-1 Added Long Bridge Study (already included in listing under DDOT)

Page A-1 Changed completion date of Crystal City Transitway Northern Extension dedicated lanes from 2021 to 2022

Page A-2 Added two segments of the Crystal City/Potomac Yards Transitway realignment to dedicated right-of-way in 2025 and 2030

Page A-2 Changed West End Transitway limits from "Van Dorn St. to Pentagon" to "Van Dorn St. to Pentagon & Landmark"

Page A-5 Changed "Reduce Capacity- Streetcar" to "Reduce Capacity- Transitway" for the two segments of the K St. NW Transitway

Page A-6 Added a capacity reduction- bike lane project on Lottsford Road from MD 202 to Largo Dr. West.- reduce from 6 to 4 lanes in 2020

Page A-8 Changed South Clark St. (Arlington) demolition limits from "12th St. S. to 18th St. S." to "12th St. S. to 20th St. S."

In the Scope of Work (Attachment B):

The reference to the Cooperative Forecasts was changed from "Round 9.1 or latest" to "Round 9.1a"

SUMMARY OF MAJOR PROJECT SUBMISSIONS

This section of the memo highlights the new or updated major project submissions from those listed in Attachment A.

DISTRICT OF COLUMBIA

The District Department of Transportation (DDOT) has proposed **to add the following projects** to the conformity analysis of the FY 2021-2024 TIP and Visualize 2045 amendment:

1. Two **Peak Period Bus-Only Lane Pilot Projects** implemented in 2019:
   a. **H St. NW from 14th St. to 19th St.**, reduce capacity from 5 to 4 lanes (CON IDs 582, 822)
   b. **I St. NW from 13th St. to Pennsylvania Ave.**, reduce capacity from 4 to 3 lanes (CON IDs 583, 823)

2. Eight **bicycle lane projects** that would reduce capacity for vehicular traffic (CON IDs 1003-1013):
   a. **9 St. NW from Florida Ave. to Massachusetts Ave.** (4 to 2 lanes); **from Massachusetts Ave. to Constitution Ave.** (6/4 lanes to 4/2 lanes), complete 2019
   b. **Dalecarlia Pkwy. NW from Loughboro Rd. to Westmoreland Circ.** (4 to 2 lanes), complete 2020
   c. **Florida Ave. NE from 2nd St. to West Virginia Ave.** (6 to 4 lanes) **and from West Virginia Ave. to 14th St.** (3 to 2 lanes), complete 2019
   d. **K St. NE from 1st St. to 8th St.** (3 to 2 lanes), complete 2019
   e. **M St. SE from Half St. to 11th St.** (6 to 5 lanes), complete 2020
   f. **Mount Olivet Rd. NE from Brentwood Pkwy. to West Virginia Ave.** (4 to 3 lanes), complete 2020
   g. **Nebraska Ave. NW from New Mexico Ave. to Loughboro Rd.** (4 to 3 lanes), complete 2020
   h. **Pennsylvania Ave. SE from 2nd St. to 17th St.** (8 to 6 lanes), complete 2020

3. Construct two segments of the **K St. NW Transitway from 9th St. to 12th St.,** reducing capacity from 4 lanes to 2 lanes **and from 12th St. to 21st St.,** reducing capacity from 6 lanes to 4 lanes allowing bus-only service on the transitway by 2021.

COMMONWEALTH OF VIRGINIA

The Virginia Department of Transportation (VDOT) has proposed to **add the following projects**:

1. Modifications to the **I-495 Capital Beltway Express Lanes ramps around the Dulles Toll Road interchange**, complete in 2025 and 2045 (CON IDs 999-1002)
2. Construct a **reversible ramp from I-95 at Opitz Dr.**, complete in 2022 (CON ID 1011)
3. Construct **VA 28 Manassas Bypass from VA 234 Sudley Rd. to VA 28 Centreville Rd.,** 4 lanes, complete in 2025 (CON ID 995)
4. Widen **VA 55 from US 29 to the Town of Haymarket**, 2 to 4 lanes, complete in 2028 (CON ID 997)
5. Widen **VA 123 from VA 267 Dulles Access Rd. to VA 634 Great Falls St.,** 4 to 6 lanes, complete in 2030 (CON ID 1015)
6. Widen **VA 286 Fairfax County Parkway from US 29 Lee Hwy. to Rolling Rd.,** 4 to 6 lanes, complete in 2030 (CON ID 728)
7. Construct **West End Transitway Phase II (Southern Segment) from Van Dorn Street Metro to Landmark Mall**, complete in 2026 (CON ID 1034)

NEXT STEPS

Following the TPB approval of the project inputs and Scope of Work, the air quality conformity analysis will be conducted between July 2019 and January 2020. Draft results will be released on January 31, 2020 for a public comment period. After the public comment period, the board will be asked to approve the air quality conformity analysis and the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan at the March 18, 2020 meeting.

National Capital Region
Transportation Planning Board

July 3, 2019

AIR QUALITY CONFORMITY ANALYSIS: FY 2021-2024 TIP & 2020 Amendment to the Visualize 2045 Plan SCOPE OF WORK

I. INTRODUCTION

The FY2021-2024 Transportation Improvement Program (TIP) and 2020 Amendment to the Visualize 2045 Plan are scheduled to be finalized at the March 18, 2020 Transportation Planning Board (TPB) meeting. This work effort addresses requirements associated with attainment of the ozone standard (volatile organic compounds (VOC) and nitrogen oxides (NOx) as ozone precursor pollutants).

The amended plan must meet air quality conformity regulations: (1) as originally published by the Environmental Protection Agency (EPA) in the November 24, 1993 Federal Register, and (2) as subsequently amended, most recently on March 14, 2012, and (3) as detailed in periodic FHWA / FTA and EPA guidance. These regulations specify both technical criteria and consultation procedures to follow in performing the assessment.

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

II. FEDERAL REQUIREMENTS

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

1. Are consistent with most recent estimates of mobile source emissions budgets
2. Provide expeditious implementation of Transportation Control Measures (TCMs)
3. Contribute to annual emissions reductions

The federal requirements governing air quality conformity compliance are contained in §93.110 through §93.119 of the Transportation Conformity Regulations (printed April 2012), as follows:

CONFORMITY CRITERIA & PROCEDURES	
All Actions at all times	
§93.110	Latest Planning Assumptions
§93.111	Latest Emissions Model
§93.112	Consultation
§93.113	TCMs
§93.114	Currently conforming Plan and TIP
§93.115	Project from a conforming Plan and TIP
§93.116	CO, PM10 and PM2.5 hot spots
§93.117	PM10 and PM2.5 Control Measures
§93.118 and/or §93.119	Emissions Budget and/or Interim Emissions

§ 93.110 Criteria and procedures: Latest planning assumptions - The conformity determination must be based upon the most recent planning assumptions in force at the time of the conformity determination.

§ 93.111 Criteria and procedures: Latest emissions model - The conformity determination must be based on the latest emission estimation model available.

§ 93.112 Criteria and procedures: Consultation – The Conformity must be determined according to the consultation procedures in this subpart and in the applicable implementation plan, and according to the public involvement procedures established in compliance with 23 CFR part 450.

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

§93.114 Criteria and procedures: Currently conforming transportation plan and TIP - There must be a currently conforming transportation plan and currently conforming TIP at the time of project approval.

§93.115 Criteria and procedures: Projects from a plan and TIP - The project must come from a conforming plan and program.

§93.116 Criteria and procedures: Localized CO, PM10, and PM2.5 violations (hot spots) -The FHWA/FTA project must not cause or contribute to any new localized CO, PM10, and/or PM2.5 violations or increase the frequency or severity of any existing CO, PM10, and /or PM2.5 violations in CO, PM10, and PM2.5 nonattainment and maintenance areas.

§93.117 Criteria and procedures: Compliance with PM10 and PM2.5 control measures -The FHWA/FTA project must comply with PM10 and PM2.5 control measures in the applicable Implementation Plan.

§93.118 Criteria and procedures: Motor vehicle emissions budget - The transportation plan, TIP, and projects must be consistent with the motor vehicle emissions budget(s).

§93.119 Criteria and procedures: Interim emissions in areas without motor vehicle budgets - The FHWA/FTA project must satisfy the interim emissions test(s).

Assessment Criteria:

Ozone season pollutants will be assessed by comparing the forecast year pollutant levels to the mobile budgets in the 2008 Ozone National Ambient Air Quality Standards (NAAQS) Maintenance Plan. In August 2018 EPA found these budgets adequate for use in conformity analyses, and the budgets were used in the Visualize 2045 conformity analysis. The 2008 Ozone NAAQS Maintenance Plan includes mobile budgets for 2014 (attainment year), 2025 (intermediate year), and 2030 (out year). The 2014 budgets will be used for any analysis year between 2014 and 2024, the 2025 budgets will be used for any analysis year between 2025 and 2029, and the 2030 budgets will be used for any analysis year beyond 2029.

III. POLICY AND TECHNICAL APPROACH

The table below summarizes the key elements of the Policy & Technical Approach:

Pollutants	Ozone Season VOC and NOx
Emissions Model	MOVES2014b
Conformity Test	Budget Test: Using mobile budgets most recently approved by EPA: 2008 Ozone NAAQS Maintenance Plan mobile budgets found adequate by EPA in August, 2018.
Vehicle Fleet Data	December 2016 vehicle registration data for all jurisdictions
Geography	8-hour ozone non-attainment area
Network Inputs	Regionally significant projects
Land Activity	Cooperative Forecasts Round 9.1a
HOV/HOT	VA: All HOV 2+/HOT 2+ facilities become HOV 3+/HOT 3+ in 2020 and beyond except I-66 inside the Beltway, which will convert to HOT3+ when I-66 outside the Beltway opens MD: All HOV facilities remain HOV2+ through 2045
Transit Constraint	NO Metrorail "capacity constraint" (removed with March 2018 passage of annual funding for WMATA agreement)
Analysis Years	2019, 2021, 2025, 2030, 2040, 2045
Modeled Area	3,722 TAZ System
Travel Demand Model	Version 2.3.75 or latest

IV. CONSULTATION

The TPB adheres to the specifications of the consultation procedures (as outlined in the consultation procedures report adopted by the TPB on May 20, 1998). The TPB will participate in meetings of MWAQC, its Technical Advisory Committee, and its Conformity Subcommittee to discuss the Scope of Work, project inputs, and other elements as needed.

V. WORK TASKS

The work tasks associated with the air quality conformity analysis are as follows:

1. Receive project inputs from programming agencies and organize into conformity documentation listings by:
   - Project type, limits, etc.
   - Phasing with respect to forecast years
   - Transit operating parameters, e.g., schedules, service

2. Update Travel Model Base Transit Service to reflect:
   - Service current to December 2018
   - Fares current to July 1, 2019

3. Update 2016 Vehicle Registration Data (VIN data)
   - Corrections to DC VIN data as provided by the DC Department of Energy and Environment on June 19, 2018

4. Review and Update Land Activity files to reflect Round 9.1a Cooperative Forecasts with respect to:
   - Zonal data files
   - Employment Data Census Adjustment
   - Households by auto ownership, size and income
   - Coordination with agencies outside the MWCOG Cooperative Forecast area (Baltimore Metropolitan Council, Fredericksburg Area Metropolitan Planning Organization, Calvert-St. Mary's Metropolitan Planning Organization, etc.)
   - Exogenous Travel (external, through trips etc.)

5. Prepare forecast year highway, HOV, and transit networks including regionally significant projects, as follows:
   - 2019, 2021, 2025, 2030, 2040, and 2045 highway networks
   - 2019, 2021, 2025, 2030, 2040, and 2045 transit network input files
   - Update highway tolls, as necessary

6. Execute travel demand modeling for years 2019, 2021, 2025, 2030, 2040, and 2045

7. Derive Mobile Emissions Estimates for years 2019, 2021, 2025, 2030, 2040, and 2045 using inputs from the 2008 Ozone NAAQS Maintenance Plan mobile budgets

8. Summarize key inputs and outputs (VMT, mode share, emissions, etc.) of the conformity determination

9. Assess conformity and document results in a report

    - Document methods
    - Draft conformity report
    - Forward to technical committees, policy committees
    - Make available for public and interagency consultation
    - Receive comments
    - Respond to comments and present to TPB for action
    - Finalize report and forward to FHWA, FTA, and EPA

DRAFT

SCHEDULE FOR DEVELOPMENT & ADOPTION FY 2021-2024 TIP & 2020 Amendment to the Visualize 2045 Plan

May 3, 2019	Technical Committee is briefed on request for TIP and Plan updates; solicitation opens
May 31, 2019	Solicitation closes; all air quality conformity project inputs are due
June 7, 2019	Technical Committee briefed on draft project inputs and draft air quality conformity Scope of Work
June 19, 2019	TPB briefed on draft project inputs and draft air quality conformity Scope of Work
June 2019	TPB staff briefs Metropolitan Washington Air Quality Committee Technical Advisory Committee (MWAQC TAC) on inputs and Scope of Work
July 17, 2019	TPB is asked to approve inputs and draft Scope of Work
December 20, 2019	Financial updates for the FY 2021-2024 TIP are due
January 16, 2020	Public Forum on the FY 2021-2024 TIP
January 31, 2020	Draft FY 2021-2024 TIP, 2020 Amendment to the Visualize 2045 Plan, and air quality conformity analysis are released for 30-day comment period
February 7, 2020	Technical Committee reviews draft TIP, Plan, and conformity analysis
February 2020	TPB staff briefs MWAQC TAC on the draft TIP, Plan, and conformity analysis
February 19, 2020	TPB is briefed on TIP, Plan, and conformity analysis
March 1, 2020	Comment period ends
March 18, 2020	TPB reviews comments and responses to comments, and is presented with the FY 2021-2024 TIP, the 2020 Amendment to the Visualize 2045 Plan, and the air quality conformity analysis for approval

APPENDIX B

Project Inputs
(significant changes & input table)

Key to the Air Quality Conformity Table:

COLUMN 1:

Con ID – conformity identification number

COLUMN 2:

Project ID - project identification number (for reference purposes)

COLUMN 3:

Agency ID – agency project identification number (for reference purposes)

COLUMN 4:

Type of improvement - defined as follows:

Construct	=	build a new facility
Close	=	facility cease operation
Convert to 2-way	=	two lanes in each direction
Demolish	=	facility cease operation
Downgrade	=	reduce the number of lanes on an existing facility
Expansion	=	increase the number of lanes on an existing facility
Widen	=	increase the number of lanes on an existing facility
Upgrade	=	improve the facility type of a roadway
Re-Align Intersection	=	improve the alignment for intersection
Reduce Capacity	=	reduce the number of lanes on an existing facility
Relocate	=	construct an existing facility on a new right-of-way
Reconstruct	=	modify an existing facility with no capacity increase i.e., shoulder paving, geometric improvements
Rehabilitate	=	repair existing structures - no capacity increase
Remove	=	facility cease operation
Revise Operations	=	facility changed operation restriction
Study	=	to review alternative transportation improvements-project planning or preliminary engineering only

COLUMN 5:

Facility - name of facility to be studied or improved

COLUMNS 6 and 7:

From and To - limits of the project

COLUMN 8:

Facility Type - defined as follows:

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

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

COLUMN 9:

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

COLUMN 10:

Project Completion Date or Status - date project will be open for use.
"not coded" indicates that project is not included in the conformity analysis

National Capital Region
Transportation Planning Board

MEMORANDUM

TO: Transportation Planning Board

FROM: Jane Posey, Transportation Engineer

SUBJECT: Project Inputs and Scope of Work for the Air Quality Conformity Analysis of the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan

DATE: July 18, 2019

The project submissions and the Scope of Work for the air quality conformity analysis of the FY 2021-2024 Transportation Improvement Program (TIP) and the 2020 Amendment to the Visualize 2045 Plan were reviewed by the Technical Committee in June and July and shared with the TPB at its June meeting. The board will be asked to approve the project submissions for inclusion in the air quality conformity analysis of the FY 2021-2024 Transportation Improvement Program (TIP) and the 2020 Amendment to the Visualize 2045 Plan, and the corresponding Scope of Work.

Attachment A lists the proposed inputs to the FY 2021-2024 TIP and changes to the Visualize 2045 Plan for inclusion in the air quality conformity analysis.

Attachment B documents the air quality conformity analysis Scope of Work, which presents an outline of the work tasks required to address all regulations currently applicable.

CHANGES AND CORRECTIONS MADE TO PROJECT INPUTS AND SCOPE OF WORK

The attached conformity project input tables and the Scope of Work for the upcoming air quality conformity analysis are identical to the materials shared with the TPB in June, with the exception of the following minor corrections/updates:

<u>In project inputs table (Attachment A):</u>

Page A-1 Added K St. NW Transitway project with transit projects (was mentioned in significant changes list and included with the highway projects)

Page A-1 Changed completion date of Corridor Cities Transitway from 2022 to 2028

Page A-1 Changed completion date of VRE Service Improvements from 2020 to 2028

Page A-1 Added Long Bridge Study (already included in listing under DDOT)

Page A-1 Changed completion date of Crystal City Transitway Northern Extension dedicated lanes from 2021 to 2022

Page A-2 Added two segments of the Crystal City/Potomac Yards Transitway realignment to dedicated right-of-way in 2025 and 2030

Page A-2 Changed West End Transitway limits from "Van Dorn St. to Pentagon" to "Van Dorn St. to Pentagon & Landmark"

Page A-5 Changed "Reduce Capacity- Streetcar" to "Reduce Capacity- Transitway" for the two segments of the K St. NW Transitway

Page A-6 Added a capacity reduction- bike lane project on Lottsford Road from MD 202 to Largo Dr. West.- reduce from 6 to 4 lanes in 2020

Page A-8 Changed South Clark St. (Arlington) demolition limits from "12th St. S. to 18th St. S." to "12th St. S. to 20th St. S."

In the Scope of Work (Attachment B):

The reference to the Cooperative Forecasts was changed from "Round 9.1 or latest" to "Round 9.1a"

SUMMARY OF MAJOR PROJECT SUBMISSIONS

This section of the memo highlights the new or updated major project submissions from those listed in Attachment A.

DISTRICT OF COLUMBIA

The District Department of Transportation (DDOT) has proposed **to add the following projects** to the conformity analysis of the FY 2021-2024 TIP and Visualize 2045 amendment:

1. Two **Peak Period Bus-Only Lane Pilot Projects** implemented in 2019:
   a. **H St. NW from 14th St. to 19th St.**, reduce capacity from 5 to 4 lanes (CON IDs 582, 822)
   b. **I St. NW from 13th St. to Pennsylvania Ave.**, reduce capacity from 4 to 3 lanes (CON IDs 583, 823)

2. Eight **bicycle lane projects** that would reduce capacity for vehicular traffic (CON IDs 1003-1013):
   a. **9 St. NW from Florida Ave. to Massachusetts Ave.** (4 to 2 lanes); **from Massachusetts Ave. to Constitution Ave.** (6/4 lanes to 4/2 lanes), complete 2019
   b. **Dalecarlia Pkwy. NW from Loughboro Rd. to Westmoreland Circ.** (4 to 2 lanes), complete 2020
   c. **Florida Ave. NE from 2nd St. to West Virginia Ave.** (6 to 4 lanes) **and from West Virginia Ave. to 14th St.** (3 to 2 lanes), complete 2019
   d. **K St. NE from 1st St. to 8th St.** (3 to 2 lanes), complete 2019
   e. **M St. SE from Half St. to 11th St.** (6 to 5 lanes), complete 2020
   f. **Mount Olivet Rd. NE from Brentwood Pkwy. to West Virginia Ave.** (4 to 3 lanes), complete 2020
   g. **Nebraska Ave. NW from New Mexico Ave. to Loughboro Rd.** (4 to 3 lanes), complete 2020
   h. **Pennsylvania Ave. SE from 2nd St. to 17th St.** (8 to 6 lanes), complete 2020

3. Construct two segments of the **K St. NW Transitway from 9th St. to 12th St.,** reducing capacity from 4 lanes to 2 lanes **and from 12th St. to 21st St.,** reducing capacity from 6 lanes to 4 lanes allowing bus-only service on the transitway by 2021.

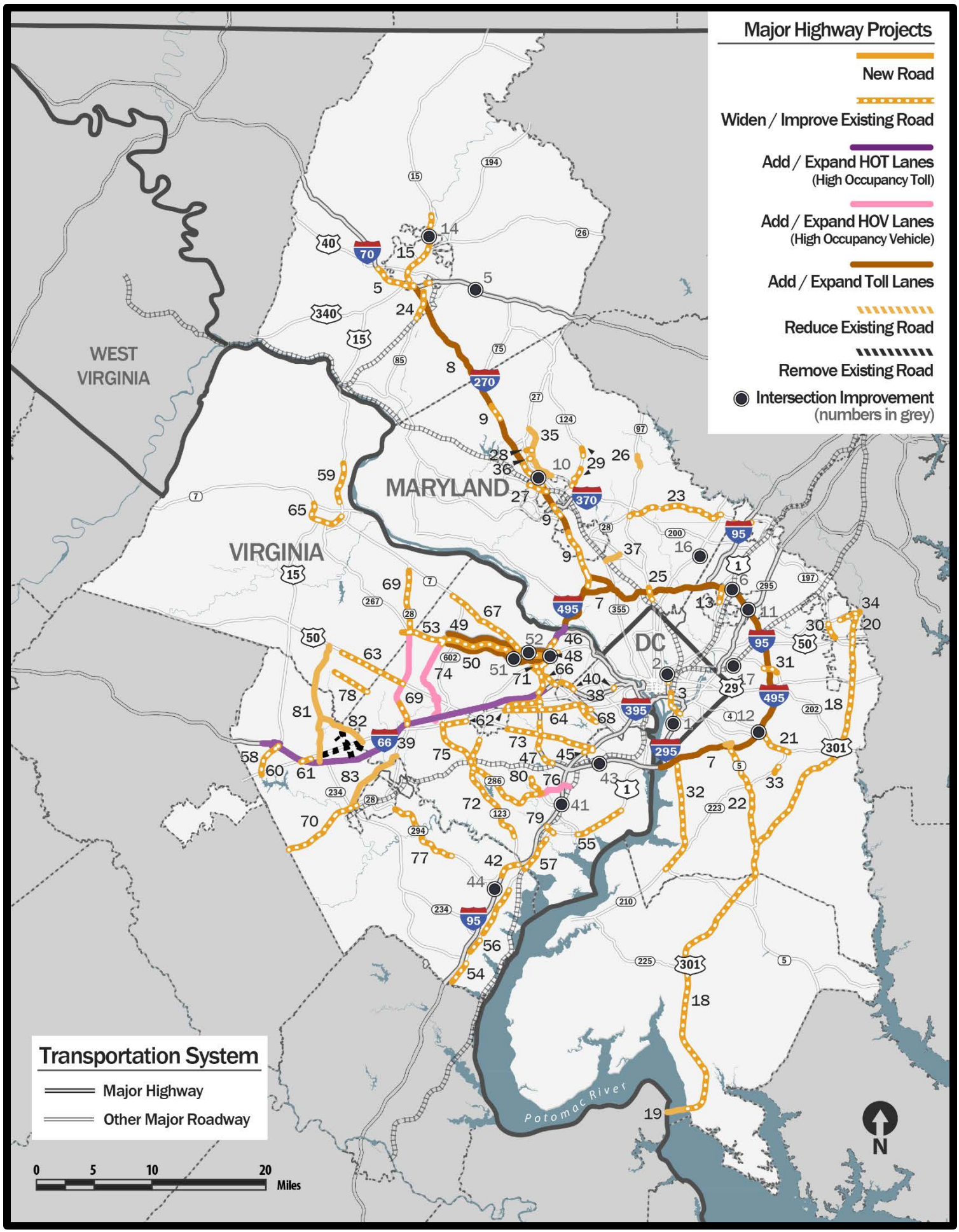
COMMONWEALTH OF VIRGINIA

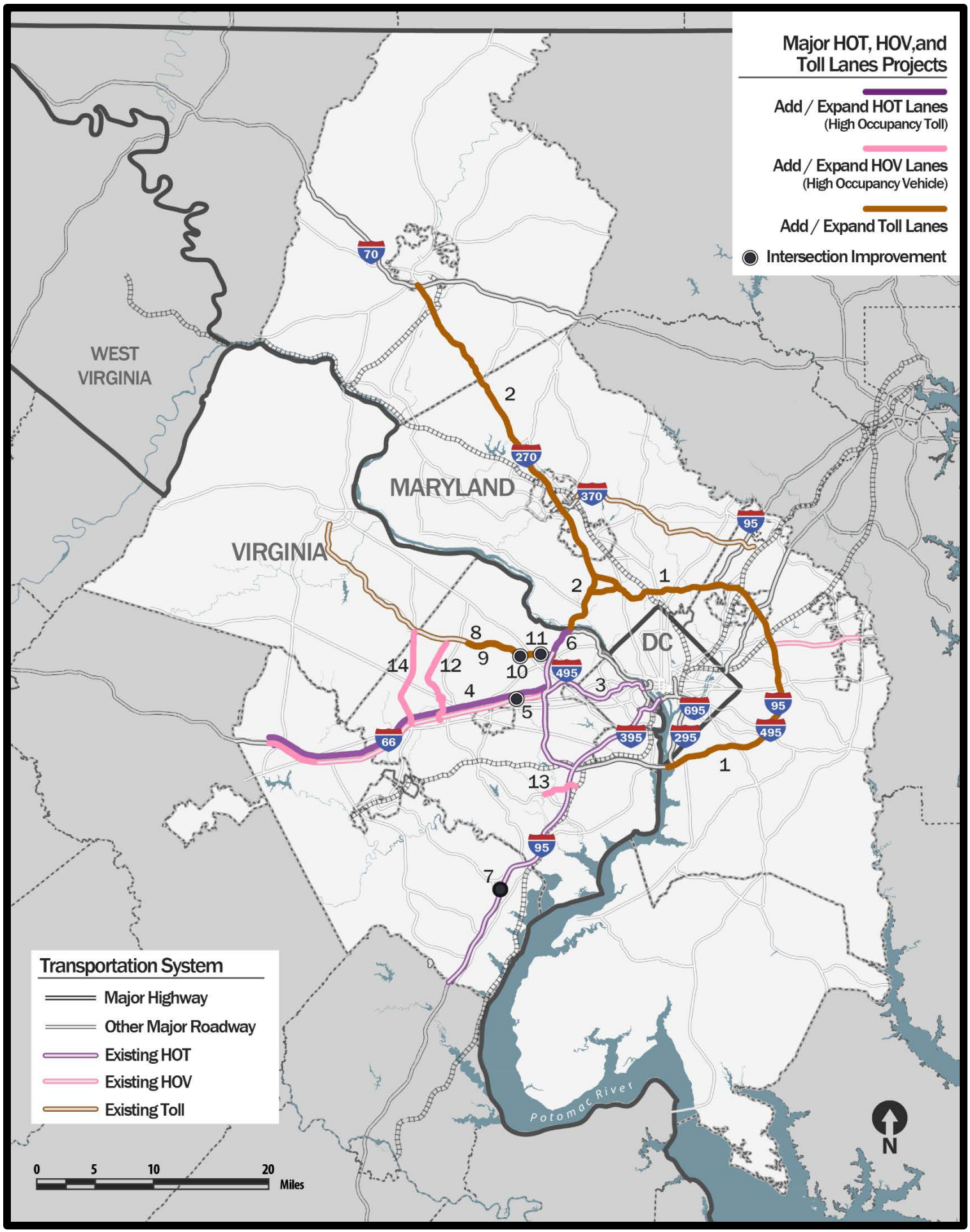
The Virginia Department of Transportation (VDOT) has proposed to **add the following projects**:

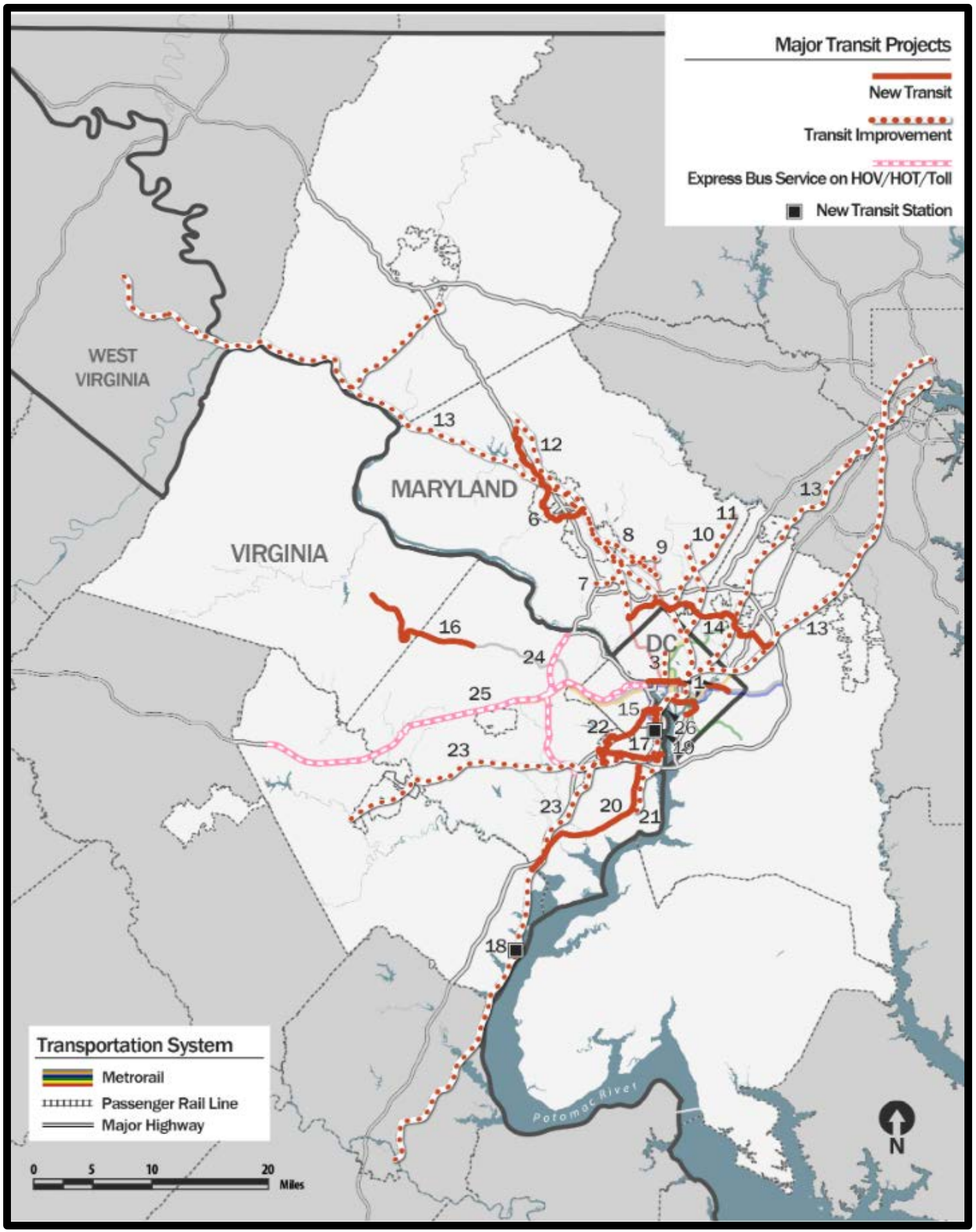
1. Modifications to the **I-495 Capital Beltway Express Lanes ramps around the Dulles Toll Road interchange**, complete in 2025 and 2045 (CON IDs 999-1002)
2. Construct a **reversible ramp from I-95 at Opitz Dr.**, complete in 2022 (CON ID 1011)
3. Construct **VA 28 Manassas Bypass from VA 234 Sudley Rd. to VA 28 Centreville Rd.,** 4 lanes, complete in 2025 (CON ID 995)
4. Widen **VA 55 from US 29 to the Town of Haymarket**, 2 to 4 lanes, complete in 2028 (CON ID 997)
5. Widen **VA 123 from VA 267 Dulles Access Rd. to VA 634 Great Falls St.,** 4 to 6 lanes, complete in 2030 (CON ID 1015)
6. Widen **VA 286 Fairfax County Parkway from US 29 Lee Hwy. to Rolling Rd.,** 4 to 6 lanes, complete in 2030 (CON ID 728)
7. Construct **West End Transitway Phase II (Southern Segment) from Van Dorn Street Metro to Landmark Mall**, complete in 2026 (CON ID 1034)

NEXT STEPS

Following the TPB approval of the project inputs and Scope of Work, the air quality conformity analysis will be conducted between July 2019 and January 2020. Draft results will be released on January 31, 2020 for a public comment period. After the public comment period, the board will be asked to approve the air quality conformity analysis and the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan at the March 18, 2020 meeting.


Major Highway Projects
New Road
Widen / Improve Existing Road
Add / Expand HOT Lanes
(High Occupancy Toll)
Add / Expand HOV Lanes
(High Occupancy Vehicle)
Add / Expand Toll Lanes
Reduce Existing Road
Remove Existing Road
Intersection Improvement
(numbers in grey)
WEST VIRGINIA
MARYLAND
VIRGINIA
DC
Potomac River
Transportation System
Major Highway
Other Major Roadway
0 5 10 20
Miles
N


Major HOT, HOV,and Toll Lanes Projects
Add / Expand HOT Lanes (High Occupancy Toll)
Add / Expand HOV Lanes (High Occupancy Vehicle)
Add / Expand Toll Lanes
Intersection Improvement
WEST VIRGINIA
MARYLAND
VIRGINIA
DC
Potomac River
Transportation System
Major Highway
Other Major Roadway
Existing HOT
Existing HOV
Existing Toll
0 5 10 20 Miles
N


Major Transit Projects
New Transit
Transit Improvement
Express Bus Service on HOV/HOT/Toll
New Transit Station
WEST VIRGINIA
MARYLAND
VIRGINIA
DC
Potomac River
Transportation System
Metrorail
Passenger Rail Line
Major Highway
0 5 10 20
Miles
N

MAJOR HIGHWAY PROJECTS

DISTRICT OF COLUMBIA

MAJOR HIGHWAYS

1. I-295 - reconstruct interchange at Malcolm X Blvd, 2020 ($200M)
2. I-395 - remove 3rd St SB exit ramp, reconfigure 3rd St SB entrance and 2nd St NB exit ramps, reconnect F St between 2nd and 3rd St, 2019 ($27M)

LOCAL ROADS

3. South Capitol St - convert to 6 lane urban Blvd., incl. Franklin Douglas Bridge Reconstruction, 2021 ($822M)
4. Lane Reductions/Reconfigurations for Bicycle Lanes, 2018, 2019, 2020, 2024

MARYLAND

MAJOR HIGHWAYS

5. I-70 - widen to 6 lanes with interchange at Meadow Rd, 2025, 2035 ($143M)
6. I-95/I-495 - interchange at Greenbelt Metro Sta, 2030 ($196M)
7. I-95/I-495 Traffic Relief Plan, construct 4 managed lanes, 2025 ($4.2B)
7. I-95/I-495 Traffic Relief Plan, construct 4 managed lanes, 2025 ($4.2B)
8. I-270 Traffic Relief Plan, construct 4 managed lanes, 2025 ($3.4B)
9. I-270 - “Innovative Congestion Management” project to includes auxiliary lanes & add'l improvements, 2019, 2020 ($114M)
10. I-270 - interchange at Watkins Mill Rd Ext, 2021 ($120M)
11. Baltimore Washington Parkway (MD-295) at MD-193 (Greenbelt Rd) - intersection improvement, 2020 ($8.5M)
12. Suitland Pkwy - interchange at Rena/Forestville Rd, 2025 ($2.8M)
13. US-1 (Baltimore Ave) - reconstruct 4 lanes, 2030 ($116M)
14. US-15 (Catoctin Mtn Hwy) - reconstruct intersection at Monocacy Blvd, 2019 ($61M)
15. US-15 (Frederick Fwy and Catoctin Mtn Hwy) - widen to 6 lanes with interchange at Biggs Ford Rd, 2030, 2040, 2045 ($420M)
15. US-15 (Frederick Fwy and Catoctin Mtn Hwy) - widen to 6 lanes with interchange at Biggs Ford Rd, 2030, 2040, 2045 ($420M)
16. US-29 (Columbia Pke) - improve interchanges at Stewart Ln, Tech Rd/Industrial Pkwy, Musgrove Rd/Fairland Rd, Greencastle Rd, and Blackburn Rd, 2045 ($646M)
17. US-50 (John Hanson Hwy) - westbound ramp to Columbia Park Rd, 2025 ($64M)

STATE ROUTES

20. MD-3 (Robert Crain Hwy) - widen to 6 lanes, 2035 ($1.8B)
21. MD-4 (Pennsylvania Ave) - widen to 6 lanes with interchanges at Dowerhouse Rd, Westphalia Rd, and Suitland Pkwy, 2040 ($533M)
22. MD-5 (Branch Ave) - upgrade, widen to 6 lanes including interchanges, 2035 ($790M)
23. MD-28 (Norbeck Rd) / MD-198 (Spencerville Rd) - widen to 4, 6 lanes, 2045 ($413M)
24. MD-85 (Buckeystown Pke) - widen to 4, 6 lanes, 2022, 2035 ($220)
25. MD-97 (Georgia Ave) - widen to 7, 8 lanes, 2025 ($52M)
26. MD-97 (Brookeville Bypass) - construct 2 lane bypass, 2021 ($52M)
27. MD-117 (Clopper Rd) - widen to 4 lanes, 2030 ($69M)
28. MD-118 (Germantown Rd) - widen to 4 lanes, 2020 ($4.0M)
29. MD-124 (Woodfield Rd) - widen to 6 lanes, 2035 ($129M)

30. MD-197 (Collington Rd) - widen to 4/5 lanes, 2025 ($94M)
31. MD-202 (Landover Rd) - Largo Town Center Metro Access Improvement, reconstruct 6 lanes, 2045 ($24M)
32. MD-210 (Indian Head Hwy) - upgrade to 6 lanes and interchange improvement, 2040 ($754M)
33. MD-223 (Woodyard Rd) - widen to 4 lanes, 2020 ($2.8M)
34. MD-450 (Annapolis Rd) - widen to 4 lanes, 2030 ($67M)

LOCAL ROADS

35. Midcounty Hwy Extension (M-83) - construct 4, 6 lanes, 2025 ($202M)
36. Middlebrook Rd Extended - widen to 4 lanes, 2025 ($16M)
37. Montrose Pkwy East - construct 4 lanes, 2025 ($140M)

VIRGINIA

MAJOR HIGHWAYS

38. I-66 HOT (Inside Beltway), revise operations from HOV 2+ to HOT during peak hours and bus service, 2017, 2021, 2040 ($375M)
39. I-66 HOT (Outside Beltway) - widen to 6 lanes (3 general purpose, 2 HOT, and 1 auxiliary) and bus service, 2021, 2040 ($4.4B)
40. I-66 - Extend existing westbound acceleration/deceleration lane, 2020, 2022 ($59M)
41. I-95/Fairfax County Parkway - enhanced interchanges for BRAC, 2025 ($57M)
42. I-95 - add southbound auxiliary lane, 2022 ($27M)
43. I-95/I-495 - reconstruct interchange at Van Dorn St, 2030 ($40M)
44. **I-95 - construct HOT reversible ramps to access VA-642 (Opitz Road), 2022**
45. I-395 - construct new south bound lane, 2018, 2020 ($58M)
46. I-495 - construct 4 HOT lanes with northbound shoulder lane and new ramps, 2025 ($500M)
47. I-495 Auxiliary Lanes - construct 2 auxiliary lanes in both directions, 2030
48. I-495 - interchanges at VA 267, 2030, 2045 ($70M)
49. Dulles Toll Rd (VA-267) - Collector-Distributor Road west-bound, 2035 ($62M)
50. Dulles Toll Rd (VA-267) - Collector-Distributor Road east-bound, 2035 ($124M)
51. Dulles Toll Rd (VA-267) - interchange at New Boone Blvd Extension, 2037 ($79M)
52. Dulles Toll Rd (VA-267) - interchange at Greensboro Drive/Tyco Rd, 2036 ($28M)
53. Dulles Access Rd (VA 267) - widen to 6 lanes including interchange reconstruct at I-495, 2030 ($40M)
54. US-1 (Jefferson Davis Hwy) - widen to 6 lanes, 2040 ($58M)
55. US-1 (Richmond Hwy) - widen to 6 lanes, 2025, 2035 ($37M)
56. US-1 (Richmond Hwy) - widen to 6 lanes, 2024, 2030 ($127M)
57. US-1 (Richmond Hwy) - widen to 6 lanes, 2035 ($125M)
58. US-15 (James Madison Hwy) - widen to 4 lanes, 2024, 2030 ($45M)
59. US-15 (James Madison Hwy) - widen to 4 lanes, 2022, 2025 ($33M)
60. US-15 (James Madison Hwy) - widen to 4 lanes, 2030, 2040 ($54M)
61. US-29 (Lee Hwy) - widen to 5 lanes and improve I-66 interchange, 2030 ($255M)
62. US-29 (Lee Hwy) - widen to 3, 6 lanes, 2017, 2025 ($130M)
63. US-50 (Lee Jackson Memorial Hwy) - widen to 6 lanes, 2025 ($100M)
64. US-50 (Arlington Blvd) - widen/reconstruct 6 lanes including interchanges, 2020, 2025 ($249M)

STATE ROUTES

65. VA-7/US-15 Bypass (Harry Byrd Hwy) - widen to 6 lanes, 2035, 2040 ($55M)
66. VA-7 (Leesburg Pke) - widen to 6 lanes, 2030 ($71M)
67. VA-7 (Leesburg Pke) - widen to 6, 8 lanes, 2030 ($49M)
68. VA-7 (Leesburg Pke) - widen to 6 lanes, 2030 ($34M)
69. VA 28 (Sully Rd) HOV, widen to 8-10 lanes, HOV in additional lanes during peak, 2025, 2040 ($100M)
70. VA-28 (Nokesville Rd) - widen to 4 or 6 lanes, 2019, 2025, 2022, 2040 ($71M)
71. VA-123 (Chain Bridge Rd) - widen to 6, 8 lanes, 2030 ($22M)
72. VA-123 (Ox Road) - widen to 4, 6 lanes, 2030 ($69.9M)
73. VA-236 (Little River Tpke) - widen to 6 lanes, 2030 ($58M)
74. VA-286 (Fairfax County Pkwy) HOV - widen to 6 lanes, HOV in additional lanes during Peak, 2025, 2035 ($295M)
75. VA-286 (Fairfax County Pkwy) - widen to 6 lanes, 2030 ($295M)
76. VA-289 (Franconia/Springfield Parkway), HOV lanes with interchange at Neuman St, 2025 ($16M)
77. VA-294 (Prince William Pkwy) - widen to 6 lanes, 2040 ($263M)
78. VA-620 (Braddock Rd) - widen to 4 lanes, 2025, 2027 ($165M)
79. VA-638 (Pohick Rd) - widen to 4 lanes, 2020 ($12M)
80. VA-638 (Rolling Rd) - widen to 4 Lanes, 2025 ($31M)

LOCAL ROADS

81. Manassas Bypass (VA-234 Bypass) - construct 4 lanes, 2040 ($96M)
82. Manassas Battlefield Bypass - construct 4 lanes and close portions of US-29 (Lee Hwy) and VA-234 (Sudley Rd), 2035, 2040 ($28M)
83. Manassas Battlefield Bypass (VA-28 Bypass)- construct 4 lanes, 2025

Note: New or significantly changed projects are identified with **bold text**. Costs identified include total project costs which may include additional elements presented in another list(s).

MAJOR HOT, HOV, AND TOLL LANE PROJECTS*

MARYLAND

MAJOR HIGHWAYS

1. I-95/I-495 Traffic Relief Plan, construct 4 managed lanes, 2025 ($4.2B)
2. I-270 Traffic Relief Plan, construct 4 managed lanes, 2025 ($3.4B)

VIRGINIA

MAJOR HIGHWAYS

3. I-66 HOT (Inside Beltway), revise operations from HOV 2+ to HOT during peak hours and bus service, 2017, 2021, 2040 ($375M)
4. I-66 HOT (Outside Beltway) - widen to 6 lanes (3 general purpose, 2 HOT, and 1 auxiliary) and bus service, 2021, 2040 ($4.4B)
5. I-66 - construct HOV ramps to access Vienna Metro Sta, 2021 ($41M)
6. I-495 - construct 4 HOT lanes, 2025 ($500M)
7. **I-95 - construct HOT reversible ramps to access VA-642 (Opitz Road), 2022**
8. Dulles Toll Rd (VA-267) - Collector-Distributor Road west-bound, 2035 ($62M)
9. Dulles Toll Rd (VA-267) - Collector-Distributor Road east-bound, 2035 ($124M)
10. Dulles Toll Rd (VA-267) - interchange at New Boone Blvd Extension, 2037 ($79M)
11. Dulles Toll Rd (VA-267) - interchange at Greensboro Drive/Tyco Rd, 2036 ($28M)

STATE ROUTES

12. VA-286 (Fairfax County Pkwy) HOV - widen to 6 lanes, HOV in additional lanes during peak, 2025, 2035 ($296M)
13. VA-289 (Franconia/Springfield Parkway), HOV lanes with interchange at Neuman St, 2025 ($16M)
14. VA-28 (Sully Rd) HOV, widen to 8-10 lanes, HOV in additional lanes during peak, 2016, 2025, 2040 ($100M)

Note: New or significantly changed projects are identified with **bold text**. Costs identified include total project costs which may include additional elements presented in another list(s).

* HOT = High-Occupancy Toll Lanes. HOV = High-Occupancy Vehicle Lanes.

MAJOR TRANSIT PROJECTS

DISTRICT OF COLUMBIA

1. DC Streetcar, 2023, 2030 ($348M)
2. DC Dedicated Bicycle Lane Network, 2019, 2024 (not mapped) ($800k)
3. 16th Street Bus Priority Improvements, 2021 ($15M)
4. **H Street, NW, Peak Period Bus-Only Lanes Pilot Project, 2019 (not mapped, $50M)**
5. **I Street, NW, Peak Period Bus-Only Lanes Pilot Project, 2019 (not mapped, $50M)**

MARYLAND

6. Corridor Cities Transitway BRT - from Shady Grove to COMSAT, 2028 ($545M)
7. North Bethesda Transtiway BRT - from Montgomery Mall to White Flint Metro, 2040 ($115M)
8. Veirs Mill Rd BRT - from Wheaton Metro to Rockville Metro, 2030 ($6M)
9. Randolph Rd BRT - from US-29 to MD-355, 2040 ($102M)
10. New Hampshire Ave. BRT - from Takoma Metro to Collesville P&R, 2045 ($285M)
11. US-29 BRT - from Silver Spring Metro to Burtonsville P&R, 2020 ($39M)
12. MD-355 BRT - from Bethesda Metro to Clarksburg, 2040 ($1B)
13. MARC - Increase trip capacity and frequency along all commuter rail lines, 2029 ($1B)
14. Purple Line - Bethesda to New Carrollton, 2020 ($2.4B)

VIRGINIA

15. Crystal City Transitway: Northern & Southern Extension BRT, 2022, 2025 ($24M)
16. Metro Silver Line (Dulles Corridor Metrorail Project) - Phase 2, 2020 ($2.9B)
17. Duke St Transitway - King St Metro to Fairfax County line, 2024 ($19M)
18. Potomac Shores VRE Station, 2020 ($26M)
19. Potomac Yard Metro Station, 2021 ($268M)
20. US-1 BRT from Huntington Metro Station to Woodbridge, 2030 ($504M)
21. US-1 bus lanes and improved intersections, 2035 ($37M)
22. West End Transitway - Van Dorn St Metro to Pentagon Metro, 2026 ($140M)
23. VRE - 3rd and 4th track projects to reduce headways along the Manassas and Fredericksburg Lines, 2028 ($105M)
24. I-495 HOT Lane Express Bus Service, 2030 ($254M)
25. I-66 HOT Lane Enhanced Bus Service, 2025, 2040
26. **Additional Long Bridge railroad crossing with two-tracks and pedestrian/bike access, 2027 ($1.9B)**

Note: New or significantly changed projects are identified with **bold text**. Costs identified include total project costs which may include additional elements presented in another list(s).

2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS (Transit)

3/18/2020

ConID	Scenario	Improvement	Facility	From	To	Projected Complete
DDOT						
613	DCSTHST2	Construct	Benning Road Streetcar Extension	Oklahoma Avenue NE	45th Street/Benning Road Metro	2023
793	WATEREXT	Implement	DC Circulator Expansion	Navy Yard Route Realignment		2018
794	UHOWEXT	Implement	DC Circulator Expansion	Rosslyn to Dupont Circle Route	Extension to U St./Howard University	2018
		Implement	DC Circulator Realignment	Potomac Ave.	Skyland	2018
822	HIBUS	~~Study~~ Implement	H St. NW Peak Period Bus-Only Lanes Pilot Project	~~17th St. NW~~ 19th St NW	~~New York Ave. NW~~ 14th St NW	~~Not Coded~~ 2019
823	HIBUS	~~Study~~ Implement	I St. NW Peak Period Bus Only Lanes Pilot Project	13th St. NW	Pennsylvania Ave. NW	~~Not Coded~~ 2019
		Construct	K St. NW Transitway	9th St. NW	21st St. NW	2021
610	DCSTGTWN	Construct	Union Station/Georgetown Streetcar	K Street/34th Street NW	3rd Street/H Street NE	~~2025~~ 2030
		Implement	16th St. Bus Priority Improvements	H St. NW	Arkansas Ave NW	2020
550		~~Study~~ Construct	Long Bridge (also in VDOT)	Alexandria	L'Enfant	Not Coded
MDOT/MTA						
588		Implement	Brunswick - New Station			not coded
617	MARCFRQ	Implement	Brunswick Line Service Improvements			2029
618	MARCFRQ	Implement	Camden Line Service Improvements			2029
481	CCTBRT	Construct	Corridor Cities BRT	Shady Grove	Comsat	~~2022~~ 2028
619	MARCFRQ	Implement	Penn Line Service Improvements			2029
479	PURPLE	Construct	Purple Line Transitway	Bethesda	New Carrollton	2020
480	SSTCTR	Construct	Silver Spring Transit Center	Phase II		2017
Montgomery County						
669		Study	Countywide BRT	various corrirors		Not Coded
	RANDBRT	Implement	Randolph Road BRT	US 29	MD 355	2040
	NBETHBRT	Implement	North Bethesda Transitway BRT	Montgomery Mall Transit Center	White Flint	2035
	MD355BRT	Implement	MD 355 BRT	MD 410 East-West Highway	Clarksburg Rd.	2045
	VIERSBRT	Implement	Viers Mill Road BRT	MD 355 Rockville Pike	MD 97 Georgia Ave.	2030

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS (Transit)

3/18/2020

ConID	Scenario	Improvement	Facility	From	To	Projected Complete
	NHBRT	Implement	New Hampshire Ave. BRT	Colesville Park and Ride	Takoma Metro Station	2045
	29BRT	Implement	US 29 BRT	Burtonsville	Silver Spring Transit Center	2020
483	MCT7	Construct	Olney Transit Center	adjacent to or north of MD 108		2045
487	TIGERVIER	Construct	Veirs Mill Road Bus Enhancement	Rockville	Wheaton	2020
VDOT						
1028		~~Study~~ Construct	Long Bridge (also in DDOT)	Control Point RO (Arlington) Rosslyn (RO) Interlocking near Long Bridge Park in Arlington, Virginia	L'Enfant (LE) Interlocking near 10th Street SW in the District of Columbia	Not Coded
1029		Construct	Alexandria 4th Track Project	Control Point Rosslyn (CFP RO) near milepost 110.1 south of the George Washington Parkway	Control Point Alexandria (CFP AF) near milepost 104.3 south of Telegraph Road	2025
1030		Construct	Franconia to Occoquan 3rd Track Project	One mile north of the Franconia-Springfield VRE station (CFP 98.8)	Approximately 400 feet north of Furnace Road, just north of the Occoquan River (CFP 90.08)	2028
504	VREFREQ	Implement	VRE Service Improvements (Reduce Headways) - associated with 3rd and 4th Track Projects	Fredericksburg and Manassas lines		~~2020~~ 2028
795	US1VABUS	Widen	US 1 (bus/right-turn lanes)	VA 235 North	SCL Alexandria (I-95 Capital Beltway)	2035
511	MWAYBRT	Construct	Crystal City/Potomac Yard Busway (2 lane- dedicated)	Vicinity of Glebe Road Extended (City/County Line)	Pentagon City Metro Station	Complete
861		Construct	Crystal City Transitway: Northern Extension - complete dedicated lanes	Crystal City Metro Station	Army Navy Drive Transit Station (Army Navy Dr halfway between Hayes St and Joyce St)	~~2021~~ 2022
	MWAYEXT2	Construct	Crystal City Transitway: Southern Extension - complete dedicated lanes	South Glebe Road	Alexandria city line	2025
	MWAYROW	Construct	Crystal City/Potomac Yard Transitway-realign with dedicated right-of-way	East Glebe Road	Evans Lane	2030
677		Study	US 1 Corridor Streetcar Conversion	Four Mile Run	Braddock Road	Not Coded
489	POTYDS	Construct	Metro Station (Proposed)	Potomac Yard		2021

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS (Transit)

3/18/2020

ConID	Scenario	Improvement	Facility	From	To	Projected Complete
493		Construct	Park-and-Ride Lot	Springfield CBD	vic. I-95 & Old Keene Mill Road	2022
670		Construct	Park-and-Ride Lot	Dulles Town Center	300 Spaces	2014
499		Construct	Park and Ride Lot	Arcola Center 300 spaces		2015
503	SILVER 2	Construct	Dulles Corridor Metrorail	Wiehle-Reston East Station	~~VA 772~~ Ashburn Station	2020
1018	**SILVER 2**	**Construct**	**Park-and-Ride Garage**	**Herndon-Monroe Station**		**2020**
1019	**SILVER 2**	**Construct**	**Park-and-Ride Garage**	**Innovation Station**		**2020**
	nrs	**Expand**	**Park-and-Ride Lot**	**Stringfellow Road Park-and-Ride**		**~~COMPLETE~~**
629	POTSHRS	Construct	VRE - Potomac Shores Commuter Rail Station	Potomac Shores	Prince William County	~~2018~~ 2020
505	VANDBRT	Construct	West End Transitway (City Funded)	Van Dorn Street Metro	Pentagon & Landmark	~~2024~~ 2026
508	ALEXBUS	Implement	DASH Service Expansion	citywide		2020
820	BELTHOT	Implement	Beltway HOT lanes transit service			2020
821	BELTHOT	Implement	Beltway HOT lanes transit service			2030
509	DUKEBUS	Construct	Duke Street Transitway	King Street Metro	Fairfax County Line	2024
672		Construct	Leesburg Park and Ride Lot (new location)	Crosstrails Blvd (approx)	300 Spaces	2018
673		Construct	Sterling Park and Ride Lot		200 Spaces	2014
674		Construct	One Loudoun Park and Ride Lot	VA 7 & Loudoun County Parkway	200 Spaces	2019
675		Study	Western Loudoun Park and Ride Lot		250 Spaces	Not Coded
797	I66HOTI	Implement	I-66 Corridor Enhanced Bus Service (details shown with project description sheet)	Inside the beltway		2025
798	I66HOTI	Implement	I-66 Corridor Enhanced Bus Service (details shown with project description sheet)	Inside the beltway		~~2040~~ 2030
799	I66HOTO	Implement	I-66 Corridor Enhanced Bus Service (details shown with project description sheet)	Outside the beltway		2021

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS (Transit)

3/18/2020

ConID	Scenario	Improvement	Facility	From	To	Projected Complete
800	I66HOTO	Implement	I-66 Corridor Enhanced Bus Service (details shown with project description sheet)	Outside the beltway		2025 ~~2030~~ & 2040
801		Construct	I-66 Corridor Park and Ride lot	Haymarket		2021
802		Construct	I-66 Corridor Park and Ride lot	University Blvd. in Gainesville		2021
803		Construct	I-66 Corridor Park and Ride lot	Balls Ford Road in Manassas		2021
804		Expand	I-66 Corridor Park and Ride lot	Prince William Pkwy (Cushing Rd)		2021
806	NRS	~~Expand~~ Construct	I-66 Corridor Park and Ride ~~lot~~ garage	~~Fairfax County Government Center/~~Monument Drive	garage replaces surface lot	2021
~~807~~	~~FFXBUS~~	~~Expand~~	~~Fairfax Connector Bus Service Expansion - All in Base~~	~~Countywide~~		~~2021~~
808	US1BRT	Construct	Bus Rapid Transit (BRT)	US 1 Richmond Highway	Huntington Metro to Hybla Valley to Ft. Belvoir to Woodbridge VRE	2030

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS
(Highway)

12/10/2019

Con ID	Project ID	Agency ID	Improvement	Facility	From	To	Facility		Lanes		Completion Date
							From	To	From	To	
DDOT											
605	DI9		Reconstruct	I 295 Interchange at Malcolm X Blvd.	Add above grade ramp connection from NB I-295 off ramp to new St. Elizabeth's Access Road						~~2018~~ 2020
604			Construct	F Street NW	2nd Street NW	3rd Street NW			0	2	2018
541	DP9A	AW011, AW024A,	Widen	South Capitol Street Corridor: Frederick Douglas Bridge	Independence Avenue (East)	Martin Luther King, Jr. Blvd.	2	2	5	6	2021
542	DP9C		Construct	South Capitol Street Intersection	at Potomac Avenue						2021
543	DP9D		Construct	Suitland Parkway interchange	at Martin Luther King, Jr. Boulevard to complete movements						2021
~~584~~	~~DS3~~		~~Construct~~	~~Southern Ave. SE~~	~~Branch Ave. SE~~	~~Naylor Rd. SE~~			~~0~~	~~2~~	~~2019~~ withdrawn
582	DS27		~~Study~~ Reduce Capacity	H St. NW Peak Period Bus-Only Lanes Pilot Project	~~17th St. NW~~ 19th St NW	~~New York Ave. NW~~ 14th St NW	3	3	5	4	~~Not Coded~~ 2019
583	DP38		~~Study~~ Reduce Capacity	I St. NW Peak Period Bus Only Lanes Pilot Project	13th St. NW	Pennsylvania Ave. NW	2	2	4	3	~~Not Coded~~ 2019
558	~~DP16~~ DP42	ED0C2A	Reduce Capacity	C Street/N. Carolina Avenue	Oklahoma Avenue	14th Street NE			5	3	~~2019~~ 2020
567	DP16		Reduce Capacity	East Capitol Street	40th Street	Southern Ave			6	4	~~2019~~ 2021
585	DS6		Reduce Capacity	Maryland Ave. NE	6th St. NE	15 St. NE			4	2	2019
608			Reconstruct	New Jersey Avenue NW 1-way to 2-way	H Street NW	N Street NW					~~2019~~ 2020
609			Reduce Capacity	South Capitol Street	Firth Sterling Ave.	Southern Ave Maryland state line			5	4	2015
663			Reduce Capacity	Adams Mill Rd. NW	Kenyon	Klingle			3	2	2016
701	DS8		Reduce Capacity	6th Street NE	Florida Avenue	K Street			2	1	2016
702	DS9		Reduce Capacity	7th Street NW	New York Avenue	N Street			4	2	2016
704	DS11		Reduce Capacity	14th Street NW	Florida Avenue	Columbia Road			4	2	2016
705	DS12		Reduce Capacity	Brentwood Parkway NE	6th Street/Penn Street	9th Street			2	1	2016
717	DS13		Reduce Capacity	Florida Avenue NE	3rd Street	West Virginia Avenue			6	4	~~2015~~ 2019
710			Reduce Capacity	Florida Avenue NE	2nd Street	3rd Street			6	5	~~2017~~ 2019
707	NRS		Reduce Capacity	New Jersey Avenue NW	H Street	Louisiana Ave			4	2	~~2016~~ 2020
713	DS14		Reduce Capacity	Pennsylvania Avenue NW	18th Street	20th Street			5	4	~~2017~~ 2020
712	DS15		Reduce Capacity	Pennsylvania Avenue NW	17th Street	18th Street			6	4	~~2017~~ 2021
715	DS16		Reduce Capacity	Pennsylvania Avenue NW	26th Street	28th Street			5	4	~~2017~~ 2021
716	DS17		Reduce Capacity	Pennsylvania Avenue NW	28th Street	29th Street			4	2	~~2017~~ 2021
714	DS18		Reduce Capacity	Pennsylvania Avenue NW	20th Street	26th Street			6	4	~~2017~~ 2021
709	DS19		Reduce Capacity	Wheeler Road SE	Alabama Avenue	Southern Avenue			4	2	~~2016~~ 2020
837	DS20		Reduce Capacity - bike lanes	4th Street NE	Lincoln Rd. NE	Harewood Rd. NE			4	2	~~2016~~ Complete

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS
(Highway)

12/10/2019

Con ID	Project ID	Agency ID	Improvement	Facility	From	To	Facility		Lanes		Completion Date
							From	To	From	To	
829	DS21		Reduce Capacity - bike lanes	6th Street NW	Constitution Avenue	Massachusetts Avenue			6 peak- 4 offpeak	4 peak - 2 offpeak	2019
830	DS22		Reduce Capacity - bike lanes	6th Street NW	Massachusettes Avenue	Florida Ave NW			4	2	2019
832	in base		Reduce Capacity - bike lanes	Blair Road NW	Peabody St. NW	Aspen St. NW			3	2	~~2019~~ 2021
~~833~~	~~DP21~~		~~Reduce Capacity - bike lanes~~	~~Constitution Avenue~~	~~1st Street NW~~	~~Pennsylvania Avenue NW~~			~~6~~	~~4~~	~~2016~~
860	DS23		Reduce Capacity - bike lanes	Harewood Road NW	Rock Creek Church Road NW	North Capitol Street			2	1	~~2016~~ 2020
834	DS24		Reduce Capacity - bike lanes	Klingle Road NW	Adams Mill Road NW	Porter Street NW			4	2	~~2016~~ Complete
835	DP22		Reduce Capacity - bike lanes	Louisana Avenue NW	Columbus Circle NE/ Mass Ave NE	Constitution Avenue NW			4	3	2020
836	DS25		Reduce Capacity - bike lanes	Piney Branch Road NW	Georgia Avenue NW	Underwood Street NE			4	2	~~2018~~ Complete
944	DP32		Reduce Capacity - bike lanes	17th Street NW	New Hampshire Avenue	Massachussetts Avenue NW	3	3	2	1	~~2018~~ 2020
945	DP33		Reduce Capacity - bike lanes	17th Street	Massachusetts Avenue NW	K Street	3	3	6	4	~~2018~~ Complete
946	DP34		Reduce Capacity - bike lanes	K Street NW	3rd Street NW	1st Street NE			6	4	~~2018~~ 2020
947	DP35		Reduce Capacity - bike lanes	Pennsylvania Ave	2nd Street SE	14th Street SE	2	2	6	4	~~2019~~ 2020
948	DP36		Reduce Capacity - bike lanes	Pennsylvania Ave SE	14th Street SE	Barney Circle			8	6	~~2019~~ 2020
949	DP37		Reduce Capacity - bike lanes	Irving Street NE/NW	Michigan Avenue NE	Warder Street NW			6	4	~~2019~~ 2020
1013	NRS		Reduce Capacity - bike lanes	9th St NW	Massachusetts Ave	Florida Ave			4	2	2019
1012	DP39		Reduce Capacity - bike lanes	9th St NW	Constitution Ave	Massachusetts Ave			6/4	4/2	2019
1010	DP40		Reduce Capacity - bike lanes	Nebraska Ave NW	New Mexico Ave	Loughboro Road			4	3	2020
1008	DS28		Reduce Capacity - bike lanes	Dalecarlia Pkwy NW	Loughboro Road	Westmoreland Circle			4	2	2020
1007	DS29		Reduce Capacity - bike lanes	K St NE	1st St	8th St			3	2	2019
1006	DS30		Reduce Capacity - bike lanes	Mount Olivet Rd NE	Brentwood	West Virginia Ave			4	3	2020

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS
(Highway)

12/10/2019

Con ID	Project ID	Agency ID	Improvement	Facility	From	To	Facility		Lanes		Completion Date
							From	To	From	To	
1005	DS31		Reduce Capacity - bike lanes	M St SE	Half St	11th St			6	5	2020
1004	DP41		Reduce Capacity - bike lanes	Florida Ave NE	West Virginia Ave	14th St			3	2	2019
839	DP23		Reduce Capacity - Bus Priority	16th Street NW	Arkansas Avenue NW	Columbia Road NW			6	4	~~2021~~ 2020
840	DP24		Reduce Capacity - Bus Priority	16th Street NW	Columbia Road NW	W Street NW			5	4	~~2021~~ 2020
841	DP25		Reduce Capacity - Streetcar	H Street NE/NW	3rd Street NE	New Jersey Ave NW			6	4	~~2022~~ 2030
842	DS26		Reduce Capacity - Streetcar	New Jersey Avenue NW	H St NW	K Street NW			3 lanes 1-way	1 lane each 2-way	~~2022~~ 2030
844	DP26		Reduce Capacity - Streetcar	K Street NW	New Jersey Avenue NW	7th Street NW			3	2	~~2022~~ 2030
845	DP27		Reduce Capacity - Transitway	K Street NW	9th Street NW	12th St NW			4	2	~~2022~~ 2021
846	DP28		Reduce Capacity - Transitway	K Street NW	12th St NW	21st St NW			6	4	~~2022~~ 2021
847	DP29		Reduce Capacity - Streetcar	K Street NW	21st St NW	25th Street NW			4	2	~~2022~~ 2030
848	DP30		Reduce Capacity - Streetcar	K Street NW	25th Street NW	29th Street NW			6/4	4	~~2022~~ 2030
849	DP31		Reduce Capacity - Streetcar	K Street NW	29th Street NW	Wisconsin Avenue NW			4	2	~~2022~~ 2030
MDOT											
Interstate											
126	MI2Q	MO8391	Construct	I 270 Interchange	at Watkins Mill Road		1	1	8	8	2020
125	MI2U1	AW0731	Construct/Widen	I 270 Toll Lanes	I 495	I 270Y	1	1	4 + 2 HOV	4 + 2 HOV + 4 ETL	2025
892	MI2U2	AW0731	Construct/Widen	I 270 Toll Lanes	I 270Y	I 370	1	1	10 + 2 HOV	10 + 2 HOV + 4 ETL	2025
893	MI2U3	AW0731	Construct/Widen	I 270 Northbound Toll Lanes	I 370	Middlebrook Road	1	1	HOV NB	HOV + 2	2025
893	MI2U4	AW0731	Construct/Widen	I 270 Southbound Toll Lanes	Middlebrook Road	I-370	1	1	4 SB	4 + 2 ETL SB	2025
894	MI2U5	AW0731	Construct/Widen	I 270 Northbound Toll Lanes	Middlebrook Road	MD 121	1	1	2 + 1 HOV NB	2 + 1 HOV NB	2025

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS
(Highway)

12/10/2019

Con ID	Project ID	Agency ID	Improvement	Facility	From	To	Facility		Lanes		Completion Date
							From	To	From	To	
894	MI2U6	AW0731	Construct/Widen	I 270 Southbound Toll Lanes	MD 121	Middlebrook Road	1	1	3 SB	3 + 2 ETL SB	2025
895	MI2U7	AW0731	Construct/Widen	I 270 Toll Lanes	MD 121	I 70 / US 40	1	1	4	4+4 ETL	2025
952	MI2TSB6		Construct	I270 southbound auxiliary lane (innovative congestion management)	South of Shady Grove Rd local slip ramp	South of Shady Grove Rd express lanes slip ramp	1	1			~~2019~~ 2020
	MI2TSB7		Construct	I270 southbound auxiliary lane (innovative congestion management)	Md 28 on-ramp	MD 189 off-ramp	1	1			2019
	MI2TSB8		Construct	I270 southbound (innovative congestion management)	MD 189 on-ramp	Montrose Road off-ramp	1	1			2019
	MI2TSB12		Construct	I270 southbound (innovative congestion management)	North of Montrose Road	Democracy Boulevard	1	1			2019
	MI2TNB1		Construct	I270 northbound (innovative congestion management)	Democracy Boulevard on-ramp	North of Montrose Road slip ramp to local lanes	1	1			2019
	MI2TNB2		Construct	I270 northbound auxiliary lane (innovative congestion management)	MD 189 on-ramp	MD 28 off-ramp	1	1			2019
	MI2TNB2		Construct	I270 northbound auxiliary lane (innovative congestion management)	South of MD 28 slip ramp to express lanes	North of MD 28 slip ramp to local lanes	1	1			2019
	MI2TNB3		Construct	I270 northbound (innovative congestion management)	Shady Grove Road	I-370 off-ramp	1	1			2019
	MI2TNB4		Construct	I270 northbound (innovative congestion management)	MD 124 on-ramp	Watkins Mill Road off-ramp	1	1			2019
	MI2TNB4		Construct	I270 northbound auxiliary lane (innovative congestion management)	Watkins Mill Road on-ramp	Middlebrook Road westbound off-ramp	1	1			2019
	MI2TNB5		Construct	I270 northbound (innovative congestion management)	MD 121	Comus Road Bridge	1	1			2019
210	MI4		Widen	I 70	Mt. Phillip Road	West of I 270	1	1	4	6	2035
151	MI4a	FR5801	Reconstruct	I 70	at MD 144FA, Meadow Road, and Old National Pike		1	1	6	6	2025
			Study	I-295 Toll Lanes- planning study	US 50	I-95 (in Baltimore)					Not Coded
108	MI1P MI1PR	PG3331	Construct	I-95/I-495	at Greenbelt Metro Station		1	1	8	8	2030
696	MI1Q	AW0731	Construct/Widen	I 495 Toll Lanes	Virginia State line/Potomac River (including American Legion Bridge)	I 270Y	1	1	8/10	8/10+4 ET	2025
856	MI1R	AW0731	Construct/Widen	I 495 Toll Lanes	I 270Y	MD 355	1	1	6	6+4 ETL	2025
905	MI1S	AW0731	Construct/Widen	I 495 Toll Lanes	MD 355	I 95	1	1	8	8+4 ETL	2025
906	MI1T	AW0731	Construct/Widen	I 95 / I 495 Toll Lanes	I 95	Baltimore Washington Parkway	1	1	8	8+4 ETL	2025

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2020 Amendment to VISUALIZE 2045 AIR QUALITY CONFORMITY NETWORK INPUTS
(Highway)

12/10/2019

Con ID	Project ID	Agency ID	Improvement	Facility	From	To	Facility		Lanes		Completion Date
							From	To	From	To	
907	MI1U	AW0731	Construct/Widen	I 95 / I 495 Toll Lanes	Baltimore Washington Parkway	Glenarden Parkway	1	1	8	8+4 ETL	2025
908	MI1V	AW0731	Construct/Widen	I 95 / I 495 Toll Lanes	Glenarden Parkway	MD 202F	1	1	10	10+4 ETL	2025
909	MI1W	AW0731	Construct/Widen	I 95 / I 495 Toll Lanes	MD 202F	Potomac River (not including Wilson Bridge)	1	1	8	8+4 ETL	2025
Primary											
139	MP10A	PG2531	Reconstruct	US 1	College Avenue	MD 193	2	2	4	4	~~2021~~ 2023
935 936	NRS	PG2531	Reconstruct	US 1	MD 193	I 95 / I 495	2	2	4	4	2030
370	MP9	CA4131	Widen	MD 2/4 Solomons Island Road	North of Stoakley Road/Hospital Drive	South of MD 765A (south junction) just south of Parkers Creek	2	2	4	6	2040
913	NRS	CA4131	Construct	MD 2 / MD 4 Interchange	at Stoakley Road/Hospital Drive and at MD 765A (south junction)		2	5	4	6	2040
645	NRS		Reconstruct	MD 4 Interchange	at MD 235		2	2	2	2	2031
127	MP2C	AT1981	Widen	MD 3 Robert Crain Highway	I595/US 50/US 301	Anne Arundel County Line	2	2	4	6	2035
355	NRS	PG9171	Construct	MD 4	at Westphalia Road		2	5	4	6	2040
393	NRS	PG6181	Construct	MD 4 Pennsylvania Avenue	at Suitland Parkway		5	5	4	4	2020
933	NRS	PG9171	Construct	MD 4 Interchange	at Dower House Road		5	5	4	6	2040
212	MP3A	PG9171	Widen	MD 4 Pennsylvania Avenue	I-95/I-495	MD 223	5	~~5~~	4	6	2040
440	NRS		Construct	MD 5	at Earnshaw/Burch Hill Roads		2	5	4	6	2030
205	MP4F	PG3916	Widen/Upgrade	MD 5 Branch Avenue	US 301 at T.B.	North of I95 /I 495	2	5	4	6	2030
354	NRS	PG1751	Construct	MD 5	at MD 373 and Brandywine Road		2	5	4	6	2019
441	NRS		Construct	MD 5	at Surratts Road		2	5	4	6	2030
914	MP15B	FR1881	Construct/Widen	US 15	MD 26	North of Biggs Ford Road	5	5	4	6	2045
915	MP15A	FR1881	Construct/Widen	US 15	US 340 / South Jefferson Street	MD 26	5	5	4	6	2030
358	MP15	FR5711	Construct	US 15 ~~Catoctin Mountain Highway~~ **Interchange**	at Monocacy Blvd./**Christophers Crossing**		~~2~~ 5 3	~~2~~ 5 3	~~6~~ 4	~~6~~ 4	~~2018~~ 2019
211	NRS	MO8911	Construct	US 29 Columbia Pike	at Musgrove/Fairland Road				6	6	2035
551			Construct	US 29 Columbia Pike	at Tech Road / Industrial Road		5	5	6	6	2030
552, 919, 918	MP19A MP19B MP19C		Construct	US 29 Columbia Pike Interchange	at Stewart Lane, Greencastle Road, & Blackburn Road		5	5	6	6	2045
647	~~MP5e~~ NRS		~~Study~~	US 29 Columbia Pike	North of MD 650 New Hampshire Avenue	Howard County Line	~~2~~ 5	5	6	6	2045
941	NRS	PG0641	Reconstruct	US 50	District of Columbia line	I 95 / I 495	2	2	4	4	2035
858	FP2B		Widen	MD 85	English Muffin Way	Crestwood Boulevard	2	2	2/4	4	2035
391	FP2A	FR3881	~~Widen~~ Construct/Widen	MD 85 Buckeystown Pike	Crestwood Drive**/Shockley Drive**	Spectrum Drive	2	2	~~4~~	6	~~2021~~ 2022
387	MP14	PG6191	Reconstruct	MD 202	at Brightseat Road		2	2	6	6	2045
353	NRS	PG7001	Upgrade	MD 210	at Kerby Hill Road/Livingston Road		~~2~~ 5	5	6	6	~~2020~~ 2021
124	MP6D	PG2211	Upgrade	MD 210 Indian Head Highway	I-95/495	MD 228	2	5	6	6	2040

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							From	To	From	To	
384	MP18		Construct	US 301 Gov. Nice Bridge	Charles County, MD	King George County, VA	2	2	2	4	2023
940	MP8E		Widen	US 301	Harry Nice Bridge	I-595 / US 50	2	5	4/6	6	2045
939	NRS	CH2031	Reconstruct	US 301 Interchange	at MD 5 Business/MD 228		2	5	6	6	2030
938	NRS	CH2031	Reconstruct	US 301	at MD 5 (south junction)		2	5	6	6	2030
937	NRS		Construct	US 301 Interchange	at MD 197		5	5	6	6	2030
Secondary											
206	MS2F	MO8861	Widen	MD 28 Norbeck Road	MD 97	MD 182	2	2	2	4-Feb	2045
925	NRS	MO8861	Reconstruct	MD 28 Norbeck Road	MD 182	Norwood Road	2	2	4	4	2045
926	NRS	MO8861	Reconstruct	MD 198	Norwood Road	MD 650	2	2	2	2	2045
927	NRS	MO8861	Reconstruct	MD 198	MD 650	Old Columbia Pike	2	2	2	2	2045
928	NRS	MO8861	Reconstruct	MD 198	Old Columbia Pike	US 29A	2	2	4	4	2045
929	NRS	MO8861	Reconstruct	MD 198	US 29A	I 95	2	2	4	4	2045
137	MP12C	MO7461	Construct	MD 97 Brookeville Bypass	Gold Mine Road	North of Brookville	0	2	0	2	2021
931		MO2241	Widen	MD 97	MD 390	MD 192 / Forest Glen Road	2	2	6/7	7/8	2025
392	NRS	MO8521	Upgrade	MD 97 Georgia Avenue Interchange	at MD 28 Norbeck Road		2	2	6	6	2035
135	NRS	MO8541	Upgrade	MD 97 Georgia Avenue Interchange	at Randolph Road		2	2	6	6	2018
115	MS32		Widen	MD 117 Clopper Road	I270	Metropolitan Grove Road	2	2	2/4	4	2030
921	NRS		Reconstruct	MD 117 Clopper Road	Metropolitan Grove Road	West of Game Preserve Road	3	3	2/4	2/4	2030
118	MS6B	MO632	Widen	MD 124 Woodfield Road	Midcounty Highway	South of Airpark Drive	3	3	2	6	2035
1	MS6D	MO6323	Widen	MD 124 Woodfield Road	North of Fieldcrest Road	Warfield Road	3	3	2	6	2035
356	MS35	PG6911	Widen	MD 197 Collington Road	MD 450	Kenhill Drive	2	2	2	4	2025
924	MS36A	FR5491	Construct/Widen	MD 180	~~I 70 (west junction)~~ Greenfield Drive	~~Greenfield Drive~~ I 70 (west junction)	4	4	2	4	2030
857	MS36B	FR6781	Construct/Widen	MD 180	~~600 ft north of I-70~~ I 70 (west junction)	~~Structure 10140~~ Ballenger Center Drive	4	4	~~2~~ 2/4	4	~~2020~~ 2021
359	MS10B	PG9491	Widen	MD 201 Edmonston Rd. / Old Baltimore Pike	Cherrywood Lane	Ammendale Way	3	3	2/3	4	2045
965	MS10E	PG9491	Construct/Widen	MD 201 Extended (Cedarhurst Dr.)	Muirkirk Road	US 1	3	3	0/2	4	2045
942	NRS	PG5811	Reconstruct	MD 223	MD 4	Steed Road	3	3	2	2	2045
175	MS18D	PG6541	Widen	MD 450 Annapolis Road	Stonybrook Drive	west of MD 3	2	2	2	4	2020
516	same as MC15B	MO3441	Construct	Montrose Parkway	Randolph Road	East of Parklawn Drive	0	2	0	4	2020
152	BRAC nrs	MO5931	Reconstruct	BRAC Intersection Improvements near the National Naval Medical Center, Bethesda			2	2			2020
Frederick County											
Secondary											
880	FS3		Expansion	Christopher's Crossing	Walter Martz Road	Thomas Johnson Drive	3	3	0 to 2	4	~~2021~~ 2020
879	NRS		Construct	Christopher's Crossing	Shookstown Road	Rocky Springs Road	3	3	0	4	~~2020~~ 2026
651	FS2a		Widen	Monocacy Boulevard	Schifferstadt Boulevard	Gas House Pike	3	3	2	4	2019

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							From	To	From	To	
691	NRS	F3	~~Study~~ Construct	Spectrum Drive	Technology Way	MD 85 Buckeystown Pike	0	4	0	2	~~Not Coded~~ 2030
Montgomery County											
Secondary											
208	NRS		Construct	Burtonsville Access Road	MD 198 Spencerville Road	School Access Road in Burtonsville	0	4	0	2	2025
597	NRS		Construct	Century Boulevard	Current terminus south of Oxbridge Tract	Intersection with future Dorsey Mill Road	0	3	0	4	2020
199	MC43		Construct	Dorsey Mill Road Bridge over I-270	Century Blvd.	Milestone Center Dr.	0	3	0	4	2020
112	MC7A		Widen	Goshen Road South	South of Girard Street	1000 feet north of Warfield Road	3	3	2	4	2025
172	MC11A		Construct	M 83 MidCounty Highway Extended	MD 27 Ridge Road	Middlebrook Road	0	2	0	4-6	2025
204	MC11D	509337-1	Construct	M 83 Midcounty Highway Extended	Middlebrook Road	Montgomery Village Avenue	0	2	0	4-6	2025
113	MC12F		Widen	MD 118 Germantown Road Extended	MD 355	M 83 at Watkins Mill Road	2	2	3	4	2020
161	MC14G		Widen	Middlebrook Road Ext.	MD 355	M 83	2	2	3	4	2025
214	MC15B		Construct	Montrose Parkway East	Eastern Limit of MD 355/Montrose Interchange	Veirs Mill Road/Parkland Road Intersection	0	2	0	4	2022
428			Construct	Platt Ridge Drive Extended	Its terminus at Jones Bridge Road	Montrose Driveway			0	2	2018
119	MC34		Widen	Snouffer School Road	MD 124 Woodfield Road	Centerway Road	3	3	2	4	2019
Urban											
421		501204-1	Construct	Executive Blvd Extended East	MD 355 Rockville Pike	New Nebel Street Extended			0	4	2020
422			Construct	Executive Blvd Extended West	MD 187 Old Georgetown Road	Marinelli Road			0	4	2020
424		501116-6	Construct	Hoya Street	Executive Blvd	Montrose Parkway			0	4	2020
425		501116-1	Construct	Main Street / Market Street	MD 187 Old Georgetown Road	MD 355 Rockville Pike			0	2	2020
423		501116-5	Construct	MD 187 Old Georgetown Road	MD 187 Old Georgetown Road	Nicholson Lane/Tilden Lane			0	6	2020
Prince George's County											
Secondary											
361	PGS3a		Widen	Addison Road	Walker Mill Road	MD 214 Central Avenue	3	3	2	4	2023
362	NRS		Reconstruct	Addison Road	Sherieff Road	MD 704	4	4	2	2	2025
386	PGS5		Construct	Allentown Road Relocated	MD 210 Indian Head Highway	Brinkley Road		3		4	2025
365	PGS73	PGS73	Widen	Ardwick-Ardmore Road	MD 704	91st Ave.	4	4	2	4	2025
388	PGS9a		Widen	Bowie Race Track Road	MD 450 Annapolis Road	Old Chapel Road	4	4	2	4	2025
389	PGS9b		Widen	Bowie Race Track Road	MD 197 Laurel-Bowie Road	Old Chapel Road	4	4	2	4	2025
390	PGS10		Widen	Brandywine Road	Piscataway Road (north of)	Thrift Road	4	4	2	4	2020
418	PGS12		Widen	Brinkley Road	MD 414 St. Barnabas Road	MD 337 Allentown Road	3	3	4	6	2020
134	PGS13		Construct	Brooks Drive Extended	Marlboro Pike	Rollins Avenue	0	3	0	4	2020
140	PGS16a		Construct	Campus Way North	Lake Arbor Way	south of Lottsford Road	0	4	0	4	2023
138	PGS16b		Construct	Campus Way North Extended	south of Lottsford Road	Evarts Drive	0	4	0	4	2020
141	PGS17		Widen	Cherry Hill Road	Powder Mill Road	Selman Road	3	3	2	4	2019
142	PGS18		Widen	Church Road	Woodmore Road	Central Ave. (MD 214)	4	4	2	4	2021
144	PGS20b		Widen	Columbia Park Road	US 50	Cabin Branch Road	4	4	2	4	2020
143	PGS20a		Widen	Columbia Park Road	Cabin Branch Road	Columbia Terrace	4	4	2	4	2020

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							From	To	From	To	
145	PGS21a		Widen	Contee Road	US 1	MD 201 Virginia Manor Road	4	4	2	4	2018
146	PGS22		Widen	Dangerfield Road	Cheltenham Avenue	MD 223 Woodyard Road	4	4	2	4	2020
147	PGS24b		Widen	Dower House Road	Foxley Road	MD 4 Pennsylvania Avenue	4	4	2	6	2025
155	PGS24a		Widen	Dower House Road	MD 223 Woodyard Road	Foxley Road	4	4	2	4	2025
156	PGS25		Widen	Fisher Road	Brinkley Road	Holton Lane	4	4	2	4	2025
157	NRS		Construct	Forbes Boulevard Extended	south of Amtrak	MD 193 Greenbelt Road	0	4	0	4	2020
158	NRS		Widen	Forestville Road	MD 337 Allentown Road	MD 4 Pennsylvania Avenue	4	4	2	2	2021
159	PGS29		Widen	Fort Washington Road	Riverview Road	MD 210 Indian Head Highway	4	4	2	4	2025
160	PGS30b		Widen	Good Luck Road	Cipriano Road	MD 193 Greenbelt Road	4	4	2	4	2025
162	PGS30a		Widen	Good Luck Road	MD 201 Kenliworth Avenue (east of)	Cipriano Road	4	4	2	4	2025
415	NRS4		Widen	Governor Bridge Road	US 301	Anne Arundel County	4	4	2	4	2020
164	PGS34a		Widen	Hill Road	MD 214 Central Avenue	MD 704 ML King Jr Highway	4	4	2	4	2018
163	NRS		Construct	Hill Road	MD 704 ML King Jr Highway	Sheriff Road	0	4	0	2	2025
416	NRS		Construct	Iverson Street Extended	Wheeler Road	19th Avenue	0	4	0	4	2018
666	PGS35		Widen	Karen Boulevard	Walker Mill Road	MD 214 Central Avenue	4	4	2	4	2020
165	PGS38b		Widen	Livingston Road	Piscataway Creek	Farmington Road	4	4	2	4	2020
417	PGS38a		Widen	Livingston Road	MD 210 Indian Head Highway at Eastover	Kerby Hill Rd.	4	3	2	4	2025
213	PGS40a		Widen	Lottsford Road	Archer Lane	MD 193 Enterprise Road	3	3	2	4	2021
	PGS40b		Reduce Capacity - bike lanes	Lottsford Road	MD 202 (Landover Rd.)	Largo Dr. West	3	3	6	4	2020
166	PGS39b		Widen	Lottsford Vista Road	MD 704 ML King Jr Highway	Ardwick-Ardmore Road/Relocated	4	4	2	4	2020
360	PGP4a		Construct	MD 193 Greenbelt Road	Baltimore-Washington Parkway (ramp to)		0	5	0	4	2025
167	PGS42		Widen	MD 223 Woodyard Road	Rosaryville Road	Dower House Road	2	2	2	4	2020
2	PGS42C		Widen	MD 223 Woodyard Road Relocated	Piscataway Creek/Floral Park Road	MD 4 /Livingston Road	3	3	2	4	2017
169	PGS44b		Widen	Metzerott Road	Adelphi Road	MD 193 University Boulevard	4	4	2	4	2020
168	PGS44a		Widen	Metzerott Road	MD 650 New Hampshire Avenue	Adelphi Road	4	4	2	4	2020
171	PGS46		Widen	Murkirk Road	US 1 Baltimore Avenue (west of)	Odell Road	4	4	2	4	2020
173	PGS47		Widen	Oak Grove and Leeland Roads	MD 193 Watkins Park Road	US 301 Robert Crain Highway	4	4	2	4	2020
174	PGS48		Widen	Old Alexandria Ferry Road	MD 223 Woodyard Road	MD 5 Branch Avenue	4	4	2	4	2025
649	PGS50		Widen	Old Branch Avenue	MD 223 Piscataway Road (north of)	MD 337 Allentown Road	4	4	2	4	2020
395	PGS90		Construct	Old Fort Road Extended	MD 223 Piscataway Road	Old Fort Road	4	4	0	4	2020
369	PGS51a		Widen	Old Gunpowder Road	Powder Mill Road	Greencastle Road	3	3	2	4	2018
364	PGS52		Reconstruct	Oxon Hill Road	Fort Foote Road North	MD 210 @ Livingston Sq.Shopping Center	4	4	2	2	2025
193	PGS81		Construct	Presidential Parkway	Suitland Parkway	Melwood Road	0	3	0	6	2025
150	NRS		Reconstruct	Rhode Island Avenue	MD 193	US Route 1	4	4	2	2	2025
176	PGS56a		Widen	Ritchie Road/Forestville Road	Alberta Drive	MD 4 Pennsylvania Avenue	3	3	2	4	2020
153	PGS55b		Widen	Ritchie-Marlboro Road	White House Road	Old Marlboro Pike	2	2	2	4	2020
177	PGS57		Widen	Rollins Avenue	MD 214 Central Avenue	Walker Mill Road	4	4	2	4	2020
178	PGS58		Widen	Rosaryville Road	US 301	MD 223 Woodyard Road	3	3	2	4	2020

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							From	To	From	To	
179	PGS60B		Widen	Spine Road	MD 5 Branch Avenue / US 301	MD 381 Brandywine Road	3	3	2	4	2025
109	PGS61		Widen	Springfield Road	Lanham-Severn Road	Good Luck Road	4	4	2	4	2020
122	PGP2		Construct	Suitland Parkway Interchange at	Rena/Forestville Roads		5	5			2025
185	PGP5a		Construct	US 50 Columbia Park Road Ramp	wb ramp to Columbia Park Rd						2025
187	PGS67a		Widen	Van Dusen Road	Contee Road	MD 198 Sandy Springs Road	3	3	2	4	2020
186	PGS67b		Construct	Van Dusen Road Interchange at	Contee Road						2025
188	PGS68		Widen	Virginia Manor Road	Muirkirk Road	Old Gunpowder Road	4	4	2	4	2014
429	PGS69a		Widen	Walker Mill Road	Silver Hill Road	I 95	3	3	2	4	2020
154	PGS91		Widen	Westphalia Road	MD 4 Pennsylvania Avenue	Ritchie-Marlboro Road	2	2	2	4	2020
189	PGS70		Widen	Wheeler Road	DC Limits	St. Barnabas Road	3	3	2	4	2018
437	PGS71		Widen	White House Road	Ritchie-Marlboro Road	MD 202 Largo-Landover Road	3	3	2	6	2020
190	PGS72		Widen	Whitfield Chapel Road	MD 450 Annapolis Road	Ardwick-Ardmore Road	4	4	2	4	2020
436	PGS40b		Construct	Woodmore Road	MD 193 Enterprise Road	Church Road	3	3	2	4	2025
Anne Arundel County											
	AA14C		Widen	US 50 EB only	MD 70	MD 2 NB	1	1	6	7	2019
	AA14D		Widen	US 50	I-97	MD 2	1	1	6	8	2045
	AA15a		Widen	I-295	I-195	MD 100	1	1	4	6	~~2030~~ 2035
	AA3E		Widen	MD 2	US 50	I-695			4	6	2035
	AA4e		Widen	MD 3	MD 32	St. Stephen's Church Rd.	2	2	4	6	2025
	AA6e		Widen	MD 100	Howard Co. Line	I-97		5/1	4	6	2035
	AA8b		Widen	MD 175	MD 170	~~BW Parkway~~ National Business Parkway		2	4	6	2025
	AA35		Widen	MD 177	MD 2	Lake Shore Dr.			2	4	2045
	AA30		Widen	MD 198	MD 32	BW Parkway	2	2	2	4	2030
			Widen	MD 214	MD 424	Shoreham Beach Dr.			2	4	2045
	AA34a		Widen	MD 713	MD 175	~~Arundel Mills Boulevard~~ Stoney Run Dr.		2	2	4	2040
Carroll County											
	CA1B		Widen	MD 140	Sullivan Road	Market St.		1	4/6	8	2035
	NRS		reconstruct	MD 140 (w/ intchg @ MD~~1~~91)	Baltimore County Line	Kays Mill Rd.			4	4	2035
	CA2a		Widen	MD 26	MD 32	Liberty Reservoir			4	6	~~2025~~ 2035
	CA4A		widen	MD 32	MD 26	Howard County Line		2	2	4	2040
	CA5		Widen	MD 97	MD 140	Bachmans Valley Rd.		2	2	4	2035

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							From	To	From	To	
Howard County											
	HW1b		Widen	I-70	US 29	~~US 40~~ MD 32	1	1	4	6	~~2025~~ 2035
	HW19		Widen	I-95 Peak period shoulder use	MD 32	MD 100	1	1	4	4+1	2035
	HW20		Widen	US 1	~~MD 100~~ Howard/PG line	~~Montevido Rd.~~ Howard/Balt. Co. line			4	6	~~2030~~ 2045
	HW10b		Widen	US 29 NB	Middle Patuxent River	Seneca Dr.		5	4	6	2030
	HW10F		Widen	US 29 NB	Seneca Dr.	MD 100	5	5	5	6	2017
	HW3c		Widen	MD 32	Cedar Lane	Anne Arundel County Line Brock Bridge Rd.		1	4/6	8	~~2025~~ 2045
	HW3B		Widen	MD 32	MD 108	I-70		2	2	4	2021
	HW3D		Widen	MD 32	I-70	Howard/ Carroll County Line River Rd			2	4	2045
	HW5F		Widen	MD 100	I-95	AA/Howard Line	1	1	4	6	2035
	HW6c		Widen	MD 108	Trotter Rd.	Guilford Rd.	2	2	2	4	~~2030~~ 2035
	HW7C		Widen	MD 175	Oceano Ave	Howard/AA Col Line			2	4	2045
	HW8b		Widen	MD 216	High School Access Rd.	Maple Lawn Blvd.		3	2	4	2015
	HW14c		Widen	Snowden River Parkway	Oakland Mills Road	Broken Land Parkway		3	4	6	~~2020~~ 2023
	NRS		Widen	Dorsey Run Rd.	MD 175	CSX RR spur			2	4	2021
	NRS		Widen	Guilford Rd.	US 1	Dorsey Run Road			2	4	2020
Calvert-St. Mary's MPO											
644	MP9B	C-SMMPO	Construct	Thomas Johnson Bridge replacement	over the Patuxent River		2	2	2	4	~~2027~~ 2031
	MP9C	C-SMMPO	Widen	MD 4 (in St. Mary's County)	Thomas Johnson Bridge	MD 235	2	2	2	4	~~2023~~ 2031
	nrs	C-SMMPO	Construct	MD 4/ MD 235 Interchange	in Lexington Park		2	2	--	--	2028
	MP9D	C-SMMPO	Widen	MD 4 (in Calvert County)	Thomas Johnson Bridge	Patuxent Point Parkway	2	2	2	4	2031
VDOT											
Federal Lands											
433	FED3a		Construct	Manassas Battlefield Bypass	US 29 West of Centreville	East of Gainesville, via 234	0	1	0	4	2035
243	VP1A	VP1A - 103073	Widen	US 1 Jefferson Davis Highway	Telegraph Road	VA 235 South	2	2	4	6	~~2016~~ COMPLETE
434	FED3b		Remove/Close	US 29 Lee Highway	Pageland Lane	Bridge over Bull Run	2	2	2/4	0	2035
435	FED3c		Remove/Close	VA 234 Sudley Road	Southern Park Boundary	Sudley Springs (north of park)			2	0	2030

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							From	To	From	To	
Interstate											
399	VI1AJ	81009	Construct	I 66 Vienna Metro Station bus ramp (duplicate project with ConID 759, below)	Transit Ramps- from EB & to WB	Saintsbury Dr.	1	1	0	2	2021
271	VI1AF	78828	Reconstruct	I 66 WB Operational/Spot Improvements	Westmoreland Dr. / Washington Blvd Exit	Haycock Rd /Dulles Access Highway	1	1	3	4	2020
350	VI1AG	78827	Reconstruct	I 66 WB Operational/Spot Improvements	Lee Highway/Spout Run On-Ramp	Glebe Road Off-Ramp	1	1	2	3	2020
718	VI1Y	105500	Widen / Revise Operations	I-66	I-495	US 50	1	1	3 general purpose in each direction + 1 HOV in peak direction during peak period	3 general purpose + 1 Auxiliary + 2 HOT each direction	2021
851	VI1Z	105500	Widen / Revise Operations	I-66	US 50	US 29 Centreville	1	1	4 general purpose in each direction off-peak, 3 general purpose + 1 HOV in peak direction during peak period	3 general purpose + 1 Auxiliary + 2 HOT in each direction (2 Aux per direction btwn VA 286 & VA 28 only)	2021
852	VI1ZA	105500	Widen / Revise Operations	I-66	US 29 Centreville	University Boulevard Ramps (new interchange for HOT only)	1	1	4 general purpose in each direction off-peak, 3 general purpose + 1 HOV in peak direction during peak period	3 general purpose + 2 HOT in each direction	2021

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							From	To	From	To	
852	VI1ZA1	105500	Widen / Revise Operations	I-66	VA 234 Bypass	University Blvd.	1	1	4 general purpose in each direction off-peak, 3 general purpose + 1 HOV in peak direction during peak period	3 general purpose+ 2 HOT in each direction (+1 Auxiliary each direction between US 29 and VA 234 Bypass only)	2021
853	VI1ZB	105500	Widen / Revise Operations	I-66	University Boulevard Ramps (new interchange for HOT only)	US 15 (1.2 miles west of)	1	1	4 general purpose in each direction off-peak, 3 general purpose + 1 HOV in peak direction during peak period	3 general purpose+ 2 HOT in each direction (+1 Auxiliary each direction between US 29 and VA 234 Bypass only)	2040
740	VI1X	97586	Revise Operations	I-66	I-495	US 29 near Rosslyn	1	1	HOV 2 in peak direction during peak period	HOT 2 in peak direction during peak period	2017
862	VI1X1		Revise Operations	I-66	I-495	US 29 near Rosslyn	1	1	HOT 2 in peak direction during peak period	HOT 3 in peak direction during peak period	2021

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							From	To	From	To	
863	VI1X2		Revise Operations	I-66	I-495	US 29 near Rosslyn	1	1	HOT 3 in peak direction during peak period	HOT 3 in both directions during peak period	2040
788	VI1XB		Construct/Widen	I 66 Eastbound	VA 267 DTR	Washington Blvd. Off-Ramp	1	1	3	4	2020
789	VI1XC		Construct/Widen	I 66 Eastbound	Washington Blvd. Off-Ramp	North Fairfax Drive	1	1	2	3	2020
786	VI1XD		Construct/Widen	I 66 Westbound	Sycamore Street	Washington Blvd. On-Ramp	1	1	2	3	2040
752	I66R31 I66R32 I66R34		Construct	I-66 Express Lanes Interchange Ramps	EB Expr to SB GP NB GP to WB Expr SB Expr to WB Expr EB Expr to NB GP SB GP to WB Expr	I-495 Interchange (Capital Beltway GP and Express Lanes)	0	1	0	1	2022
753	I66R37		Construct	I-66 General Purpose Lanes Interchange Ramp	NB Expr to WB GP (modification of existing loop ramp)	I-495 Interchange (Capital Beltway GP and Express Lanes)	0	1	0	1	2022
754			Relocate / Reconstruct	I-66 Interchange	Dual-lane loop ramp from NB I-495 GP to I-66 GP relocated to dual-lane flyover & existing ramp modified to NB I-495 GP to I-66 WB HOT	@ I-495	1	1	2	2	2022
755			Reconstruct	I-66 Interchange	EB GP to SB GP WB GP to SB GP WB GP to SB Expr NB GP to EB GP SB GP to WB GP	@ I-495	1	1	—	—	2022
756	I66R29		Construct	I-66 flyover ramp	EB general purpose to EB express lanes	.5 mile east of VA 243	0	1	0	1	2022
757	NRS		Reconstruct	I-66 Interchange	Cloverleaf interchange converted to diverging diamond interchange	@ Nutley Street (VA 243)	1	1	—	—	2022
759	I66R27 I66R28		Construct	I-66 Express Lanes Interchange Ramps (duplicate project with ConID 399, above)	EB off-ramp, WB on-ramp to/from I-66 Express lanes BUS /HOV-3/HOT ONLY	@ Vaden Drive / Vienna Metro Station	1	1		Bus / HOV 3 / HOT from proposed Express Lanes	2022
	I66R43		Remove	I-66 ramp	remove existing EB on-ramp from Saintsbury Dr. at Vaden Dr.						2022
762	VI1YA		Reconstruct	I-66 Interchange	Reconfigured interchange to eliminate C-D roads & replacemodify EB to NB loop ramp with flyover& WB to SB flyover	@ Chain Bridge Road (VA 123)	1	1	—	—	2022

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							From	To	From	To	
763	I66R25 I66R26		Construct	I-66 Express Lanes Interchange Ramps	EB on-ramp, EB off-ramp, WB on-ramp, WB off-ramp to/from I-66 Express Lanes	@ Chain Bridge Road (VA 123)	0	1	0	1	2022
765	I66R23 I66R24		Construct	I-66 Express Lanes Interchange Ramps	EB on-ramp, WB off-ramp to/from I-66 Express lanes	@ Lee Jackson Mem Highway (US 50)	0	1	0	1	2022
	I66R62		Construct	I-66 Express Lanes Interchange ramps	EB Express Lanes on-ramp from NB US 50	@ Lee Jackson Mem Highway (US 50)	0	1	0	1	2040
767	I66R19A I66R20A I66R21A I66R22A		Relocate / Reconstruct	I-66 Interchange	Reconfigure interchange with Express lanes ramps shifted to the north of I-66; ; Construct new EB off-ramp, WB on-ramp to/from I-66 Express lanes	@ Monument Drive (US 50)	1	1	Bus / HOV-2 Reversible by time of day	Bus / HOV 3 / HOT Movements in both directions 24 hrs/day	2040
768	I66R19 I66R20 I66R21 I66R22		Reconstruct / Revise Operations / Construct	I-66 Interchange	Conversion of existing HOV ramps to HOT; Construct new EB off-ramp, WB on-ramp to/from I-66 Express lanes	@ Monument Drive (US 50)	1	1	Bus / HOV-2 Reversible by time of day	Bus / HOV 3 / HOT Movements in both directions 24 hrs/day	2022
769	I66R17 I66R18		Revise Operations	I-66 Express Lanes Interchange Ramps	~~Existing reversible HOV ramp converted to HOT EB on-ramp only, 24 hrs/day; Construct new flyover ramp for HOT WB off-ramp from I-66 Express Lanes, operating 24 hrs/day~~ The existing reversible HOV ramp at Stringfellow Road will be expanded and converted to Express Lanes ramps providing access to and from the east using the Express Lanes. The new ramps will allow two-way traffic to and from the Express Lanes toward the Beltway 24 hours a day.	@ Stringfellow Road	1	1	Bus / HOV-2 Reversible by time of day	Bus / HOV 3 / HOT both directions 24 hrs / day	2022
771	I66R16		Construct	I-66 flyover ramp	EB express lanes to EB general purpose	1.5 miles west of VA 286	0	1	0	1	2022
772	I66R41	Prfd Alt ~~B~~	Construct	I-66 slip ramp	EB general purpose to EB express lanes	2.5 miles west of VA 286	0	1	0	1	2022
773	I66R15		Construct	I-66 flyover ramp	WB express lanes to WB general purpose	1 mile west of VA 286	0	1	0	1	2022

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							From	To	From	To	
774	I66R42		Construct	I-66 slip ramp	WB general purpose to WB express lanes	2.0 miles west of VA 286	0	1	0	1	2022
776	I66R11 I66R12 I66R13 I66R14 I66R40		Construct	I-66 Express Lanes Interchange Ramps	EB Expr to NB GP WB Expr to NB GP SB GP to EB Expr SB GP to WB Expr NB GP to EB Expr	Route 28 Interchange	0	1	0	*1*	2022
	I66R61		Construct	I-66 Express Lanes Interchange ramps	SB HOV to WB Expr	Route 28 Interchange	0	1	0	1	2040
			Construct	I-66 flyover ramp	EB general purpose to EB Express Lanes	.65 miles east of VA Bus 234	0	1	0	1	2022
			Construct	I-66 flyover ramp	WB Express Lanes to WB general purpose	.65 miles east of VA Bus 235	0	1	0	1	2022
778	I66R9 I66R10		Construct	I-66 Express Lanes Interchange Ramps	EB on-ramp, WB off-ramp to/from I-66 Express lanes	@ Balls Ford Road / Ashton Avenue Connector 1.25 mile west of VA Bus 234	0	1	0	*1*	2022
779	I66R7 I66R8		Construct	I-66 Express Lanes Interchange Ramps	EB on-ramp, WB off-ramp to/from I-66 Express lanes	@ Cushing Road Park-Ride Lot .5 mile east of VA 234 Bypass	0	1	0	*1*	2040
855	I66R38 I66R39		Construct	I-66 Express Lanes Interchange Ramps	EB off-ramp, WB on-ramp to/from I-66 Express lanes	@ VA 234 Bypass to/from south of I-66	0	1	0	*1*	2040
781	I66R5 I66R6		Construct	I-66 Express Lanes Interchange Ramps	EB on-ramp, WB off-ramp to/from I-66 Express lanes	@ University Bloulevard .75 mile east of US 29	0	1	0	*1*	2022
784	I66R1 I66R1A I66R2 I66R2A		Construct	I-66 Express Lanes Interchange Ramps	EB on-ramp & off-ramp, WB on-ramp & off-ramp to/from I-66 Express lanes	@ New connector road between Heathcote Boulevard and VA 55 approx .5 mile west of US 15	0	1	0	*1*	2040
785	VSP49C		Construct	I-66 Express Lanes Access Connector Road	Heathcote Boulevard Extension	John Marshall Highway (VA 55)	0	1	0	*1*	2040
444	VI2T		Widen	I 395 southbound	VA 236 Duke Street (north of)	VA 648 Edsall Road (south of)	1	1	3	4	2018
854	VI2V		Widen/Revise Operations	I-395 reversible HOV lanes	Turkeycock Run	vicinity of Eads Street	1	1	2 reversible HOV 3+ lanes during peak periods	3 reversible HOT-3+ lanes operating nb in am and sb in pm	2019
			Revise Operations	I-395 Flyover Ramp South of Duke Street (NB)	I-395 NB GP lanes	I-395 HOV lanes	1	1	HOV-3+ in am peak period	HOT-3+ in morning hours	2019
			Revise Operations	I-395 HOV nb on-ramp at Seminary	Seminary Road	I-395 HOV lanes	1	1	HOV-3+ in am peak period	HOT-3+ in morning hours	2019

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							From	To	From	To	
			Revise Operations	I-395 HOV sb off-ramp at Seminary	I-395 HOV lanes	Seminary Road	1	1	HOV-3+ in pm peak period	HOT-3+ in evening hours	2019
			Revise Operations	I-395 HOV nb on-ramp at Shirlington Circle	Shirlington Circle	I-395 HOV lanes	1	1	HOV-3+ in am peak period	HOT-3+ in morning hours	2019
			Revise Operations	I-395 HOV sb off-ramp at Shirlington Circle	I-395 HOV lanes	Shirlington Circle	1	1	HOV-3+ in pm peak period	HOT-3+ in evening hours	2019
			Revise Operations	I-395 HOV sb off-ramp near Edsall Rd.	I-395 HOV lanes	I-395 SB GP lanes	1	1	HOV-3+ in pm peak period	HOT-3+ in evening hours	2019
			Revise Operations	I-395 NB HOV Ramp to Washington Blvd.	I-395 NB HOV lanes	Washington Blvd. NB	1	1	HOV-3+ in am peak period	HOT-3+ in morning hours	2019
			Revise Operations	I-395 SB HOV Ramp from Washington Blvd.	Washington Blvd. SB	I-395 SB HOV lanes	1	1	HOV-3+ in pm peak period	HOT-3+ in evening hours	2019
			Revise Operations	I-395 HOV nb off ramp at Eads Street			1	1	HOV-3+ in am peak period	HOT-3+ in morning hours	2019
			Revise Operations	I-395 sb HOV on-ramp at Eads Street			1	1	HOV-3+ in pm peak period	HOT3+ in evening hours	2019
	VI2R47		**Remove**	**I-395 HOV/HOT SB Slip Ramp to I-395 main lanes**	**Just south of Eads St**		**1**	**0**	**1**	**0**	**2019**
270	VI2AC		Reconstruct	I 95 Interchange	VA 613 Van Dorn Street		1	1			~~2015~~ 2030
			Construct	I-95 HOT lanes ramp	.25 miles south of Russell Road (Exit 148)	Russell Road	0	1	0	1	2022
6	NRS		Reconstruct	Boundary Chanel Drive	Old Jefferson Davis Highway (off of I-395 Boundary Chanel Interchange)						2020
378	BRAC	BRAC0005	Construct	I 95 NB Off Ramp at Newington	I-95 NB	Fairfax County Parkway NB	1	1	0	1	2020
8	BRAC0004 / VI2ra		Construct	I 95 Reversible Ramp (Colocated w/ existing slip ramp from HOV to GP lanes)	I 95 ~~NB~~ HOV/BUS/HOT Lanes (Located N of Rte. 7100/I 95 I/C Phase II DAR)	EPG Southern Loop Road AM Only	0	1	0	1	2025

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							From	To	From	To	
16	VI2r43a		Construct	I 95 HOV/Bus/HOT Ramp SB Gen Purpose Lanes to SB HOV/Bus/HOT lanes	Between Dumfries Rd. and Joplin Rd.		0	1	0	1	2018
18	VI2r45a		Construct	I 95 HOV/Bus/HOT Ramp NB HOV/Bus/HOT lanes to NB Gen Purpose Lanes	Between Joplin Rd. and Russell Rd.		0	1	0	1	2018
969	VI2X		Construct	I-95 Auxiliary Lane SB	VA 123	VA 294	1	1	0	1	~~2028~~ 2022
1011	VI2R48		**Construct**	**I-95 Opitz Drive Reversible Ramp**	**I-95 Express Lanes at Opitz Drive**	**Optiz Drive**	**1**	**1**	**0**	**1**	**2022**
20	VI4laux1		Widen	I 495 Capital Beltway NB Auxiliary Lane	North of Hemming Ave. Underpass	Braddock Road Off Ramp	1	1	4+2	5+2	2030
21	VI4laux2		Widen	I 495 Capital Beltway SB Auxiliary Lane	Braddock Road On Ramp	North of Hemming Ave. Underpass	1	1	4+2	5+2	2030
22	VI4laux3		Widen	I 495 Capital Beltway NB Auxiliary Lane	Braddock Road On Ramp	VA 236 Off Ramp	1	1	4+2	5+2	2030
24	VI4laux5		Widen	I 495 Capital Beltway NB Auxiliary Lane	VA 236 On Ramp	Gallows Road Off Ramp	1	1	4+2	5+2	2030
25	VI4laux6		Widen	I 495 Capital Beltway SB Auxiliary Lane	Gallows Road On Ramp	VA 236 Off Ramp	1	1	4+2	5+2	2030
29	VI4laux10		Widen	I 495 Capital Beltway NB Auxiliary Lane	US 50 On Ramp	I 66 Off Ramp	1	1	5+2	6+2	2030
32	VI4laux13		Widen	I 495 Capital Beltway SB Auxiliary Lane	VA 7 On Ramp	I 66 Off Ramp to WB	1	1	4+2	5+2	2030
35	VI4laux16		Widen	I 495 Capital Beltway SB Auxiliary Lane	VA 123 On Ramp	VA 7 Off Ramp	1	1	5+2	6+2	2030
38	VI4laux19		Widen	I 495 Capital Beltway NB Auxiliary Lane	VA 267 On Ramp	VA 193 Off Ramp	1	1	4+2	5+2	2030
39	VI4laux20		Widen	I 495 Capital Beltway SB Auxiliary Lane	VA 193 On Ramp	VA 267 Off Ramp	1	1	4+2	5+2	2030
999	VI4IRMP1		**Construct**	**I-495 Express Lanes On-Ramp**	**Dulles Connector Road WB**	**I-495 Express Lanes NB**	**0**	**1**	**0**	**1**	**2025**
1000	part of VI4KA		**Construct**	**I-495 Express Lanes (Shoulder Lane) – NB DIRECTION PEAK PERIODS ONLY**	**Dulles Connector WB On-Ramp**	**GW Parkway Off-Ramp**	**0**	**1**	**0**	**1**	**2025**
1001	VI4IRMP2		**Construct**	**I-495 NB Exchange Ramp**	**Interstate Ramp**	**I-495 NB GP Lanes at Dulles Toll Road**	**0**	**1**	**0**	**1**	**2045**
1002	VIRIRMP3		**Construct**	**I-495 SB Exchange Ramp**	**Interstate Ramp**	**I-495 SB Express Lanes at Dulles Toll Road**	**0**	**1**	**0**	**1**	**2045**
40	VI4K		Construct	I 495 Capital Beltway HOT Lanes	American Legion Bridge	George Washington Parkway (south of)	1	1	8	8+4	2025
41	VI4KA		Construct	I 495 Capital Beltway HOT Lanes	George Washington Parkway (south of)	Old Dominion Drive (south of)	1	1	8	8+4	2025
49	Part VI4IHOTa		Relocate	I 495 Capital Beltway Interchange Flyover Ramp (Phase 4)	EB Dulles Airport Access Highway to NB General Purpose	at VA 267 Dulles Toll Road	1	1	1	1	2030
519	Part VI4IHOTa		Construct	I 495 Capital Beltway Interchange (Phase IV)	Provide SB HOT to EB HOV & EB DTR to NB HOT movements	at VA 267 Dulles Toll Road	1	1			2030
517	Part VI4IHOTa		Widen	I 495 Capital Beltway Interchange Ramp (Phase III DTR)	Widen EB DTR ramp to 2 NB lanes	NB GP Lanes	1	1	1	2	2030
520	VI4Irmp1		Construct	I 495 Capital Beltway Interchange Flyover Ramp (Phase 4)	I 495 Capital Beltway NB GP lanes	Dulles Airport Access Highway (DAAH) WB	0	1	0	1	2030
50	VI4IHOTb		Construct	I 495 Capital Beltway Interchange Ramp (Phase II, Ramp 3 DAAH)	I 495 Capital Beltway SB	Dulles Airport Access Highway WB	0	1	0	1	2020
			Widen	Dulles Greenway - eastbound only	Toll Plaza	Dulles Toll Road	1	1	2	3	2019
			Widen	VA 267 Dulles Toll Road - eastbound only	Dulles Greenway	Centreville Rd. off-ramp	1	1	4	5	2019

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							From	To	From	To	
534	VP15E		Construct	VA 267 Dulles Toll Road Ramp	New Boone Boulevard Extension at Ashgrove		0	1	0	2	2037
535	VP15B		Construct	VA 267 Dulles Toll Road Ramp	Greensboro Drive @ Tyco Road		0	1	0	2	2036
236	MW1	MW1	Widen	Dulles Airport Access Road	Dulles Airport	VA 123	1	1	4	6	2030
Primary											
549	VP1AH	90339	Widen	US 1 Richmond Highway	Fuller Road	Stafford County Line	2	2	4	6	2040
631	VP1AD	90339	Widen	US 1 Fraley Blvd. (Town of Dumfries)	Brady's Hill Road	VA 234 Dumfries Road	2	2	4	6	2025
632	VP1ADA		Widen	US 1 Richmond Highway	VA 234 Dumfries Road	Cardinal Drive/Neabsco Road	2	2	4	6	2030
84	VP1AF	104303	Widen	US 1 Richmond Highway	Featherstone Road	Mary's Way	2	2	4	6	~~2022~~
239	VP1P	94102	Widen	US 1 Richmond Highway	Mary's Way	Annapolis Way	2	2	4	6	2019
633	NRS	100938	Reconstruct	US 1 Richmond Highway	at VA 123 Gordon Boulevard (Interchange)						~~2025~~ 2028
634	VSP63	100938	Construct	Belmont Bay Drive Extension	US 1 Jefferson Davis Highway	Heron's View Way			0	4	2025
85	VP1AG		Widen	US 1 Richmond Highway	Annapolis Way	Lorton Road	2	2	4	6	2035
322	VP1U		Widen	US 1 Richmond Highway	VA 235 North	VA 235 South	2	2	4	6	2025
653	VP2P		*Construct*	VA 7 Interchange	At VA 690		2	2	0	4	*2025*
86	VP2JA	16006	Widen	VA 7 Bypass	VA 7 West	US 15 South King Street South	5	1	4	6	2040
299	VP2J	16006	Widen	VA 7 Bypass	US 15 South King Street	VA7/US 15 East	5	1	4	6	2040
221	VP2M		Widen	VA 7	Reston Avenue	West Approach to Bridge over Dulles Toll Road	2	2	4	6	2025
626	NRS	82135	Construct	VA 7 Leesburg Pike	Bridge over Dulles Toll Road		2	2	4	6	~~2030~~ Complete
628	VP2Lb		Widen	VA 7 Leesburg Pike	VA 123 Chain Bridge Road	I 495 Capital Beltway	2	2	6	8	~~2021~~ 2030
87	VP2N		Widen	VA 7 Leesburg Pike	I 495	I 66	2	2	4	6	~~2021~~ 2030
347	VP2B	TBD	Widen	VA 7	Seven Corners	Bailey's Crossroads	2	2	4	6	~~2025~~ 2030
1022	**NRS**		**Study**	**VA 7 Interchange**	**VA 123 Dolly Madison Road**						**2030**
682	NRS	105584	Construct	VA 7 Overpass at	George Washington Boulevard		0	4	0	4	2022
621	nrs	99481	Construct	VA 7 Interchange	at VA 659 Belmont Ridge Road		2	2	6	6	2017
1023	**NRS**		**Construct**	**US 15 Bypass / Battlefield Parkway Interchange**							
253	VP4EA		Widen	US 15 James Madison Highway	US 29 Lee Highway	Haymarket Drive	3	3	2	4	2040
	VP4EC		Widen	US 15 James Madison Highway Overpass	1200' S of RR tracks	1000' N. of RR tracks	3	3	2	4	2030
881	VP4G		Widen	US 15	Battlefield Parkway	Montresor Road	2	2	2	4	2022
88	VP6H		Widen	VA 28	Fauquier County Line	VA 652 Fitzwater Drive	3	3	2	4	2040
309	VP6kA	105198	Widen	VA 28	VA 652 Fitzwater Drive	VA 215 Vint Hill Road	3	3	2	4	2019
326	VP6MA	96721	Widen	VA 28	Godwin Drive	Manassas City limits	3	2	4	6	2019
89	VP6K	105428	Widen	VA 28 Nokesville Road	Manassas City Limits	VA 619 Linton Hall Road	3	3	4	6	2022
	VP6EDD		Convert	VA 28 PPTA Phase II- HOV	I-66	Westfields Blvd	5	5	8+ 2 aux	6 + 2aux + 2 HOV	2040
	VP6EDE		Convert	VA 28 PPTA Phase II- HOV	Westfields Blvd	Dulles Toll Road	5	5	8	6 + 2 HOV	2040
310	VP6EAA		Widen	VA 28 PPTA Phase II	I 66	Westfields Blvd	5	5	6	8+ 2 aux	2021

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							From	To	From	To	
	VP6EAB		Widen	VA 28 PPTA Phase II	Westfields	US 50	5	5	6	8	2025
	VP6EBB		Widen	VA 28 PPTA Phase II	US 50	Sterling Blvd.	5	5	6	8	2016
310	VP6ECC	106651	Widen	VA 28 PPTA Phase II	Sterling Blvd.	VA 7	5	5	6	8	2025
656			Study	VA 28 Manassas Bypass /VA 411	VA 234 Sudley Road	I 66 Proposed Interchange					Not Coded
737	VP6N	108720	Widen	VA 28 Centreville Road	~~VA 898 Old Cntreville Road~~ US 29	Prince William County Line	2	2	4	6	~~2025~~ 2023
995	**VP6O**		**Construct**	**VA 28 Manassas Bypass**	**VA 234 Sudley Road**	**VA 28 Centreville Road**	**0**	**5**	**0**	**4**	**2025**
730		105482	Study	VA 28	US 29	Liberia Avenue					Not Coded
620	VP7s		Widen	US 29 (add NB lane)	I 66	Entrance to Conway Robinson MSF	3	2	4	5	2030
622	VP7AG		Widen	US 29 (add NB lane)	Legato Road	Shirley Gate/Waples Mill Rd.	2	2	2	3	~~2017~~ Complete
349	VP7AA		Widen	US 29	ECL City of Fairfax (vic. Nutley St.)	Espana Court	2	2	4	6	2025
625	VP7AB		Widen	US 29	Espana Court	I 495 Capital Beltway	2	2	4	6	2025
731	VP7T		Widen	US 29 Lee Highway	VA 659 Union Mill Road	Buckleys Gate Drive	2	2	4	6	2024
319	VP8H			US 50	ECL City of Fairfax	Arlington County Line	2	2	4	6	2025
94	NRS		Construct	US 50 Interchange	VA 606 Loudoun County Parkway		2	2	6	6	2025
657	NRS		Construct	US 50 Interchange	West Spine/Gum Springs Road		2	2	6	6	2035
658	NRS		Construct	US 50 Interchange	South Riding Boulevard		2	2	6	6	2035
659	NRS		Construct	US 50 Interchange	Tall Cedars Parkway		2	2	6	6	2035
885	NRS		Upgrade/ Intersection	Route 50 & Everfield Drive			2	2	2	2	2022
997	**VP16**		**Widen**	**VA 55**	**Route 29**	**Town of Haymarket**			**2**	**4**	**2028**
245	VP10G	100938	Widen	VA 123	US 1	Annapolis Way	2	2	4	6	2025
235	VP10H		Widen	VA 123 Ox Road	Hooes Rd.	Fairfax Co. Parkway	2	2	4	6	~~2025~~ 2030
337	VP10F	1784	Widen	VA 123 Ox Road	Fairfax Co. Parkway	Burke Center Parkway	2	2	4	6	~~2025~~ 2030
300	VP10R		Widen	VA 123	Burke Center Parkway	Braddock Road	2	2	4	6	~~2025~~ 2030
95	VP10S		Widen	VA 123	VA 677 Old Courthouse Road	VA 7 Leesburg Pike			4	6	~~2025~~ 2030
595	VP10T		Widen	VA 123 Chain Bridge Road	VA 7 Leesburg Pike	I 495 Capital Beltway	2	2	6	8	~~2025~~ 2030
1016	NRS		**Upgrade**	**VA 123**	**I-495 Capital Beltway**	**VA 267 Dulles Access Road**	**3**	**3**	**6**	**6**	**2030**
1015	VP10U		**Widen**	**VA 123**	**VA 267 Dulles Access Road**	**VA 634 Great Falls Street**	**2**	**2**	**4**	**6**	**2030**
590	VP24B		Widen	VA 215 Vint Hill Road	Kettle Run Drive	VA 1566 Sudley Manor Drive	4	4	2	4	2020
678		43	Construct	VA 234 Bypass Interchange	Balls Ford Road Relocated						2022
660		T5665	Construct	VA 234 Bypass Interchange	Dumfries Road/Brentsville Road						2025
727	NRS		Construct	VA 234 Prince William Parkway Interchange at	VA 1566 Sudley Manor Dr.						2030
311	VP13A		Widen	VA 236	Pickett Road	I 395	2	2	4	6	2025
264	VSF25aa	57167	Convert	VA 286 Fairfax County Parkway HOV	VA 267 Dulles Toll Road	Sunrise Valley Drive	5	5	6	4+2	2035
96	VSF25ea	57167	Widen	VA 286 Fairfax County Parkway HOV	Sunrise Valley	West Ox Road	5	5	4	4+2	2035
97	VSF25e	57167	Convert	VA 286 Fairfax County Parkway HOV	West Ox Road	US 50	5	5	6	4+2	2035
1024	NRS	111725	**Widen/Construct**	**VA 286 Fairfax County Parkway Interchange**	**VA 654 Pope's Head Road**		**2**	**2**	**4**	**6**	**2025**
98	VSF25y		Upgrade	VA 286 Fairfax County Parkway HOV	US 50	VA 7735 Fair Lakes Parkway	2	5	6	4+2	2035

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(Highway)

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Con ID	Project ID	Agency ID	Improvement	Facility	From	To	Facility		Lanes		Completion Date
							From	To	From	To	
101	VSF25z		Widen/Upgrade	VA 286 Fairfax County Parkway HOV	VA 7735 Fair Lakes Parkway	I 66	2	5	6	6+2	2035
320	VSF25g		Widen	VA 286 Fairfax County Parkway	US 29	~~VA 123 Ox Road~~ Rolling Rd.	5	5	4	6	~~2025~~ 2030
729			Study	VA 286 Fairfax County Parkway	VA 267 Dulles Toll Road	Rugby Road					Not Coded
304	VSF26		Construct	VA 289 Franconia-Springfield Parkway HOV	VA 286 Fairfax County Parkway	VA 2677 Frontier Drive	5	5		2	2025
104	NRS		Construct	VA 289 Franconia-Springfield Parkway HOV Interchange	Neuman Street		1	1			~~2025~~ 2035
105	VSF26b		Upgrade	VA 289 Franconia-Springfield Parkway HOV	VA 638 Rolling Road	VA 617 Backlick Road	5	1	6+2	6+2	2025
408	VSP23d		Widen	VA 294 Prince William County Parkway	VA 776 Liberia Avenue	VA 642 Hoadly Road	2	2	4	6	2040
739			Construct	VA 234 Byp-Prince William Parkway Interchange at	VA 840 University Boulevard						2030
	NRS		**Construct**	**VA 234 Bypass Interchange**	**Clover Hill Road**						**2026**
1028	**NRS**		**Construct**	**VA 294 Prince William Parkway Intersection Improvements**	**VA 641 Old Bridge Road**						**2028**
1027	**NRS**		**Construct**	**VA 294 Prince William Parkway Interchange**	**VA 640 Minnieville Road**						**2028**
106	VP15CD		Construct	Collector-Distributor Rd Westbound (parallels Dulles Toll Rd.)	~~**Spring Hill Rd.**~~ **Route 7 Leesburg Pike**	VA 828 Wiehle Avenue	0		0	+1	~~**2037**~~ **2035**
107	VP15CDE		Construct	Collector-Distributor Rd Eastbound (parallels Dulles Toll Rd.)	VA 828 Wiehle Avenue	~~Spring Hill Rd.~~ Route 7 Leesburg Pike	0		0	**+1**	~~**2036**~~ **2035**
	VP15CD2		**Construct**	Collector-Distributor Rd Westbound (parallels Dulles Toll Rd.)	Route 7 Leesburg Pike	Spring Hill Rd.			**0**	~~**1**~~ **'+2**	~~**2037**~~ **2035**
	VP15CDE2		**Construct**	Collector-Distributor Rd Eastbound (parallels Dulles Toll Rd.)	Spring Hill Rd.	Route 7 Leesburg Pike			**0**	~~**1**~~ **'+2**	~~**2036**~~ **2035**
286	VP12O	99482	Construct	VA 234 Bypass Extension North	VA 234 Bypass@I-66 (Prince Wm. Co.)	US 50 (Loudoun Co.)		5		4	2040
Urban											
313	VU28B	100518	Construct	Battlefield Parkway	US 15 south of Leesburg	Dulles Greenway	0	2	0	4	2020
52	VU30F	50100	Widen/Reconstruct	East Elden Street	Monroe Street	Fairfax County Parkway	3	2	4	6	2020
328	VU52	77378	Widen	Eisenhower Avenue	Mill Road	Holland Lane	3	3	4	6	2019
553	VU55	106976	Widen	Evergreen Mills Road	US 15 S. King Street	South City Limits of Leesburg	4	4	2	4	2022
681	VU56		Construct	Farrington Aveneue	Van Dorn Street at Eisenhower Avenue	Edsall Road	0	4	0	2	2035
267	VU10B	105521	Widen/Reconstruct	Spring Street	Herndon Parkway (East)/Spring Street	Fairfax County Parkway Interchange	3	2	4	6	2021
232	VU33	102895	Widen	Sycolin Road	VA7/US 15 Bypass	SCL of Leesburg	4	4	2	4	2020
382	NRS	89890/LEES 0001	Construct	US 15 Bypass Interchange	At Fort Evans Road and Edwards Ferry Road		5	2	4	4	2025
290	VU45	15960 (PE & RW Only)	Widen	VA 234 Dumfries Road Business	South Corporate Limits	Hastings Drive	3	3	2	4	2040
594	NRS		Reconstruct	VA 234 Grant Avenue	Lee Avenue	Wellington Road	3	3	4	2	2020
53	nrs	8645	Construct	Intersection Improvement	King Street	Beauregard Street					2018
54	nrs		Construct	Ellipse	Seminary Road	Beauregard Street					2020

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							From	To	From	To	
56	NRS	104328 and 106986	Reconstruct	Herndon Parkway (East): Transit Drop-off/Pick-Up Access to Herndon Metrorail Station	East of Rte 666/Van Buren Street (at 593 Herndon Parkway)	West of Rte 675 / Spring Street (at 575 Herndon Parkway	2	2	4	4	2018
725	NRS	89889	Reconstruct	Herndon Parkway/Van Buren Street (south) intersection	Herndon Parkway/Van Buren Street (south)	Worldgate Drive/Van Buren Street (south)	2	2	4	4	2019
687	NRS	76408	Reconstruct	VA 17 Intersection Improvements in Warrenton	South of Frost Ave.	South of Winchester St.					2021
Secondary											
Arlington County											
411	AR17a		Widen	Washington Boulevard	Wilson	Kirkwood	3	3	3	4	2019
	NRS		Construct	12th Street South	VA-120 (South Glebe Rd.)	South Monroe St	4	4	0	2	2019
	AR30		Convert to 2-way	27th Street South	US-1	Crystal Drive	4	4	4	4	2019
	AR31		Demolish	South Clark Street	12th Street South	~~18th~~ 20th Street South	4	0	2	0	2019
Fairfax County											
336	FFX2a	FFX2a	Construct	VA 602 Reston Pkwy.	VA 5320 Sunrise Valley Dr.	VA 606 Baron Cameron Avenue	2	2	4	6	2020
732	VSF44		Widen	VA 608 Frying Pan Road	VA 28 Sulley Road	VA 657 Centreville Road	3	3	2	4	2025
241	VSF4f	VSF4f	Widen	VA 611 Furnace Road	VA 123 Ox Road	VA 642 Lorton Road	3	3	2	4	~~2016~~ COMPLETE
218	VSF4ca		Widen	VA 611 Telegraph Road	Leaf Road North	VA 635 Hayfield Road	3	3	2	4	2025
298	VSF4i		Widen	VA 611 Telegraph Road	VA 635 Hayfield Road	VA 613 (Van Dorn St.)	3	3	2	4	2025
62	VSF4h	11012	Widen	VA 611 Telegraph Road	VA 613 S. Van Dorn	VA 644 Franconia Road	3	3	2	3	2025
63	VSF15b		Construct	VA 613 Van Dorn Interchange	VA 644 Franconia Road		0	0	0	0	2025
301	VSF8g	VSF8g	Widen	VA 620 Braddock Road	~~VA 7100~~ VA 286 Fairfax County Parkway	VA 123 Ox Road	3	3	4	6	2025
334	VSF8j		Construct/Widen	VA 620 New Braddock Rd.	VA 28	US 29 @ VA 662 (Stone Rd.)	0/4	3	0/2	4	2025
736	VSF45		Widen	VA 636 Hooes Road	VA 286 Fairfax County Parkway	VA 600 Silverbrook Road	3	3	2	4	2025
302	VSF10a		Widen	VA 638 Rolling Road	VA 286 Fairfax County Parkway	VA 644 Old Keene Mill Road	3	3	2	4	*2025*
586	VSF10E	102905	Widen	VA 638 Rolling Road	Rt 5297 DeLong Drive	Fullerton Drive	3	3	2	4	~~2022~~ 2035
377	VSF10c	16505	Widen	VA 638 Pohick Road	VA 1	I 95	3	3	2	4	2025
217	FFX11a		Widen	VA 645 Stringfellow Road	US 50	VA 286 Fairfax County Parkway	3	3	2	4	~~2020~~ 2030
64	VSF37a		Widen	VA 650 Gallows Road	VA 7 Leesburg Pike	VA ~~299~~ 699 Prosperity Ave.	2	2	4	6	2038
65	VSF33a		Widen	VA 651 Guinea Road	VA 6197 Roberts Parkway	VA 4807 Pommeroy Drive	3	3	2	4	2025
255	FFX12a		Construct	VA 651 New Guinea Road	VA 123 Ox Road	Roberts Road	0	3	0	4	2025
688	VSF17b		Construct	VA 655 Shirley Gate Road	VA 286 Fairfax County Parkway	VA 620 Braddock Road	0	3	0	4	~~2025~~ 2030
346	VSF18C	74749	Widen	VA 657 Centreville Road	VA 8390 Metrotech Dr.	VA 668 McLearen Road	3	3	4	6	2040
66	NRS		Construct	Boone Boulevard Extension	VA 123 Chain Bridge Road	Ashgrove Lane			0	4	2036
724	VSF46		Construct	VA 2677 Frontier Drive	Franconia-Springfield Transportation Center	VA 789 Loisdale Road	0	4	0	~~2~~ 4	2024
69	NRS		Construct	Greensboro Drive WB	Spring Hill Road	Tyco Road	0	4	0	2	2034
68	VSF43		Widen	Magarity Road	VA 7 Leesburg Pike	VA 694 Great Falls Street			2	4	2037
67	NRS		Construct	New Bridge/Road Crossing- bike ped only	Tysons Corner Center Ring Road	Old Meadow Road			0	0	2036

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882	VSF48		Construct	Rock Hill Road Overpass	VA 5320 (Sunrise Valley Dr.)	VA 209 (Innovation Avenue)	0	4	0	4	2030
722	VSF49		Construct	Soapstone Drive 4-Lane Overpass	Sunrise Valley Drive	Sunset Hills Road	0	4	0	4	2027
1017	**VSF50**		**Construct**	**Town Center Parkway Underpass of Dulles Toll Road**	**VA 5320 Sunrise Valley Dr.**	**VA 675 Sunset Hills Road**	**0**	**4**	**0**	**4**	**2030**
442	VSF41	103907	Construct/Widen	VA 8102 Scotts Crossing Rd	VA 123 Dolly Madison Blvd	Jones Branch Dr			0/2	4	2018
Loudoun County											
661	NRS		Construct	VA 606 Ramp	VA 606 Eastbound	VA 789 Lockridge Road Northbound			0	2	2020
330	VSL1B	97529, 105064	Widen/Upgrade	VA 606/607 Old Ox Rd/Loudoun County Parkway	VA 634 Moran Rd	VA 621 Evergreen Mills Rd	4	3	2	4	~~2017~~ 2018
566	VSL10E		Widen	VA 607 Loudoun County Parkway	US 50	VA 606 at new Arcola Blvd.	3	3	4	6	2030
275	VSL10bb		Widen/Upgrade	VA 607 Loudoun County Parkway	W&OD Trail	Redskin Park Drive	4	3	4	6	2025
890	VSL2C		Widen	VA 620 Braddock Rd	VA 659	Fairfax County Line	3	3	2	4	2025
889	VSL2D		Widen	VA 620 Braddock Rd	VA 659	Royal Hunter Drive	4	4	2	4	2025
884	NRS		Reconstruct	Braddock/Summerall/Supreme Intersection Improvements			4	4	2	2	2020
683	NRS		Construct	VA 625 Waxpool Road/ VA 607 Loudoun County Parkway Interchange			3	3	0	4	2019
689	VSL54	106996	Widen	VA 640 Farmwell Road	VA 1950 Smith Switch Road	VA 641 Ashburn Road	4	4	4	6	2020
335	VSL45	VSL45	Widen	VA 643	Leesburg Town Limits	Crosstrails Boulevard	3	3	2	4	2035
827	VSL65		Construct	VA 643 Shellhorn Extended	VA 606 Loudoun County Parkway	Moran Road	0	4	0	4	2020
825	VSL64		Construct	VA 645 Westwind Blvd	VA 607 Loudoun County Parkway	VA 606 Old Ox Rd.	0	4	0	4	2020
72	VSL4ac	76244 & 99481	Widen	VA 659 Belmont Ridge Road	VA 7 Leesburg Pike	VA 267 Dulles Greenway	4	3	2	4	2018
746	VSL4AD		Widen/Upgrade	VA 659 Belmont Ridge Road	VA 645 Croson Lane	VA 267 Dulles Greenway	4	3	2	4	2025
297	VSL4f		Widen	VA 659 Gum Spring Rd.	Prince William County Line	VA 620 Braddock Road	4	4	2	4	2035
641	VSL58		Construct	Ashburn Silver Line Station Connector Bridge	VA 267 Dulles Greenway	Ashburn Silver Line Station	4	4	0	4	2019
573 574 575	VSL61		Construct	VA 842 Arcola Boulevard (Southern Segment)	US 50	VA 607 Loudoun County Parkway	0	4	0	4	2022
76	VSL40F	102858	Construct	VA 901 Clairborne Parkway	VA 645 Croson Lane	VA 772 Ryan Road	0	4	0	4	2019
576	VSL63		Construct	VA 774 Creighton Road (completion of eastern end)	VA 659 Belmont Ridge Road	VA 621 Evergreen Mills Road	0	4	0	4	2025
883	VSL66		Widen	Croson Ln Widening	Clairborn	Mooreview Pkwy	4	4	2	4	2025
577	VSL56		Construct	Crosstrail Boulevard	VA 625 Sycolin Road	Kincaid Boulevard	0	4	0	4	2019
662	NRS	69870	Construct	VA 868 Davis Drive	VA 606 Old Ox Road	VA 846 Sterling Boulevard	0	4	0	4	2025
888	NRS		Reconstruct	Elk Lick Rd Intersections	US 50	Tall CedarsPkwy	4	4	2	2	2020
887	NRS		ReAlign Intersections	Evergreen Mills Rd	Watson Road	Reservoir Road	3	3	2	2	2020
578 580	VSL62		Widen	VA 621 Evergreen Mills Road (Eastern Segment)	VA 607 Loudoun County Parkway	VA 659 Belmont Ridge Road	4	4	2	4	2025
564 & 565	VSL67A		Construct	~~Glascock Road~~ Dulles West Blvd. Phase I & Phase II	Dulles Landing Drive	Arcola Blvd	0	4	0	4	~~2023~~ 2022

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1031	VSL67B		Construct	~~Glascock Road~~ Dulles West Blvd. Phase III	Arcola Blvd	Northstar Dr.	0	4	0	4	~~2023~~ 2025
886	NRS		Construct	Moorefield Boulevard	Mooreview Parkway	Moorefield Station	0	4	0	3	2020
568	VSL57		Construct	VA 2298 Mooreview Parkway (Missing Link)	VA 2773 Amberleigh Farm Drive	VA 772 Old Ryan Road	0	4	0	4	2019
570	VP12R	106994	Construct	VA 3171 Northstar Boulevard (Missing Link #79)	Shreveport Drive	US 50	0	3 ~~2~~	0	4	2022
572	VSL59		Construct	VA 1071 Prentice Drive (Western Segment)	VA 607 Loudoun County Parkway	Loudoun Station Drive	0	4	0	4	2019
556	VSL59		Construct	VA 1071 Prentice Drive Eastern Segment	VA 789 Lockridge Road	VA 607 Loudoun County Parkway	0	4	0	4	2019
826	VSL48B		Construct	VA 2401 RIverside Parkway	VA 607 Loudoun County Parkway	VA 2020 Ashburn Village Boulevard Extension	0	4	0	4	2018
559	VSL49B		Construct	VA 1061 Russell Branch Parkway (Western Segment)	VA 659 Belmont Ridge Road	Tournament Parkway	0	4	0	4	2017
563	VSL55A		Construct	Shreveport Drive (Western Segment)	VA 621 Evergreen Mills Road	VA 659 Belmont Ridge Road	0	4	0	4	2025
562	VSL60	105783	Construct	VA 846 Sterling Boulevard Extension	VA 1036 Pacific Boulevard	VA 634 Moran Road	0	4	0	4	2025
555		87106	Widen	VA 2119 Waxpool Road	VA 2070 Demott Road	VA 2020 Ashburn Village Boulevard	4	4	2	4	2018
Prince William County											
257	VSP25c		Widen	VA 1781 Telegraph Rd.	VA 294 (Prince William Pkwy)	VA 849 (Caton Hill Rd.)	4	4	2	4	2025
996	**VSP3D**		**Widen**	**VA 621 Devlin Road**	**Linton Hall Road**	**Wellington Road**			**2**	**4**	**2028**
79	VSP3b	80347	Widen/Upgrade	VA 621 Balls Ford Road	Sudley Rd	Doane Drive	4	3	2	4	2022
690	VSP64		Construct	VA 621 Balls Ford Road Relocated	Doane Drive	Devlin Road	0	3	0	4	2022
376	VSP5e	103484	Widen	VA 640 Minnieville Road	VA 643 Spriggs Road	VA 234 Dumfries Road	3	3	2	4	2018
998	**VSP17C**		**Widen**	**VA 674 Wellington Road**	**University Boulevard**	**VA 621 Devlin Road/Balls Ford Road**			**2**	**4**	**2028**
646 581	VSP17ba		Widen	VA 674 Wellington Road	VA 621 Devlin Road/Balls Ford Road	VA 234 Prince William Parkway Bypass	3	3	2	4	2025
338 589	VSP17b		Widen	VA 674 Wellington Road	VA 234 Bypass Prince William Parkway	VA 668 Rixlew Lane	3	3	2	4	2035
308	VSP18	VSP18	Widen	VA 676 Catharpin Rd.	VA 55 John Marshall Highway	Heathcote Blvd.	3	3	2	4	2040
325	VSP20C	VSP20c	Widen/Upgrade	VA 1392 Rippon Boulevard Extension	West of Wigeon Way	Rippon VRE Station	4	3	2	4	2040
83	VSP47e		Construct	University Boulevard	Sudley Manor Drive	Wellington Rd/Progress Ct.	0	3	0	4	2035
82	VSP2i	92999	Widen	VA 619 Fuller Road	US 1	VA 619 Fuller Heights Road Relocated			2	4	2025
593	VSP65		Widen	VA 638 Neabsco Mills Road	US 1 Jefferson Davis Highway	~~S~~moke Ct.			2	4	2023
642	VSP62a		Construct	Rollins Ford Road	Wellington Road	Linton Hall Road	0	3	0	4	2040
591	VSP66		Construct	VA 627 Van Buren Road	VA 234 Dumfries Road	VA 610 Cardinal Drive	0	4	0	4	2040
401	NRS		Construct	McGraws Corner Dr. / Thoroughfare Rd.	US 29 Lee Highway @ Virginia Oaks Dr.	US 15 @ Thoroughfare Dr.	0	4	0	4	2040
219	VSP25b	104802	Widen	VA 1781 New Telegraph Road/Summit School Road	Horner Road/Park'n'Ride Lot Access	VA 2190 Summit School Road Extension	4	4	2	4	2025

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							From	To	From	To	
745	NRS		Construct	VA 234 Potomac Shores Parkway	US 1 Jefferson Davis Highway	VA 4700 River Heritage Boulevard	0	4	0	4	2020
743	NRS		Widen	VA 4700 River Heritage Boulevard	VA 234 Potomac Shores Parkway	Dominica Drive	4	4	2	4	2020
744	NRS		Construct	VA 4700 River Heritage Boulevard	Dominica Drive	VA 234 Potomac Shores Parkway	0	4	0	2	2020
643	VSP67	104802	Construct	VA 2190 Summit School Road Extension	Telegraph Road	VA 2190 Summit School Road (south end of existing)	4	4	2	4	2025
FAMPO											
	VI2RFA		Construct/revise operations	I-95 :HOV/Bus/HOT Lanes- single reversible lane	north of Garrisonville Road (south of Aquia Creek) at flyover	south of Garrisonville Road	1	1	0	1	2018
	VI2RFB		Construct	I 95 : HOV / Bus / HOT Lanes: Southbound Ramp	South of Garrisonville Road	SB HOT Lanes to SB GP Lanes	1	1	0	1	2018
	VI2RFC		Construct	I 95 : HOV / Bus / HOT Lanes: Northbound Ramp	South of Garrisonville Road	NB GP Lanes to NB HOT Lanes	1	1	0	1	2018
	VI2rf		Construct	I 95 : HOV / Bus / HOT Lanes	Rte. 610 (Garrisonville Rd.) in Stafford County	VA 17 Warrenton Rd. (exit 133)	1	1	0	2	2022
			Study	I 95 : HOV / Bus / HOT Lanes	VA 17 Warrenton Road (exit 133)	VA 17 in Spotsylvania County (exit 126)	1	1	0	2	not coded
			Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Telegraph Road (North of Aquia Creek)	SB GP Lanes to SB HOT Lanes	1	1	0	1	2022
			Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	South of Telegraph Road (North of Aquia Creek)	NB HOT Lanes to NB GP Lanes	1	1	0	1	2022
			Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	North of Garrisonville Road (south of Aquia Creek)	NB GP Lanes to NB HOT Lanes	1	1	0	1	2022
	VI2RFD		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	At Courthouse Rd.	NB AM on-ramp	1	1	0	1	2022
	VI2RFE		Construct	I 95 : HOV / Bus / HOT Lanes: Ramp	at Courthouse Rd.	SB PM off-ramp	1	1	0	1	2022
	FAI1F		Widen	I-95 northbound	Exit 126 (US 1/VA17)	Exit 130 (VA 3 Plank Rd.)	1	1	3	4	~~2045~~ 2035
	FAI1G		Construct	I-95 northbound 3 lane collector distributor road	Exit 130 (VA 3 Plank Rd.)	Exit 133 (VA 17 Warrenton Rd.)	1	1	3	6	~~2030~~ 2025
	FAI1H		Widen	I-95 northbound	Exit 133 (VA 17 Warrenton Rd.)	Exit 136 (Centerport Parkway)	1	1	3	4	2045
	FAI1HA		Construct	I-95 4th auxiliary lane	Exit 133 (VA 17 Warrenton Rd.)	Exit 136 (Centerport Parkway)	1	1	X	X+1	2045
	FAI1J		Widen	I-95 southbound	~~1.3 miles south of~~ Exit 130	Exit 126 (US 1/VA17)	1	1	3	4	~~2030~~ 2035
	FAI1K		Construct	I-95 southbound	1.3 miles south of Exit 130	.3 miles north of Truslow Rd	1	1	x	x+3cd	2025
	FAS22A		Widen	VA-3 (William St)	Gateway Blvd.	William St./Blue Gray Parkway			4	6	2030
	FAS22		Widen	VA 3 (Spotsylvania)	Chewing Lane	VA 627 (Gordon Rd.)	2	2	4	6	2013
	FAP6E		Widen	Tidewater Trail US 17 Business/VA 2	~~SCL Frederickburg~~ Beulah Salisbury Dr.	US 17 Bypass (Mills Dr.)	2	2	2	4	~~2040~~ 2035
	FAP6		Widen	US 17	US 1	Hospital Blvd.	2	2		4	2025

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	FAP6C		Widen	US 17 (Warrenton Rd.)	McLane Drive	Stafford Lakes Parkway	2	2	4	6	2020
	FAP7A		Widen	VA 218 (Butler Rd.)	Carter St.	Castle Rock Dr.	4	4	2	4	2045
Fredericksburg											
			Construct	Carl D. Silver Pkwy Ext.	current terminus	Gordon Shelton Blvd.			0	4	2035
	FAU1			Fall Hill Ave./ Mary Washington Blvd. Extension	Mary Wash. Blvd.	Gordon Shelton Blvd.			2	4	2020
				Lafayette Blvd.	~~Sophia St~~ City Limit	VA-3 (Blue & Gray Parkway)				4	~~2025~~ 2045
	FAU2			Gateway Blvd. Extended	William St. (PR-3)	Fall Hill Ave (UR-3965)			0	4	~~2030~~ 2035
Stafford County Secondary											
	NRS			VA 610	Shenandoah Ln	Oriville Rd				6	2021
	FAS5b			VA 630 (Courthouse Rd)	~~Winding Creek Dr.~~ Austin Ridge Dr.	VA 648 (Shelton Shop Rd)	4	4	2	4	~~2030~~ 2035
	FAS13			VA 648 (Shelton Shop Rd.)	VA 610 (Garrisonville Rd)	VA 627 (Mountainview Rd)	4	4	2	4	2035
	FAS3E		Widen	Garrisonville Rd.	Eustace Rd.	Shelton Shop Rd.			4	6	2045
Spotsylvania County Secondary											
	FAS26A			VA 606	US 1	I-95				4	2025
	FAS18B			VA-620 (Harrison Rd.)	US-1 BUS (Lafayette Blvd.)	VA-639 (Salem Church Rd.)			2	4	~~2025~~ 2035
	FAS19			VA 636 (Mine Rd./ Hood Dr.)	VA 208 (Courthouse Rd.)	US 1	4	4	2	4	2025
	FAS19B			VA 636 (Mine Rd./ Hood Dr.)	Falcon Dr. / Spotsylvania Ave	Landsdowne Rd	4	4		4	2035

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APPENDIX C

Interagency Consultation and Public Involvement Process

TPB Public Comment Procedures and Opportunities Related the Air Quality Conformity Planning Process

As described in the 2014 TPB *Participation Plan*, it is the policy of the TPB to carry out the following public involvement activities with respect to air quality conformity regulations governing TPB plans and programs.

- Ensure that the TPB follows federal requirements for public involvement, including a public comment period of at least 30 days prior to the approval of air quality conformity determinations that are part of the Long Range Transportation Plan (LRTP) and the Transportation Improvement Program (TIP) and other major documents, and the development and consideration of written responses to comments received.

    - Provide notification of the opportunity to comment during the public comment period through a variety of means, including:
        - Direct email notifications that the public comment period has begun;
        - Paid advertisements in local newspapers;
        - Notices in the TPB's monthly newsletter the *TPB News;*
        - Information in other publications, including the TPB *Weekly Report;*
        - Announcements on TPB websites including the COG Transportation homepage http://www.mwcog.org/transportation,
        - Agenda items on key TPB committee's including the Citizens Advisory Committee, Access for All Advisory Committee and Technical Committee;
        - At least one formal public meeting during the development process for the TIP.

    - Comments from the public can be submitted on the TPB's web site, by email, postal mail, or in person at the beginning of TPB meetings. All comments are posted on the web site and are grouped according to whether the comment was submitted by a private citizen, a business or non-profit organization, or a government official or representative body. Comments can also be sorted according to the nature of the comment.

    - The TPB shall provide an additional opportunity for public comment, if the final LRTP or TIP differs significantly from the version that was made available for public comment by the TPB and raises new material issues which interested parties could not reasonably have foreseen from the public involvement efforts.

    - When significant written and oral comments are received on the draft LRTP and TIP (including the financial plans) as a result of the participation process in this section or the interagency consultation process required under the EPA

transportation conformity regulations (40 CFR part 93), a summary, analysis, and report on the disposition of comments shall be made as part of the final metropolitan transportation plan and TIP.

- In addition to the formal public comment process described above, the following ongoing public involvement opportunities are in place and can be used to provide comment on air quality conformity determinations related to the TPB's plans and programs, and to learn about the conformity process:
    - A period of time for public comment is provided at the beginning of each TPB meeting.
    - The TPB website provides online opportunities for public comment.
    - All meetings of the TPB's committees are open to public.
    - The TPB strives to provide reasonable public access to technical and policy information through its website, distribution of paper documents, and through telephone and email communications.
    - Information about the planning process, including air quality conformity issues, is provided through a variety of ad hoc meetings and presentations that regularly occur throughout the region.

TPB Consultation and Public Comment Opportunities for the Air Quality Conformity Analysis of the FY 2021-2024 TIP and 2020 Amendment to the Visualize 2045 Plan

The following lists TPB consultation and public comment opportunities during the air quality conformity analysis:

- February 27th, 2019 – The TPB director gave an in-depth presentation on air quality in transportation planning to the Metropolitan Washington Air Quality Committee (MWAQC)
- May 3rd, 2019 – TPB Technical Committee presentation on the process, schedule, and requirements for the air quality conformity analysis of the FY2021-2024 Transportation Improvement Program (TIP) and 2020 Amendment to the Visualize 2045 Long Range Transportation Plan (LRTP).
- June 7th, 2019 – TPB Technical Committee presentation on the Air Quality Conformity Scope of Work and project inputs for the conformity analysis of the FY 2021-2024 TIP and 2020 Amendment to Visualize 2045.
- June 11th, 2019 – MWAQC Technical Advisory Committee (TAC) presentation on the 2020 Amendment to Visualize 2045 conformity analysis Scope of Work and project inputs.
- June 14, 2019– Monthly conformity consultation letter referenced the Scope of Work and the project inputs for the air quality conformity analysis of the FY 2021-2024 TIP and 2020 Amendment to Visualize 2045.
- June 19th, 2019 – Opportunity for the public comment at the TPB meeting.
- June 19th, 2019 – TPB presentation on project inputs and Scope of Work for the air quality conformity analysis of the FY 2021-2024 TIP and 2020 Amendment to Visualize 2045.
- July 12th, 2019 – TPB Technical Committee presentation on project inputs and Scope of Work for the air quality conformity analysis of the FY 2021-2024 TIP and 2020 Amendment to Visualize 2045
- July 18th, 2019 – TPB Citizens Advisory Committee (CAC) presentation on an overview of the FY 2021-2024 TIP and the required air quality conformity analysis.
- July 19th, 2019 Monthly conformity consultation letter referenced the TPB approval of the Scope of Work and project inputs for the air quality conformity analysis of the FY 2021-2024 TIP and the 2020 Amendment to Visualize 2045.
- July 24th, 2019 – Opportunity for public comment at the TPB meeting.
- July 24th, 2019 – The TPB approved the project inputs and the air quality conformity Scope of Work. TPB staff posted meeting updates on Twitter https://twitter.com/NatCapRegTPB.
- July 30th, 2019 – Article in *TPB News* provided information on the TPB approval of project inputs and the air quality conformity Scope of Work.

- December 10th, 2019 – Article in *TPB News* provided information on a public TIP forum scheduled for January 16, 2020 to explain how region's transportation agencies prioritize and fund major projects. https://www.mwcog.org/newsroom/2019/12/10/find-out-which-projects-are-scheduled-for-funding-in-the-next-few-years-at-the-tpbs-tip-forum/
- January 10th, 2020 – TPB Technical Committee was briefed on the status of the air quality conformity analysis of the FY2021-2024 TIP and the 2020 Amendment to Visualize 2045. https://www.mwcog.org/newsroom/2020/02/10/air-quality-conformity-explained/
- January 16th, 2020 – TIP forum on the FY 2021-2024 TIP with Twitter posts https://twitter.com/NatCapRegTPB.
- January 31st, 2020 – Beginning of 30-day public comment period; posted on Twitter; summary conformity report and project listing posted on COG website.
- January 31st, 2020 – Paid advertisements posted in the ***Afro-American, Washington Hispanic,*** and ***Washington Post*** announcing a 30-day public comment period for the air quality conformity analysis results, the FY 2021-2024 TIP and the 2020 Amendment to Visualize 2045.
- February 7th, 2020 – TPB Technical Committee was briefed on the FY 2021-2024 TIP and air quality conformity analysis of the TIP and the 2020 Amendment to Visualize 2045.
- February 10th, 2020 – Article in *TPB News* explaining air quality conformity. https://www.mwcog.org/newsroom/2020/02/10/air-quality-conformity-explained/.
- February 10th MWAQC Technical Advisory Committee (TAC) presentation on the results of the air quality conformity analysis.
- February 11th, 2020 – TPB Twitter post on "What the heck is Air Quality Conformity? We have the answer in the latest installment of *MPO 101*" https://twitter.com/NatCapRegTPB.
- February 13th, 2020 – TPB Twitter post about upcoming air quality conformity results at the TPB's February 19, 2020 meeting. https://twitter.com/NatCapRegTPB.
- February 14th, 2020 - Monthly conformity consultation letter referenced the FY 2021-2024 TIP and air quality conformity analysis of the TIP and the 2020 Amendment to Visualize 2045.
- February 19th, 2020 – Opportunity for the public comment at the TPB meeting.
- February 19th, 2020 – TPB presentation on the FY 2021-2024 TIP and on the air quality conformity analysis of the TIP and the 2020 Amendment to Visualize 2045.
- February 19th, 2020 – TPB Twitter account post on the schedule for approving the FY 2021-2024 TIP and air quality conformity analysis of the TIP and the 2020 Amendment to Visualize 2045. https://twitter.com/NatCapRegTPB.
- February 24th, 2020 – Article in *TPB News* about the TPB briefing on the FY2021-2024 TIP and air quality conformity analysis of the TIP and 2020 Amendment to Visualize 2045.

https://www.mwcog.org/newsroom/2020/02/24/heres-what-happened-at-the-february-tpb-meeting/.

- March 6th, 2020 – TPB Technical Committee was briefed on the comments received during the 30-day comment period that ended on March 1, 2020 for the FY 2021-2024 TIP, 2020 Amendment to Visualize 2045, and air quality conformity analysis.
- March 10th, 2020 – Article in the *TPB News* indicating that the TPB would be asked to approve the FY 2021-2024 TIP and air quality conformity analysis of the TIP and 2020 Amendment to Visualize 2045 at the upcoming Board meeting on March 18, 2020. https://www.mwcog.org/newsroom/2020/03/10/heres-whats-coming-up-at-the-march-tpb-meeting/.
- March 12th, 2020 – TPB CAC was briefed on the air quality conformity analysis of the FY 2021-2024 TIP and the 2020 Amendment to Visualize 2045.
- March 13th, 2020 – Monthly conformity consultation letter referenced results of the air quality conformity analysis of the 2020 Amendment to Visualize 2045 and the FY 2021-2024 TIP.
- March 18th, 2020 – Opportunity for public comment at the TPB meeting.
- March 18th, 2020 – TPB responded to comments received during the public comment period and approved the air quality conformity analysis, the 2020 Amendment to Visualize 2045, and the FY 2021-2024 TIP.

National Capital Region
Transportation Planning Board

July 19, 2019

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

FROM: Kanti Srikanth, COG Transportation Planning Director

SUBJECT: Consultation with respect to TPB Plans and Programs

Enclosure:
1) Agenda for July 24, 2019 TPB meeting

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

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

Item 5 is the Director's report which includes letters sent and received for the TPB. This month's packet includes a letter from Kanti Srikanth to Mr. Norman Whitaker regarding a sensitivity test that TPB staff conducted for VDOT. The sensitivity test was an assessment of the potential impact of minor updates to the Beltway HOT lanes project on the regional air quality conformity analysis of the TPB's Long Range Transportation Plan (Visualize 2045). The test showed that the proposed updates have a minor impact on regional emissions, and would not change the results of the air quality conformity determination for the approved Visualize 2045 Plan and FY 2019-2024 Transportation Improvement Program (TIP). A copy of the letter is posted with the July TPB Technical Committee meeting materials at https://www.mwcog.org/committees/tpbtech/.

Item 8 is action item in which the Board will be asked to approve the Scope of Work for the Air Quality Conformity Analysis of the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan. The Board was briefed on the inputs received and the Scope of Work for an air quality conformity analysis of the FY 2021-2024 TIP and 2020 Amendment to the Visualize 2045 Plan in June.

Item 11 is action item in which the Board will be asked to approve an amendment to update funding for the FY 2019-2024 TIP for the Governor Harry W. Nice/Senator Thomas "Mac" Middleton Bridge Replacement project to be consistent with the currently approved Maryland Consolidated Transportation Program (CTP). This project is already included in

the Air Quality Conformity Analysis of Visualize 2045 and the FY 2019-2024 TIP, and these funds are included in the Visualize 2045 financial analysis. This action was deferred from the May agenda.

National Capital Region
Transportation Planning Board

TRANSPORTATION PLANNING BOARD

Wednesday, July 24, 2019
12:00 - 2:00 P.M.
Walter A. Scheiber Board Room

AGENDA

12:00 P.M. **1. PUBLIC COMMENT ON TPB PROCEDURES AND ACTIVITIES**
Martin Nohe, TPB Chairman
Interested members of the public will be given the opportunity to make brief comments on transportation issues under consideration by the TPB. Each speaker will be allowed up to three minutes to present his or her views. Board members will have an opportunity to ask questions of the speakers, and to engage in limited discussion. Speakers are encouraged to bring written copies of their remarks (65 copies) for distribution at the meeting.

12:20 P.M. **2. APPROVAL OF THE MINUTES OF THE JUNE 19, 2019 MEETING**
Martin Nohe, TPB Chairman
- Minutes of the June 2019 TPB Meeting

12:25 P.M. **3. REPORT OF THE TECHNICAL COMMITTEE**
Mark Rawlings, TPB Technical Committee Chairman
- July 2019 Technical Committee Summary

12:30 P.M. **4. REPORT OF THE CITIZENS ADVISORY COMMITTEE (CAC)**
Robert Jackson, TPB Citizens Advisory Committee Chairman

12:40 P.M. **5. STEERING COMMITTEE ACTIONS AND REPORT OF THE DIRECTOR**
Kanti Srikanth, TPB Staff Director
This agenda item includes Steering Committee actions, letters sent/received, and announcements and updates.
- Steering Committee Actions and Report of the Director

12:45 P.M. **6. CHAIRMAN'S REMARKS**
Martin Nohe, TPB Chairman

ACTION ITEMS

12:50 P.M. **7. REGIONAL CAR FREE DAYS 2019 PROCLAMATION**

Nicholas Ramfos, TPB Transportation Operations Programs Director

In an effort to create awareness and encourage residents to go car free by using public transportation, bicycling or walking, or go car lite and carpool, Regional Car Free Day events are being organized in the region for September 21, 22, and 23. These events will encourage the community and regional decision-makers to support car free policies and initiatives.

Action: Approve the Car Free Days 2019 Proclamation

- Car Free Days 2019
- Presentation: Car Free Days 2019

12:55 P.M. **8. FY 2021-2024 TIP AND VISUALIZE 2045 UPDATES: INPUTS FOR THE AIR QUALITY CONFORMITY ANALYSIS AND THE AIR QUALITY CONFORMITY SCOPE OF WORK**

Jane Posey, TPB Transportation Engineer

The board was briefed on the inputs received and the Scope of Work for an air quality conformity analysis of the FY 2021-2024 TIP and 2020 Amendment to the Visualize 2045 Plan in June. The board will be asked to approve the project inputs and the air quality conformity Scope of Work.

Action: Adopt Resolution R1-2020 to approve the project submissions for inclusion in the Air Quality Conformity Analysis of the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan.

Action: Approve the Scope of Work for the Air Quality Conformity Analysis of the FY 2021-2024 TIP and the 2020 Amendment to the Visualize 2045 Plan

- FY 2021-2024 TIP and Visualize 2045 Updates: Inputs for the and Air Quality Conformity Analysis and the Air Quality Conformity Scope of Work

1:10 P.M. **9. FY 2020 TRANSPORTATION ALTERNATIVES SET ASIDE PROGRAM FOR MARYLAND TPB JURISDICTIONS**

John Swanson, TPB Transportation Planner

A portion of the federal Transportation Alternatives Set-Aside Program (TAP) is sub-allocated to the TPB for project selection in suburban Maryland. The board will be briefed on the recommended projects and asked to approve them.

Action: Adopt Resolution R2-2020 to approve projects for funding under the Federal Transportation Alternatives Set Aside Program for Suburban Maryland for FY 2020.

- FY 2020 Transportation Alternatives Set Aside Program for Maryland TPB Jurisdictions
- Presentation: FY 2020 MD Transportation Alternatives Program Projects

1:20 P.M. **10. FY 2020 TRANSPORTATION ALTERNATIVES SET-ASIDE PROGRAM FOR THE DISTRICT OF COLUMBIA**

John Swanson, TPB Transportation Planner

A portion of the federal Transportation Alternatives Set Aside Program is sub-allocated to the TPB for project selection in the District of Columbia. The board will be briefed on the recommended projects and asked to approve them.

Action: Adopt Resolution R3-2020 to approve projects for funding under the Federal Transportation Alternatives Set Aside Program for DC for FY 2020.

- FY 2020 Transportation Alternatives Set-Aside Program for the District of Columbia

- Presentation: FY 2020 DC Transportation Alternatives Program Projects

1:25 P.M. **11. FY 2019-2024 TIP AMENDMENT TO UPDATE PROJECT AND FUNDING INFORMATION FOR THE GOVERNOR HARRY W. NICE/SENATOR THOMAS "MAC" MIDDLETON BRIDGE REPLACEMENT PROJECT, AS REQUESTED BY MDOT**

Earl R. Lewis, MDOT

MDOT has requested an amendment to update funding for the FY 2019-2024 TIP for the Governor Harry W. Nice/Senator Thomas "Mac" Middleton Bridge Replacement project to be consistent with the currently approved Maryland Consolidated Transportation Program (CTP). This project is already included in the Air Quality Conformity Analysis of Visualize 2045 and the FY 2019-2024 TIP, and these funds are included in the Visualize 2045 financial analysis. This action was deferred from the May agenda.

Action: Approve Resolution R4-2020 to amend the FY 2019-2024 TIP.

- FY 2019-2024 TIP Amendment to Update Project and Funding Information for the Governor Harry W. Nice/Senator Thomas "Mac" Middleton Bridge Replacement Project, As Requested By MDOT

1:40 P.M. **12. BUS TRANSFORMATION PROJECT: TPB COMMENTS**

Kanti Srikanth, TPB Staff Director

At the June meeting, TPB members expressed interest in commenting on the Bus Transformation Project Draft Strategy from a TPB perspective.

Action: Approve draft letter.

- Bus Transformation Project: TPB Comments

NOTICE ITEM

1:55 P.M. **13. PROPOSED AMENDMENT TO UPDATE PROJECTS AND FUNDING IN THE DISTRICT OF COLUMBIA SECTION OF THE FY 2019-2024 TIP**

Jim Sebastian, DDOT

The District Department of Transportation (DDOT) has requested an amendment to update projects and funding in the District section of the FY 2019-2024 TIP. The amendment was released for a 30-day public comment and inter-agency review period on July 24, 2019. The board will be asked to approve this amendment at its September meeting.

- Proposed Amendment to Update Projects and Funding in the District of Columbia Section of the FY 2019-2024 TIP

2:00 P.M. **14. ADJOURN**

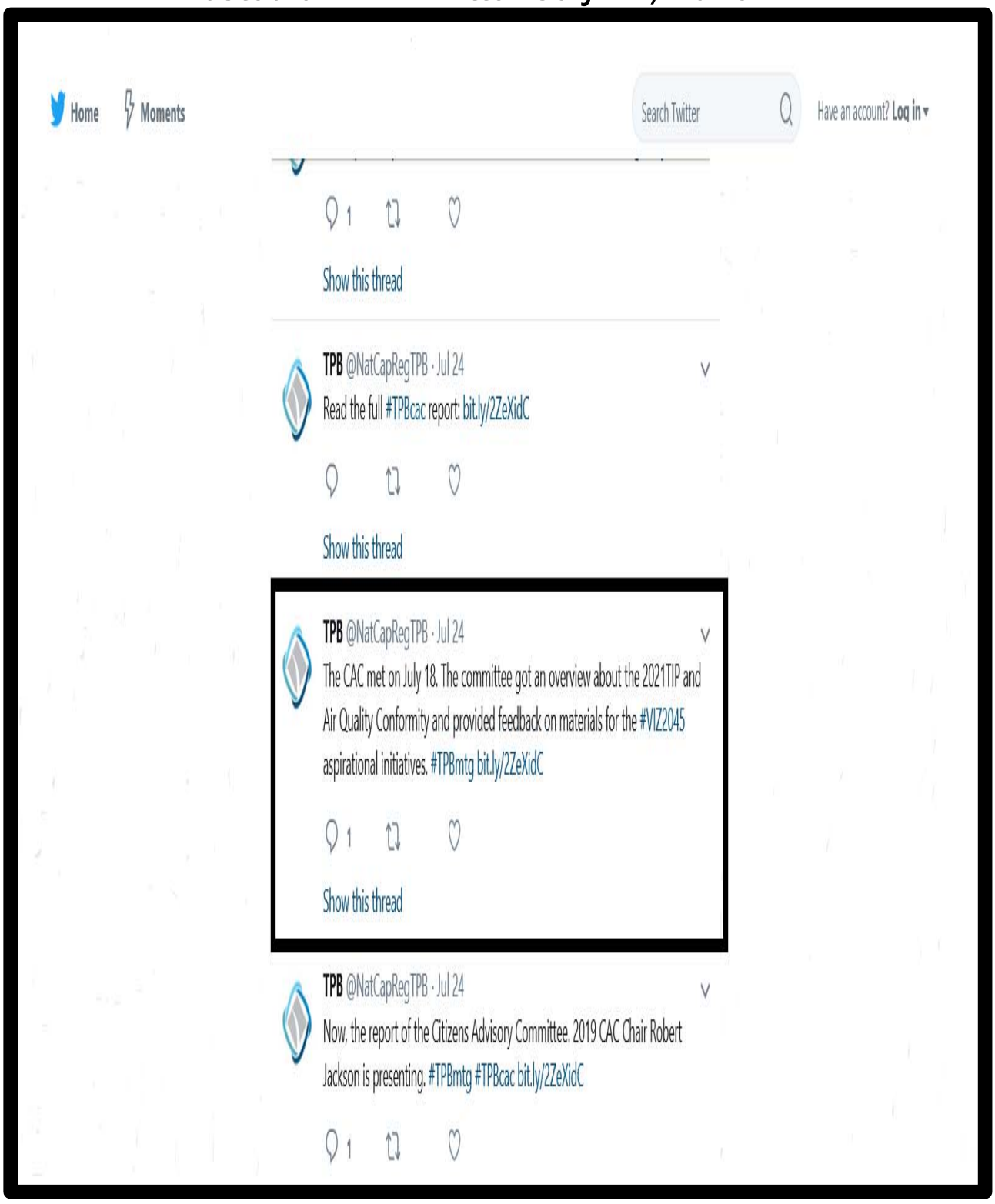
The next meeting is scheduled for September 18, 2019.

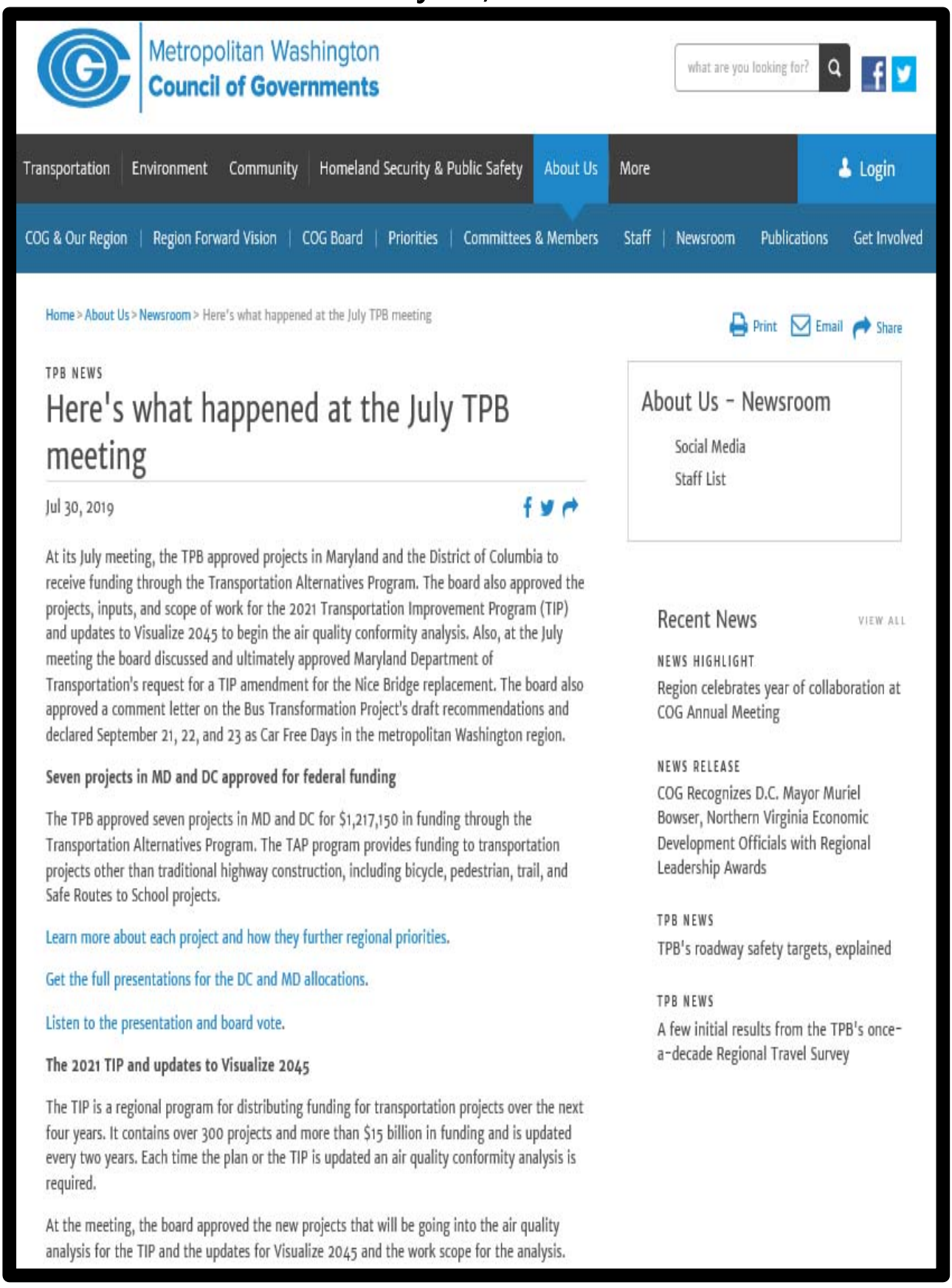
MEETING AUDIO

Stream live audio of TPB meetings and
listen to recorded audio from past meetings at:
www.mwcog.org/TPBmtg

Twitter: TPB Approved the Inputs and Scope of Work for the 2021 TIP and Updates to Visualize 2045
July 24, 2019

Twitter: TPB CAC reviewed 2021 TIP and Air Quality Conformity
Posted on TPB Twitter July 24, 2019





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TPB NEWS

Here's what happened at the July TPB meeting

Jul 30, 2019

At its July meeting, the TPB approved projects in Maryland and the District of Columbia to receive funding through the Transportation Alternatives Program. The board also approved the projects, inputs, and scope of work for the 2021 Transportation Improvement Program (TIP) and updates to Visualize 2045 to begin the air quality conformity analysis. Also, at the July meeting the board discussed and ultimately approved Maryland Department of Transportation's request for a TIP amendment for the Nice Bridge replacement. The board also approved a comment letter on the Bus Transformation Project's draft recommendations and declared September 21, 22, and 23 as Car Free Days in the metropolitan Washington region.

Seven projects in MD and DC approved for federal funding

The TPB approved seven projects in MD and DC for $1,217,150 in funding through the Transportation Alternatives Program. The TAP program provides funding to transportation projects other than traditional highway construction, including bicycle, pedestrian, trail, and Safe Routes to School projects.

Learn more about each project and how they further regional priorities.

Get the full presentations for the DC and MD allocations.

Listen to the presentation and board vote.

The 2021 TIP and updates to Visualize 2045

The TIP is a regional program for distributing funding for transportation projects over the next four years. It contains over 300 projects and more than $15 billion in funding and is updated every two years. Each time the plan or the TIP is updated an air quality conformity analysis is required.

At the meeting, the board approved the new projects that will be going into the air quality analysis for the TIP and the updates for Visualize 2045 and the work scope for the analysis.

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https://www.mwcog.org/newsroom/2019/07/30/heres-what-happened-at-the-july-tpb-meeting/

The 2021 TIP and updates to Visualize 2045

The TIP is a regional program for distributing funding for transportation projects over the next four years. It contains over 300 projects and more than $15 billion in funding and is updated every two years. Each time the plan or the TIP is updated an air quality conformity analysis is required.

At the meeting, the board approved the new projects that will be going into the air quality analysis for the TIP and the updates for Visualize 2045 and the work scope for the analysis.

Learn more about the 2021 TIP and updates to Visualize 2045.

Listen to the presentation and board questions.

The TPB approved a TIP amendment for MDOT's Nice-Middleton Bridge project

The TPB approved an amendment to its FY 2019-2024 TIP to include the balance funding for the Governor Harry W. Nice/Senator Thomas "Mac" Middleton Bridge replacement project. With the approval, Maryland will now be able to pursue a federal loan guarantee to help finance this $769M infrastructure project while it continues to work on the design for the new bridge.

The TPB has supported Maryland's efforts to accelerate and accomplish the replacement and upgrade of this vital link in the region's transportation infrastructure. The board has also highlighted important bicycle and pedestrian safety elements that it prefers to be part of the design. Last fall, the TPB sent a letter to Maryland asking that the state consider only designs that include a barrier-separated facility for bicyclists and pedestrians on the new bridge.

In May, the board deferred action on an amendment to the TIP that would update funding information for the Nice Bridge replacement in Maryland. TPB members were concerned about not knowing how safety accommodations for people biking and walking across the bridge would be made in the final design.

MDOT requested the amendment to add funding to the project information which would provide the balance funding needed to construct the replacement bridge. At the June meeting, MDOT and MDTA clarified some of the details about the bridge's location and the design options that are available. At the July meeting the board approved the amendment.

Maryland officials have said they have sought alternative design proposals and cost estimates for two designs for the bridge-one with a barrier-separated facility for bicyclists and pedestrians and one without it.

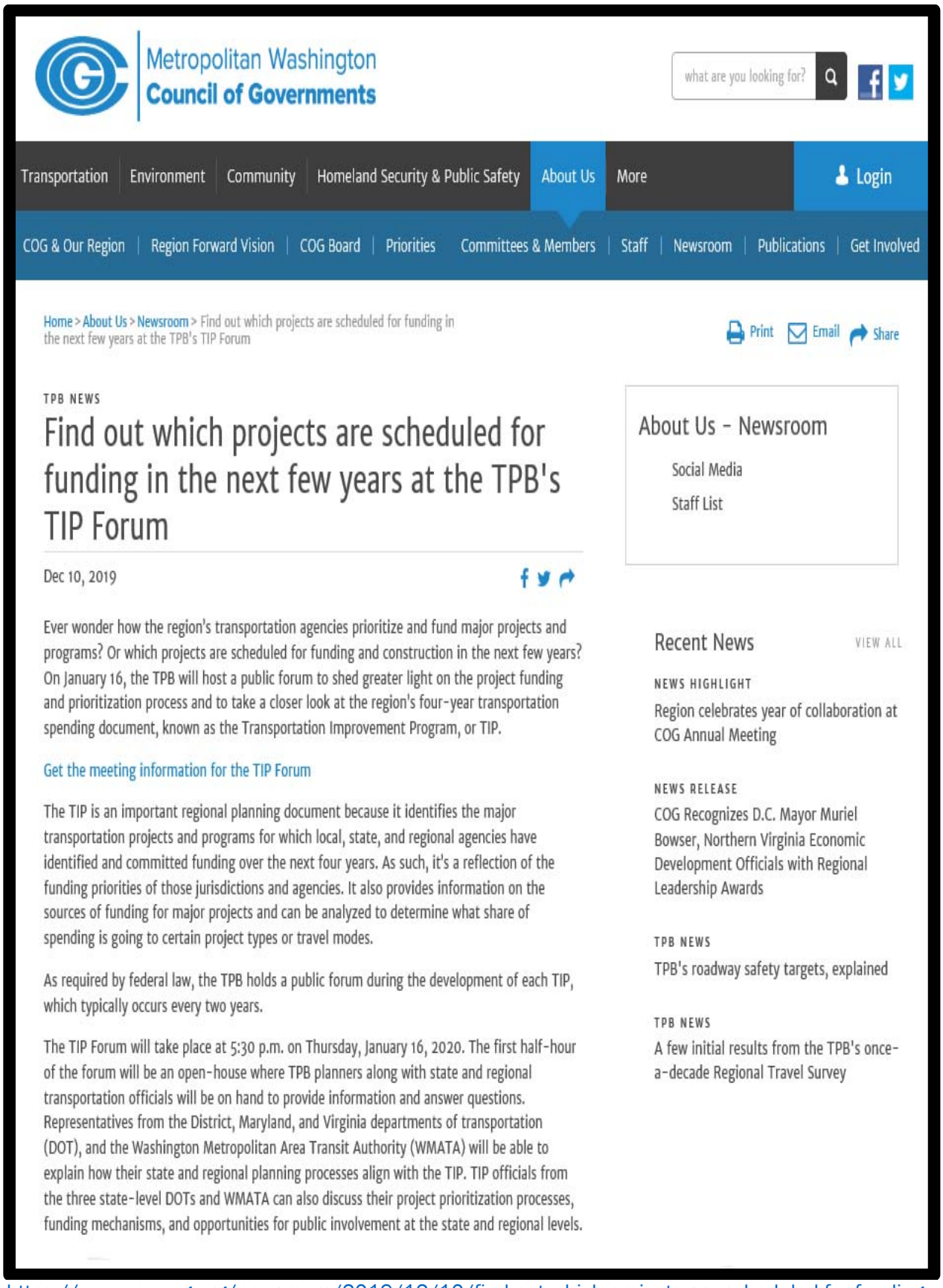
During the board discussion some board members expressed frustration with MDOT's process and said that they thought it is important to request designs that include a protected bike lane as opposed to two designs, one with the protected lane and one with a shared lane.

Maryland committed to come back to the TPB in December, when it expects to have reviewed alternative design proposals, to report on how the TPB's preference for a barrier separated facility has been addressed in the design.

Ultimately the board approved the amendment so that MDOT can apply for the funding.

The project has been in the TPB's long-range plan 2010 and is now anticipated to be complete in 2023.

https://www.mwcog.org/newsroom/2019/07/30/heres-what-happened-at-the-july-tpb-meeting/



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TPB NEWS

Find out which projects are scheduled for funding in the next few years at the TPB's TIP Forum

Dec 10, 2019

Ever wonder how the region's transportation agencies prioritize and fund major projects and programs? Or which projects are scheduled for funding and construction in the next few years? On January 16, the TPB will host a public forum to shed greater light on the project funding and prioritization process and to take a closer look at the region's four-year transportation spending document, known as the Transportation Improvement Program, or TIP.

Get the meeting information for the TIP Forum

The TIP is an important regional planning document because it identifies the major transportation projects and programs for which local, state, and regional agencies have identified and committed funding over the next four years. As such, it's a reflection of the funding priorities of those jurisdictions and agencies. It also provides information on the sources of funding for major projects and can be analyzed to determine what share of spending is going to certain project types or travel modes.

As required by federal law, the TPB holds a public forum during the development of each TIP, which typically occurs every two years.

The TIP Forum will take place at 5:30 p.m. on Thursday, January 16, 2020. The first half-hour of the forum will be an open-house where TPB planners along with state and regional transportation officials will be on hand to provide information and answer questions. Representatives from the District, Maryland, and Virginia departments of transportation (DOT), and the Washington Metropolitan Area Transit Authority (WMATA) will be able to explain how their state and regional planning processes align with the TIP. TIP officials from the three state-level DOTs and WMATA can also discuss their project prioritization processes, funding mechanisms, and opportunities for public involvement at the state and regional levels.

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Then, TPB planners will present highlights from the new TIP that's currently under development. These highlights will include some of the anticipated major projects and funding amounts. There will also be a preliminary report about how the DOTs are working toward reaching targets that they set for themselves on various performance measures. These measures include ensuring that a higher percentage of roadway pavement or bridges are in good condition or reducing the number of fatalities on roadway or transit systems. The performance will be compared with the funding levels the DOTs are programming for projects that would influences these measures. Once the forum concludes, the TPB's Citizens Advisory Committee will meet for its monthly meeting. Members of the public are welcome to attend.

A few major projects expected to be included in the draft FY 2021-2024 TIP include Maryland's Purple Line light rail connecting New Carrolton with Bethesda, new bikelanes in the District of Columbia, and the new Metro Station in Alexandria's Potomac Yards, which breaks ground this month and will help serve Amazon's HQ2 expansion.

The TPB will consider the draft FY 2021-2024 TIP for approval at its March meeting. A federally required 30-day comment period ahead of that meeting will give the public a formal opportunity to comment on the draft spending document.

Get TPB Public Comment notices delivered to your inbox.

Contact: **Andrew Austin**
Phone: **(202) 962-3353**
Email: **aaustin@mwcog.org**

Tags: TIP

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TPB Twitter: Public Forum on FY2021-2024 TIP
January 16, 2020

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TPB Twitter: FY2021-2024 TIP and 2020 Amendment to Visualize 2045 Plan out for Public Comment on January 31, 2020

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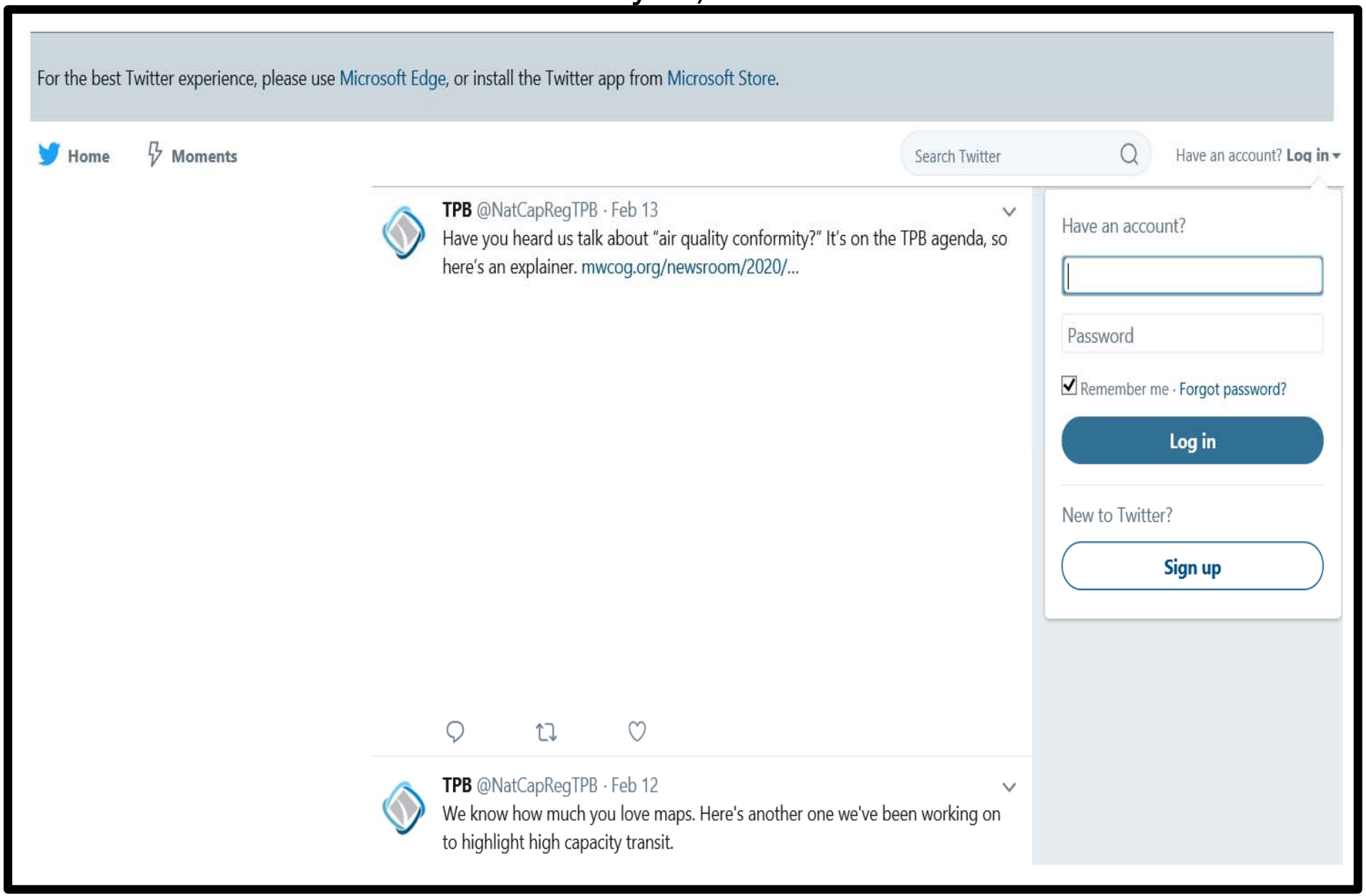
TPB @NatCapRegTPB · Jan 31

We've released the draft FY2021-2024 Transportation Improvement Program for Public Comment. Learn more and comment at mwcog.org/tpbcomment

TPB Twitter: On Air Quality Conformity
February 11, 2020

TPB Twitter: Announcing Air Quality Conformity as an item on the TPB Agenda
February 13, 2020



TPB Twitter: Development Schedule for TIP on Feb 19, 2020

TPB
@NatCapRegTPB

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7,602	327	1,302	923	2

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TPB @NatCapRegTPB · Feb 19
If you want to learn more about the air quality conformity analysis, we wrote up an explainer for you, check it out: mwcog.org/newsroom/2020/... #TPBmtg

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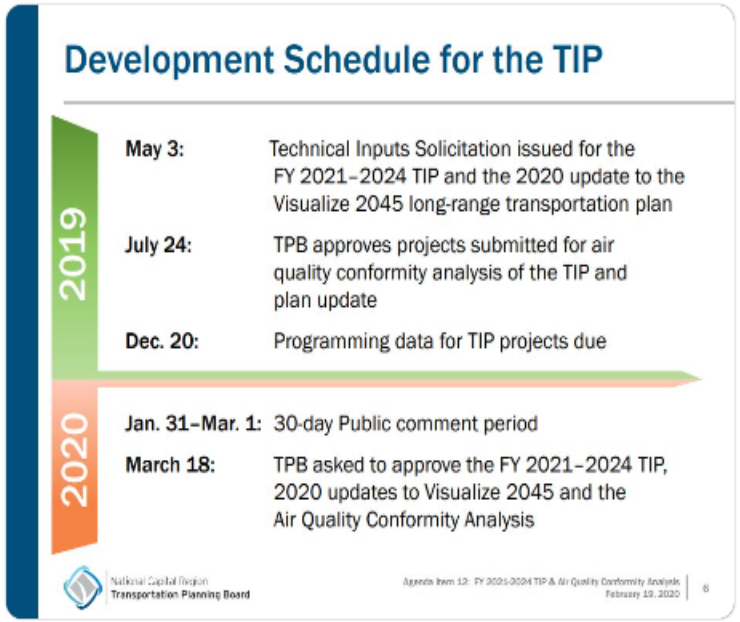
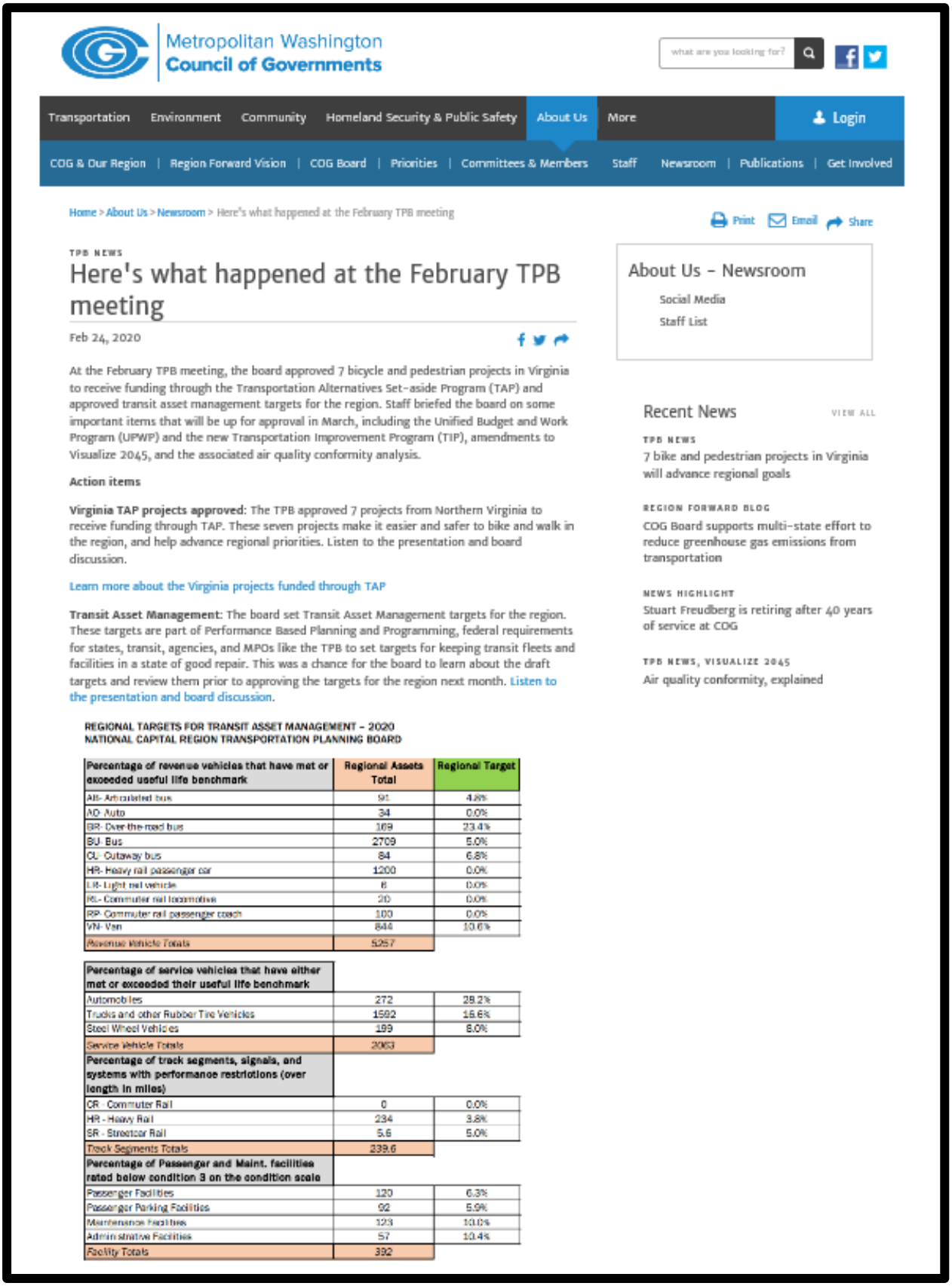
TPB @NatCapRegTPB · Feb 19
The TIP, information on the updates, and the air quality analysis were released for public comment on 1/31. Here is the schedule #TPBmtg





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TPB NEWS

Here's what happened at the February TPB meeting

Feb 24, 2020

At the February TPB meeting, the board approved 7 bicycle and pedestrian projects in Virginia to receive funding through the Transportation Alternatives Set-aside Program (TAP) and approved transit asset management targets for the region. Staff briefed the board on some important items that will be up for approval in March, including the Unified Budget and Work Program (UPWP) and the new Transportation Improvement Program (TIP), amendments to Visualize 2045, and the associated air quality conformity analysis.

Action items

Virginia TAP projects approved: The TPB approved 7 projects from Northern Virginia to receive funding through TAP. These seven projects make it easier and safer to bike and walk in the region, and help advance regional priorities. Listen to the presentation and board discussion.

Learn more about the Virginia projects funded through TAP

Transit Asset Management: The board set Transit Asset Management targets for the region. These targets are part of Performance Based Planning and Programming, federal requirements for states, transit, agencies, and MPOs like the TPB to set targets for keeping transit fleets and facilities in a state of good repair. This was a chance for the board to learn about the draft targets and review them prior to approving the targets for the region next month. Listen to the presentation and board discussion.

REGIONAL TARGETS FOR TRANSIT ASSET MANAGEMENT – 2020
NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD

Percentage of revenue vehicles that have met or exceeded useful life benchmark	Regional Assets Total	Regional Target
AB- Articulated bus	91	4.8%
AO- Auto	34	0.0%
BR- Over-the-road bus	169	23.4%
BU- Bus	2709	5.0%
CU- Cutaway bus	84	6.8%
HR- Heavy rail passenger car	1200	0.0%
LR- Light rail vehicle	8	0.0%
MB- Commuter rail locomotive	20	0.0%
RP- Commuter rail passenger coach	100	0.0%
VN- Van	844	10.6%
Revenue Vehicle Totals	5257	

Percentage of service vehicles that have either met or exceeded their useful life benchmark		
Automobiles	272	28.2%
Trucks and other Rubber Tire Vehicles	1592	16.6%
Steel Wheel Vehicles	199	8.0%
Service Vehicle Totals	2063	
Percentage of track segments, signals, and systems with performance restrictions (over length in miles)		
CR - Commuter Rail	0	0.0%
HR - Heavy Rail	234	3.8%
SR - Streetcar Rail	5.6	5.0%
Track Segments Totals	239.6	
Percentage of Passenger and Maint. facilities rated below condition 3 on the condition scale		
Passenger Facilities	120	6.3%
Passenger Parking Facilities	92	5.9%
Maintenance Facilities	123	10.0%
Administrative Facilities	57	10.4%
Facility Totals	392	

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TPB NEWS
7 bike and pedestrian projects in Virginia will advance regional goals

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COG Board supports multi-state effort to reduce greenhouse gas emissions from transportation

NEWS HIGHLIGHT
Stuart Freudberg is retiring after 40 years of service at COG

TPB NEWS, VISUALIZE 2045
Air quality conformity, explained

https://www.mwcog.org/newsroom/2020/02/24/heres-what-happened-at-the-february-tpb-meeting/

Other items

UPWP briefing: The board received a briefing about the TPB's budget and work program, the UPWP. Each fiscal year, the TPB, like other MPOs must detail its budget for the year. This process is a time when staff present on what annual work will be on going and provides a chance to highlight new work for the upcoming year. Much of the highlights for the next year include working on the next long-range plan, conducting a study on safety in the region, research on new technology, and on-going work including modeling, analysis, research, communications, and other member services. Listen to the presentation and board discussion.

Commuter Connections Work Program: The board also received a briefing about the Commuter Connections Work Program (CCWP). Commuter Connections works to find ways to help people find alternatives to driving alone. Its staff works to help people find carpools, plans Bike to Work Day, reaches out to employers, and provides smart phone applications to find a ride. Commuter Connections also publishes the State of the Commute, a survey of commuters and their habits. Board members asked about how Commuter Connections compares to other programs and how it is adapting to new technology. Commuter Connections Director Nick Ramfos explained that the program has been promoting its new apps Carpool Now and Incentrip and is finding that more commuters are interacting with the programs using the apps. Listen to the presentation and board discussion.

FY 2021-2024 TIP, Air Quality Conformity: The board received a briefing on the FY 2021-2024 TIP and Air Quality Conformity analysis of the TIP and Visualize 2045 amendments. The TPB produces a new TIP every 2 years, plus there were minor updates for Visualize 2045 which means testing the TIP and plan for its effect on air quality. Some highlighted project updates for Visualize 2045 include the Long- Bridge over the Potomac River between the District and Virginia, a third track between Franconia and Occoquan, and a fourth track in Alexandria. The presentation also went through the emissions budgets, and the population and jobs forecast that go into the computer model for the analysis. The TIP, plan amendment, and air quality conformity analysis is currently out for public comment. Listen to the presentation and board discussion.

Comment on the FY 2021-2024 TIP and Air Quality Conformity.

More: Air quality conformity, explained.

Citizens Advisory Committee: CAC Chair Nancy Abeles presented the CAC report to the board. The committee met on February 13. TPB Chair Kelly Russell was in attendance and spoke with the committee about her priorities for the year and asked about the committee's priorities for the year. The committee discussed how it's focus on safety lines up with the board's priority and how they can be effective in commenting on TPB activities. Read the CAC report. Listen to the CAC report.

Access for All Advisory Committee: The AFA also met on February 11. AFA Chair and TPB member Kacy Kostiuk reported on the meeting. The AFA discussed the Enhanced Mobility projects selected at the January TPB meeting. The committee also learned about COG's housing initiative and focus on Transit Oriented Communities and learned about the Virginia TAP project selection. Read the AFA report. Listen to the AFA report.

Listen to the full February TPB meeting.

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September 24, 2019

At its September meeting, the TPB approved an amendment to the District of Columbia Transportation Improvement Program (TIP) to update funding information for...

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July 30, 2019

At its July meeting, the TPB approved projects in Maryland and the District of Columbia to receive funding through the Transportation Alternatives Program. The...

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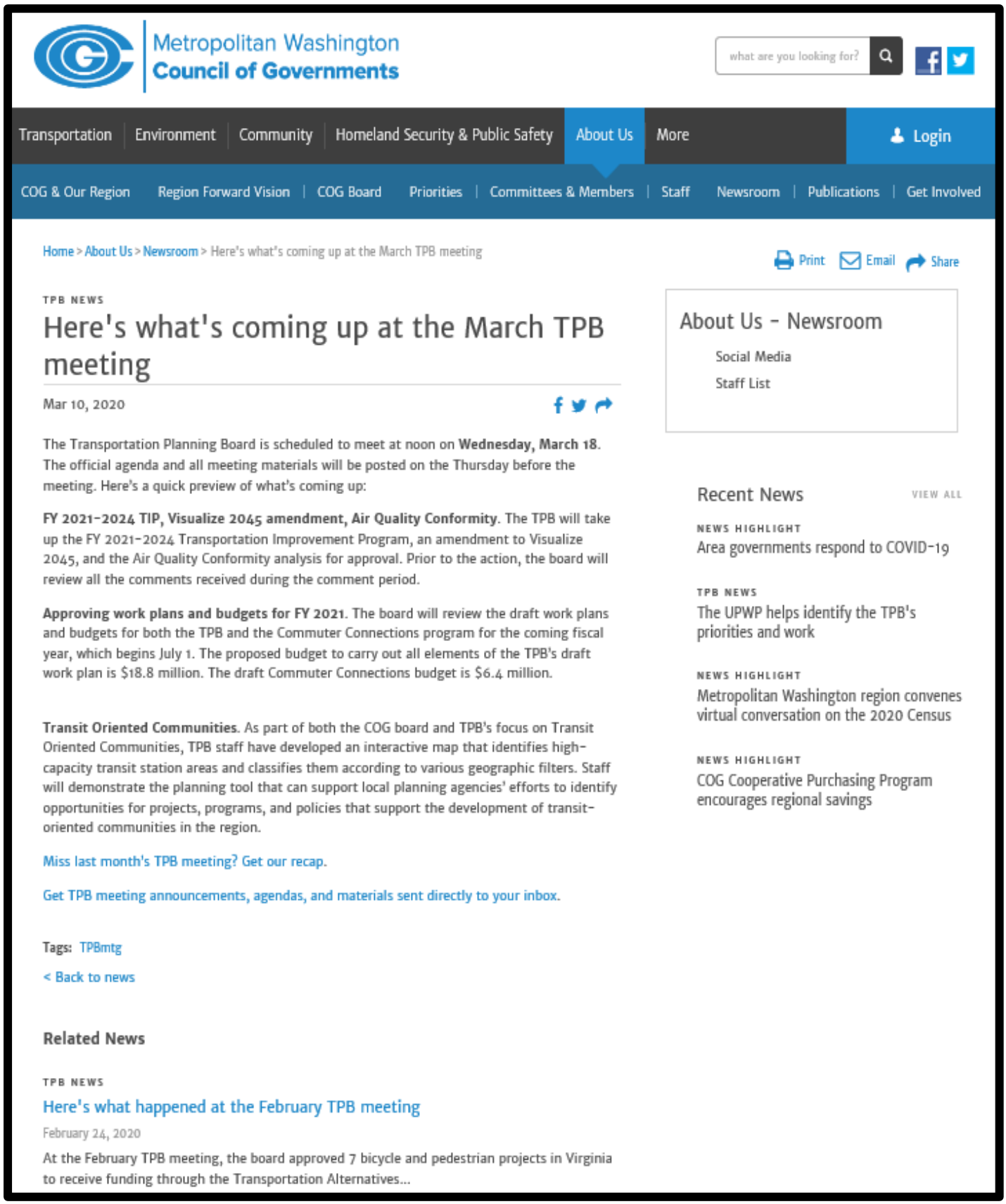

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TPB NEWS

Here's what's coming up at the March TPB meeting

Mar 10, 2020

The Transportation Planning Board is scheduled to meet at noon on **Wednesday, March 18**. The official agenda and all meeting materials will be posted on the Thursday before the meeting. Here's a quick preview of what's coming up:

FY 2021-2024 TIP, Visualize 2045 amendment, Air Quality Conformity. The TPB will take up the FY 2021-2024 Transportation Improvement Program, an amendment to Visualize 2045, and the Air Quality Conformity analysis for approval. Prior to the action, the board will review all the comments received during the comment period.

Approving work plans and budgets for FY 2021. The board will review the draft work plans and budgets for both the TPB and the Commuter Connections program for the coming fiscal year, which begins July 1. The proposed budget to carry out all elements of the TPB's draft work plan is $18.8 million. The draft Commuter Connections budget is $6.4 million.

Transit Oriented Communities. As part of both the COG board and TPB's focus on Transit Oriented Communities, TPB staff have developed an interactive map that identifies high-capacity transit station areas and classifies them according to various geographic filters. Staff will demonstrate the planning tool that can support local planning agencies' efforts to identify opportunities for projects, programs, and policies that support the development of transit-oriented communities in the region.

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https://www.mwcog.org/newsroom/2020/03/10/heres-whats-coming-up-at-the-march-tpb-meeting/

Afro-American
February 1, 2020

The AFRO American Newspapers

COMMENT NOW ON THE DRAFT FY 2021-2024 TRANSPORTATION IMPROVEMEMT PROGRAM, THE PROPOSED 2020 AMENDMENT TO VISUALIZE 2045, THE REGION'S LONG-RANGE TRANSPORTATION PLAN,AND THE AIR QUALITY CONFORMITY ANALYSIS THROUGH MARCH 1, 2020

The National Capital Region Transportation Planning Board (TPB) is updating the FY 2021-2024 Transportation Improvement Program (TIP). On Friday, January 31, 2020 the National Capital Region Transportation Planning Board (TPB) released for public comment the new and updated project information that the region's agencies have proposed as part of the FY 2021-2024 TIP and the associated 2020 amendment to the financially constrained element of Visualize 2045. Also released was the Air Quality Conformity Analysis of the financially constrained element of Visualize 2045, and the FY 2021-2024 TIP. The 30-day public comment period will close at midnight on Sunday, March 1, 2020.

The TPB will be asked to approve the FY 2021-2024 TIP, the plan amendments, and the Air Quality Conformity Analysis at their meeting on March 18, 2020.

These materials are available for review online at visualize2045.org and at the offices of the Metropolitan Washington Council of Governments located at the address below. The comment process on the TIP is also used to obtain comments on the region's program of projects that are funded by the Federal Transit Administration, (including projects funded by the Urbanized Area Formula Program) and the Federal Highway Administration. The financially constrained element of Visualize 2045 includes the road, bridge, high-occupancy vehicle (HOV), transit, bicycle, and pedestrian projects that are anticipated to be funded through the year 2045. The air quality conformity analysis assesses the constrained element with respect to the air quality requirements under the 1990 Clean Air Act Amendments.

Comments may be submitted by any of the following means:

Write: Kelly Russell, Chair
National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002-4239

Online: www.mwcog.org/TPBcomment

Email: TPBComment@mwcog.org

In Person: People interested in making a comment may do so during the public comment period at the beginning of each TPB meeting, at 12 pm on the third Wednesday of every month, except August. To participate, call (202) 962-3315 or sign up in person by 11:55 AM.

The Metropolitan Washington Council of Governments (COG) fully complies with Title VI of the Civil Rights Act of 1964 and related statutes and regulations prohibiting discrimination in all programs and activities. For more information, or to file a Title VI related complaint, see www.mwcog.org/publications/nondiscrimination.asp or call (202) 962-3200.If information is needed in another language, then contact (202) 962-3200.

El Consejo Metropolitano de Gobiernos de Washington(COG) cumple con el Titulo VI de la Ley sobre los Derechos Civiles de 1964 y otras leyes y reglamentos en todos sus programas y actividades. Para obtener información en español, o para someter una demanda relacionado al Titulo VI, visite nuestra página web www.mwcog.org/publications/nondiscrimination.asp o llame al (202) 962-3300. Para obtener información en otra idioma, llame al (202) 962-3200.

PERIODO DE COMENTARIO PÚBLICO PARA EL PLAN PROPUESTO VISUALIZE 2045 DE TRANSPORTE A LARGO PLAZO, PROGRAMA DE MEJORAMIENTO DE TRANSPORTACIÓN DEL AÑO FISCAL 2021-2024, Y ANÁLISIS DE CALIDAD DE AIRE DE LA REGIÓN DE WASHINGTON

El consejo de planificación de Transporte de la Región Capital (TPB) es la organización regional designada de planificación metropolitana (MPO), con la responsabilidad de la planificación de transportación metropolitana, requerida por el gobierno federal, para el Distrito de Columbia, el área suburbana de Maryland y el norte de Virginia.

El TPB está en el proceso de actualizar el Programa de Mejoramiento de Transportación del año fiscal 2021-2045. El viernes 31 de enero 2020, el TPB iniciará un periodo de comentario público de 30 días para comentar en el plan preliminar del Programa de Mejoramiento de Transportación (TIP) del año fiscal 2021-2024, la enmienda del año 2020 para la parte con financiamiento limitado del plan Visualize 2045, y el análisis de conformidad de la calidad de aire.

Este periodo de comentario público se extenderá hasta el 18 de marzo del 2020. Miembros del público están invitados a revisar y comentar estos documentos preliminares en la página de web de Visualize 2045, www.visualize2045.org. Estos materiales también pueden ser revisados en el Consejo Nacional de Gobiernos de Washington localizado en la dirección proveída abajo.

El proceso de comentarios sobre el TIP se está usando para obtener comentarios sobre el programa de proyectos de la región que están financiados por la Administración Federal de Transito (incluyendo proyectos financiados por el programa Área Urbanizada Formulada) y por la Administración Federal de Carreteras. El TIP de seis años incluyen todos los proyectos, programas, y estrategias que las agencias de transportación regional planean implementar entre el 2021 y 2024. Visualize 2045 es el plan de transportación metropolitana a largo plazo por orden del gobierno federal. El plan presenta proyectos de carreteras, puentes, vehículos de alta ocupación (HOV), tránsito y uso de bicicletas, que las agencias de transportación de la región esperan poder financiar entre 2021-2045. El análisis de la conformidad de la calidad del aire evalúa el plan y programa con respeto a los requisitos de calidad del aire bajo las enmiendas del acta de Aire Limpio de 1990.

Comentarios pueden ser enviados en diferentes formas:

Por Escrito: Kelly Russell, Chair
National Capital Region Transportation Planning Board
Metropolitan Washington Council of Governments
777 North Capitol Street NE, Suite 300
Washington, DC 20002-4239

En Linea: www.mwcog.org/TPBcomment

Email: TPBComment@mwcog.org

En Persona: Individuos interesados a comentar en persona lo pueden hacer durante el período de comentario público al principio de cada reunión del TPB, a las 12 del tercer miércoles de cada mes, excepto Augusto. Llame al (202) 962-3315 o subscríbase en persona al 11:55 AM para participar.

El Consejo Metropolitano de Gobiernos de Washington (COG) cumple con el Título VI de la Ley sobre los Derechos Civiles de 1964 y otras leyes y reglamentos en todos sus programas y actividades. Para obtener información en español, o para someter una demanda relacionado al Título VI, visite nuestra página web www.mwcog.org/publications/nondiscrimination.asp o llame al (202) 962-3300. Para obtener información en otro idioma, llame al (202) 962-3200.

Washington Post
January 31, 2020

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APPENDIX D

TPB C-SMMPO Agreement

TPB R6-2016
January 20, 2016

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

RESOLUTION ON AGREEMENT BETWEEN THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD AND THE CALVERT-ST. MARY'S METROPOLITAN PLANNING ORGANIZATION AND CALVERT COUNTY, MARYLAND

WHEREAS, the National Capital Region Transportation Planning Board (TPB) is the officially designated Metropolitan Planning Organization (MPO) for the Metropolitan Washington area; and

WHEREAS, the TPB's planning area is part of the Washington, DC-MD-VA 8-Hour Ozone Nonattainment area, as shown on the map in Attachment A, and as such, is subject to regional air quality conformity analysis of its Transportation Plans and Transportation Improvement Programs (TIPs); and

WHEREAS, the Washington, DC-MD-VA 8-Hour Ozone Nonattainment area also includes Calvert County, and transportation projects within Calvert County have been included in TPB's regional air quality conformity analysis as appropriate; and

WHEREAS, the Calvert-St. Mary's Metropolitan Planning Organization (C-SMMPO) is the newly officially designated MPO for Southern Maryland, whose planning area includes Calvert County, as shown on the map in Attachment B; and

WHEREAS, under federal surface transportation legislation (23 U.S.C. § 134 and 49 U.S.C. § 5303) related to MPO Consultation in Plan and TIP Coordination for Nonattainment areas, "If more than one metropolitan planning organization has authority within a metropolitan area or an area which is designated as a nonattainment area for ozone or carbon monoxide under the Clean Air Act (42 U.S.C. § 7401 et seq.), each metropolitan planning organization shall consult with the other metropolitan planning organizations designated for such area and the State in the coordination of plans and TIPs" and

WHEREAS, the TPB and the C-SMMPO have agreed to consult with the Maryland Department of Transportation (MDOT) in the coordination of their respective plans and TIPS; and

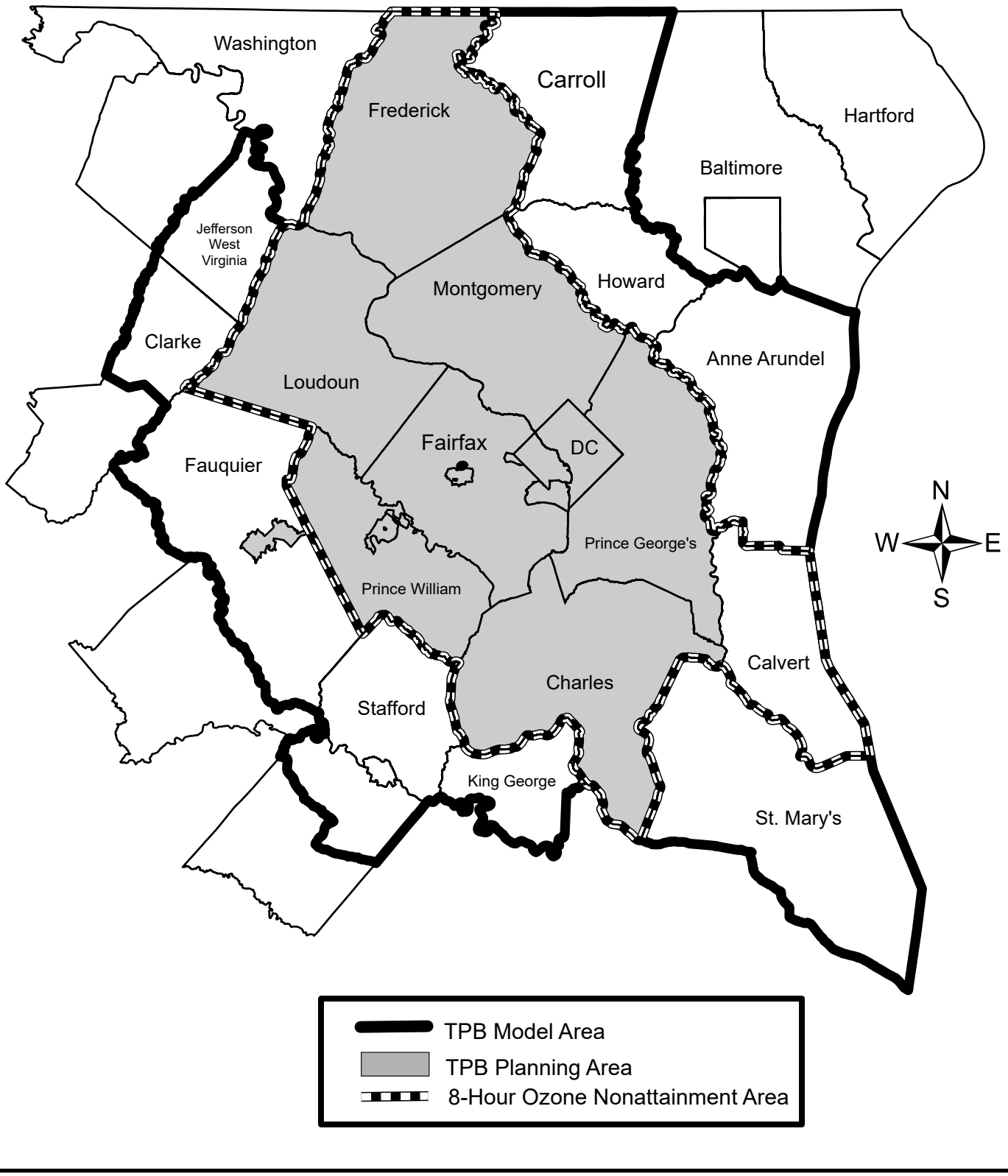
WHEREAS, the TPB, the C-SMMPO, and Calvert County have agreed to a process where C-SMMPO will develop Plans and TIPs to include Calvert County projects, and the TPB will continue to include these Calvert County projects in its regional air quality conformity analysis;

NOW, THEREFORE, BE IT RESOLVED THAT THE NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD approves execution, by its Chairman, of the attached ***Agreement between the National Capital Region Transportation Planning Board (TPB) and the Calvert-St. Mary's***

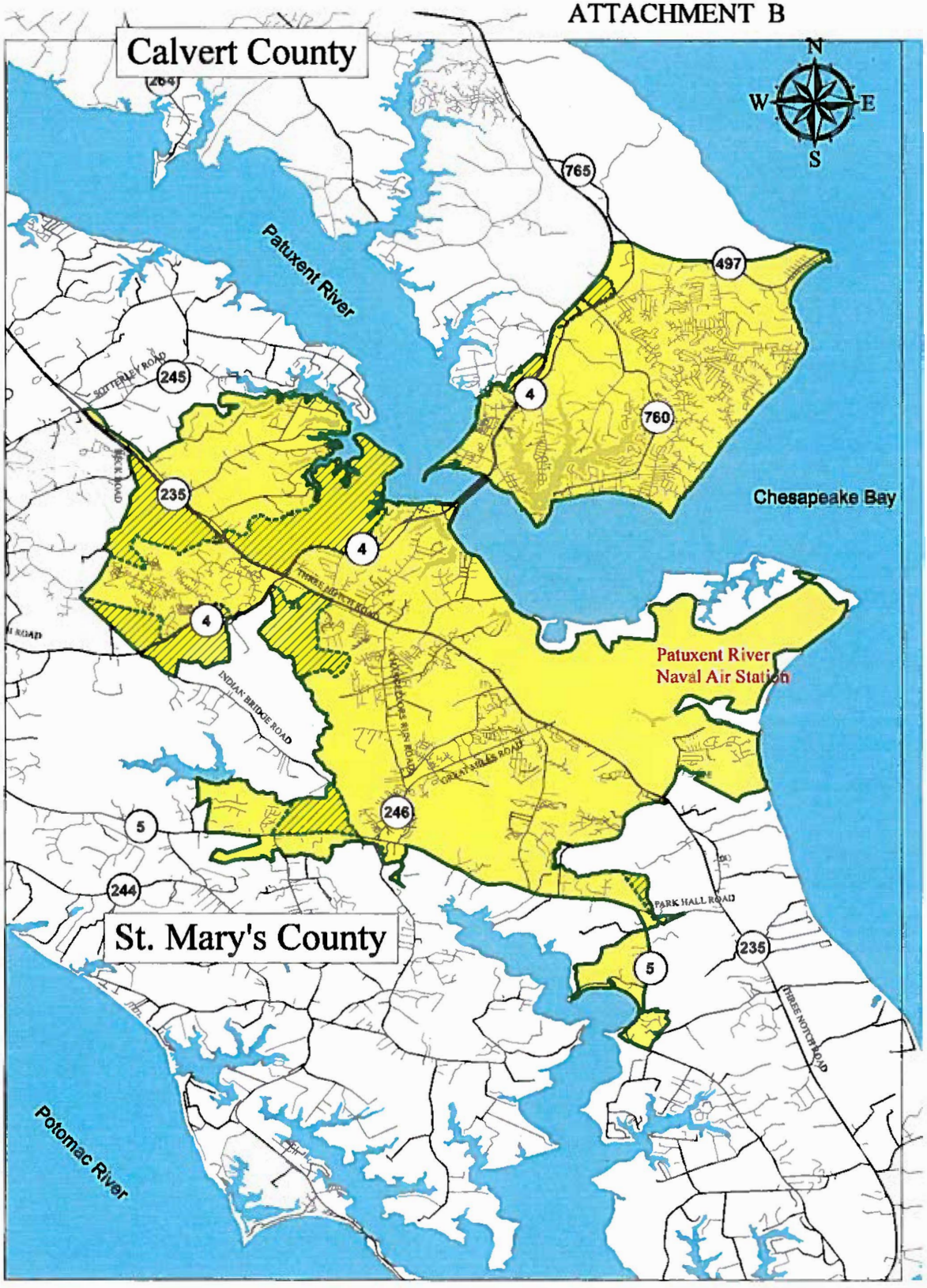
Metropolitan Planning Organization (C-SMMPO) and Calvert County, Maryland on the conformity analysis and determination of transportation plans, programs, and projects in Calvert County, Maryland document to ensure that transportation plans, programs, and projects in Calvert County are assessed for regional air quality conformity as is required in the Clean Air Act Amendments of 1990 (with subsequent amendments).

Adopted by the Transportation Planning Board at its regular meeting on January 20, 2016

TPB Transportation Planning Areas



ATTACHMENT B



Legend

- Boundary Line
- Urbanized Area Boundary Incorporated into Adjusted Urbanized Area
- Adjusted Urbanized Area
- Metropolitan Planning Area

Calvert - St. Mary's Metropolitan Planning Organization Adjusted Urbanized Area and Metropolitan Planning Area

April 2015

Agreement between the National Capital Region Transportation Planning Board (TPB) and the Calvert-St. Mary's Metropolitan Planning Organization (C-SMMPO) and Calvert County, Maryland on the conformity analysis and determination of transportation plans, programs, and projects in Calvert County, Maryland

Recognizing that Calvert County, Maryland, is a member of the C-SMMPO and is included in the Washington DC-MD-VA 8-hour Ozone Nonattainment area, TPB and C-SMMPO and Calvert County agree upon the following procedures for ensuring that transportation plans, programs, and projects in Calvert County are assessed for regional air quality conformity as is required in the Clean Air Act Amendments of 1990 (with subsequent amendments):

1. Transportation plans, programs, and projects in the C-SMMPO Metropolitan Planning Area (MPA) of Calvert County will be included in the Long Range Transportation Plan and Transportation Improvement Program developed by the C-SMMPO.

2. The C-SMMPO and Calvert County, in consultation with the Maryland Department of Transportation (MDOT), will submit the plan, program, and project inputs for Calvert and for the C-SMMPO MPA to the TPB for inclusion in each update of the TPB's regional air quality conformity analysis and determination for the Washington, DC-MD-VA 8-Hour Ozone Nonattainment area.

3. The timeframe for analysis and coordination will be outlined by the schedule in the TPB's *Call For Projects* document for each cycle.

4. The TPB's *Air Quality Conformity Scope of Work* will provide details regarding the steps taken to ensure compliance with the Federal Transportation Conformity Rule (40 CFR 51 and 93). For example, the TPB will coordinate with Calvert County and the State of Maryland to obtain all necessary analysis inputs and latest planning assumptions (e.g., land activity, vehicle registration data, etc.).

5. Project level conformity analyses will continue to be performed by the State, and assessed through the interagency consultation process, as is currently done for all state projects.

6. Calvert County will be involved in all aspects of the TPB's air quality conformity analysis and determination including its interagency consultation process:

    - Formal involvement for Calvert County on the TPB will be provided through MDOT, and through Calvert County's membership on the

777 NORTH CAPITOL STREET NE, SUITE 300, WASHINGTON, DC 20002
MWCOG.ORG/TPB (202) 962-3200

Metropolitan Washington Air Quality Committee (MWAQC) and on the MWAQC Technical Advisory Committee.

- Informal involvement by Calvert County will be provided through participation by representatives of Calvert County in TPB committees and processes concerned with regional air quality conformity, including receipt of all materials and participation in all meetings, discussions, and reviews.

7. The TPB will provide copies of the conformity report to C-SMMPO and Calvert County at the completion of each conformity cycle. As relevant, portions of the TPB conformity report will be included in the C-SMMPO Plan and TIP documentation to demonstrate conformity.

This agreement will remain in effect for the 2008 Ozone National Ambient Air Quality Standards (NAAQS) and all future NAAQS applicable to Calvert County.

Executed by the undersigned this _____day of_____2016:

Tim Lovain, Chair
National Capital Region Transportation
Planning Board

Steven R. Weems, Chairperson
Calvert – St. Mary's Metropolitan
Planning Organization

Evan K. Slaughenhoupt Jr, President
Board of County Commissioners
Calvert County, Maryland

Approved for legal sufficiency
on January 27, 2016 by

County Attorney

Department of Community Planning and Building
INTEROFFICE MEMORANDUM

TO: Board of County Commissioners
VIA: Terry Shannon, County Administrator TLS
VIA: Thomas Barnett, Director of Community Planning and Building
FROM: Patricia Haddon, Principal Planner
DATE: January 27, 2016
SUBJECT: Agreement between the National Capital Region Transportation Planning Board and the Calvert-St. Mary's Metropolitan Planning Organization and Calvert County, Maryland on the conformity analysis and determination to transportation plans, programs, and projects in Calvert County, Maryland

Background:

In their letter of July 24, 2015, to Dr. Kwame Arhin, Planning & Program Manager of the Federal Highway Administration, Maryland Division, the Calvert-St. Mary's Metropolitan Planning Organization (C-SMMPO) advised that they were coordinating the required air quality conformity analysis with the MPO for the National Capital Region, Transportation Planning Board (TPB), as Calvert County's portion of the C-SMMPO was within the non-attainment area for the 2008 8-Hour Ozone area within the National Capital Region.

Transportation plans, programs and projects in Calvert County must be included in the conformity analysis and determination carried out by the TPB for the Washington Metropolitan Statistical Area, as per a Proposal for Satisfying Federal Metropolitan Planning Requirements for Charles and Calvert Counties (Attachment A) and TPBs current resolution, adopted in 1993 (Attachment B.)

The TPB resolution (R23-93, Resolution Responding to Governor Schaefer's Letter Concerning the Metropolitan Planning Boundary in Maryland) which includes Calvert county in the TPB's air quality conformity analysis was the result of coordination between the State transportation air agencies and the Federal Highway Administration (FHA) and the Federal Transit Administration (FTA), in response to requirements in the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991.

Discussion

Since the establishment and inclusion of Calvert County in the C-SMMPO, the TPB staff has initiated discussions with the Maryland Department of Transportation to review and update the 1993 resolution. Updates have resulted in the attached agreement between TPB, the C-SMMPO, and Calvert County to address analysis issues related to inclusion of C-SMMPO and Calvert County transportation plans, projects and programs in TPB's regional air quality conformity analysis. The agreement has been reviewed by the TPB, MDOT, the C-SMMPO, FHA and FTA, and the County Attorney, John Norris. The agreement requires BOCC approval and signature.

Conclusion/Recommendation:

Staff requests the BOCC review and authorize signature of the attached agreement by the President of the County Commissioners, Evan Slaughenhoupt.

Attachments: 3

ATTACHMENT A

Proposalfor Satisfying Federal Metropolitan Planning Requirements
for Charles and Calvert Counties

The TPB proposes the conformity procedures defined in parts 1-4 below. These procedures affirm the practices that have been used for the past two years for the Metropolitan Washington Region non-attainment area as a means for assuring conformity in Charles and Calvert Counties.

1. The TPB agrees with Governor Schaefer that Charles and Calvert Counties not be a part of the planning area covered by the TPB.

2. Transportation plans, programs and projects in Charles and Calvert Counties will be excluded from the TPB's Long-Range Transportation Plan and six-year Transportation Improvement Program (TIP). and included in the statewide Long-Range Transportation Plan and state-wide Transportation Improvement Program (STIP) developed by the State of Maryland.

3. Transportation plans, programs and projects in Charles and Calvert Counties will be included in the conformity analysis and determination carried out by the TPB for the Washington Metropolitan Statistical Area (MSA). Conformity determinations concerning proposed added projects will be based on a system level analysis for the non-attainment area.

4. Charles and Calvert Counties will be involved in all aspects of the conformity analysis and determinations.

   Formal involvement for Charles and Calvert Counties will be provided through the Maryland Department of Transportation on the TPB, and through Charles and Calvert Counties' membership on MWAQC and its Technical Staff Coordination Committee (TSCC).

- Informal involvement by Charles and Calvert Counties will be provided through participation by their representatives in COG and TPB committees and processes concerned with conformity, including receipt of all materials and participation in all meetings, discussions, and reviews.

These procedures are subject to amendment should they be found in conflict with the final rule on conformity promulgated by the U.S. Environmental Protection Agency.

ATTACHMENT B

TPB R23-93
December 16, 1993

METROPOLITAN WASHINGTON COUNCIL OF GOVERNMENTS
NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD
777 North Capitol Street, N.E.
Washington, D. C. 20002

RESOLUTION RESPONDING TO GOVERNOR SCHAEFER'S LETTER CONCERNING THE METROPOLITAN PLANNING BOUNDARY IN MARYLAND

WHEREAS, the National Capital Region Transportation Planning Board (TPB) is the officially designated Metropolitan Planning Organization (MPO) for the Metropolitan Washington area; and

WHEREAS, the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 requires MPO boundaries to "at least include the boundaries of the non-attainment area, except as otherwise provided by agreement between the metropolitan planning organization and the Governor;" and

WHEREAS, in a letter of April 16, 1992, the Governor of Maryland presented a proposal to the TPB under which "the Washington area MPO boundaries should not be expanded to encompass Charles and Calvert Counties;" and

WHEREAS, on September 16, 1992, the Transportation Planning Board (TPB) requested that the Metropolitan Washington Air Quality Committee (MWAQC) consider and provide comments to the TPB on the implications of Governor Schaefer's request for air quality planning and conformity findings in the Metropolitan Washington Area; and

WHEREAS, there has been extensive coordination with the State Transportation Agencies and the State Air Quality Agencies, who are members of MWAQC, and with Federal Highway Administration (FHWA) and Federal Transit Administration (FTA); and

WHEREAS, on December 9, 1992, the MWAQC adopted a set of recommendations to the TPB on responding to Governor Schaefer's request; and has transmitted those recommendations to the TPB; and

WHEREAS, the "Interim Guidance on the ISTEA Metropolitan Planning Requirements" issued by the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA) of April 6, 1992, contains the following guidance on Metropolitan boundaries:

"In non attainment areas, if the MPO and the Governor agree to exclude a portion of the nonattainment area, they must be able to demonstrate how conformity will be ensured in the excluded portion. Such proposals should be coordinated with FHWA, FTA, EPA, the state transportation agency.and the state air quality agency before a final decision is made".

NOW, THEREFORE, BE IT RESOLVED THAT: The National Capital Region Transportation Planning Board endorses the MWAQC recommendations as defined in Attachment A, agrees to respond favorably to the April 16, 1992 request of the Governor of Maryland, and also to transmit copies to the Federal Highway Administration, the Federal Transit Administration, and the Environmental Protection Agency.

Adopted by the Transportation Planning Board at its regular meeting on December 16, 1992.

MEMORANDUM

TO: Files

FROM: Jane Posey, TPB Transportation Engineer

SUBJECT: TPB Coordination with C-SMMPO for 2020 Amendment to Visualize 2045 Conformity Analysis

DATE: March 18, 2020

Calvert County, Maryland is in the Washington, DC-MD-VA 8-hour ozone non-attainment area and is also a member of the Calvert-Saint Mary's Maryland Metropolitan Planning Organization (C-SMMPO), located in southern Maryland. Projects in Calvert County have always been included in the Transportation Planning Board's (TPB's) air quality conformity analyses, but when the MPO was created, it was necessary to formalize coordination between the TPB and C-SMMPO to ensure that Calvert County's transportation plans, programs, and projects are assessed for regional air quality conformity.

In January 2016, the TPB adopted Resolution TPB R6-2016, approving a coordination agreement between the TPB, the C-SMMPO, and Calvert County, MD. The agreement outlines a process where C-SMMPO will develop Long-Range Transportation Plans (LRTPs) and Transportation Improvement Programs (TIPs) to include Calvert County projects, and the TPB will continue to include these Calvert County projects in its regional air quality conformity analysis. The agreement lists the seven tasks, below, to be followed for each conformity cycle. Following each task is a record (in italics) of the steps taken, or procedures used, to complete the task during the TPB's air quality conformity analysis of the 2020 Amendment to the Visualize 2045 Long Range Transportation Plan.

1. Transportation plans, programs, and projects in the C-SMMPO Metropolitan Planning Area (MPA) of Calvert County will be included in the Long-Range Transportation Plan and Transportation Improvement Program developed by the C-SMMPO.

   Transportation plans, programs, and projects in the C-SMMPO Metropolitan Planning Area (MPA) of Calvert County have been included in the 2016 Long-Range Transportation Plan (LRTP) and FY 2018-2021 Transportation Improvement Program (TIP) developed by the C-SMMPO. The C-SMMPO adopted its Plan (http://www.calvert-stmarysmpo.com/156/Long-Range-Transportation-Plan-LRTP***) in March 2016, and its TIP (https://www.calvert-stmarysmpo.com/DocumentCenter/View/252/FY18-Transportation-Improvement-Program-TIP) in May 2017.***

2. The C-SMMPO and Calvert County, in consultation with the Maryland Department of Transportation (MDOT), will submit the plan, program, and project inputs for Calvert and for the C-SMMPO MPA to the TPB for inclusion in each update of the TPB's regional air quality conformity analysis and

determination for the Washington, DC-MD-VA 8-Hour Ozone Nonattainment area.

The C-SMMPO, Calvert County, and MDOT submitted projects in February 2016 to the TPB for the update to the TPB's regional air quality conformity analysis and determination for the Washington, DC-MD-VA 8-Hour Ozone non-attainment area. The TPB approved project inputs for the air quality conformity analysis of the 2016 CLRP and FY2017-2022 TIP in March 2016. Inputs from the C-SMMPO included: 1) a replacement of the Thomas Johnson Bridge over the Patuxent River with a 4-lane structure, 2) a widening of MD 4 from the Thomas Johnson Bridge to MD 235, 3) the construction of an interchange at MD 4/MD 235, and 4) a widening of MD 4 from the Thomas Johnson Bridge to Patuxent Point Parkway. There were no updates to these projects for Visualize 2045 (approved by TPB in October 2018) or for the 2020 Amendment to Visualize 2045.

3. The timeframe for analysis and coordination will be outlined by the schedule in the TPB's *Call For Project*s document for each cycle.

   Solicitation of projects for the 2020 Amendment to Visualize 2045 began at the May 3, 2019 TPB Technical Committee meeting. In June staff briefed the Technical Committee and the TPB on the Scope of Work and schedule for the air quality conformity analysis. The schedule called for project inputs to be approved by the TPB in July 2019, and for the approval of the completed conformity analysis by the TPB in March 2020. MDOT attended meetings where the Scope of Work and schedule were discussed. The Scope of Work and schedule were also included in the monthly consultation mailout to MDOT and C-SMMPO staff.

4. The TPB's *Air Quality Conformity Scope of Work* will provide details regarding the steps taken to ensure compliance with the Federal Transportation Conformity Rule (40 CFR 51 and 93). For example, the TPB will coordinate with Calvert County and the State of Maryland to obtain all necessary analysis inputs and latest planning assumptions (e.g., land activity, vehicle registration data, etc.).

   The TPB's Scope of Work for the air quality conformity analysis of the 2020 Amendment to Visualize 2045 and the FY 2021-2024 TIP called for the use of updated inputs and the latest planning assumptions. TPB coordinated with various Maryland agencies and reviewed C-SMMPO's latest Long-Range Transportation Plan to get the latest planning assumptions for Calvert County. The Council of Governments' (COG) Department of Community Planning and Services obtained land activity (household, population, and employment) data for Calvert and St. Mary's Counties from the Maryland Department of Planning. The Maryland Department of the Environment provided vehicle registration data, and other data, such as fuel and inspection/maintenance information, for use as input to the Motor Vehicle Emissions (MOVES2014a) model.

5. Project level conformity analyses will continue to be performed by the State, and assessed through the interagency consultation process, as is currently done for all state projects.

At this time there is no requirement for project level conformity analyses in Calvert County, as the county is not a non-attainment or maintenance area for fine particles ($PM_{2.5}$) or CO pollutants.

6. Calvert County will be involved in all aspects of the TPB's air quality conformity analysis and determination including its interagency consultation process:

   - Formal involvement for Calvert County on the TPB will be provided through MDOT, and through Calvert County's membership on the Metropolitan Washington Air Quality Committee (MWAQC) and on the MWAQC Technical Advisory Committee.

     MDOT representatives are active members of the TPB and are members of the TPB's subcommittees. Calvert County is a member of the Metropolitan Washington Air Quality Committee (MWAQC) and is represented on the MWAQC Technical Advisory Committee (TAC). All aspects of the conformity analysis (inputs, analysis, results) were presented to the TPB Technical Committee, the TPB, and MWAQC TAC at various times throughout the interagency consultation process.

   - Informal involvement by Calvert County will be provided through participation by representatives of Calvert County in TPB committees and processes concerned with regional air quality conformity, including receipt of all materials and participation in all meetings, discussions, and reviews.

     MDOT and representatives of C-SMMPO are included on the mailing list for the TPB's monthly consultation letter, which announced all items related to the conformity analysis and provided links to all related documents.

7. The TPB will provide copies of the conformity report to C-SMMPO and Calvert County at the completion of each conformity cycle. As relevant, portions of the TPB conformity report will be included in the C-SMMPO Plan and TIP documentation to demonstrate conformity.

   The TPB will provide electronic copies of the final air quality conformity report after the Board approves the conformity analysis in March 2020.

APPENDIX E

Documentation of Data Development Process for Mobile Source Emissions Calculations

MEMORANDUM

TO: Files
FROM: Jinchul (JC) Park, Principal Transportation Engineer
SUBJECT: Mobile Source Emissions Process and Data Development for the Air Quality Conformity Analysis of the 2020 Amendment for Visualize 2045 (draft)
DATE: January 10, 2020

1.0 BACKGROUND

This technical appendix documents four categories of data preparation executed for MOVES model: (1) postprocessing of MWCOG/TPB's Version 2.3.78 travel demand model results; (2) development of travel-related inputs based on the postprocessed travel demand results from (1) and local data; (3) non-travel related inputs such as meteorology, fuel supply and formulation, and inspection/maintenance (I/M) programs and state-specific policy programs; and (4) 2016 vehicle registration data updated with the corrected vehicle registration from of the District of Columbia. The vehicle registration data, or vehicle identification number (VIN), were obtained from agencies in the District of Columbia, the Commonwealth of Virginia, and the state of Maryland. MOVES model requires two broad sets of data (i.e., travel and non-travel related data) and policy programs specific to each state's requirements. Travel related data were created through data development methods established and recommended by the MOVES Task Force. Postprocessing of travel demand results is a pre-requisite for developing travel related data. Non-travel related data were provided by state air quality agencies.

Emissions modeling in Metropolitan Washington Council of Governments/Transportation Planning Board (MWCOG/TPB) is executed by applying Emissions Modeling Process (EMP) version 1[1]. The EMP is composed of mainly three components to be executed in order: (1) Development of travel and non-travel related data and local data for MOVES and creation of setups; (2) Execution of MOVES model; and (3) Summary of MOVES outputs. The modeling process is illustrated in Figure 1.

The data inputs are obtained from a variety of sources as shown in Table 1. Local data are applied in emissions estimations where available; otherwise, MOVES default data are used. Table 1 exhibits MOVES input data by locality and supplies sources of the data.

2.0 POSTPROCESSING OF TRAVEL DEMAND RESULTS

Travel demand results are postprocessed to create vehicle hours of travel (VHT) and vehicle miles of traveled (VMT) distributions, which later will be used to create travel related MOVES data. An emissions postprocessor had been used to calculate emissions in the Mobile 6.2 model in the past, but with MOVES, postprocessing is tailored to only create VHT and VMT distributions for each vehicle type.

For each analysis year, travel demand results are postprocessed to obtain hourly jurisdictional VHT and VMT distributions by Mobile's 14 speed bins and three vehicle types (i.e., passenger vehicles, commercial vehicles and trucks) for two facility types. In postprocessing six travel markets from the travel demand model results are grouped into three vehicle types as follows:

[1] Daniel Son and Jinchul Park to Files, "User's Guide for Emissions Modeling Process Version 1," Draft memorandum, April 25, 2019 U:\!!!_MOVES_Training\MOVES_User_Guide\ memorandum_MOVES_User_Guide_2019_04_25_EMP_V100.pdf

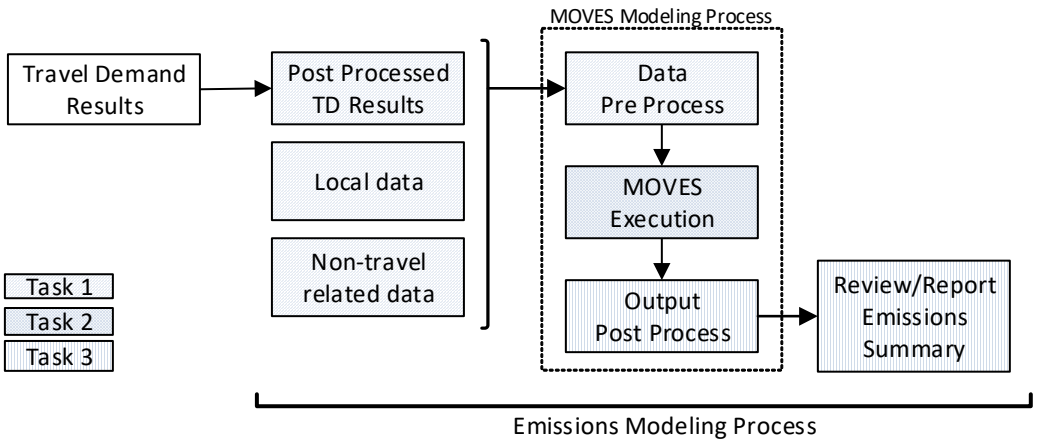


Figure 1. Emissions Modeling Process

- Passenger Vehicles (PVs) = SOV + HOV2 + HOV3 or more + Airport Passenger Trips;
- Commercial Vehicles (CVs) = Commercial Vehicles; and
- Heavy Duty Vehicles (HDVs) = Trucks;

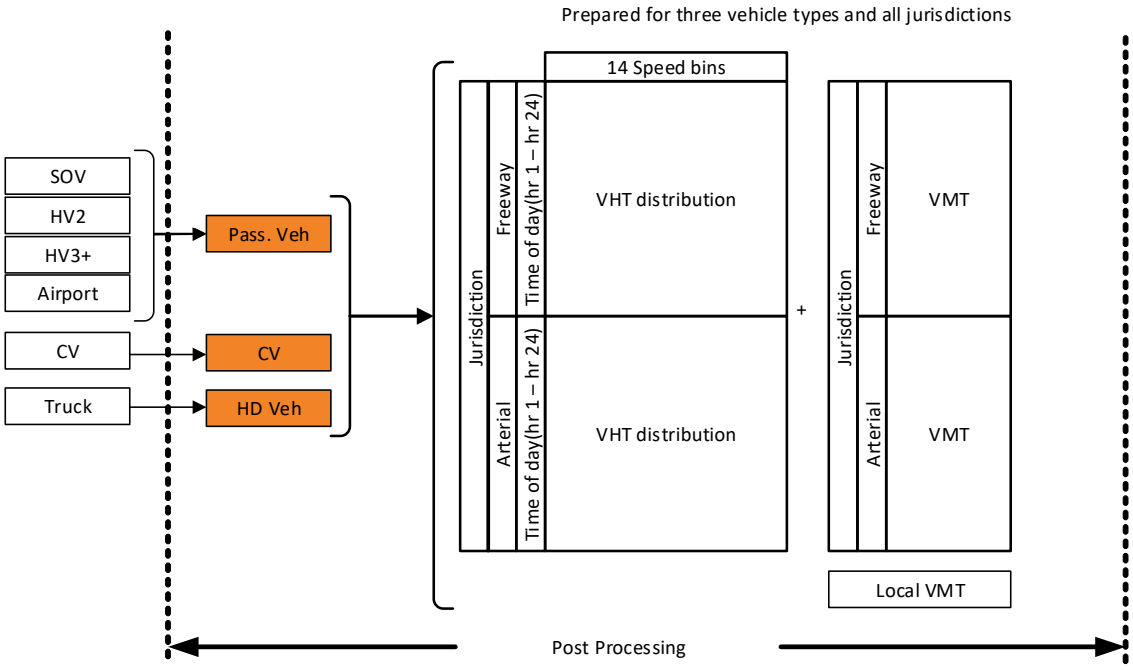
And six facility types are grouped into two as follows:

- Freeway = freeway + expressway + freeway ramp; and
- Arterial = major arterial + minor arterial + collector.

The postprocessor is then executed four times for each analysis year: one for each vehicle type and another for all vehicle types combined. A successful postprocessing of travel demand results produces hourly jurisdictional VHT distributions by Mobile's 14 speed bins and two facility types for three vehicle types, and jurisdictional VMT by two facility types for three vehicle types. Figure 2 illustrates the postprocessing of travel demand results.

Table 1. MOVES Input Data

Data Type	No	Data Category	Data Table Name	Locality	Data Source
Travel	1	Age Distribution	**sourceTypeAgeDistribution**	County	based on VIN
	2	Average Speed Distribution	**avgSpeedDistribution**	County	based on TDM's post-processor outputs + school bus/refuse truck data from Fairfax Co. + Transit bus from WMATA
	3	Road Type Distribution	**roadTypeDistribution**	County	based on TDM's post-processor outputs
	4	Source Type Population	**sourceTypeYear**	County	based on CLRP Vehicle Projection & VIN
	5	Vehicle Type VMT	**HPMSVTypeYear**	County	based on TDM's post-processor outputs
			monthVMTFraction	Region	based on Regional Data
			dayVMTFraction	Region	based on Regional Data
			hourVMTFraction	Region	based on Regional Data
	6	Ramp Fraction	**roadType**	Region	8% of the urban/rural restricted access roads
Non Travel	7	Fuel	**FuelSupply**	State	from state air agency (state-wide data)
	8		**FuelFormulation**	State	from state air agency (state-wide data)
	9	I/M Programs	**IMCoverage**	State	from state air agency (state-wide data)
	10	Meteorology Data	**zoneMonthHour**	Jurisdiction	from DEP (by each jurisdiction)



Pass. Veh = passenger vehicle
CV = commercial vehicle
Truck = heavy duty vehicle

Freeway = freeway, expressway & freeway ramp
Arterial = major/minor arterials, collectors & local roads

Figure 2. Postprocessing of Travel Demand Results

3.0. TRAVEL RELATED INPUTS

A. Age Distribution

Every three years since 2005, Departments of Motor Vehicles of the District of Columbia, Maryland, and Virginia have been supplying MWCOG/TPB with vehicle registration data for use in Air Quality Conformity (AQC) Determinations and State Implementation Plan (SIP) updates. The vehicle registration data, collected by Departments of Motor Vehicles in each state, are a snapshot of vehicle registrations of the year the data were collected, which contain a broad range of attributes of the vehicles registered in the jurisdictions of the Metropolitan Washington DC non-attainment area. The latest data, 2016 VIN with DC correction delivered on June 19, 2018, are used in the development of future year vehicle population profiles (i.e., vehicle age and vehicle type distribution) for all the analysis years in the air quality conformity analysis for the 2020 Amendment for Visualize 2045. This new 2016 VIN is an update to the 2016 VIN with removal of expired vehicles in the District of Columbia.

Prior to using the VIN data as input to MOVES, the 'raw' vehicle registration data are decoded using a commercial decoding software program[2]. Following EPA's guidelines, the data are decoded in two steps in order: (1) the 'raw' data are decoded to a Mobile 6.2 format; and (2) the Mobile 6.2 format vehicle population distributions are converted to a MOVES format using an EPA converter[3]. Thus, 16 Mobile vehicle types and 25 vehicle age categories are mapped into MOVES' 13 vehicle and 31 vehicle

[2] VinPower, Copyright; ESP Data Solutions Inc., Product version 4.0.0.16
[3] RegistrationDistributionConverter_Veh16.xls, https://www.epa.gov/moves/tools-develop-or-convert-moves-inputs#fleet

age categories. The vehicle population mapping process is shown in greater detail in Table AS1 in the Appendix Supplement section. The vehicle population of the 2016 VIN data was reviewed by the MWCOG/TPB technical oversight committees prior to becoming approved for transportation planning applications. The VIN data were formally approved by MWCOG/TPB to be used for the 2020 Amendment for Visualize 2045 in June 2019.

B. Average Speed Distribution

The MWCOG/TPB regional travel demand model calculates link-level traffic volumes, not average link-level speed estimates. Vehicle Hours of Travel (VHT) distributions were selected as a suitable proxy for average speed distribution. MWCOG/TPB's regional travel demand model results are first processed to derive VHT distributions by six vehicle categories:

- Single Occupancy Vehicles (SOV);
- High Occupancy Vehicles 2 (HOV2);
- High Occupancy Vehicles 3+ (HOV3 or more);
- Commercial Vehicles;
- Trucks; and
- Airport Passenger Trips.

Through postprocessing, six VHT distributions are first classified by three vehicle types, Mobile's 14 speed bins, hour of the day, and two facility types (i.e., freeway and arterial); and later reclassified into MOVES's 16 speed bins, hour of the day, day of the week (i.e., weekdays and weekend days), and four facility types for Ozone non-attainment jurisdictions in MWCOG/TPB planning area. Six vehicle types from the travel demand model are reclassified into three vehicle types as follows:

- Passenger Vehicles (PVs) = SOV + HOV2 + HOV3 or more + Airport Passenger Trips;
- Commercial Vehicles (CVs) = Commercial Vehicles; and
- Heavy Duty Vehicles (HDVs) = Trucks.

MOVES requires: (1) 16 speed bins from 2.5 mph to 75 mph in increments of 5 mph; and (2) four road types, which are a combination of two facility types (i.e., restricted and unrestricted) and two environmental settings (i.e., urban and rural settings). The restricted facilities include freeways, expressways and freeway ramps, while the unrestricted facilities include major/minor arterials, collectors, and local roads. The following assumptions are used to develop average speed distributions fulfilling MOVES requirements stated above:

1. VHT Distribution to Restricted Facilities:

    a. All vehicle types:
        - Weekday VHT Distribution:
            - All Day: Hourly distribution for all vehicles
        - Weekend VHT Distribution:
            - 11:00 am – 7:00 pm: Distribution across the 13 MOVES vehicle type categories reflecting the 3:00 pm hour on a weekday
            - 7:01 pm – 10:59 am: Distribution across the 13 MOVES vehicle type categories reflecting the 12:00 am hour on a weekday

2. VHT Distribution to Unrestricted Facilities:

a. All vehicle types exclusive of refuse trucks, school buses and transit buses:
   - Weekday VHT Distribution:
     - All Day: Hourly distribution for all vehicles
   - Weekend VHT Distribution:
     - 11:00 am – 7:00 pm: Distribution reflecting the 3:00 pm hour on a weekday
     - 7:01 pm – 10:59 am: Distribution reflecting the 12:00 am hour on a weekday

b. Refuse trucks: Refuse trucks operate on a 3-phase cycle: Phase 1 is the period of driving from the dispatch garage to trash collection sites; Phase 2 is the period of the actual trash/recycle collection; Phase 3 is the period of driving back to transfer stations. Using local data from Fairfax County, VA, the average speed of Phases 1 and 3 were assumed to be in the range of 22.5-27.5 miles per hour (i.e., MOVES Speed Bin 6), and the average speed of Phase 2 was assumed to be in the range of 2.5-7.5 miles per hour (i.e., MOVES Speed Bin 2). Based on the above assumptions the refuse truck vehicle type VHT distributions were as follows:

   - Weekday VHT Distribution (see Table 2):
     - 5:00 am–5:00 pm (Trash Collection): VHT hourly distributions according to Phases 1, 2 and 3.
     - 5:01 pm–5:00 am (On Road Phase): VHT hourly distribution consists of Phase 2.
   - Weekend VHT Distribution:
     - All Day: VHT distribution made up of Phase 1 and Phase 3 (on road phases)

c. School buses:
   - Weekday VHT Distribution:
     - 6:00 am – 6:00 pm: VHT distribution (see Table 3)
     - 6:00 pm – 6:00 am: VHT distribution of heavy duty vehicles

   - Weekend VHT Distribution:
     - 11:00 am–7:00 pm: VHT Distribution of heavy duty vehicles at 3:00 pm on a weekday
     - 7:00 pm – 11:00 am: VHT Distribution of heavy duty vehicles at 12:00 am on a weekday

d. Transit buses:
   - Weekday VHT Distributions (see Table 4):
     - 6:00 – 9:00 am: Per WMATA's bus speed distribution of the AM peak period
     - 9:00 am–3:00 pm: Per WMATA's bus speed distribution of the off-peak period
     - 3:00 - 6:00 pm: Per WMATA's bus speed distribution of the PM peak period
     - 6:00pm-6:00 am: Per WMATA's bus speed distribution of the off-peak period

   - Weekend VHT Distribution (see Table 4):
     - All Day: Per WMATA's bus speed distribution of the off-peak period.

Table 2. Average Weekday VHT Distribution for Refuse Trucks (source: Fairfax Co, VA)[4]

Speed Bins	Speed Range	5:00 AM - 5:00 PM	5:01 PM - 4:59 AM
1	< 2.5 mph	0.00%	0.00%
2	2.5 - 7.5 mph	62.65%	0.00%
3	7.5 - 12.5 mph	0.00%	0.00%
4	12.5 - 17.5 mph	0.00%	0.00%
5	17.5 -22.5 mph	0.00%	0.00%
6	22.5 - 27.5 mph	37.35%	100.00%
7	27.5 - 32.5 mph	0.00%	0.00%
8	32.5 - 37.5 mph	0.00%	0.00%
9	37.5 - 42.5 mph	0.00%	0.00%
10	42.5 - 47.5 mph	0.00%	0.00%
11	47.5 - 52.5 mph	0.00%	0.00%
12	52.5 - 57.5 mph	0.00%	0.00%
13	57.5 - 62.5 mph	0.00%	0.00%
14	62.5 - 67.5 mph	0.00%	0.00%
15	67.5 - 72.5 mph	0.00%	0.00%
16	72.5 mph <	0.00%	0.00%

Table 3. VHT Distribution of School Buses (6:00 am – 6:00 pm) (source: Fairfax Co, VA)

		Bus Trip (%)											
Speed Bin	Speed Range	1	2	3	4	5	6	7	8	9	10	11	Wgt. Avg.
1	< 2.5 mph	0.35	24.30	17.58	14.65	7.90	16.11	6.55	18.30	25.76	16.18	17.67	19.21
2	2.5 - 7.5 mph	10.87	11.57	6.45	11.04	29.89	20.20	44.83	11.01	9.68	6.49	9.12	14.39
3	7.5 - 12.5 mph	10.90	9.35	12.89	6.50	26.31	17.69	3.34	9.12	9.52	6.69	8.69	10.92
4	12.5 - 17.5 mph	8.81	9.18	8.59	9.45	6.00	11.13	23.76	10.12	9.98	8.46	10.32	10.37
5	17.5 -22.5 mph	5.01	10.15	5.18	14.04	3.04	5.94	4.09	10.36	7.57	9.74	12.02	8.30
6	22.5 - 27.5 mph	8.91	8.55	11.62	12.59	6.18	5.30	3.54	7.29	7.11	8.87	11.73	8.13
7	27.5 - 32.5 mph	8.79	7.97	14.36	11.28	5.86	13.33	6.35	9.43	5.37	10.06	10.20	9.41
8	32.5 - 37.5 mph	5.33	9.10	5.86	13.43	7.62	3.32	6.36	13.79	8.68	12.04	6.81	7.81
9	37.5 - 42.5 mph	3.43	6.89	8.69	7.02	4.80	3.76	1.07	7.94	9.79	13.81	8.16	7.22
10	42.5 - 47.5 mph	1.72	2.44	8.79	0.00	2.40	2.87	0.00	1.31	5.83	5.15	4.75	3.42
11	47.5 - 52.5 mph	0.68	0.00	0.00	0.00	0.00	0.36	0.00	0.67	0.31	32.27	0.36	0.59
12	52.5 - 57.5 mph	0.34	0.50	0.00	0.00	0.00	0.00	0.00	0.67	0.41	0.24	0.18	0.23
13	57.5 - 62.5 mph	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14	62.5 - 67.5 mph	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15	67.5 - 72.5 mph	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16	72.5 mph <	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

[4] Sivasailam, Daivamani, et al., "Vehicle Hours of Travel (VHT) Distribution for Refuse Truck," (MOVES Task Force Meeting, Washington, D.C.: Metropolitan Washington Council of Governments, National Capital Region Transportation Planning Board, September 21, 2010) V:\MOVES\Memos_MOVES_Task_Force\2010.09.21\3.Item 3a.pdf

Table 4. VHT Distribution of Transit Buses (Source: Washington Metropolitan Area Transit Authority (WMATA))

Speed Bin	Speed Range	6:00 am - 9:00 am	3:00 pm - 6:00 pm	9:01 am - 2:59 pm/ 5:01 pm - 5:59 pm
1	< 2.5 mph	9.94	9.10	7.92
2	2.5 - 7.5 mph	13.79	18.95	14.49
3	7.5 - 12.5 mph	34.07	37.86	31.36
4	12.5 - 17.5 mph	28.52	23.97	29.17
5	17.5 -22.5 mph	10.02	5.92	10.77
6	22.5 - 27.5 mph	1.88	1.84	3.91
7	27.5 - 32.5 mph	0.92	0.85	1.04
8	32.5 - 37.5 mph	0.34	0.60	0.72
9	37.5 - 42.5 mph	0.14	0.50	0.35
10	42.5 - 47.5 mph	0.05	0.15	0.15
11	47.5 - 52.5 mph	0.31	0.28	0.06
12	52.5 - 57.5 mph	0.00	0.00	0.06
13	57.5 - 62.5 mph	0.00	0.00	0.00
14	62.5 - 67.5 mph	0.00	0.00	0.00
15	67.5 - 72.5 mph	0.00	0.00	0.00
16	72.5 mph <	0.00	0.00	0.00

C. Road Type Distribution

Road type distribution develops Vehicle Miles Traveled (VMT) distribution by MOVES 13 vehicle types and four facility types. The method of developing VMT distribution is as follows:

1. Through postprocessing of travel demand results, jurisdictional VMT distributions of six vehicle types are reclassified to VMT distributions by three vehicle types as follows:

    - Passenger Vehicles (PVs) = SOV + HOV2 + HOV3 or more + Airport Passenger Trips;
    - Commercial Vehicles (CVs) = Commercial Vehicles; and
    - Heavy Duty Vehicles (HDVs) = Trucks.

2. VMT percentages by three vehicle types are allocated to MOVES vehicle types as follows:

    - Passenger Vehicles (PVs): VMT percentages by facility type are applied to motorcycles, passenger cars and passenger trucks;
    - Commercial Vehicles (CVs): VMT percentages by facility type are applied to commercial trucks;
    - Heavy Duty Vehicles (HDVs): VMT percentages by facility type are applied to single unit short-haul and long-haul trucks, and combination short-haul and long-haul trucks;
    - Refuse Trucks and Motor Homes: MOVES default percentage values;
    - School, Transit and Intercity Buses: Local network percentages from local data sources (i.e., local bus operators); and
    - Urban and rural percentage split factors are used to further allocate facility type VMT between urban and rural facilities. These factors vary by jurisdiction, and are based on the latest Highway Performance Monitoring System (HPMS) VMT data provided by the three state

transportation agencies. Figure 3 illustrates the process of allocating VMT by vehicle type, facility type, and urban/rural split.

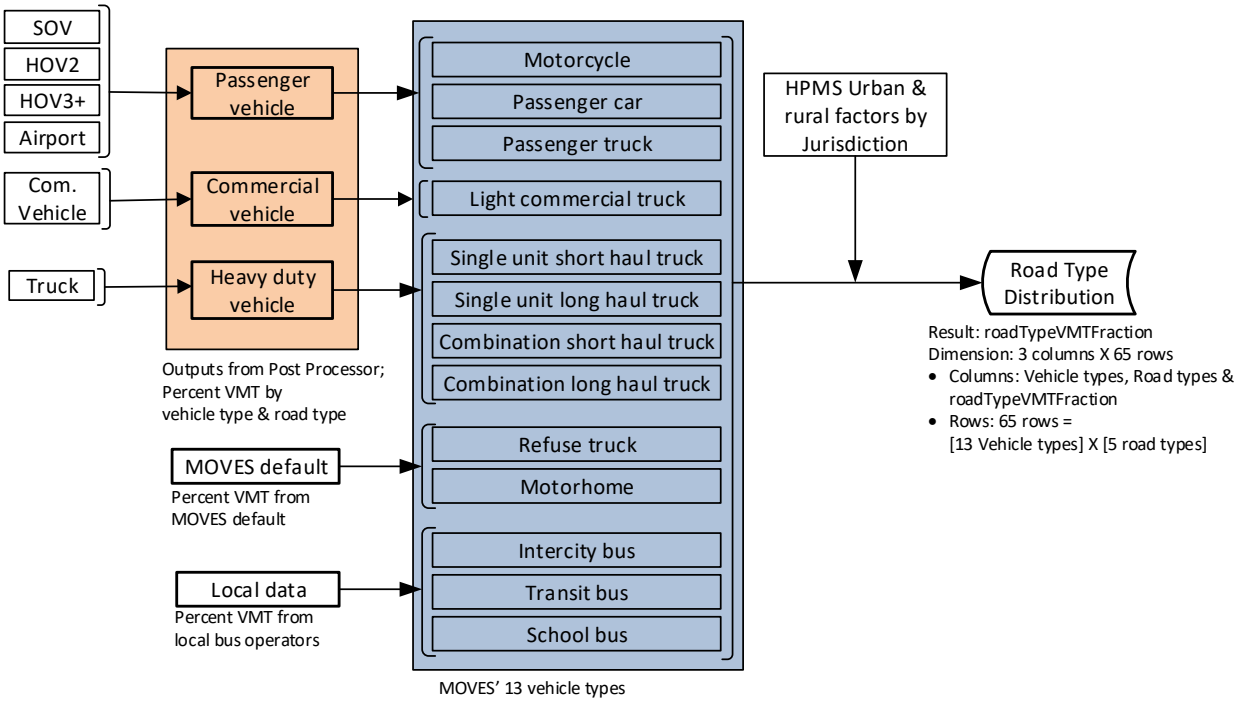


Figure 3. Road Type Distribution Development Process

D. Source Type Population

Source type population, or vehicle population, is acquired from the vehicle registration data. The VIN decoding software outputs vehicle population totals by Mobile 6.2 vehicle types. The vehicle population from the VIN data is then used to estimate vehicle population for each analysis year. Methods of estimating vehicle population vary by analysis year and availability of VIN data.

For example:

- Case 1: If a VIN data year is the same as an analysis year, vehicle population total of the VIN data is used without any change;
- Case 2: If an analysis year is historical and is between any two VIN data years, vehicle population total of the analysis year is calculated using an interpolation method based on the two sets of VIN data; and
- Case 3: If an analysis year is a future year, regression analysis is used to project future vehicle population totals based on available VIN data (collected from 1975 to 2014), which draws the 'best fitting' line among scattered VIN data points[5].

Table 5 exhibits vehicle population forecasts based on this method using new 2016 VIN data. Vehicle profiles of the 2016 VIN data are used to develop future year vehicle profiles by jurisdiction. Vehicle profiles are prepared in a Mobile format first, and then are converted into a MOVES vehicle type using a vehicle mapping table provided by EPA (see Table AS1 in the Appendix).

[5] Daniel Son and Jinchul Park to Files, "Vehicle Population Projection based on 2016 Vehicle Registration Data plus DC's New Vehicle Identification Number," Draft memorandum, June 12, 2019 V:\MOVES\VIN_Data\2017_VIN\VIN_Related_Documents\ Memo_VehPop_Projection_2016VIN_NewDC_VIN.docx

Table 5. Vehicle Population Forecasts (Source Type Population)

State	Jurisdiction	2019	2021	2025	2030	2040	2045
DC	District of Columbia	317,477	325,955	342,912	364,107	406,498	427,694
Maryland	Calvert County	94,962	98,398	105,272	113,863	131,046	139,638
	Charles County	144,828	149,442	158,670	170,206	193,277	204,813
	Frederick County	237,344	244,741	259,533	278,025	315,007	333,498
	Montgomery County	793,978	811,491	846,518	890,302	977,870	1,021,653
	Prince George's County	654,417	665,308	687,090	714,318	768,773	796,001
	MD Total	**1,925,528**	**1,969,380**	**2,057,084**	**2,166,713**	**2,385,973**	**2,495,602**
Virginia	City of Alexandria	132,750	135,228	140,185	146,382	158,774	164,970
	Arlington County	151,884	153,975	158,157	163,385	173,841	179,068
	Fairfax County	999,761	1,026,611	1,080,310	1,147,434	1,281,681	1,348,805
	Loudoun County	308,308	322,507	350,905	386,403	457,398	492,896
	Prince William County	431,262	448,445	482,810	525,768	611,682	654,640
	VA Total	**2,023,965**	**2,086,766**	**2,212,368**	**2,369,371**	**2,683,376**	**2,840,379**
Grand Total		**4,266,969**	**4,382,101**	**4,612,363**	**4,900,191**	**5,475,847**	**5,763,675**

E. Vehicle Type VMT and VMT Percent by Hour, Day, and Month

MOVES2014b, the most recent MOVES version, requires annual VMT by five Highway Performance Monitoring System (HPMS) vehicle types. These are:

- Motorcycle (sourceTypeID = 10);
- Light duty vehicle (sourceTypeID = 25);
- Buses (sourceTypeID = 40);
- Single unit trucks (sourceTypeID = 50); and
- Combination trucks (sourceTypeID =60).

Average annual weekday VMT estimates include on-network data from the travel demand model outputs as well as local road VMT estimates, which are added in exogenously. Auto access VMT for transit riders, estimated from postprocessing, is added to the VMT of Light Duty Vehicles (sourceTypeID = 25). Modeled VMT is divided into three vehicle types: passenger vehicles, commercial vehicles, and heavy-duty vehicles. Local road VMT is developed by using a combination of observed and simulated data in the postprocessing shown in Figure 4.

The local road VMTs are added to VMT from the travel model to produce total VMT. The resulting total VMT of the three vehicle types is then classified by five MOVES vehicle types using observed jurisdictional Highway Performance Monitoring System (HPMS) VMT percentages. Figure 4 illustrates the process of developing VMT for five HPMS vehicle types.

An EPA converter, AAD VMT Calculator HPMS.XLS, is used to convert daily VMT into the required annual VMT necessary for MOVES. The converter uses annual average weekday VMT (AADVMT) at the HPMS level to calculate type of day (i.e., weekday or weekend day), monthly and yearly VMT in terms of HPMS and/or MOVES source types. It generates the HPMSVTypeYear, monthVMTFraction, and dayVMTFraction tables from AADVMT and monthly/weekend-day adjustment factors.

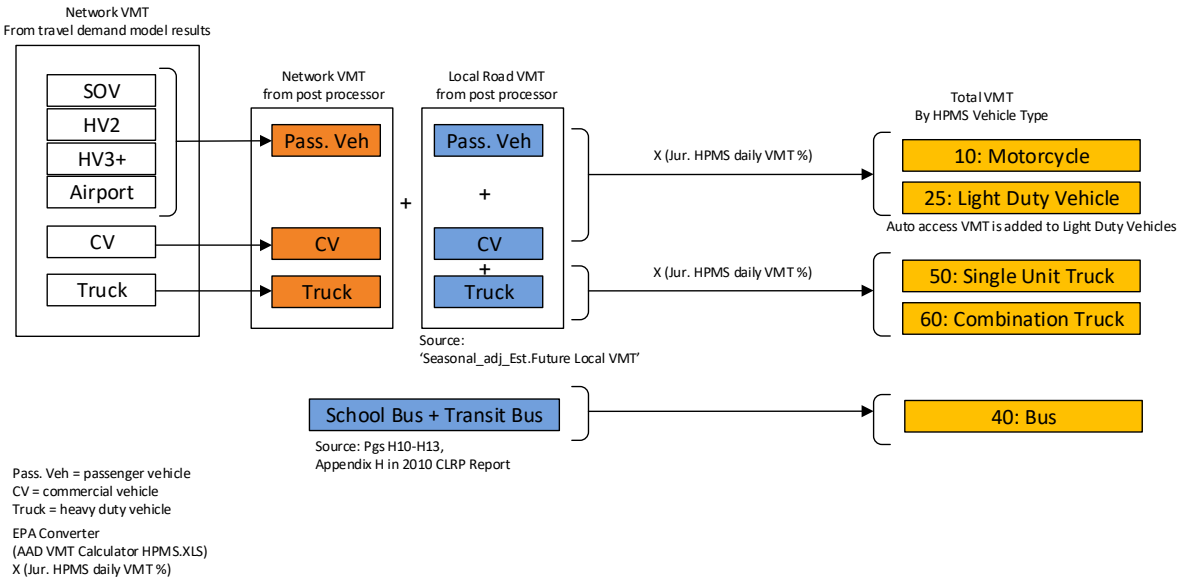


Figure 4. Annual VMT Calculation Process

F. Ramp Fraction

Local data are used to estimate the local ramp fraction using a method approved by the MOVES Task Force. The locally-derived percentage is equal to 8 percent of VHT, which, coincidentally, is the same as the MOVES default value.

4.0 Non-Travel Inputs (Meteorology, Fuel, and Control Programs)

A. METEOROLOGY

Meteorology data used in the conformity analysis for a particular pollutant match the data used in the Attainment State Implementation Plan (SIP) or Maintenance Plan demonstrating attainment or maintenance respectively of the national ambient air quality standard (NAAQS) for that pollutant. The meteorology data used in this conformity analysis match the data used in developing MOVES2014a based motor vehicle emissions budgets (MVEBs) for the maintenance plan for the 2008 ozone NAAQS. These MVEBs were approved by EPA and became effective May 15, 2019. Since there is no difference in meteorology data format for MOVES2014a and MOVES2014b, data from the above maintenance plan were used in the same format for this analysis.

B. FUEL SUPPLY, FORMULATION, & FUEL USAGE FRACTION

The state air agencies of the District of Columbia, the state of Maryland, and the Commonwealth of Virginia provided fuel characteristics data for the analysis years in the MOVES2014b ready format.

For analysis years 2019 and beyond, the gasoline sulfur content used was 10 ppm (except for Maryland), which is an assumption that is consistent with the 2014 Tier 3 rule of EPA. Maryland used actual local fuel samples to develop gasoline sulfur values for years 2019 and 2021 and used Tier 3 gasoline sulfur value assumptions (10 ppm) for 2025 and beyond.

C. INSPECTION/MAINTENANCE (I/M) PROGRAMS

The District of Columbia, Maryland, and Virginia provided details of I/M programs for the analysis years in MOVES2014b ready format.

In addition to the above inputs there are state-specific programs that were included in the analyses:

D. STATE-SPECIFIC CONTROL PROGRAMS

1. Early NLEV: The District of Columbia, Maryland, and Virginia adopted an Early NLEV program, which is reflected in all analysis years. Early NLEV input database file – MOVES2014_early_NLEV

2. Stage II: Varies by jurisdiction as follows:
   - District of Columbia: 1999 onwards - Refueling vapor program adjustment- 0.9, Refueling spill program adjustment- 0.5 (MOVES2014b defaults)

   - Maryland: 2017 onwards – No Stage II program, MOVES2014b Stage II database file - md_no_stageii (reflects refueling vapor program adjustment & refueling spill program adjustment at 0.0)

   - Virginia: 2015 onwards - No Stage II program, MOVES2014b Stage II database file - va_stage2_input_20161104 (reflects refueling vapor program adjustment & refueling spill program adjustment at 0.0)

3. CAL-LEV /ZEV Programs: Maryland adopted CAL-LEV II and CAL-LEV III programs in 2007 and 2012 respectively. CAL-LEV II and CAL-LEV III programs became effective for the model year 2011 and 2015-2025 vehicles respectively. The CAL-LEV II program includes a Zero Emissions Vehicle (ZEV) mandate that car manufacturers must meet. The CAL-LEV III program strengthens this mandate, increasing the requirements for ZEVs beginning in 2018. Both programs are reflected in all analysis years.* The following auxiliary files, provided by the Maryland Department of the Environment (MDE), were used to model these programs in the Maryland jurisdictions:

   MOVES2014b Cal-Lev Database File - MOVES2014_caleviii2011;
   MOVES2014b ZEV Program Information - Included in all MD MS-Excel input files as a tab (ZEV_AVFT_MD_moves2014b)

   * EPA and NHTSA jointly published a rule (SAFE Vehicle Rule Part One: One National Program) effective November 26, 2019. Through this rule, EPA withdrew the Clean Air Act preemption waiver granted to California in January 2013 as it relates to California's GHG and ZEV programs. Though the rule also affects inputs related to Maryland's CAL-LEV/ZEV programs, those inputs are included in this conformity analysis without any changes as the conformity process was already underway at the time the rule was published on September 27, 2019. Also, MDE staff was still in the process of receiving guidance from EPA on how to accommodate this rule into MOVES2014b inputs at the time this document was being developed. For the above reasons, no changes were made to Maryland's CAL-LEV/ZEV programs in this conformity analysis.

APPENDIX SUPPLEMENT

TABLE AS1 - Population Mapping from MOBILE6.2 Vehicle Types to MOVES Source Types

MOBILE6.2 Vehicle		MOVES Source Type		
ID	Name	ID	Name	Fraction
1	LDGV	21	Passenger Car	1.00
2	LDGT1	31	Passenger Truck	0.78
		32	Light Commercial Truck	0.22
3	LDGT2	31	Passenger Truck	0.78
		32	Light Commercial Truck	0.22
4	LDGT3	31	Passenger Truck	0.78
		32	Light Commercial Truck	0.22
5	LDGT4	31	Passenger Truck	0.78
		32	Light Commercial Truck	0.22
6	HDGV2B	31	Passenger Truck	0.63
		32	Light Commercial Truck	0.37
7	HDGV3	31	Passenger Truck	0.63
		32	Light Commercial Truck	0.37
8	HDGV4	31	Passenger Truck	0.06
		32	Light Commercial Truck	0.94
9	HDGV5	31	Passenger Truck	0.06
		32	Light Commercial Truck	0.94
10	HDGV6	43	School Bus	0.04
		52	Single Unit Short-haul Truck	0.69
		53	Single Unit Long-haul Truck	0.03
		54	Motor Home	0.23
		61	Combination Short-haul Truck	0.01
11	HDGV7	43	School Bus	0.04
		52	Single Unit Short-haul Truck	0.69
		53	Single Unit Long-haul Truck	0.03
		54	Motor Home	0.23
		61	Combination Short-haul Truck	0.01
12	HDGV8A	52	Single Unit Short-haul Truck	0.90
		53	Single Unit Long-haul Truck	0.08
		61	Combination Short-haul Truck	0.02
13	HDGV8B	52	Single Unit Short-haul Truck	0.90
		53	Single Unit Long-haul Truck	0.08
		61	Combination Short-haul Truck	0.02
14	LDDV	21	Passenger Car	1.00

TABLE AS1 - Population Mapping from MOBILE6.2 Vehicle Types to MOVES Source Types

MOBILE6.2 Vehicle Type		MOVES Source Type		
ID	**Name**	**ID**	**Name**	**Fraction**
15	LDDT12	31	Passenger Truck	0.42
		32	Light Commercial Truck	0.58
16	HDDV2B	31	Passenger Truck	0.43
		32	Light Commercial Truck	0.57
17	HDDV3	31	Passenger Truck	0.43
		32	Light Commercial Truck	0.57
18	HDDV4	31	Passenger Truck	0.10
		32	Light Commercial Truck	0.90
19	HDDV5	31	Passenger Truck	0.10
		32	Light Commercial Truck	0.90
20	HDDV6	51	Refuse Truck	0.01
		52	Single Unit Short-haul Truck	0.72
		53	Single Unit Long-haul Truck	0.06
		54	Motor Home	0.07
		61	Combination Short-haul Truck	0.11
		62	Combination Long-haul Truck	0.03
21	HDDV7	51	Refuse Truck	0.01
		52	Single Unit Short-haul Truck	0.72
		53	Single Unit Long-haul Truck	0.06
		54	Motor Home	0.07
		61	Combination Short-haul Truck	0.11
		62	Combination Long-haul Truck	0.03
22	HDDV8A	51	Refuse Truck	0.02
		52	Single Unit Short-haul Truck	0.30
		53	Single Unit Long-haul Truck	0.02
		61	Combination Short-haul Truck	0.35
		62	Combination Long-haul Truck	0.31
23	HDDV8B	51	Refuse Truck	0.02
		52	Single Unit Short-haul Truck	0.30
		53	Single Unit Long-haul Truck	0.02
		61	Combination Short-haul Truck	0.35
		62	Combination Long-haul Truck	0.31
24	MC	11	Motorcycle	1.00
25	HDGB	43	School Bus	1.00
26	HDDBT	41	Intercity Bus	0.62
		42	Transit Bus	0.38
27	HDDBS	43	School Bus	1.00
28	LDDT34	31	Passenger Truck	0.42
		32	Light Commercial Truck	0.58

APPENDIX F

Transportation Emissions Reduction Measures (TERMS)

TRANSPORTATION EMISSIONS REDUCTION MEASURES (TERMs) ANALYSIS

for the Visualize 2045 and FY2019-2024 TIP

TECHNICAL DOCUMENTATION

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BACKGROUND

Mobile emissions forecasts are developed on the basis of modeled travel demand. The TPB's travel model takes into account the key influences on trip making such as where future development will occur and what future transportation projects will be built. The model, however, does not explicitly account for other programs that are much smaller in scale but are nonetheless expected to influence trip-making in the future. These strategies or actions are known as Transportation Emission Reduction Measures, or TERMs. TERMs may be considered to offset forecasted mobile emission levels by reducing the number of vehicle trips, reducing vehicle miles traveled (VMT) or by reducing delay. Common examples of TERMs typically include ridesharing and telecommuting programs, improved bike and pedestrian facilities and clean fuel vehicle programs. As these programs generally affect a small segment of the regional population, the mobile emissions impacts resulting from individual TERM may be estimated using relatively simple spreadsheet-based techniques. Analysis of TERMs impacts has been undertaken to demonstrate the amount of emission reductions that would be expected from TERMs actions if such a need was warranted.

This document presents an evaluation of emission reductions that might be expected from four TERMs categories:

A. MWCOG/TPB Commuter Connections Program: The Commuter Connections Program has been a cornerstone for regional travel demand management (TDM) and emissions reductions since its inception in 1999. The program encourages the use of alternatives to the single occupant driver mode. The program currently serves a substantial geographic area that extends well beyond the TPB member jurisdictions.

B. Regional Incident Management Program (MATOC): The Metropolitan Area Transportation Operations Coordination (MATOC) promotes communication and timely information sharing among the region's 'first-responders' to emergency incidents that occur on the region's transportation system. Effective responses to incidents reduce fuel consumption attributed to delay which in turn yields emissions reduction benefits.

C. Pedestrian and Bicycle Facilities Expansions/Enhancements: The FY2019-2024 Transportation Improvement Program (TIP) includes pedestrian and bicycle facility improvements in the form of trails, bicycle paths, dedicated bicycle lanes and sidewalks. These types of projects are considered a TERM strategy as they encourage the use of non-motorized modes.

D. Informal Carpool Lots (Slugging): 'Slugging' is a term that refers to an informal carpooling practice that has evolved in the I-95 and I-395 corridor for decades. I-95 and I-395 HOV lanes provide substantial travel time savings in the corridor, and thus provide a clear incentive for travelers to form carpools during peak periods. Slugging is essentially an informal arrangement by which prospective carpooling passengers queue up at designated locations to be paired with auto drivers searching for passengers. This arrangement for forming multi-occupant vehicles reduces single occupant driving and serves to reduce the overall delay of the system.

The emissions reductions estimated in this document are intended to provide an approximate estimate of the emissions reductions that might be expected from each TERM category using emission rates derived from the most recent MOVES2014a modeling conducted by TPB staff. Emission reductions are calculated for Ozone criteria pollutants such as VOC and NOX (in short tons/day) and analyzed for the TPB's conformity assessment. Emission reduction results are provided by the specific analysis years of Visualize 2045 Air Quality Conformity assessment: 2019, 2021, 2025, 2030, 2040 and 2045.

A. EMISSIONS REDUCTIONS FROM MWCOG/TPB COMMUTER CONNECTIONS PROGRAMS

Mobile emissions reductions attributed to the Commuter Connections Program were estimated as follows: Staff obtained historical daily VMT reductions documented in the Commuter Connections' TERMs analysis reports[1] as a basis for developing future VMT estimates as shown in Table 1. The table indicates that for Audit #7 in year 2017, the Commuter Connections programs helped reduce about 3 million vehicle miles from the highway system. Next, the reported reductions were extrapolated into the future based on rates implied by the travel demand model VMT. The growth rates are shown in Table 2. Table 3 shows the resulting historical VMT reductions and the extrapolated reductions.

Table 1. Historical VMT Reductions from Commuter Connections

Program Year	Audit #1 1999	Audit #2 2002	Audit #3 2005	Audit #4 2008	Audit #5 2011	Audit #6 2014	Audit #7 2017
Telework Resource Center	606,908	279,692	226,913	413,703	241,834	205,511	370,563
Guaranteed Ride Home	13,069	202,058	334,088	227,428	208,346	212,834	181,335
Expanded Telecommuting	0	0	36,859	0	0	0	0
Integrated Rideshare	6,977	117,940	146,612	199.079	51,589	66,442	51,340
Employer Outreach	90,000	1,107,698	1,339,818	968,047	1,656,726	1,327,044	1,841,429
Employer Outreach– Bicycling	0	1,225	3,431	0	0	0	0
Mass Marketing	0	0	132,861	69,274	78,297	173,269	163,250
Commuter Operations Center	0	0	279,055	575,237	180,409	488,226	401,327
TOTAL	716,964	1,708,613	2,499,637	2,453,895	2,418,264	2,473,326	3,009,244

Table 2. Average Annual VMT Growth

Year	VMT*	Annual Growth
2019	173,227,597	0.00%
2021	176,875,154	1.05%
2025	184,701,381	1.11%
2030	191,512,001	0.74%
2040	204,290,216	0.67%
2045	210,273,755	0.59%
Avg. Annual Growth		0.89%

Note: *Annual average weekday VMT from travel demand forecasts

[1] *"Transportation Emission Measure (TERM) Analysis Report", which has been published in September 1999 (Audit #1 of the FY1997-FY1999 period), March 2003 (Audit#2 of the FY2000-FY2002 period), January 2006 (Audit#3 of the FY2003-FY2005 period), January 2009 (Audit#4 of the FY2006-FY2008 period), January 2012 (Audit#5t of the FY2009-FY2011 period), November 2014 (Audit #6 of the FY2012-FY2014 period), and November 2017 (Audit #7 of the FY2014-2017).*

Table 3. Projection of Commuter Connections VMT Reduction

Analysis Year	VMT Reductions
1999	716,954
2002	1,708,613
2005	2,499,637
2008	2,453,895
2011	2,418,264
2014	2,473,326
2017	3,009,244
,2019	3,063,332
2021	3,118,392
2025	3,231,500
2030	3,378,671
2040	3,693,425
2045	3,861,633

*Note: 1999 to 2017: Historical VMT from Commuter Connections; and 2019 and beyond: Forecasted VMT

.

As the TPB travel model was calibrated with 2007/08 data, the 'affect' of the Commuter Connections Program was already reflected in the travel behavior data used to calibrate the travel model. Thus, to avoid 'double-counting' in this regard, the estimated VMT reductions shown in Table 4 were adjusted by subtraction, so that VMT reductions would begin after a 2008 'base year.' For example, the year 2016 adjusted VMT reduction was calculated as:

3,063,332 (2019 reduction) – 2,453,895 (2008 reduction) = 609,437

The adjusted reductions per day are shown in Table 4.

Table 4. Projection of Adjusted VMT Reductions (in VMTs/day)

Year	Ozone (VOC and NO_x)
2008	0
2019	609,437
2021	664,497
2025	777,605
2030	924,776
2040	1,239,530
2045	1,407,738

The VMT reductions in Table 4 were next multiplied by emission rates reflecting passenger cars and passenger trucks to arrive at mobile emissions reductions. The emission rates were derived by dividing year-specific passenger car/truck emissions by passenger car/truck vehicle miles as developed by the MOVES2014a (see Table 5). The projected daily VMT in Table 4 are multiplied to corresponding emission rates in Table 5 to calculate emission reductions of Commuter Connections in Table 6.

Table 5. Emission Rates of Commuter Connections Programs (in grams/mile)

Years	Ozone VOC	Ozone NOx
2019	0.272	0.245
2021	0.241	0.201
2025	0.209	0.144
2030	0.141	0.082
2040	0.099	0.043
2045	0.096	0.041

Table 6. Emission Reductions by Commuter Connections Programs (in short tons/year)

Years	Ozone VOC	Ozone NOx
2019	0.183	0.165
2021	0.177	0.147
2025	0.179	0.123
2030	0.144	0.084
2040	0.135	0.058
2045	0.149	0.063

B. EMISSIONS REDUCTIONS FROM THE REGIONAL INCIDENT MANAGEMENT PROGRAM

The Metropolitan Area Transportation Operations Coordination (MATOC) Program – a jointly funded program by the state of Maryland, the District of Columbia, and the Commonwealth of Virginia - monitors, gathers and communicates timely incident information, so that transportation agencies may better coordinate their respective response activities in order to reduce travel delay and fuel consumption and better inform the public. The information allows travelers to make informed travel decisions by deferring/delaying trip making, taking an alternate route, or switching modes of travel.

Mobile emissions reductions from the MATOC program were estimated by calculating the differences in delay that result with and without the MATOC program. A methodology was developed especially for this analysis based on published data[2] and the following assumptions:

- Fairfax County, VA, was selected for developing emissions rates by speed bin from the MOVES model as it has a balanced mix of restricted-access facilities (i.e., highways and expressways) and unrestricted-access facilities (i.e., arterials, collectors and local roads).
- Queue travel speeds after a highway/expressway incident typically fall in the 12.5 - 17.5 mph speed bin in the MOVES2014a model.
- '.....MATOC is typically involved in approximately 20 minor incidents and one major incident on arterials and freeway, respectively, of regional significance per month....'

[2] *MATOC Benefit-Cost Analysis White Paper", June 2010 authored by Sabra, Wang & Associates, Inc., on behalf of MWCOG and under the guidance of the MATOC Steering Committee.*

Methodology

The methodology is composed of three elements: (1) development of speed specific emission rates; (2) development of regional emission rates; and (3) development of mobile emission savings:

(1) Speed specific emission rates development: An adjustment factor, $\mathrm{Rate_{adj}}$, was developed to align 'non-speed sensitive' mobile emission rates developed as part of the conformity assessment from MOVES Inventory Approach with a low speed range, 12.5-17.5 mph, which is a typical queue speed after incident occurrences:

$$\mathrm{Rate_{adj}} = \frac{\mathrm{P\_Rate_e}}{\mathrm{P\_Rate_i}}$$

Where:

$\mathrm{P\_Rate_e}$ (grams per mile) was derived using MOVES' Emission Rate Approach for Fairfax County, for year 2015 based on the 2012 CLRP Air Quality Conformity Assessment, and applicable to the 4th MOVES Speed Bin (i.e., 12.5-17.5 mph); and

$\mathrm{P\_Rate_i}$ (grams per mile) was derived using MOVES' Inventory Approach for Fairfax County, for year 2015 based on the 2012 CLRP Air Quality Conformity Assessment as follows:

$$\mathrm{P\_Rate_i} = \frac{\text{Total Emissions FFX Co., 2012 CLRP, Yr 2015}}{\text{Total VMT FFX Co., 2012 CLRP, Yr 2015}}$$

For Ozone (VOC and NOx) daily emissions the corresponding rate was 1.30.

(2) Regional emission rates development: Total regional emissions by pollutant and analysis year were divided by the corresponding VMT from the Visualize 2045 Air Quality Conformity Analyses, as follows:

$$\mathrm{Rate_i\ (grams\ per\ mile)} = \frac{\text{Total Regional Emissions by Analysis Year}}{\text{Total Regional VMT by Analysis Year}}$$

The resulting regional emission rates were developed in Table 7.

(3) Mobile emissions savings development attributable to MATOC:

$$\text{Emissions Savings (grams per mile)} = \text{Queue VMT Savings} * \mathrm{Rate_i} * \mathrm{Rate_{adj}}$$

Based on the MATOC report[2],
assumed Major Incident Queue VMT Savings = 452,120 (vehicle miles) and
assumed Minor Incident Queue VMT Savings = 19,040 (vehicle miles).

Assumed Daily Emissions Savings (grams per mile) by Pollutant =
1/30 (1 major incident per month) X Emissions Savings from Major Incident +
20/30 (20 minor incidents per month) X Emissions Saving from Minor Incident

Based on assumptions above total emissions savings from the MATOC program are calculated as in Table 8.

Table 7. Mobile Emissions Rates (in grams/mile)

Years	Ozone VOC	Ozone NOx
2019	0.376	0.592
2021	0.330	0.468
2025	0.283	0.324
2030	0.192	0.205
2040	0.136	0.133
2045	0.133	0.131

Table 8. Mobile Emissions Reductions from Regional Incident Management Program (in short tons/day)

Years	Ozone VOC	Ozone NOx
2019	0.011	0.018
2021	0.010	0.014
2025	0.009	0.010
2030	0.006	0.006
2040	0.004	0.004
2045	0.004	0.004

C. EMISSIONS REDUCTIONS FROM THE PEDESTRIAN AND BIKE FACILITIES EXPANSIONS & ENHANCEMENTS

A methodology was developed to estimate mobile emissions reductions from VMT savings realized from travelers choosing non-motorized modes of travel instead of driving. It is assumption-driven[3], so that the resulting emission reductions are dependent on the following assumptions:

- Facility construction/expansions/enhancements were post-2007/2008;
- Baseline Year 2010 Pedestrian Facilities Length = 634 miles[4]. VMT estimates were based only on Home-Based-Work (HBW) trips from the regional travel demand model;
- Average trip length (ATL) = 2.46 miles[5]; and
- Non-motorized HBW trips percentage = 3% of the regional total HBW trips[5].

[3] *Caltrans/Air Resources Board analysis, dated December, 1995, which was developed by COMSIS Corporation, for FHWA & FTA, and which was previously used by MWCOG/DTP staff for TERMs analyses starting in 1993*

[4] *"2015 Bicycle and Pedestrian Plan for the National Capital Region Report", TPB, January 2015*

[5] *"2016 State of the Commute Survey Report," June 2017*

Methodology:

Baseline (Year 2010) VMT reductions from use of the pedestrian and bike facilities are as a function of non-motorized HBW trips percentage, HBW trips (regional total), and average trip length:

Baseline VMT Reductions = [HBW Ped & Bike Trips %] x [Avg. Weekday HBW Trips] x [ATL]
= 3% x 3,659,233 trips x 2.46 miles
= 270,117

Baseline (Year 2010) VMT reductions per mile are estimated as follows:

VMT Reductions per mile = [Baseline VMT reductions]/[Baseline length of ped + bike facilities]
= 270,117/634
= 426.05

VMT reductions per mile were estimated based on the mileage of new or expanded pedestrian and bike facilities included in Visualize 2045 & FY2019-2024 TIP beyond 2007/2008 according to their forecasted completion years. Facilities without adequate numerical data not allowing computations or financial support were omitted. The following pedestrian and bike facilities expansions were assumed such as:

Year 2019: 24.9 lane miles,
Year 2021: 75.9 lane miles and
Year 2025 - 2045: 178.0 lane miles.

Future average weekday VMT reductions due to the lane mile additions above are:

Year 2019: 24.9 miles x 426.05 = 10,609 vehicle miles,
Year 2021: 75.9 miles x 426.05 = 33,352 vehicle miles and
Year 2025 - 2045: 178.0 miles x 426.05 = 75,839 vehicle miles.

The emissions rates previously used in the Commuter Connections calculations (Table 5) were multiplied by the above VMT reductions by analysis year to yield mobile emission reductions from pedestrian and bike facilities expansions (Table 9).

Table 9. Mobile Emissions Reductions from Pedestrian and Bike Facilities Expansion (in short tons/day)

Years	Ozone VOC	Ozone NOx
2019	0.003	0.003
2021	0.009	0.007
2025	0.017	0.012
2030	0.012	0.007
2040	0.012	0.007
2045	0.008	0.003

D. EMISSIONS REDUCTIONS FROM INFORMAL CARPOOLING

'Slugging' is an informal carpooling arrangement that occurs at several locations in the I-95 and I-395 corridors in Virginia which offers dedicated HOV lanes. Park and Ride lots without transit service were assumed as an informal carpool lot and inventoried in 2018 shown in Table 10. Capacities of the parking lots were obtained from several sources such as Commuter Connections Program, state DOTs and local jurisdictions.

Average travel distance estimates, 15.50 miles, from such facilities to work were derived from the weighted average Home-Based Work (HBW) trip lengths of traffic analysis zones (TAZs) containing slug lots. The estimates were derived directly from the TPB regional travel demand model for year 2019. Furthermore, the following assumptions were made:

1. TAZs containing each slug lot were considered as the origin of each HBW trip for this exercise because it is the starting point of the 'slugged' trip to work.
2. TAZs containing work trip destinations were considered as the destination of each HBW trip for this exercise, so that the methodology assumes the spatial distribution of slugged trips is the same as that of HBW trips in the region.
3. The slugged trips are made along the shortest path during AM peak period.
4. The average slugged trip distance was calculated as the weighted average trip distances for each slug lot, so that the computations take into account the size/utilization of each lot.
5. TAZ 2022 was used as a proxy for TAZ 2018 because no household population is associated with TAZ 2018.
6. Average vehicle mile calculations are based on trip productions which include both 'to work' and 'from work' direction.

According to the paper of 'Methods to find the Cost-Effectiveness of Funding Air Quality Projects, May 2005' by Caltrans/Air Resources Board, a default 16 mile is suggested as the length of auto trips eliminated for Ridesharing programs. According to the paper of 'Reasonably Available Control Measure (RACM) Analysis for the Baltimore Region, July 2001' by Maryland Department of Environment (MDE), an estimated 13 miles were reduced for one-way travel by people who rideshare in Guaranteed Ride Home Program based on Baltimore Metropolitan Council (BMC) Travel Demand Model Validation Report. The resulting weighted average distance of 15.5 miles (Table 10) was calculated from local data, which is within the range of the average distances reported by the other sources.

Average weekday VMT reductions were derived by multiplying capacities of the lots – reduced by 1/3 to account for less-than-full lots – by average weekday travel distances to/from these lots. The capacity reduction assumption is consistent with Washington Metropolitan Area Transit Authority (WMATA) observations (in Washington Examiner article on March 19, 2013), earlier TPB TERMs analyses, and literature research from metropolitan areas in California.

Table 10. 2018 Informal Carpool Lots Capacity and Trip Length to Work

Slug Lots Summaries	TAZ ID	2018 Parking spaces	Avg HBW Trip Length (in miles)
American Legion*	2018 (2022)	100	12.80
Baron Cameron Park	1733	50	12.30
Beltway	925	265	10.10
Bethel United Methodist Church	2745	49	16.70
Calvert County Fairgrounds (SHA Lot)	3291	20	17.00
Cherrydale Road	2732	30	17.80
Dumfries Shopping Center	2804	55	16.80
Frederick Armory	2914	230	15.90
Frederick Lot 1	2940	37	20.50
Frederick Lot 2	2940	46	20.50
Good Shepherd United Methodist Church	2732	62	17.80
Hechinger's	2664	591	14.90
Huntingtown	3299	35	24.20
Jefferson	2826	99	27.60
Kirkdale Drive	2738	41	19.40
K-Mart Dale City	2732	85	17.80
K-Mart Sudley Manor Square	2536	200	15.10
Kutner Park	1796	35	12.00
La Plata Armory	3153	20	18.70
Lusby	3324	16	27.50
Manassas Mall	2592	206	7.30
Monocacy Boulevard	2917	110	17.30
Myersville	2848	63	32.30
New Market	2888	54	26.50
North Forestdale Avenue	2734	20	18.20
Oakwood Drive	2669	44	18.70
Old Bridge Festival Shopping Center	2671	130	17.90
On-Street Parking, Dale Blvd & Ashdale Ave	2751	12	17.80
Oxbridge Center	2763	50	14.10
Portsmouth Road Commuter Lot	2537	652	14.20
Prince William Stadium	2678	190	18.00
Princedale	2712	75	21.30
Rosemont	2820	46	27.80
Solomons (Creston Lane)	3325	16	21.30
South Laurel Fringe Parking	1195	684	12.30
Sudley Road	2631	50	14.80
Sudley Town Plaza	2533	200	14.90
Tackett's Mill Specialty Center	2667	250	16.00
Triangle Commuter Lot	2803	31	17.50
Woodbridge Church of the Brethren	2760	21	15.40
Woodsboro	2879	20	27.00
Weighted Average Trip Length (Lots to work)			**15.50**

* This slug lot has an initial TAZ ID 2018 w/ no populations, and nearest TAZ ID of 2022 was applied.

Base Year 2018 lot capacities were kept constant for all the analysis years because: (1) no reliable historical data were available to allow the development of trend lines (where such data were available, the data were fragmented and deemed not reliable for extrapolation); (2) prospects for Park & Ride lot expansions were considered, but the expansions could be limited as most of these facilities are located in developed areas. As data become available, the zero-growth assumption may be revisited and revised. Based on these assumptions the average weekday VMT estimate was equal to 103,127 miles. Using the emission rates in Table 5, emission reductions from the informal carpool lots were derived in Table 11.

Table 11. Mobile Emissions Reductions from Informal Carpool Lots (in short tons/day)

Years	Ozone VOC	Ozone NOx
2019	0.031	0.028
2021	0.027	0.023
2025	0.024	0.016
2030	0.016	0.009
2040	0.011	0.005
2045	0.011	0.005

E. TOTAL MOBILE EMISSIONS REDUCTIONS FROM TERMS

The mobile emissions reductions attributed to all the TERMs described above are summarized in Table 12.

Table 12. Mobile Emissions Reductions from All TERMs Combined (in short tons/day)

Years	Ozone VOC	Ozone NOx
2019	0.228	0.214
2021	0.223	0.191
2025	0.229	0.162
2030	0.177	0.106
2040	0.162	0.074
2045	0.172	0.076

APPENDIX G

Transportation Control Measures (TCMs) Implementation

MEMORANDUM

September 11, 2014

To: **Files**

From: **Jane Posey**
Senior Transportation Engineer

Subject: **TCM Reporting: All TCMs Completed**

The transportation conformity rule and the Clean Air Act require that Transportation Control Measures (TCMs) in approved State Implementation Plans (SIPs) be implemented in a timely manner according to the schedules in the SIP. If a nonattainment or maintenance area cannot determine that TCMs are meeting the timely implementation requirement, the Long Range Plan or Transportation Improvement Program does not conform.

Table F-1 lists all TCMs included in the Washington DC- Maryland-Virginia Region's 1-Hour Ozone SIP (adopted by the Metropolitan Washington Air Quality Committee-- MWAQC on 2/19/04), the 8-Hour Ozone SIP (adopted by MWAQC on 5/23/07), and the $PM_{2.5}$ SIP (adopted by MWAQC on 3/7/2008). Following the table are TCM implementation status letters from the agencies responsible for the completion of each project. These letters confirm that all of the TCM's in Table F-1 were completed in a timely manner.

777 North Capitol Street NE, Suite 300, Washington, DC 20002-4290
Web: www.mwcog.org/tpb Phone: (202) 962-3315 Fax: (202) 962-3202

TABLE F-1
DC-MD-VA Region State Implementation Plan
TRANSPORTATION CONTROL MEASURES (TCMs)

ID	Description	Responsible Agency
DC-1	Bicycle Lane in D. C. (8 miles)	DDOT
DC-2	New CNG Powered Trash Trucks (2 Vehicles)	DDOT
DC-3	Bicycle Racks in D.C. (150 Racks)	DDOT
MD-1	Maryland Suburban Bus Replacements	MCG, PG
MD-2	Transit Parking Facilities (at Lake Forest, Tulagi, Germantown)	MDOT
MD-3	MARC Replacement/Expansion Coaches	MARC
MD-4	Bicycle Facilities	MDOT
MD-5	Park and Ride Facilities (at MD5/MD205, MD210/MD 373, I-270/MD 80)	MDOT
MD-6	Grosvenor Metro Garage (1300 spaces)	MDOT
MD-7	Maryland Park & Ride Lots (at MD 210/MD 373, I-270/ MD 124, MD 2/MD 4, MD 231/ Fairgrounds, MD 117/I-270, MD 2/MD 4)	MDOT
NV-1	Northern Virginia Districtwide Park-And-Ride Spaces (1872 spaces)	VDOT
NV-2	Transit Access Improvements (200 VRE Parking Spaces)	VDOT
NV-3	Purchase Of New Transit Buses (52 WMATA buses)	VDOT
NV-4	Improved Pedestrian Access	VDOT
NV-5	Construction of Bus Shelters (12 shelters)	City of Fairfax
NV-6	Park & Ride Spaces (3200 spaces)	VDOT
NV-7	Bicycle Lanes/Trails in Northern Virginia (12 miles)	VDOT
NV-8	Bicycle Lockers in Northern Virginia (100 lockers)	VDOT
NV-9	Hybrid Light Duty Vehicles (25 vehicles)	Fairfax County
NV-10	Bicycle Trails/Lanes in Northern Virginia (29 miles)	Arlington County P.W. County
NV-11	Sidewalk improvements in Northern Virginia (1.5 miles)	VDOT
NV-12	11 New CNG Buses in place of Diesel Buses	Arlington County
WM-1	Bicycle Racks on Buses (1458 racks)	WMATA
WM-2	ULSD; CRT Filters (886 buses)	WMATA
WM-3	CNG Buses (164 buses)	WMATA

NOTE: The projects in this list include all TCMs in the 1-Hour Ozone SIP (adopted by MWAQC 2/19/04), the 8-Hour Ozone SIP (adopted by MWAQC 5/23/07), and the $PM_{2.5}$ SIP (adopted by MWAQC on 3/7/2008).

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF TRANSPORTATION

d. Policy, Planning and Sustainability Administration

August 11, 2014

Mr. Kanti Srikanth, Director
Department of Transportation Planning
Metropolitan Washington Council of Governments
777 North Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4239

RE: Confirmation of Transportation Control Measures (TCMs) Completion

Dear Mr. Srikanth:

The Transportation Control Measures (TCMs) commitments made by the District Department of Transportation (DDOT) as a part of a regional coordinated effort to mitigate ozone emissions from on-road mobile sources have been completed as demonstrated in pervious conformity determinations. The summary of the status remains unchanged in that all TCMs committed by DDOT have been completed. Listed below are the TCM projects in our jurisdiction, completion years, and reference to the provided documentation.

ID	Description	Completion Year	Reference
DC-1	Bicycle Lanes (8 miles)	2004	DDOT internal documents
DC-2	CNG Powered Refuse Haulers (2)	2004	DDOT Letter 6/6/2004
DC-3	Bicycle Racks (150)	2004	DDOT Letter 6/6/2004

Should you have any questions, please contact Mark Rawlings at (202) 671-2234 or mark.rawlings@dc.gov.

Sincerely,

Sam Zimbabwe
Associate Director

Maryland Department of Transportation
The Secretary's Office

Martin O'Malley
Governor

Anthony G. Brown
Lt. Governor

James T. Smith, Jr.
Secretary

August 6, 2014

Mr. Gerald Miller
Co-Director of Transportation Planning (Acting)
Transportation Planning Board
Metropolitan Washington Council of Governments
777 N. Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4239

Re: Confirmation of Transportation Control Measures (TCMs) Completion

Dear Mr. Miller,

The Transportation Control Measures (TCMs) commitments made by the Maryland Department of Transportation (MDOT) as part of a regional coordinated effort to mitigate ozone emissions from on-road mobile sources have been completed as demonstrated in previous conformity determinations. The summary of the status remains unchanged in that all of the TCMs that have been committed to by MDOT have been duly completed/implemented. Listed below are the TCM projects in our jurisdictional area, their completion years, and the reference to the documentation that had been provided:

ID	Description	Completion Year	Reference
MD-1	Maryland Suburban Bus Replacements	2003	MDOT letter 7/29/2003
MD-2	Transit Parking Facilities (@ Lake Forest, Tulagi, Germantown)	2003	MDOT letter 7/29/2003
MD-3	MARC Replacement/Expansion Coaches	2004	MDOT letter 7/29/2003
MD-4	Bicycle Facilities	2003	MDOT letter 7/29/2003
MD-5	Park & Ride Facilities (@ MD5/MD205, MD210/MD373, I-270/MD80	2003	MDOT letter 8/25/2004
MD-6	Grosvenor Metro Garage (1,300 spaces)	2004	Montgomery County email 7/30/2004
MD-7	Park & Ride Facilities (@ MD210/MD373, I-270/MD124, MD2/MD4, MD231/Fairgrounds, MD117/I-270, MD2/MD4)	2001	MDOT letter 9/3/2003

My telephone number is _____
Toll Free Number 1-888-713-1414 TTY Users Call Via MD Relay
7201 Corporate Center Drive, Hanover, Maryland 21076

We appreciate your cooperation in this matter. If you have any questions or comments, please do not hesitate to me at 410-865-1279, toll-free at 888-713-1414 or via email at lerickson@mdot.state.md.us.

Thank You,

Lyn Erickson, Manager
Office of Planning and Capital Programming

Attachment
cc: Mr. Donald A. Halligan, Director, Office of Planning and Capital Programming
Maryland Department of Transportation
Ms. Heather Murphy, Deputy Director, Office of Planning and Capital Programming
Maryland Department of Transportation
Michael W. Nixon, Manager, Office of Planning and Capital Programming
Maryland Department of Transportation
Mr. Howard Simons, Air Quality Specialist, Office of Planning and Capital Programming
Maryland Department of Transportation

COMMONWEALTH of VIRGINIA

DEPARTMENT OF TRANSPORTATION
4975 Alliance Drive
Fairfax, VA 22030

CHARLES A. KILPATRICK, P.E.
COMMISSIONER

August 21, 2014

Mr. Kanathur Srikanth
Director of Transportation Planning
Transportation Planning Board
Metropolitan Washington Council of Governments
777 N. Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4239

Re: Confirmation of Transportation Control Measures (TCMs) Completion

Dear Mr. Srikanth,

The Transportation Control Measures (TCMs) commitments made by our agency as part of a regional coordinated effort to mitigate ozone emissions from on-road mobile sources have been completed in a timely manner and consistent with the agreed upon schedule. Listed below are the TCM projects in our jurisdictional area and their completion years:

ID	Description	Completion Year
VA-1	Northern Virginia Districtwide Park & Ride Facilities (1,872 Parking Spaces)	1996-1999
VA-2	Transit Access Improvements (200 VRE Parking Spaces)	1994 & 2002
VA-3	Purchase of New Transit Buses (52 WMATA Buses)	1995-1996
VA-4	Improved Pedestrian Access	2001-2004
VA-5	Construction of Bus Shelters (12 Shelters)	2000-2004
VA-6	Park & Ride Facilities (3,200 Parking Spaces)	2000-2002
VA-7	Northern Virginia Bicycle Lanes/Trails (12 miles)	1999-2003
VA-8	Northern Virginia Bicycle Lockers (100 Lockers)	1997-2002
VA-9	Hybrid light Duty Vehicles purchase (25 Vehicles)	2002-2003
VA-10	Northern Virginia Bicycle Lanes/Trails (29 miles)	2000-2003
VA-11	Northern Virginia Sidewalk Improvements (1.5 miles)	2001-2003
VA-12	CNG Bus Replacements for Diesel Buses (11 Vehicles)	2002-2003

Thank you for the TPB's cooperation assistance and cooperation. Please contact me if you need any additional information.

Sincerely,

Norman Whitaker, AICP
Transportation Planning Manager
C: Maria Sinner, P.E.

August 5, 2014

Mr. Gerald Miller
Co-Director of Transportation Planning (Acting)
Transportation Planning Board
Metropolitan Washington Council of Governments
777 N. Capitol Street, N.E., Suite 300
Washington, D.C. 20002-4239

Re: Confirmation of Transportation Control Measures (TCMs) Completion

Dear Mr. Miller,

The Transportation Control Measures (TCMs) commitments made by our agency as part of a regional coordinated effort to mitigate ozone emissions from on-road mobile sources have been completed in a timely manner and consistent with the agreed upon schedule. Listed below are the TCM projects in our jurisdictional area and their completion years:

ID	Description	Completion Year
WM-1	Bicycle Racks on Buses (1,458 Racks)	2004
WM-2	Ultra Low Sulfur Diesel Fuel with CRT Filters (886 Buses)	2004
WM-3	CNG Buses Purchase (164 Buses)	2004

Sincerely,

Shyam Kannan
Managing Director
Office of Planning

Washington Metropolitan Area Transit Authority

600 Fifth Street, NW
Washington, D.C. 20001
202/962-1234

By Metrorail:
Judiciary Square-Red Line
Gallery Place-Chinatown
Red, Green and
Yellow Lines

A District of Columbia
Maryland and Virginia
Transit Partnership