

June 15, 2022

visualize
2045 A long-range
transportation plan
for the National
Capital Region

APPENDIX A

Financial Plan

June 15, 2022

**FINANCIAL PLAN FOR THE VISUALIZE 2045 (2022 UPDATE)
LONG-RANGE TRANSPORTATION PLAN FOR THE NATIONAL CAPITAL REGION**

June 15, 2022

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.

Visualize 2045 is developed by the National Capital Region Transportation Planning Board (TPB), the federally designated metropolitan planning organization (MPO) for metropolitan Washington. It is responsible for developing and carrying out a continuing, cooperative, and comprehensive transportation planning process in the metropolitan area. 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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FINANCIAL ANALYSIS FOR THE VISUALIZE 2045 LONG-RANGE TRANSPORTATION PLAN FOR THE NATIONAL CAPITAL REGION

1. Introduction and Summary

INTRODUCTION

The National Capital Region Transportation Planning Board (TPB) is the federally designated Metropolitan Planning Organization (MPO) for the National Capital Region as per 23 USC Part 450 and 49 USC Part 613 and plays an important role as the regional forum for transportation planning. The TPB prepares plans and programs that the federal government must approve in order for federal-aid transportation funds to flow to the metropolitan Washington region.

Members of the TPB include representatives of local governments; state transportation agencies; the Maryland and Virginia General Assemblies; the Washington Metropolitan Area Transit Authority (WMATA); and non-voting members from the Metropolitan Washington Airports Authority (MWA) and federal agencies. The TPB has an extensive public involvement process, and provides a 30-day public comment period before taking action on plans and programs. The TPB's planning area covers the District of Columbia (D.C.) and surrounding jurisdictions. In Maryland these jurisdictions include Charles County, Frederick County, Montgomery County, and Prince George's County, plus the cities of Bowie, College Park, Frederick, Gaithersburg, Greenbelt, Laurel, Rockville, and Takoma Park. In Virginia, the planning area includes Alexandria, Arlington County, the City of Fairfax, Fairfax County, Falls Church, Loudoun County, the Cities of Manassas and Manassas Park, Prince William County and a portion of Fauquier County.

The TPB is responsible for conducting the continuing, comprehensive and cooperative (3C) planning process as outlined in 23 USC 450 and 49 USC 613. The primary products of the 3C planning process the TPB is required to develop are the quadrennial long-range metropolitan transportation plan (LRTP) and the biennial transportation improvement program (TIP). The LRTP documents the MPO's transportation planning policy together with the planned transportation projects intended to be implemented over a no less than 20-year planning horizon. Per federal regulation 23 USC 450.324, the LRTP shall include a financial plan that demonstrates how the adopted transportation plan can be implemented, by estimating costs and revenue sources that are reasonably expected to be available to adequately operate and maintain the highway and public transportation system. In this manner the scope and contents of the LRTP are financially constrained.

The previous quadrennial update to the TPB's LRTP, Visualize 2045 (2018), and its financial plan element were adopted by the TPB on October 17, 2018. The TPB's new LRTP, the 2022 update to Visualize 2045, covers a period of 23 years, between 2023 and 2045, and represents a quadrennial update to the 2018 plan. Work on the update of the LRTP began in early 2020 in a cooperative effort with the representatives of the TPB's member jurisdictions and agencies. Throughout the process the TPB has engaged and received comments and input from the region's residents and interest groups

via its Community Advisory Committee process, two 30-day open public comment periods preceding updates to the projects and the TIP, and online publications and outreach activities.

The update to the projects in Visualize 2045 was undertaken as part of the TPB's Technical Inputs Solicitation for the Air Quality Conformity Analysis of the Constrained Element of Visualize 2045 and the FY 2023-2027 TIP that started in December of 2020 and ended with the TPB's approval, after a 30-day public comment period of the project updates for use in regional Air Quality Conformity analysis on June 16, 2021 (with revisions adopted on July 21, 2021). The updates to the projects were provided by the TPB member jurisdictions and agencies working with the TPB staff. The TPB Policy element: the TPB Vision, the Regional Transportation Priorities Plan (RTPP) goals and the Aspirational Initiatives informed the development of the inputs. The federal Performance-Based Planning And Programming process (PBPP) and Congestion Management Process (CMP) as well as the federal planning factors also informed the development of the inputs.

The Visualize 2045 (2022) financial plan includes estimates of the project costs and the revenue amounts reasonably expected to be available to implement the projects as well as operate and maintain the existing transportation system. It was prepared by the TPB member jurisdiction and agency staffs, working with the TPB staff. The forecasts and the assumptions were reviewed by a working committee and subsequently reported to and reviewed by the TPB Technical Committee. The financial plan includes revenue and expenditure estimates for the regional rail and bus transit system operated by WMATA and funded by member jurisdictions. The expenditure and revenue estimates for the WMATA transit system were developed with inputs from both WMATA and its members. Similarly, the financial plan includes expenditure and revenue estimates that were developed and reviewed for the commuter rail services and the local transit services, including planned light rail and streetcar projects.

EXECUTIVE SUMMARY

This analysis demonstrates that the Visualize 2045 LRTP, covering the period 2023 through 2045, is financially constrained. The plan is financially realistic, balancing all proposed new project investments and system maintenance and operating costs with reasonable revenue expectations, as agreed upon by the MPO and its implementation agency partners in the metropolitan transportation planning process. 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 public transportation system in the region.

Because federal planning regulations require that the financial analysis show reasonably anticipated revenues and expenditures in year of expenditure (YOE) dollars, this report provides estimates in year of expenditure dollars. Year of expenditure dollars include inflation rates in the future years.

A total of \$223.3 billion in transportation expenditures is projected for the metropolitan Washington region for the 23-year period of 2023 to 2045. The majority, \$180.8 billion (81 percent), of future transportation revenues will be devoted to the operations and maintenance of the public transportation and highway systems. Funding for expansion of the transportation system makes up the remainder: \$42.5 billion (19 percent).

Evaluating expenditures by mode, WMATA expenditures constitute 45 percent and other public transportation 22 percent of the total through 2045. Expenditures on highways constitute 32.5

percent of the total. Expenditures for pedestrian and bicycle systems included in the LRTP are 0.4 percent; however most such projects in the region take place at the local level and are not included in the LRTP.

Funding is identified for significant capital projects, including the K Street Transitway in the District of Columbia (CE3081), the I-270 and I-495 Traffic Relief Plan (Ops Plan) in Maryland (CE6432), and implementation of the Transforming Rail initiative in Virginia including construction of a new span of the Long Bridge across the Potomac River (T6727). The financial plan also demonstrates full funding for WMATA's forecast needs for both operations and state of good repair through 2045.

Contents of the analysis report include:

- Section 2 summarizes the results of the regional forecasts for revenues and expenditures. Observations are made about the forecasts for both.
- Section 3 provides information on the methodologies used in developing the forecast of revenues and expenditures for each state, including local jurisdictions and WMATA.
- Section 4 provides a comparison of the Visualize 2045 update financial analysis results to those of previous long-range transportation plans.
- Section 5 provides an overview of recent trends and future options for additional transportation revenues for the region. Recent projects and proposals that make use of innovative financing are also discussed. In regard to additional potential finance resources and innovative financing techniques, an extensive review was conducted for the 2010 LRTP financial analysis, which includes information still applicable.

2. Summary of the Results of the Regional Forecasts

This analysis demonstrates that the projects and programs contained in the long-range transportation plan for the years 2023-2045 can be funded with the reasonably expected revenues and that the financial plan for the Visualize 2045 long-range transportation plan conforms to federal guidelines requiring metropolitan planning organizations to develop a financially constrained long-range transportation plan. The revenue and expenditure estimates were developed cooperatively by the states, local jurisdictions, and transit agencies of the metropolitan Washington region with TPB staff assistance. Revenue projections do not include projections of new sources that are not yet legislatively enabled but do assume a continuation of current sources including some that were recently established.

As per federal regulations, the revenue and expenditure estimates are shown in year of expenditure (YOE) dollars. Year of expenditure dollars were arrived at by applying an inflation factor to estimates in 2023 dollars; future year dollars are therefore worth less than current year dollars in terms of their buying power. For the near-term years, agencies already have estimated inflation rates and have converted their estimates of revenues and expenditures to year of expenditure dollars, as part of their work to update their respective capital improvements programs. For the longer term, year of expenditure dollars are typically calculated using a long-term inflation rate of 2.4 percent, which is the current long-term inflation rate predicted in the forecast of the Congressional Budget Office.¹

FORECAST REVENUES

The anticipated revenues for the Visualize 2045 long-range transportation plan are shown in Table 1. Revenues are broken down into five source categories (federal, state, local, private/other, and fares/tolls) and grouped under the three “state” level jurisdictions (District of Columbia, Suburban Maryland, and Northern Virginia) and a fourth “non-jurisdictional regional” level. The overall category of private/other is comprised of a variety of sources, including local jurisdiction general funds, anticipated private sector contributions, and general bonds issued by WMATA.

The regional “non-jurisdictional” revenues listed in the table for WMATA include transit fares, federal grants, and other non-jurisdictional sources such as advertising and special event service revenues. Transit fare revenues for WMATA and the local transit systems include revenues from planned services. For additional information on WMATA, a sub-table summarizing the total revenues in Table 1 for WMATA by combining the non-jurisdictional funds with the jurisdictional funding is provided, categorized by the five funding source columns.

¹ Congressional Budget Office, 2019 Long Term Budget Outlook, June 2019 (Table A-2, page 54). <https://www.cbo.gov/system/files/2019-06/55331-LTBO-2.pdf>

Table 2 Revenues: Visualize 2045 Long-Range Transportation Plan (2023 to 2045)

REVENUES	Year of Expenditure Dollars (Millions)					TOTAL
	Federal	State/DC	Local	Private / Other	Fares / Tolls	
District of Columbia						
Highway	\$5,402	\$3,389				\$8,791
Local Transit	\$887	\$2,438			\$98	\$3,423
Bike & Ped		\$77			\$228	\$305
Commuter Rail						\$0
WMATA Support		\$23,900				\$23,900
Sub-Total	\$6,289	\$29,804	\$0	\$0	\$327	\$36,419
Suburban Maryland						
Highway	\$6,124	\$23,541	\$976	\$6,000	\$324	\$36,964
Local Transit	\$1,704	\$2,863	\$6,692	\$0	\$2,344	\$13,602
Bike & Ped	\$0	\$0	\$9	\$0	\$0	\$9
Commuter Rail	\$1,361	\$5,283		\$0	\$1,015	\$7,659
WMATA Support		\$24,180				\$24,180
Sub-Total	\$9,188	\$55,867	\$7,677	\$6,000	\$3,683	\$82,415
Northern Virginia						
Highway	\$2,890	\$14,505	\$7,710	\$1,244	\$524	\$26,873
Local Transit	\$1,351	\$3,884	\$7,061	\$290	\$2,711	\$15,298
Bike & Ped	\$0	\$7	\$500	\$0	\$0	\$507
Commuter Rail	\$0	\$7,176	\$147	\$0	\$1,621	\$8,944
WMATA Support		\$12,302	\$6,712			\$19,014
Sub-Total	\$4,241	\$37,875	\$22,130	\$1,535	\$4,856	\$70,637
WMATA¹						
Sub-Total	\$12,212				\$21,604	\$33,816
GRAND TOTAL	\$31,930	\$123,545	\$29,807	\$7,535	\$30,470	\$223,288

Revenues Subtable - WMATA Summary

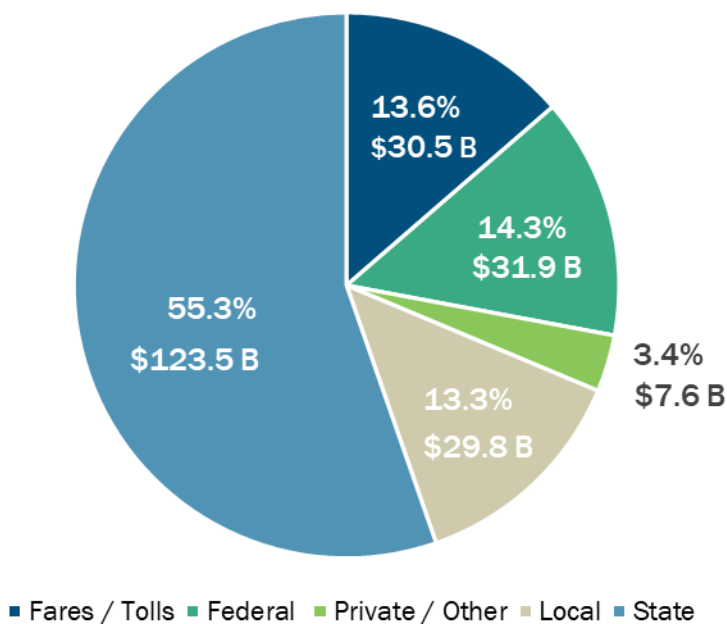
	Year of Expenditure Dollars (Millions)					TOTAL
	Federal	State/DC	Local	Private / Other	Fares / Tolls	
Capital	\$12,212	\$21,297	\$2,888			\$36,397
Operating		\$31,487	\$11,422		\$21,604	\$64,513
Subtotal WMATA	\$12,212	\$52,784	\$14,310	\$0	\$21,604	\$100,910

1. Fares, Grants and Other Nonjurisdictional (Regional) Funds.

Observations about Forecasted Revenues

The revenues shown in Table 1 are portrayed graphically in Figure 1 below by funding source. Overall, federal revenue as a proportion of total revenue is 14 percent, while state (including the District of Columbia) sources are the largest single source at 55 percent. Local funds, which include funds collected across Northern Virginia, represent 13 percent of revenue. User fees of fares and tolls are 14 percent of the total revenues, while bonds and private or other sources account for three percent of total revenues. Section 3 of the report provides more detail on the revenue types and forecasting methodology used to develop the long-term projections for each funding source.

Figure 1 – Revenues by Funding Source (YOE dollars (Billions))



Regarding revenue projections for each major jurisdiction, Figure 2 provides a summary of funding sources for each state.

For the District of Columbia:

- federal revenues constitute 17 percent of its revenues;
- the District contributes 82 percent; and
- transit fares make up 1 percent.

For Suburban Maryland, the revenue source proportions are:

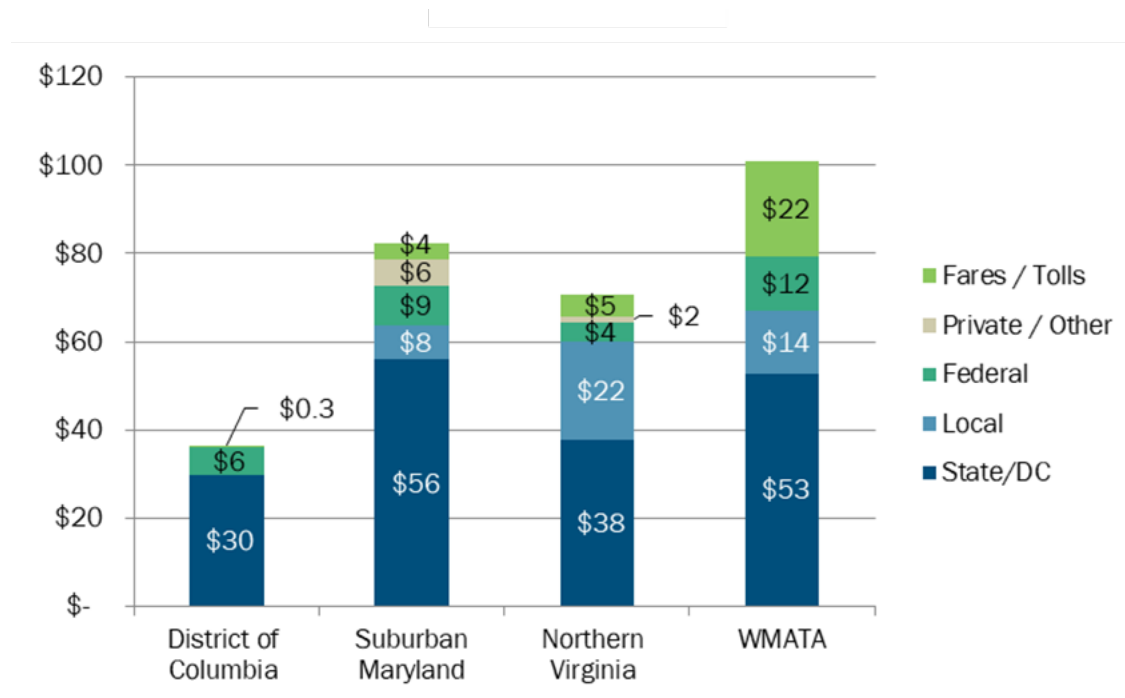
- federal – 11 percent;
- state – 68 percent;
- local – 9 percent;
- private/other – 7 percent; and
- tolls/fares – 4 percent.

In northern Virginia, the revenue source proportions are:

- federal – 6 percent;
- state – 54 percent;
- local – 31 percent (which includes regional taxes),
- private/other – 2 percent; and
- tolls/fares – 7 percent.

In addition, WMATA revenue sources are also shown in Figure 2. Much of this revenue (53 percent) is already included in the state columns, with state and local revenue used to fund WMATA.

Figure 2 – Revenues: Funding Sources by State (YOY dollars (Billions))



New Revenue Sources Since 2018

A significant funding development for the region was the 2018 approval for new, long-term dedicated funding for WMATA’s state of good repair needs by the District of Columbia, Maryland, and Virginia. In addition to continued support for the current capital subsidy, the three jurisdictions provide an additional \$500 million annually in funding. The funding allocation was arrived at through WMATA’s capital costs formula: the District provides \$178 million, Maryland \$167 million, and Virginia \$154 million per year. This dedicated funding was included in the 2018 LRTP financial plan.

In 2020, the Virginia legislature passed additional transportation funding in the Omnibus Transportation Bill, with an increase in the gas tax of five cents a year for two consecutive years (in July 2020 and July 2021) and then indexed to inflation. The legislation also increased funding for transit and established the Virginia Passenger Rail Authority to oversee the state’s expansion of passenger rail service.

In regard to federal revenues, the passage of the Bipartisan Infrastructure Law (Infrastructure Investment and Jobs Act) in November 2021 reauthorized federal surface transportation for five

years with a significant increase in funding. For the metropolitan Washington region, an additional \$400 to \$600 million per year are possible, depending upon the implementation of the funded federal programs and the competitive nature of grant funding. The increased funding is not included in this financial plan, but projected over the lifetime of the LRTP could provide some \$12 to \$19 billion in additional funding for the region.

The federal transportation legislation also reauthorized the Passenger Rail Investment and Improvement Act of (PRIIA) funding for WMATA rehabilitation through 2030, for which \$150 million of federal funds is matched by \$150 million in state funds (\$50 million each from DC, MD, and VA) annually. These revenues are included in Table 1 to meet WMATA's State of Good Repair needs, with the assumption the funds will be authorized through 2045.

FORECAST EXPENDITURES

The forecast expenditures for the Visualize 2045 LRTP are shown in Table 2. The total estimated expenditures are summarized in year of expenditure dollars for the 23-year period from 2023 through 2045. The totals can be compared with those in Table 1 to show that expenditures and revenues match for each major jurisdiction, mode, and the region overall, and thus the Visualize 2045 long-range transportation plan is financially constrained as required. The total expenditures shown in Table 2 are \$223.3 billion and match the revenues shown in Table 1.

Public transportation is expected to comprise 67.1 percent of the expenditures, highways comprise 32.5 percent, and bicycle and pedestrian projects comprise 0.4 percent. Of the total expenditures, operations and capital costs for WMATA represent 45.2 percent of the region's total projected expenditures.

Expenditures are separated into three major categories: operations, state of good repair, and system expansion. Expenditures are further categorized among five modes: highway, local transit, bicycle and pedestrian, commuter rail, and WMATA support. The rows in the table show expenditures by the three state-level jurisdictions (the District of Columbia, Suburban Maryland, Northern Virginia), the regional non-jurisdictional expenditures, and the aggregate total. The regional non-jurisdictional expenditures are those covered by WMATA fares, grants, and other non-jurisdictional funds for regional services. Within each jurisdictional category, Table 2 shows the expenditure breakdown for the principal modes (highway, local transit, commuter rail, and WMATA). Table 2 also includes a sub-table for WMATA with total expenditures categorized by the three types of expenditure and a sub-table of expenditures by mode categorized by the three types of expenditure.

Section 3 of the report provides more detail on the revenue types and forecasting methodology used to develop the long-term projections for each funding source.

OBSERVATIONS ABOUT FORECASTED EXPENDITURES

As in previous financial analyses, the majority of future transportation revenues will be devoted to the operations and state of good repair of the current transit and highway systems. Beginning with the 2014 LRTP financial analysis, agencies have worked to discretely identify state of good repair expenditures for highway and transit systems, previously included with operational system preservation costs or included in the total capital expenditures for system expansion (i.e., investment). The proportion of revenues identified for Visualize 2045 and devoted to operations and

Table 3 Expenditures: Visualize 2045 Long-Range Transportation Plan (2023 to 2045)

Year of Expenditure Dollars (Millions)				
State of Good				
	Operations	Repair	Expansion	TOTAL
District of Columbia				
Highway	\$2,252	\$6,285	\$254	\$8,791
Local Transit	\$1,395	\$905	\$1,123	\$3,423
Bike & Ped	\$279		\$26	\$305
Commuter Rail				\$0
WMATA Support	\$15,407	\$7,389	\$1,104	\$23,900
Sub-Total	\$19,333	\$14,579	\$2,507	\$36,419
Suburban Maryland				
Highway	\$13,906	\$10,082	\$12,977	\$36,964
Local Transit	\$8,420	\$907	\$4,276	\$13,603
Bike & Ped	\$0	\$4	\$5	\$9
Commuter Rail	\$3,001	\$1,937	\$2,721	\$7,659
WMATA Support	\$16,080	\$7,043	\$1,057	\$24,180
Sub-Total	\$41,407	\$19,973	\$21,035	\$82,415
Northern Virginia				
Highway	\$9,405	\$2,503	\$14,966	\$26,873
Local Transit	\$9,599	\$3,766	\$1,933	\$15,298
Bike & Ped	\$0	\$0	\$507	\$507
Commuter Rail	\$6,397	\$1,992	\$555	\$8,944
WMATA Support	\$11,422	\$6,602	\$990	\$19,014
Sub-Total	\$36,822	\$14,863	\$18,952	\$70,637
WMATA¹				
Sub-Total	\$21,604	\$12,212		\$33,816
GRAND TOTAL	\$119,166	\$61,627	\$42,495	\$223,288

Expenditures Subtable - WMATA Summary

State of Good				
	Operations	Repair	Expansion	TOTAL
DC	\$15,407	\$7,389	\$1,104	\$23,900
Maryland	\$16,080	\$7,043	\$1,057	\$24,180
Virginia	\$11,422	\$6,602	\$990	\$19,014
WMATA ¹	\$21,604	\$12,212	\$0	\$33,816
Subtotal WMATA	\$64,513	\$33,246	\$3,151	\$100,910

Expenditures Sutable - Modal Summary

Highways	\$25,563	\$18,869	\$28,197	\$72,629
Bike & Ped	\$279	\$4	\$539	\$822
Transit	\$93,324	\$42,753	\$13,760	\$149,837

1. Fares, Grants and Other Nonjurisdictional (Regional) Funds.

annual maintenance is forecast to be about 53 percent; the expenditures for capital projects to maintain the highway and transit systems in a state of good repair are forecasted at about 28 percent while the expenditures devoted to system expansion are around 19 percent. For highways, 61 percent of expenditures are anticipated on operations and state of good repair projects.

Under local transit, commuter rail, and WMATA, operations expenditures are 62 percent of the forecast expenditures, with another 29 percent devoted to state of good repair. Together for all modes, the capital state of good repair and expansion investments are about 46 percent of total expenditures for the region. Regionally significant bike and pedestrian projects are funded at \$822 million, or 0.4 percent of overall expenditures.

Figure 3 shows total expenditures, separated by mode and type. Transit expenditures include those for WMATA, local transit, and commuter rail. Over the 23-year period of Visualize 2045, public transportation is projected to absorb 67.1 percent of the total expenditures of \$223.3 billion. WMATA expenditures are forecast at \$100.9 billion (45 percent of the overall total) and match the available revenues. Highway expenditures and revenues total \$72.6 billion (32.5 percent) and regionally significant bike and pedestrian expenditures and revenues total \$822 million (0.4 percent).

Figure 3 – Expenditures by Type and Mode (YOE dollars (Billions))

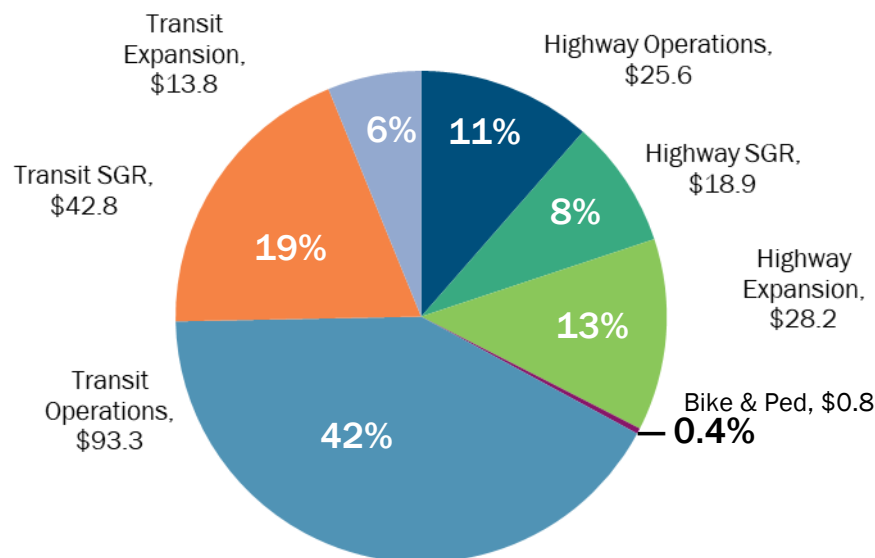
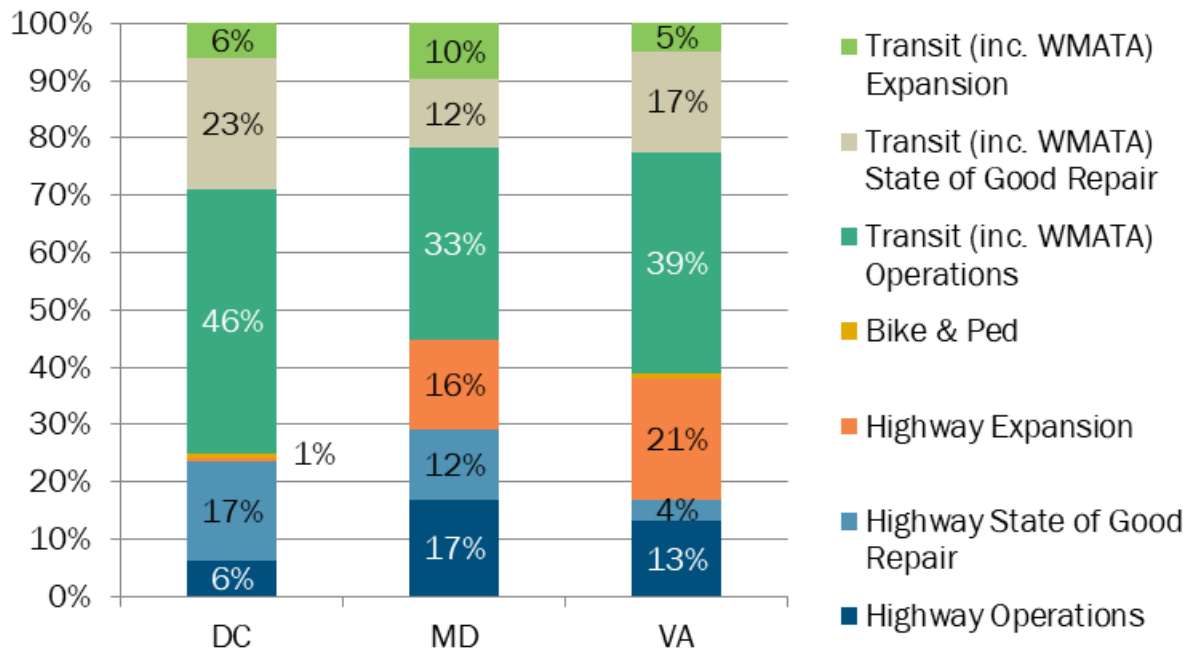


Figure 4 (on the next page) shows expenditures by mode and type for each state as a percentile out of 100 percent (WMATA's expenditures using revenues received directly from federal sources and collected from passenger fares are excluded). In the District of Columbia, transit state of good repair and operations expenditures constitute three-quarters of total transportation expenditures. This is due to the significant transportation role of Metrorail and Metrobus as well as DC Circulator and DC Streetcar in the District.

Suburban Maryland's proportions of expenditures are about 45 percent for highway and 55 percent for transit, with 0.01 percent for bicycle and pedestrian expenditures that are included in the LRTP and TIP. For Northern Virginia the figures are about 38 percent and 61 percent for highway and

transit respectively, with bicycle and pedestrian expenditures 0.7 percent. Both Suburban Maryland and Northern Virginia have about 26 percent of funding devoted to expansion projects, through Suburban Maryland is higher in dollar terms (\$21.0 billion for Maryland vs. \$19.0 billion for Virginia).

Figure 4 – Expenditures by Mode and Type by State



WMATA'S EXPENDITURES

WMATA's forecast needs for both operations and state of good repair through 2045 were fully met by the funding agencies for the Visualize 2045 update financial analysis. About a third of the expansion funding will provide for 100 percent 8-car trains, core station capacity improvements, and other capital project improvements to meet growth, as identified in WMATA's Capital Needs Inventory.

3. How Revenues and Expenditures are Forecast

PERIOD OF ANALYSIS AND SUMMARY OF APPROACH

The Visualize 2045 update financial analysis covers both expenditures and revenues for a 23-year period for 2023 to 2045. Agencies used the current long-range transportation plan, the current TIP, and their latest capital investment programs and six-year improvement proposals as a starting point for expenditures and made appropriate adjustments to extend their forecasts for the 23-year period. Revenues were forecast based on historic funding trends and anticipated changes in federal, state, and local revenues. TPB staff distributed template spreadsheets to each agency and jurisdiction for their use in preparing the estimates of revenues and expenditures. Agencies that wished to utilize their own existing spreadsheets or models could do so and reported the information back to staff using the common spreadsheet format.

METHODOLOGIES

Revenue and expenditure data were developed and synthesized by the departments of transportation (DOTs) of the District of Columbia, Maryland and Virginia, by WMATA and other transit agencies, and by the local jurisdictions. The District of Columbia DOT (DDOT) provided all District of Columbia estimates. Maryland Department of Transportation (MDOT) coordinated all of the local jurisdiction and state inputs in Maryland and the Virginia Department of Transportation (VDOT) coordinated all the local jurisdiction and transit agency inputs in Virginia. WMATA provided forecasts of capital and operating expenditures for its regional Metrobus, Metrorail, and MetroAccess services, which were coordinated with the jurisdictions and agencies that fund those services.

Highway expenditures in Maryland are made by both MDOT and by the local jurisdictions. Transit in Maryland is funded and operated either directly by MDOT (which includes the Maryland Transit Administration), which provides WMATA's funding, and which operates the commuter rail and commuter bus service, or by the local jurisdictions themselves. Charles, Frederick, Montgomery and Prince George's Counties each fund and operate their own local transit services, with some state assistance.

Most of the funding to construct, operate and maintain highways in Virginia is provided by the state, with significant funding for highway and transit also provided through regional revenues allocated by the Northern Virginia Transportation Authority (NVTA) and by the Northern Virginia Transportation Commission (NVTC), as well as local jurisdiction and private funding. Cities and towns as well as Arlington County have the responsibility to maintain and operate the roadway system with funding allocated to them by the state as well as local funding. Transit in Virginia is provided by WMATA, by the local jurisdictions, and by the Potomac and Rappahannock Transportation Commission (PRTC) and Virginia Railway Express (VRE), with the Virginia Department of Rail and Public Transportation (DRPT) providing state funding support.

The TPB staff employed a methodology consistent with that used to forecast revenues and expenditures in previous financial analyses. Each agency and jurisdiction was requested to provide year-by-year forecasts of their transportation revenues and expenditures through 2045. When necessary, the TPB staff converted expenditure dollar estimates between current and future years, for forecasts submitted by agencies that were not converted by the agencies themselves.

DISTRICT OF COLUMBIA FORECAST

Over the near term, the District of Columbia's revenues forecasts rely on budget projections. For this financial analysis, DDOT used the approved 2021 budget and 2021-2026 Capital Improvement Plan. For the revenue forecast beyond 2026, DDOT assumed future escalations at the rate of general inflation.

The revenue numbers for highways (\$8.8 billion in year of expenditure dollars) in the summary tables (Table 1) has been derived from yearly revenue projections provided by DDOT in spreadsheet format. DDOT forecasts that \$5.4 billion of this would be covered by federal aid and \$3.4 billion from various local D.C. sources used to fund highways.

DDOT developed projected revenues for highway, local transit, bicycle and pedestrian, and WMATA needs, both capital and operating. The District's Highway Trust Fund revenue projections are anticipated to remain available to match available federal funds; these projected revenues to match federal funds represent 17 percent of highway funds.

District of Columbia revenues for WMATA and local transit – DC Streetcar, DC Circulator, and paratransit programs – include funds programmed for WMATA State of Good Repair capital investments. Revenues are projected into the future with a 2.4 percent annual growth rate due to the costs of upgrading aging systems and District policy statements that commit to funding transit capital projects and transit State of Good Repair.

For user fee revenues from fares and tolls, revenues from transit fares are assumed in keeping with planned transit expansions. These are anticipated to increase at a 3.0 percent rate through 2045 due to the anticipated growth in ridership. For private and other revenues, there are assumptions of private spending for several projects in the long-range transportation plan that will result in improved regional transportation infrastructure.

For expenditures, DDOT projects highway spending on significant capital projects from planned spending in the 2021-2026 Capital Improvement Plan with ongoing expenditures projected for significant projects based on past trends.

Tables 1 and 2 include \$3.4 billion in revenue and expenditures for local transit that mainly consists of the DC Streetcar and the DC Circulator Bus, paratransit programs, and construction of the K Street NW Transitway and other transit capital projects. Operating and capital costs for local transit (DC Circulator and DC Streetcar) are taken from existing financial plans for both systems, with a long-term operating cost increase assumed of 3 percent past 2023. DDOT's forecasts for WMATA transit expenditures are based on estimates provided by WMATA through the financial plan process and by assumptions made for WMATA operating subsidies and capital needs by the region. This includes dedicated capital funding of \$178 million a year and also \$50 million a year in match from District for the extension of PRIIA through 2045.

SUBURBAN MARYLAND FORECAST

The revenue numbers in Table 1 for Suburban Maryland reflects estimates for MDOT funding, including by the State Highway Administration, the Maryland Transportation Authority and the

Maryland Transit Administration, and from the four counties in the TPB's planning area: Charles County, Frederick County, Montgomery County, and Prince George's County.

MDOT bases its overall revenue projections on the state's Consolidated Transportation Program (CTP) budget for the next few years, extrapolation of past trends, and assumptions about future increases for out years (approximately 2027-2045). For years 2023-2045, the numbers from MDOT imply an annual increase of approximately 5.3 percent in real terms for state funds, while federal fund projections are based on an average growth rate of 3.0 percent for both highway and transit program funds. Long-term federal contributions continue to decrease from past financial assumptions. MDOT projections for WMATA include dedicated funding of \$167 million a year as well as matching funds \$50 million a year for continuation of funding for PRIIA through 2045.

Maryland jurisdictions also base their overall revenue projections on budget estimates over the next few years, extrapolation of past trends, and assumptions about future increases for more distant years (approximately 2027-2045). The Table 1 revenue breakdown in year of expenditure dollars by source for Maryland forecasts \$9.2 billion from federal sources, \$55.9 billion from state, \$7.7 billion from local, \$6.0 billion from private and other, and \$3.7 billion from tolls and non-WMATA transit fares.

On the expenditure side (Table 2), the figures again include MDOT data and data from the four Suburban Maryland jurisdictions. MDOT and jurisdictions typically match their expenditures to the forecasted revenues available for each year. Table 2 includes \$41.4 billion for operations and annual system preservation, \$20.0 billion for capital state of good repair projects and \$21.0 billion for expansion projects, including the I-270 and I-495 Traffic Relief Plan (Ops Plan), implementation of the MARC Cornerstone Plan for commuter rail, and the construction of several bus rapid transit (BRT) lines in Montgomery County.

NORTHERN VIRGINIA FORECAST

Northern Virginia estimates of revenues and expenditures were developed cooperatively by VDOT, DRPT, NVTA, NVTC, local jurisdictions, and transit agencies. VDOT and DRPT developed estimates of federal and state revenues that would be available both statewide and to the Northern Virginia region. VDOT worked with local jurisdictions to identify their additional highway and transit funding needs, taking into account the state revenues available for highways and transit. VDOT and the jurisdictions also reviewed the WMATA financial projections.

VDOT coordinated the effort and provided revenue and expenditure information for the state, federal, and local jurisdiction data. Five different categories of projects and programs were evaluated: Highways, Local Transit, Bicycle and Pedestrian, Commuter Rail (VRE), and WMATA Virginia Allocations, both operating and capital. For each, the revenues by source (federal, state, regional/local, tolls/fares, private/other) and expenditures by category (operations, state of good repair, and expansion) were identified. These data were used to complete the summary table.

Northern Virginia revenues are derived from multiple federal, state, local, toll, private and transit sources, and future forecasts are based on a complex set of assumptions regarding expected escalations of each source. The six-year estimate of state revenues is based on the FY 2021-2026 Six-Year Financial Plan (SYFP) as well as the Six-Year Improvement Program (SYIP) adopted by the Commonwealth Transportation Board (CTB) in June 2019. The official forecast of state revenues is

prepared by the Department of Taxation. The state revenues include Motor Vehicle Sales and Use Tax, Motor Vehicle Fuels Tax, Licenses Fees, and State Sales and Use Tax. The average total state revenue growth for FY 2021-2026 is forecast at 3.8 percent. In the long-term, state revenues are expected to grow by 2.2 percent annually, with a 1.7 percent annual growth in federal revenues.

The total federal, state, and local funding figures that are shown in Table 1 include both highway and transit funding – \$4.2 billion, \$37.9 billion, and \$22.1 billion, respectively. User charge revenues of approximately \$500 million from toll facilities and \$4. billion from local transit and commuter rail fares are shown combined.

Regional and local revenues include the dedicated NVTAs funds. The NVTAs funds are made up of a portion of the sales tax in Northern Virginia, a transit occupancy tax, and a grantors tax. A portion of the NVTAs funds will go directly to WMATA under recent legislation, while the major portion of the NVTAs funds is allocated by the NVTAs through a competitive process; both are treated as local revenues in the financial analysis.

Expenditures (Table 2) include data from VDOT and the Northern Virginia agencies and jurisdictions. The expenditure data for the near term are derived from the latest annual budget and the six-year program data along with estimates in the TIP. Table 2 shows \$36.8 billion for operations, \$14.9 billion for state of good repair projects, and \$19.0 billion for expansion, including both highways and transit.

State funding for WMATA includes \$154 million in dedicated capital funding as well as \$50 million annually for matching of the PRIIA state of good repair funds, both annually through 2045. Much of WMATA's operating funding from Virginia as well as some capital funding comes from the local jurisdictions.

VRE costs are based on the approved state improvement program through 2020, with assumed growth of 2.5 percent growth in later years, while fares are expected to grow by three percent annually. Other local transit providers in Northern Virginia have their revenues and costs projected as well.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY FORECAST

WMATA's financial estimates were prepared based on WMATA's *FY2021 – FY2026 Capital Improvement Program (CIP)* and *FY 2021 Budget*, as well as a *10-Year Capital Plan*. The capital plan and CIP rely upon the dedicated funding committed by jurisdictions which are part of WMATA's Compact to maintain a continued state of good repair (SGR) as well as some funding to meet capacity expansion and new needs.

WMATA Operations Revenues and Expenditures

Forecasts for future operations and maintenance expenditures are limited by the three percent subsidy cap imposed by the enabling legislation for jurisdictional dedicated funding. Consistent with discussions with and assumptions by TPB and local, state, and regional partners, WMATA ridership and revenue forecasts assumed a “back-to-normal” status matching pre-COVID levels by FY 2023.

Systemwide Metrorail ridership is forecast to grow by 1.4 percent per year for 2020-2025, then by an average of 0.7 percent 2025-2045. The higher growth rate during the first few years recognizes ridership increases from the opening of the Silver Line Phase Two to Dulles Airport and Loudoun County and the Potomac Yard station in Alexandria, both scheduled to open for service in 2022.

Metrobus service growth is expected to grow at a modest rate, just a few tenths of a percent per year. Metrobus subsidies are allocated to the local jurisdictions based on policies adopted by the WMATA Board of Directors.

MetroAccess, WMATA's paratransit operation, is anticipated to continue growing at four to six percent per year for operating costs and revenues due to increasing demand for this type of service, driving by an expanding eligible population. Costs for MetroAccess are assigned based on the rider's jurisdiction of residence.

WMATA Capital Revenues and Expenditures

The WMATA capital revenues forecast projected anticipated funding sources from the federal, state and local governments including an extension of PRIIA and federal formula funds with matches at current funding levels, along with a contribution of dedicated funding of \$500 million annually from the District, Maryland, and Virginia.

Capital expenditures were based on 'steady-state' state of good repair needs of \$1.36 billion (\$YOE), annually from WMATA's Capital Needs Inventory (CNI) through 2030. For FY 2031-2045, the analysis assumed a two percent inflation rate for state of good repair. Additional modest capital funds are targets for system modernization and some capacity expansion and new needs to meet anticipated growth in ridership through 2045.

Beyond the completion of the Silver Line extension to Dulles Airport and into Loudoun County and opening of the new in-fill station at Potomac Yard in Alexandria in 2022, there are no funded plans for expansion of Metrorail. No further expansion of the rail system network is included in the Visualize 2045 long-range transportation plan.

WMATA regional operating and capital numbers (covered by operating revenues, grants, and other non-jurisdictional funds) are shown in a separate section below the rows summarizing the three jurisdictions in summary Tables 1 and 2. WMATA's support from each jurisdiction is shown under each jurisdiction summary section as well as separately at the end of expenditure Table 2.

4. Comparison to Previous Financial Analyses

This section assesses the changes in total revenues and the purpose of revenues over the past long-range transportation plan financial analyses. The revenues and expenditures for the financial plans were developed using the same general methods, though over different periods of time (i.e., number of years). However, comparisons should take into account that figures are in year of expenditure dollars, so amounts will grow over time in line with general regional growth and with inflation.

An important development in the region in the past few years has been the advocacy and legislation that led to a successful regional effort to agree on new dedicated funding to meet WMATA's state of good repair needs. This has led to a significant increase in the revenues and expenditures for public transportation in the financial analysis, even as highway revenues and expenditures are stable. The required use of year of expenditure dollars in the analysis also increases financial figures over time.

Key observations on changes in revenues and expenditures for the Visualize 2045 Financial Analysis include:

Table 4 Total Expenditures in Billions of YOE Dollars over time

	D.C.	Suburban Maryland	Northern Virginia	WMATA (Non-jurisdictional)	Total
2010 LRTP	\$ 28.0	\$ 74.5	\$ 58.0	\$ 62.0	\$ 222.5
2014 LRTP	\$ 33.1	\$ 87.3	\$ 68.5	\$ 55.2	\$ 244.1
Visualize 2045 (2018)	\$ 45.6	\$ 116.2	\$ 80.6	\$ 48.7	\$ 291.1
Visualize 2045 (2022)	\$ 36.4	\$ 82.4	\$ 70.6	\$ 33.8	\$ 223.3

Forecast total revenues and expenditures decreased by 24 percent between the 2018 and 2022 Visualize 2045 plans. This was largely the result of a reduction of the analysis period by four years, from twenty-seven to twenty-three years, a 15 percent decrease. The other factor was the completion of or substantial work on multiple large-scale projects from 2019 through 2022, including the I-66 Outside the Beltway Express lanes, Silver Line Phase Two and the Potomac Yard station, the South Capitol Street Bridge, and the Nice-Middleton Bridge. Future investments anticipated for the region are more modest.

Table 5 Percentage of Total Expenditures in Billions of YOE Dollars by Mode

	Highway	WMATA	Other Transit	Total
2010 LRTP	\$ 81 (36%)	\$ 114 (51%)	\$ 28 (13%)	\$ 223
2014 LRTP	\$ 99 (41%)	\$ 101 (41%)	\$ 43 (18%)	\$ 243
2018 LRTP (Visualize 2045)	\$ 99 (34%)	\$ 139 (48%)	\$ 52 (18%)	\$ 290
2022 LRTP (Visualize 2045)	\$ 71 (32%)	\$ 101 (45%)	\$ 49 (22%)	\$ 221

The proportion of revenues and expenditures devoted to public transportation has increased over time. This is largely due to the increased need for investment in WMATA's state of good repair needs, but also due to planned investments in transit projects such as commuter rail investments in both Maryland and Virginia and the Montgomery County BRT projects. Expenditures for WMATA constitute 45 percent of the total expenditures, in line with previous forecasts.

Federal revenues as a proportion of the total is at 14 percent, a slight reduction from past analyses though up one percent from the 2018 analysis. However, the additional revenues of the federal Bipartisan Infrastructure Law are not included in this financial analysis, with the exception of the extension of PRIIA funding for WMATA. State and local revenues are up proportionately in this analysis. Other sources of revenue, including private and other sources and user fees from tolls and fares, are down to 16 percent from 19 percent in 2018 and 24 percent in 2014. In part, this is due to the proportional increase in state and local revenues, making up a larger piece of the total. In addition, some major toll projects in Northern Virginia have been completed; future toll revenues being collected on these roads are no longer included in the financial analysis as they are paying off issued bonds and private investments. In addition, predicted transit fare revenues have shrunk based on observed trends in ridership and more conservative forecasts of future transit ridership as well as fare reduction programs.

With respect to the forecast for individual modes, for highways, the federal government and the states provide 78 percent of the revenues, an increasing share. Local transit and commuter rail are largely funded from state and local revenue sources, 68 percent (compared to 73 percent in 2018), with fares contributing 19 (compared to 17 percent in 2018) and federal aid 12 percent.

5. Transportation Revenues: Recent Trends and Future Options

There have been positive actions taken by agencies in recent years in terms of seeking adequate revenues to maintain the existing highway and transit systems in a state of good repair. However, major challenges remain as the region looks to enhance the transportation system to accommodate the travel demands of the forecast population and economic growth. The forecast congestion on the existing and future transportation system points to unacceptable outcomes such as costly delay and a negatively impacted quality of life. The region should examine new sources of possible future funding and must identify the critical steps needed to achieve more adequate funding for the unfunded expansion needs of the transportation system. In addition, the region is still recovering from the economic recession. It is important that long-term forecasts be understood in terms of long-term trends, so information is presented here about trends prior to the coronavirus pandemic.

While increases in transportation funding in Maryland, Virginia, and the District of Columbia over the past decade have been significant, the long-term forecast for transportation revenues is of gradual decline. While the national Bipartisan Infrastructure Law passed in November 2021 will bring additional revenues, federal revenues make up only a small percentage of overall transportation funding: just 13 percent through 2045 in this analysis, though it can be anticipated that proportion will increase in the next financial plan. In the long-term though, states and local jurisdictions will have to find more or new sources of transportation funding as traditional sources, in particular the motor fuel or gas tax, decrease.

The shift to user fees for highway expansion, particularly for specific project-based funding agreements such as for high-occupancy toll (HOT) lanes and toll lanes, has been an important step in the direction of increased revenues as well as project implementation. The 2010 opening of the tolled Inter-County Connector (ICC) in Maryland, built by the MDOT State Highway Administration and operated by the MDOT Maryland Transportation Authority was the first example in the region. Demonstrating innovation, nationally recognized public-private partnerships in Virginia have funded the construction of additional capacity in the shape of tolled lanes added to congested highways. The Capital Beltway I-495 Express Lanes opened in 2012 and the I-95 Express Lanes opened in 2015. In 2019, Virginia imposed a toll on I-66 inside the Beltway, which is paying for improvements and transit alternatives projects in the corridor. Meanwhile the I-66 outside the Beltway project is adding Express Lanes constructed by a private partner is due to open in 2022. Maryland has similar projects in the works with the Traffic Relief Plan (Ops Plan), which will add dynamically managed HOT lanes along the portions of the I-495 Capital Beltway and I-270.

There may be opportunities for future capacity expansion through tolling, including a role for public-private partnerships. In addition, the State of Maryland is using a public-private partnership (P3, or PPP) arrangement to construct and operate the light rail Purple Line system in which the private partner is financing a considerable portion of the costs of construction. However, these limited opportunities are not substitutes for enhanced broad-based funding sources such as fuel taxes, vehicle fees, sales taxes, or other major dedicated sources that can support the operation, preservation, maintenance, and long-term state of good repair replacement and rehabilitation needs for major components of the surface the transportation system. Also, although increases to traditional motor fuel taxes and other current user fees are feasible short- and mid-term sources of revenue, they may not necessarily be the best long-term solution given improved vehicle fuel efficiency and alternative fueled vehicles.

Other options for new transportation revenue include special tax districts, economic development corridors, and innovative infrastructure development. One regional example is the Union Station Redevelopment Corporation, established to leverage the redevelopment potential of the historic downtown train station and air-rights on the railroad lines to raise revenues for upkeep and investment in the station. Another strategy, action to promote transit-oriented community (TOC) projects around Metrorail and other high-capacity transit (HCT) stations, not only provides direct revenues for transportation but also leads to more transit ridership and revenues.

In support of the 2010 long-range transportation plan financial analysis, an exhaustive review of potential revenue sources, innovative financing techniques, and relevant factors was conducted and is still very relevant. This report is available at:

http://www1.mwcog.org/store/item.asp?PUBLICATION_ID=391

ACTIONS NEEDED TO ACHIEVE NEW OR ENHANCED REVENUE SOURCES

The National Capital Region still needs additional revenues and new revenue sources in order to support critical needs for expansion of the surface transportation network. As in previous financial analyses, the vast majority of available future transportation revenues are already dedicated to the maintenance and operations of the current transit and highway systems. Many unfunded but desirable projects are proposed that cannot be included in the long-range transportation plan under the funding constraints.

One of the more significant challenges to the region is the existence of multiple jurisdictions at several levels, each with its own tax base, tax structure, and tax policy. This leads to varying priorities and funding for regional or inter-jurisdictional coordination, connections, and interoperability, particularly for public transportation services and bicycle/pedestrian facilities. There are opportunities in each jurisdiction to develop new or enhanced revenue sources that can be part of an overall regional solution. There also is the potential for developing metropolitan-level funding sources for planning and implementing regional transportation projects.

Recent analyses have indicated that fuel taxes will remain a viable base for funding in the near term, both for the region and the nation. The recent indexing of state motor fuels taxes to inflation, and the automatic adjustment of dedicated sales taxes, is the most promising development in ensuring that at least a basic level of funding continues to flow to the region's highway and transit systems in the future. The next step would be for federal motor fuel taxes to also be indexed to inflation, along with a rise to incorporate inflation since last adjusted in 1993. In addition to the indexing of revenue sources, recent developments in the region with regard to tolling and pricing mechanisms suggest that their application could be expanded in the shorter term.

PUBLIC SUPPORT FOR ADDITIONAL TRANSPORTATION REVENUES

In the region and across the nation, there is considerable political and popular resistance to increased tolling and to the introduction of additional pricing mechanisms. In 2013, the TPB completed *A Study of the Public Acceptability of Congestion Pricing Through a Deliberative Dialogue with Residents of Metropolitan Washington*². The study found that participants agreed that congestion resonates as a critical problem facing the region, with significant personal impacts.

² http://www1.mwcog.org/store/item.asp?PUBLICATION_ID=470

However, participants who said they wanted more transportation alternatives rarely connected the lack of those options to the lack of funding. Some expressed doubts about the reality or extent of funding problems while many lacked confidence in the government's ability to solve transportation problems even if enough funding were available. An additional finding was that participants were generally unaware of the details of how transportation is currently funded, including the fact that the federal gas tax had not been raised in nearly two decades and was not indexed to inflation. Participants seemed to doubt inherently that congestion pricing would be effective in improving the region's transportation system. Therefore, framing pricing as an effective tool for addressing congestion problems and funding shortfalls did not seem to resonate with the public, despite the opportunity for facility tolling and congestion pricing in cordon or area-specific settings, including the use of variable and dynamic schemes.

During the study discussion, participants showed more interest in congestion pricing if the pricing mechanism could effectively create specific and useful transportation alternatives. Participants suggested that congestion pricing could play a role in the future, but proposals would need to clearly indicate how revenues raised through congestion pricing would be used and how transparency and accountability would be ensured in the allocation of these funds.

PRIVATE SECTOR FUNDING OPTIONS

The Express Lanes projects in Virginia have received national recognition for their innovative use of private-public partnerships. There has been both strongly negative and strongly positive reactions to the role of private firms in building and managing tolled highway networks, even if only new capacity is provided. Even when tolling is done by the public sector, as in the case of the ICC, the Dulles Toll Road, and I-66 inside the Beltway, there is opposition to tolling. There is also opposition to perceived diversion of the funds when highway toll revenues are used to invest in transit capacity expansion, as is the case for the Silver Line. The conversion of free lanes to toll lanes would likely face much greater public opposition and be much more difficult than the leasing of current toll facilities or the implementation of new toll facilities on high-occupancy vehicle (HOV) lanes.

Implications from these current experiences suggest that pricing and PPPs (those that involve tolling) will not be enough to fund significant surface transportation capacity, and that other sources of revenue will be needed. However, managed lanes with tolling may create an opportunity for private sector involvement in providing some financing of any potential project.

In the long-term, new financing mechanisms are important in view of the anticipated shift away from petroleum-based fuels toward new, broad-based user fees that are not dependent on fuel consumption but on the use of the system, e.g., mileage-based or vehicle-miles traveled (VMT)-based fees. For both political and technological reasons, their actual implementation is likely to lie in the medium-term future though significant efforts are underway to develop technological solutions.

Phasing in of new transportation revenue exaction will be dependent on a variety of factors, including the needs for revenues, and the availability and attributes of the various revenue options, including the roles and required actions of various levels of government. However, if new revenues are ever to be developed, progress will need to be made in developing public and political support for such strategies.