

Appendix A

Financial Plan

TPB Technical Committee

July 6, 2018

Item #7

**FINANCIAL ANALYSIS FOR THE VISUALIZE 2045
LONG-RANGE TRANSPORTATION PLAN
FOR THE NATIONAL CAPITAL REGION**

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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TABLE OF CONTENTS

FINANCIAL ANALYSIS FOR THE VISUALIZE 2045 LONG-RANGE TRANSPORTATION PLAN FOR THE NATIONAL CAPITAL REGION	1
Section 1: Introduction and Summary	1
Introduction	1
Executive Summary	2
Section 2: Summary of the Results of the Regional Forecasts	4
Forecast Revenues	4
Forecast Expenditures	8
Observations about Forecasted Expenditures	8
WMATA's Expenditures	11
Section 3: How Revenues and Expenditures are Forecast	12
Period of Analysis and Summary of Approach	12
Methodologies	12
District of Columbia Forecast	13
Suburban Maryland Forecast	13
Northern Virginia Forecast	14
Washington Metropolitan Area Transit Authority Forecast	15
Section 4: Comparison to Previous Financial Analyses	17
Section 5: Transportation Revenues: Recent Trends and Future Options	19
Actions Needed to Achieve New or Enhanced Revenue Sources	20
Public Support for Additional Transportation Revenues	20
Private Section Funding Options	21

FIGURES AND TABLES

TABLE 1 – REVENUES: VISUALIZE 2045 LONG RANGE PLAN (2019 2045)	5
FIGURE 1 – REVENUES BY FUNDING SOURCE	6
FIGURE 2 – REVENUES BY FUNDING SOURCES BY STATE	7
TABLE 2 – EXPENDITURES: VISUALIZE 2045 LONG-RANGE PLAN (2019-2045)	9
FIGURE 3 – EXPENDITURES BY TYPE AND MODE	10
FIGURE 4 – EXPENDITURES BY MODE AND TYPE BY STATE	11

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FINANCIAL ANALYSIS FOR THE VISUALIZE 2045 LONG-RANGE TRANSPORTATION PLAN FOR THE NATIONAL CAPITAL REGION

Section 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 Washington region.

Members of the TPB include representatives of local governments; state transportation agencies; the Maryland and Virginia General Assemblies; the Washington Metropolitan Area Transit Authority; and non-voting members from the Metropolitan Washington Airports Authority and federal agencies. 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 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 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 metropolitan transportation plan and the transportation improvement program (TIP). The metropolitan transportation plan documents the MPO's transportation planning policy together with the planned transportation projects intended to be implemented over the next 20 years. Per federal regulation 23 USC 450.324, the metropolitan transportation plan 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 metropolitan transportation plan is financially constrained.

The previous quadrennial update to the TPB's metropolitan transportation plan, the 2014 Constrained Long Range Plan (CLRP), and its financial plan element were adopted by the TPB on October 15, 2014. The TPB's new metropolitan transportation plan, the Visualize 2045 long range plan, will cover a period of 27 years, between 2019 and 2045 and will represent a quadrennial update to the 2014 CLRP. The update of the long range plan has been developed over the past year collectively by 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 citizens and interest groups via its Citizens Advisory Committee process, the board's two 30 day open public

comment periods preceding updates to the projects and the TIP, and its on-line publications and outreach activities.

The update to the projects in Visualize 2045 was done 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 2019-2024 Transportation Improvement Program (TIP) that started in October of 2017 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 January 17, 2018. The updates to the projects were provided by the TPB member jurisdictions and agencies working with the TPB staff. The TPB Policy element, the Vision; federal planning factors, and the TPB's Regional Transportation Priorities Plan (RTPP) informed the development of the inputs. Additionally, submitting agencies were encouraged to consider the work of the Long Range Planning Task Force then concluding, which endorsed seven aspirational initiatives for the region.

The Visualize 2045 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, and 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's 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, and revised by TPB staff following the approval of new dedicated funding for WMATA's state of good repair needs by the District of Columbia, Maryland, and Virginia this year. Similarly the financial plan includes commuter rail services, VRE and MARC, and local bus transit services whose expenditure and revenue estimates were developed and reviewed.

EXECUTIVE SUMMARY

This analysis demonstrates that the Visualize 2045 long range plan, covering the period 2019 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 \$292.9 billion in transportation expenditures is projected for the Washington Metropolitan Region for the 27-year period of 2019 to 2045. The majority of future transportation revenues will be devoted to the operations and maintenance of the current public transportation and highway systems. WMATA expenditures constitute 48 percent and local public transportation 18 percent of the total through 2045 and highways constitute 34 percent.

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 and construction of the Purple Line, and implementation of the MARC Growth and Investment Plan for commuter rail in Maryland; and the I-66 HOT Lanes, completion of phase two of the Silver Line, and implementation of the VRE System Expansion Plan in Virginia. Most importantly, the 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 and the new revenue sources since 2014 are described.
- 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 financial analysis results to those of previous long range 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 CLRP financial analysis, which includes information still applicable.

Section 2: Summary of the Results of the Regional Forecasts

This analysis demonstrates that the projects and programs contained in the long-range plan for the years 2019-2045 can be funded with the reasonably expected revenues and that the financial plan for the Visualize 2045 long range plan conforms to Federal guidelines requiring metropolitan areas 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 Washington Metropolitan Region with TPB staff assistance. Revenue projections do not include projections of new sources that are not yet legislatively enabled, but 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 dollars. Year of expenditure dollars were arrived at by applying an inflation factor to estimates in 2019 dollars. However, these future year dollars are not the same as 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, the conversions between year of expenditure dollars and constant dollars in this analysis typically use 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 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 major “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, the construction of the Silver Line phase two by the Metropolitan Washington Airports Authority (MWAA), 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. To clarify WMATA’s information, a sub-table summarizing the total aggregate revenues by combining the non-jurisdictional funds with the jurisdictional funding is provided in Table 1 (which already are included in prior rows of the table) categorized by the five funding source columns.

¹ Congressional Budget Office, 2017 Long Term Budget Outlook (Table A-1, page 30). <https://www.cbo.gov/system/files/115th-congress-2017-2018/reports/52480-ltbo.pdf>

Table 1 – Revenues: Visualize 2045 long range plan (2019 2045)

Millions of YOE Dollars

	Federal	State/DC	Local	Private / Other	Fares / Tolls	TOTAL
District of Columbia						
Highway	\$6,067	\$4,010				\$10,076
Local Transit	\$100	\$3,033			\$436	\$3,569
Commuter Rail						\$0
WMATA Support		\$32,434				\$32,434
Sub-Total	\$6,167	\$39,477	\$0	\$0	\$436	\$46,079
Suburban Maryland						
Highway	\$10,112	\$27,008	\$7,135	\$9,332	\$769	\$54,356
Local Transit	\$2,446	\$3,401	\$11,313	\$0	\$2,647	\$19,807
Commuter Rail	\$1,293	\$8,566		\$0	\$1,032	\$10,891
WMATA Support		\$31,865				\$31,865
Sub-Total	\$13,851	\$70,840	\$18,448	\$9,332	\$4,448	\$116,919
Northern Virginia						
Highway	\$3,975	\$13,116	\$15,820	\$1,343	\$1,501	\$35,755
Local Transit		\$2,231	\$7,024		\$2,219	\$11,473
Commuter Rail	\$963	\$1,104	\$1,627	\$544	\$1,872	\$6,110
WMATA Support		\$1,341	\$26,512			\$27,853
Sub-Total	\$4,938	\$17,792	\$50,983	\$1,887	\$5,592	\$81,191
WMATA¹						
Sub-Total	\$13,622			\$219	\$34,840	\$48,681
GRAND TOTAL	\$38,578	\$128,109	\$69,431	\$11,438	\$45,316	\$292,870

Sub-Table - WMATA Summary

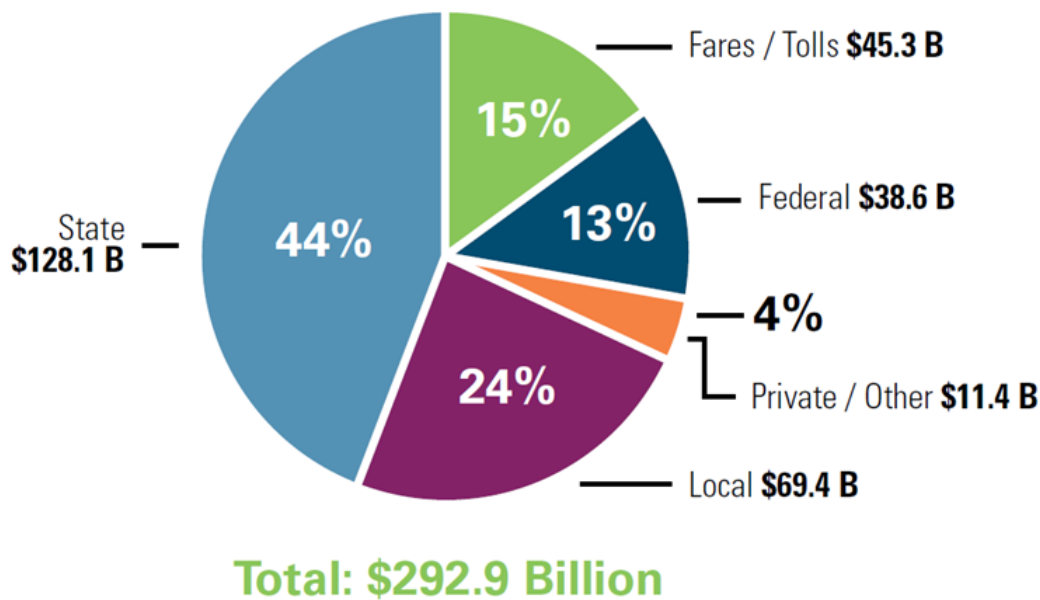
	Federal	State/DC	Local	Private / Other	Fares / Tolls	TOTAL
Capital	\$13,622	\$27,884	\$7,292	\$219	\$2,937	\$51,954
Operating		\$37,756	\$19,220		\$31,903	\$88,879
Subtotal WMATA	\$13,622	\$65,640	\$26,512	\$219	\$34,840	\$140,833

1. Fares, Grants and Other Nonjurisdictional (Regional) Funds. Includes MWAA Silver Line phase 2.

Observations about Forecasted Revenues

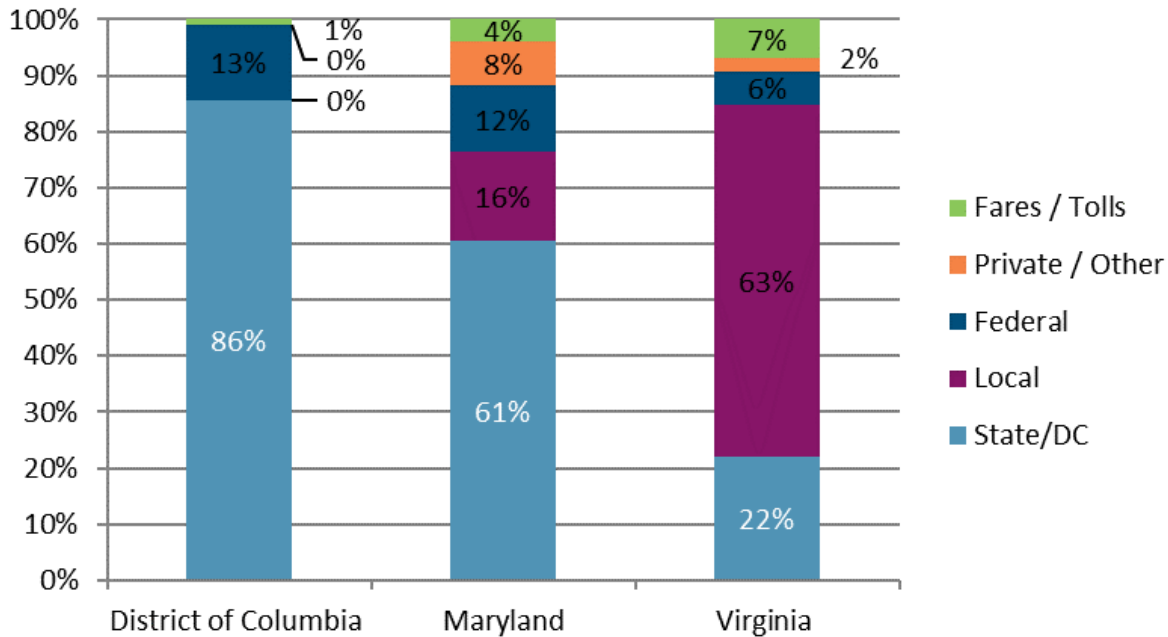
The revenues shown in Table 1 are portrayed graphically in Figure 1 below by funding source. Overall, Federal revenue as a proportion of total revenue is 13 percent, while State (including the District of Columbia) sources are the largest single source at 44 percent. Local funds, which include funds collected across Northern Virginia, represent 24 percent of revenue. User fees of fares and tolls are 15 percent of the total revenues, while bonds and private or other sources account for 4 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



Regarding revenue projections for each major jurisdiction, the summary presented in Figure 2 shows that in D.C., federal revenues constitute 13 percent of its revenues with D.C. contributing 86 percent and fares making up 1 percent. For Suburban Maryland the revenue contributions are federal – 12 percent, state – 61 percent, local – 16 percent, private/other – 8 percent and tolls/fares – 4 percent. In Virginia, the contributions are federal – 6 percent, state – 22 percent, local – 63 percent (which includes regional taxes), private/other – 2 percent and tolls/fares – 7 percent.

Figure 2 – Revenues by Funding Sources by State



New Revenue Sources Since 2014

The most significant development for the region has been the approval for new, long-term dedicated funding for WMATA’s state of good repair needs by the District, Maryland, and Virginia. In addition to continued support for the current capital subsidy, the three jurisdictions will provide an additional \$500 million annually in funding. The funding allocation was arrived at through WMATA’s capital costs formula: the District to provide \$178 million, Maryland \$167 million, and Virginia \$154 million per year. Virginia’s share will be provided starting in fiscal year 2019, with the District and Maryland’s contribution a year later.

To raise additional revenues for WMATA, the District has increased taxes on Transportation Network Companies trips, and increased sales, hotel, meal and, and commercial property taxes. Maryland is fund their additional contribution to WMATA out of general funds. In Virginia, a portion of the funding was re-allocated from funds collected by the Northern Virginia Transportation Authority (NVTA). Other Virginia funding came through a new floor on the regional gas tax and reapportionment of the regional grantor’s tax, lodging tax, and motor vehicle taxes.

The dedicated funding for WMATA came with various requirements and restrictions. The most important of these financially is a restriction on increases in the WMATA operating subsidy, limiting general increases to 3 percent per year or some portion of funds would be withheld. In this financial analysis, TPB staff have assumed that WMATA will adhere to this annual subsidy increase limit indefinitely.

In regard to Federal revenues, no significant increases are expected, though program funds are anticipated to increase with inflation in the long-term. One exception is that an extension is assumed of the federal Passenger Rail Investment and Improvement Act of 2008 (PRIIA) for WMATA rehabilitation beyond 2019. Per this assumption, \$150 million of federal funds from PRIIA matched

by \$150 million in state funds (\$50 million each from DC, MD, and VA) annually is assumed for the period 2020 – 2045, for which federal funds are matched with local funds. The revenues shown in Table 1 include this anticipated revenue for WMATA's State of Good Repair needs.

The current PRIIA legislation expires at the conclusion of federal fiscal year 2019 (September 30, 2019). The region and local jurisdictions, the three states, WMATA, and the business community are committed to working to extend this federal legislation. It is reasonable to assume that the current commitment by the states to match the federal funds will be continued when PRIIA is extended by Congress.

FORECAST EXPENDITURES

The forecast expenditures for the Visualize 2045 long range plan are shown in Table 2. The total estimated expenditures are summarized in year of expenditure dollars for the 27-year period from 2019 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 plan is financially constrained as required.

Public transportation is expected to be comprise 66 percent of the expenditures and highways comprise 34 percent. Of the total expenditures, operations and capital projects for WMATA will represent about 48 percent of the region's expenditures for transportation.

Expenditures are separated into three major categories: operations, state of good repair, and system expansion. Expenditures are further divided among four modal categories: highway, local transit, commuter rail, and WMATA support. The rows in the table show expenditures by the three jurisdictions (the District of Columbia, Suburban Maryland, Northern Virginia), the regional nonjurisdictional expenditures, and the aggregate total. The regional "nonjurisdictional" expenditures are those covered by WMATA fares, grants, and other non-jurisdictional funds for regional services, including MWAA construction of the Silver Line phase two. Within each jurisdictional category, Table 2 shows the expenditure breakdown by the principal modes (highway, local transit, commuter rail, and WMATA). Table 2 also shows a summary of total aggregate revenues for WMATA (already included in prior rows of the table) categorized by the two expenditure columns. The total expenditures shown in Table 2 are \$292.9 billion and match the revenues shown in Table 1.

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 CLRP financial analysis, agencies have worked to discretely identify state of good repair expenditures for highway and transit systems, previously divided between annual 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 annual maintenance is forecast to be about 43 percent; the expenditures for capital projects to maintain the highway and transit systems in a state of good repair are forecasted at about 34

Table 2 – Expenditures: Visualize 2045 Long-Range Plan (2019-2045)

Millions of YOE Dollars

District of Columbia	Operations	Repair	Expansion	TOTAL
Highway	\$6,324	\$3,274	\$478	\$10,076
Local Transit	\$2,662	\$559	\$348	\$3,569
Commuter Rail				\$0
WMATA Support	\$17,011	\$13,547	\$1,876	\$32,434
Sub-Total	\$25,997	\$17,380	\$2,702	\$46,079
	56%	38%	6%	
Suburban Maryland				
Highway	\$8,227	\$25,046	\$21,083	\$54,356
Local Transit	\$9,777	\$1,039	\$8,991	\$19,807
Commuter Rail	\$2,365	\$6,102	\$2,424	\$10,891
WMATA Support	\$17,071	\$12,996	\$1,798	\$31,865
Sub-Total	\$37,440	\$45,183	\$34,296	\$116,919
	32%	39%	29%	
Northern Virginia				
Highway	\$7,134	\$9,400	\$19,221	\$35,755
Local Transit	\$8,059	\$1,739	\$1,675	\$11,473
Commuter Rail	\$3,395	\$683	\$2,032	\$6,110
WMATA Support	\$13,434	\$12,514	\$1,905	\$27,853
Sub-Total	\$32,022	\$24,336	\$24,833	\$81,191
	39%	30%	31%	
WMATA¹				
Sub-Total	\$31,903	\$13,622	\$3,156	\$48,681
GRAND TOTAL	\$127,362	\$100,521	\$64,987	\$292,870

Sub-Table - WMATA Summary

	State of Good			TOTAL
	Operations	Repair	Expansion	
DC	\$17,011	\$13,547	\$1,876	\$32,434
Maryland	\$17,071	\$12,996	\$1,798	\$31,865
Virginia	\$13,434	\$12,514	\$1,905	\$27,853
WMATA	\$31,903	\$13,622	\$3,156	\$48,681
Subtotal WMATA	\$79,419	\$52,679	\$8,735	\$140,833

Sub-Table - Modal Summary

Highways	\$21,685	\$37,720	\$40,782	\$100,187
Transit	\$105,677	\$62,801	\$24,205	\$192,683
Percentages	43.5%	34.3%	22.2%	

1. Fares, Grants and Other Nonjurisdictional (Regional) Funds. Includes MWAA Silver Line phase 2.

percent while the expenditures devoted to system expansion are around 22 percent. For highways, 59 percent of expenditures are anticipated on operations and state of good repair projects.

Under local transit, commuter rail, and WMATA, operations is 51 percent of the forecast expenditures, with another 34 percent devoted to state of good repair. Together, the capital state of good repair and expansion investments are about 57 percent of total expenditures for the region.

The expenditures shown in Table 2 include the new dedicated funding for WMATA from the District of Columbia, Maryland, and Virginia through 2045 as well as their match for an extension of the Passenger Rail Investment and Improvement Act of 2008 (PRIIA) for WMATA rehabilitation through 2045. Each of the three jurisdictions contributes \$50 million annually, to match \$150 million of annual federal funds, all of which is expended on state of good repair capital projects.

Figure 3 shows total expenditures, separated by mode and type. Transit expenditures include those for WMATA, local transit, and commuter rail. Over the 27-year period of Visualize 2045, public transportation is projected to absorb 66 percent of the total expenditures of \$292.9 billion. WMATA expenditures are forecast at \$140.8 billion (48 percent of the total) and match the available revenues. Highway expenditures and revenues total \$100.2 billion (34 percent).

Figure 3 – Expenditures by Type and Mode

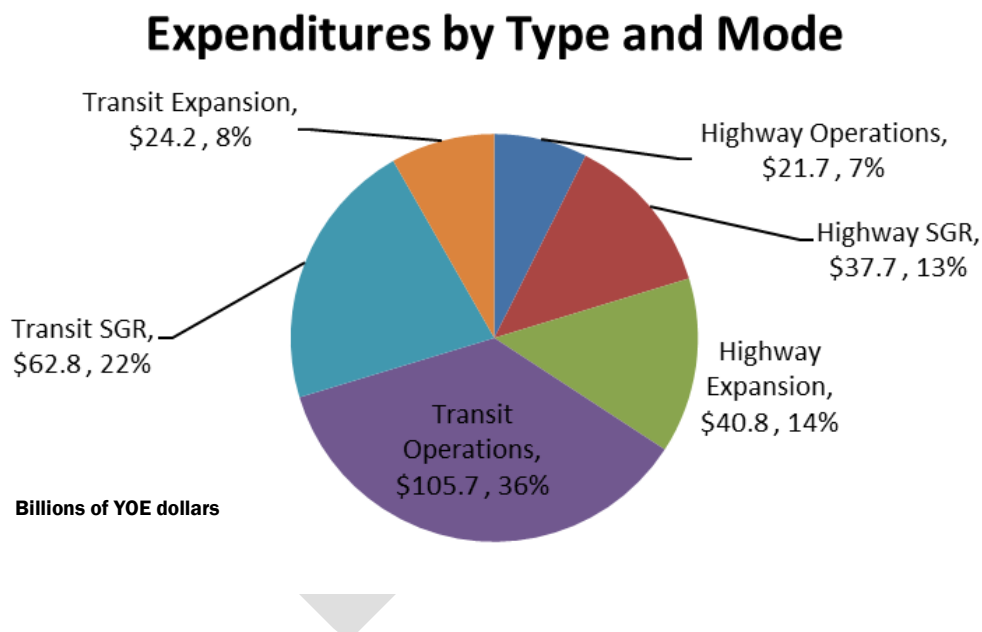
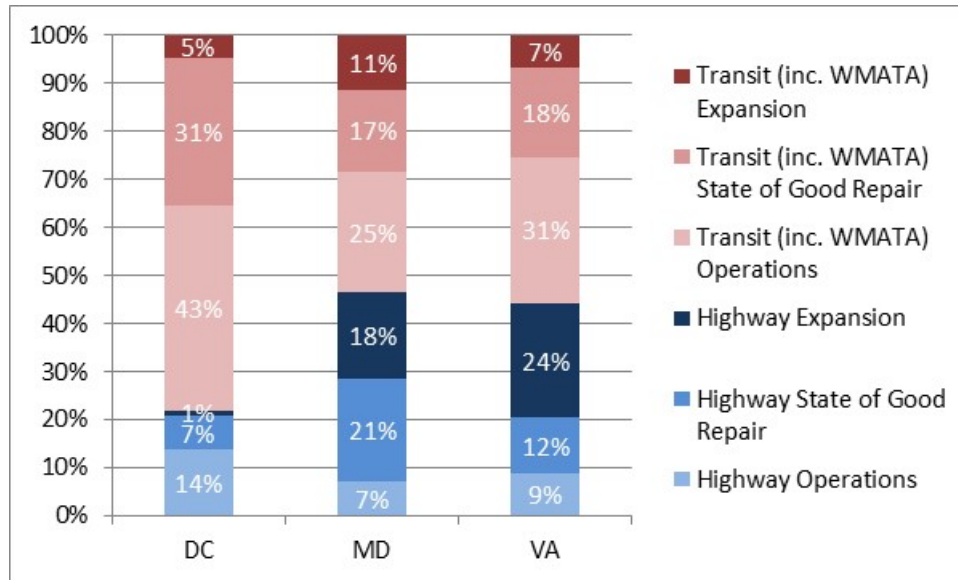


Figure 4 (on the next page) shows expenditures by mode and type for each state shown as percentile out of 100% (WMATA's expenditures using revenues received directly from federal sources and collected from passenger fares are excluded). In the District of Columbia, transit state of good repair and operations expenditures are a much higher proportion of total expenditures, given the significant transportation role of Metrorail and Metrobus.

Suburban Maryland and Northern Virginia have comparable proportions of expenditures allocated to highway and to transit: 46% and 54% respectively for Maryland, 44% and 56% for Virginia. Suburban Maryland has a smaller proportion of funds going to expansion projects, but in dollar terms forecasts

spending considerably more than Northern Virginia on expansion (\$34.3 billion for Maryland vs. \$24.8 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 financial analysis. About a third of the expansion funding is for the completion of the construction of Silver Line Phase 2 (to Dulles Airport and Loudoun County) due to open in 2020, a project being carried out the Metropolitan Washington Airports Authority. The other expansion amount will provide for 100% 8-car trains, core station capacity improvements, and other capital project improvements to meet growth, as identified in WMATA's 2017 Capital Needs Inventory.

Beginning with the 2000 CLRP, the TPB imposed a transit core capacity constraint when using its travel demand model for air quality conformity determination. Ridership on Metrorail in the downtown was constrained at 2020 levels for further out-years of the analysis. This was to reflect between that funding had not been identified to accommodate all of the projected Metrorail ridership growth after 2020. However, with the provision of dedicated funding for WMATA, it is anticipated that Metrorail will receive the all 8-car trains and the downtown station core capacity improvements needed to meet increasing demand. Accordingly, the transit core capacity constraint has been removed from the travel demand model and the air quality conformity determination for Visualize 2045.

Section 3: How Revenues and Expenditures are Forecast

PERIOD OF ANALYSIS AND SUMMARY OF APPROACH

The Visualize 2045 long range plan financial analysis covers both expenditures and revenues for a 27-year period for 2019 to 2045. Agencies used the current long range plan, the current TIP, and their latest capital investment programs and six-year improvements proposals as a starting point for expenditures and made appropriate adjustments to extend their forecasts for the 27-year period while revenues were forecast based on historic funding trends and anticipated changes in federal and state revenues. Template spreadsheets were distributed 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 using the common spreadsheet format.

METHODOLOGIES

Revenue and expenditure data were developed and synthesized by the states of Maryland and Virginia and the District of Columbia, by WMATA and other transit agencies, and by the local jurisdictions. The District DOT provided all District of Columbia estimates. MDOT coordinated all of the local jurisdiction and state inputs in Maryland and 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 provides WMATA's funding and which operates the commuter rail and 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 from the Maryland Transit Administration.

Most of the funding to construct, operate and maintain highways in Virginia is provided by the state, with significant funding also provided through regional revenues allocated by the Northern Virginia Transportation Authority (NVTA) and also 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 providers, with the Virginia Department of Rail and Public Transportation providing state funding support.

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

DISTRICT OF COLUMBIA FORECAST

Over the near term, D.C.'s revenues forecasts rely on budget projections. For this financial analysis, the FY 2018 proposed budget, which includes a capital program for fiscal years 2018 through 2023 was used. For the revenue forecast beyond 2023, the District assumes future escalations at the rate of general inflation.

The revenue numbers for highways (\$10.1 billion in year of expenditure dollars) in the summary tables (Table 1) has been derived from yearly revenue projections provided by the District Department of Transportation (DDOT) in spreadsheet format. The District forecasts that \$6.1 billion of this would be covered by Federal aid and \$4.0 billion from various local D.C. sources used to fund highways.

Projected state revenues include highway, local transit, 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 Federal Highway funds.

DC revenues for WMATA and local transit – DC Streetcar, DC Circulator, and paratransit programs – include funds programmed for WMATA State of Good Repair capital investments and local bus transit. The average state 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 District 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 and WMATA's needs. For private and other revenues, there are assumptions of private spending for several projects in the long range plan that will result in improved regional transportation infrastructure.

For expenditures, DDOT projects highway spending on significant capital projects from planned spending on major projects in the FY 2018-2024 budget with ongoing expenditures projected for significant projects based on past trends. These expenditures also include the District's planned GARVEE Bond repayments for significant projects.

Tables 1 and 2 include \$3.6 billion in revenue and expenditures for local transit that mainly consists of the D.C. Streetcar and the D.C. Circulator Bus as well as paratransit programs. 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. The District'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 \$50 million a year in match from District for the presumed 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: Charles County, Frederick County, Montgomery County, and Prince George's County.

MDOT bases its overall revenue projections on the state's Consolidated Transportation Plan (CTP) budget for the next few years, extrapolation of past trends, and assumptions about future increases for out years (approximately 2023-2045). For years 2019-2045, 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 commit matching funds \$50 million a year for continuation of funding for PRIIA through 2045.

Maryland jurisdictions also base their overall revenue projections on the budget estimates over the next few years, extrapolation of past trends, and assumptions about future increases for out years (approximately 2023-2045). For years 2019-2045, while each jurisdiction made slightly different assumptions about future escalations, the aggregate numbers imply an overall annual increase of approximately 2.1 percent in funding for highway and transit by the Maryland jurisdictions. The able 1 revenue breakdown in year of expenditure dollars by source for Maryland forecasts \$13.9 billion from Federal sources, \$70.8 billion from state, \$18.4 billion from local, \$9.3 billion from private and other, and \$4.4 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 \$37.4 billion for operations and annual system preservation, \$45.2 billion for capital state of good repair projects and \$34.3 billion for expansion projects, including the I-270 and I-495 Traffic Relief Plan, the replacement of the Nice Bridge and construction of the Purple Line, and the implementation of MARC Growth and Investment Plan for commuter rail.

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 reviewed the WMATA financial projections.

VDOT coordinated the effort and provided revenue and expenditure information for the state, Federal, and local jurisdiction data. Four different categories of projects and programs were evaluated: Highways, Local Transit, Commuter Rail (Virginia Railway Express), 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 used for the fiscal annual Budget and the Six-Year Program is extracted the official forecast of state revenues prepared by the

Department of Taxation. The state revenues include: Motor Vehicle Sales and Use Tax, Motor Vehicle Fuels Tax, Licenses Fees, International Registration Plan, and State Sales and Use Tax. In the long-term, state revenues are expected to grow long-term by 2.4 percent annually, with a 1.9 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 – \$4.9 billion, \$17.8 billion, and \$51.0 billion, respectively. User charge revenues of \$1.5 billion from tolls on state toll roads and \$4.1 billion from local transit and commuter rail fares are shown separately. Private/other funds are \$1.9 billion, including a one-time concession payment funding from the I-66 Outside the Beltway Express Lanes private consortium.

Regional and local revenues include the dedicated NVTA funds. The NVTA 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 NVTA funds will go directly to WMATA under the newly passed legislation, while the major portion of the NVTA funds is allocated by the NVTA 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 \$32.0 billion for operations, \$24.3 billion for state of good repair projects, and \$24.8 billion for expansion, including both highways and transit.

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 3 percent annually. WMATA revenue and expenditure entries include match from Northern Virginia for the extension of PRIIA through 2045.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY FORECAST

WMATA's financial estimates were prepared based on anticipated growth in the operating costs and revenues for the three modes: Metrobus, Metrorail, and MetroAccess, and on the capital needs identified in WMATA's 10 year *Capital Needs Inventory and Prioritization* report, released in November 2016, and GM/CEO Wiedefeld's plan to "Keep Metro Safe, Reliable, and Affordable," released on April 19, 2017.

WMATA's revenue and expenditure forecasts were prepared in June 2017, prior to the dedicated funding legislation being taken up and approved by the District of Columbia, Maryland, and Virginia in 2018. Subsequently, adjustments were made to the forecast by TPB staff in keeping with the projected impacts of the legislation on both revenues and expenditures.

WMATA Operations Revenues and Expenditures

The initial WMATA operations forecast was for a 3.5 percent annual increase in bus and rail expense growth, combined with a 1 to 2 percent annual ridership and revenue growth, resulting in annual subsidy growth of about 4 to 6 percent throughout most of the years of the analysis period. Subsequently, adjustments were made to the forecast by TPB staff in keeping with the projected impacts of the legislation, limiting the annual increase in operating subsidy for Metrorail and Metrobus to 3 percent and setting fare revenue growth at 2.4 percent annually.

Metrorail service and fleet assumptions include operating support and fares for the Silver Line Phase 2 to Dulles Airport and Loudoun County, with the expectation that costs for the service will begin in FY 2020 as operators, mechanics, police, and other staff are hired and trained so that revenue service can begin in FY 2021.

Metrobus service growth is expected to grow at a modest rate, perhaps 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 4 to 6 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 initial WMATA capital revenues and costs forecast included a 2.4 percent inflation rate, based on the Congressional Budget Office 2017 long-term forecast. The capital revenues 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. The new, dedicated funding of \$500 million annually was assumed to begin in FY 2020, and grow at 2.4 percent annually from a base year of FY 2022 (i.e., starting with FY 2023).

Capital expenditures were based on 'Steady-state' state of good repair needs of \$1.07 billion (\$YOE), from WMATA's Capital Needs Inventory (CNI), and an estimated \$6.66 billion in backlog needs. In the initial ten-year period, expenditures totaled \$15.5 billion, consistent with the GM/CEO's plan.

The construction of the Silver Line Phase 2 is being managed by the Metropolitan Washington Airports Authority, not WMATA, however the remaining construction costs are included in the WMATA figures for expansion. After the Silver Line Phase 2 and construction of a new in-fill station at Potomac Yard, no further expansion of the rail system network is included.

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.

Section 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 are 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.

The most important development in the region 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. However, the Visualize 2045 analysis covers a period of twenty-seven years, as opposed to the twenty-six years of the 2014 CLRP analysis. 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:

Total Expenditures in Billions of YOE Dollars are increasing over time:

	D.C.	Suburban Maryland	Northern Virginia	WMATA (Nonjurisdictional)	Total
2010 CLRP	\$ 28.0	\$ 74.5	\$ 58.0	\$ 62.0	\$ 222.8
2014 CLRP	\$ 33.1	\$ 87.3	\$ 68.5	\$ 55.2	\$ 244.1
Visualize 2045	\$ 46.1	\$ 116.9	\$ 81.2	\$ 48.7	\$ 292.9
% Change (Visualize 2045 vs. 2014 CLRP)	+39%	+34%	+20%	-12%	+20%

Forecast total revenues and expenditures increased by 20 percent between the 2014 CLRP and Visualize 2045. One factor is the substantial increase in WMATA's state of good repair needs, which will be funded through the new dedicated funding for WMATA passed by all three major jurisdictions. Another factor is the addition of new toll road projects in Maryland and Virginia, which will be funded through private revenues and recouped through tolls. There are also increases in expenditures that will be funded locally, including projects to be funded by the NVT in Northern Virginia and by Montgomery County for its BRT projects.

The Percentage of Total Expenditures in Billions of YOE Dollars by Mode

	Highway	WMATA	Other Transit	Total
2006 CLRP	\$ 68 (43%)	\$ 69 (43%)	\$ 22 (14%)	\$ 159
2010 CLRP	\$ 81 (36%)	\$ 114 (51%)	\$ 28 (13%)	\$ 222.8
2014 CLRP	\$ 99 (41%)	\$ 101 (41%)	\$ 43 (18%)	\$ 244.1
Visualize 2045	\$ 100 (34%)	\$ 141 (48%)	\$ 52 (18%)	\$ 292.9

The proportion of revenues and expenditures devoted to public transportation in Visualize 2045 has increased since 2014 to 66 percent, similar to the 64 percent in the 2010 CLRP. This is largely due

to the increased need for investment in WMATA's state of good repair needs, but also the transit projects added to the Visualize 2045 long range plan, including commuter rail investments in both Maryland and Virginia and also the Montgomery County BRT projects. Expenditures for WMATA constitute 48 percent of the total expenditures, in line with previous forecasts.

Federal revenues as a proportion of the total has decreased to 13 percent, down from 16 percent in past analyses. State and local revenues are up proportionately. Other sources of revenue, including private and other sources and user fees from tolls and fares, are down to 19 percent from 24 percent in 2014 and 32 percent in 2010. In part, this is due to the increase in state and local revenues, making up a larger piece of the growing total. In addition, some major toll projects, including I-95 and I-495 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 recently observed trends in ridership and more conservative forecasts of future transit ridership.

With respect to the forecast for individual modes, for highways, the Federal government and the states provide 64 percent of the revenues, similar to the 63 percent in 2014 but down from 74 percent contribution in 2010. Over time, the local share as a proportion of highway revenues has increased, largely due to the changes in Virginia funding with more local funds coming from the NVTA. Local transit and commuter rail are largely funded from state and local revenue sources, 74 percent (up from 52 percent in 2014), with fares contributing 16 percent (down sharply from the 2014 forecast of 35 percent) and Federal aid 9 percent (down from 12 percent in 2014).

Section 5: Transportation Revenues: Recent Trends and Future Options

There have been positive actions taken by agencies since 2010 in terms of seeking adequate revenues to maintain the existing highway and transit systems in a state of good repair. However, major challenges remain if surface transportation capacity is to grow to meet forecast population and economic growth, or if congestion on the entire transportation system leads to 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 recession.

While the recent increases in state funding in Maryland, Virginia, and the District of Columbia have been significant, the long-term forecast for federal revenues is of gradual decline. Absent an increase in federal transportation programs to keep up with the population and economy, states and local jurisdictions will have to find more sources of transportation funding, even while under immense pressure to constrain their own revenue exaction. About 43 percent of recent national highway capital and just a slightly smaller percentage of recent national transit capital funding have come from the Federal government, yet as the financial analysis shows, the region forecasts only 13 percent of overall revenues will come from federal programs through 2045.

The shift to user fees for highway expansion, particularly for specific project-based funding agreements such as for 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 in Maryland, built by the State Highway Administration and operated by the Maryland Transportation Authority was the first example in the region. More innovatively, nationally recognized private-public 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. More recently, Virginia imposed a toll on I-66 inside the Beltway, which is paying for improvements and transit alternatives projects in the corridor. Meanwhile I-66 outside the Beltway is adding Express Lanes constructed by a private partner, due to open in 2022. Maryland has decided to pursue similar projects, with the Traffic Relief Plan to add tolled lanes along the I-495 Capital Beltway and I-270, with a proposal to also build such lanes along the Baltimore-Washington Parkway.

There may be opportunities for future capacity expansion through tolling, including a role for public-private partnerships. In addition, the State of Maryland is constructing the light rail Purple Line system using a public-private partnership in which the private partner has financed 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 development (TOD) projects around current and future Metrorail stations, not only provides direct revenues for transportation, but also leads to more transit ridership and revenues.

In support of the 2010 CLRP 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 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. What Do People Think About Congestion Pricing? A Study of the Public Acceptability of Congestion Pricing Through a Deliberative Dialogue with Residents of Metropolitan Washington² was completed by the TPB in 2013. The study found that participants agreed that congestion resonates as a critical problem facing the region, with significant personal impacts. 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

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

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 has not been raised in nearly two decades and is 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 does 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.

However, if congestion pricing can effectively create specific and useful transportation alternatives, people showed more interest during the study discussion. 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 will be used, and ensure transparency and accountability in the allocation of these funds.

PRIVATE SECTION 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 Inter County Connector, the Dulles Toll Road, and I-66 inside the Beltway, there is opposition to tolling. This is additionally the case where highway toll revenues are being 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 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 addition, the State of Maryland reached a public-private partnership agreement with a private partner to construct and finance a considerable portion of the Purple Line light rail system.

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 VMT fees. For both political and technological reasons, their actual implementation lies well into the future although significant efforts already 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.