

# **Analysis of Resources for the 2010 Financially Constrained Long-Range Transportation Plan for the Washington Region**

## **final report**

*prepared for*

**National Capital Region Transportation Planning Board**

*prepared by*

**Cambridge Systematics, Inc.**

*with*

**K.T. Analytics, Inc.**

---

*final report*

# **Analysis of Resources for the 2010 Financially Constrained Long-Range Transportation Plan for the Washington Region**

*prepared for*

National Capital Region Transportation Planning Board

*prepared by*

Cambridge Systematics, Inc.  
4800 Hampden Lane, Suite 800  
Bethesda, Maryland 20814

*with*

K.T. Analytics, Inc.

*November 2010*

---

# Table of Contents

<b>1.0 Introduction and Study Purpose .....</b>	<b>1</b>
<b>2.0 Summary of the Results of the Regional Forecasts... ..</b>	<b>3</b>
Revenues .....	3
Expenditures.....	7
Differences from the WMATA Expenditure Request.....	10
<b>3.0 Analysis Methods.....</b>	<b>13</b>
Period of Analysis and Summary of Approach.....	13
Methodologies.....	13
Suburban Maryland.....	14
Northern Virginia.....	14
District of Columbia.....	15
Washington Metropolitan Area Transit Authority .....	16
Transit Ridership Constraint .....	17
<b>4.0 Comparison to the 2006 CLRP Update .....</b>	<b>18</b>
<b>5.0 Recent Trends in Revenues Before the Recession .....</b>	<b>21</b>
Recent Regional Trends for Revenues and Expenditures .....	22
Highways .....	22
Transit.....	23
<b>6.0 Actions Needed to Achieve New or Enhanced Revenue Sources.....</b>	<b>25</b>
Establishing a Policy Rationale .....	27
Providing Sound Technical Analysis .....	28
Assuring Sustained Leadership .....	28
Establishing Political Consensus .....	29
Educating and Informing the Public.....	29
Reconciling Institutional Roles, Responsibilities, and Relationships .....	30
Reconciling Administrative Responsibilities and Procedures.....	31
Establishing the Legal Framework.....	31
Combining Management of Current and Emerging Revenue Sources.....	32
Introducing Necessary Technologies .....	32
Investing in the Phase-In.....	33
<b>7.0 Evaluation of New or Enhanced Revenue Sources.....</b>	<b>35</b>
Potential Yields.....	45
<b>8.0 Lessons Learned Elsewhere: New and Enhanced Revenue Sources .....</b>	<b>46</b>
Tolling Pricing, and Other Direct User Fees .....	54
Financing Techniques.....	58

## **Table of Contents (continued)**

<b>Appendix A -Constant Dollar Estimates.....</b>	<b>68</b>
<b>Appendix B - Northern Virginia Process for Estimates .....</b>	<b>73</b>
Highways - Revenues .....	73
Highways - Expenditures.....	75
Transit - Revenues.....	76
Transit - Expenditures .....	78

# List of Tables

1.	Revenues – Financially Constrained Long-Range Plan (2011-2040).....	4
2.	Expenditures – Financially Constrained Long-Range Plan (2011-2040) .....	8
3	2010 CLRP: WMATA Expenditure Requests Versus Revenues Committed by Jurisdictions (2011-2040).....	11
4.	Trends in State Revenues for Highways.....	22
5.	Trends in State Disbursement for Highways.....	23
6.	Trends in Transit Receipts and Disbursements for Capital .....	24
7.	Trends in Transit Receipts and Disbursements for Operations .....	24
8.	Candidate Revenue Sources .....	36
9.	Promising Sources for Highways and Transit (Motor Fuels Taxes).....	38
10	Promising Sources for Highways and Transit (Vehicle Registration and Sales Fees).....	39
11.	Promising Sources for State or Local Highways .....	40
12.	Promising Sources for State and Local Highways and Transit .....	41
13.	Promising Sources for Highways and Transit.....	42
14.	Summary of Promising Project Delivery Tools for Highways and Transit.....	44
15.	Illustrative Yields from Alternative Sources.....	45
A.1	Revenues – Financially Constrained Long-Range Plan (2011-2040).....	68
A.2	Expenditures – Financially Constrained Long-Range Plan (2011-2040) .....	70
A.3	2010 CLRP: WMATA Funding Requests Versus Funding Commitment by Jurisdictions (2011-2040) .....	72

## ■ 1.0 Introduction and Study Purpose

In 2010, the National Capital Region Transportation Planning Board (TPB), is required to conduct a major update of the Financially Constrained Long-Range Transportation Plan (CLRP). Federal metropolitan transportation planning regulations require a financial plan to show how the adopted transportation plan can be implemented, and that the forecast revenues reasonably expected to be available cover the estimated costs of expanding and adequately maintaining and operating the highway and transit system in the region through 2040. This analysis demonstrates that the updated 2010 CLRP is financially constrained.

This document summarizes forecasts of transportation revenues and expenditures for the Washington Metropolitan Region for the 30-year period of 2011 to 2040, provides a discussion of issues, and identifies alternatives for new or enhanced revenue sources. The forecasts have been prepared by the region's transportation agencies and jurisdictions, with coordination provided by the staff of the TPB and by consultants Cambridge Systematics, Inc. and K.T. Analytics, Inc. Agencies have updated their forecasts of anticipated revenues from the currently available sources. All of the forecasts and assumptions were reviewed extensively by a working committee for the study and were reported to and reviewed by the Technical Committee of the TPB and have been presented to the TPB.

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 show future year expenditures in dollars which include inflation. Previous financial analyses for the updated CLRPs, including the most recent update in 2006, were reported in constant dollars and so are not directly comparable. Constant dollar values for this financial analysis are shown in an appendix.

The Virginia Department of Transportation (VDOT), the Maryland Department of Transportation (MDOT), the District of Columbia Department of Transportation (DDOT), and the Washington Metropolitan Area Transit Authority (WMATA) also have coordinated forecasts between the jurisdictions and agencies. During and prior to the conduct of this study, the state DOTs and WMATA and the local jurisdictions also have reviewed and updated all of the project cost data for the CLRP and Transportation Improvement Program (TIP) that are in the current TPB database. Projects to be included in the new CLRP have been constrained with regard to the results of the update of the 2010 financial analysis.

The report also discusses the financial "big picture" and the trends impacting the region. The vast majority of future transportation revenues will be devoted to the maintenance and operations of the current transit and highway systems. New sources are under discussion in the region, and legislative proposals have been suggested. Alternative future revenue sources are identified in this document, along with a preliminary evaluation of each. The needed actions to implement new or enhanced revenue sources also are described.

The products of this financial analysis of the plan include:

- The forecast revenues reasonably expected to be available are shown to be in balance with the estimated costs of expanding and adequately maintaining and operating the highway and transit system in the region through 2040;
- With these financial estimates which are constrained, the updated 2010 CLRP can be implemented with the region's reasonably expected revenues;
- Breakouts of projections in future year or year of expenditure (inflated) dollars of revenues and expenditures through 2040 for the total region, Suburban Maryland, Northern Virginia, and the District of Columbia, and WMATA, by mode and by expenditure category;
- A discussion of regional issues such as the recent historical experience, and the major funding issues facing the region; and
- Identification of potential new sources of revenues to enhance regional highway and transit funding, and a description of the actions that will be needed in order to implement new or enhanced sources.

## ■ 2.0 Summary of the Results of the Regional Forecasts

### Revenues

This financial analysis shows that the region’s reasonably anticipated revenues and expenditures match and that the 2010 CLRP can be funded with the reasonably expected revenues. This analysis conforms to Federal guidelines requiring metropolitan areas to develop long-range transportation plans. The estimates were developed cooperatively by the states, local jurisdictions, and transit agencies of the Washington Metropolitan Region with TPB staff and consultant help. Revenue and expenditure projections do not include projections of new sources but assume a continuation of current sources.

Table 1 shows anticipated revenues for the 2010 Update of the CLRP. The estimates are shown in year of expenditure dollars. Year of expenditure dollars include assumed escalation for future years, and are a reflection of what dollars in each year would have to be expended. However, these future year dollars are not the same as current year dollars in terms of their buying power. Constant dollars are used in this report also to show what the value of the expenditures would be in purchasing power of dollars as we understand them to be worth today. Table A.1 in Appendix A shows revenues in constant 2010 dollars for 2011 through 2040.

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 the TIP and their investment and expenditure programs, such as for maintenance and operations, which are not in the TIP. The conversions between year of expenditure dollars and constant dollars were accomplished by utilizing existing year of expenditure estimates for each revenue and expenditure category, and for (the short term) years for which agencies already have estimated inflation, using the existing inflation estimates of those agencies. For the longer term, the conversions between year of expenditure dollars and constant dollars use a long-term inflation rate of 2.1 percent, which is the long-term inflation rate included in the long-term forecasts of the “Economic Report of the President, January 2009.” This exercise complies with Federal guidelines on the ways of presenting the CLRP, which recommends estimating and showing all figures in terms of year of expenditure dollars. This is a departure for the region’s financial analysis, which previously showed all forecasts in constant dollars.

Revenues are broken down into five source categories (Federal, state, local, private/tolls, and fares) and by three major “state”-level jurisdictions (District of Columbia, Suburban Maryland, and Northern Virginia) and “nonjurisdictional regional” categories. The overall category of private/tolls are comprised of a variety of sources and include anticipated developer contributions. The regional “nonjurisdictional” revenues are WMATA fares, Federal grants, and other nonjurisdictional funds. Transit fares are forecasted for WMATA and for the local transit systems. The table also shows total aggregate revenues for WMATA (which already are included in prior rows of the table) categorized by the five funding source columns. Special Federal, state, and local revenues (already included in the summary above) also are shown separately for some specific projects of regional significance.



**Table 1. Revenues – Financially Constrained Long-Range Plan (2011-2040)**  
*Millions of Year of Expenditure Dollars*

	Federal	State	Local	Toll/Bond/ Private	Fares <sup>a</sup>	Total
<b>District of Columbia</b>						
Highway	\$7,000	\$5,692				\$12,692
Local Transit	\$61	\$999			\$161	\$1,221
Commuter Rail						
WMATA Support		\$14,457				\$14,457
<b>Subtotal</b>	<b>\$7,061</b>	<b>\$21,148</b>		<b>-</b>	<b>\$161</b>	<b>\$28,370</b>
<b>Maryland</b>						
Highway	10,005	19,734	6,027	\$3,764	-	\$39,530
Local Transit	2,034	4,509	7,609	\$316	\$756	\$15,225
Commuter Rail (included above)						-
WMATA Support		\$19,722				\$19,722
<b>Subtotal</b>	<b>\$12,039</b>	<b>\$43,965</b>	<b>\$13,636</b>	<b>\$4,080</b>	<b>\$756</b>	<b>\$74,477</b>
<b>Virginia</b>						
Highway	\$4,903	\$12,074	\$2,819	\$9,024	-	\$28,820
Local Transit	\$355	\$1,040	\$3,483	\$697	\$2,260	\$7,835
Commuter Rail	\$1,002	\$651	\$636	-	\$1,454	\$3,743
WMATA Support	\$1,123	\$8,412	\$6,478	\$1,778	-	\$17,791
<b>Subtotal</b>	<b>\$7,383</b>	<b>\$22,177</b>	<b>\$13,416</b>	<b>\$11,499</b>	<b>\$3,714</b>	<b>\$58,189</b>
<b>WMATA Fares, Grants and Other Nonjurisdictional (Regional) Funds</b>						
<b>Subtotal</b>	<b>\$14,259</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$47,570</b>	<b>\$61,829</b>
<b>Total</b>	<b>\$40,741</b>	<b>\$87,290</b>	<b>\$27,052</b>	<b>\$15,579</b>	<b>\$52,201</b>	<b>\$222,865</b>
<b>WMATA Summary (included above)</b>						
Capital <sup>b,c</sup>	\$15,382	\$9,444	\$2,814	\$1,778	-	\$29,418
Operating	-	\$36,811	Included with state	Included with state	\$47,570	\$84,381
<b>Subtotal WMATA</b>	<b>\$15,382</b>	<b>\$46,255</b>	<b>\$2,814</b>	<b>\$1,778</b>	<b>\$47,570</b>	<b>\$113,799</b>

<sup>a</sup> Includes other transit operating revenues.

<sup>b</sup> An additional \$7.5 billion in potential Federal and state funds for WMATA's Capital Program for the period 2021 through 2040 are not shown as funding sources.

<sup>c</sup> The WMATA revenue requests for capital expenditures shown are for equipment to serve ridership growth on existing lines.

**Table 1. Revenues – Financially Constrained Long-Range Plan (2011-2040)**  
*Millions of Year of Expenditure Dollars (continued)*

	Federal	State	Local	Toll/Bond/ Private	Fares	Total
<b>Regional Significant Capital Project Revenues (included above)</b>						
<b>District of Columbia</b>						
St. Elizabeth Access	\$79	\$79				\$158
11 <sup>th</sup> Street Bridge	\$306	\$306				\$612
South Capitol Street Bridge and Corridor	\$71	\$71				\$141
D.C. Streetcar Line	\$28	\$141				\$169
<b>Subtotal</b>	<b>\$484</b>	<b>\$597</b>	-	-	-	<b>\$1,080</b>
<b>Maryland</b>						
Intercounty Connector				\$1,684		\$1,684
Nice Bridge Replacement				\$2,080		\$2,080
Purple Line Transit	\$895	\$895				\$1,790
Corridor Cities Transitway	\$596	\$597				\$1,193
<b>Subtotal</b>	<b>\$1,491</b>	<b>\$1,492</b>		<b>\$3,764</b>		<b>\$6,747</b>
<b>Virginia</b>						
I-495 HOV/HOT Lanes	\$213	\$34	-	\$217	-	\$477
I-95/I-395 HOV/Bus/ HOT Lanes	-	-	-	\$428	-	\$428
I-95/I-395 HOT Lanes Bus Service	\$38	-	-	\$195	\$157	\$390
Dulles Corridor Rail	\$975	\$1,667	\$1,222	\$1,778	-	\$5,642
Columbia Pike Streetcar	\$186		\$150			\$336
<b>Subtotal</b>	<b>\$1,412</b>	<b>\$1,701</b>	<b>\$1,372</b>	<b>\$2,618</b>	<b>\$157</b>	<b>\$7,273</b>
<b>Total Regional Significant Projects</b>	<b>\$3,387</b>	<b>\$3,789</b>	<b>\$1,372</b>	<b>\$6,382</b>	<b>\$157</b>	<b>\$15,100</b>

Revenues are identified for significant new expansion projects for both highways and public transportation, including the entire Dulles Rail corridor, HOT lanes and bus services on I-95/I-395, HOT lanes on the Virginia Beltway, the Columbia Pike streetcar in Virginia; the Intercounty Connector in Maryland, the Nice Bridge, the Purple Line, and the Corridor Cities Transitway in Maryland; and a D.C. streetcar line, the 11<sup>th</sup> Street Bridge, and the South Capitol Street Corridor projects in D.C.

The revenues shown in Table 1 exclude the WMATA request to the jurisdictions for revenues for projects identified as to be funded by “extension” of Passenger Rail Investment and Improvement Act of 2008 type funds for WMATA rehabilitation beyond 2020, for which neither the required Federal legislation is in place nor any agreement by the jurisdictions to match these funds is in place. If enacted, this “continuation” of the Passenger Rail Investment and Improvement Act of 2008 type funding would identify an additional \$7.5 billion for WMATA capital investments after 2020, with half from Federal grants and the other half from the three jurisdictions over the 20 years beyond 2020 when the current Passenger Rail Investment and Improvement Act of 2008 funding will end. For the purposes of this plan, a ridership constraint will be imposed post 2020, as has occurred in past plans where there were capital shortfalls.

Significant new revenue sources since the 2006 CLRP include a newly dedicated portion of sales taxes and of the vehicle titling tax in Maryland, additional motor fuel taxes and other taxes in the District of Columbia, additional toll and HOT lane revenues, and new local commercial and industrial revenues available for highways and public transportation in Virginia. Despite the new sources, some highway expansion projects in Maryland, Virginia, and the District have been delayed or removed from the plan since the 2006 CLRP.

Much of future transportation revenues will be devoted to maintenance and operations of the current transit and highway systems in the region. The proportion of revenues devoted to operations and preservation has remained at about 70 percent, and thus expenditures devoted to system expansion have remained at around 30 percent.

Public transportation is expected to consume 64 percent of the revenues with highways taking up 36 percent. Of the total revenues, WMATA will absorb about 51 percent of the region’s revenue for transportation.

Overall, Federal and local revenues as a proportion of total have declined (from the percentages in the 2006 CLRP) to 18 and 12 percent, respectively. State (including the District of Columbia) sources and transit fares are now playing an increasing role (39 percent and 24 percent of the total revenues, respectively). Tolls/Bonds and private sources account for 7 percent of total revenues.

Regarding revenue projections for each jurisdiction, the summary shows that in D.C., Federal revenues constitute 25 percent of its revenues with D.C. contributing the remaining 75 percent. For Maryland the revenue contributions are Federal – 16 percent, state – 59 percent, local – 18 percent, and tolls/private – 7 percent. In Virginia, the contributions are 13 percent Federal, 38 percent state sources, locals -23 percent, tolls/private – 20 percent, and fares -6 percent.

## **Expenditures**

Table 2 summarizes the total estimated expenditures in year of expenditure dollars for the 30-year period from 2011 through 2040. The far right column in Table 2 shows that expenditures and revenues match, and thus the TPB's 2010 CLRP is financially constrained as required.

Expenditures are separated into two major categories (operations/preservations and expansion) and by four modal breakouts: highway, local transit, commuter rail, and WMATA support (for regional WMATA services). Operations, maintenance, and preservation continue to be the majority (70 percent) of expenditures. The WMATA capital expenditures shown are for equipment and facilities to serve ridership growth on existing lines.

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 nonjurisdictional funds for regional services. Within each jurisdictional category, Table 2 shows the expenditure breakdown by the principal modes (highway, local transit, commuter rail, and WMATA).

The table 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 \$222.8 billion and match the revenues shown in Table 1.

The expenditures (already included in the summary above) for the significant new expansion projects in the CLRP for both highways and public transportation are identified. These projects include the entire Dulles Rail corridor, HOT lanes, and bus services on I-95/I-395, and the Columbia Pike streetcar in Virginia; the Intercounty Connector, Nice Bridge, the Purple Line, and the Corridor Cities Transitway in Maryland; and a D.C. streetcar line, the 11<sup>th</sup> Street Bridge, and the South Capitol Street Corridor projects in D.C.

As mentioned above earlier with reference to Table 1, the expenditures shown in Table 2 exclude the WMATA expenditure request for projects identified as to be funded by a proposed "extension" of the Passenger Rail Investment and Improvement Act of 2008 type of funds for WMATA rehabilitation beyond 2020. WMATA has identified an additional \$7.5 billion in capital investment requests, with half from Federal grants and the other half from the three jurisdictions over the 20 years beyond 2020. This is discussed below under the section on WMATA expenditure request.

**Table 2. Expenditures – Financially Constrained Long-Range Plan (2011-2040)**  
*Millions of Year of Expenditure Dollars*

	Operations/ Preservation	Expansion	Total	Revenue – Expenditure
<b>District of Columbia</b>				
Highway	\$11,828	\$864	\$12,692	-
Local Transit	\$1,052	\$169	\$1,221	-
Commuter Rail				
WMATA Support <sup>a,b,c</sup>	\$11,169	\$3,288	\$14,457	-
<b>Subtotal</b>	<b>\$24,049</b>	<b>\$4,321</b>	<b>\$28,370</b>	<b>-</b>
<b>Maryland</b>				
Highway	\$18,333	\$21,197	\$39,530	-
Local Transit	\$9,901	\$5,324	\$15,225	-
Commuter Rail (included above)				
WMATA Support <sup>a,c</sup>	\$16,416	\$3,306	\$19,722	-
<b>Subtotal</b>	<b>\$44,650</b>	<b>\$29,827</b>	<b>\$74,477</b>	<b>-</b>
<b>Virginia</b>				
Highway	\$21,145	\$7,675	\$28,820	-
Local Transit	\$6,713	\$1,122	\$7,835	-
Commuter Rail	\$2,577	\$1,166	\$3,743	-
WMATA Support <sup>a,c</sup>	\$9,226	\$8,565	\$17,791	-
<b>Subtotal</b>	<b>\$39,661</b>	<b>\$18,528</b>	<b>\$58,189</b>	<b>-</b>
<b>WMATA Expenses Covered by Fares, Grants, and Other Nonjurisdictional Funds</b>				
<b>Subtotal</b>	<b>\$47,570</b>	<b>\$14,259</b>	<b>\$61,829</b>	<b>-</b>
<b>Total</b>	<b>\$155,930</b>	<b>\$66,935</b>	<b>\$222,865</b>	<b>-</b>
<b>WMATA Summary (included above)</b>				
D.C. <sup>a,b,c</sup>	\$11,169	\$3,288	\$14,457	-
Maryland <sup>a,c</sup>	\$16,416	\$3,306	\$19,722	-
Virginia <sup>a,c</sup>	\$9,226	\$8,565	\$17,791	-
WMATA Expenses Paid by Fares, Grants, and Other Nonjurisdictional Funds <sup>b,c</sup>	\$47,570	\$14,259	\$61,829	-
<b>Subtotal WMATA</b>	<b>\$84,381</b>	<b>\$29,418</b>	<b>\$113,799</b>	<b>-</b>

<sup>a</sup> Excludes \$1.253 billion in subsidy request to meet an additional \$7.5 billion in WMATA’s Capital Program. These funds are not reflected since the source of these Federal and state funds are not identified.

<sup>b</sup> D.C.’s operating subsidy is \$2.761 billion lower than WMATA request since D.C. will utilize lower cost alternative service delivery methods to provide projected Metrobus and MetroAccess service levels.

<sup>c</sup> The WMATA capital expenditures shown are for equipment to serve ridership growth on existing lines and include Dulles Corridor Rail.

**Table 2. Expenditures – Financially Constrained Long-Range Plan (2011-2040)**  
*Millions of Year of Expenditure Dollars (continued)*

<b>Regionally Significant Capital Project Expenditures (included above)</b>	
<b>District of Columbia</b>	
St. Elizabeth Access	\$158
11 <sup>th</sup> Street Bridge	\$612
South Capitol Street Bridge and Corridor	\$141
D.C. Streetcar Line	\$169
<b>Subtotal</b>	<b>\$1,080</b>
<b>Maryland</b>	
Intercounty Connector	\$1,684
Nice Bridge Replacement	\$2,080
Purple Line Transit	\$1,790
Corridor Cities Transitway	\$1,193
<b>Subtotal</b>	<b>\$6,747</b>
<b>Virginia</b>	
I-495 HOV/HOT Lanes	\$477
I-95/I-395 HOV/Bus/HOT Lanes	\$428
I-95/ I-395 HOT Lanes Bus Service	\$390
Dulles Corridor Rail	\$5,642
Columbia Pike Streetcar	\$336
<b>Subtotal</b>	<b>\$7,273</b>
<b>Total Regional Significant Projects</b>	<b>\$15,100</b>

The majority of future transportation revenues will be devoted to the maintenance and operations of the current transit and highway systems. For highways, more expenditures are anticipated on operations and preservation than on expansion or special projects. Under local transit, commuter rail, and WMATA, operations and preservation also will constitute the vast majority of expenditures.

Over the 30-year period, public transportation is projected to absorb 64 percent of the total expenditures of YOE \$222.8 billion. WMATA expenditures requests are estimated to be YOE \$113.8 billion (51 percent of the total) and match the available revenues. Highway expenditures and revenues total YOE \$81 billion (36 percent).

Overall, WMATA operating costs are expected to escalate at a faster rate than general inflation. The total annual operating costs of WMATA are projected to increase from YOE \$1.4 billion in 2010 to YOE \$4.4 billion in 2040 with a 30-year total of YOE \$84 billion (out of the total WMATA expenditures of YOE \$113.8 billion, inclusive of Dulles Corridor Rail). Thus, even while WMATA anticipates maintaining the operating cost to farebox ratios (farebox recovery ratios) at the present levels for each of their services, the subsidies are likely to increase in absolute terms.

An examination of WMATA operating costs and subsidy requests suggests a total operating cost subsidy (YOE \$37.7 billion) escalating from YOE \$590 million in 2010 to YOE \$2,123 million (a 360 percent increase) in 2040 with modal increases of Metro Bus \$348 million to \$1,080 million; Metro Rail \$162 million to \$418 million; and Metro Access \$80 million to \$625 million. A closer examination of subsidies by WMATA submodes (Bus, Rail, and MetroAccess) shows that while Metro Rail subsidies are expected to escalate at a modest rate, the Metro Bus and, especially, MetroAccess subsidies are forecast to increase more rapidly. For instance, the total operating subsidy for the 2010 CLRP is projected to be approximately \$37.7 billion (YOE dollars). Of this amount, YOE \$17 billion (Bus – \$9.5 billion, Rail – \$3.5 billion, and MetroAccess – \$5 billion) would be needed over the last 10 years (2031-2040).

### **Differences from the WMATA Expenditure Request**

Table 3, which is similar to the Table 3 included in the 2006 financial analysis, shows the differences between the WMATA request for expenditures and the revenues included in the CLRP. Two differences are notable, which are a difference in post 2020 assumptions about a potential continuation of revenues for projects similar to the funding in the Passenger Rail Investment and Improvement Act of 2008 and a difference in the District of Columbia revenues committed for WMATA’s operating subsidy. The District has determined that it will follow its own recent precedents as well as precedents elsewhere in the region and will rely on alternative service delivery methods rather than as much of a reliance on Metrobus and MetroAccess as in the past. The District intends to meet the same service levels as are anticipated by WMATA, but by using alternative providers with lower subsidy costs.

### **No Extension Post 2020 of Passenger Rail Investment and Improvement Act of 2008**

The revenues shown in Table 1 exclude the WMATA request to the jurisdictions for revenues for capital investments identified as to be funded by “extension” of Passenger Rail Investment and Improvement Act of 2008 type funds for WMATA rehabilitation beyond 2020, for which neither the required Federal legislation is in place nor is any agreement in place by the jurisdictions which would match these Federal funds.

If enacted, this “continuation” of the Passenger Rail Investment and Improvement Act of 2008 type funding would identify an additional \$7.5 billion for WMATA capital investments after 2020, with half from Federal grants and the other half from the three jurisdictions over the 20 years beyond 2020 when the current Passenger Rail Investment and Improvement Act of 2008 funding will end.

Without this funding, a ridership constraint will be applied, as has been applied in past CLRPs, to account for a shortfall in transit capacity compared with what transit ridership could have been with higher levels of investment. The transit ridership is described on page 18.

**Table 3. 2010 CLRP: WMATA Expenditure Requests Versus Revenues  
Committed by Jurisdictions (2011-2040)**  
*Millions of YOE Dollars*

	District of Columbia	Suburban Maryland	Northern Virginia <sup>c</sup>	Regional	Total
<b>WMATA Capital</b>					
WMATA Capital Request <sup>a</sup>	\$4,541	\$4,559	\$9,818	\$18,018	\$36,936
Capital Revenue Commitment	\$3,288	\$3,306	\$8,565	\$14,259	\$29,418
<i>WMATA Capital Funding Shortfall<sup>b</sup></i>	<i>-\$1,253</i>	<i>-\$1,253</i>	<i>-\$1,253</i>	<i>-\$3,759</i>	<i>-\$7,518</i>

<sup>a</sup> Includes the full WMATA capital program request, including \$7.5 billion additional capital funding for period 2021-2040.

<sup>b</sup> The capital shortfall represents unfunded expenditures over 2021-2040.

<sup>c</sup> NoVA capital needs and commitment include Dulles Corridor Rail project.

<b>WMATA Operating</b>					
WMATA Operating Request <sup>a</sup>	\$13,930	\$16,416	\$9,226	\$47,570	\$87,142
Operating Revenue Commitment <sup>b</sup>	\$11,169	\$16,416	\$9,226	\$47,570	\$84,381
<i>WMATA Operating Funding Shortfall<sup>c</sup></i>	<i>-\$2,761</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>-\$2,761</i>

<sup>a</sup> The operating request for D.C. is its allocated share of WMATA's forecast rail, bus and MetroAccess expenditures.

<sup>b</sup> D.C.'s revenue commitment is based on its decision to utilize lower cost alternative service delivery methods to provide the same service levels in the future as Metrobus and MetroAccess.

<sup>c</sup> D.C.'s shortfall reflects its decision to use lower cost alternative service delivery methods as noted above.

<b>WMATA Capital Plus Operating</b>					
WMATA Expenditure Request	\$18,471	\$20,975	\$19,044	\$65,588	\$124,078
Revenue Funding Commitment	\$14,457	\$19,722	\$17,791	\$61,829	\$113,799
<i>WMATA Funding Shortfall</i>	<i>-\$4,014</i>	<i>-\$1,253</i>	<i>-\$1,253</i>	<i>-\$3,759</i>	<i>-\$10,279</i>

### District of Columbia Service Delivery Strategies

The difference shown in Table 3 for operating for WMATA operating request versus funding commitment is due to D.C.'s decision to utilize alternative service delivery methods to provide the Metrobus and MetroAccess service levels which have been projected through the future. WMATA's future expenditure estimate is based on current systems of service delivery, particularly for bus and MetroAccess services. D.C.'s estimate of revenue reflects its assumption that the service delivery systems for WMATA's bus and MetroAccess services will be different which will help reduce the projected expenditure by \$2.761 billion. Metrobus and MetroAccess services account for about 80 percent of the projected total D.C. WMATA operating subsidy allocation over time.



The other jurisdictions within the region already utilize such alternative service delivery methods for these types of services. For Northern Virginia, 50 percent of the total public transportation operating and preservation expenditures will be for non-WMATA operating and preservation expenditures, with a comparable figure of about 38 percent for Suburban Maryland. The District's recent experience indicates that the circulator type bus services (which operate in the most congested area of the region) are provided at an operating cost of \$93 per bus hour versus the regional average of \$141 per hour region-wide operating cost for Metrobus, which would amount to about a 34 percent cost reduction if substitute service methods were to be fully utilized.

The current regional average cost per MetroAccess trip is \$38. Under an alternative service delivery option, such as a D.C. same-day paratransit service, utilizing taxi sedans and wheelchair accessible taxicabs, the average cost per taxi trip could range from \$14 to \$16<sup>1</sup> given that many of the D.C. trips would be short. Both taxi sedans and wheelchair accessible taxicabs can be utilized for paratransit, as only about 20 percent of MetroAccess users are in wheelchairs. The D.C. Wheelchair Accessible Taxicab Pilot Program being implemented by the TPB through a Federal New Freedom grant has introduced 20 wheelchair accessible taxicabs into service in the District between January and July 2010. Demand for the service in the first six months of the pilot from private-pay customers has been growing steadily. The TPB also has awarded the D.C. Office of Aging a New Freedom grant to expand a taxi voucher program that could shift trips away from MetroAccess and onto taxicabs. Other demonstration projects funded by the TPB's New Freedom grant program include travel training for people with disabilities on how to use the fixed route service rather than MetroAccess. The D.C. Center for Independent Living, in coordination with WMATA, currently is operating such a program. Another way for the District to improve access to the fixed route system for people with disabilities is to invest in improved pedestrian infrastructure and bus stop facilities.

Table 3 indicates that the D.C. WMATA operating subsidy allocation shortfall in terms of year of expenditure dollars is \$2.761 billion out of \$13.930 billion, a difference of about 20 percent. Based on the cost savings experienced by D.C. in its current services, it would be plausible for D.C. to achieve the reductions which it intends to achieve in operating subsidy costs if it were to adopt more extensively the types of alternative service delivery methods it has recently begun to use and which already are being utilized very extensively by the other jurisdictions for large portions of their services. The District thus is expected to be capable of implementing service delivery options which maintain the service levels assumed in the CLRP, using the levels of revenues forecast by the District.

---

<sup>1</sup> Sources: "A Survey on the use of Taxis in Paratransit Programs" found that taxi-provided ADA paratransit trips cost less than \$20. December 2008. Easter Seals Project ACTION.

TCRP Report 121 "Toolkit for Integrating Non-Dedicated Vehicles in Paratransit Service" found ADA paratransit taxi costs to be approximately \$14 to \$16 per trip.

## ■ 3.0 Analysis Methods

### **Period of Analysis and Summary of Approach**

For both expenditures and revenues the CLRP financial analysis covers a 30-year period for 2011 to 2040. Agencies used the 2006 CLRP and the existing TIP as a starting point and made appropriate adjustments to extend their forecasts for the 30-year period. The consultant team developed and distributed 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 were allowed to do so and to report the information back on 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. VDOT coordinated all the local jurisdiction and transit agency inputs in Virginia and the consultant team coordinated all of the local jurisdiction and MDOT inputs in Maryland. The District DOT provided all District of Columbia estimates. 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 service, or by the local jurisdictions themselves. Prince Georges County and Montgomery County fund and operate their own local bus services.

Highways in Virginia are mostly owned and funded by VDOT, with some local jurisdiction and private funding. Transit in Virginia is provided by WMATA, by the local jurisdictions themselves and by specific Northern Virginia transit agencies, with the Virginia DRPT providing state funding support.

A methodology similar to that used to forecast revenues and expenditures in the 2006 Update was adopted in this study. Each agency and jurisdiction was requested to provide year-by-year forecasts of their transportation revenues and expenditures through 2040. The consultant team converted back and forth between constant and future year of expenditure dollar estimates for all forecasts that were not converted by the agencies themselves.

### ***Suburban Maryland***

The revenue numbers in Table 1 for Suburban Maryland includes estimates for MDOT funding and from the five suburban jurisdictions (Montgomery County, Prince Georges County, Frederick County, the City of Frederick, and the City of Rockville). Suburban Maryland's figures show MDOT's and five jurisdictions' funding projections and expenditure projections for the future. The total local transit figures include commuter rail numbers.

MDOT bases both its overall revenue projections on the budget estimates over the next few years, and extrapolation of past trends as well as assumptions about future increases for out years (approximately 2016-2040). For years 2016-2040, the numbers from MDOT imply an annual increase of approximately 3 percent in real terms (over and above the general inflation - assumed to be 2.1 percent per year beyond 2016) in funding for high-way expansion, 2.5 percent in real terms for operations, and 0.5 percent in real terms in system preservation. MDOT projections considered continuation of funding of the Passenger Rail Investment and Improvement Act of 2008 for rehabilitation types of expenditures beyond 2020, but MDOT will not commit matching funds without regional consensus.

Maryland jurisdictions also base their overall revenue projections on the budget estimates over the next few years, and extrapolation of past trends as well as assumptions about future increases for out years (approximately 2016-2040). For years 2016-2040, while each jurisdiction makes slightly different assumptions about future escalations, the aggregate numbers imply an overall annual increase of approximately 0.6 percent in real terms (over and above inflation) in funding for highway and transit by the Maryland jurisdictions.

Table 1 revenue breakdown by source for Maryland shows YOE \$12 billion from Federal, YOE \$44 billion from state, YOE \$13.5 billion from local, YOE \$4 billion from tolls/private, and YOE \$0.75 billion from non-WMATA transit fares.

On the expenditure side (Table 2), the figures again include MDOT data and data from the five suburban Maryland jurisdictions. MDOT and jurisdictions typically match their expenditures to the forecasted revenues available for each year. Table 2 includes YOE \$44.5 billion for operations/preservation and YOE \$30 billion for expansion. The WMATA expenditure items exclude the YOE \$1.253 billion Maryland share for continuation of funding of Passenger Rail Investment and Improvement Act of 2008 type expenditures beyond 2020.

### ***Northern Virginia***

Northern Virginia estimates of revenues and expenditures were developed cooperatively by VDOT, local jurisdictions, and transit agencies. VDOT 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 requests and WMATA funding.

Northern Virginia CLRP revenues are derived from multiple Federal, state, local, toll/private and transit user sources, and future forecasts are based on a complex set of assumptions regarding expected escalations of each source. VDOT coordinated the effort and provided revenue and expenditure information for the state, Federal, and local jurisdiction data. Six separate worksheets were developed for different categories of projects and program. These include: General Highways; selected mega-highway projects, including the HOT lanes and others; WMATA Virginia Allocations; Dulles Corridor Rail; Local Transit; and VRE. In each, the revenues by source (state, Federal, local, tolls, other) and expenditures by category (operating, capital) have been identified. These disaggregated data have been used to build the summary table categories.

The total Federal, state, and local funding figures that are shown in Table 1 include both highway and transit funding – YOE \$7.3 billion, YOE \$22.2 billion, and YOE \$13.4 billion, respectively. User charge revenues of YOE \$11.5 billion from tolls on state toll roads and YOE \$3.7 billion from local transit and commuter rail fares are shown separately.

Details on the Federal, state, and local revenue sources are provided in Appendix A. The Federal revenues include: STP, NHS, Interstate Maintenance, Minimum Guarantee/Equity Bonus, Safety, CMAQ, and Rail. The estimate of Federal revenues reflects Virginia's anticipated growth in the consumption of motor fuels and is continued at the anticipated Federal Obligation Authority levels. 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. The six-year estimate of state revenues used for the fiscal annual Budget and the Six-Year Program is extracted from the official forecast of state revenues prepared by the Department of Taxation. For the Constrained Long-Range Plan (CLRP), the estimate of state revenues beyond FY 2016 reflects the same growth pattern of the current six-year program. The sources of local revenue include Telephone Right-of-Way fees and NVTD Debt Service funding.

Expenditures (Table 2) include data from VDOT and the Northern Virginia jurisdictions. WMATA expenditure items in Table 2 exclude WMATA's request of YOE \$1,253 million in match from Northern Virginia for the extension of Rail Investment and Improvement Act of 2008 type expenditures beyond 2020. Table 2 shows YOE \$39.6 billion for operations/preservation and YOE \$18.5 billion for expansion, including both highways and transit. 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. The future year projections are based on forecasted cost escalations (see Appendix A for details) and expected revenue allocations.

### ***District of Columbia***

Over the near term, D.C.'s revenues forecasts rely on budget projections. For revenue forecast beyond 2015, the District assumes future escalations at the rate of general inflation.

The revenue numbers for highways (\$12.7 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. The District forecasts that YOE \$7.0 billion of this would be

covered by Federal and grants and YOE \$5.7 billion from various local D.C. sources used traditionally to fund highways.

Total highway expenditure forecast also is based on DDOT highway expenditure spreadsheet. The year of expenditure (YOE) numbers from DDOT's submission.

WMATA's request from the District was for \$13.9 billion (in year of expenditure dollars) for operations and \$3.3 billion in year of expenditure dollars to meet capital allocation. This excluded WMATA's request of YOE \$1,253 million in match from D.C. for the extension of Rail Investment and Improvement Act of 2008 type of WMATA rehabilitation expenditures beyond 2020. The District has identified YOE \$11.1 billion to meet WMATA operations providing the Metro service levels envisioned by WMATA and YOE \$3.3 billion to meet the WMATA capital request. D.C.'s operating funding of \$11.1 billion is about \$2.8 billion below WMATA's original subsidy request. This difference is largely due to D.C.'s decision to utilize alternative service delivery methods to provide the Metrobus and MetroAccess service levels which have been projected through the future. This will reduce WMATA's Metrobus and MetroAccess operating subsidy allocation to D.C. These modes account for about 80 percent of the projected total D.C. WMATA operating subsidy allocation over time.

Tables 1 and 2 include \$1,221 million in revenue and expenditures for local transit that mainly consists of the D.C. Streetcar Phase I, and the D.C. Circulator Bus. The total amount consists of about YOE \$169 million in capital expenditures over the next three years. The remaining YOE \$1,052 million will be to cover operating expenses over the period 2016-2040. D.C. estimates that Federal grants of YOE \$61 million will cover part of the capital expenses expected over early years. The fares are projected to generate YOE \$161 million (2016-2040). The remaining YOE \$999 would be funded from local D.C. sources.

### ***Washington Metropolitan Area Transit Authority***

WMATA numbers have been derived from WMATA's latest estimates for CLRP submission. For capital expenses, WMATA uses figures for FY 2011-FY 2016 that match the CIP. The remaining projects and needs are funded in 2017-2040. WMATA capital estimates are derived assuming inflation of roughly 3.0 percent per year for FY 2011-FY 2020 and 2.1 percent for 2021-2040 (with the exception of costs from Dulles Operating Financial Plan to 2030 and Rail Fleet Plan to 2034 - where a 3.0 percent inflation is used).

For operating expenses, WMATA utilizes two sets of escalation factors.

The first set of expenditure escalators consists of unit cost (cost per vehicle-mile) increase due to general inflation and as well as other additional factors such as wage and fuel price increases in excess of general inflation. For this set (unit cost), WMATA assumes a 3 percent per year escalation to FY 2020 and 2.1 percent from 2021-2040 for rail and Metro Access. For Metrobus, 4.4 percent rate is used up to FY 2020 and for years 2021-2040, 2.1 percent rate (equal to the general inflation rate) is assumed.

The second set of escalators accounts for the growth in service (increase in vehicle-miles) due to increase in ridership and expansion of routes (like Dulles Extension). WMATA

expense estimates assume annual service growth: for bus – 1.0 percent 2011-2040; for Metro Access – 9.0 percent 2011-2015, 5.0 percent 2016-2020, and 3.0 percent beyond 2020; and for Metro Rail – about 33 percent increase by 2020 (Dulles Extension by 2017 and 100 percent eight-car trains by 2020).

The overall effect is implied annual operating cost escalation rates of 3.8 percent for Bus, 3.4 percent for Rail, and 6.6 percent for Access.

For regional operating revenues (largely from fares), estimates are based on fare increases to keep the farebox recovery rates constant at the present level (32.8 percent for Bus, 80.6 percent for Rail, and 6.4 percent for Access).

WMATA regional operating and capital numbers (covered by operating revenues, grants, and other nonjurisdictional funds) are shown in a separate row below the rows summarizing the three jurisdictions in summary Tables 1 and 2. WMATA's request from each jurisdiction is shown under each jurisdiction summary section as well as separately at the end of expenditure Table 2. As mentioned earlier, the expenditures in Table 2 exclude WMATA's request of YOE \$7.5 billion for the extension of Passenger Rail Investment and Improvement Act of 2008 type expenditures beyond 2020.

The revenues for WMATA identified by each jurisdiction are shown in the revenue Table 1 under each jurisdiction section. These WMATA summaries show the aggregate picture for total WMATA revenues and expenditures of YOE \$113.8 billion. This expenditure amount is about YOE \$2.8 billion below WMATA's original estimate and is caused by the fact that the funding identified by the District is below the WMATA original subsidy request from the District by this amount. The District will utilize alternative service delivery methods to provide the same service levels within the budget levels that are forecasted by the District, at a lower cost than required through Metrobus and MetroAccess.

### ***Transit Ridership Constraint***

As in prior analyses, the post-2020 shortfall in WMATA capital funding for system capacity investments will be addressed with a transit ridership constraint for trips to or through the core. Because funding has not yet been identified to accommodate all of the projected WMATA ridership growth, a method that has been applied since the 2000 CLRP is used to limit the projected ridership to be consistent with the available funding for the capacity improvements.

The funding uncertainties affecting the Metrorail system capacity and levels of service beyond 2020 were explicitly accounted for by constraining transit ridership to or through the core area to 2020 levels. The transit constraint method is applied during the travel demand modeling process as part of the air quality conformity analysis of the CLRP. First, unconstrained origin and destination trip tables are produced for the years 2020, 2030, and 2040. Constrained transit trip tables are then created for 2030 and 2040 by inserting 2020 totals for the transit trip patterns that correspond to trips into or through the core area containing the maximum load points in the rail system. The transit person trips that cannot be accommodated are then allocated back to the auto person trip tables, resulting in increased daily automobile trips and vehicle emissions.

## ■ 4.0 Comparison to the 2006 CLRP Update

Initial comparisons between average annual revenues by jurisdiction and type for the 2009 Draft versus the 2006 Update concludes that more revenues are needed on an annual basis than in previous CLRP estimates. All conclusions are of course tempered by the switch to making the forecasts in year of expenditure dollars and including additional years in the forecasts.

While the revenues and expenditures for 2010 and 2006 Updates were developed using the same general methods, some assumptions have changed and several other factors have changed. First, there are now 30 years in the forecasts (2011-2040) in comparison to 24 years in the earlier forecasts (2007-2030). Also, the new Tables 1 and 2 are estimated in both year of expenditure and constant 2009 dollars whereas the previous tables were shown in constant 2006 dollars.

The proportion of revenues and expenditures devoted to public transportation has increased to approximately 64 percent, from slightly below 60 percent in the 2006 CLRP. Revenues for WMATA constitute 51 percent of the total versus 43 percent in 2006. WMATA revenues largely come from fares (42 percent) and state sources (40 percent). These proportions were (35 percent and 48 percent in 2006).

Federal and local revenues as a proportion of the total have declined since 2006 (Federal: down from 27 percent to 16 percent; local: from 19 percent to 13 percent). State revenues and tolls/private/fares are playing an increasing role. The state share of total revenues is 40 percent, up from 33 percent in 2006; toll/private/fares are up to 32 percent from 21 percent. With respect to revenues for individual modes, Federal and states provide 74 percent of the revenues (up from 68 percent contribution in 2006), while local share as a proportion of highway revenues has declined from 28 percent in 2006 to 11 percent in 2010. Tolls and private sources now constitute 16 percent of revenues for highways as compared to only 4 percent in 2006. Local transit and commuter rail are largely funded from state and local revenue sources (67 percent) with fares contributing only 15 percent.

Key observations on changes in expenditures for the 2010 CLRP Financial Analysis include:

### **Total Expenditures in Billions of YOE Dollars Increased since the 2006 CLRP:**

	<b>Total</b>	<b>D.C.</b>	<b>Maryland</b>	<b>Virginia</b>	<b>WMATA (Nonjurisdictional)</b>
<b>(2006 CLRP)</b>	159	23	56	48	32
<b>(2010 CLRP)</b>	222.8	28	74.5	58	62
<b>Percent Increase</b>	40%	23%	33%	21%	94%

Total expenditures increased by 42 percent from 2006 to 2010 CLRP. Reasons include: 1) 25 percent more years and replacement of four earlier years in the 2006 CLRP (2006-2010) by more expensive years during 2031-2040; 2) the 2010 CLRP includes the future years 2030-2040 with future year numbers, which are inflated over longer periods; and 3) a few new projects have been added as new sources of specific additional revenues have been established. A relatively much larger (94 percent) increase occurs in WMATA's expenditures from 2006 CLRP to 2010 CLRP, when compared with the increases in the jurisdictions for other non-WMATA categories of expenditures.

**The Percentage of Total Expenditures in Billions of YOE Dollars by Mode Shifted towards WMATA in the 2010 CLRP:**

<b>CLRP</b>	<b>Highway</b>	<b>Other Transit</b>	<b>WMATA</b>	<b>Total</b>
<b>2006</b>	68 (43%)	22 (14%)	69 (43%)	159
<b>2010</b>	81 (36%)	28 (13%)	113.8 (51%)	222.8

WMATA expenditures constitute 52 percent of the total for the 2010 CLRP and highways constitute 36 percent and local transit 12 percent. In 2006 CLRP, the proportions for highways and WMATA were 43 percent and 43 percent, with local transit at 14 percent. So, the percentage of funding shifted to WMATA from highways and local transit.

**The Total Public Transportation Percentage versus Highways Increased since 2006:**

	<b>Public Transportation</b>	<b>Highways</b>
<b>2000 CLRP</b>	50	50
<b>2003</b>	60	40
<b>2006</b>	57	43
<b>2010 CLRP</b>	64	36

Public transportation expenditures are 64 percent of the total (versus 57 percent in 2006 CLRP). Public transportation expenditures decreased compared to highways in the 2006 CLRP versus the 2003 CLRP.

**Total Operations/Preservation Decreased Slightly versus Expansion:**

<b>CLRP</b>	<b>OP/Preserve</b>	<b>Expansion</b>
<b>2003</b>	77%	23%
<b>2006</b>	71%	29%
<b>2010</b>	<b>70%</b>	<b>30%</b>



Operations and preservation expenses inched down to 70 percent in 2010 CLRP versus 71 percent in the 2006 CLRP. The reason may be that while operating costs are escalating fast, the 2010 CLRP has added some high cost capital projects to the program, including completion of both phases of Dulles Corridor Rail, I-95/I-395 HOT Lanes, Columbia Pike Streetcar, Nice Bridge replacement, D.C. bridge rehabilitation, and D.C. Streetcars.

**WMATA Operations Grow Faster in the 2010 CLRP versus Capital (Billions of YOE Dollars):**

<b>CLRP</b>	<b>OP</b>	<b>CAP</b>
<b>2006</b>	50 (70%)	19 (30%)
<b>2010</b>	84 (74%)	29 (26%)

While WMATA capital expenditures show a small increase from 2006 CLRP, the operating costs are increasing much more rapidly as 10 very high inflated cost future years (2031-2040) are now included in the 2010 CLRP.

## ■ 5.0 Recent Trends in Revenues Before the Recession

There have been some positive actions taken by agencies since 2006 in terms of seeking adequate revenues, but major challenges still remain. The region must examine new sources of possible future funding and must identify the critical steps needed to achieve more adequate funding for the unfunded maintenance, rehabilitation, operating, and expansion needs of the transportation system. The most recent years of revenues have been strongly impacted by 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 specific project-based funding agreements such as for HOT lanes and toll lanes have been important steps in the direction of increased revenues, they 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 preservation, maintenance, and operation of the transportation system. Also, although increases to traditional motor fuel taxes and other current user fees are feasible short- and mid-term sources, they may not necessarily be the best long-term solution.

Maryland now has a Blue Ribbon Commission, established by legislation, to address the transportation revenue picture in the State. The Commission will examine how best to raise the needed revenue for transportation in Maryland, and will report in January 2011.

Since the last time that Maryland or Virginia raised their state motor fuel tax rates, three-fourths of the other states have raised their motor fuel tax rates. Several states have indexed some or all of their motor fuel taxes to inflation or to petroleum prices, including Kentucky, Georgia, Maine, Nebraska, New York, North Carolina, Pennsylvania, and West Virginia. Fees on vehicle miles of travel (VMT) are being considered in states such as Oregon, Minnesota, and Iowa as long-term options and could be considered as a viable future option for the region. Technologies are now being tested in these states and other places for collecting VMT fees at the pump or through other mechanisms. In addition, the Netherlands plans to transition to VMT fees over the next decade. In the case of the Netherlands, the plan is to continue motor fuel taxes but to substitute VMT fees for other revenue sources that are now used there, including fees on vehicle registrations and fees on engine displacements.

Federal revenues currently are very uncertain. Authorization of a new surface transportation act has been postponed, although the previous act has now expired and no new authorization has been enacted as of September 2010. It is not known at what time the Congress will act, and the levels of revenues that will be available from the Federal government are unknown. At this time, the Federal surface transportation programs are operating under continuing resolutions, which means that funding and procedures are generally unchanged from the previous fiscal year of 2009, except for special actions that were taken to stimulate economic recovery. Temporary funding measures related to economic stimulus have provided some short-term revenues, but these are not long-term programs.

About 43 percent of recent national highway capital and just a slightly smaller percentage of recent national transit capital funding has come from the Federal government. However, for the region itself, the previous percentage is uncertain because funding of state, local, and Federal funds have been mixed together in many instances. For example, Maryland has a unified trust fund into which all revenues are deposited and from which allocations are provided. Since the capital matching requirement for Federal-aid for highways and transit is 20 percent for most Federal programs, there is more than an overmatch in terms of the funding totals, and of course, all projects have always met the Federal matching requirements.

## **Recent Regional Trends for Revenues and Expenditures**

This section reviews recent trends in revenues and expenditures for Maryland, the District of Columbia, and Virginia, prior to the recession and the temporary assistance under short-term Federal programs. These tables were compiled from data gathered by the Federal Highway Administration (FHWA) Office of Highway Policy Information.

### **Highways**

Table 4 reports the revenues used by states for highways, as reported by a common source, the FHWA's *Highway Statistics*. The revenue comes from highway user revenues (fuel taxes, tolls, and motor vehicle registration fees) as well as from general funds, bonds, Federal funds, and other miscellaneous sources. Over a five-year period, state revenues for highways increased in D.C. and Maryland, while remaining relatively stable in Virginia.

**Table 4. Trends in State Revenues for Highways**  
*Thousands of Dollars*

<b>Jurisdiction</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>
D.C.	363,099	354,727	311,485	301,203	633,975
Maryland	1,795,063	1,906,115	1,951,391	2,352,935	2,598,849
Virginia	3,641,578	3,035,586	3,470,356	3,511,979	3,507,970

Table 5 shows trends in state disbursements for highways. The total state disbursement is broken out by capital outlay, maintenance and services, grants to local governments, and other expenditures (D.C. does not have local jurisdictions). Total state disbursement for highways, including capital outlay has declined over the five-year period in D.C. and Virginia, and increased in Maryland.

**Table 5. Trends in State Disbursements for Highways**  
*Thousands of Dollars*

Jurisdiction	Capital Outlay	Maintenance and Services	Other	Grants to Local Governments	Total Disbursements
<b>D.C.</b>					
2003	251,054	70,548	46,201	-	367,803
2004	229,210	24,934	115,167	-	369,311
2005	170,166	37,255	119,336	-	326,757
2006	207,600	39,819	39,762	-	287,181
2007	215,227	62,485	56,018	-	333,730
<b>Maryland</b>					
2003	820,022	223,190	410,010	431,450	1,884,672
2004	869,463	245,404	339,079	377,296	1,831,242
2005	1,026,219	269,822	296,681	456,586	2,049,308
2006	1,171,434	272,002	347,995	512,631	2,304,062
2007	1,273,780	413,763	387,355	554,061	2,628,959
<b>Virginia</b>					
2003	1,245,921	926,846	993,351	253,034	3,419,152
2004	1,162,797	909,789	666,462	263,084	3,002,132
2005	1,117,012	1,058,211	925,582	283,086	3,383,891
2006	965,835	1,063,165	804,908	360,780	3,194,688
2007	1,077,432	989,330	819,102	342,000	3,227,864

## Transit

Tables 6 and 7 show transit operator receipts and disbursements for capital improvements and operations. Transit operators are classified by location of their headquarters and receipts and disbursements of multistate operators are not split by state. Therefore, WMATA is shown in this Federal data as included in the District only. Data is not available for 2007. All three states showed an increase in receipts and disbursements for capital improvements and operations over the five-year period, with a major fluctuation for capital estimated in D.C. in 2005. Operations disbursements grew rapidly over the period, in line with rapid increases in ridership.

**Table 6. Trends in Transit Receipts and Disbursements for Capital**  
*Thousands of Dollars*

	2002	2003	2004	2005	2006
D.C.	314,904	409,521	451,105	233,750	542,157
Maryland	132,416	164,057	207,719	227,364	210,196
Virginia	41,819	51,665	61,853	50,183	62,659

**Table 7. Trends in Transit Receipts and Disbursements for Operations**  
*Thousands of Dollars*

	2002	2003	2004	2005	2006
D.C.	924,481	973,619	1,064,004	1,142,514	1,267,478
Maryland	406,081	462,340	481,724	525,094	564,310
Virginia	167,163	174,774	196,082	217,124	242,057

## ■ 6.0 Actions Needed to Achieve New or Enhanced Revenue Sources

The National Capital Region needs additional revenues and new revenue sources in order to support its critically needed future transportation programs and projects. The vast majority of available future transportation revenues will be devoted to the maintenance and operations of the current transit and highway systems. Many unfunded but desirable projects were identified in the 2004 publication *Time to Act* that could not be included in the CLRP under the funding constraints. This progress report on unfunded needs and revenues summarizes some promising revenue options for consideration by the region and its constituent jurisdictions.

The region must continue to examine new sources of possible future funding and identify the critical steps needed to achieve more adequate funding for the unfunded maintenance, rehabilitation, and expansion needs of the transportation system. Although the region is in the process of implementing HOT and toll lanes, these are only appropriate in particular circumstances and for specific corridors. While specific project-based funding agreements such as HOT and toll lanes are important steps in the right direction, they are not substitutes for broad-based funding sources such as enhanced taxes, vehicle taxes, or broad-based fuel taxes. In addition, although fuel taxes and other current user fees are feasible short- and mid-term sources, they may not necessarily be the best long-term solution. VMT fees are being considered elsewhere as long-term option and also could be considered as a potential long-term option for the region.

The greatest challenge to the region is the existence of multiple jurisdictions at several levels, each with its own tax base, tax structure, and tax policy. There are opportunities in each jurisdiction to develop new or enhanced revenue sources that can be part of an overall regional solution. Based on a recent report released by the American Association of State Highway and Transportation Officials (AASHTO) titled *Metropolitan-Level Transportation Funding Sources*, 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 short term, both for the region and the nation. Also in the short term, the indexing current Federal and state motor fuels taxes to inflation is the most promising immediate step to assure that adequate funding continues to flow to our highway and transit systems in the next two to five years (National Chamber Foundation, *Future Highway and Public Transportation Financing*, 2005, and NCHRP Report 20-24(49), *Future Financing Options to Meet Highway and Transit Needs*, 2006). While it is conceptually a simple task to adjust existing fee mechanisms, there are political and philosophical challenges ahead to expand indexing beyond the seven states that already have taken this step.

In addition to indexing of the current motor fuel taxes, experiments with various tolling and pricing mechanisms suggest that their application could be expanded in the shorter term, e.g., facility tolling and congestion pricing in cordon or area-specific settings, including the use of variable and dynamic schemes. Experiences to date, here and abroad,

have shown some positive impacts on traffic flow over very limited portions of larger networks or subareas, and have produced additional revenues, though small in relation to total facility costs and overall system expenditures. Several states are aggressively examining new tolling schemes for either passengers or freight (California, Colorado, Florida, Illinois, Minnesota, New Jersey, New York, Ohio, and Texas).

There remains, however, in the region and in many other states and regions in the United States as well as in Europe, strong political and popular resistance to increased tolling and to the introduction of additional pricing mechanisms. (Federal Highway Administration, *International Urban Road Pricing*, 2006, AECOM Consult.) There also has been both strong negative and strong positive reactions to the few recent examples of large-scale long-term asset leases of highway facilities that provide significant, one-time cash infusions in exchange for facility revenues, along with maintenance and operating responsibility over extended periods (Illinois, Indiana). There are only a limited number of toll facilities that can be leased out, and all toll collections amount to only five percent of state highway revenues. The conversion of free lanes to toll lanes is more difficult than the leasing of current toll facilities or the implementation of new toll facilities. Implications from these current experiences suggest that pricing and PPPs (those that involve tolling) will not be enough to address congestion problems and that other sources of revenue will be needed.

For 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 narrow and test the technological solutions.

Phasing in of new sources or enhanced sources 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. Most new funding initiatives come about either through legislative actions or through ballot initiatives and referenda. In the first instance, a legislative body makes the decision on a new or enhanced funding source. In the second case, a ballot measure must be passed to provide the authority to collect new or enhanced revenue source. In some special circumstances, highway toll facilities also may come about as a result of public or private project development actions that have previously been enabled by legislation.

Either legislation or initiatives and referenda require the same types of steps in order to achieve success in implementation of new or enhanced revenue sources. Phasing can always be a variable. However, if transitions are ever to occur, sufficient progress will need to be made in carrying out the strategies to meet the key challenge areas. The phase-in for the state and local governments involves two major parameters:

1. Defining the alternative state and local actions needed; and
2. Determining the timing for the state and local governments to take those actions.

There are significant challenges. The most significant of these challenges are listed below and then described in more detail along with possible strategies for addressing them in the short term:

- Development of a sound policy rationale for each mechanism proposed;
- Conduct of credible and comprehensive technical analysis of alternatives;
- Recruitment of sustained leadership to guide implementation;
- Development of a broad political consensus in support of proposed mechanisms;
- Conduct of effective public education and advocacy of proposed measures;
- Development of consensus on institutional roles and responsibilities in implementation;
- Integration of current and new revenue collection as well as allocation mechanisms;
- Development of effective administrative procedures and capability;
- Establishment of the appropriate legal frameworks at all levels;
- Application of required technologies; and
- Commitment of the resources to support and sustain the entire range of phase-in activities.

### **Establishing a Policy Rationale**

A clearly stated, logical and technically supported “rationale” will be needed for efforts to enact new funding and financing mechanisms for the short or long term. In either case, transportation must be seen as a clear priority in need of renewed attention at all levels, but particularly at the Federal level. The rationale for pursuing new mechanisms in the short term lies in establishing whether or not increases in existing sources will be adequate or whether tolls and pricing is necessary. The policy rationale must reconfirm and communicate: 1) the scope and urgency of the region’s, states’, and nation’s surface transportation problems and needs; 2) the immediate- and long-term consequences of inaction; and 3) the courses of action that are available in the short run.

The rationale for shifting the base and for possibly increasing the yield of total revenues in the long term lies in establishing: 1) the specific rationales associated with alternative mechanisms, including better linking traveler behavior to costs and price; 2) the role that broad-based revenue sources, market-based mechanisms and private sector participation can be expected to play in overall highway and transit finance in the long term; and 3) outlining the actions that state and local governments must engage in to implement these mechanisms.

Absent broad agreement on the rationale for action and the impact on underlying objectives, e.g., declining revenues in the short term and the need for system efficiency and revenue stability and revenue growth in the long term, it will be difficult to promote implementation of new funding and financing sources requiring multiple governmental institutions each to respond.



Possible strategies to meet the “policy rationale” challenge may include:

- An aggressive, inclusive effort to confirm the advantages and urgency of shifting more rapidly to alternative financing mechanisms rather than simply raising rates on existing taxes. Such an effort might integrate findings from a number of recent analyses.
- An effort to bring major business, industry, and political leaders together to assess and confirm the merits of various strategies and mechanisms, the scope of investment requirements, and the implications of a failure to respond.

### **Providing Sound Technical Analysis**

The policy rationale and eventual implementation must be supported with clear, credible, and technically sound evaluation of alternative mechanisms for both the short and long term, across the dimensions described above. Critical to the analyses will be findings regarding economic impacts and efficiencies, yield, administrative capacity, equity, and adaptability to changing socioeconomic conditions.

Possible strategies to meet the challenge of continued technical analysis include:

- Pivoting off the considerable work that has been carried out or already is in an advanced stage on the advantages and disadvantages of alternative mechanisms in different situations and case studies of the successful implementation of various financing mechanisms in other states and abroad;
- Development of legislation and technical materials to assist state and local agencies that want to implement different financing mechanisms; and
- Better distinguishing how financing options vary across states and regions as a way to better focus and define popular and political interest in various mechanisms.

### **Assuring Sustained Leadership**

Sustained local, regional, state, and national leadership is essential in both the short and long term. In efforts to make fundamental changes such as the introduction of new revenue sources, “champions” must be found among key elected officials at both levels through involvement and advocacy of industry leaders and other leaders of key constituencies. Phasing in new mechanisms over the long term is likely to extend through several Federal, state, and local election and budget cycles, and should proceed ideally with limited partisan influence or disruption. Pursuit of the long-term agenda may require more formal organization.

Possible strategies to meet the challenge of sustained leadership and direction include:

- Reliance on traditional advisory mechanisms to pursue recommendations and agendas aimed at implementation of new financing mechanisms; and
- Recruiting a broader, multifaceted leadership group to actively advocate and support implementation of new revenue sources.

## **Establishing Political Consensus**

Building a broad political consensus for the phase-in of new funding and financing mechanisms represents a parallel challenge to building sustained leadership. Like most successful initiatives at the state and local level to enact new transportation revenues, a “campaign” type structure and organization may be required to create a broad consensus among community leaders and elected officials across party lines and levels of government.

Possible strategies in building and sustaining a political consensus include:

- Formation of a group or organization that can support and manage the search for political consensus, that may focus on launching a formal dialogue on needs for and alternatives for a new system of mechanisms to fund and finance highways and transit in the future; and
- Engagement of elected officials at all levels and their respective research and policy-related institutions in the formal dialogue over alternatives under consideration and the rationales for pursuing them.

## **Educating and Informing the Public**

Success in bringing new funding sources to bear will depend to a considerable degree on understanding and acceptance by the public, including the myriad stakeholder groups that have a legitimate interest in how transportation problems are defined and addressed, and the media, which will evaluate and interpret reactions to what is being proposed. Ultimately, popular interests are the source of authority where implementation of new funding and financing mechanisms is governed by popular referenda, and even “super-majorities” at the state or local levels.

Possible strategies to meet the public education and communications challenge include:

- Stakeholders, including the general public, must be defined, engaged, and kept informed on a sustained and strategic basis as part of the larger communications strategy, including state-of-the-art web-based mechanisms as well as more traditional strategies and activities such as public opinion polling, focus groups, and media-oriented initiatives.

- Conduct and support of these types of activities likely lies outside the sphere of public responsibility and/or propriety. Stakeholder organizations might serve as the conduit for public education and information activities.

## **Reconciling Institutional Roles, Responsibilities, and Relationships**

Planning, funding, implementing, and operating agencies responsible for highway and transit systems and improvements have developed detailed, often complicated and varied, arrangements to guide decision-making on how resources are to be used and services/projects delivered. These varied intergovernmental arrangements are the product of: 1) longstanding Federal program structures where Federal highway funds are allocated to state DOTs while Federal transit funding is apportioned directly to local and regional operating agencies; 2) evolving Federal regulations and varied program-level budget protocols; 3) the increasing role that states and localities are playing in transportation funding and finance; and 4) the larger role of the private sector in financing and delivering public projects and services.

Short-term adjustments to existing revenue sources such as indexing the Federal and state motor fuel tax will do little to disrupt current institutional roles, responsibilities, and relationships. The larger challenge lies in the primary roles that the Federal state and local governments now play and how they might shift in implementation of new mechanisms under discussion, given the widely varied mix of legal, regulatory, policy, and administrative mechanisms in place.

Implementation of new revenue-raising mechanisms at the state and/or local level, presents a challenge, i.e., to not let past practice and procedure limit the effectiveness of new sources, and an opportunity, i.e., to remake roles, responsibilities, processes, and procedures to better serve policies that already have been embraced, e.g., greater local and regional decision-making authority, increased flexibility in the use of funds, enhanced support for multimodal decision-making and system integration, and support for broader shared community goals – economic, social, and environmental.

Possible strategies to meet the institutional challenges might involve:

- Maintaining a focus throughout the evaluation, enactment, and implementation process on identifying: 1) what contradictions with existing practice may arise in the flow of new sources of funds; 2) what actions may be needed to minimize these; 3) what new or altered authority and mechanics might need to be enacted at state and local levels to make the most effective use of added resources; and 4) what timetables these actions require for completion.
- Directing resources from new funding and financing mechanisms to flow through other than the traditional processes and under a separate set of procedures, perhaps even to new recipient agencies such as the MPO in combination with the state DOTs.
- New revenues might be directed to broader categories of improvements than has traditionally been the case, e.g., portions to preservation and capacity expansion without reference to mode.

## **Reconciling Administrative Responsibilities and Procedures**

The basic administrative functions already are in place for collection and administration of current highway and transit funding and financing, although they are not uniform across all states and localities. With the introduction of new funding and financing mechanisms not in the current mix there may be significant shortcomings in managerial and administrative authority, capacity, know-how, and support systems, including: actual tax collection systems; accounting/financial management/risk management; economic and investment expertise; real estate and development expertise; and technical (hardware and software) expertise, among others.

Possible strategies for meeting the administrative challenges of transitioning to new funding and financing sources for highways and transit include:

- Examination of each potential new source of funding or financing to describe and assess: 1) the system-related, administrative and management requirements inherent in its use; 2) where those capabilities currently reside and where they are lacking among potential partners; and 3) what models and steps might be undertaken and over what timetable to assure that full and credible capacity exists to manage the flow of funds from new sources.
- Independent examination of the requirements, state of the practice, and opinions of experts in the respective fields to guide recommendations and enhancements to essential administrative and management systems and approaches.

## **Establishing the Legal Framework**

Legal frameworks already are in place for current highway and transit funding and financing, although they too are not uniform across all states and localities. Indexing current motor fuel taxes to inflation is a simple legislative act conceptually, assuming that popular and political support exists. Significant variations exist with regard to what jurisdictions have authority to raise revenues from what sources. Some 30 states limit the use of revenues from motor fuel taxes and vehicle fees to highway investment through statutory or constitutional restrictions. Some states provide enormous amounts of funding to transit while local governments provide little; some states provide little funding to transit, but empower local or regional entities to enact taxes to support public transportation based on popular approval. Many of the types of new mechanisms currently under discussion also raise issues that have not been relevant before in transportation funding and revenue raising, the most significant of which are privacy, security, and enforcement, where the prospects for prolonged litigation may be significant.

Actions taken at the Federal level to implement, authorize, or encourage new funding and financing mechanisms will almost certainly impinge upon what are traditionally considered states' prerogatives (if not literal states' "rights") in revenue-raising, or at least potentially cause disruptions in their tax administration apparatus at either or both the state and local levels.

Possible strategies for addressing the legal challenge might include:

- Defining for each new mechanism under consideration, the necessary legal underpinning, and possible conflicts that may exist in state constitutions or statutes;
- Establishing clear definitions, existing legal frameworks, and outline the basic mechanics for revenue collection from potential new sources; and
- Examining the extent to which existing revenue collection, distribution, and oversight mechanisms can be used to minimize the time and resources required to institute wholly new responsibilities, systems, and procedures.

### **Combining Management of Current and Emerging Revenue Sources**

At some point, the flow of revenues from current sources, adjusted for inflation or not, and revenues from new mechanisms introduced over the long term will have to be managed concurrently if not fully integrated by some combination of agencies. Complexity in management of current and new sources is likely to arise at several levels. First, implementation of new mechanisms is likely to be staged not only in time but geographically with implementation likely initiated and focused in particular regions. Secondly, not all new mechanisms are likely to be applied meaningfully at the Federal level or even at a statewide level. Third, some new mechanisms may be better applied in support of broad-based, continuing “programs” while others may be better suited to support specific “projects” or facilities.

The challenge is to anticipate how revenues from new, long-term “user fee” type mechanisms might be channeled to and through various agencies and under what set of procedures, conditions, and systems so that all available revenues can be integrated, leveraged, and overseen effectively across a multimodal network.

Possible strategies for combining management of current funding flows with the flow of revenues from new sources might include:

- Inviting discussion, generally or in a more focused way, on actions that could enhance the flow of existing revenues to highway and transit investment to meet key objectives;
- Including in the rationales developed for each mechanism clear statements about the geographical options for collection and use, options for where spending authority might reside, and the differential nature of programs or projects that various mechanisms might support; and
- Engaging the public interest groups representing major funding partners to examine the issues and find consensus on how they should be resolved.

### **Introducing Necessary Technologies**

Many of the new financing mechanisms generally under discussion for the long term cannot be implemented effectively without the wholesale application of state-of-the-art

information technologies, including hardware and software. Even in the cases of revenue sources already in place, enhanced technologies will likely be available over time.

New mechanisms with the broadest potential applications, e.g., VMT fees, require hardware and software to be installed on individual vehicles and as part of regional networks, wired or wireless. A consortium, including vehicle manufacturers, AASHTO, 10 state DOTs, and the U.S. DOT are jointly investigating the application of new information technologies for a variety of purposes through a Vehicle Infrastructure Integration (VII) initiative. These efforts bring a new set of partners into the picture, i.e., vehicle manufacturers and component suppliers, and potentially require a new set of skills and capabilities among traditional state and local implementing agencies, i.e., installation, maintenance, testing and regular enhancement of state-of-the-art electronics, and/or the ability to effectively manage private providers under service contracts.

An additional challenge lies in areas that are being successfully addressed in the world of intelligent transportation systems (ITS), i.e., system architecture, interoperability, standards, and the broader issue of who or what agency or institution might own or manage such a regional network and under what policies, rules, and regulations.

Possible strategies for addressing the technology challenge might include:

- Pivot off research and demonstrations already in progress to extend knowledge of vehicle-based hardware and software systems and applications;
- Expanding the number and scope of current demonstrations, e.g., Oregon's VMT fee application, the demonstration of mileage-based taxes being conducted pursuant to Section 1919 of SAFETEA-LU, and European examples for variants of technology applications suited to the types of mechanisms being considered;
- Reliance on current actors and organizations to address or (re)define a way forward technologically, with a specific focus on the evolution of a national strategy, system architecture, standards, and phased implementation; and
- Increased investment in and more rapid deployment of necessary technologies, perhaps with increased private sector participation.

### **Investing in the Phase-In**

Resolving the challenges outlined above will require a new, sustained commitment of resources, both financial and human, to guide analysis, deliberation, promotion, testing, and troubleshooting over a significant period of time.

Possible strategies for directing and managing the investment needed to support phase-in might include:

- Reliance on existing institutions and processes in collaboration with key stakeholder organizations many of whom already are at work addressing one or more of these challenges;

- Defining an independent, high-level, coordinating function for planning, management, and integration activities, including management of a work program, assurance of both short- and long-term sustained flow of resources, and to assess and report progress; and
- Assessing the need for a new institution or organization to guide and advance consideration and implementation of new funding and financing mechanisms for highways and transit.

The state and local governments' role in all areas can be viewed as either forcing, leveraging (i.e., through incentives), passive but supportive, neutral, or negative. Phasing can, of course, be done on any schedule. State and local actions and involvement in each of the areas noted, however, logically should begin immediately with a focus on developing the required policy rationale and technical support. Phasing can be varied based on how long it takes before all of the elements are in place that are sufficient to drive a transition to new revenue sources. However, most elements need to be in place in order for new revenue sources to be implemented.

## ■ 7.0 Evaluation of New or Enhanced Revenue Sources

Successful transportation revenue-raising initiatives in other states and major metropolitan areas provide valuable lessons in how to successfully bring about new or enhanced revenue sources. A wide range of potential revenue sources is available to the region. Table 8 provides an overview of strategies for expanding existing highway and transit funding. The strategies are grouped by their primary purposes (e.g., to generate new revenue, to leverage current revenue, or to improve the efficiency of investment through better management) and are described in the first column. The columns in the center of the table show to what kind of needs the strategies can be applied. The table is not exhaustive, but provides a reasonably current and comprehensive overview of sources and applications. In some cases, legal restrictions on existing sources would have to be removed in some of the area's jurisdictions.

Tables 9 through 14 show the attributes of some of the major alternative sources of revenues for highways and public transportation, in terms of the criteria used for evaluating tax sources.



**Table 8. Candidate Revenue Sources**

Specific Tool - Primary Purpose	Modes			Scope		
	Highway Bridge		Transit	Capital	Program	Project
	Preservation and Maintenance	New Capacity	Operations and Maintenance			
<b>I. Revenue Generation</b>						
<i>Fuel Taxes</i>						
Raising the motor fuel excise (per gallon) tax	●	●	●	●	●	
Indexing of the motor fuel tax (can be indexed to inflation or to other factors such as program costs)	●	●	●	●	●	
Sales tax on motor fuel	●	●	●	●	●	
Other motor fuel-related taxes	●	●	●		●	
<i>Registration and Vehicle Fees</i>						
Raising registration or related fees	●	●			●	
Vehicle personal property taxes	●	●			●	
Excise tax on vehicle sales	●	●			●	
<i>Tolling and Pricing, and Other User Fees</i>						
Tolling new roads and bridges		●				●
Tolling existing roads	●	●				●
HOT lanes, express toll lanes, truck toll lanes		●				●
VMT fees	●	●	●	●	●	
Transit fees (fares, park-and-ride fees, other)			●		●	
<i>Local Option and Beneficiary Charges</i>						
Beneficiary charges/value capture (special assessment impact fees) and tax increment financing		●	●	●		●
Permitting local option taxes for highway improvements	●	●			●	●
Local option vehicle or registration fees	●	●			●	
Local option sales taxes	●	●			●	
Local option motor fuel taxes	●	●			●	
Permitting local option taxes for transit			●	●	●	
Local option sales taxes			●	●	●	
Local option income or payroll taxes			●	●	●	

**Table 8. Candidate Revenue Sources (continued)**

<b>I. Revenue Generation (continued)</b>						
<i>General Revenue Sources</i>						
General revenue	●	●	●	●	●	
Property taxes	●	●	●	●	●	
<b>II. Financing Techniques</b>						
<b>Federal Initiatives</b>						
<i>Leveraging of Federal Grants</i>						
GARVEE bonds		●		●	●	●
SIBs					●	●
Section 129 loans		●				●
<i>Leveraging of User Fees or Tax Revenues with Credit Instruments</i>						
TIFIA/RRIF assistance		●		●		●
<i>Leveraging of User Fees and/or Tax Revenues with Tax Subsidies</i>						
Private activity bonds		●		●		●
Tax credit bonds	●	●	●	●	●	●
<b>State/Local Initiatives</b>						
Leveraging of tax revenues (shadow tolls/availability payments)		●				●
Leveraging of user fees (asset leases)	●	●			●	

**Table 9. Promising Sources for Highways and Transit**  
*Motor Fuels Taxes*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><b>Motor Fuel Taxes – Excise Tax (Per Gallon)</b> – Maryland, Virginia, and D.C. have a traditional “cents per gallon” excise taxes on the highway use of motor fuel. Some states also have variable taxes with rates that can vary based on an adjustment for inflation adjustment or for fuel price.</p>	<p>Motor fuel taxes are dedicated to transportation in Maryland and Virginia and part of the general fund in D.C. Adjustments to these taxes result in higher yields for highway investment.</p>	<p>Motor fuel taxes are very easy to administer and have very low costs of compliance. Evasion has been a major issue, but states and the FHWA have curtailed evasion. Motor fuel taxes are mildly regressive among income groups. Motor fuel taxes are not equitable among vehicle classes, because the largest vehicles may pay less in fuel taxes relative to the costs imposed on highways.</p>	<p>The motor fuel tax could add cents per gallon or could be indexed to inflation or to fuel prices as in some states.</p>	<p>Based on history, adjustments through legislation to the motor fuel excise tax have been the method of choice in Maryland, Virginia, and D.C. and other states for major new funding resources to fill funding gaps for transportation, but rates in the region have not been adjusted recently.</p>
<p>Motor Fuel Taxes – Indexing of Fuel Taxes to Inflation or to Fuel Prices, or a Sales Tax on Fuel</p>	<p>The yield of motor fuel taxes could be enhanced by indexing to inflation or, in some cases, to fuel prices. A ceiling and a floor on the change in the indexed rate is likely. A sales tax would be more volatile unless structured with floors and caps.</p>	<p>Same issues as above.</p>	<p>Indexing to inflation is a very promising adjustment because the index to inflation makes partial corrections for economic changes.</p>	<p>Other states have indexed or have used sales taxes on fuels.</p>

**Table 10. Promising Sources for Highways and Transit**  
*Vehicle Registration and Sales Fees*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><b>Registration and Other Vehicle Fees</b> – All states, including Maryland, Virginia, and D.C. have traditional types of registration fees for light vehicles and somewhat higher and graduated fees for heavy vehicles.</p>	<p>Registration fees provide major revenue sources for states and local governments (through state allocations) and must be adjusted through legislation. In addition to adjusting rates, other options include revising the type of registration fee.</p>	<p>Registration fees are relatively inexpensive to administer in relation to potential yield, but not as inexpensive as fuel taxes. Registration fees can be varied by vehicle size and can be set in rough relation to highway cost responsibility, except for the impacts of different mileage by similarly sized vehicles.</p>	<p>Registration fee adjustments are very promising as both a short- and long-term option for funding highways. Registration fees allow for collections from vehicles using alternative fuels without establishing new mechanisms for collection.</p>	<p>Equity among vehicle classes would indicate that parallel adjustments in registration fees should be made applicable to all vehicles.</p>
<p><b>Registration Fees Based on Value – Personal Property Taxes</b> – A registration fee based on value can be structured as a personal property tax and be deductible from Federal income. Virginia has had experience with this type of fee.</p>	<p>A fee on the value of a vehicle could raise substantial revenue, and could be structured to be deductible for Federal income tax purposes, thus increasing the State’s revenue yield without an equal increase in net total tax payments.</p>	<p>Registration fees for light vehicles, if collected on a flat basis, are somewhat regressive by income class. Registration fees for light vehicles on the basis of value are progressive.</p>	<p>Registration fees based on value have the best revenue generating potential and are less costly to taxpayers in the State.</p>	<p>Some states have recently eliminated or reduced such fees despite their advantages in comparison to collecting other state taxes that are not deductible (such as sales taxes).</p>
<p><b>Sales Taxes on Vehicles</b> – Maryland, Virginia, and D.C. collect sales taxes on new vehicles.</p>	<p>Sales taxes on vehicles can be useful revenue sources.</p>	<p>Sales taxes on vehicles will be fairly progressive.</p>	<p>Sales taxes on vehicles have substantial revenue raising potential.</p>	<p>All sales taxes already may be deposited into general revenue accounts.</p>

**Table 11. Promising Sources for State or Local Highways**  
*Tolls*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><b>Traditional Tolls</b> – Selected highways and selected bridges historically have been administered as toll facilities. In the region, the Dulles corridor has been tolled and the ICC will be tolled.</p>	<p>Existing toll facilities have been proven to be reliable and stable generators of revenue. The bonds of toll agencies are highly marketable.</p>	<p>Tolling costs more to administer and more for compliance than motor fuel taxes, although these costs are reduced through electronic toll collection. Tolls require lower-income groups to pay a higher proportion of their incomes.</p>	<p>Tolls and pricing may be considered to be highly promising options for application to new highway capacity in the longer term, with perhaps some limited short-term opportunities.</p>	<p>A few existing toll facilities have been leased to international companies, substituting short-term revenue gains by public agencies for lesser longer-term revenues.</p>
<p><b>Tolling New Lanes</b> – New lanes for high-occupancy tolls (HOT lanes) will be tolled along I-495 in Virginia. The express lanes along I-95/I-395 are scheduled to become HOT lanes.</p>	<p>Legislation may be necessary to enable new types of tolls or pricing initiatives. Electronic pricing could significantly expand future opportunities.</p>	<p>Tolls can be set to achieve equity among vehicle classes. Concerns about the impacts of tolling on equity among income groups have been addressed in several analyses.</p>	<p>Major positive opportunities exist to toll new future capacity. Sometimes this could be accomplished with tolls covering only a portion of needed revenues, which provides more total revenue and capacity than no tolling of new facilities.</p>	<p>Acts allowing Regional Mobility Authorities (RMA) and a PPP act could expand future possibilities for tolling.</p>
<p>Tolling Existing Lanes.</p>	<p>Tolling existing lanes could provide very substantial additional revenues.</p>	<p>Tolling existing lanes could provide for greater equity than other sources of new revenues, but is widely perceived as inequitable (“paying twice”).</p>	<p>Little short-term opportunity is thought to exist to toll existing free lanes. This does not mean that such opportunities might not exist in the future, particularly with new types of approaches to toll collection and pricing, including electronics and PPPs.</p>	<p>Sentiment is against tolling any currently free highway lanes. Likewise, little opportunity exists for tolling existing free bridges.</p>

**Table 12. Promising Sources for State and Local Highways and Transit**  
*VMT Fees*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><b>VMT Fees</b> - Fees on VMT could be long-term options (after 2017) that could supply revenues without being directly tied to fuel consumption.</p>	<p>VMT fees could be set to yield any level of desired revenues. VMT fees do not conflict with the need to reduce energy costs, reduce the balance of payments, or reduce fossil fuel consumption.</p>	<p>VMT fees, especially if applied as congestion pricing fees, send stronger pricing signals to travelers. VMT fees will require much higher administrative and compliance costs than motor fuel taxes. VMT fees must be graduated by vehicle weight to raise fees equitably by vehicle class.</p>	<p>In the long run, VMT fees and congestion pricing could replace all or a portion of current user fees. Oregon has demonstrated the technologies for collecting VMT fees at the fuel pump, and other states are conducting demonstrations.</p>	<p>VMT fees or congestion pricing fees require the technology to collect those fees reliably and also the political will to implement a new approach.</p>
<p><b>Congestion Pricing</b> - This type of pricing could be applied as a special kind of VMT fee, with fees varying based on the level of congestion on each road at each time of day.</p>	<p>VMT fees or congestion-related fees themselves would have to be indexed to respond to inflation.</p>	<p>VMT fees will be about as regressive among income groups as motor fuel taxes, because Department of Energy data show small differences in fuel efficiency by vehicles owned by different income groups.</p>	<p>A 2005 study of highway and transit revenue options for the U.S. Chamber of Commerce's National Chamber Foundation identified VMT fees and congestion pricing fees as a promising option in the long term (15 or more years).</p>	<p>There are not yet any VMT fees or congestion pricing fees in the United States that are not associated with toll facilities.</p>

**Table 13. Promising Sources for Highways and Transit**  
*Local Option Taxes and Beneficiary Charges*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><b>Local Option Taxes</b> – These taxes have been widely used in many states to support highway and transit investments. Local option taxes must be specifically allowed by state enabling legislation. Local option taxes for transportation investments could include motor fuel, vehicle, property, sales, and income taxes.</p>	<p>Sales taxes tend to have the highest yield in comparison to other local option taxes. Motor fuel and vehicle taxes tend to generate less revenue in comparison to other local option taxes. Except for motor fuel and vehicle taxes, other local option taxes tend to respond to grow with inflation. Sales taxes respond to economic growth.</p>	<p>Collection mechanisms already are in place to levy these taxes at the state or local level. Most local option taxes do not send pricing signals to drivers. Most local option taxes are regressive (except for income taxes). However, everyone pays sales taxes, whether they are vehicle or transit users.</p>	<p>State legislation must be in place that allows local governments to implement local option taxes. Sales taxes have been widely used by transit agencies to support operations and capital investments.</p>	<p>Commonly, local option taxes require voters’ approval. While an expenditure plan that specifies projects and/or programs to be funded with the new local option tax levies is not always required, local option taxes have better chances of success for implementation where expenditures and uses are clearly defined.</p>

**Table 13. Promising Sources for Highways and Transit (continued)**  
*Local Option Taxes and Beneficiary Charges*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><i>Beneficiary Charges</i></p> <p><b>Impact Fees</b> - Impact fee legislation exists in 26 states (excluding Florida). Impact fees for transportation improvements are widely used in California and Florida.</p> <p><b>Value Capture</b> - These techniques have been in place since the 1950s, starting in California. Only Arizona does not have enabling legislation to allow TIF to finance infrastructure needs.</p>	<p>Revenues from impact fees are typically dedicated for certain road and transit improvements that would serve the new development. In addition, revenues from impact fees will be highly dependent on development opportunities in the area where implemented.</p> <p>Value capture tools are subject to increases in property value realized by infrastructure improvements.</p>	<p>Beneficiary charges do not send pricing signals to encourage efficient transportation decisions.</p> <p>These charges can be relatively efficient and equitable if properly structured. Benefit districts can target the specific beneficiaries.</p> <p>While impact fees are directly charged to developers, they pass those charges to buyers, increasing the cost of real estate.</p> <p>TIF allocates a portion of the additional property taxes resulting from the increase in property values. Communities and local agencies could argue that implementation of TIF would take away revenues that otherwise would be used to meet other public needs.</p>	<p>Implementation is subject to enabling legislation that allows the collection of impact fees and the formation of assessment districts.</p> <p>These tools tend to be most applicable in higher growth state or localities.</p>	<p>Impact fees are only applicable to new development. TIF and other property assessments may require the formation of districts, where property tax levies are dedicated for transportation improvement. This may require voters' approval from district residents and business owners.</p> <p>Beneficiary charges have been the subject of numerous lawsuits in many areas.</p>



**Table 14. Summary of Promising Project Delivery Tools for Highways and Transit**  
*Innovative Finance and Public-Private Partnerships*

Source and History	Yield, Adequacy, and Stability	Cost-Efficiency, Economic Efficiency, and Equity	Potential Applicability and Acceptability	Implementation Issues and Potential Strategies to Overcome Barriers
<p><b>Innovative Finance</b> – Most states have used one or more forms of these financing tools. Virginia is utilizing PPPs for the I-95/I-395 HOT lanes and for the Beltway HOT lanes.</p>	<p>Innovative financing tools are used to leverage capital in the form of debt or equity. They rely on existing or new revenue sources to pay the indebtedness.</p>	<p>Incurring longer-term debt helps advance programs and projects that would otherwise take years to develop if at all.</p>	<p>They are widely applicable and can be used for program and individual project delivery.</p>	<p>Most innovative finance grant management tools are codified under Title 23 U.S. Code and require no special action from states to be used. To test new grant management tools, states may apply to the U.S. DOT. Many states cap the amount of debt that can be issued.</p>
<p><b>PPPs</b> – PPPs are a long-term opportunity to impact on project and program delivery. PPPs are commonly used in Europe to reduce public sector costs to construct, operate, and maintain highway facilities but are not yet widely used to support similar projects in the United States.</p>	<p>States and other public sponsors increasingly consider private sector involvement as a way to spur implementation of large projects.</p>	<p>PPPs can facilitate access to private capital and bring innovative cost-saving project delivery methods.</p>	<p>Several states are using PPPs to operate and maintain portions of their highway systems. There is further potential for large-scale PPPs. The U.S. DOT has preliminary evaluations that indicate the potential for significant cost savings and improvements in the quality of highway services provided to the public.</p>	<p>Specific project proposals need to be evaluated to determine if PPPs would be cost-effective. More than 20 states have explicit PPP acts that provide means to bring the private sector into funding and management of highways. Virginia’s act has fostered a wide range of proposals.</p>

## Potential Yields

These various sources could yield potentially large funding increments for large regions. A large region is identified as having a population of more than 4.0 million and, according to the 2000 census, the National Capital Region's population consisted of 4.2 million people with a land area comprising of 3,020 square miles. Table 15, from a National Cooperative Highway Research Program (NCHRP) review of revenue options for metropolitan areas, indicates the level of taxes that would be necessary to generate \$20 million annually in a region of 4.0 million people. For example, in order to generate an additional \$20 million annually, it would require an increase of only 1.1 cents on the gasoline tax.

**Table 15. Illustrative Yields from Alternative Sources**

Source	Unit	Rate for \$20 Million
VMT Fees	Per 100 miles traveled	\$0.050
Fuel Tax	Per gallon	\$0.011
Fuel Sales Tax	Percentage of sales	0.47%
Vehicle Sales Tax	Annual vehicle sales	0.30%
Registration Fees	Per vehicle, annually	\$10.560
Property Tax	Per \$1,000 of assessed value	\$0.130
Development Tax	Per new house built	\$706.000

Source: Martin Wachs, et al., *Metropolitan-Level Transportation Funding Sources*, prepared for National Cooperative Highway Research Program, 2005.

## ■ 8.0 Lessons Learned Elsewhere: New and Enhanced Revenue Sources

Provided here is information and case studies on some of the revenue options.

**Vehicle Miles of Travel (VMT) Fees** – Some states are anticipating a time when the fuel tax may not be adequate to fund transportation improvement needs, and are researching alternative fees based on VMT. The University of Iowa conducted a study on the viability of such a system using global positioning systems (GPS) in 2002.<sup>2</sup>

- Oregon also is currently field-testing technologies for collecting mileage fees. The Oregon DOT (ODOT) is conducting a pilot test designed to demonstrate the technical and administrative feasibility of implementing an electronic collection system for mileage-based user fees and congestion tolls. The on-board technology was demonstrated in May 2004. Twenty trial vehicles were to be equipped with the on-board devices and undergo preliminary tests during 2005. After verifying successful functionality, 280 trial participants in Eugene, Oregon, are to have the on-board equipment added to their vehicles. For a period of one year, all participants will pay distance charges rather than the fuels tax (when they fill up at the station, the fuels tax will be deducted from the bill, and the mileage charge will be added). At the conclusion of the study, ODOT expects to have demonstrated the feasibility of both mileage-based user fees and congestion pricing. ODOT intends to draft model legislation that will enable the Oregon State Legislature to consider adopting these programs on a statewide basis beginning sometime in 2007.

**Gasoline or Motor Fuel Tax (Per Gallon)** – The motor fuel tax is the most important source of highway revenue. This is comprised of the taxes on motor fuels such as gasoline, diesel, liquefied petroleum gas, and gasohol. Currently, each jurisdiction collects varying levels of all taxes, including the gasoline tax:

- **Virginia** – 17.5 cents per gallon with a two percent tax in localities that are part of the Northern Virginia Transportation District (last adjusted in 1992);
- **Maryland** – 23.5 cents per gallon (last adjusted in 1992); and
- **District of Columbia** – 22.5 cents per gallon (last adjusted in 2004).

Indexing the fuel tax can protect existing fuel tax revenues from the impacts of inflation. Through indexing, fuel tax rates can be adjusted automatically with changing rates of inflation or other factors. Currently, several states adjust fuel tax rates based either on the consumer price index (CPI) or on changes in fuel prices. Florida, Maine, and Wisconsin adjust their fuel tax rates annually based on inflation; however, legislation authorizing

---

<sup>2</sup> Forkenbrock, David J., and Jon G. Kuhl. *A New Approach to Assessing Road User Charges*. Iowa City, Iowa: Public Policy Center, The University of Iowa, July 2002.

Wisconsin to adjust the motor fuel tax rate has been rescinded. Other states, such as Kentucky, Nebraska, North Carolina, New York, Pennsylvania, and West Virginia, have a variable component that is adjusted based on the price of motor fuel. Therefore, the variable component is subject to fluctuations in fuel prices. If Virginia were to index the gasoline fuel tax rates based on the CPI since the last change, it would yield 24 cents; Maryland's would be 33 cents. Maryland, the District of Columbia, and Virginia fall well below the national average.

The revenue options related to motor fuel taxes, reviewed in this task as potential sources of additional revenue for transportation investments, include: 1) raising the motor fuel excise tax; 2) indexing the motor fuel tax; 3) sales tax on fuel; and 4) other taxes such as an oil company franchise tax (Pennsylvania) or a petroleum business tax (New York). Local option motor fuel taxes, along with other local option taxes, are addressed below.

Motor fuel taxes account for most of the Federal revenues used for highway and transit programs and for almost half of the revenues used by states to fund highway needs. In 2004, \$29.2 billion in motor fuel tax levies were spent at the state level for highways. Furthermore, motor fuel tax revenues exceed two-thirds of the funding used for highways in Arkansas, Indiana, Mississippi, Montana, South Carolina, and Wisconsin. Motor fuel tax revenues are typically dedicated to transportation by statute and, in some states, these revenues are restricted for highways. In addition to being one of the main revenue sources for state highway expenditures, state motor fuel tax levies also are commonly distributed to local governments and are used to pay debt service on bonds issued for transportation projects.

At the local level, locally generated motor fuel taxes account for a smaller share of the funding used for highways. Highway Statistics reported that locally generated motor fuel taxes accounted for approximately three percent of the total local revenues for highways. Similarly, motor fuel taxes account for a small share of the revenue used for transit expenditures, accounting for two percent of the state and local revenues. At the local level, motor fuel tax revenues include those levies dedicated at state level but that are directly transferred to counties and municipalities, and local option gas taxes (LOGT) approved by voters at the local level.

Examples – Ohio and Washington State are among the states that have increased the motor fuel excise tax in recent years.

- **Ohio.** In 2002, the Ohio Legislature designated a task force to evaluate the status of the state gas tax and to provide recommendations on how to meet the State's transportation needs. As a result, the motor fuel tax rate was increased by 6 cents per gallon to 28 cents per gallon. The motor fuel tax rate was increased gradually, over a period of three years. Other changes enacted in association with the motor fuel tax increase included the elimination of motor fuel tax allocations to the Ohio State Highway Patrol. These revenues are now redirected to local governments.
- **Washington.** Motor fuel tax rates have been increased twice during the last five years. First, the motor fuel tax rate was increased by five cents per gallon in 2003, as part of the 2003 "Nickel" Funding Package. This funding package also included an increase of

15 percent in gross weight fees on heavy trucks and a 0.3 percent increase in the sales tax on motor vehicles. The 2003 “Nickel” Funding Package will fund 158 projects over a 10-year period, for a total investment of \$3.9 billion. The five-cent per gallon increase will expire when the projects are completed and when related debt is retired.

- A second motor fuel tax rate increase of 9.5 cents per gallon was enacted in 2005 as part of the 2005 Transportation Package. This program will fund 274 projects (\$7.1 billion) over a 16-year period. The funding package consists of an increase to the motor fuel tax rate of 9.5 cents per gallon over 4 years, and other revenue tools, including a new vehicle weight fee on passenger cars. It should be noted that there is a continuing effort to repeal the second fuel tax increase.

**Indexing the Fuel Tax to Inflation or Prices** – Indexing the fuel tax can protect existing fuel tax revenues from the impacts of inflation. Through indexing, fuel tax rates can be adjusted automatically with changing rates of inflation or with other factors. Currently, several states adjust all or a portion of motor fuel tax rates based on either the CPI or changes in fuel prices. Florida, Maine, and Wisconsin adjust their fuel tax rates based on inflation annually; however, legislation authorizing Wisconsin to adjust the motor fuel tax rate has recently been repealed. Other states, such as Kentucky, Nebraska, North Carolina, New York, Pennsylvania, and West Virginia, have a variable component that is adjusted based on the price of motor fuel. Therefore, the variable component is subject to fluctuations in fuel prices.

*Examples* – Florida and North Carolina have indexed motor fuel taxes.

- **Florida.** Florida’s motor fuel tax is adjusted annually in proportion to annual changes in the CPI. While the motor fuel tax rate has been subject to adjustments since the early 1980s, the procedure to adjust the motor fuel tax rate was last modified in January 1997. The “tax floor” of 6.9 cents per gallon (in 1989 dollars) is indexed annually to the CPI. The state motor fuel tax rate was 10.5 cents per gallon in 2005, and increased to 10.9 cents per gallon in 2006.
- Florida also levies a further gasoline tax surcharge called the State Comprehensive Enhanced Transportation System (SCETS) tax, which also is adjusted to the CPI. The SCETS tax was enacted in 1990, and varies by county. The tax rate is equivalent to two-thirds of all local option fuel taxes, not to exceed 4 cents per gallon (1990 dollars). Because all counties in Florida levy at least 6 cents in local option fuel taxes, the SCETS tax rate is now constant in all counties. The SCETS tax was 5.8 cents per gallon in 2005, and increased to 6.0 cent per gallon in 2006. The proceeds of the SCETS tax are not shared directly with local governments, but must be spent in the respective Florida DOT (FDOT) district and, to the extent feasible, in the county in which the funds were collected.
- **North Carolina.** The motor fuel tax rate in North Carolina has two components: 1) a fixed rate of 17.5 cents per gallon; and 2) a variable rate based on 7 percent of the average wholesale price of motor fuel, adjusted every six months. Because the variable rate is dependent of the average wholesale price of motor fuel, the variable rate has

decreased when gasoline prices have dropped. In July 2002, the motor fuel tax rate went from 24.2 cents per gallon to 22.1 cents per gallon. The new motor fuel rate, effective January 2006, is 29.9 cents per gallon.

**Sales Tax on Motor Fuel** - In addition to the traditional motor fuel excise taxes, some states also collect sales taxes on motor fuels, including California (6.0 percent), Georgia (4.0 percent), Hawaii (4.0 percent), Illinois (6.25 percent), Indiana (6.0 percent), Michigan (6.0 percent), and New York (4.0 percent). These rates do not include any county or local taxes that also may be levied on motor fuel in these states. In some instances, revenues from sales taxes on motor fuel are not completely dedicated for transportation, as is the case of California and Georgia, where a portion goes to the general fund. In Indiana, none of the receipts of sales taxes on motor fuels is dedicated for transportation.

*Examples* - California and Georgia have sales taxes on motor fuels.

- **California.** California levies a motor fuel tax of 18 cents per gallon that goes into the Transportation Tax fund. In addition to the excise tax on motor fuel, sales taxes on fuel are collected at the state, county, and local levels. The state sales tax rate is 7.25 percent, of which 0.25 percent goes into Local Transportation Funds of counties and 2.0 percent goes to the counties General Fund. Revenues from the remaining 5.0 percent sales tax on gasoline and diesel go into the Transportation Investment Fund (TIF) and the Public Transportation Account (PTA), providing funding for state and local highways and public transportation. The transfer of motor fuel sales tax levies from the General Fund into transportation-related accounts was first introduced in the Transportation Congestion Relief Act of 2000, and made permanent through the passage of Proposition 42 in March 2002. However, the transfer of sales tax revenues into the TIF has been suspended as an emergency measure due to General Fund shortfalls in the past few years. Proposition 42 allows for the suspension of sales tax revenue transfers upon a two-thirds vote by the state legislature and by the Governor. The 2006 State Transportation Improvement Program (STIP) assumes that sales tax revenues will be transferred into the TIF and PTA over the next five years.
- **Georgia.** Georgia levies a 4 percent sales tax on motor fuels for highway investments, in addition to a motor fuel excise tax of 7.5 cents per gallon. Only the revenues from 3 percent of the sales tax are dedicated to transportation, with the remaining levies going into the State's general fund. Starting on January 2004, instead of collecting the sales tax at the pump, motor fuel distributors and suppliers must collect a prepaid state tax on all motor fuel sold. The prepaid tax is calculated every six months, based on the average retail sales price of motor fuel. The prepaid tax was estimated at 5.9 cents per gallon in January 2006.

**Vehicle Sales Tax** - Many states, regions, and local governments levy a sales tax on all goods or on most goods sold. The proceeds from the sales of vehicles most often accrue into the general funds of the states and the tax is levied as a percentage of the purchase price. Vehicle sales taxes could be dedicated to transportation.

**Raising Vehicle Registration or Related Fees** – Vehicle taxes include registration and related fees and are an important source. In 2004, states collected \$14.4 billion in vehicle registration fees. Highway Statistics data show that 90 percent of California’s motor vehicle-related revenues came from motor vehicle registrations.

Vehicle registration fees vary by vehicle class. For light vehicles, many states have a flat fee, whereas other states base the vehicle registration fee on weight or a combination of weight, age, horsepower, and value. For heavy vehicles, most vehicle registration fees are based on weight and are graduated based on each state’s unique, legislatively defined schedule for vehicles of different weights. The heavy vehicle fee categories are specific to each state.

License and title fees generated approximately \$2.5 billion in 2004. License and title fees generate modest revenues for transportation and, where dedicated for transportation, are mainly used to cover administrative costs, rather than provide a net source of revenue for capital projects or maintenance expenditures.

**Property Taxes** – Property taxes play an important role for funding highway needs at the local level. In 2004, about 21 percent of the total local highway funding in the nation came from property taxes. For example, local governments in Massachusetts and Vermont rely significantly on property tax revenues to support their highway-related investments.

Property tax revenues represented only 1.4 percent of total transit revenues.

**Personal Property Taxes on Vehicles** – Some states and localities levy a personal property tax on vehicles. These fees are in effect registration fees based on the value of the vehicle. These fees have been highly responsive to inflation, because the value of the vehicles owned has continued to increase. These fees have the strong advantage for vehicle owners in that they are deductible for those who itemize when filing their Federal income taxes. Motor fuel taxes, traditional registration fees, and sales taxes, which also are major sources for transportation, are not deductible. Thus, if a state wishes to raise revenues under the existing Federal tax structure but with minimal impact on net taxes for its citizens, personal property taxes on vehicles are a very attractive source.

Despite the advantages of such fees to a state and its citizens, opponents of such fees have recently mounted campaigns to reduce or eliminate these fees in Virginia and Washington State. These fees were targets at least partially because of their visibility. An individual taxpayer has to write a separate check for these fees, whereas a motor fuel tax collected at the pump may be relatively less visible and is paid over many purchases of motor fuel each year.

**Excise Tax on Vehicle Sales** – Vehicle sales taxes are normally levied as a percentage of the sales price of a vehicle when it is purchased or first registered in a state. Currently, a few states collect vehicle sales taxes that are dedicated for transportation, including Nebraska, Minnesota, Missouri, Kansas, North Carolina, and South Dakota.<sup>3,4</sup>

*Examples* – Nebraska and Missouri tax vehicle sales.

- **Nebraska.** Sales tax collected on the purchase of motor vehicles are dedicated to transportation. The sales tax revenues on motor vehicles are collected by the counties and deposited into the Highway Trust Funds. The Highway Allocation Fund for local governments receives 46.7 percent of the revenues, and the Nebraska Department of Roads (NDOR) receives the remaining 53.3 percent. In FY 2005, \$143.0 million were deposited into Nebraska’s Highway Trust Fund.
- **Missouri.** In Missouri, a portion of the vehicle sales and use taxes are dedicated for transportation needs. Half of the revenues from the 4 percent sales tax on motor vehicles is distributed among the Missouri DOT (MoDOT) (75 percent), cities (15 percent), and counties (10 percent) for transportation expenditures, including public transportation (from MoDOT’s share). Amendment 3, which was approved by voters in November 2004, redirects the sales tax levies that were deposited into the General Fund to the State Road Bond Fund, which will be used primarily to pay debt service through FY 2009. The transfer of sales tax revenues will be phased over a four-year period, starting in July 2005. After FY 2009, excess revenue in the State Road Bond Fund (after debt service payments are met) can be redirected to the State Road Fund to cover other transportation-related needs.
- A use tax of 4 percent on the purchase is collected on vehicles that are not subject to the Missouri sales tax at the time of purchase. From the 4 percent use tax on motor vehicles, MoDOT receive all levies from 3 percent of the use tax on motor vehicle, and 75 percent of the remaining 1 percent use tax. Cities and counties receive 25 percent of the revenues from the 1 percent use tax. MoDOT received \$177.7 million in FY 2004 and \$181.5 million in FY 2005 from the vehicle sales and use tax.

---

<sup>3</sup> U.S. Department of Transportation, Federal Highway Administration. *Highway Taxes and Fees – How Are They Collected and Distributed?* Washington, D.C., 2001. Table S-106. Available at <http://www.fhwa.dot.gov/ohim/hwytaxes/2001/index.htm>.

<sup>4</sup> In Minnesota, Motor Vehicle Sales Tax transfers from the General Fund for highway and transit expenditures were restored in 2003, after being entirely eliminated in 1991. More information available at <http://www.house.leg.state.mn.us/hrd/issinfo/ssmvst.htm>.



**Value Capture (Land Taxes and Special Assessment Districts)** – Value capture seeks to return to jurisdictions some of the increase in property value due to the improvement of publicly funded transportation facilities and services. This can be accomplished through taxes on assessed land values. Special Assessment Districts are special property taxing districts where the cost of infrastructure is paid for by properties in identified areas that are deemed to benefit from the infrastructure. Value capture taxes should be applied to assessed land values that reflect infrastructure-created value – but are often applied to the assessed value of land and buildings combined. The District of Columbia used a special assessment district to finance one-third of the cost of a new Metrorail Station at New York and Florida Avenues, NE. Virginia has used special assessment districts to help finance road and highway improvements.

**Tax Increment Financing (TIF)** – TIF is a technique for segregating and dedicating a portion of property tax revenues for the finance of particular infrastructure investments. Bonds are issued to finance public infrastructure improvements, and repaid with dedicated revenues from the increment in property tax revenue increases that occur after such improvements are made. This technique is based on the assumption that all increments in property value (and property tax revenues) are due to an infrastructure investment. This assumption is generally false but has been accepted as a way to justify dedicating a portion of property tax revenues to infrastructure in such a way that the infrastructure being financed does not have to compete for funds with other public expenditure needs.

**Adequate Public Facilities** – The flip side of “impact fee” legislation is “adequate public facilities” legislation. This legislation prohibits development where the development would create conditions that exceed the capacity of the existing public infrastructure to accommodate potential users. Capacity is calculated for key public facilities such as schools, roadways, water and sewer systems, etc. Montgomery County has an adequate public facilities ordinance.

**Parking Taxes and Fees** – The District of Columbia imposes a 12 percent sales tax on commercial parking transactions. Some parking escapes this tax because it is provided for free. The District enacted the Clean Air Compliance Fee Act in 1995, but Congress repealed it before implementation. The National Capital Planning Region Transportation Board (TPB) has calculated the revenue and pollution reduction impacts of a \$1 per day parking fee in the region. Parking meters also are a potential source of revenues.

**Local Option Taxes** – Local options taxes have been adopted in one form or another in at least 46 states.<sup>5</sup> They include mechanisms such as state-authorized local options sales, gasoline, income, and vehicle taxes and fees. The application and level could be at the local or regional level. These taxes are often dedicated to specific transportation projects or programs. Listed below are specific examples of local option taxes.

---

<sup>5</sup> University of California at Berkeley. *Local Options Taxes in the United States*. March 2001.

- **Transportation User Fee.** The City of Austin, Texas has an innovative way of financing transportation infrastructure that rewards households that reduce their vehicle ownership. City utility bills include a “Transportation User Fee” (TUF), which averages \$30 to \$40 annually for a typical household (City of Austin Code 14-10). This charge is based on the average number of daily motor vehicle trips made per property, reflecting its size and use. The City provides exemptions to residential properties with occupants that do not own or regularly use a private motor vehicle for transportation, or if the user is 65 years of age or older.
- **Local Option Gas Taxes (LOGT) - Florida.** Local governments in Florida have the option of implementing up to 11 cent per gallon on local gas taxes for funding transportation improvement projects, including transit. There are three types of LOGT: the First LOGT (up to 6 cents on gasoline and diesel), the Second LOGT (up to 5 cents on gasoline only), and the Ninth-Cent Gas Tax (1 cent on gasoline and diesel). Since 1994, the Ninth-Cent gas tax is no longer optional for diesel. Of the 67 counties in Florida, 16 counties levy the maximum rate (i.e., 11 cents per gallon) of local gas tax. Most counties levy at least 6 cents per gallon from the First LOGT. However, the First LOGT rate is 5 cents per gallon in Franklin and Union counties, although Union County also collects the Ninth Cent Gas Tax, which brings its local gas tax to 6 cents per gallon.
- **Vehicle Taxes - Ohio.** Local governments in Ohio can levy up to \$20 in vehicle license registration fees, in increments of \$5. Revenues from the local motor vehicle license fees must be used for roadway and bridge projects. A study conducted in 2000 by the Ohio Legislative Budget Office found that 67 percent of the counties, 52 percent of the municipalities, and 23 percent of the townships had enacted vehicle license fees.
- **Sales Taxes - Missouri.** Local governments in Missouri have the authority (subject to voters’ approval) to implement local sales taxes, ranging from 0.125 percent to 1 percent, for capital improvements and transportation-specific improvements (including roadways, bridges, and transit capital and operations).
- **Property Taxes - Michigan.** Michigan legislation allow for the implementation of property taxes dedicated to public transportation. In 2004, 13 counties in Michigan voted to continue or increase property taxes to support public transportation investments. In 2005, six property tax proposals were approved by voters, including a three mills renewal in the City of Saginaw that was defeated in 2004.
- **Income or Payroll Taxes - Oregon.** Lane County Transit and the Tri-County Metropolitan Transportation District of Oregon (TriMet) levy 0.6 percent and 0.6418 percent, respectively, in payroll and self-employment taxes, which are dedicated to public transportation. In the Lane County Transit District, payroll taxes generated approximately \$21.3 million in 2005. For TriMet, payroll taxes accounted for almost 52 percent of the operating revenues, levying \$157.3 million in 2005. In 2003, the Oregon Legislature authorized TriMet to increase the payroll tax rate by 0.01 percent every year, over a 10-year period.

## Tolling, Pricing, and Other Direct User Fees

As of December 2005, toll facilities in the United States accounted for approximately 5,100 miles of roads, bridges, and tunnels.<sup>6</sup> In 2004, state and local governments used \$6.6 billion in tolls for highway investments or approximately seven percent of total revenues used for highways at the state and local level. Many states are using the promise of tolls as a way of generating new revenue. The most promising candidates for future toll facilities are for new roads or when adding additional lanes to existing roads. Texas has all but made the policy decision to fund new limited-access highway capacity at least partially through tolls, and to refrain from tolling of existing lanes. A number of states are considering the idea, and yet others are not ready to embrace such policies.

**Tolling New Roads or Bridges** - Users incur a toll for use of new roads, bridges, and special lanes. The toll rate typically does not vary by time of day or day of week. Listed below are some examples of toll road projects from Texas and Florida.

**Examples** - Texas and Florida have extensive programs to toll new roads.

- **Texas.** In Texas, tolling currently is used primarily in the two large metropolitan areas of Dallas and Houston. The amount of revenue from tolling at all levels of government in Texas ranged from 2.5 to 5.0 percent in recent years, according to Highway Statistics Tables SF-1 and HF-1. In Dallas, the Metroplex Toll Financing System (MTFS) allows the Texas DOT (TxDOT) and/or the North Texas Tollway Authority (NTTA) to make toll projects available for investment by other entities that would then receive returns on their investments, as well as benefit through accelerated project development and completion. Candidate MTFS projects would be those toll projects that can reasonably be expected to generate toll revenues beyond the level necessary to pay debt and expenses. These candidates could be designated MTFS projects and represent an opportunity for local entities to partner in the investment, thereby sharing in any surplus revenues generated by the toll project. For example, if City A were to contribute 10 percent of the funding for Project X, then that city would receive 10 percent of the surplus revenues from Project X. This surplus revenue could provide an ongoing funding source for the city to use in other transportation projects. In keeping with the premise of regional project support, first choice to invest in a MTFS toll project would belong to those cities and counties directly affected by a project. Contributions are not limited to cash, but include donated rights-of-way, design, or other contributions to the value of the total project. Also in Texas, the Texas Mobility Fund is a revolving fund that is designed to back bonds that are pledged towards the construction of highway projects. The proceeds from the sale of these bonds could be used to finance construction on state-maintained highways, publicly owned toll roads,

---

<sup>6</sup> U.S. Department of Transportation, Federal Highway Administration. *Toll Facilities in the United States*, 2005. Available at <http://www.fhwa.dot.gov/ohim/tollpage.htm>.

and any other project that is eligible for the State's Highway Fund.<sup>7</sup> As of December 2005, nine toll projects were under construction or underway in Texas, of which the largest is the State Highway 130 (SH 130) around Austin.

- **Florida.** Florida, which has an extensive network of toll roads, derived between 8.2 and 11.2 percent of its annual highway revenue for all levels of government from tolling in recent years according to Highway Statistics. Since 1990, Florida's Turnpike opened nine new system interchanges, added 39 lane-miles of widening projects, and made substantial improvements to toll plazas, service plazas, and other facilities. The Turnpike also made substantial investments in electronic toll collection (ETC) and ITS. The current 10-year finance plan, covering the period FY 2003 through FY 2012, has a number of significant widening and improvement projects. These will produce a total of 150 lane-miles of widening and 11 interchange improvement projects.<sup>8</sup> Florida also has a system whereby it encourages the development of new toll projects by leveraging the revenue stream of the Turnpike Enterprise. It does this by providing loans from the Toll Facilities Revolving Fund, and also by providing revenue support for the early years of toll operation for new projects, with flexible and liberal payback terms.

**Tolling Existing Roads -** Tolling existing facilities is a much more challenging undertaking and is prohibited on the Interstate System with a few exceptions. Although the Transportation Equity Act for the 21<sup>st</sup> Century (TEA-21) had provision for three states to test putting tolls on existing Interstate's for reconstruction, no state successfully advanced a project. In early March 2003, VDOT requested approval to toll I-81 from the U.S. Secretary of Transportation and submitted an application for tolling. A toll impact study was conducted to determine to effects of traffic diversion from I-81 to other roadways as a result of implementing different toll scenarios. A Draft Environment Impact Statement (EIS) has been completed as of the spring of 2006; the decision for tolling will be made after the Final EIS is submitted to the Federal Highway Administration (FHWA) for approval.

The Interstate reconstruction toll pilot provision was extended in SAFETEA-LU, with changes intended to make it easier for states to take advantage of the provision. Also, a new program to allow three Interstate highways to be constructed as toll roads was added in SAFETEA-LU. Several states are now looking seriously at these provisions of SAFETEA-LU.

---

<sup>7</sup> Texas Department of Transportation, Texas Mobility Fund, <http://www.dot.state.tx.us/txdotnews/txmobilfundplan.htm>.

<sup>8</sup> Florida's Turnpike, <http://www.dot.state.fl.us/turnpikepio/NewWebPages/future.html>.

### ***Special Lanes (Express Lanes/FAIR Lanes, Truck Lanes)***

**High-Occupancy Toll (HOT) Lanes** - These are lanes for which single-occupancy vehicles (SOV) buy the right to use the excess capacity available in exclusive lanes that are otherwise reserved for high-occupancy vehicles (HOV) that pay no tolls. HOT lanes allow an SOV to pay a toll to use HOV lanes that have excess capacity. The first conversion of HOV lanes to HOT lanes opened in San Diego in the mid-1990s, and an extension of that project is now being planned.

In May 2005, the first lanes on I-394 in Minneapolis opened to traffic, and the I-25 HOT lane is due to open in Denver summer 2006. Each of these is described below.

- **Minnesota - I-394 HOT Lane (MnPASS).** The first HOT lane to open for quite awhile just opened recently in Minneapolis, where the existing HOV lane on I-394 was converted to a HOT lane. The project extends for 9 miles in one direction (11 in the other), with part of the project a single lane in each direction and the remainder two lanes reversible. I-394 is different from previous HOT lane projects in these ways:
  - Most of it is a single lane in each direction, with only a double-white stripe separating the HOV/HOT traffic from the general purpose traffic. There are zones where there are breaks in the striping to allow drivers to enter or exit the facility. This is in contrast to the single on- and off-points on previous projects.
  - There are two tolling zones, and prices change dynamically every three minutes, based on traffic density in the HOT lanes. Drivers are shown the price to use either one or both tolling zones at the beginning of their trips, with the price at entry guaranteed, regardless of any price changes by the time they get to the new sections.
  - Enforcement of the HOV and tolling is done by roving patrol vehicles. Some patrol cars are equipped with enforcement transponders that allow them to query the transponders of vehicles in the toll lane that do not have more than one occupant.<sup>9</sup>
- **Colorado - I-25 HOT Lanes.** The I-25 HOT Lane Project in Colorado is scheduled to open in the summer of 2006. This project is a conversion of the existing I-25 HOV facility. State law currently maintains free access for HOV 2+ vehicles, motorcycles, Inherently Low-Emission Vehicles (ILEV), and hybrids. The Colorado DOT (CDOT) currently is seeking a change in state statutes for the hybrids to become tolled. The important constraints on this project are as follows:
  - The full funding grant agreement between the Federal Transit Administration (FTA) and the Regional Transportation District (RTD) specifies that net revenues must go to transit;

---

<sup>9</sup> Minnesota Department of Transportation, MnPASS, <http://www.mnpass.org/>.

- Bus travel times take precedence over all others using the facility, meaning that the addition of SOV traffic should not impact bus operations; and
  - Entering and exiting loading constraints for the facility into the downtown Denver grid network mean that the pricing for this facility will be on a published toll schedule to be updated periodically, rather than with dynamic pricing.
- The revenue priorities for this project are to cover operations, maintenance, enforcement, and rehabilitation. The project is not anticipated to generate additional net revenue within the first 10 years of operation.<sup>10</sup>

HOT lanes are not always conversions of existing HOV lanes. The 91 Express Lanes that opened in Orange County, California, in the mid-1990s was a public-private venture that involved building four new toll lanes in the median of an existing freeway. On these lanes, HOV 3+ vehicles can drive for free during most hours, and must pay 50 percent of the full toll at the busiest times.

Other toll express lane projects are under consideration around the country, and are being encouraged through SAFETEA-LU with an Express Lanes Demonstration Program. Although these are toll facilities, in many cases, the tolls may not be adequate to pay for the cost of construction. However, such facilities are being considered for their effectiveness at providing congestion-free travel at all times of day, despite the fact that all capital costs may not be paid for by tolls.

The National Capital Region's current long-range transportation plan includes four new HOT lanes along 15 miles of the Capital Beltway in Virginia, and six new variably priced lanes along 18 miles on the Intercounty Connector in Montgomery and Prince George's Counties in Maryland. Virginia also is exploring the possibility of converting existing HOV lanes along the I-95/I-395 corridor into HOT lanes. Maryland is studying express toll lanes along I-495, I-95, and I-270, as well as along other facilities.

**Truck-Only Toll (TOT) Lanes** – TOTs are toll roadways or lanes for exclusive truck use. TOT lanes have been studied in the Los Angeles region on SR 60 and I-710, both of which are heavily utilized by trucks accessing the Ports of Los Angeles and Long Beach. The preliminary Los Angeles region studies found that urban TOT lane facilities would need to overcome challenges that include truck trips of short lengths, limited travel time savings during off-peak periods, and significant construction costs and geometric constraints related to adding lanes in an urban environment.

Another TOT lane concept involves urban corridors, which do not necessarily allow longer or heavier vehicles. Such a system of TOT lanes has been recently studied in the Atlanta metropolitan areas, with the findings that TOT lanes had a high potential for relieving congestion, potentially even more so than HOV or HOT lanes. Some of the scenarios studied involved the conversion of existing and planned HOV lanes to TOT lanes.

---

<sup>10</sup>Colorado Department of Transportation, *North I-25 HOT Lanes Study*, <http://www.i25hotlanes.com/>.

Such a policy would be unprecedented, and politically very difficult to implement. However, the study does point the way towards the potential for TOT lanes in dense urban regions with heavy truck demands.<sup>11</sup>

**Transit Fares and Other Fees** – Transit fares and other operating revenues were reported at \$10.9 billion in 2004, accounting for 28 percent of the total revenues used for transit expenditures at all levels of government. Although most agencies dedicate these revenues to transit Operations and Maintenance (O&M) costs, a few agencies use transit fares to support their capital programs. Other operating revenues also include parking fees, investment income, advertising revenues, leases, and concessions, to mention a few. While these revenues sources represent additional opportunities for agencies to generate additional resources, the revenue potential is limited in comparison to other sources, such as dedicated taxes.

- **Chicago Metra.** Since 1989, Metra has dedicated the farebox revenues from a 5 percent fare increase to its capital program. In 2004, the capital farebox financing revenue was \$9.1 million. In addition, Metra is required by statute to have an operating ratio (i.e., operating revenues/operating expenditures) of 55 percent.
- **New York Metropolitan Transportation Authority (MTA).** The New York MTA operates the bus, rapid transit, and commuter rail services in the New York Metropolitan Area. In addition, it operates seven bridges and two tunnels under the Triborough Bridge and Tunnel Authority. MTA toll revenues are used to pay for the operating expenditures and debt service of these bridges and tunnels, and the excess toll revenues are dedicated to support public transit needs (including debt service).

## Financing Techniques

### *Federal Initiatives*

**Grant Anticipation Revenue Vehicle (GARVEE) Bonds – MDOT is using GARVEE bonds for the ICC.** The GARVEE borrowing tool was created in 1995 as part of the National Highway System (NHS) Designation Act and is now codified as Section 122 in Title 23, U.S. Code. A GARVEE can be any “bond, note, certificate, mortgage, lease, or other debt financing instrument issued by a state or political subdivision,” whose principal and interest is repaid primarily with Federal-aid funds. The NHS Act allowed debt-related costs, including interest to be eligible. It also eliminated provisions that restricted the amount and timing of advance construction authorizations. Together, these modifications enable state and other grant recipients to issue long-term bonds to fund a Federal-aid eligible project, and annually “convert” the Federal share of the debt service payment as a reimbursable cost. The FHWA program regulations allow the state or other project sponsor to cash-fund its matching share through a discounted up-front contribution, so that the entire debt service payment is Federal-aid eligible.

---

<sup>11</sup>Georgia State Road and Tollway Authority. *Truck-Only Toll Facilities: Potential for Implementation in the Atlanta Region*, July 2005. Available at <http://www.georgiatolls.com/>.

GARVEE bonds effectively allow state/local project sponsors to monetize a portion of their anticipated future years' Federal-aid in order to accelerate large projects. By doing so, states avoid either having to defer the project until funds are accumulated on a pay-as-you-go basis or bump other projects. The bonds payable from Federal-aid reimbursements may be issued on a stand-alone basis (i.e., not additionally secured by state resources). An important consideration for any state contemplating a GARVEE issuance is the extent to which the state is willing to place claims on future Federal funding, as a GARVEE issued today means debt service payable tomorrow – and commitment of Federal monies that would otherwise be available to fund pay-as-you-go projects. Some states may need enabling legislation to issue GARVEEs that may include clauses that place limits on the volume of GARVEE debt that can be issued. Fourteen states plus Puerto Rico and the Virgin Islands have issued GARVEE bonds, totaling \$4.8 billion.

- **Oklahoma.** Oklahoma's first GARVEE issue of \$50 million was sold in March 2004. In August 2005, the State issued an additional \$48.9 million in GARVEE bonds as part of the financing for the Governor's 12 identified corridors of "economic significance." These issues are part of an anticipated \$799 million program authorized by the legislature in 2000, of which \$500 million is expected to be funded with GARVEE bonds. Within these corridors, the State is anticipating issuing a total of \$300 million of GARVEE bonds by October 2007, with an additional \$200 million planned after that date. It is expected that improvements within these identified corridors will enhance the business climate throughout the State. Examples of the proposed projects include U.S. 77 Broadway Extension in Oklahoma City, I-44 in Tulsa, and U.S. 183 from U.S. 70 to I-40 in Southwest Oklahoma.
- **Kentucky.** In May 2005, the State issued \$139.6 million in GARVEE notes that have maturities ranging from 2005 through 2017. This issue was the first tranche of a phased GARVEE program that focuses on the widening of the I-65, I-75, and I-74 from three to six lanes. The notes are insured by MBIA Insurance Corporation and received underlying ratings of AA – from Fitch Ratings and Standard & Poor's and Aa3 from Moody's Investors Service. The Kentucky General Assembly has approved a total program of \$400 million for these three widening projects that will increase the state highway system's ability to accommodate freight and people movement. Future bonds will have to be individually authorized.

**State Infrastructure Banks (SIB) - SAFETEA-LU** establishes a new SIB program under which all states, Puerto Rico, the District of Columbia, American Samoa, Guam, the Virgin Islands, and the Commonwealth of the Northern Mariana Islands are authorized to enter into cooperative agreements with the Secretary to establish infrastructure revolving funds eligible to be capitalized with Federal transportation funds authorized for FY 2005-FY 2009. SIBs authorized by the NHS Designation Act and TEA-21 may continue to operate. States participating in the new SIB program may capitalize the account(s) in their SIBs with Federal surface transportation funds for each of FY 2005-FY 2009 as follows: Highway account – up to 10 percent of the funds apportioned to the state for the National Highway System Program, the Surface Transportation Program, the Highway Bridge Program, and the Equity Bonus; Transit account – up to 10 percent of funds made available for capital projects under Urbanized Area Formula Grants, Capital Investment



Grants, and Formula Grants for Other Than Urbanized Areas; Rail account – funds made available for capital projects under Subtitle V (Rail Programs) of Title 49, U.S. Code. The state must match the Federal funds used to capitalize the SIB on an 80:20 Federal/non-Federal basis, except that for the Highway Account, the sliding-scale provisions apply.

The new program gives states the capacity to increase the efficiency of their transportation investments and significantly leverage Federal resources by lending, rather than granting, Federal-aid funds, and attracting non-Federal public and private investment. Among the advantages to borrowers are that funds may be loaned on a low-interest basis, and they may be secured by a junior lien on pledged revenues, facilitating loans by other entities. From the state's perspective, loan repayments may be recycled as received into new projects.

There currently are 33 states participating in the NHS and TEA-21 SIB programs. These states have issued more than \$5.0 billion in authority. No states have entered into cooperative agreements for SAFETEA-LU SIBs to date.

- **Florida.** To date, Florida's SIB portfolio consists of 50 loans with a value of approximately \$87 million. In June 2005, FDOT issued \$62.3 million in revenue bonds secured solely by the repayment stream of the existing loan portfolio. There continues to be a strong market for the SIB with the expansion of program eligibility to include all modes of transportation. The demand for the program is expected to continue with a broader application of loans to many new modes of transportation during future award cycles. As part of growth management legislation passed in 2005, Florida's SIB received a one-time capitalization of \$100 million to be applied to projects of regional impact. With the additional lending capacity, the size and duration of the loan portfolio will likely shift to borrowers with larger projects and more diverse repayment sources.
- **Arizona.** Arizona's Highway Expansion and Extension Loan Program (HELP) has been one of the nation's most active SIBs, ranking third nationally in loan activity. A seven-member HELP Advisory Committee accepts loan applications, reviews and evaluates requests for financial assistance, and makes recommendations to the State Transportation Board on loan and financial assistance requests. To date, the Transportation Board has approved 49 loans totaling \$564 million. The program has been used throughout Arizona with loans in 14 of Arizona's 15 counties, benefiting both rural and urban areas. Each of the three major regional areas of the State – Maricopa County, Pima County, and statewide (the other 13 counties) – have received substantial assistance from HELP. Loans have ranged from an \$80,000 loan to the Town of Miami for two street widening and resurfacing projects to a \$100 million loan to the Arizona DOT (ADOT) for the purchase of right-of-way for the Regional Freeway System in Maricopa County.

**Section 129 Loans** – Section 129 loans were enacted as part of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The loan provisions, as amended, are codified at Section 129(a)(7) of Title 23 and, for this reason, loans under this program are commonly referred to as Section 129 loans. Funds from a state's annual apportionment

are used to fund Section 129 loans. Any Federal-aid highway project is a potential candidate for a Section 129 loan. States may make loans to public or private project sponsors. The project sponsor must pledge revenues from a dedicated source to repayment of the loan. Dedicated revenues may include, but are not limited to, tolls, excise taxes, sales taxes, property taxes, motor vehicle taxes, and other beneficiary fees. Federal funds cannot be used as a revenue source. Loans can be in any amount, up to 80 percent of the project cost, provided that a state has sufficient obligation authority to fund the loan. Proceeds from Section 129 loans can fund the costs of engineering, right-of-way acquisition, and physical construction. However, only those costs incurred after the date the FHWA authorizes the loan may be funded by the loan; no costs incurred prior to the loan authorization can be reimbursed retroactively with loan proceeds.

One of the key advantages to Section 129 loans is the opportunity for states to get more mileage out of their annual apportionments. States benefit because every loaned dollar is repaid and recycled into further investment in the transportation system. From a project sponsor's perspective, loans are useful in offsetting up-front capital requirements that might otherwise have to be borrowed in the open market at higher rates. Further, Section 129 loans can serve a credit enhancement function by reducing the cost of other borrowing.

To date, only Texas has used a Section 129 loan, which was issued for the construction of the George Bush Turnpike. Through a combination of a Section 129 loan and partial conversion of advance construction, TxDOT structured a finance plan for this project that responded to the State's debt and cash flow constraints, allowing this and other important projects throughout the State to proceed more quickly than would otherwise be possible. The financial benefits of the Section 129 loan include the following: 1) the loan's subordinated status improved the credit quality of the senior bonds; 2) the North Texas Tollway Authority, which was a project partner in addition to TxDOT, obtained below-market interest rates on their revenue bonds, reducing the debt burden on the project; and 3) the loan repayments will provide the foundation for a self-sustaining revolving fund.

**Transportation Infrastructure Finance and Innovation Act (TIFIA)** - The TIFIA program, which was enacted in 1998 as part of TEA-21 and expanded in SAFETEA-LU, provides credit assistance in the form of direct loans, loan guarantees, and lines of credit to large surface transportation projects of "national or regional significance." TIFIA eligibility includes highway, transit, passenger rail, intermodal, and ITS projects. Both public and private project sponsors may apply for TIFIA assistance. Selection criteria include economic significance, private participation, environmental protection, project acceleration, and credit risk, among other factors. TIFIA assistance is limited to 33 percent of eligible project costs, and the minimum project size is now \$50 million. The cost threshold is lower in some states and, for ITS projects, the minimum size is \$15 million. The project sponsor/borrower must pledge user fees or other dedicated revenues to repay TIFIA assistance.

Large, complex projects that require bond financing often encounter investor concerns about "ramp-up" risk, particularly when the revenues pledged to repay the debt represent new or untested sources of security. Through the TIFIA program, the U.S. DOT can act as

a patient project investor, lending funds with final maturities as long as 35 years after substantial completion of the project. The program also allows the TIFIA assistance to have a claim on revenues subordinate to other debt, and gives the U.S. DOT flexibility in structuring deferrals of loan repayments. For direct loans, the TIFIA rate is set at five basis points over the published Treasury State and Local Government Series (SLGS) rate at the day of closing for obligations of similar term.

Total TIFIA assistance extended to date is approximately \$3.2 billion. Under SAFETEA-LU, there is a \$122 million annual authorization to fund the government's cost (loan loss reserve for the government's default risk) of providing credit assistance for a given fiscal year for a given project. However, there is no separate limit on the amount of credit assistance that can be provided to borrowers in a given fiscal year. TIFIA currently is being used in California, Florida, Louisiana, Maryland, Nevada, New York, Puerto Rico, South Carolina, Texas, and Virginia. Two examples follow:

- **Nevada.** The Reno Transportation Rail Access Corridor (ReTRAC) program consists of the construction of a 33-foot-deep trench below existing tracks to separate auto traffic from rail traffic in downtown Reno. The project also includes the reconstruction of 11 bridges to provide crossing over the trench and an access road. Total project cost is \$280 million. A \$50.5 million TIFIA direct loan agreement and senior lien bonds (approximately \$114 million), both secured by a pledge of county sales taxes and City of Reno hotel room taxes, for the project were closed simultaneously on June 28, 2002. Two additional loans, \$17 million to be repaid from tax revenues from a special assessment district and \$5.0 million to be repaid from lease income, will be negotiated. In total, the ReTRAC project was approved for up to \$73.5 million in credit assistance. This was the first TIFIA deal subordinate to publicly offered senior securities. The \$50.5 million loan was prepaid in 2006 with the proceeds of a tax-exempt refunding bond issue.
- **California.** The \$455 million SR 125 South project involves development of a new 9.5-mile toll highway alignment in San Diego County, California, by California Transportation Ventures, Inc., a private consortium. The facility is being financed through a combination of taxable bank debt, private equity, and a \$94 million TIFIA loan. It will be linked to the regional freeway network by a 2-mile locally funded nontolled segment, known as the San Miguel Connector. Toll revenues to be levied on the facility are pledged to repay the TIFIA loan. Repayment of the TIFIA loan has second priority in the flow of funds, subordinate to the project's debt service payments to senior bondholders. Interest earnings on the debt service reserve fund and other accounts provide a secondary pledge to the TIFIA obligations.

**Railroad Rehabilitation and Improvement Financing (RRIF) Program** - This U.S. DOT program was enacted in 1998 as part of TEA-21 and was reauthorized and expanded under SAFETEA-LU in 2005. RRIF provides credit assistance in the form of direct loans and loan guarantees. The funding may be used to acquire, improve, or rehabilitate intermodal or rail equipment or facilities. RRIF can refinance debt previously incurred for these purposes and also can be used to establish new intermodal or railroad facilities. Eligible borrowers include state and local governments, railroads, government-sponsored

authorities, and joint ventures that include a railroad partner. Direct loans can fund up to 100 percent of a railroad project with repayment terms of up to 25 years and interest rates equal to the cost of borrowing to the government.

There currently are 13 RRIF-assisted projects with an aggregate loan amount of approximately \$517 million. Under SAFETEA-LU, the program is authorized to issue up to \$35 billion in direct loans and loan guarantees. Up to \$7.0 billion is reserved for benefiting freight railroads other than Class I carriers. RRIF currently does not have an appropriation to cover the risk cost of the project to the government. This credit risk cost must be paid by the applicant at the time of the loan or loan guarantee.

States where RRIF is presently being used include: Arkansas, Illinois, Iowa, Maine, Minnesota, Missouri, Nebraska, North Carolina, Ohio, Oklahoma, Oregon, Tennessee, Texas, South Dakota, Vermont, West Virginia, and Wisconsin.

- **Iowa.** The Iowa Interstate Railroad (IIR) received a \$32.7 million Federal loan to help it improve service to rural areas that rely on trains to ship corn, soybeans, steel, chemicals, and other products to market. The loan will pay for track improvements needed to haul heavier freight cars and get products to key shipping points faster and safer. Specifically, the funds from the RRIF program will improve 266 miles of track, replace 180,000 crossties, lay thousands of tons of new ballast, and rebuild 95 highway-rail grade crossings between Council Bluffs, Iowa, and Bureau, Illinois. A portion of the loan also will be used to purchase a rail line that IIR currently is leasing and refinance debt incurred from previous infrastructure improvement projects.
- **Illinois.** The Riverport Railroad, a short-line located in Northwestern Illinois, received a more than \$5.5 million loan to rehabilitate rail-related infrastructure and facilities that were once part of the Savanna Army Ordnance Depot. The loan will be used to improve and consolidate about six miles of existing track to make operations more efficient and install new, heavier track to handle the industry standard 286,000-pound railcars. In addition, yard storage capacity will be increased by 33 percent (from 3,000 to 4,000 railcars) and real estate will be acquired to support its planned business expansion.

**Private Activity Bonds (PAB) for Highway and Intermodal Projects** - The newly expanded PAB program allows sponsors of highway and intermodal projects with substantial private participation in terms of ownership or operation to borrow at lower tax-exempt rates. A new class of PABs is established under the Internal Revenue Code for “qualified highway or surface freight transfer facilities.” This tax code change was enacted in 2005 as Section 11143 of SAFETEA-LU. To be eligible, projects must be Title 23 - eligible projects, international bridges and tunnels, or intermodal rail-truck transfer facilities. It is a requirement that each project receive some form of Federal assistance under Title 23. A national limit of \$15 billion is authorized under the program, to be allocated by the Secretary of Transportation on a discretionary basis. This volume ceiling is in addition to each state’s annual private activity bond limitation under current law. Current refundings of PABs approved under this section do not count against the limit. The bonds must comply with the normal provisions for PABs (bonds must be issued through a state or local entity, there is a public hearing requirement, etc.). The PABs are Federally tax exempt but are subject to alternative minimum tax.

Tax-exempt PAB yields generally are 20 percent lower than the prevailing taxable interest rate for the same credit quality and maturity term. In today's market, this reduction in interest expense has a present value benefit to the issuer of approximately 15 percent of the face amount borrowed.

With an authorized PAB issuance volume of \$15 billion, the program potentially could be utilized by projects with a notional value of \$20 billion to \$25 billion, given that many of these projects also may be drawing upon TIFIA financing, equity infusions, or other sources of capital in tandem with the PABs. (Senior debt often represents 70 percent of the capital structure for infrastructure project financings.)

The U.S. DOT is in the process of drafting a Notice of Proposed Rulemaking, which will seek comments on proposed regulations. The DOT has not set forth specific weightings for evaluation criteria, but notes that project readiness will be a key factor.

Examples of potential PAB applications include:

- **Private Concession Toll Road.** Projects such as SR 125 in San Diego and the Trans Texas Corridor involve long-term concessions (operating agreements) with private sector entities. Up until passage of SAFETEA-LU, such projects were precluded from utilizing tax-exempt bonds for the debt portion of their capital structures. Instead, they borrowed from commercial banks or sold taxable bonds in the corporate bond market. The new program will enable these privately developed, operated, and financed facilities to access the lower rates in the municipal bond market.
- **Rail Intermodal Facility.** Freight transfer facilities previously were not financeable on a tax-exempt basis. Under the new tax code provisions, a Class I rail carrier could issue lower cost tax-free bonds through a local public agency for a rail-truck intermodal facility. Projects like the Alameda Corridor would be able to finance a greater percentage of their costs on a tax-exempt basis.

**Tax Credit Bonds** – This financing tool refers to a new type of tax-preferred “zero-interest” debt financing. The Federal government effectively pays the interest cost on the bonds by giving the bondholder an annual tax credit, in lieu of the borrower paying cash interest. The bondholder/investor can use this tax credit to offset Federal income tax liability. The borrower is responsible for repaying the principal at maturity from locally identified sources. The tax credit is treated as taxable interest income to the bondholder. Interest expense represents 50 to 75 percent of the financial cost (present value) of borrowing, depending upon interest rate and repayment term. At any given interest rate, the longer the bond issue, the greater the interest expense component. Having the Federal government “pay” the interest on a 25-year bond issue represents a 75 percent effective Federal subsidy from the General Fund.

Presently, there is no established “general market” investor base for the current tax credit bond programs in the education and energy sectors, due to their small issue size and limited secondary market liquidity. Recent surveys of Wall Street bond dealers have indicated that if issuance volume were larger, and there was greater uniformity in terms among the issues, the market could readily absorb \$5.0 billion to \$10 billion per year.

Implementation of tax credit bonds requires Federal tax legislation authorizing a change to the Internal Revenue Code. Absent Federal legislation, it may be possible to fashion a tax credit bond at the state level (i.e., with state rather than Federal tax credits) in more populous states (California, New York, Texas, and Florida).

- **Qualified Zone Academy Bonds (QZAB).** QZABs are tax credit bonds that may be used by school districts to finance renovations to public school buildings. Congress first authorized the program for \$400 million of bond volume in 1998 and 1999, and it has been renewed every 2 years since then. The annual \$400 million volume cap is formula distributed to states, which in turn allocate the volume among in-state districts. An estimated \$2.5 billion of bonds have been privately placed over the last 8 years. Average issue size is approximately \$5.0 million, and most of the issues are nonrated. Maximum maturity date is set each month to produce a 50 percent private subsidy (approximately 16 years). Tax credit is treated as taxable interest income to investor.
- **Clean and Renewable Energy Bonds (CREB).** CREBs are tax credit bonds that may be used by state/local governments and electric cooperatives to finance renewable energy projects (wind, biomass, solar, hydropower, etc.). The program was first authorized in the 2005 Energy Act for \$800 million to be issued by December 31, 2007. The U.S. Department of Treasury will allocate the volume, based on applications that were submitted April 2006. The bond maturity is set at approximately 15 years. CREBs differ from QZABs in certain respects: no limitation on eligible investors; principal must be amortized annually in equal installments; and arbitrage investment restrictions apply.

### *Financing Techniques - State/Local Initiatives*

**Shadow Tolling** - A Shadow Toll System consists of a concession awarded to a private contractor who then has the responsibility to design, build, finance, and operate (DBFO) a road section for an agreed period of time. The term “shadow tolling” is used as there are no visible tollbooths and the users do not actually pay charges to the operators; rather, a fee is paid to the private operator based on usage of the facility. Although the approach requires governmental resources, it helps expedite construction, transfer risk, and enhance the level of service. The payments do not commence unless and until the project is built to standard and becomes operational, so the concessionaire is incentivized to construct a high-quality facility quickly. Because payments to the operator are conditioned upon attaining certain service levels, the concessionaire has a vested interest in the long-term utility of the project. The approach additionally has the concessionaire absorb traffic risk, so that the government’s payment level is based on actual utilization. Such approaches may be appropriate when real tolls are unacceptable or unfeasible.

Great Britain has used “shadow tolling” extensively to support its privatization program. Shadow tolls currently are not used in the United States although FDOT, in the first procurement of its kind in the nation, is offering annual “availability payments” to prospective concessionaires willing to build, own, and operate a new nontolled tunnel to the Port

of Miami. Payments will be based on the availability of the project for use by trucks and buses and such other factors as safety and compliance with other performance standards.<sup>12</sup> Texas has passed enabling legislation to allow for shadow tolling. Implementation in other states would require the existence of enabling legislation to enter into such PPP agreements with the contracting party.

A report for the FHWA suggests that shadow toll concepts can be beneficially used in the United States if certain conditions are met. These conditions include:

- The project has access to tax-exempt debt;
- Underlying repayment sources are stable and creditworthy;
- The project sponsor agrees to accept traffic risk;
- Projects have a proven traffic demand, thus generally precluding start up projects; and
- Projects are in areas where there may be resistance to tolling.

**Selling/Leasing Assets** – Public owners of existing revenue-generating facilities enter into a long-term concession agreement with private entities (cessionaires), under which the concessionaire makes an upfront payment in exchange for the right to collect tolls over a predefined time period. The franchise or concession agreement can run from 35 years to as long as 99 years, but title to the facility remains with the governmental owner. Typically, there is a formula-based cap on the extent to which tolls may be increased over the franchise period (predefined step-up rates, plus inflation). This type of transaction can generate a substantial but nonrecurring amount of long-term cash that may be used for transportation (or other) purposes, and shifts to the private sector any ongoing responsibility for operating and capital costs during the term of the franchise.

Lease transactions have been recently completed in Illinois and Indiana as described below, and currently are under consideration by other states.

Leasing assets are limited only by the number of current toll facilities. Asset leases of transit facilities are not likely to be meaningful sources of cash, because virtually no system fully recovers its operating expenses, let alone capital costs, from user charges. In addition, projects may require Federal approval, to the extent Federal-aid was utilized for construction or capital renewal purposes.

---

<sup>12</sup>Testimony of Karen J. Hedlund, Partner, Nossaman, Guthner, Knox & Elliott, LLP, before the Highways, Transit, and Pipelines Subcommittee, Committee on Transportation and Infrastructure, U.S. House of Representatives, May 24, 2006.

- **Illinois - Chicago Skyway.** In January 2005, the City of Chicago entered into 99-year agreement with Skyway Concession Company LLC for the lease of the Chicago Skyway, an eight-mile, 46-year-old elevated bridge extending from Chicago to the Indiana state line. The investors in the Concession Company, Macquarie Infrastructure Group and Cintra Concesiones de Infraestructuras de Transporte, S.A., paid the City of Chicago \$1.83 billion for the right to operate the Skyway. The proceeds were used largely for nontransportation purposes.
- **Indiana Toll Road.** The State recently signed an agreement to turn the 157-mile Indiana Toll Road over to a foreign consortium that will operate it for a profit for the next 75 years. Under the lease, Spanish-Australian consortium Cintra-Macquarie will pay the State \$3.8 billion up front and will be responsible for operating and maintaining the highway. It will get to keep the toll revenue it collects. The up-front payment will help pay for other transportation projects in the State.



## ■ Appendix A – Constant Dollar Estimates

The Tables A.1, A.2, and A.3 show all estimates in constant dollars.

**Table A.1 Revenues – Financially Constrained Long-Range Plan (2011-2040)**  
*Millions of Constant 2010 Dollars*

	Federal	State	Local	Toll/Bond/ Private	Fares <sup>a</sup>	Total
<b>District of Columbia</b>						
Highway	\$5,027	\$4,085				\$9,112
Local Transit	\$51	\$764			\$118	\$933
Commuter Rail						
WMATA Support		\$10,373				\$10,373
<b>Subtotal</b>	<b>\$5,078</b>	<b>\$15,222</b>		<b>-</b>	<b>\$118</b>	<b>\$20,418</b>
<b>Maryland</b>						
Highway	\$6,831	\$13,577	\$4,301	\$2,568	-	\$27,277
Local Transit	\$1,397	\$3,088	\$5,367	\$225	\$531	\$10,608
Commuter Rail (included above)						-
WMATA Support		\$13,570				\$13,570
<b>Subtotal</b>	<b>\$8,228</b>	<b>\$30,235</b>	<b>\$9,668</b>	<b>\$2,793</b>	<b>\$531</b>	<b>\$51,455</b>
<b>Virginia</b>						
Highway	\$3,363	\$8,281	\$1,933	\$6,189	-	\$19,766
Local Transit	\$243	\$713	\$2,389	\$478	\$1,550	\$5,373
Commuter Rail	\$687	\$447	\$436	-	\$997	\$2,567
WMATA Support	\$1,025	\$6,254	\$4,799	\$1,681	-	\$13,759
<b>Subtotal</b>	<b>\$5,318</b>	<b>\$15,695</b>	<b>\$9,557</b>	<b>\$8,348</b>	<b>\$2,547</b>	<b>\$41,465</b>
<b>WMATA Fares, Grants and Other Nonjurisdictional (Regional) Funds</b>						
<b>Subtotal</b>	<b>\$10,239</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$32,893</b>	<b>\$43,132</b>
<b>Total</b>	<b>\$28,863</b>	<b>\$61,152</b>	<b>\$19,225</b>	<b>\$11,141</b>	<b>\$36,089</b>	<b>\$156,470</b>
<b>WMATA Summary (included above)</b>						
Capital <sup>b,c</sup>	\$11,264	\$7,236	\$2,259	\$1,681	-	\$22,440
Operating	-	\$25,501	Included with state	Included with state	\$32,893	\$58,394
<b>Subtotal WMATA</b>	<b>\$11,264</b>	<b>\$32,737</b>	<b>\$2,259</b>	<b>\$1,681</b>	<b>\$32,893</b>	<b>\$80,834</b>

<sup>a</sup> Includes other transit operating revenues.

<sup>b</sup> An additional \$4.9 billion in potential Federal and state matching funds for WMATA's Capital Program needs for the period 2021 through 2040 are not reflected as funding sources are yet to be finalized at this time.

<sup>c</sup> The WMATA revenue requests for capital expenditures shown are for equipment to serve ridership growth on existing lines.

**Table A.1 Revenues – Financially Constrained Long-Range Plan  
(2011-2040)  
Millions of Constant 2010 Dollars (continued)**

	Federal	State	Local	Toll/Bond/ Private	Fares	Total
<b>Regional Significant Capital Project Revenues (included above)</b>						
<b>District of Columbia</b>						
St. Elizabeth Access	\$73	\$73				\$146
11 <sup>th</sup> Street Bridge	\$272	\$272				\$544
South Capitol Street Bridge and Corridor	\$68	\$69				\$137
D.C. Streetcar Line	\$27	\$136				\$163
<b>Subtotal</b>	<b>\$440</b>	<b>\$550</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>\$990</b>
<b>Maryland</b>						
Intercounty Connector				\$1,638		\$1,638
Nice Bridge Replacement				\$1,373		\$1,373
Purple Line Transit	\$750	\$751				\$1,501
Corridor Cities Transitway	\$505	\$505				\$1,010
<b>Subtotal</b>	<b>\$1,255</b>	<b>\$1,256</b>		<b>\$3,011</b>		<b>\$5,522</b>
<b>Virginia</b>						
I-495 HOV/HOT Lanes	\$213	\$34	-	\$217	-	\$464
I-95/I-395 HOV/Bus/ HOT Lanes	-	-	-	\$412	-	\$412
I-95/I-395 HOT Lanes Bus Service	\$36	-	-	\$188	\$151	\$375
Dulles Corridor Rail	\$922	\$1,576	\$1,155	\$1,681	-	\$5,334
Columbia Pike Streetcar	\$177		\$143			\$320
<b>Subtotal</b>	<b>\$1,348</b>	<b>\$1,610</b>	<b>\$1,298</b>	<b>\$2,498</b>	<b>\$151</b>	<b>\$6,905</b>
<b>Total Regional Significant Projects</b>	<b>\$3,043</b>	<b>\$3,416</b>	<b>\$1,298</b>	<b>\$5,509</b>	<b>\$151</b>	<b>\$13,417</b>

**Table A.2 Expenditures – Financially Constrained Long-Range Plan  
(2011-2040)**  
*Millions of Constant 2010 Dollars*

	Operations/ Preservation	Expansion	Total	Revenue – Expenditure
<b>District of Columbia</b>				
Highway	\$8,384	\$728	\$9,112	-
Local Transit	\$770	\$163	\$933	-
Commuter Rail				
WMATA Support <sup>a,b,c</sup>	\$7,997	\$2,376	\$10,373	\$0
<b>Subtotal</b>	<b>\$17,151</b>	<b>\$3,267</b>	<b>\$20,418</b>	<b>\$0</b>
<b>Maryland</b>				
Highway	\$12,863	\$14,414	\$27,277	-
Local Transit	\$6,964	\$3,644	\$10,608	-
Commuter Rail (included above)				
WMATA Support <sup>a,c</sup>	\$11,184	\$2,386	\$13,570	-
<b>Subtotal</b>	<b>\$31,011</b>	<b>\$20,444</b>	<b>\$51,455</b>	<b>-</b>
<b>Virginia</b>				
Highway	\$14,502	\$5,264	\$19,766	-
Local Transit	\$4,604	\$769	\$5,373	-
Commuter Rail	\$1,768	\$799	\$2,567	-
WMATA Support <sup>a,c</sup>	\$6,320	\$7,439	\$13,759	-
<b>Subtotal</b>	<b>\$27,194</b>	<b>\$14,271</b>	<b>\$41,465</b>	<b>-</b>
<b>WMATA Expenses Covered by Fares, Grants, and Other Nonjurisdictional Funds</b>				
<b>Subtotal</b>	<b>\$32,893</b>	<b>\$10,239</b>	<b>\$43,132</b>	<b>-</b>
<b>Total</b>	<b>\$108,249</b>	<b>\$48,221</b>	<b>\$156,471</b>	<b>\$0</b>
<b>WMATA Summary (included above)</b>				
D.C. <sup>a,b,c</sup>	\$7,997	\$2,376	\$10,373	\$0
Maryland <sup>a,c</sup>	\$11,184	\$2,386	\$13,570	-
Virginia <sup>a,c</sup>	\$6,320	\$7,439	\$13,759	-
WMATA Expenses Paid by Fares, Grants, and Other Nonjurisdictional Funds <sup>b,c</sup>	\$32,893	\$10,239	\$43,132	-
<b>Subtotal WMATA</b>	<b>\$58,394</b>	<b>\$22,440</b>	<b>\$80,838</b>	<b>\$0</b>

<sup>a</sup> Excludes \$812 million in subsidy request to meet an additional \$4.9 billion in WMATA's Capital Program needs. These needs are not reflected since the source of these Federal and state funds are yet to be finalized at this time.

<sup>b</sup> D.C.'s operating subsidy is \$1,557 million lower than original WMATA request since D.C. is proposing to utilize lower cost alternative service delivery methods to provide projected Metrobus and MetroAccess service levels.

<sup>c</sup> The WMATA capital expenditures shown are for equipment to serve ridership growth on existing lines and include Dulles Corridor Rail.

**Table A.2 Expenditures – Financially Constrained Long-Range Plan  
(2011-2040)**  
*Millions of Constant 2010 Dollars (continued)*

<b>Regionally Significant Capital Project Expenditures (included above)</b>	
<b>District of Columbia</b>	
St. Elizabeth Access	\$146
11 <sup>th</sup> Street Bridge	\$544
South Capitol Street Bridge and Corridor	\$137
D.C. Streetcar Line	\$163
<b>Subtotal</b>	<b>\$990</b>
<b>Maryland</b>	
Intercounty Connector	\$1,638
Nice Bridge Replacement	\$1,373
Purple Line Transit	\$1,501
Corridor Cities Transitway	\$1,010
<b>Subtotal</b>	<b>\$5,522</b>
<b>Virginia</b>	
I-495 HOV/HOT Lanes	\$464
I-95/I-395 HOV/Bus/HOT Lanes	\$412
I-95/I-395 HOT Lanes Bus Service	\$375
Dulles Corridor Rail	\$5,334
Columbia Pike Streetcar	\$320
<b>Subtotal</b>	<b>\$6,905</b>
<b>Total Regional Significant Projects</b>	<b>\$13,417</b>

**Table A.3 2010 CLRP: WMATA Funding Requests Versus Funding Commitment by Jurisdictions (2011-2040)**  
*Millions of 2010 Dollars*

	District of Columbia	Suburban Maryland	Northern Virginia <sup>d</sup>	Regional	Total
<b>WMATA Capital</b>					
WMATA Capital Request (Excludes \$4.9B in Additional Capital Needs for 2021-2040) <sup>a</sup>	\$2,376	\$2,386	\$7,439	\$10,239	\$22,440
WMATA Additional Capital Request <sup>b</sup>	\$812	\$812	\$812	\$2,437	\$4,873
Subtotal WMATA Capital Request	\$3,188	\$3,198	\$8,251	\$12,676	\$27,313
Capital Funding Commitment	\$2,376	\$2,386	\$7,439	\$10,239	\$22,440
<i>WMATA Capital Funding Shortfall<sup>c</sup></i>	<i>-\$812</i>	<i>-\$812</i>	<i>-\$812</i>	<i>-\$2,437</i>	<i>-\$4,873</i>

<sup>a</sup> Includes the full WMATA capital program request excluding the additional capital funding for period 2021-2040.

<sup>b</sup> The additional capital needs of \$4.9 billion for 2021-2040, although the sources for these funds are yet to be finalized.

<sup>c</sup> The capital shortfall represents the as yet unfunded additional funding over 2021-2040.

<sup>d</sup> NoVA capital needs and commitment include Dulles Corridor Rail project.

<b>WMATA Operating</b>					
WMATA Operating Request <sup>a</sup>	\$9,554	\$11,184	\$6,320	\$32,893	\$59,951
Operating Funding Commitment <sup>b</sup>	\$7,997	\$11,184	\$6,320	\$32,893	\$58,394
<i>WMATA Operating Funding Shortfall<sup>c</sup></i>	<i>-\$1,557</i>	<i>\$0</i>	<i>\$0</i>	<i>\$0</i>	<i>-\$1,557</i>

<sup>a</sup> WMATA's operating request for D.C. consists of D.C.'s allocated share of WMATA's forecast rail, bus, and Access.

<sup>b</sup> D.C.'s funding commitment is based on D.C.'s decision to utilize lower cost alternative service delivery methods to provide the Metrobus and MetroAccess service levels projected through the future.

<sup>c</sup> D.C.'s shortfall reflects its decision to use alternative service delivery methods as noted above.

<b>WMATA Capital Plus Operating</b>					
WMATA Full Request	\$12,742	\$14,382	\$14,571	\$45,569	\$87,264
Funding Commitment	\$10,373	\$13,570	\$13,759	\$43,132	\$80,834
<i>WMATA Funding Shortfall</i>	<i>-\$2,369</i>	<i>-\$812</i>	<i>-\$812</i>	<i>-\$2,437</i>	<i>-\$6,430</i>

## ■ Appendix B – Northern Virginia Process for Estimates

Northern Virginia (NoVA) has a more detailed process than the other areas, due primarily to the degree of shared funding. The detailed assumptions are documented here.

### Highways – Revenues

#### *Federal Revenue – Virginia Share*

1. Growth is based on estimated fuel consumption of 0.6 percent based on TAX data.
2. Forecast does not consider impacts of potential reduction due to lack of funding or potential increased funding as part of reauthorization.
3. Revenues for Columbia Pike Streetcar project are included in the Highway program. The project assumes about \$186 million in New Starts FTA grant for the Columbia Pike streetcar.
4. Revenue estimate assumes \$150 million in Federal earmarks for the U.S. 1 Corridor improvement designed to accommodate the proposed BRAC-related development.

#### *Virginia – State Revenues*

5. Growth rates, developed by VDOT and the Virginia Department of Taxation, are based on the Commonwealth's adopted (FY 2010-2015) Six-Year Program and reflect current economic downturn. Growth rates based on estimated fuel consumption growth of about 0.6 percent.
6. Northern Virginia Transportation District general fund revenues discontinued once current debt is fully serviced.

#### *VDOT – Priority Trust Fund Revenues*

7. Growth rates similar to those used for state revenues. Average growth past 2015 is about 2.96 percent.

#### *VDOT – Bonds*

8. Revenue through issuance of Bonds continues through FY 2029. Bond revenues are primarily used to match Federal funds.
9. Revenue sharing program is discontinued beyond 2011.

### ***Local Funds***

10. Local funds generated and used for nonregionally significant purposes, including operations and maintenance, are excluded as they are assumed to represent non-CLRP type revenues (except in case of Arlington County).
11. Local funds include Commercial and Industrial Property tax receipts in the City of Fairfax, Fairfax, and Arlington counties.

### ***Arlington County - Highway Program***

12. County's General Fund revenues are based on forecasts previously developed for the 2006 CLRP.
13. State payment amounts, used for Maintenance and Capital programs, were provided by VDOT.

### ***Loudoun County - Highway Program***

14. The local revenues above reflect a portion (40 percent) of the County's NoVA Gas Tax revenues (distributed by the NVTC) after WMATA's Operating subsidies has been paid. These funds are assumed to be used for the County's (including towns of Leesburg and Purcellville) Secondary and Local Roads projects. (Remaining funds in this category is assumed to be used for the County's Transit program.)
15. Majority (about 85 percent) of Developer Contributions are assumed to be used for the County's Secondary and Local Roads program. (Remaining funds in this category is assumed to be used for the County's Transit program.)

### ***Fairfax County - Highway Program***

16. Local revenues include the County's Commercial and Industrial Property tax.

### ***Dulles Toll Road***

17. Gross Toll Revenue estimates are based on future toll rate increases and other assumptions in July 2009 Comprehensive Traffic and Revenue Study and future toll rate increases, which have not yet been approved by the MWAA Board.
18. Proceeds from Dulles Toll Road Revenue Bonds issued in August 2009 will be used to fund \$100 million of capital improvements in Dulles Toll Road corridor.
19. Assumed investment earnings are based on 2010 Budget. Beginning in 2017, amount includes projected earnings on approximately \$200 million of debt service reserve fund deposits.

## **Highways – Expenditures**

### ***Maintenance***

1. VDOT's maintenance budget and maintenance payments to localities grow at an annual rate of four percent through FY 2022. Thereafter, the growth rate is about three percent.
2. Federal share of maintenance minimized to amount needed to support growth and averages to about 20 percent between 2016 and 40.

### ***Construction***

3. All funding for construction previously distributed through formula is discontinued for the forecast period. The small amount of funds in these programs will be allocated on a discretionary basis.
4. Construction funds will be transferred to Maintenance program (to meet the forecast Maintenance needs) starting 2011 and will increase, fourfold, by 2040.

### ***Other Programs***

5. No provisions for increased Capital Outlay held at \$11 million annually.
6. Personnel costs grow annually at 2.5 percent and nonpersonnel costs grows annually at 3 percent.

### ***Northern Virginia – Highway Program***

7. All CLRP type Capital costs reflects latest estimates for projects included in the current CLRP and was developed by VDOT and local jurisdictions staffs.
8. Operations and Maintenance expenditure estimates were developed by VDOT except for Arlington County. These estimates are constrained by the revenue forecasts to be available for this purpose.

### ***Arlington County – Highway Program***

9. Capital expenditures include those incurred for the Columbia Pike streetcar project in 2013-2016. Also included are TDM and Traffic Signal projects funded mostly with CMAQ is the Columbia Pike Streetcar.
10. Operations and Maintenance estimates are based on 2006 CRLP and include O&M expenses for Columbia Pike streetcar system.
11. Revenue projections allow for future Capital expenditures that are yet to be included in the County's Capital Program or the CLRP.



### ***Dulles Toll Road***

12. Expenses for operation and maintenance of the Dulles Toll Road are based on the 2010 Budget. Estimate starting 2013 assumes annual growth of 3.5 percent.
13. Renewal and Replacement expenditure is based on the 2010 Budget. Estimates starting 2011 an annual growth rate of 3.5 percent.
14. Projected debt service is on approximately \$2.9 billion of bonds expected to be issued from 2009 to 2013 to fund the Dulles Corridor Rail project (listed separately).
15. Capital project expenses for 2010 to 2015 are based on 2010 Budget and Capital Improvement Program. Estimates for 2016 and thereafter are planning-level estimates and is not part of a Board approved capital program. The expenditures for capital improvements are subject to our Board's approval in any given year.
16. Revenues in excess of the Operations/Maintenance expenditures may be used for variety of programs at the Board's discretion, including: capital improvements, debt service, retirement of debt, deposits to required reserves, and other uses as identified in MWAA's agreements with the Commonwealth of Virginia.

### **Transit - Revenues**

#### ***State-Aid Funds***

1. Estimates of state-aid for NoVA transit programs are based on similar assumptions and methodology used for VDOT's Highway program revenues. These revenues are distributed to the localities by the Northern Virginia Transportation Commission (NVTC) and Prince William and Rappahannock Transportation Commission (PRTC).
2. State-Aid funds distributed by NVTC to NoVA localities are used towards either WMATA transit services and/or local transit services. Estimates of state-aid funds applied to WMATA and local transit services within each NoVA locality is based on most the percentages provided by the Subsidy Allocation Model (SAM).
3. Revenue projections include dedicated funds of \$50 million per year provided by the State towards Virginia's portion of the matching funds for the Federal Dedicated Funds (a.k.a. Davis (Need to Rename) Bill funds) for the period 2010-2020.

#### ***Subregional Funds***

4. Northern Virginia Motor Fuels Tax revenues are dedicated for WMATA transit services in NoVA. The rate of growth (5.9 percent per year) in this revenue reflects the average growth in revenues collected between the years 1981 and 2009.
5. Metro Capital Improvement Program (MCIP) Bonds revenues, annually, reflects the average Bond revenues over the period 1981 and 2006. These revenues are dedicated for WMATA transit program.

### ***Virginia Railway Express***

6. Federal Subsidies are made up of funding from: 5307, 5309, and SSTP.
7. State funding estimates were provided by the Virginia Department of Rail and Public Transportation (VDRPT). VDRPT forecasts are based on the similar assumptions and methodology used for projecting Highway revenues.
8. Fare revenue starting 2016 is based on 2015 fares inflated at 2.1 percent per year. Fare revenues for the period 2010 through 2015 are derived from VRE's adopted Capital Program. In years FY 2012-FY 2015, a 4 percent increase is assumed. No other fare increases are assumed.
9. Other sources of revenue include: Interest income, merchandise sales, miscellaneous revenue (all fiscal years), and appropriation from reserve (Sale of Mafersa Railcars in FY 2010 only).

### ***Dulles Corridor Rail***

10. Project funding includes \$77 million in American Recovery and Reinvestment Act (ARRA) Mass Transit Capital Funds and revenues from Fairfax County Dulles Transportation Improvement District, general funds, bonds, and other sources.
11. Baseline Cost Estimates are as provided in Full Funding Grant Agreement Executed March 10, 2009.

### ***Loudoun County Transit***

12. State funds estimated were provided by VDRPT and represent allocation of state-aid to the County (outside of the NVTC process).
13. The local revenues a portion (60 percent) of the County's NoVA Gas Tax revenues (distributed by the NVTC) left over after fully paying WMATA's Operating subsidies.
14. The fare revenues (\$9,253,000 in FY 2009 for Phase I grown to 2012, \$21,095,000 in FY 2013 for Phase II grown to 2016 and \$14 million in FY 2017 for Phase III grown to the year 2040) were obtained from the Draft Countywide Transportation Plan, dated August 2009, page 3-29 in the Transit Chapter, Table 3-6: Annual Service Cost Projections. These were provided from the Loudoun County Office of Transportation Services Transit Division of Transportation Services.
15. Developer Contributions funds represent an average of proffered and conditioned collections for FY 2005-FY 2008 and is a portion (15 percent) of the total. Remaining funds are assumed to be used for the County's Highway Program.

## **Transit – Expenditures**

### ***WMATA Transit***

1. These forecasts were developed by WMATA both at regional and subregional level. The estimates for both the Operations and Capital program used in NoVA’s analyses are limited to NoVA’s portion of the regional forecasts developed by WMATA.

### ***Virginia Railway Express***

2. Expenditure estimates are based on the Board approved Capital Program through 2016. Estimates thereafter reflect inflation of 2.1 percent per year.

### ***Dulles Corridor Rail***

3. Capital expenditure for the IAD/Route 772 Extension as planning-level estimates and will be updated upon completion of the preliminary engineering task.
4. Professional Services include preliminary engineering, final design, project management, owner administration, FTA and other agency coordination, insurance, project start-up, and testing costs.

### ***Loudoun County Transit***

5. The total Transit expenditures are obtained from the Draft Countywide Transportation Plan, dated August 2009, page 3-29 in the Transit Chapter, Table 3-6: Expenditures for: FY 2009 through 2012 are based on Phase I of Transit Plan (\$17 million in FY 2009 grown at 2.1 percent per year); for FY 2013 through FY 2016 are based on Phase II (\$21 million in FY 2013 grown at 2.1 percent per year); for FY 2017 through 2040 are based on Phase III (\$27 million in FY 2017 for Phase III grown at 2.1 percent per year).
6. The breakdown of the total Transit costs into Capital and Operations reflect the average distribution of expenses among the various types of transit services provided by the County.