Appendix B

Roadway Financial Analysis and Assumptions

Introduction

This document outlines the methodology and assumptions used in developing revenue projections as part of the Knoxville Regional TPO's Metropolitan Transportation Plan (MTP), referred to as **Mobility Plan 2050**. In 23 CFR Part 450 Subpart A - Transportation Planning and Programming Definitions and Subpart C -Metropolitan Transportation Planning and Programming, the level and intent of financial plan requirements as part of the TPO's MTP are laid out. The following highlight several key provisions of these requirements:

> **§ 450.104 Definitions**
>
> Financially constrained or fiscal constraint means that the metropolitan transportation plan, TIP, and STIP includes sufficient financial information for demonstrating that projects in these documents can be implemented using committed, available, or reasonably available revenue sources, with reasonable assurance that the federally supported transportation system is being adequately operated and maintained.
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> **§ 450.324 Development and Content of the Metropolitan Transportation Plan**
>
> (11) A financial plan that demonstrates how the adopted transportation plan can be implemented.
>
> (i) For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain the Federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).
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> (ii) For the purpose of developing the metropolitan transportation plan, the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under § 450.314(a). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.
>
> (iv) In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect ''year of expenditure dollars,'' based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

The intent of these provisions is that Mobility Plan 2050 be fiscally constrained, only programming dollars it expects to receive. This appendix covers only the roadway mode while **Appendix I – Transit Service**

Summary contains the financial analysis for the transit mode. Each documents the sources reviewed and assumptions for determining available revenues for roadway and transit expenditures. Revenue projections are categorized by roadway capital funding, roadway operations and maintenance funding, transit capital, and transit operating funding.

Roadway Financial Analysis

Operating, maintaining, and improving the highway/roadway system in the Knoxville TPO planning area relies on federal, state, and local funding. While the funding amounts vary among the different sources, each plays a critical role in supporting the region's multimodal transportation system.

FEDERAL FUNDING

Federal funding represents the largest transportation funding source for the TPO, with motor fuel taxes generating revenue for the national Highway Trust Fund. However, motor fuel taxes have failed to keep pace with transportation demand and spending, requiring general revenue transfers to augment the trust fund. The sections below describe the federal funding programs relied upon to implement this Plan. Of note is that most federal funding programs are established and carried forward with each reauthorization bill. The current federal surface transportation authorization bill is known as the Infrastructure Investment & Jobs Act (IIJA), which is set to expire in September 2026. As such, the availability of funds in the following programs is largely contingent on the passage or extension of a new reauthorization bill.

National Highway Performance Program (NHPP)

NHPP funding provides support for the condition and performance of the National Highway System (NHS), for the construction of new facilities on the NHS, and to ensure that investments of Federal-aid funds in highway construction are directed to support progress toward the achievement of performance targets established in a State's asset management plan for the NHS. Roadways eligible for this funding include rural and urban roads serving major population centers, other rural and urban principal arterials, the Interstate system, international border crossings, intermodal transportation facilities, and major travel destinations. Other areas of eligible funding are publicly owned bus terminals, infrastructure-based intelligent transportation system capital improvements, and natural habitat mitigation. This program is managed by the Tennessee Department of Transportation (TDOT) with projects selected by TDOT in cooperation with the TPO.

Highway Safety Improvement Program (HSIP)

The purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads that focuses on performance. This program is managed and projects are selected by TDOT.

Surface Transportation Block Grant Program (STBG)

Projects eligible for funding under this program include construction, reconstruction, and rehabilitation (major resurfacing) of any Federal-aid Highway, including the NHS, bridge projects on any public road, transit capital projects, enhancement projects, public bus terminals and facilities, carpool projects, fringe/corridor parking facilities, bicycle and pedestrian infrastructure, and safety infrastructure. In general, STBG projects may not be on roads that are functionally classified as local. Both TDOT and the TPO receive an annual allocation of STBG funds.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

The CMAQ program was designed to assist nonattainment and maintenance areas in meeting the National Ambient Air Quality Standards (NAAQS) for ozone, carbon monoxide (CO), and particulate matter by funding transportation projects and programs that will improve air quality by reducing transportation-related emissions. This program is managed and projects are selected by TDOT with input from the TPO.

Carbon Reduction Program (CRP)

The IIJA established this program, which provides funds for projects designed to reduce transportation emissions, defined as carbon dioxide (CO2) emissions from on-road highway sources. Both TDOT and the TPO receive an annual allocation of CRP funds.

Transportation Alternatives Program (TAP)

The IIJA also continues a set-aside of STBG funding for transportation alternatives (TA). These set-aside funds encompass a variety of smaller-scale transportation projects such as pedestrian and bicycle facilities, recreational trails, and safe routes to school projects. Both TDOT and the TPO receive an annual allocation of TAP funds.

Federal Lands Access Program (FLAP)

The Federal Lands Access Program (Access Program) is continued from MAP-21 to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators.

Better Utilizing Investments to Leverage Development (BUILD)

Previously known as the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) and Transportation Investment Generating Economic Recovery (TIGER) discretionary grants, this program was established under the American Recovery and Reinvestment Act of 2009. The program provides grants for surface transportation infrastructure projects with significant local or regional impact. The eligibility requirements of BUILD allow project sponsors, including state and local governments, counties, Tribal governments, transit agencies, and port authorities, to pursue multi-modal and multi-jurisdictional projects that are more difficult to fund through other grant programs.

Safe Streets and Roads for All (SS4A)

The IIJA established the Safe Streets and Roads for All (SS4A) competitive grant program to fund regional, local, and Tribal initiatives through grants to prevent roadway fatalities and serious injuries.

Reconnecting Communities Pilot (RCP)

The IIJA established the Reconnecting Communities Pilot (RCP) competitive grant program to advance community-centered transportation connection projects, with a priority for projects that benefit low-capacity communities.

Highway Infrastructure Program (HIP)

The Consolidated Appropriations Act, 2023 (Public Law 117-328) appropriated funds through the Highway Infrastructure Programs (HIP) as a set aside for “Community Project Funding / Congressionally Directed Spending”. These funds remain available for obligation to the specifically listed projects through September 30, 2026.

STATE FUNDING

Like the federal government, the State of Tennessee funds surface transportation projects primarily with motor fuel taxes. Tennessee is a “pay as you go” state and does not incur debt to finance the construction or maintenance of the state’s surface transportation system. TDOT uses fuel taxes to support transportation improvements throughout the state. In 2017, Tennessee passed the IMPROVE Act, which increased gasoline and diesel taxes to provide funds for transportation projects across the state.

The TPO area has received funds from three other discretionary funding programs administered by TDOT. The State Industrial Access (SIA) Program provides needed connections to developing industrial sites. The Local Interstate Connector (LIC) Program provides funding for new roadways that connect critical local facilities and the interstate system. Finally, the Multimodal Access Grant (MMAG) Program provides funding for pedestrian and bicycle facilities along state routes.

The State of Tennessee also distributes State Street Aid funding to cities and counties for use in eligible activities. Directly generated by gas tax revenues, the State Street Aid funding can be used for a variety of street improvements, including roadway construction or reconstruction, maintenance, right-of-way acquisition, roadway widening, purchasing of related construction or maintenance equipment, street lighting, signage, traffic control equipment, and other administrative costs of making such improvements.

LOCAL FUNDING

Towns, cities, and counties use their own general funds for transportation improvements, operations, and maintenance. Some counties have instituted a local wheel tax in addition to the State motor vehicle registration fee to support their general funds. Local jurisdictions also provide funding to match federal or state funds for local transportation projects. Money for capital investments in streets and highways may also come from the sale of bonds. Locally, jurisdictions in the TPO area have additional funding sources available to them through state enabling legislation to finance transportation projects. These sources of funding can include rail authorities, local gasoline tax, local motor vehicle taxes, and road improvement districts. These sources can help generate a steady flow of funding for transportation improvements. The following describes these options as well as other local funding tools available.

Property Taxes

Property taxes are the chief source of local revenue and are dependent on local economic conditions. Typically, though, they remain a steady and reliable source of revenue. The funds are distributed to a general fund and then appropriated for transportation purposes.

Sales Taxes

This is one of the most commonly used and a major source of general revenue for state and local jurisdictions. This tax is placed on the sale of consumer goods and services, and purchases by business firms of items for business use. The tax is a function of the tax rate, use of funds and of redistribution formulas. A sales tax is generally more acceptable to citizens than other taxes since the tax is collected in small amounts that are not highly visible to consumers.

Wheel Taxes

Counties are authorized under Section 5-8-102 of the Tennessee Code Annotated to impose a local motor vehicle tax to provide revenue for county purposes. Imposition of the tax requires a majority vote in public referendum, or a two-thirds vote from the county legislators at two consecutive meetings.

Special Assessment Districts

Special Assessment Districts are designated areas within which commercial and residential property is assessed a charge sufficient to defray the costs of capital improvements that benefit the property within the district. Transportation Development Districts (TDDs) are one example of these districts used to finance transportation improvements.

Impact and Utility Fees

This one-time fee is imposed by local governments on new developments to help pay for the capital facilities that serve it. A fee is typically assessed on the square footage of the planned development and in some cases, the granting of a building permit is made contingent on payment of the fee.

Bond Financing

Bond financing helps local government pay for projects by establishing a type of payment plan that allows capital costs to be spread over a number of years.

REVENUE PROJECTIONS

In developing the roadway element of the **Mobility Plan 2050** financial plan, the Knoxville Regional TPO Transportation Improvement Program (TIP) and the IIJA were reviewed. Summary financial data was used to determine historic funding levels for various federal, state, and local funding sources and programs as shown in **Table B-1**. Funds sub-allocated to the TPO (L-STBG, L-STBG-TA and CRP) reflect annual allocations, while TDOT managed federal funds reflect actual annual obligations in the TPO planning area.

Table B-1. Historic Roadway Capital Revenues

FUND SOURCE	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	AVERAGE
CMAQ	$1,660,472	$4,125,471	$6,899,671	-$2,188,260	$2,513,757	$2,602,222
HSIP	$8,821,078	$6,409,028	$11,363,985	$10,183,271	$4,630,853	$8,281,643
NHPP	$76,663,900	$22,558,292	$29,359,930	$200,557,257	$65,252,168	$78,878,309
S-STBG	$5,033,104	$7,892,191	$2,994,799	$2,159,332	$9,639,951	$5,543,875
L-STBG*	$11,666,905	$11,588,207	$12,731,119	$12,985,741	$13,332,843	N/A
L-STBG-TA	$766,059	$766,059	$1,524,844	$1,557,045	$1,560,735	N/A
S-STBG-TA	$-12,000	-$44,862	$100,517	$441,314	$4,153,429	$927,679
CRP	-	-	$1,530,360	$1,564,028	$1,562,990	N/A
CMAQ 2.5	-	-	-	$4,879,305	$4,879,305	N/A
OTHER STATE (SIA, LIC, MMAG)	$16,434,050	-	-	-	-	$3,640,326
TOTAL	**$121,033,568**	**$53,294,386**	**$66,505,225**	**$232,139,033**	**$107,526,031**	

** Includes STBG allocations to Seymour and Tellico Village starting in FY 2024*

Using these data and in consultation with TDOT and the Federal Highway Administration (FHWA), an average annual growth rate was developed. This rate was used to project highway revenue sources over the life of the **Mobility Plan 2050**. Projected highway revenues increase at a rate of 2.2% annually, matching the annual growth rate of IIJA apportionments to Tennessee. In consultation with TDOT, revenues legislated for specific projects in the TPO area through the Transportation Modernization Act (TMA) are included in the applicable horizon year. This results in the new revenues shown in **Table B-2** program for each plan horizon, which equates to approximately $5.9 billion available over the life of the plan.

Table B-2. Projected Roadway Capital Revenues

FUNDING SOURCE	CARRYOVER FUNDS	2025-2030	2031-2040	2041-2050	TOTAL
CMAQ	$22,919,838	$60,593,989	$120,346,540	$149,603,780	**$353,464,147**
CRP	$3,048,848	$12,658,886	$25,141,984	$31,254,208	**$72,103,926**
HSIP	$0	$21,959,776	$93,131,950	$147,202,876	**$262,294,602**
LOCAL	$0	$47,838,980	$0	$0	**$47,838,980**
L-STBG	$71,644,408	$107,984,656	$214,469,783	$266,609,162	**$660,708,009**
NHPP	$0	$158,071,289	$738,585,387	$1,577,284,001	**$2,473,940,677**
S-STBG	$0	$0	$64,430,931	$110,857,675	**$175,288,606**
STBG-TA	$13,806,555	$20,154,034	$40,028,198	$49,759,385	**$123,748,172**
STATE-TDOT	$0	$19,885,970	$12,958,846	$0	**$32,844,816**
OTHERS	$0	$44,763,858	$113,657,880	$0	**$158,421,738**
TDOT TMA	$0	$695,700,000	$861,500,000	$0	**$1,557,200,000**
TOTAL	**$111,419,648**	**$1,189,611,438**	**$2,284,251,499**	**$2,332,571,088**	**$5,917,853,673**

To develop the capital costs for projects in the **Mobility Plan 2050**, an annual inflation rate of 3.8% was used. The inflation rate was based on the number developed by TDOT for their first 10-Year Project Plan that was released in December 2023. TDOT decided to take a fairly conservative approach which is based on the relatively high inflation rate that has been recently observed since roughly the start of the Covid pandemic.

To develop the roadway operations and maintenance (O&M) anticipated expenditures for the TPO jurisdictions, operating budgets for each jurisdiction were reviewed for Fiscal Years (FY) 2019 and 2024 to determine the historic and current funding levels attributed to activities such as sidewalk, greenway, street, and traffic signal maintenance, roadway restriping, street lighting, and others.

Table B-3 shows the comparison of these two data points used to evaluate how these needs have grown over a 4-year span.

Table B-3. Historic Roadway O&M Expenditures

JURISDICTION	FY 2019 O&M COSTS	FY 2024 O&M COSTS	CHANGE	EXISTING LANE MILES*
Anderson County	$2,285,800	$2,790,313	$504,513	49.3
City of Clinton	$560,000	$759,705	$199,705	21
City of Oak Ridge	$2,216,000	$1,860,165	-$355,835	109.2
Blount County	$3,117,000	$5,642,506	$2,525,506	223
City of Alcoa	$331,000	$264,262	-$66,738	76.6
City of Maryville	$488,000	$1,660,000	$1,172,000	75.1
Knox County	$5,500,000	$7,890,097	$2,390,097	507.2
Town of Farragut	$670,000	$984,099	$314,099	51.4
City of Knoxville	$8,600,000	$10,883,000	$2,283,000	430.7
Loudon County	$696,000	$991,500	$295,500	106.9
Lenoir City	$300,250	$350,000	$49,750	43.7
City of Loudon	$180,500	$158,270	-$22,230	23.8
Sevier County	$3,076,600	$7,098,359	$4,021,759	38.7
TDOT	$6,500,000	$18,000,000	$11,500,000	2,041.8
TOTAL	**$34,521,150**	**$59,332,276**	**$24,811,126**	**3,798.4**

** The TPO Planning Area does not include entire counties except Knox - O&M costs are for full county, lane miles represent TPO Planning Area portion of each county only.*

The anticipated O&M expenditures/revenues were derived by using the same assumed 3.8% inflation rate used for capital projects. **Table B-4** shows the total expected O&M needs through the life of this Plan equating to approximately $2.65 billion. Additionally, it was determined that from project implementation that an overall addition of 210 lane miles representing a growth amount of 5.5% for the entire life of the Plan. We believe that this small annual percentage increase (0.2%) should be manageable.

Table B-4. Projected Roadway O&M Needs

JURISDICTION	2025 – 2030	2031-2040	2040-2050	TOTAL
Anderson County	$19,115,053	$43,093,469	$62,572,714	**$124,781,237**
City of Clinton	$5,204,363	$11,732,850	$17,036,370	**$33,973,583**
City of Oak Ridge	$12,743,069	$28,728,305	$41,714,164	**$83,185,538**
Blount County	$38,654,015	$87,142,611	$126,533,087	**$252,329,712**
City of Alcoa	$1,810,328	$4,081,251	$5,926,070	**$11,817,649**
City of Maryville	$11,371,838	$25,636,966	$37,225,468	**$74,234,272**
Knox County	$54,051,148	$121,854,306	$176,935,271	**$352,840,725**
Town of Farragut	$6,741,575	$15,198,381	$22,068,401	**$44,008,357**
City of Knoxville	$74,554,044	$168,076,566	$244,051,062	**$486,681,673**
Loudon County	$6,792,276	$15,312,682	$22,234,368	**$44,339,325**
Lenoir City	$2,397,677	$5,405,384	$7,848,743	**$15,651,804**
City of Loudon	$1,084,229	$2,444,315	$3,549,202	**$7,077,746**
Sevier County	$48,627,343	$109,626,740	$159,180,562	**$317,434,644**
TDOT	$123,309,088	$277,991,197	$403,649,648	**$804,949,933**
TOTAL	**$406,456,045**	**$916,325,023**	**$1,330,525,130**	**$2,653,306,198**

Conclusion

This document outlines the assumptions underlying the financial plan for the **Mobility Plan 2050**. Specifically, revenues for roadways are summarized with historical data and associated growth rates for future projections. In addition, anticipated growth rates for estimating YOE highway and transit needs are presented and are based on historic data as well as consultation with FHWA and TDOT. The financial plan for **Mobility Plan 2050** applies these assumptions to future project needs and demonstrates fiscal constraint of the planned spending.