Appendix E
Financial Assumptions

E. FINANCIAL 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 2045. 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.

§ 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).

(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 2045 be fiscally constrained, only programming dollars it expects to receive. This document is organized in two sections, highways and transit. Each documents the sources reviewed and assumptions for determining available revenues for highway and transit expenditures. Revenue projections are categorized by highway capital funding, highway operations and maintenance funding, transit capital, and transit operating funding.

HIGHWAYS

Operating, maintaining, and improving the highway 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 each of the main federal funding programs. Of note is that most federal funding programs are established and carried forward with each reauthorization bill. The current federal surface transportation authorization bill, the Fixing America's Surface Transportation Act (FAST Act), expired in September 2020, but was extended for another fiscal year to September 2021. 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.

National Highway Freight Program (NHFP)

The FAST Act established a new program to improve the efficient movement of freight on the National Highway Freight Network (NHFN), which includes many key corridors in the Knoxville region. This program is intended to support several goals, including improving the safety, security, efficiency, and resiliency of freight transportation and investing in infrastructure and operational improvements that strengthen the nation's economic competitiveness and increase productivity. This program is managed and projects are selected by TDOT.

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 (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.

Transportation Alternatives (TA)

The FAST Act created 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 TA funds.

High Priority Projects (HPP)

A previous transportation bill ended the tradition of providing designated funding for specific projects identified by Congress. There are two projects where HPP funding is still committed in the TPO area.

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 out over a number of years.

Revenue Projections

In developing the highway element of the Mobility Plan 2045 financial plan, the Knoxville Regional TPO Transportation Improvement Program (TIP) and the FAST Act 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 E-1. Funds sub-allocated to the TPO (L-STBG and L-STBG-TA) reflect annual allocations, while TDOT managed federal funds reflect annual obligations in the TPO planning area.

Table E-1. Historic Highway Capital Revenues

FUNDING SOURCE	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019
CMAQ	$1,381,372	$993,236	$426,066	$1,712,951	$10,532,793
HSIP	$13,123,931	$6,805,621	$9,016,950	$10,417,160	$19,955,462
NHPP	$23,418,622	$100,208,165	$75,266,231	$60,016,540	$133,599,863
S-STBG	$7,703,776	$5,569,684	$8,231,039	$7,669,905	$7,481,385
L-STBG	$9,556,129	$9,954,081	$10,334,493	$10,779,523	$11,235,865
L-STBG-TA	$736,374	$751,265	$751,265	$766,059	$766,059
S-STBG-TA	$0	$0	$0	$986,503	$2,561,403
OTHER STATE (SIA, LIC, MMAG)	$1,256,936	$435,984	$538,651	$1,176,750	$1,767,579
STATE/LOCAL MATCH	$12,157,283	$30,125,288	$24,754,157	$21,393,707	$43,121,265
TOTAL	**$69,334,423**	**$154,843,324**	**$129,318,850**	**$115,165,723**	**$231,662,024**

Using this 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 2045. Projected highway revenues increase at a rate of 2.2% annually, matching the annual growth rate of FAST Act apportionments to Tennessee. In consultation with TDOT, revenues legislated for specific projects in the TPO area through the IMPROVE Act are included in the applicable horizon year. This results in the new revenues shown in Table E-2 by program for each plan horizon, which equates to approximately $6.6 billion available over the life of the plan.

Table E-2. Projected Highway Capital Revenues

FUNDING SOURCE	2021 – 2026	2027-2035	2036-2045	TOTAL
CMAQ	$16,768,291	$29,637,887	$40,508,946	$86,915,124
HSIP	$76,869,490	$135,866,511	$185,701,806	$398,437,807
L-STBG	$75,593,583	$133,611,351	$182,619,462	$391,824,396
NHPP	$508,638,641	$899,016,729	$1,228,772,480	$2,636,427,850
S-STBG	$47,500,900	$83,957,647	$114,752,977	$246,211,524
L-STBG-TA, S-STBG-TA	$12,600,290	$22,270,962	$30,439,861	$65,311,113
IMPROVE ACT	$453,921,736	$927,597,338	$463,014,724	$1,844,533,798
OTHER STATE (SIA, LIC, MMAG)	$6,707,260	$11,855,054	$16,203,441	$34,765,754
STATE/LOCAL MATCH	$173,816,481	$307,219,923	$419,906,965	$900,943,369
TOTAL	$1,372,416,672	$2,551,033,401	$2,681,920,661	$6,605,370,735

To develop the capital costs for projects in the Mobility Plan 2045, an annual inflation rate of 3.3% was used. The inflation rate, approved at the March 2020 TPO Executive Board meeting, is based on annual increases in FHWA's National Highway Construction Cost Index and the Engineering News Record

Construction Cost Index, which are 3.6% and 3.0%, respectively, across a 5-year period. It was assumed that these indices are more reflective of the construction costs of capital transportation projects than other commonly used measures, such as the Bureau of Labor Statistics' Consumer Price Index.

To develop the highway operations and maintenance (O&M) anticipated expenditures for the TPO jurisdictions, operating budgets for each jurisdiction were reviewed for Fiscal Years (FY) 2015 and 2019 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 E-3 shows the comparison of these two data points used to evaluate how these needs have grown over a 4-year span.

Table E-3. Historic Highway O&M Expenditures

	FY 2015		FY 2019		ANNUAL % CHANGE	
JURISDICTION	O&M Costs	Lane Miles	O&M Costs	Lane Miles	Cost/Mile	Average
Anderson County	$1,728,420	49.3	$2,285,800	49.2	8.1%	3.3%
City of Clinton	$420,000	20.9	$560,000	21.0	8.2%	
City of Oak Ridge	$874,000	105.8	$2,216,000	109.2	36.4%	
Blount County	$4,429,844	229.2	$3,117,000	225.8	-7.1%	
City of Alcoa	$232,392	76.0	$331,000	76.7	10.3%	
City of Maryville	$458,423	67.7	$488,000	70.8	0.4%	
Knox County	$3,825,000	500.4	$5,500,000	501.5	10.9%	
Town of Farragut	$607,954	50.7	$670,000	51.4	2.2%	
City of Knoxville	$11,300,000	434.0	$8,600,000	448.6	-6.6%	
Loudon County	$795,302	106.3	$696,000	106.9	-3.2%	
Lenoir City	$267,125	43.7	$300,250	43.9	3.0%	
City of Loudon	$166,934	23.8	$180,500	23.8	2.0%	
Sevier County	$7,867,084	38.6	$3,076,600	39.5	-15.4%	
TDOT	$6,500,000	1,833.0	$6,500,000	2,027.7	-2.4%	

Anticipated expenditures associated with operating and maintaining the transportation system were derived by calculating a cost per lane mile and applying this cost to the number of lane miles eligible for federal aid in each jurisdiction. Across all the jurisdictions, the average percent increase in these costs was approximately 3.3% annually between 2015 and 2019. Applying this growth rate, Table E-4 shows the anticipated expenditures required for maintenance activities in each jurisdiction within the TPO area, equating to approximately $1.4 billion over the life of the plan.

Table E-4. Projected Highway O&M Needs

JURISDICTION	2021 – 2026	2027-2035	2036-2045	TOTAL
Anderson County	$15,917,974	$30,587,935	$46,433,035	$92,938,945
City of Clinton	$3,899,758	$7,493,763	$11,375,667	$22,769,188
City of Oak Ridge	$15,431,898	$29,653,891	$45,015,139	$90,100,928
Blount County	$21,706,329	$41,710,821	$63,317,775	$126,734,925
City of Alcoa	$2,305,035	$4,429,349	$6,723,832	$13,458,216
City of Maryville	$3,398,360	$6,530,279	$9,913,081	$19,841,721
Knox County	$38,301,190	$73,599,459	$111,725,301	$223,625,950
Town of Farragut	$4,665,781	$8,965,752	$13,610,173	$27,241,707
City of Knoxville	$59,889,133	$115,082,791	$174,697,744	$349,669,668
Loudon County	$4,846,841	$9,313,677	$14,138,329	$28,298,848
Lenoir City	$2,090,897	$4,017,861	$6,099,186	$12,207,944
City of Loudon	$1,256,975	$2,415,400	$3,666,621	$7,338,997
Sevier County	$21,424,989	$41,170,199	$62,497,102	$125,092,291
TDOT	$45,265,042	$86,981,179	$132,038,992	$264,285,214
TOTAL	**$240,400,203**	**$461,952,356**	**$701,251,977**	**$1,403,604,542**

TRANSIT

As with highways, funding for transit comes from multiple federal, state, and local sources as described below.

Federal

Federal grant programs are the largest source of funding for transit investments. They are included with each reauthorization of the federal surface transportation authorization bill, with the most recent bill, the FAST Act, extended for one fiscal year and scheduled to expire in FY 2021. Projecting federal transit funding will be challenging until a new transportation bill is enacted. In the Knoxville area, Federal Transit Administration (FTA) Section 5307, 5310, and 5339 funds are used to support transit and are described below.

5307 Urbanized Area

FTA provides funding to urbanized areas across the country through its 5307 – Urbanized Area Formula Grant program. Any incorporated area with more than 50,000 in population is eligible to receive these funds. For areas over 200,000 in population, such as Knoxville, a local authority is the designated recipient of these funds, which are distributed from the federal level based on a combination of factors including revenue vehicle miles, passenger miles, population, and population density. The City of Knoxville/Knoxville Area Transit (KAT) is the designated direct recipient of 5307 funds, portions of which are sub allocated to Knox County Community Action Committee (CAC) Transit and the East Tennessee Human Resource Agency (ETHRA). These funds can be used for transit capital expenses and planning activities. Because Knoxville is a TMA with over 200,000 in population, 5307 funds generally cannot be used for transit operations assistance. However, Knox County CAC Transit and ETHRA use some 5307 funding for operations under the special rule established by the FAST Act. For capital projects funded with 5307 dollars, the federal share is typically 80%, though in certain cases where capital expenses are related to modifying vehicles for Americans with Disabilities Act and Clean Air Act compliance, up to 90% of the capital cost can be borne by federal sources.

5310 Enhanced Mobility

FTA also administers the 5310 – Enhanced Mobility of Seniors and Individuals with Disabilities formula funding program. The goal of this program is to provide funds for improving the mobility of seniors and disabled people where existing transportation services may be insufficient, unavailable, or incapable of meeting their specific needs. Similar to the other FTA programs, for areas with more than 200,000 in population, there is a local direct recipient for these funds and allocations are based on a State's share of the senior and disabled population. The Knoxville Regional TPO is the designated recipient of the 5310 funds and is responsible for receiving and administering the funds to appropriate agencies, including private nonprofit organizations, state and local government authorities, and public transportation operators. Funds from the 5310 program can be used for capital and operating assistance with the federal share typically representing 80% and 50%, respectively.

5339 Bus and Bus Facilities

The 5339 – Bus and Bus Facilities program is a combination of two formula allocations and a single competitive grant program that can be used to improve an agency's fleet of transit vehicles through rehabilitation, retrofitting, or replacement and to improve bus related transit facilities. The competitive portion of the program allocates funds based on the age and conditions of vehicles in a fleet as well as the plan for integrating low- or no-emissions vehicles. In Knoxville, the designated recipient for these funds is the City of Knoxville/KAT, which can allocate to subrecipients such as public transit operators, public agencies, and non-profit organizations that provide fixed-route bus transportation. Currently, only KAT provides fixed-route transit services. For most capital projects, the federal share of costs is 80% though in certain cases where capital expenses are related to modifying vehicles for Americans with Disabilities Act and Clean Air Act compliance, the federal share can be more than 80%.

State

The State provides transit funding through TDOT, which covers a portion of the required match for transit projects using FTA funding programs such as those described above. Historically, this amount has equated to half of the non-federal share. State funding for transit programs is contingent on the approval of TDOT's budget each year.

In addition, the 2017 IMPROVE Act created additional state funding for transit through the increase in motor fuel taxes and fees. The additional revenue generated from these sources can be allocated to improve regional transit services across the state to mitigate congestion on the State's highways as well as assist rural transit providers in improving the efficiency of demand-response services. The IMPROVE Act also created a local option for voters in large urban areas to approve dedicated transit funding via referendum.

TDOT also provides the Urban Operating Program (UROP) and the Critical Trip funding to the Knoxville urban area. UROP goes to fixed-route providers and can be used for matching capital funds as well as transit operations. KAT, as the only fixed-route service in the Knoxville TPO area, is the only recipient of the UROP funds. Critical Trip funding is designated for transit services outside the fixed-route provider's service area. Knox County CAC Transit, ETHRA, and the City of Oak Ridge receive Critical Trip funding from TDOT, which can be used for both matching funds and transit operations.

Local

Both the City of Knoxville and Knox County contribute local funding to match state and federal funding sources. The City of Knoxville contributes funding to transit services and improvements, essentially underwriting the KAT budget and making up any unforeseen short-term deficits. Conversely, any revenue surpluses are returned to the City's general fund. Therefore, as KAT's other revenue sources grow, the City's contributions are adjusted accordingly. Knox County also provides funding for transit matches and in-kind services that contribute to the day-to-day operations of the Knox County CAC Transit, such as property for storing fleet vehicles, fueling services and purchasing assistance.

Other Funding Sources

Additional transit funding sources include farebox revenues collected from riders. Regular KAT fares range from $1.50 per ride to $50 for a 30-day pass. ETHRA fares start at $3 for adults and increase with travel distance and the number of stops requested. The Knox County CAC Transit fare is $2. In 2018, the farebox recovery ratio for KAT was approximately 11%, and 2% for Knox County CAC Transit, and 4% for ETHRA.

Discretionary grants are another source of revenue for the region's transit agencies. These grants are relatively unreliable sources of revenue as they are often competitive in nature. However, the Knoxville region's transit providers have been successful over the past decade in securing such funding through programs such as the state's Congestion Mitigation and Air Quality (CMAQ) program. Knox County CAC

Transit and ETHRA both utilize human service contracts, such as TennCare, that help provide additional transit revenues.

In addition, a separate property tax for transit operations and capital can be administered by voter approval.

Revenue Projection

In developing the transit element of the Mobility Plan 2045 financial plan, summary financial data was used to determine historic funding levels for various federal, state, and local funding sources and programs. This data, shown in Table E-5 as well as consultation with representatives from KAT, Knox County CAC Transit, and ETHRA, was used to establish expected funding levels anticipated over the life of the plan. The average annual growth rates presented in this table remove the outlier year (either high or low value) to minimize the impact of one-time funding increases or decreases on the long-term funding outlook for transit operations. Also, the funds used for capital expenditures have varied significantly from year to year, resulting in a relatively high average annual growth rate of 45%. One or two large grant awards can radically change the calculation of annual percent growth. This level of funding increase is unrealistic over the life of the plan. In consultation with the transit providers it was determined a 2.5% growth rate in capital revenue was more realistic over the life of the plan. In addition, it should be noted that the urban area received $18,423,476 in FY2020 Coronavirus Aid, Relief, and Economic Security (CARES) Act stimulus funding. This funding was divided between KAT ($13.3 million), Knox County CAC Transit ($3.6 million), and ETHRA ($1.6 million). Though it is too early to assess the financial impact of COVID-19 on transit's future revenues and expenses, the CARES Act funding will help offset any short-term losses and may even have a positive carryover impact for the next few fiscal years. However, due to its one-time nature, this funding was not included in the revenue tables.

Annual growth rates shown in Table E-6

Table E-6 were used to forecast revenues. A 10% adjustment to these percentages was made in years 2022, 2032, and 2042 to account for anticipated increases in funding based on growth in the urbanized area following each decennial Census, which occurred following both the 2000 and the 2010 Censuses. This process results in the projected revenues for transit operations shown in Table E-6 which equate to over $1.2 billion over the life of the plan.

Table E-5. Historic Transit Revenues

	SOURCE	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	AVERAGE ANNUAL GROWTH*
OPERATING	Federal	$5,422,185	$5,364,492	$4,858,241	$5,652,104	$5,184,311	2.3%
	State	$3,575,565	$4,004,782	$4,357,819	$4,692,560	$4,817,300	6.4%
	Local	$9,339,803	$10,000,625	$10,422,652	$10,953,893	$13,978,474	5.5%
	Fares	$2,483,853	$2,087,818	$1,951,841	$2,419,478	$2,106,094	0.5%
	Other	$2,501,545	$1,919,321	$1,824,792	$2,486,021	$2,977,298	2.7%
	Total Operating	**$23,322,951**	**$23,377,038**	**$23,415,345**	**$26,204,056**	**$29,063,477**	**3.8%**
CAPITAL	FTA	$618,464	$1,898,846	$4,618,138	$3,398,491	$4,007,753	
	TDOT	$77,308	$237,356	$577,267	$424,811	$500,969	45%
	Local	$77,308	$237,356	$577,267	$424,811	$500,969	
	Total Capital	**$773,080**	**$2,373,558**	**$5,772,672**	**$4,248,113**	**$5,009,691**	**45%**

**Note: The average annual growth rates shown are adjusted to remove the outlier year (high or low).*

Table E-6. Projected Transit Revenues

	SOURCE	GROWTH RATE	2021 – 2026	2027-2035	2036-2045	TOTAL
OPERATING	Federal	2%	$36,045,286	$66,660,149	$97,967,362	$200,672,797
	State	3%	$35,852,657	$71,450,167	$115,259,693	$222,562,517
	Local	3%	$94,170,438	$176,602,116	$260,020,167	$530,792,721
	Fares	1%	$12,867,786	$20,801,085	$25,405,665	$59,074,536
	Other	1%	$18,927,937	$30,597,466	$37,370,597	$86,896,000
	Total Operating		**$197,864,104**	**$366,110,983**	**$536,023,484**	**$1,099,998,571**
CAPITAL	FTA	2.5%	$19,042,143	$34,413,771	$48,369,981	$101,825,895
	TDOT	2.5%	$2,380,268	$ 4,301,721	$6,046,248	$12,728,237
	Local	2.5%	$2,380,268	$4,301,721	$6,046,248	$12,728,237
	Total Capital		**$23,802,679**	**$43,017,213**	**$60,462,477**	**$127,282,369**
		Total	**$221,666,783**	**$409,128,196**	**$596,485,961**	**$1,227,280,940**

For the purposes of establishing expenses for transit operations, National Transit Database (NTD) data provided by the three transit agencies was reviewed for 2009 – 2019. Specifically, the sources of operating funds expended, and the summary of operating expenses, were used to determine the average annual growth rates of operating expenses.

Table E-7 shows a 5-year snapshot of operating expenses by agency, which have increased an average of 3.4% annually. However, consultation with the region's transit agencies resulted in an assumed 3% growth rate annually for what was expected to be a more realistic estimation of transit operating expenses.

Table E-7. Historic Transit Operating Expenses

AGENCY	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	AVERAGE ANNUAL GROWTH
KAT	$18,365,496	$19,515,414	$19,547,192	$21,217,233	$22,333,863	3.9%
CAC	$3,394,518	$2,984,764	$2,966,217	$3,071,354	$3,093,432	1.2%
ETHRA	$851,034	$868,340	$993,417	$1,902,509	$2,429,127	14.7%
TOTAL	**$22,611,048**	**$23,368,518**	**$23,506,826**	**$26,191,096**	**$27,856,422**	**3.4%**

To estimate transit capital expenses, each agency's Transit Asset Management (TAM) Plan was reviewed to determine existing vehicle ages and replacement schedules based on their useful life expectancies. Additionally, the cost of retrofitting existing vehicles is also taken into account for KAT trolleys and buses. Average unit costs by vehicle type were provided by the respective transit agencies and were increased by 2.5% annually to determine a Year of Expenditure (YOE) cost for vehicle replacements. The resulting vehicle needs, shown in Table E-8, equate to approximately $205 million in YOE dollars over the life of the plan.

Table E-8. Projected Vehicle Replacement Needs and Capital Costs

AGENCY / VEHICLE TYPE	2021 – 2026		2027-2035		2036-2045	
	Vehicles	Capital Cost	Vehicles	Capital Cost	Vehicles	Capital Cost
KAT						
TROLLEYS	4	$3,680,000	6	$6,000,000	10	$13,750,000
TROLLEY RETROFITS	0	--	3	$562,349	3	$567,972
BUSES	28	$23,233,874	61	$61,144,500	41	$52,246,000
BUS RETROFITS	0	--	39	$6,515,564	32	$5,816,730
MINI-BUS CUTAWAYS	4	$305,238	46	$3,997,455	1	$106,498
KNOX COUNTY CAC TRANSIT						
MINI-BUS CUTAWAYS	35	$2,665,245	64	$5,750,683	70	$7,975,946
VAN/FUSION	7	$243,821	9	$377,486	16	$885,207
PRIUS	4	$117,830	11	$378,743	11	$484,823
ETHRA						
MINI-BUS CUTAWAYS	15	$1,179,239	28	$2,524,566	38	$4,242,843
TOTAL	**97**	**$31,425,247**	**267**	**$87,251,346**	**222**	**$86,076,019**

CONCLUSION

This document outlines the assumptions underlying the financial plan for the Mobility Plan 2045. Specifically, revenues for both highways and transit 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, TDOT, and the region's transit agencies. The financial plan for Mobility Plan 2045 applies these assumptions to future project needs and demonstrates fiscal constraint of the planned spending.