DRAFT

MOBILITYPLAN 2050

KNOXVILLE REGIONAL TPO
MOBILITY PLAN 2050

Knoxville Region Tennessee

March 2025

What's Inside?

(Appendices for this project are available separately)

Thank you!

Thank you to all the organizations and individuals who committed their time, energy, and resources to this effort. This study would not have been possible without their support throughout the process.

TPO Staff
Anderson County
Blount County
Knox County
Loudon County
Sevier County
City of Alcoa
City of Clinton
Town of Farragut
City of Knoxville
City of Lenoir City
City of Loudon
City of Maryville
City of Oak Ridge
East Tennessee Human Resource Agency (ETHRA)
East Tennessee Development District (ETDD)
Knoxville Area Transit (KAT)
Knox County Community Action Committee (CAC)
Federal Highway Administration (FHWA)
Federal Transit Administration (FTA)
Knoxville Knox County Planning
Tennessee Vans
Metropolitan Knoxville Airport Authority

Abbreviations

ADA - *Americans with Disabilities Act*
ATMS - *Advanced Traffic Management Systems*
CAC - *Knoxville-Knox County Community Action Committee*
CFR - *Code of Federal Regulations*
CMAQ - *Congestion Mitigation and Air Quality Improvement Program*
EPA - *Environmental Protection Agency*
ETDD - *East Tennessee Development District*
ETHRA - *East Tennessee Human Resources Agency*
FHWA - *Federal Highway Administration*
FTA - *Federal Transit Administration*
FSI - *Fatal or Severe Injury Crashes*
GIS - *Geographic Informations System*
HIN - *High-Injury Network*
HSIP - *Highway Safety Improvement Program*
ITS - *Intelligent Transportation Systems*
KAT - *Knoxville Area Transit*
LIC - *Local Interstate Connector Program*
LOTTR - *Level of Travel Time Reliability*
MMAG - *Multimodal Access Grant Program*
MPO - *Metropolitan Planning Organization*
MSA - *Metropolitan Statistical Area*
NAAQS - *National Ambient Air Quality Standards*
NHPP - *National Highway Performance Program*
NHS - *National Highway System*
PM - *Performance Measures*
PPP - *Public Participation Plan*
SIA - *State Industrial Access Program*
SIP - *State Improvement Plan*
L-STBG - *Surface Transportation Block Grant Program, Locally Administered*
S-STBG - *Surface Transportation Block Grant Program, State Administered*
STBG-TA - *Surface Transportation Block Grant Program, Transportation Alternatives Set-Aside*
STIP - *State Transportation Improvement Program*
TAC - *Technical Advisory Committee*
TDOT - *Tennessee Department of Transportation*
TIP - *Transportation Improvement Program*
TOC - *Traffic Operations Center*
TPM - *Transportation Performance Management Program*
TPO - *Transportation Planning Organization*
TPWP - *Transportation Planning Work Program*
TRIMS - *Tennessee Roadway Information Management System*
V/C - *Volume-to-Capacity ratio*
YOE - *Year of Expenditure*

01

An introduction to Knoxville TPO

The Knoxville Regional Transportation Planning Organization (TPO) is the federally designated Metropolitan Planning Organization (MPO) for the Knoxville urbanized area. The TPO coordinates transportation planning and improvements across a **six-county area**, shown in Figure 1.1. The TPO boundary was revised following the 2020 Census to adjust for population growth in the region. For more specific information, visit https://knoxtpo.org/about-tpo/tpo-overview/.

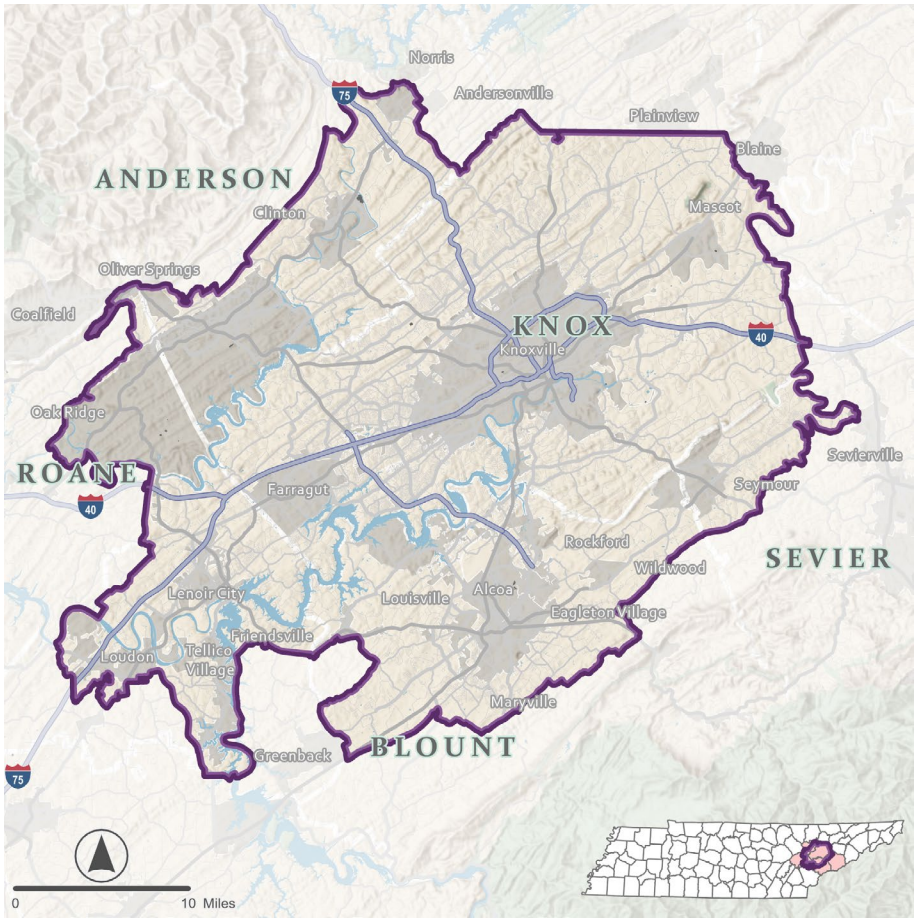


Figure 1.1: TPO Planning area

TPO Governance Structure

EXECUTIVE BOARD

- 17 Voting Members
- 2 Non-Voting Members

Responsible for setting policy and adopting plans and programs.

TECHNICAL COMMITTEE

- 22 Voting Members
- 2 Non-Voting Members

Provide recommendations to the Executive Board for plan and program development.

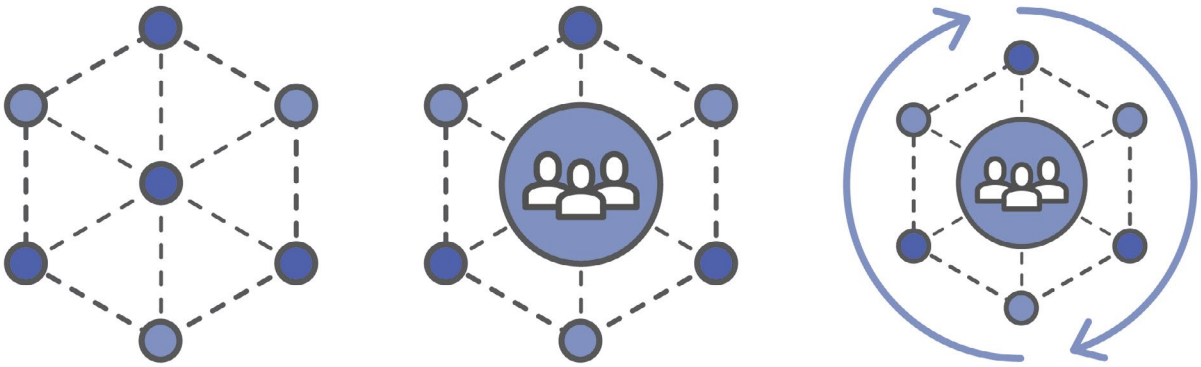
Our Planning Process

Our transportation planning process follows Federal guidance and must be comprehensive, cooperative, and continuing and is summed up in the three major plans and programs:

- The Metropolitan Transportation Plan (MTP);
- The Transportation Improvement Program (TIP); and
- The Transportation Planning Work Program (TPWP).

In addition, a draft copy of the plan was sent to federal and state agencies for review and comment in Spring 2025, during the public comment period.

Improvements to our transportation system are based on Federal guidance for a 3C planning process that is:



1. **COMPREHENSIVE** 2. **COOPERATIVE** 3. **CONTINUING**

Learn more about the 3C planning process:
https://www.transit.dot.gov/regulations-and-guidance/transportation-planning/metropolitan-statewide-non-metropolitan-planning

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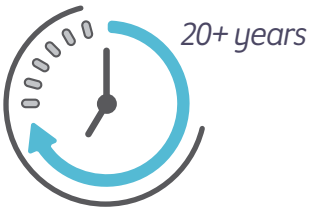
The Mobility Plan, updated every four years, is a key tool for advancing our regional mobility network, coordinating plans with project development and funding opportunities. This update covers a 25-year period, and represents the region's collective long-term goals to fund, operate, maintain, and expand its transportation systems. The TIP represents the highest priority, short-range projects that have identified funding for design and construction. The TPWP identifies the TPO's specific work projects for this year and next, and their costs.

What is the **Mobility Plan 2050**?

Long-Range



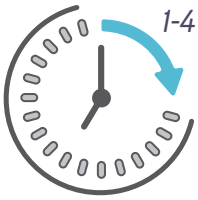
Regulated

Measured

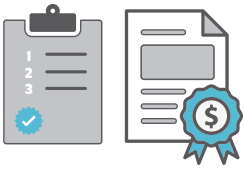
Constrained

What is a **Transportation Improvement Plan**?

Short-Range

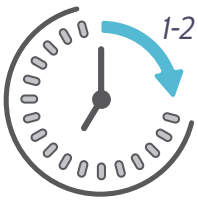


Prioritized & Constrained



What is the **Transportation Planning Work Program**?

Short-Range



Coordinated

Learn more about the MTP, TIP, and TPWP: https://knoxtpo.org/what-we-do/

01

Mobility Plan 2050 Goals & System Performance Report

The previous Mobility Plan (2045) developed a set of eight regional goals. These goals still represent the desires, needs, and priorities of the region and have been carried forward to guide Mobility Plan 2050. Aligned with **federal planning factors**, each of these goals is complemented by a set of objectives and performance measures used to consistently track and report progress in achieving those goals, described on the following page.

FEDERAL PLANNING FACTORS (23 CFR450.306)*:

1. *Economic Vitality*
2. *Safety*
3. *National Security*
4. *Accessibility & Mobility*
5. *Sustainability*
6. *Connectivity*
7. *Efficiency*
8. *Preservation*
9. *Resiliency & Reliability*
10. *Tourism*

Learn more about the USDOT federal planning factors:
https://www.ecfr.gov/current/title-23/chapter-I/subchapter-E/part-450/subpart-C/section-450.306what-we-do/

See how each of these 10 factors relate to the goals below!

GOAL 1: ***Preserve & maintain our existing infrastructure*** — 3, 7, 8

GOAL 2: ***Improve access to services & employment with multimodal projects*** — 4, 6, 7

GOAL 3: ***Reduce crash rates & Fatal or Severe Injury crashes*** — 2, 9

GOAL 4: ***Minimize negative impacts on the environment & people's health*** — 5, 9

MOBILITY PLAN 2050 GOALS RELATE TO:

- Federal Planning Factors
- Performance Measures
- Scenario Planning Performance Indicators

GOAL 5: ***Connect communities to opportunities & services throughout the region*** — 1, 4, 6

GOAL 6: ***Use our system more efficiently through technology*** — 3, 7

GOAL 7: ***Preserve the natural & cultural areas that make our region unique*** — 5, 10

GOAL 8: ***Improve intermodal connections to help move freight to & through the region*** — 4, 6, 7

The TPO supports TDOT performance measures and targets as part of the federal Transportation Performance Management Program (TPM). Our system performance reporting consists of trend data and targets called Performance Measures (PMs) that track performance over time. We also track safety (PM1) and emissions (PM3: CMAQ) performance measures for the Knoxville region relative to our own targets.

Table 1.2: Knoxville TPO performance measures and targets

	Performance Measure	TDOT Statewide Baseline	TDOT Target	TPO Regional Baseline	TPO Regional Target
PM 1: Safety (Set Annually, 5-Year Rolling Average)	Number of Fatalities	1,263.2	1,321.2	101.4	110.2
	Fatality Rate per 100 Million Vehicles-Miles Traveled	1,541	1.418	1.087	1.157
	Number of Serious Injuries	5,812.6	5,995.6	518.0	483.0
	Serious Injury Rate per 100 Million Vehicle-Miles Traveled	7.090	7.251	5.573	5.074
	Number of non-Motorized fatalities and serious injuries	602.2	670.9	49.8	45.8
PM2: Infrastructure Condition (4-Year Performance Period)	% of interstate pavement in good condition	70.8%	58.0%	--	--
	% of interstate pavement in poor condition	0.2%	1.0%	--	--
	% of non-interstate NHS pavement in good condition	40.3%	36.0%	--	--
	% of non-interstate NHS pavement in poor condition	4.1%	6.0%	--	--
	% of NHS bridges classified in good condition	32.5%	32.0%	--	--
	% of NHS bridges classified in poor condition	5.0%	6.0%	--	--
PM3: Reliability (4-Year Performance Period)	% of reliable person-miles traveled on the Interstate	92.1%	87.0%	--	--
	% of reliable person-miles traveled on the non-interstate NHS	93.4%	87.0%	--	--
	Truck Travel Time Reliability Index (TTTR)	1.32	1.55	--	--
PM3: CMAQ (4-Year Performance Period)	Peak Hour Excessive Delay per Capita	--	--	10.1	12.0
	% Non-Single Occupancy Vehicle	--	--	17.8%	21.0%
	Emission Reductions: PM2.5	10.480	0.009	--	--
	Emission Reductions: NOx	226.196	226.196	--	--
	Emission Reductions: VOC	54.772	54.772	--	--

Note: Compiled from TDOT and TPO sources. TDOT Transportation Performance Management - https://www.tn.gov/tdot/strategic-planning-home/transportation-performance-management.html

Only Knoxville TPO and Memphis MPO are subject to these Emissions PMs.

01

Public Engagement Process

Outreach for this plan targeted key groups: regional stakeholders, the public, and the TPO Technical Committee and Executive Board. Regional stakeholders include local government and community representatives. Outreach with targeted communities included specific efforts to inform and engage traditionally underserved communities, including hosting open house events at the Knoxville Area Transit (KAT) station, John O'Connor Senior Center, and Blount County Library. The TPO's Technical Committee and Executive Board were updated throughout the process so that the plan reflects the needs and priorities of the region. In addition, the TPO's federal and state planning partners provided guidance throughout plan development.

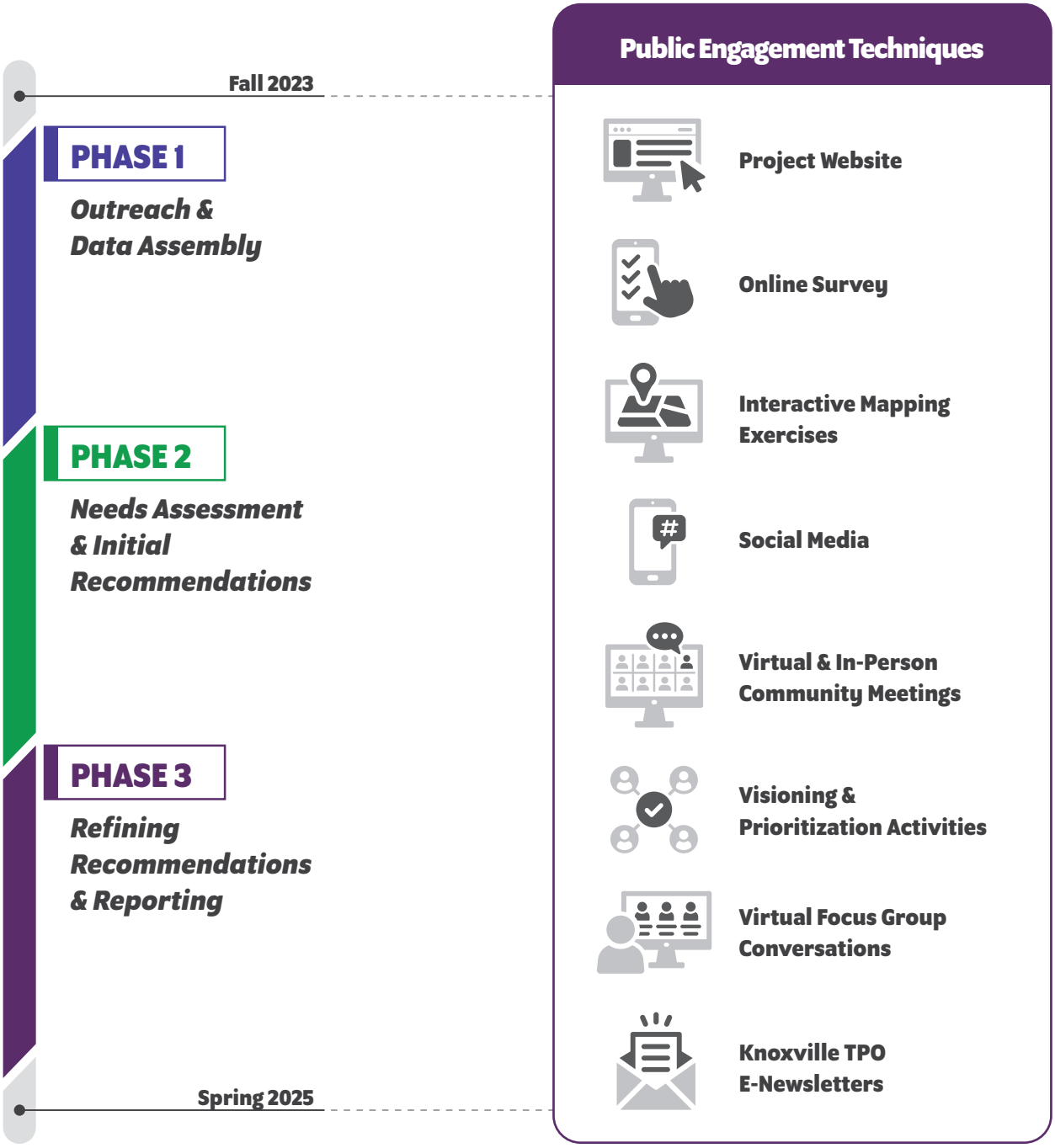


Figure 1.3: Project timeline and public engagement techniques

Public Engagement and Outreach

Public Engagement was a key driver in informing the Mobility Plan Update process. Reaching out to regional community members and stakeholders, including businesses and public organizations, gave the TPO opportunity to listen first to understand the needs, priorities, and concerns of those who live and work in the region. This process was carried out through a diverse set of engagement techniques between fall 2023 and fall 2024.

Large turnout for Open House #2

Open House engagement

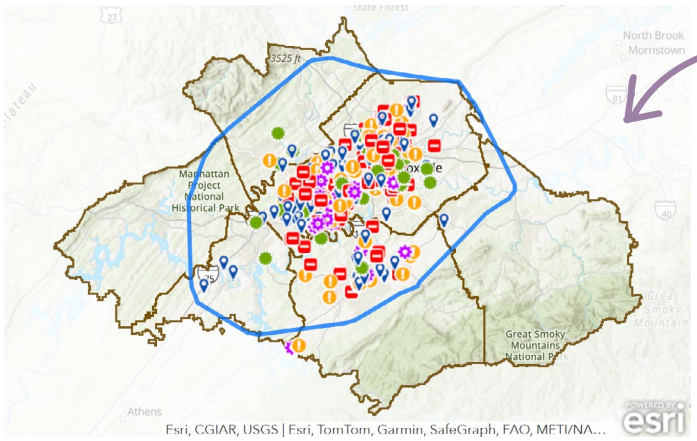


Figure 1.4: Interactive Map with comments

Public Engagement Statistics

6 community meetings
(2 virtual and 4 in-person)

- 100+ community members involved throughout.

Project Website

- 595 unique visitors and 703 total interactions.

Focus Groups

- 84 attendees from 54 organizations across the region.

Online Survey

- 772 online survey participants who identified traffic congestion, lack of multimodal options, and a need for more frequent transit service as most critical transportation issues.

Interactive Mapping

- 500 points of interest identified, with top concerns noted as congestion issues, barriers to walking and biking, and safety hazards.

E-Newsletter

- 2,449 recipients outlining project goals and how to get involved and share feedback.

02

How are we doing?

The Knoxville TPO is responsible for planning the multimodal transportation network in the Knoxville region. Understanding our community, our transportation systems, and how our systems meet or fail to meet community needs, as well as future trends, is critical to a comprehensive process and an effective mobility network.

Demographics

16%

More People

2022 Population: 925,000 → **2050 Population 1.1 Million**

Tennessee, including the Knoxville Region, seeing much higher In-Migration than previous years.

More than half of region's growth will occur in Knox County.

32%

More Employment

More than 250,000 new employment opportunities by 2050.

Highest growth rate in the Service Industry.

Highest-Growth

Counties

Sevier	Loudon	Blount
+36%	+32%	+25%

Increased growth in rural areas is evident through twice as many building permits issued outside of the City of Knoxville than inside.

Median Age

40	39	38.9
Knoxville MSA 2022	Tennessee 2022	United States 2022

20-24 Age Group

2040 boom in younger residents (Knoxville MSA)

Children of Millennials reaching adulthood will increase.

By 2040, population in all age groups much larger, with more people living longer.

$323,000

Median Single-Family Home Sale Price

Knoxville MSA (2023)

Knox County alone is averaging more than 1,100 residential lots per year over the last decade.

Data Sources: Knoxville-Knox County Development Activity Report (2023); Knoxville Area Facts & Figures (2024); Woods & Poole Economics, Inc

Priority Population Analysis

Knoxville and Knox County identify transportation-disadvantaged and socially vulnerable populations using a priority populations analysis, which considers 27 socioeconomic indicators in total, notably: income, poverty, education, disability, limited English proficiency, age, minority status, along with social determinants of health and accessibility. The priority population analysis for Knoxville-Knox County has been on-going since 2013, highlighting its importance to the region.

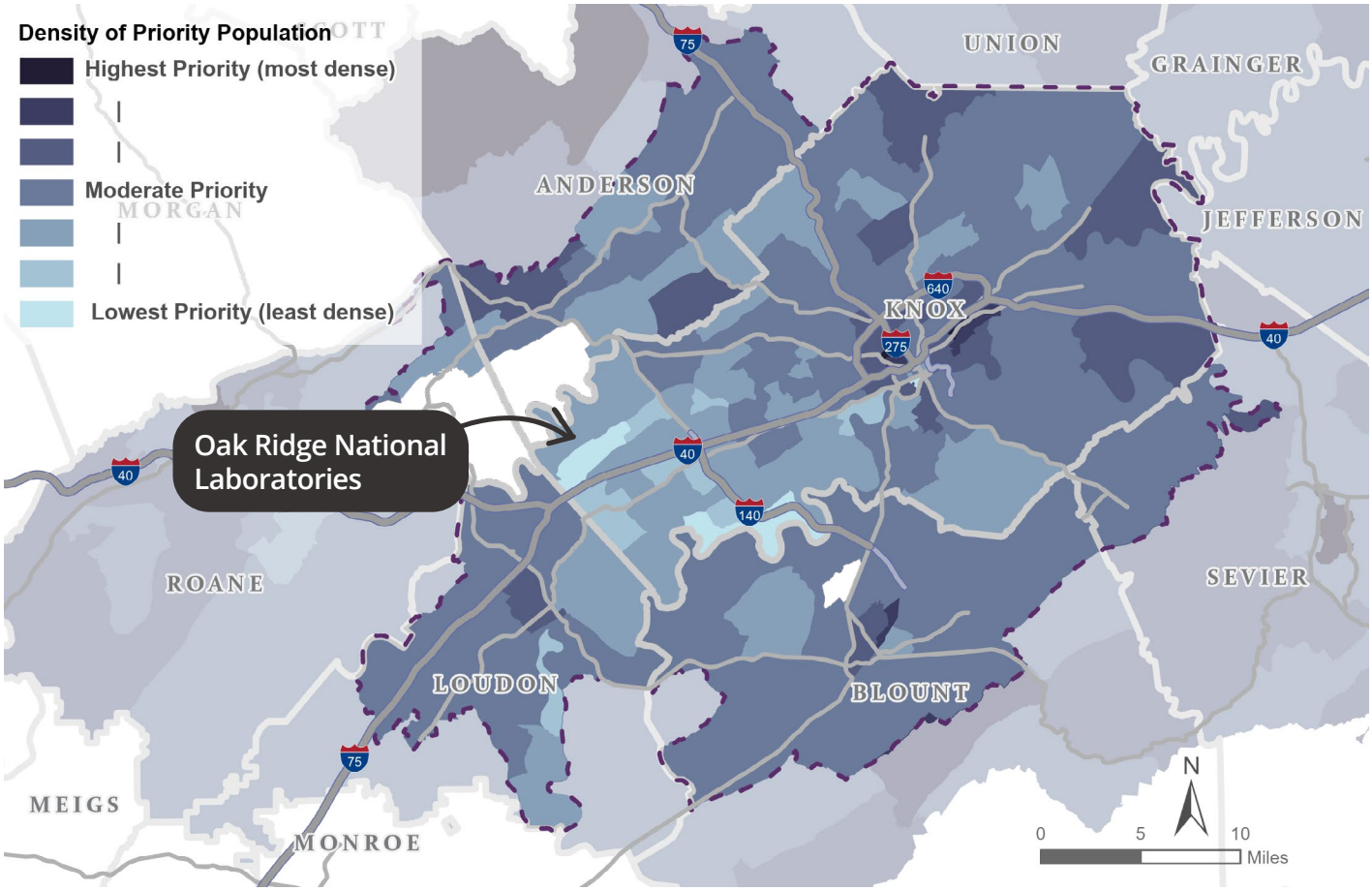


Figure 2.1: Priority Population Analysis Map

Data Source: Knoxville-Knox County Planning - Priority Populations - https://knoxplanning.org/data

Natural Resources

The East Tennessee region is rich with natural resources that support its outdoor adventure tourism. Major waterways like the Tennessee River contribute to both recreation and interstate commerce, while the Great Smoky Mountains is a driver of tourism and a center for employment.

Land use and the natural environment have regional impacts that are important to the transportation system. Efficient development of land will conserve our natural resources like air or water quality, while also attracting new employers and jobs to the region, expanding mobility options like walking or biking, and retaining young professionals who are seeking an active outdoor lifestyle.

Great Smoky Mountains National Park

Sharps Ridge

Tennessee River

Melton Lake Greenway

Land Use

Land use in the region varies greatly depending on context. Knoxville, as a central city, is urban, but the predominant land uses within the region reflect a rural and transitional character outside of the urban core. Growth and development within the region is still focused on rural and suburban areas.

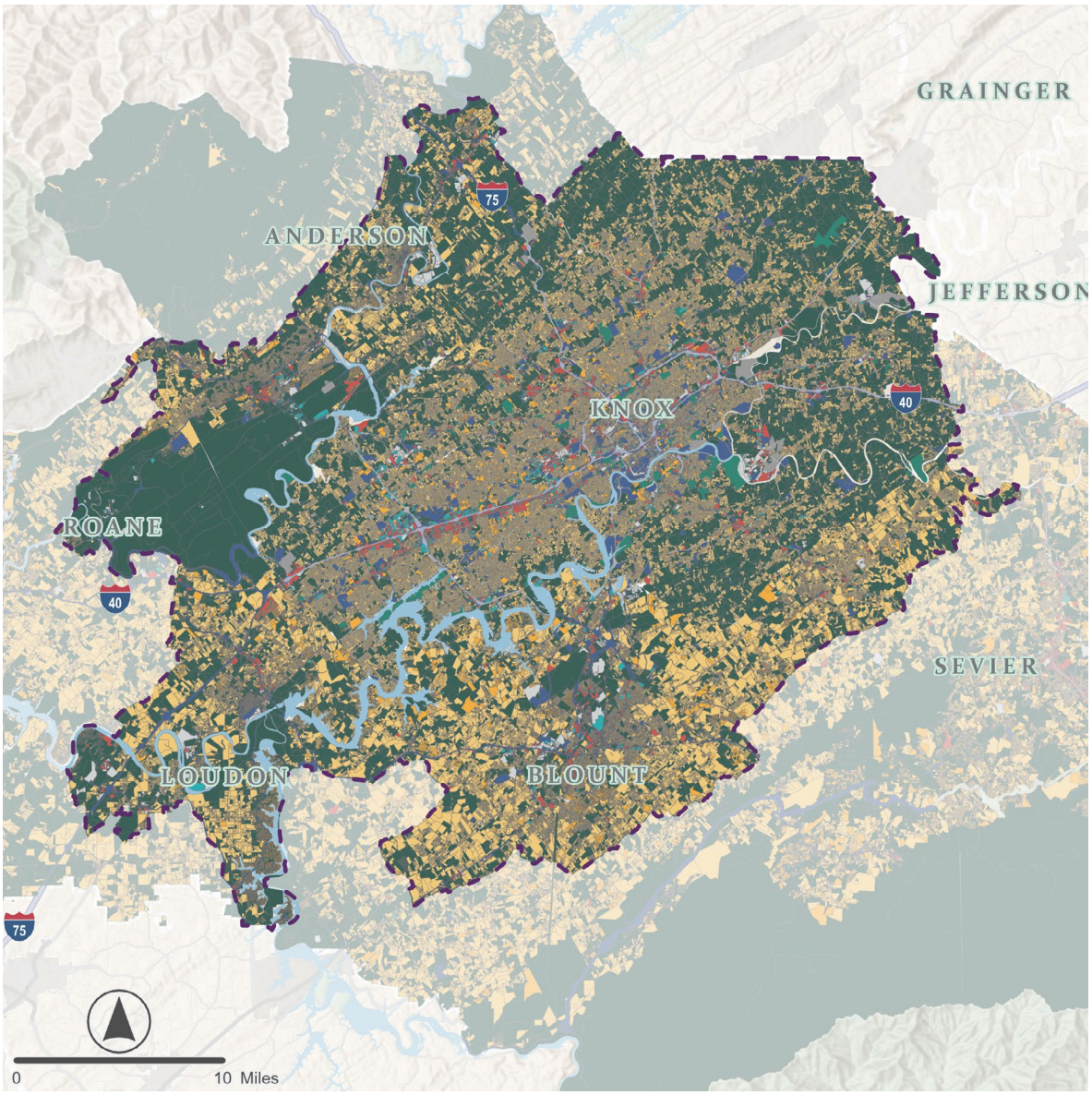


Figure 2.2:
Existing Land Uses in the Region

Data Sources:
TN Property Assessment (Comptroller of the Treasury); Knoxville-Knox County Planning

LAND USES IN THE KNOXVILLE REGION

- 43% Agriculture / Forestry / Vacant Land
- 27% Single Family Residential
- 4% Water
- 3% Transportation / Utilities / Right-Of-Way
- 3% Public Parks / Open Spaces
- 2% Commercial
- 1% Office
- 1% Industrial Manufacturing / Mining

Employment

Employment and economic trends are also important considerations. The regional economy has continued its shift from industrial to majority retail and service sector employment. Manufacturing continues to increase within the region however, making up approximately 11% of all employment.

By 2050, employment will grow within the region, impacting where we work and how we move around.

Top Employment Sectors

Health Care & Social Assistance:
14%

Retail & Trade:
12%

Manufacturing:
11%

Accommodation & Food Services:
9%

Educational Services:
8%

Administration & Support:
8%

Data Source: Bureau of Labor and Statistics

2050 Trends

Overall Employment:
+208,000 Jobs

Percent change, employment growth:

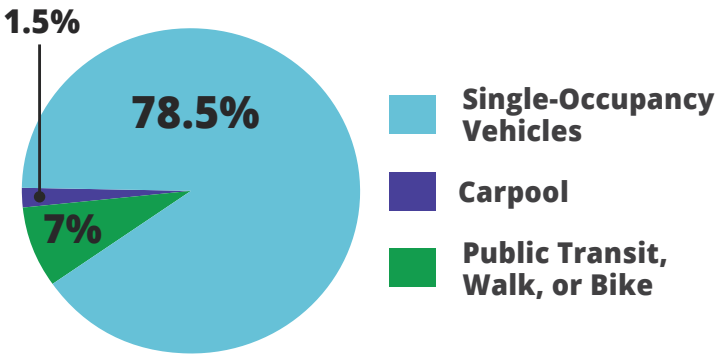
- Sevier County (+61%)
- Blount County (+52%)
- Knox County (+39%)

Data Source: Woods & Poole Economics

Commuting Patterns

Sevier, Anderson, and Blount Counties are secondary hubs for labor, reflecting the influence of larger communities like Oak Ridge (north), Alcoa (south), and Maryville (south).

COMMUTER CHARACTERISTICS FOR THE KNOXVILLE METROPOLITAN AREA



24.4 Minutes
average travel time to work

72%
work in their county of residence

17.5%
have one or fewer vehicles available

Data sources: ACS 5-Year 2019 - 2023,US Census Bureau

KNOX COUNTY COMMUTING PATTERNS (2021)

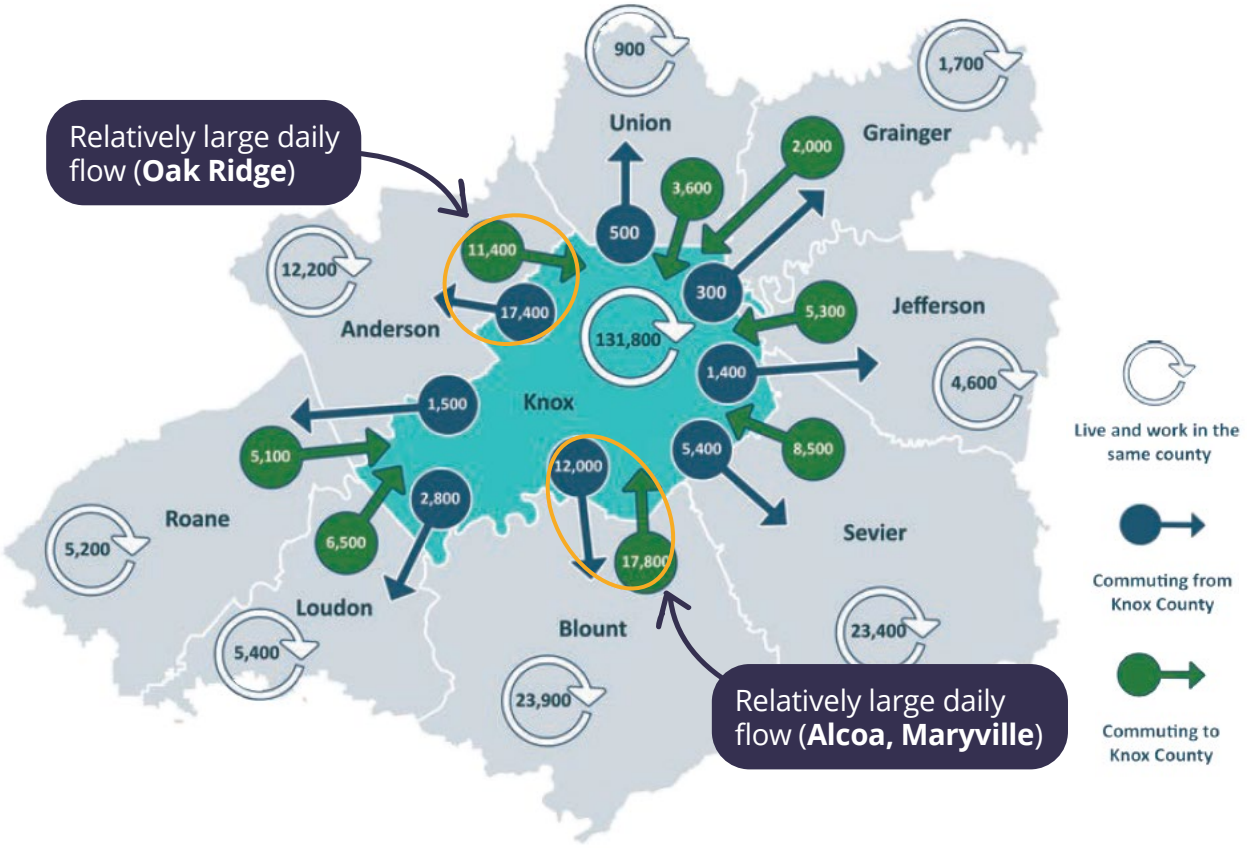


Figure 2.3: Knoxville Region Commuting Patterns Map
Data Source: Knoxville Area Facts and Figures (2024)

Roadways & Freight Movement

The Knoxville region is located at the juncture of major national and regional roadway networks. I-40 and I-75 converge between Lenoir City and downtown Knoxville and drive interstate activity, including substantial freight movement. Sections of both interstates are designated as smart corridors. TDOT's SMART Corridor program takes a comprehensive approach to managing existing infrastructure and improving travel time reliability along major roadways. Other key roadways include US 11, US 441 and US 25W. Local roads account for a majority (72%) of roadway miles in the region.

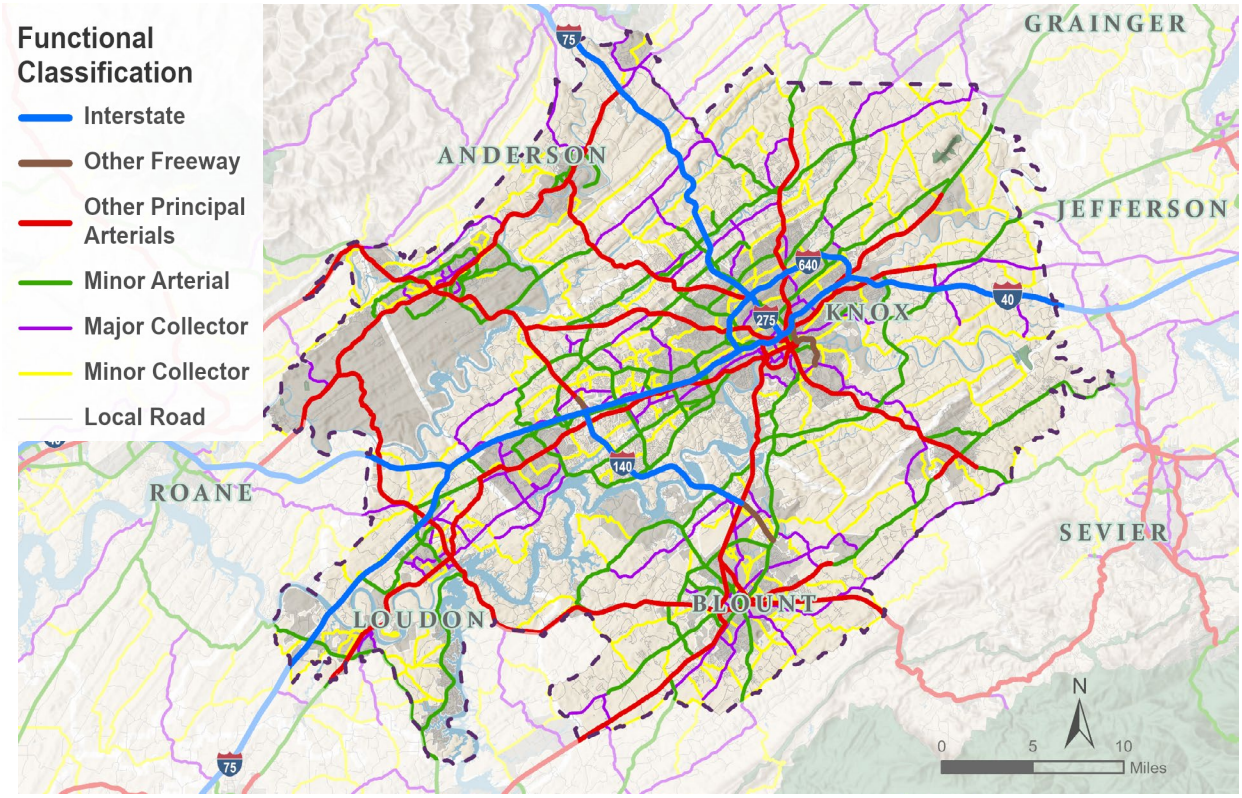


Figure 2.4: Functional Classification of Roadways
Data Source: Federal Highway Administration (FHWA)

100 Miles
Interstate Roads
1.8% of Total Roads

7.5 Miles
Other Freeways
0.1% of Total Roads

610 Miles
Arterial Roads
11% of Total Roads

844 Miles
Collector Roads
15% of Total Roads

4,067 Miles
Local Roads
72% of Total Roads

5,628
Total Miles

Assessing our Performance: Roadways

Condition of roadways and bridges vary. A small number (1%) of interstate road miles, and 6% of national highway system road miles, are in poor condition. Of the 912 bridges in the region, 2.1% are in poor condition. These bridges primarily are road crossings, and are distributed throughout the planning area.

Check out **Page 4** of this report to learn more.

	Performance Measure	TDOT Statewide Baseline	TDOT Target
PM2: Infrastructure Condition (4-Year Performance Period)	% of interstate pavement in good condition	70.8%	58.0%
	% of interstate pavement in poor condition	0.2%	1.0%
	% of non-interstate NHS pavement in good condition	40.3%	36.0%
	% of non-interstate NHS pavement in poor condition	4.1%	6.0%
	% of NHS bridges classified in good condition	32.5%	32.0%
	% of NHS bridges classified in poor condition	5.0%	6.0%

Figure 2.5: Performance Measure 2 - Regional infrastructure condition

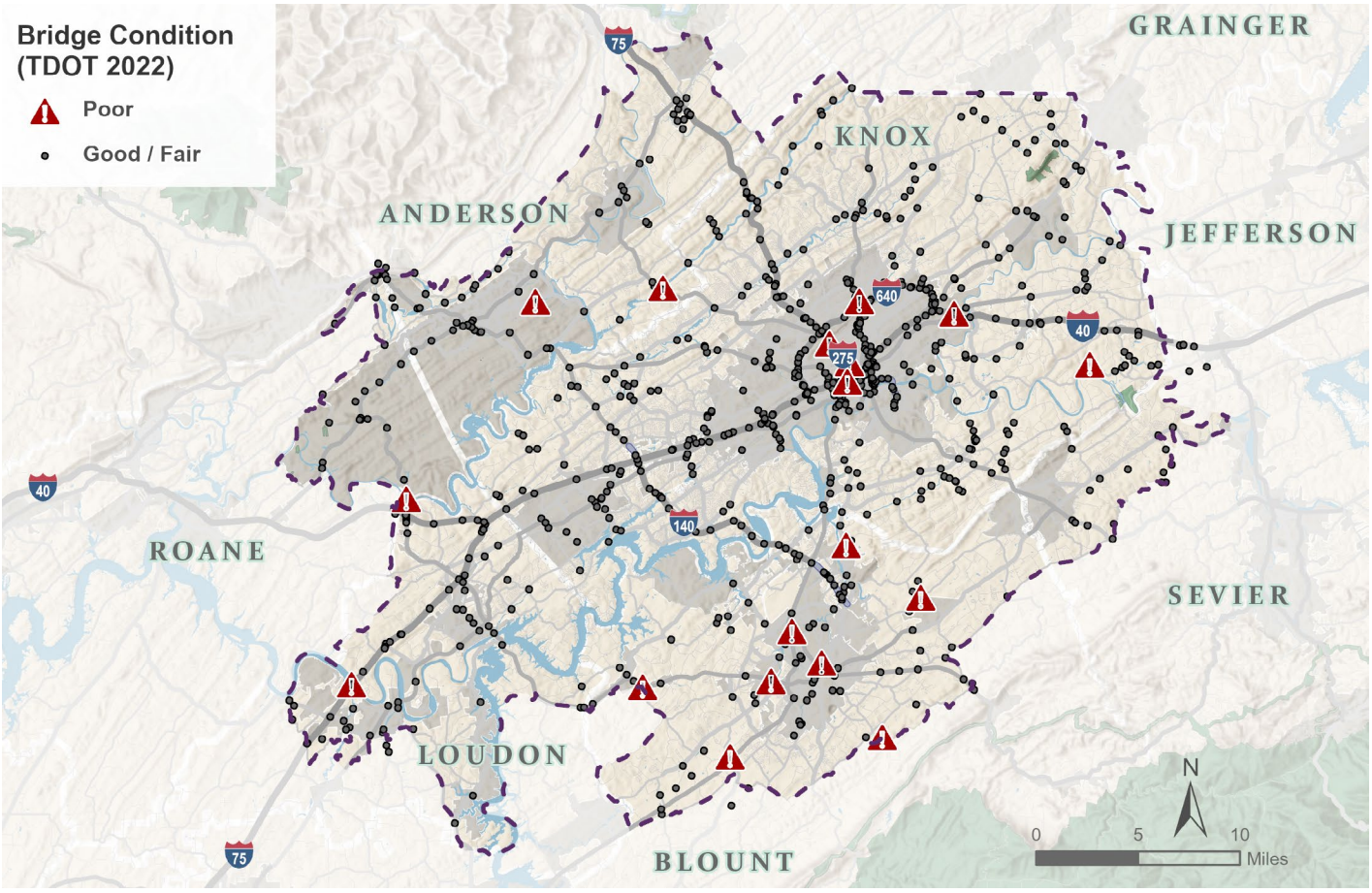


Figure 2.6: Knoxville Region Bridge Conditions

02

Assessing our Performance: Freight

Freight movement is a critical component of regional commerce and travel. Congestion on major freight routes can create bottlenecks and delay, which hurts commerce and contributes to unnecessary emissions. Roadways with high levels of delay include I-40, US 70/Kingston Pike, and TN-62/Western Ave.

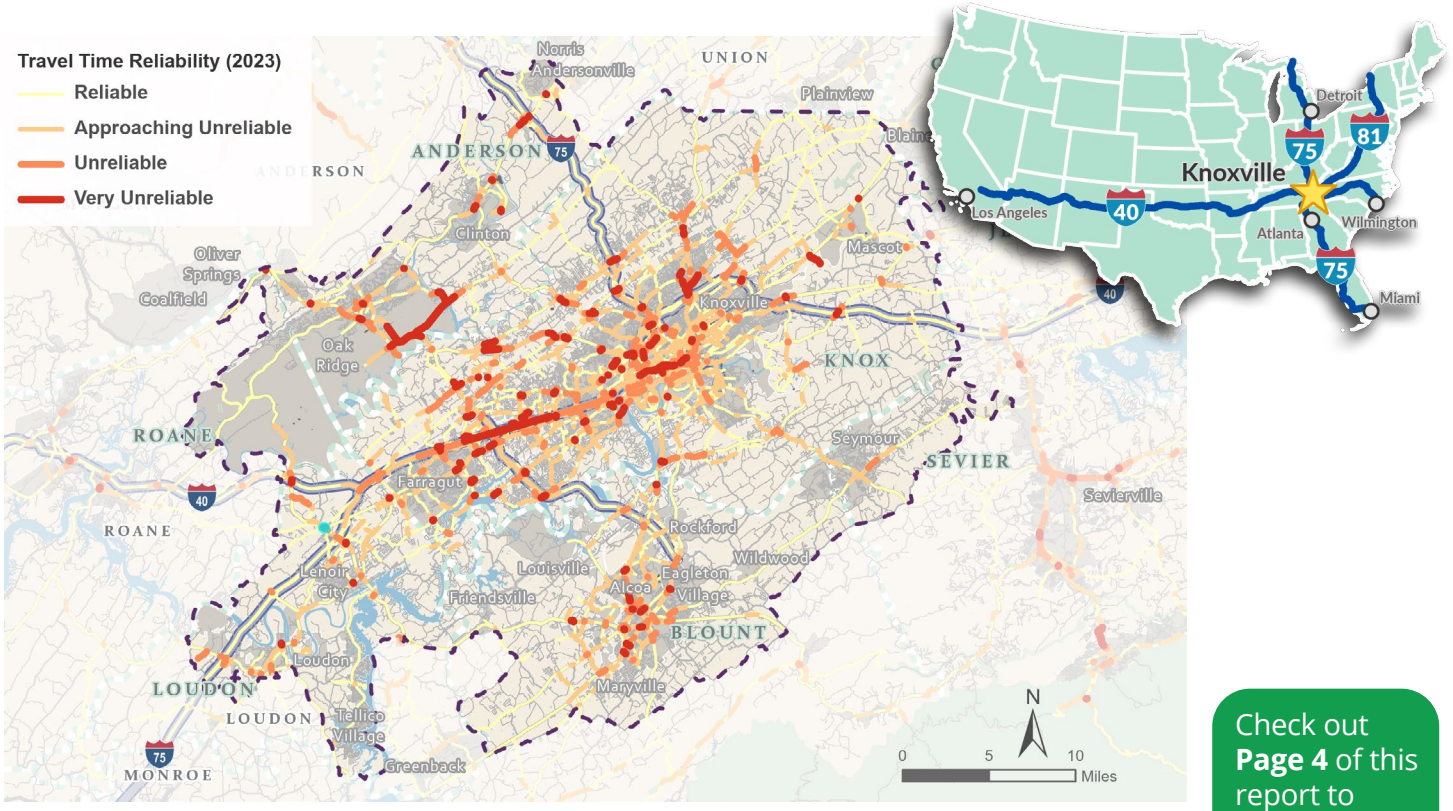


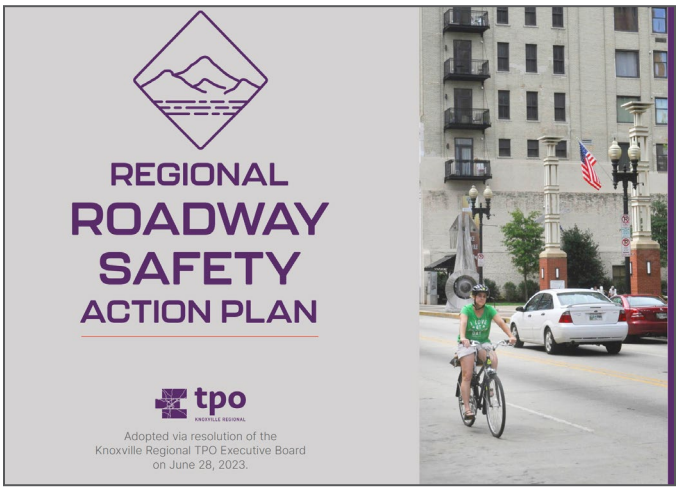
Figure 2.7: Freight Delay/Reliability
Data Source: INRIX-XD from National PM Roadway Dataset

Check out **Page 4** of this report to learn more.

	Performance Measure	TDOT Statewide Baseline	TDOT Target	TPO Regional Baseline	TPO Regional Target
PM3: Reliability (4-Year Performance Period)	% of reliable person-miles traveled on the Interstate	92.1%	87.0%	--	--
	% of reliable person-miles traveled on the non-interstate NHS	93.4%	87.0%	--	--
	Truck Travel Time Reliability Index (TTTR)	1.32	1.55	--	--
PM3: CMAQ (4-Year Performance Period)	Peak hour excessive delay per capita	--	--	10.1	12.0
	% Non-signal occupancy vehicle	--	--	17.8%	21.0%
	Emission reductions: PM2.5	10.480	0.009	--	--
	Emission reductions: NOx	226.196	27.808	--	--
	Emission reductions: VOC	54.772	30.854	--	--

Table 2.8: Performance Measure 3 - Travel time reliability and overall emissions

Assessing our Performance: Safety



Roadway safety is both a local and national concern. The TPO's recently completed Regional Safety Action Plan (2023) identifies a high-injury network (HIN): roadways that bear a disproportionate amount of fatal or severe injury (FSI) crashes. In Knoxville, the HIN represents 5% of non-interstate road miles but 63% of severe crashes. Regionally, 1.7% of roadways account for 29% of crashes. The region has a higher rate of FSI crashes than other regions in Tennessee (averaging 494 per year), although total crashes have declined 22% since 2019.

Check out **Page 4** of this report to learn more.

	Performance Measure	TDOT Target (2023)	TPO Target (2024)	Status (TDOT)	Status (TPO)
PM1: Safety (Set Annually, 5-Year Rolling Average)	Number of fatalities	1,263.2	1,321.2	101.4	110.2
	Fatality rate per 100 million vehicles-miles traveled	1.541	1.418	1.087	1.157
	Number of serious injuries	5,812.6	5,995.6	518.0	483.0
	Serious injury rate per 100 million vehicle-miles traveled	7.090	7.251	5.573	5.074
	Number of non-motorized fatalities and serious injuries	602.2	670.9	49.8	45.8

Table 2.9: Performance Measure 1 - Safety along our roadways

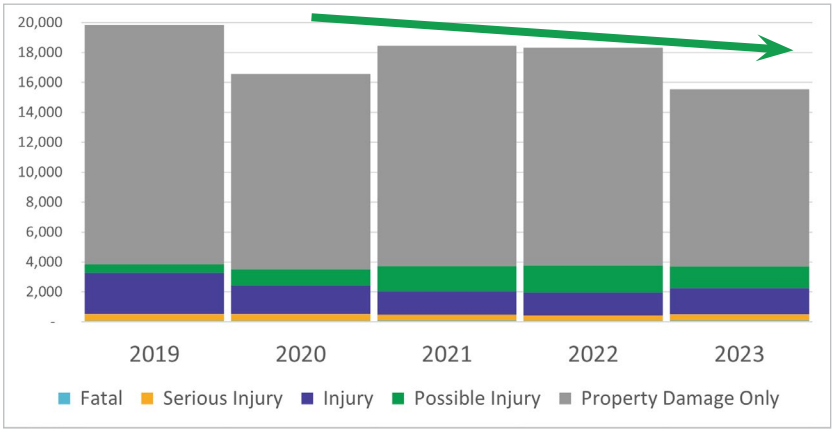


Figure 2.10: Crashes by Year

2019
19,847 crashes

2023
15,557 crashes

22% DECREASE
Total crashes has been trending downward.

While the region has over 5,500 miles of roads, some are more heavily traveled than others. I-40, I-75, US 25W, TN-162 / Pellissippi Parkway, and US 129 each carry volumes in excess of 20,000 vehicles per day, moving travelers to and through Knoxville and Knox County. Due to geographic constraints, few roadways support movement from northwest to southeast, with narrow, steep ridges limiting connectivity. Over the past five years growth in traffic has not been uniform. Regional arterials outside of Knoxville and Knox County have seen the greatest increases in traffic volumes, reflecting population growth trends for the region. These include US 129/SR 15 in Maryville, US 129/Alcoa Highway in Alcoa, and SR 62/S Illinois Avenue in Oak Ridge.

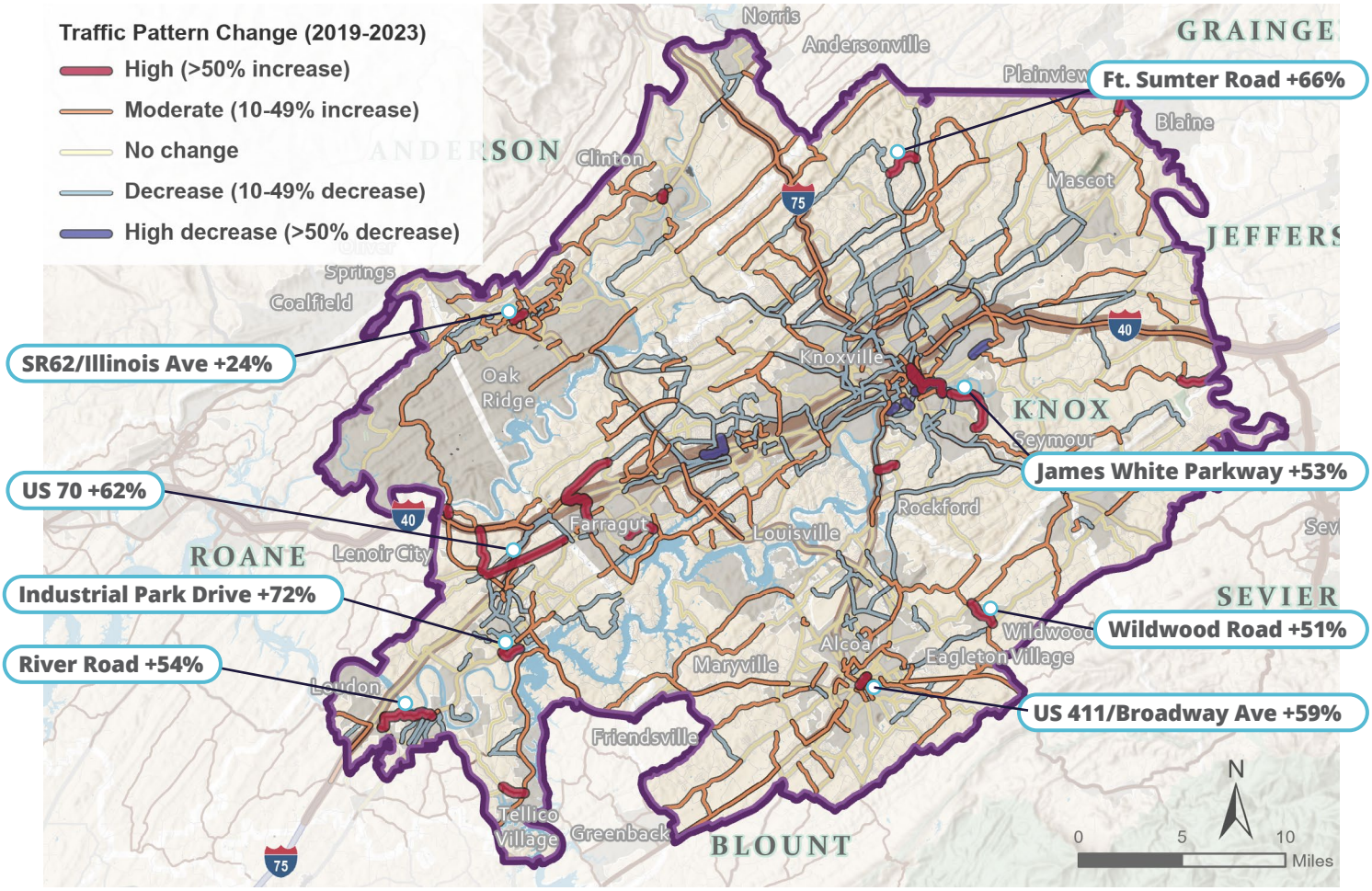
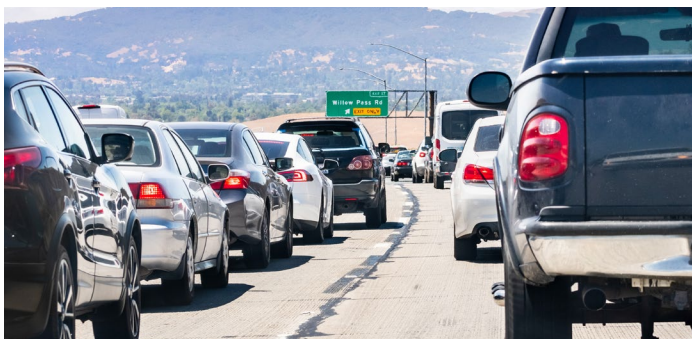


Figure 2.11: Traffic Volume Change, 2019-2023
Data Source: TDOT Data Visualization Office



> ***"Old US 411 is too busy & congested everywhere in Blount County. The older and smaller roads are in need of maintenance."***
>
> *- Public Meeting Attendee*

Bicycle and Pedestrian Network

There were 152 new miles of sidewalks constructed since the Mobility Plan 2045, growing the regional network to 1,072 miles of sidewalks, approximately 20% of all roads in the planning area. The City of Knoxville remains the predominant location of these facilities, approximately half of all sidewalks are found in the City of Knoxville. Farragut (60% of roads) and Oak Ridge (49% of roads) have the most complete sidewalk networks.

Pedestrian Network

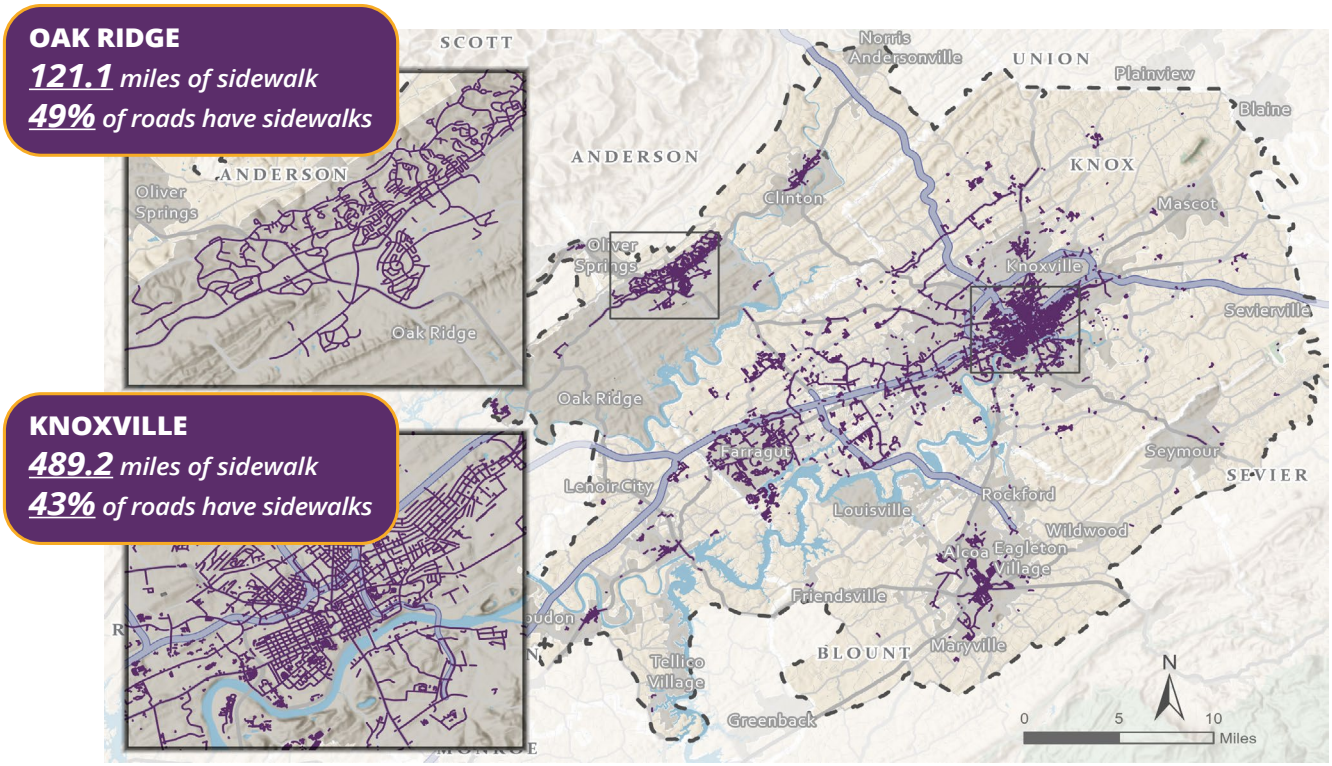


Figure 2.12: Sidewalks in the Knoxville Region
Data Source: Knoxville Regional TPO

City/Town	Miles of Sidewalk	Sidewalk per Miles of Road
Knoxville	489.2	43%
Oak Ridge	121.1	49%
Farragut	89.4	60%
Maryville	69.2	37%
Alcoa	43.1	39%
Clinton	22.2	25%
Lenoir City	17.5	22%
Loudon	12.5	19%

City/Town	Miles of Sidewalk	Sidewalk per Miles of Road
Seymour	3.0	n/a
Oliver Springs	2.6	n/a
Tellico Village	0.8	n/a
Mascot	0.8	n/a
Friendsville	0.4	2%
Louisville	0.1	~1%
Unincorporated Area	200.4	n/a

Table 2.13: Miles of Sidewalk by Municipality

Bicycle Network

Nearly 14 miles of new bike facilities have been constructed in the same time period, growing the network to 83 miles of bike lanes and 131 miles of greenways / shared-use paths. Similar to sidewalks, nearly half of these facilities are found in Knoxville. Major greenways include the Melton Hill Greenway Trail in Oak Ridge, Third Creek Greenway in Knoxville, and the Alcoa Greenway Trail in Alcoa.

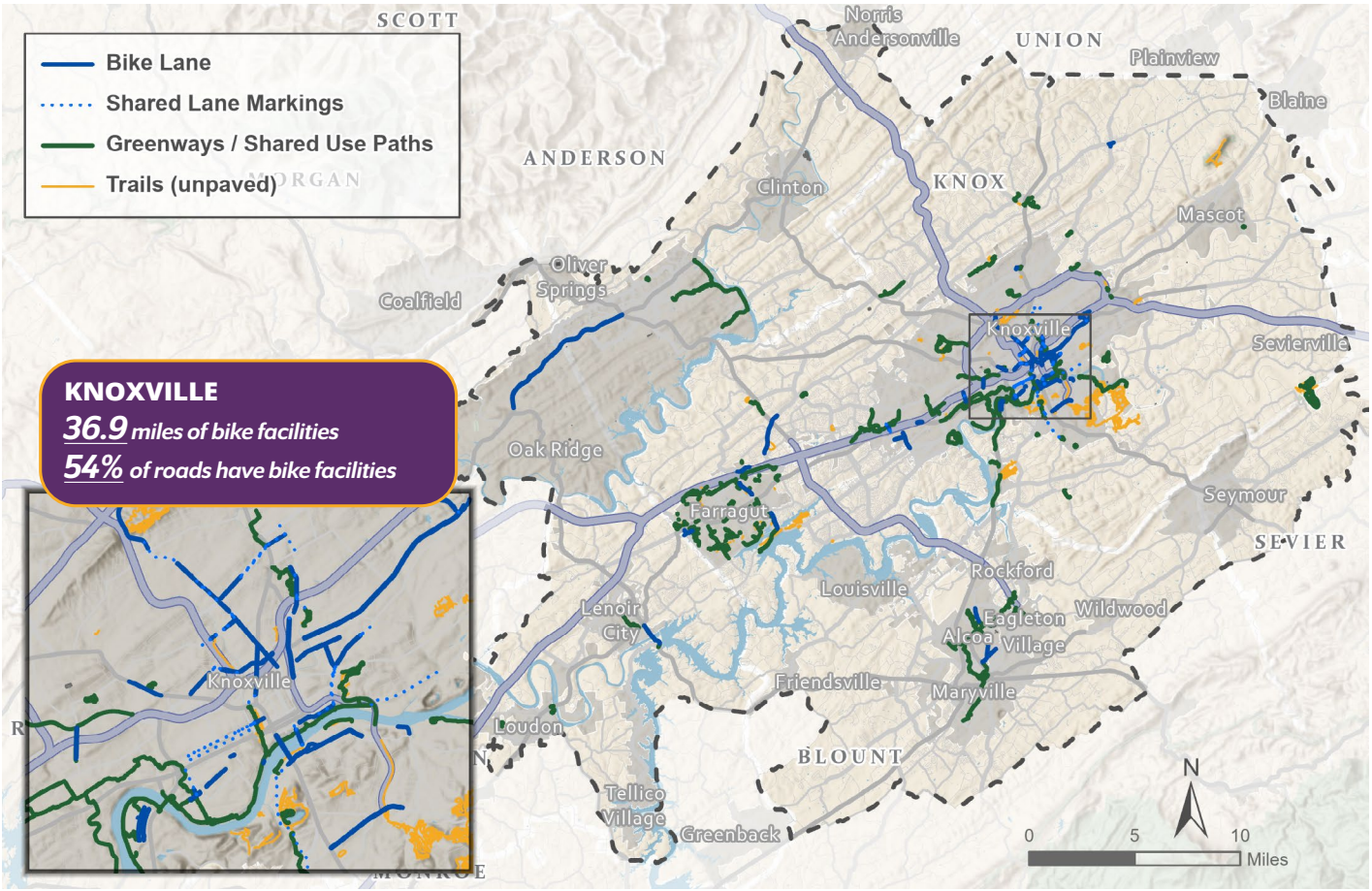


Figure 2.14: Bike Facilities in the Knoxville Region
Data Source: Knoxville Regional TPO

City/Town	Miles of Bike Facilities	Miles of Greenway	Miles of Trails *(unpaved)*
Knoxville	36.9	56.2	141.1
Oak Ridge	14.5	9.4	--
Lenoir City	17.5	3.0	--
Farragut	5.6	21.0	23.9
Knox County	4.6	19.5	50.7
Alcoa	4.2	16.9	--
Clinton	0.6	--	--

Table 2.15: Miles of Bike Facilities by Municipality

Crashes involving non-motorized users have remained relatively constant from 2019 to 2023, averaging 140 annually. While only 3% of total crashes result in a death or serious injury, however, 31% of bike/pedestrian crashes result in a death or serious injury. Figure 2.16 shows the distribution of bike and pedestrian crashes in our region, and Table 2.17 displays the crash severity trend.

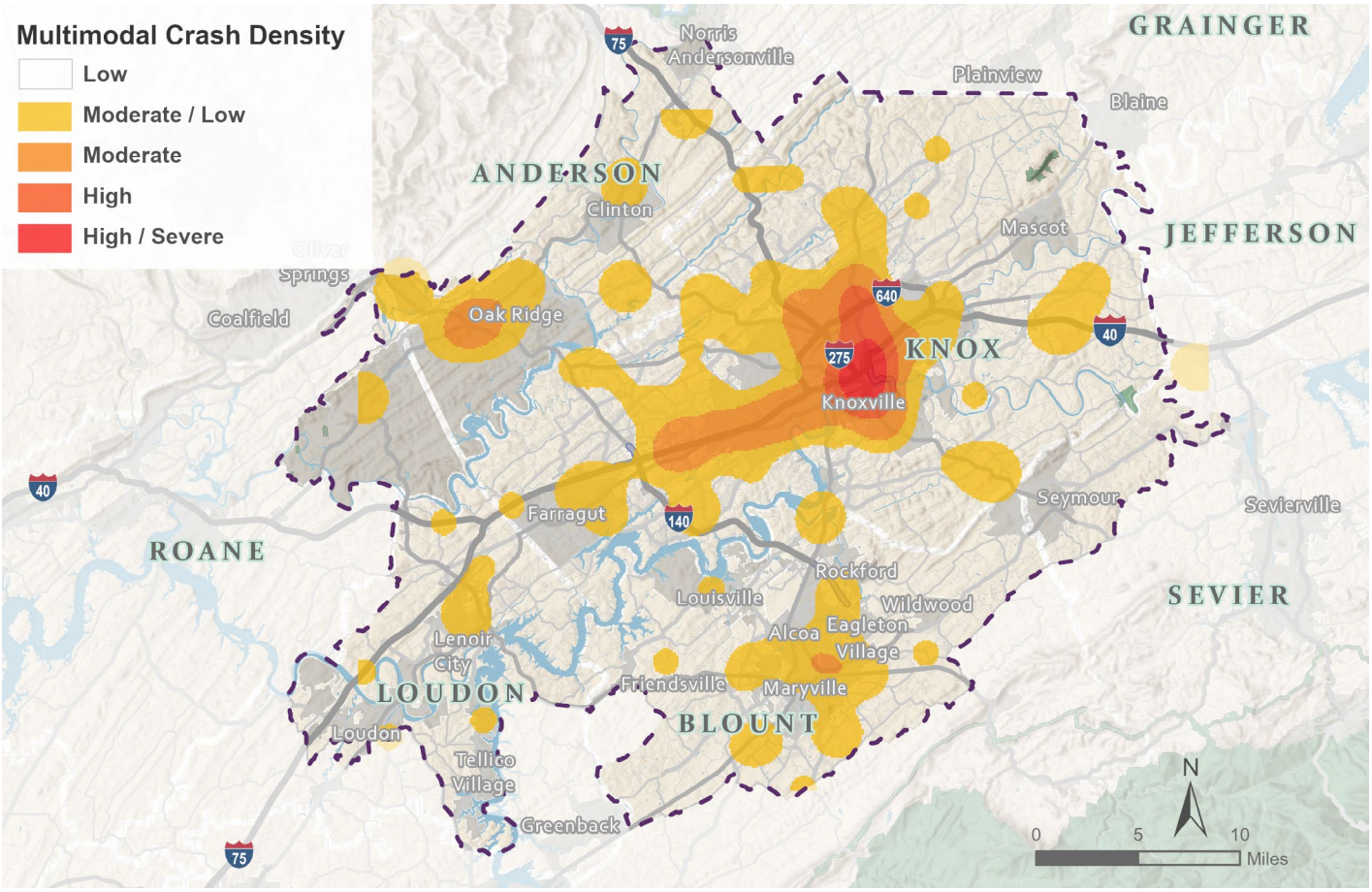


Figure 2.16: Crash Severity, Bike & Pedestrian Crashes
Data Source: TDOT AASHTOWare project

Year	Total Crashes	Fatal Crash (K)	Severe Injury Crash (A)	Minor Injury Crash (B)	Possible Injury Crash (B)	Property Damage Only (PDO)
2019	**146**	10	26	81	14	15
2020	**141**	14	**36**	53	26	12
2021	**120**	12	31	31	30	16
2022	**162**	**14**	35	55	45	13
2023	**136**	13	26	50	30	17

Table 2.17: Crash Severity, Bike & Pedestrian Crashes

02

Public Transit Services in the Knoxville Region

Within the TPO planning area there are a variety of public transportation services. The following agencies are the primary providers of these services: (1) Knoxville Area Transit (KAT), (2) Knox County Community Action Committee (CAC) Transit, and (3) the East Tennessee Human Resource Agency (ETHRA). The Map below shows the service areas of these providers in the TPO area.

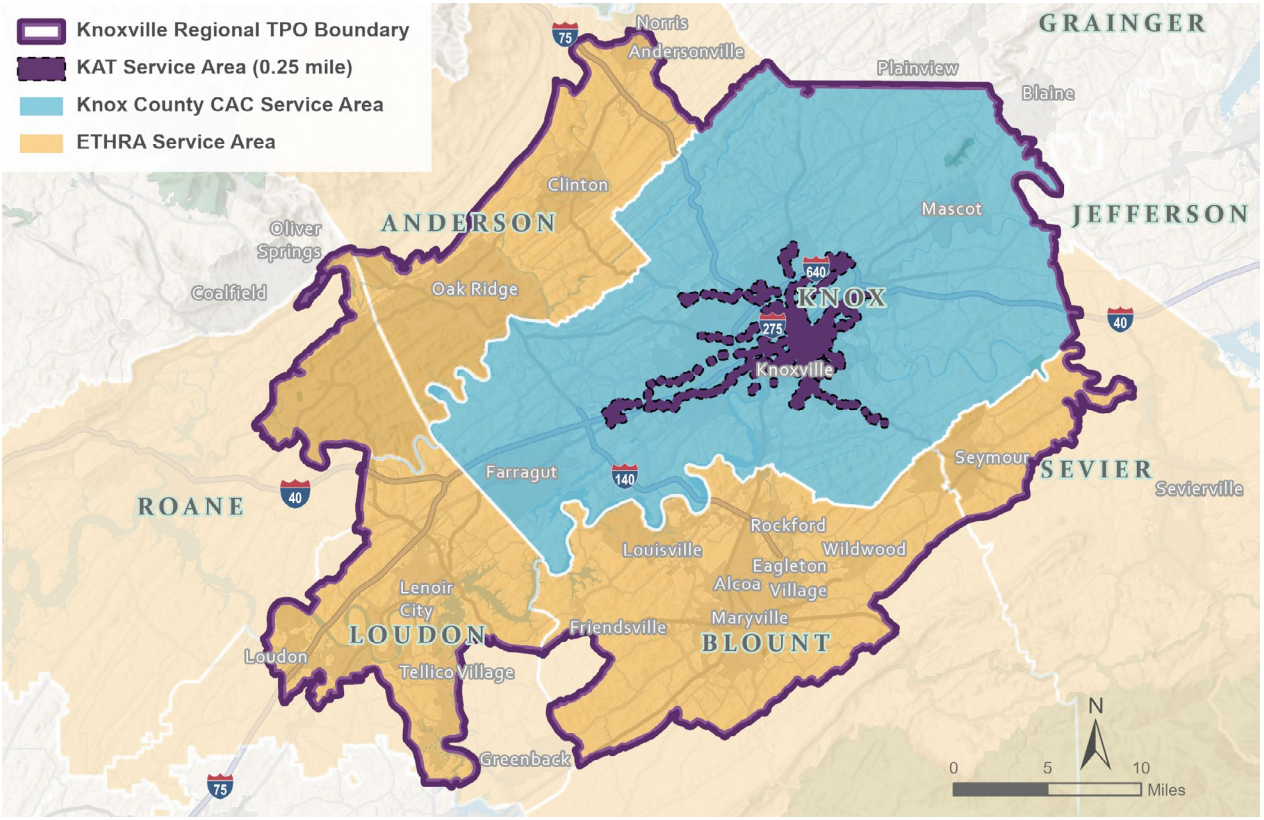


Figure 2.18: Service Areas for Regional Transit Providers

Annual Ridership Trends

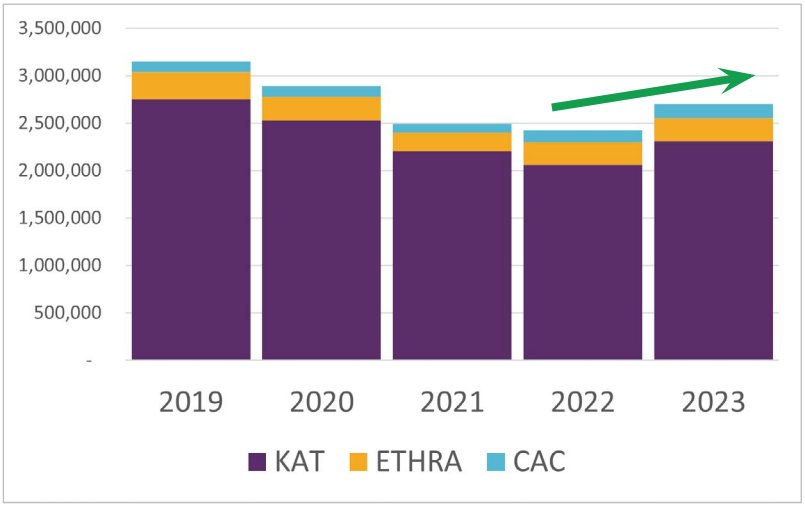


Table 2.19: Annual Ridership Trends

Knoxville Area Transit
Ridership for all transit agencies saw a decrease between 2019 - 2021, during the COVID-19 Pandemic. However, all agency services have see an increase in service post-COVID. In 2023, KAT alone provided over 2.3 million.

Knoxville Area Transit (KAT)

As the largest provider of public transit in the TPO planning area, KAT provides fixed-route bus service and door-to-door paratransit service. KAT implemented **KAT Reimagined**, a network redesign in 2024. The revised network aims to improve job accessibility by 16%, with frequency improvements on most routes.

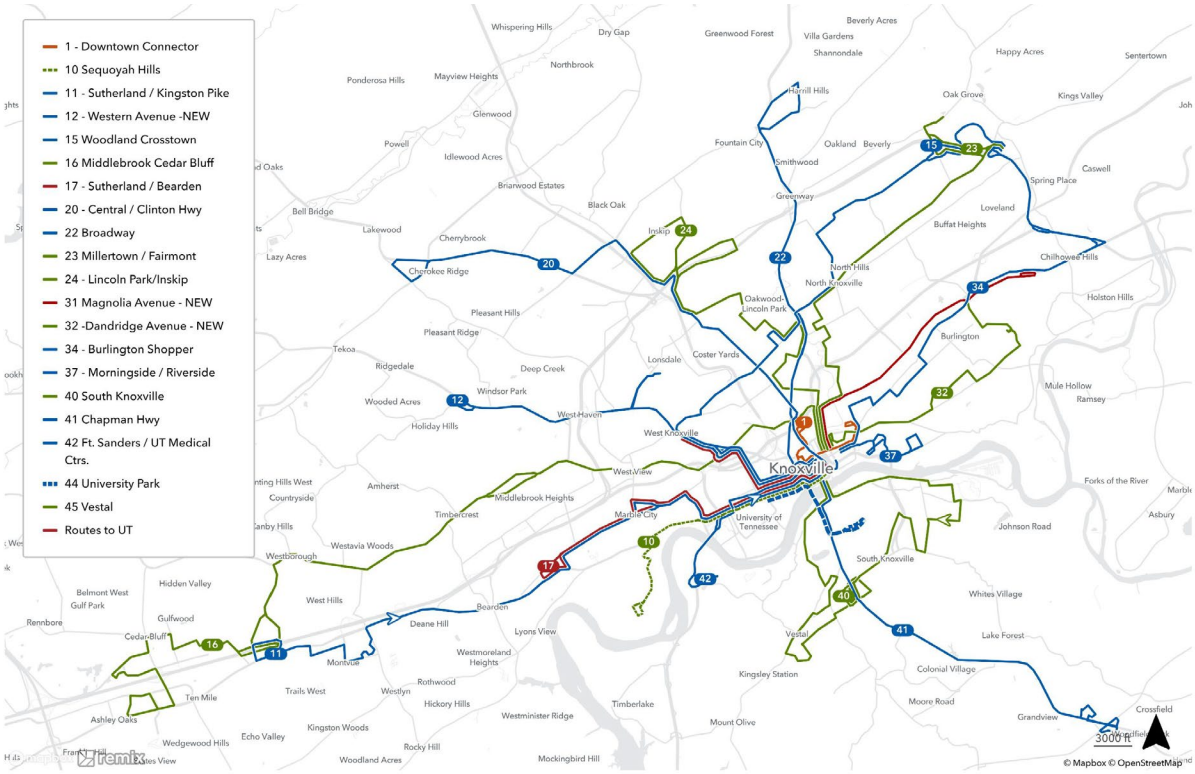


Figure 2.20: New KAT Reimagined Routes (2024)

Increased Transit Frequency, Increased Job Accessibility

16%
more jobs than are reachable within the previous network.

20%
increase for the average person in poverty.

24%
increase for persons of color.

kat REIMAGINED
designing better transit together

For more information on KAT Reimagined, visit their website: https://katbus.com/kat-reimagined-network-approved-by-knoxville-transportation-authority-board/

East Tennessee Human Resource Agency (ETHRA)

ETHRA provides transit services for sixteen counties in the region, including the six counties that are part of the TPO's planning area. ETHRA also provides the City of Oak Ridge transit services. ETHRA provides demand response services, where vehicles typically pick up and drop off passengers in locations according to passenger needs. ETHRA provided 244,937 trips in the 16-county service area for 2023.

ETHRA transit services (Source: ETHRA)

Knox County Community Action Committee (CAC) Transit

The Knox County CAC Transit is a demand-response transit service that provides transportation services to those in Knox County outside the Knoxville city limits, as well as those in Knoxville who are outside of the KAT service area. Knox County CAC Transit provided 114,573 trips in 2023.

CAC transit services (Source: Knox County CAC)

Other Transit Service Providers

The University of Tennessee, located in Knoxville, also has an on-campus fixed route system but does not utilize FTA funding. The T serves campus seven days a week with a fleet of thirty-one buses, ten fixed routes, and on-demand accessible transportation. The T is free to ride for students, faculty, staff, and visitors moving around campus. In August of 2024, KAT and the University of Tennessee began a partnership that provides free rides for UT students, faculty, and staff on KAT.

University of Tennessee Campus

Transit Funding

Federal programs and local revenues are the two most significant sources of funding for the three urban area transit agencies. A number of State and system generated revenues are also used to fund the daily operational and capital needs. Like the fiscal constraint analysis for roadway expenditures, the transit analysis began with an estimation of projected revenues.

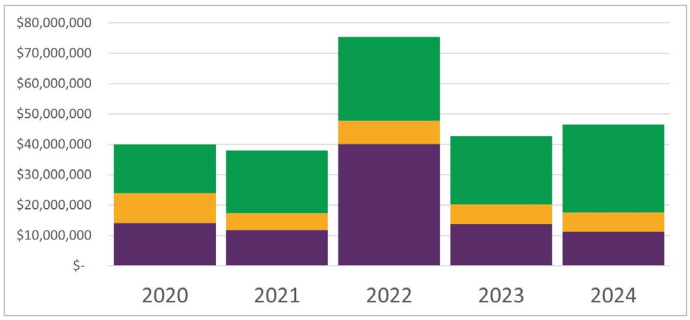


Table 2.21: Trend of Transit Funding by Year and Category

As with highways, funding for transit comes from multiple federal, state, and local sources as described below. For more information, see details in the Appendices.

Federal

Federal grant programs are one of the largest sources of funding for transit investments. Federal funds are allocated through each federal reauthorization of the surface transportation bill, with the most recent being the Infrastructure Investment and Jobs Act (IIJA).

State

The State provides transit funding through the Tennessee Department of Transportation (TDOT), which covers a portion of the required match for transit projects using FTA funding programs. Historically, this amount has equated to half of the non-federal share. 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.

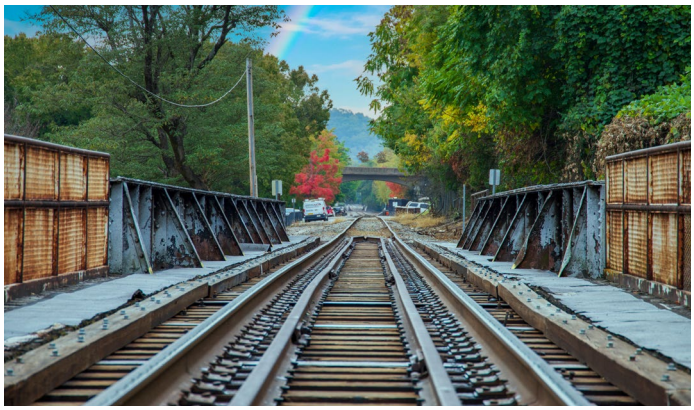
Local / Other Funding Sources

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, underwriting the KAT budget and making-up any unforeseen short-term deficits. Knox County also provides funding for transit matches and in-kind services that contribute to the day-to-day operations of Knox County CAC Transit, such as property for storing fleet vehicles, fueling services, and purchasing assistance. Discretionary grants are another source of revenue for the urban area's transit agencies. The Knoxville urban area's transit providers have been successful over the past decade in securing discretionary funding through programs such as the TPO's and TDOT's Congestion Mitigation and Air Quality (CMAQ) programs. Knox County CAC Transit and ETHRA both utilize human service contracts, such as TennCare, that help provide additional transit revenues.

Rail

There are two Class 1 railroads operating in the region (CSX and Norfolk Southern) as well as one short line railroad (Knoxville and Holston River Railroad).

These two Class 1 rail lines directly connect Knoxville with nearly all states east of the Mississippi, providing direct connections to other economic hubs including a number of international ports.



Aviation

The Knoxville region is home to two airports: McGhee Tyson Airport and the Knoxville Downtown Island Airport. In 2023, McGhee Tyson serviced approximately 100 daily arrivals and departures, serving approximately 2.6 million passengers, an increase of 12% from 2022. Freight service was slightly down from 2022 to 2023, moving 80.6 million tons of freight and cargo (-6% from 2022).

McGhee Tyson Airport

McGhee Tyson Airport (TYS):

- Small air traffic hub airport
- Two parallel runways
- Passenger & cargo airlines

Knoxville Downtown Island Airport
Source: Wikimedia Commons | Brian Stansberry

Knoxville Downtown Island Airport (DKX):

- Small general aviation
- Single runway (~3,500 feet)
- Primarily private & corporate aircraft

Intelligent Transportation Systems (ITS)

In collaboration with the Knoxville Regional TPO, TDOT oversees the administration, evaluation, and deployment of ITS in the Knoxville region. To achieve these functions, the Knoxville Regional ITS Architecture was first developed in 2000. Since then, it has been updated in 2003, 2012, and 2021.

TDOT and Knoxville Regional TPO collaborated on the update to the Knoxville Regional ITS Architecture in conjunction with the Mobility Plan 2045 effort. After this latest update in 2021, several ITS projects including Traffic Operations Centers (TOC), Advanced Traffic Management Systems (ATMS) for central management of traffic signals, and fiber network expansion have been ongoing throughout Knoxville region. Considering these changes in the ITS infrastructure, a scheduled maintenance and update to the regional ITS architecture is critical for reflecting the current conditions accurately and recording the changes in the region's needs and visions for ITS.

In the Knoxville region, the existing ITS infrastructure comprises wireless vehicle detection sensors (VDS), closed-circuit television (CCTV) cameras, dynamic message signs (DMS), highway advisory radio (HAR) signs, and over-height vehicle detectors (OVD) along the interstate highways.

TDOT SmartWay

TDOT's SmartWay program focuses on the use of ITS to improve travel efficiency and safety. For more information on SmartWay, visit https://smartway.tn.gov/

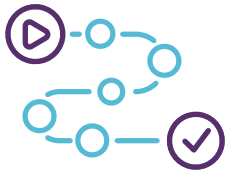
Where are we heading?

03

Identification of Projects

The transportation projects selected in this Plan are based on multiple sources of input:

Assessing regional system performance

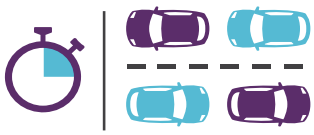


Previous projects audit by Technical Advisory Committee

Public engagement

Coordination with cities, towns, and counties

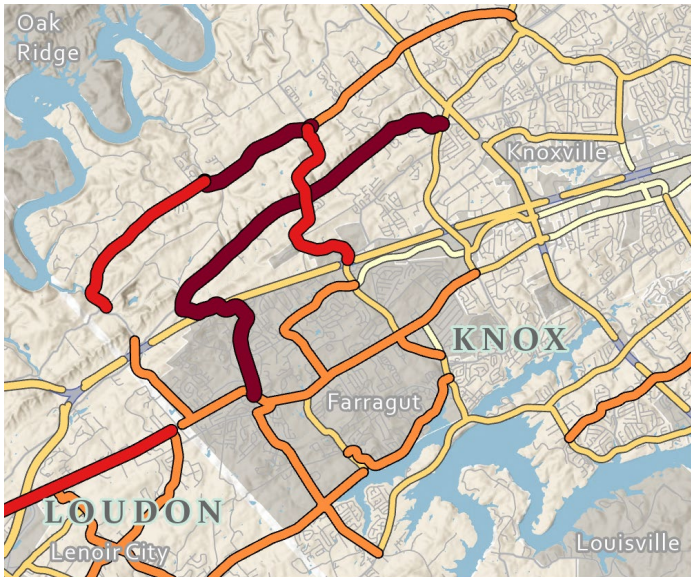
Travel Demand Model



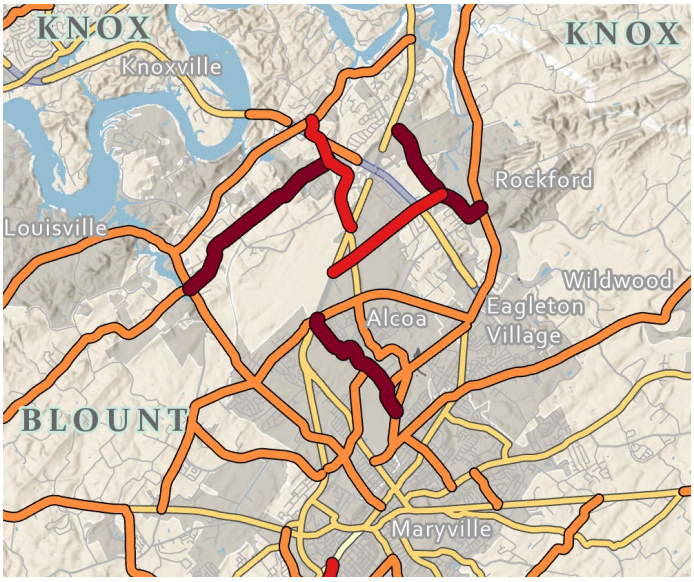
Why is the Travel Demand Model Important?

Projecting future traffic is not an exact science, but merely a transportation planning strategy that relies on forecasting (1) **population growth**, (2) **development patterns**, and (3) **driving behavior** (or mode choice). A travel demand model is a tool that translates this growth onto our future roadway network to help identify potential traffic issues before they may occur. Ideally we are able to improve traffic capacity before congestion becomes too severe, while also allowing for alternative modes of travel to become a more feasible option for travelers.

A travel demand model is also valuable to help us **prioritize** funding towards roadway projects that may address the more heavily congested areas within the region. For more information, see details contained within the Appendices.



Farragut Area Inset



Alcoa-Maryville Area Inset

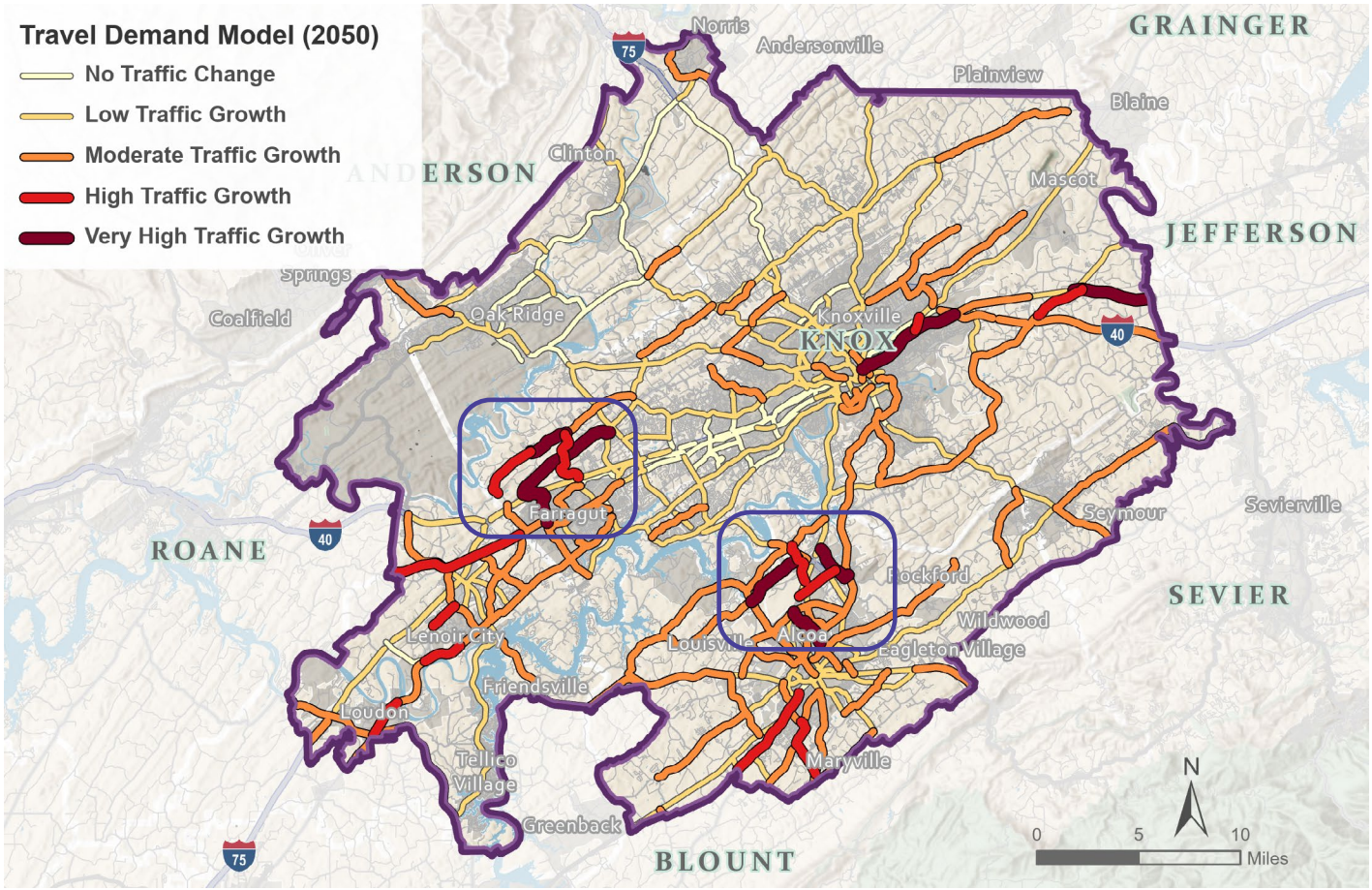


Figure 3.3: Forecasted Regional Traffic Growth for 2050
Data Source: Travel Demand Model Output

Prioritization of Projects

With more project needs than funding available, our data-driven process evaluated all projects against the TPO's established eight regional goals. Weights for each goal were assigned by the Technical Advisory Committee based on whether a project was considered small/local, or large/regional, and evaluation criteria provided the measurable geographic features to determine the score (Table 3.4). Evaluation criteria were reviewed with input from the TPO and TAC members.

Goal	Small & Local Projects	Large & Regional Projects	Evaluation Criteria Datasets
Safety & Security	21%	17%	Percent project length on High Injury Network Tier 1 Percent project length on High Injury Network Tier 2 Interactive Map points "Speeding" or "Safety"
Congestion Reduction	15%	19%	Level of Travel Time Reliability (LOTTR) Value Expected volume over capacity (V/C) Interactive Map points "Congestion"
Maintenance & Efficiency	14%	15%	Crosses a Bridge rated as "Poor" or "Critical Condition" Interactive Map points "Maintenance"
Health & Environment	13%	12%	Proximity to existing high-quality bikeway or pedway facilities Avoids potential impact with environmental resources
Equitable Access	11%	9%	Priority Population Index average value (vulnerable) USDOT defined area of Persistent Poverty
More Options	10%	6%	Population density of transit service Connected with existing transit service area Interactive Map points "Barrier to walking/biking"
Preservation of Place	8%	8%	Avoids potential impact with cultural resources
Economy of Freight	8%	14%	Density of freight facilities nearby
Local Priority			Project identified in other local plans *(not quantifiable)*

Table 3.4: Evaluation Criteria for Project Prioritization

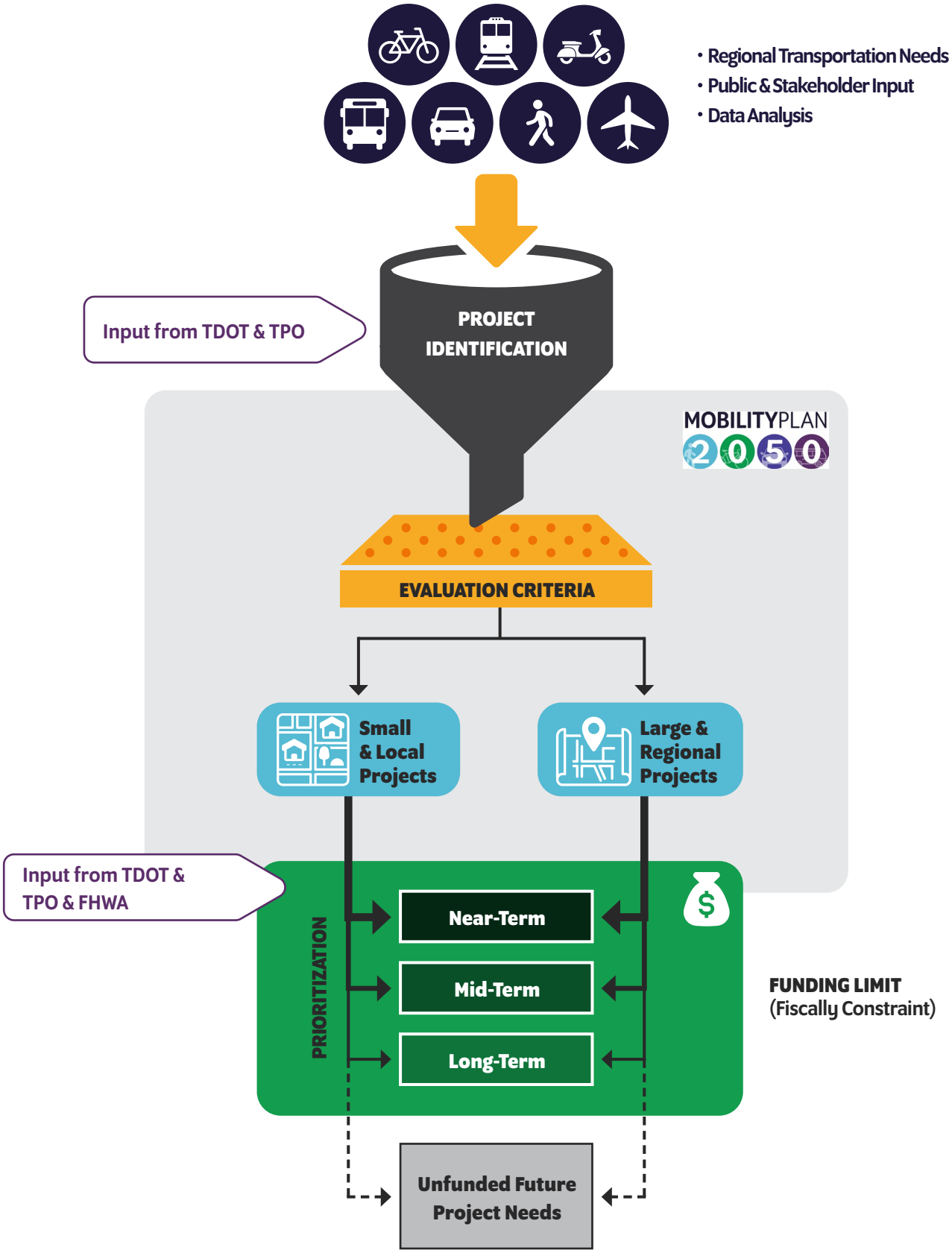


Figure 3.5: General Process for Project Prioritization and Funding

Travel Demand Model Performance Summary

After finalizing the fiscally constrained project list, the TPO's regional travel demand model was used to assess the performance of the transportation system with and without the projects. A comparison of common transportation system performance metrics are provided in Table 3.6, both in the base year and the final horizon year of the Mobility Plan, which is 2050. For the year 2050 two separate scenarios were run in the model – one using the roadway network as it existed in 2022 and the other using the roadway network with all of the fiscally constrained road projects being implemented. This allows us a glimpse into what the future might look like if the population and employment growth expected in the TPO Region between now and 2050 all showed up overnight.

Performance Metric	2022 Base Year	2050 (Base Network)	2050 (Mobility Plan Projects)	% Change from 2022	% Change 2050 Scenarios
Population Estimate	756,349	913,915		20.8%	
DVMT (veh-miles per day)	20,011,194	23,842,698	24,691,675	23.4%	3.6%
DVHT (veh-hours per day)	511,166	657,086	645,228	26.2%	-1.8%
Daily Avg Speed (mph)	39.1	36.3	38.3	-2.2%	5.5%
Hours of Delay (hours per day)	119,433	188,164	165,644	38.7%	-12.0%
Percent Time Congested	16.3%	18.8%	17.6%	7.9%	-6.4%
VMT at LOS F	5,301,754	9,130,401	8,004,330	51.0%	-12.3%

Table 3.6: Travel Demand Model Output Statistics - 2050 Mobility Plan for TPO Planning Area

An explanation of the metrics that were compared are as follows:

- Daily Vehicle Miles Traveled (DVMT) – This is a measure of total amount of vehicular travel on the regional roadway system on an average day. It is computed by multiplying the volume of traffic on a roadway segment by its length.
- Daily Vehicle Hours Traveled (DVHT) – Similar to DVMT, this is the total time spent by vehicles operating on regional roadways on an average day.
- Daily Average Speed – This is computed by dividing DVMT by DVHT and can provide an indication of operating efficiency or overall congestion.
- Hours of Delay – This is a metric computed from post-processing the travel demand model outputs and aggregating travel times where actual speed is less than the free-flow speed.
- Percent Time Congested – Also a metric computed by the model as a function of the overall time per day that vehicles experience poor "Level of Service" conditions indicating congestion.
- VMT at LOS F – This is a measure of the vehicle travel that occurs on roadway segments that are expected to operate at the poorest level-of-service, another indicator of congestion levels.

Metrics shown in Table 3.6 indicate how efficiently the roadway system within the TPO's planning area operates with the planned project investments. It can be observed however that even with the implementation of all the fiscally constrained projects that the expected increase in travel activity from the higher population and employment will likely result in more delay and congestion in the year 2050 than was present in 2022. Some of the key takeaways are as follows:

- Vehicle Miles Traveled (VMT) is expected to outpace the growth in population, which can be an indicator of the continued dispersed development patterns of population and employment in the Region leading to longer average trip lengths.
- Delay and congestion both increase significantly in the future although the project implementation is shown to be very beneficial as metrics such as the VMT on roadways with level-of-service F rating and Hours of Delay are both around 12% less in the "build" versus "no-build" scenario.

The travel demand model was also an important tool used to evaluate each roadway's congestion level in order to help target those that are most congested for potential improvement projects, for more information see Appendix D for the Congestion Management Process (CMP). It is important to note that the travel demand model is not able to account for improvements to the transportation system generated by projects that do not increase roadway capacity (e.g., greenway, sidewalk, transit, or bikeway projects) but these are also critical to achieving efficient mobility in light of constraints both fiscally and environmentally along with other impacts from major roadway construction.

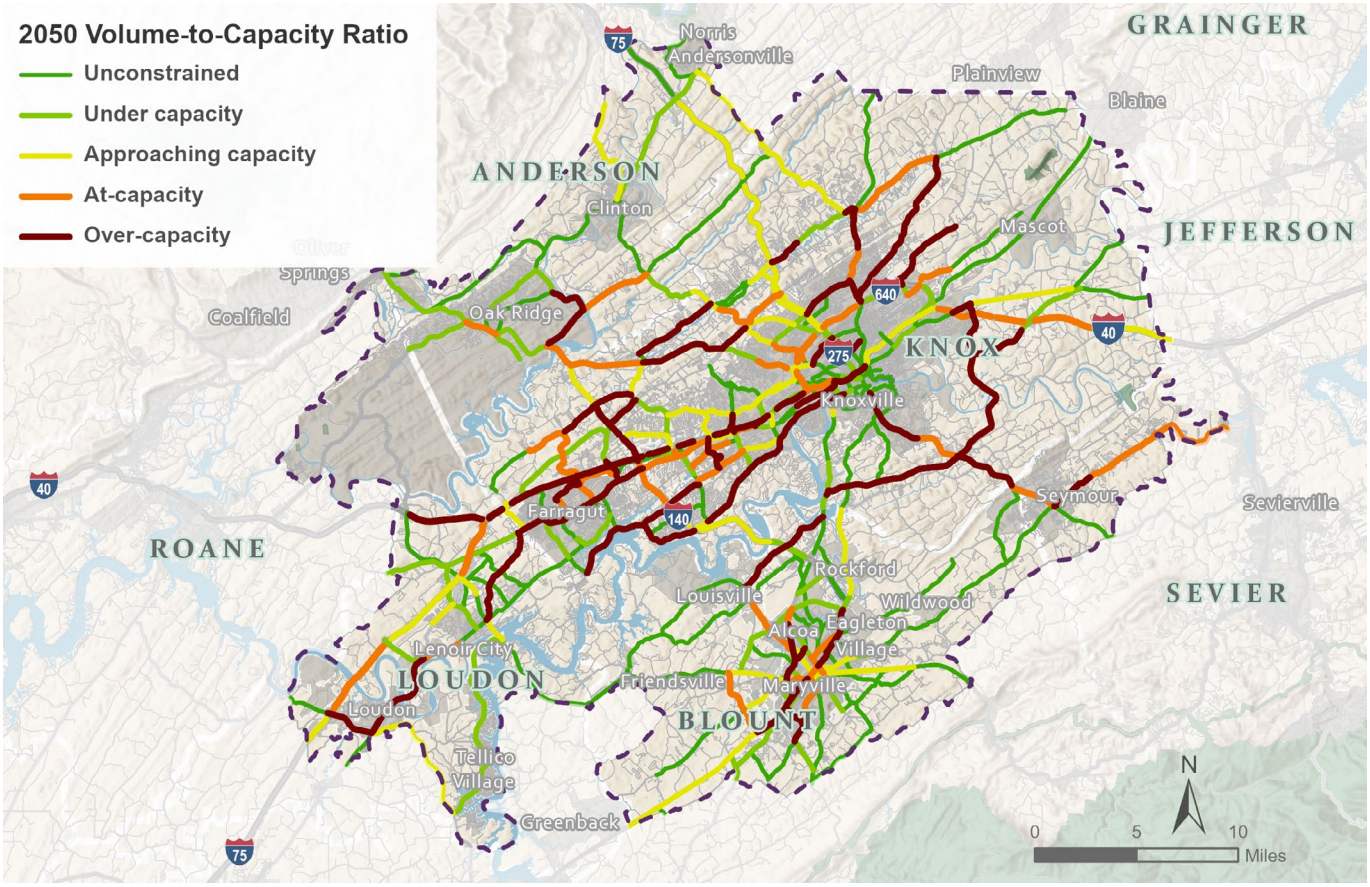


Figure 3.7 Future Year Travel Demand Model Output - Volume to Capacity Ratio (V/C)

Funding Plan

03

Transportation Revenue Sources

This Mobility Plan considers a variety of funding sources. The funding will balance total project costs expected in the region. To estimate revenues that our region can **reasonably anticipate to receive**, federal, state, and local funding opportunities are evaluated.

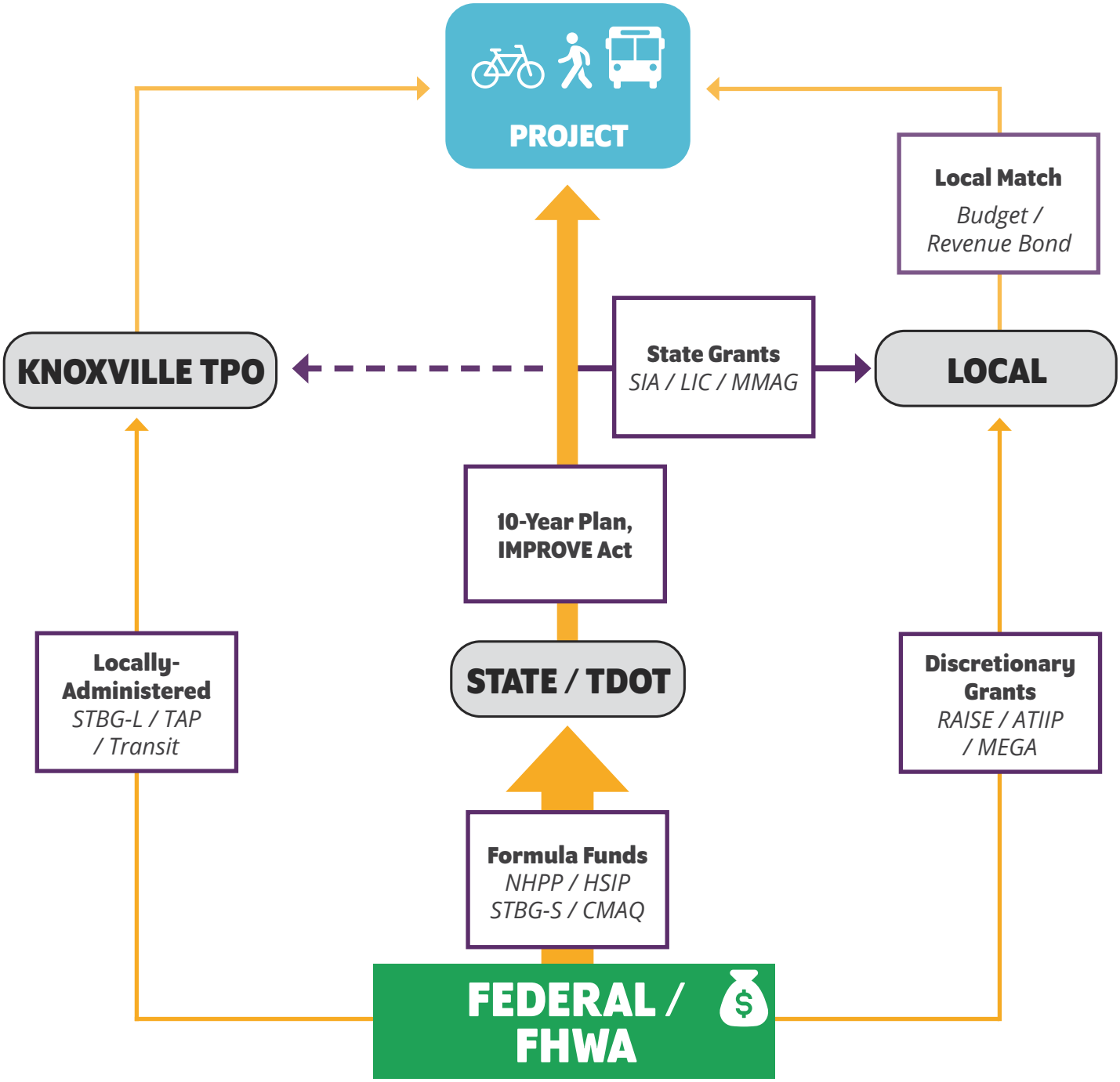


Figure 3.8: Where Does Project Funding Come From?

Long range transportation plans like Mobility 2050 consider project funding in three timeframes called horizons. Breaking down the 25-year plan into these smaller horizons helps to better align available revenues and project needs. Using historical allocations from federal and state funding programs and considering the Tennessee Department of Transportation 10-Year Plan, highway revenues are anticipated to grow by 2.2% annually, estimating approximately **$5.15 billion** in new revenues for improvements, operations, and maintenance of the transportation system.

Roadways Revenues, 2025-2050					Total
Funding Program	Carryover Revenue		New Revenues		
	2024	2025-2030	2031-2040	2041-2050	
CMAQ	$11,170,350	$57,663,771	$25,710,690	$21,604,027	**$116,118,838**
CRP	$990,000	$4,877,479	$10,892,282	--	**$16,759,761**
HSIP	--	$21,959,776	$28,930,552	$42,007,831	**$92,898,159**
Local	--	$47,838,980	--	--	**$47,838,980**
L-STBG	--	$101,176,146	$320,524,586	$189,774,178	**$661,474,910**
NHPP	--	$158,071,289	$676,182,884	$1,639,686,504	**$2,473,940,678**
S-STBG	--	--	$59,431,124	--	**$59,431,124**
STBG-TA	$8,454,878	$4,665,889	--	--	**$13,120,767**
State-TDOT	--	$53,185,970	$1,504,858,846	--	**$1,558,044,816**
Others	--	$44,763,858	$113,657,880	--	**$158,421,738**
Subtotal	**$20,615,228**	**$494,173,158**	**$2,740,188,843**	**$1,893,072,540**	**$5,148,049,769**

Table 3.9: Roadways Revenues, 2025-2050
Data Source: Knoxville Regional TPO

Available transit revenues followed a similar analysis. Using historical figures for Knoxville Area Transit (KAT), East Tennessee Human Resources Agency (ETHRA), and Knoxville-Knox County Community Action Committee (CAC) capital and operating expenses, revenues are anticipated to grow by 2.2% annually, estimating approximately **$1.4 billion** in new revenues for maintenance and replacement of vehicles and other transit assets, as well as to fund service operations.

Horizon Year	Capital	Operating	Total
2025-2028 TIP	$30,971,560	$170,671,682	**$201,643,242**
2025-2030	$52,773,175	$280,926,512	**$333,699,687**
2031-2040	$80,421,327	$414,719,176	**$495,140,503**
2041-2050	$99,533,185	$515,444,628	**$614,977,813**
Subtotal	**$232,727,687**	**$1,211,090,317**	**$1,443,818,004**

Table 3.10: Transit Funding, 2025-2050
Data Source: KAT, ETHRA, and FTA

Funding Plan by Horizon Year

03

Project Costs & Priorities

Mobility Plan 2050 includes capital roadway and non-roadway projects, and demonstrates fiscal constraint: projected funds are sufficient to cover the cost of programmed projects. Revenues are balanced against rising project costs, using a 3.8% annual inflation rate for both capital and maintenance expenditures. Prioritized projects are then sorted into horizon years based upon Year of Expenditure (YOE) cost and funding program eligibility. Between Mobility Plan Update cycles, TPO staff manage these projects, including updates to funding projections and horizon years.

2025 - 2030

Highlights

18 roadway projects
4 transit improvements
6 ITS improvements
13 Greenway / Pedestrian Projects

Major Projects

- Emory Road/I-75 Interchange
- Washington Pike widening
- Schaad Road widening
- East Knox Greenway

2031 - 2040

Highlights

43 Roadway projects
4 ITS
6 Greenways, Bike & Pedestrian

Major Projects

- I-75/I-640/I-275 Interchange
- Pellissippi Parkway Extension
- Edgemoor Road widening
- Alcoa Highway reconstruction

2041-2050

Highlights

26 roadway projects
1 ITS improvement

Major Projects

- I-75 Widening
- Chapman Highway widening
- Oak Ridge Highway
- Pellissippi Parkway access control

Table 3.11: Fiscally Constrained Horizon Years by Funding Program

2025 - 2030 Horizon Years				
Funding Program	**Carry Over Funds**	**Total Revenue**	**Expenditures**	**Balance (Carry Over)**
CMAQ	$22,919,838	$83,513,827	$68,804,121	$14,709,707
CRP	$3,048,848	$15,707,733	$5,867,479	$9,840,254
HSIP	--	$21,959,776	$21,959,776	--
Local	--	$47,838,980	$47,838,980	--
L-STBG	$71,644,408	$179,629,064	$93,258,907	$86,370,157
NHPP	--	$158,071,289	$158,071,289	--
S-STBG	--	--	--	--
STBG-TA	$13,806,555	$33,960,588	$21,038,007	$12,922,582
State-TDOT	--	$695,700,000	$33,300,000	$662,400,000
Others	--	$64,649,828	$64,649,828	$0
Subtotal	**$111,419,648**	**$1,301,031,085**	**$514,788,385**	**$786,242,700**
2031 - 2040 Horizon Years				
Funding Program	**Carry Over Funds**	**Total Revenue**	**Expenditures**	**Balance (Carry Over)**
CMAQ	$14,709,707	$135,056,246	$25,710,690	$109,345,557
CRP	$9,840,254	$34,982,238	$10,892,282	$24,089,957
HSIP	--	$93,131,950	$28,930,552	$64,201,398
Local	--	--	--	--
L-STBG	$86,370,157	$300,839,940	$294,694,340	$6,145,600
NHPP	--	$738,585,387	$676,182,884	$62,402,503
S-STBG	--	$64,430,931	$59,431,124	$4,999,807
STBG-TA	$12,922,582	$52,950,780	$25,830,245	$27,120,535
State-TDOT	$662,400,000	$1,523,900,000	$1,491,900,000	$32,000,000
Others	$0	$126,616,726	$126,616,726	$0
Subtotal	**$786,242,700**	**$3,070,494,200**	**$2,740,188,843**	**$330,305,357**
2041 - 2050 Horizon Years				
Funding Program	**Carry Over Funds**	**Total Revenue**	**Expenditures**	**Balance (Carry Over)**
CMAQ	$109,345,557	$258,949,337	$21,604,027	$237,345,309
CRP	$24,089,957	$55,344,165	--	$55,344,165
HSIP	$64,201,398	$208,235,523	$42,007,831	$166,227,692
Local	--	--	--	--
L-STBG	$6,145,600	$272,754,762	$189,774,178	$82,980,584
NHPP	$62,402,503	$1,639,686,504	$1,639,686,504	$(0)
S-STBG	$4,999,807	$115,857,482	--	$115,857,482
STBG-TA	$27,120,535	$76,879,920	--	$76,879,920
State-TDOT	$32,000,000	$32,000,000	--	$32,000,000
Others	$0	$0	--	$0
Subtotal	**$330,305,357**	**$2,659,707,693**	**$1,893,072,540**	**$766,635,153**

Projects

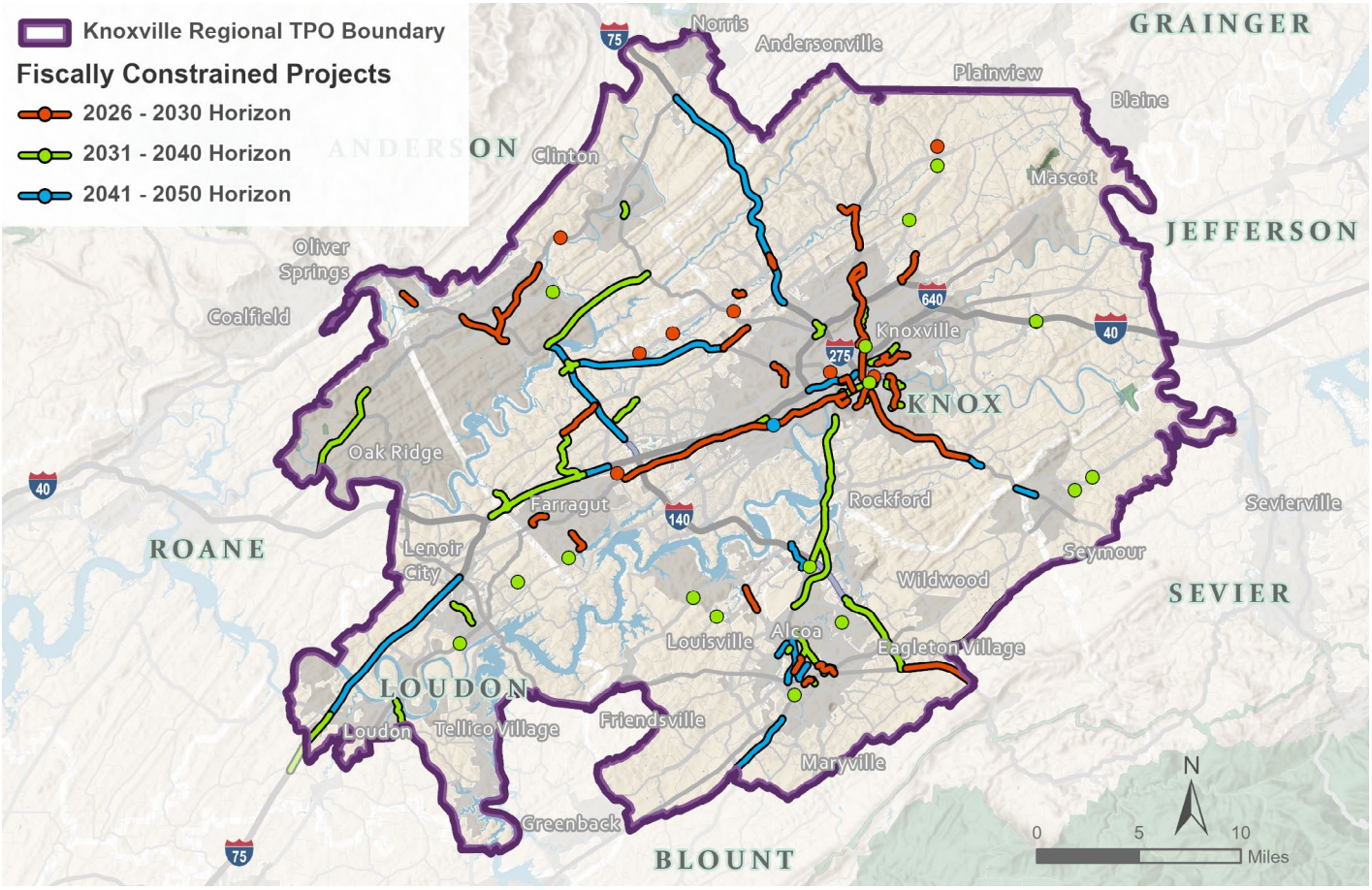


Figure 3.12: Fiscally Constrained Projects for the Knoxville TPO

REGIONAL PROJECT SUMMARY

131 total projects

$69M Total Intersection Projects

$4.2B Corridor Projects

$200M Bicycle / Pedestrian or Transit

$1.65B project costs (2024 dollars)

Estimated to cost **$5.15B*** to construct by 2050

**All costs represent Year of Expenditure (YOE) costs*

ANDERSON COUNTY

8 total projects

14 total miles

$373M estimated project costs

4 bicycle / pedestrian projects

BLOUNT COUNTY

26 total projects | **35** total miles

$1.0B estimated project costs

5 intersection improvement projects **($45M)**

2 greenway projects totaling **4.5 miles,** estimating **$10M**

KNOX COUNTY

70 total projects

100 total miles

$2.7B estimated project costs

9 intersection improvements

13 bicycle/pedestrian projects

14 transit/ITS projects

ROANE COUNTY

1 corridor project along **Oak Ridge Turnpike (SR-95)** for **5.5 miles**

$3.2M estimated project costs

SEVIER COUNTY

4 total projects/studies

3 intersection improvement projects along Boyds Creek Highway (SR-338) estimating **$4.0M**

LOUDON COUNTY

7 total projects

$432M estimated project costs

2 intersection improvement projects

5 corridor projects:

Project Highlight:
I-75 widening totaling **13+ miles ($412M)**

1 corridor widening project along Chapman Highway (segment 7) estimated to cost **$21.7M**

**All costs represent Year of Expenditure (YOE) costs*

Anderson County

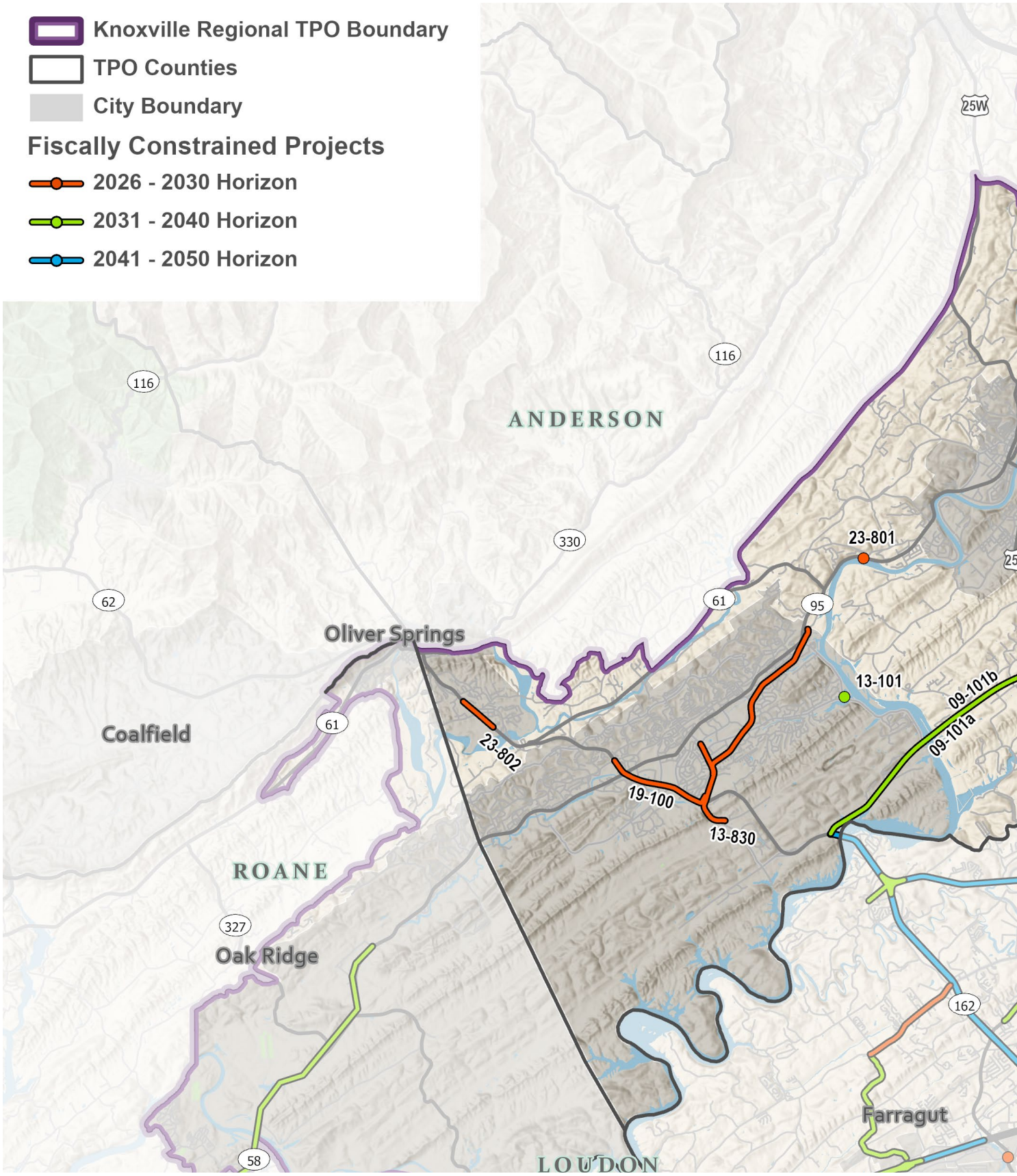
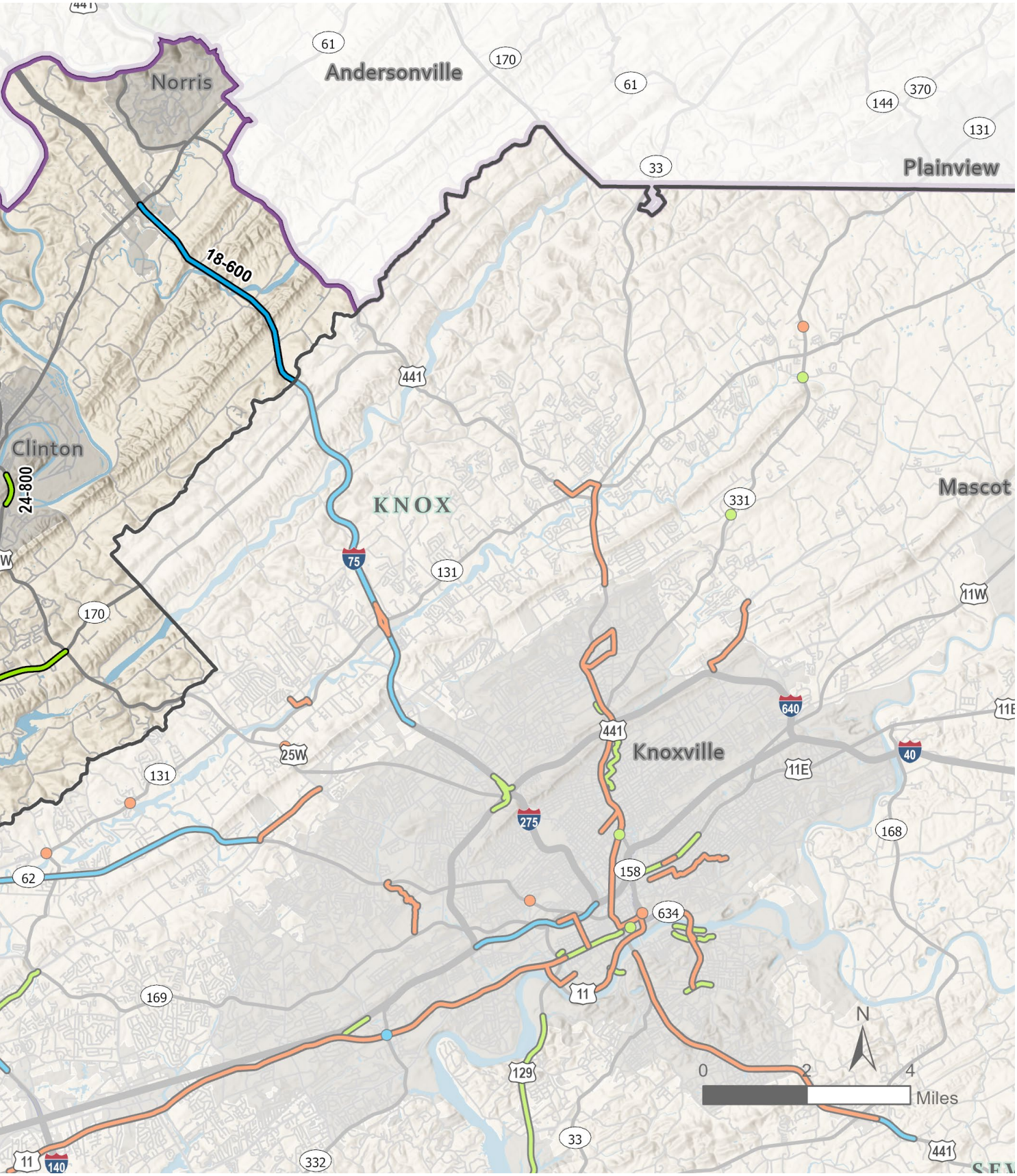


Figure 3.13: Fiscally-Constrained Projects, Anderson County


Norris
Andersonville
Plainview
Clinton
KNOX
Mascot
Knoxville
18-600
24-800
61
170
61
144
370
131
33
441
331
75
131
11W
170
640
11E
441
25W
131
40
275
168
62
158
634
11
169
N
0
2
4
Miles
129
33
11
140
332
441

Blount County

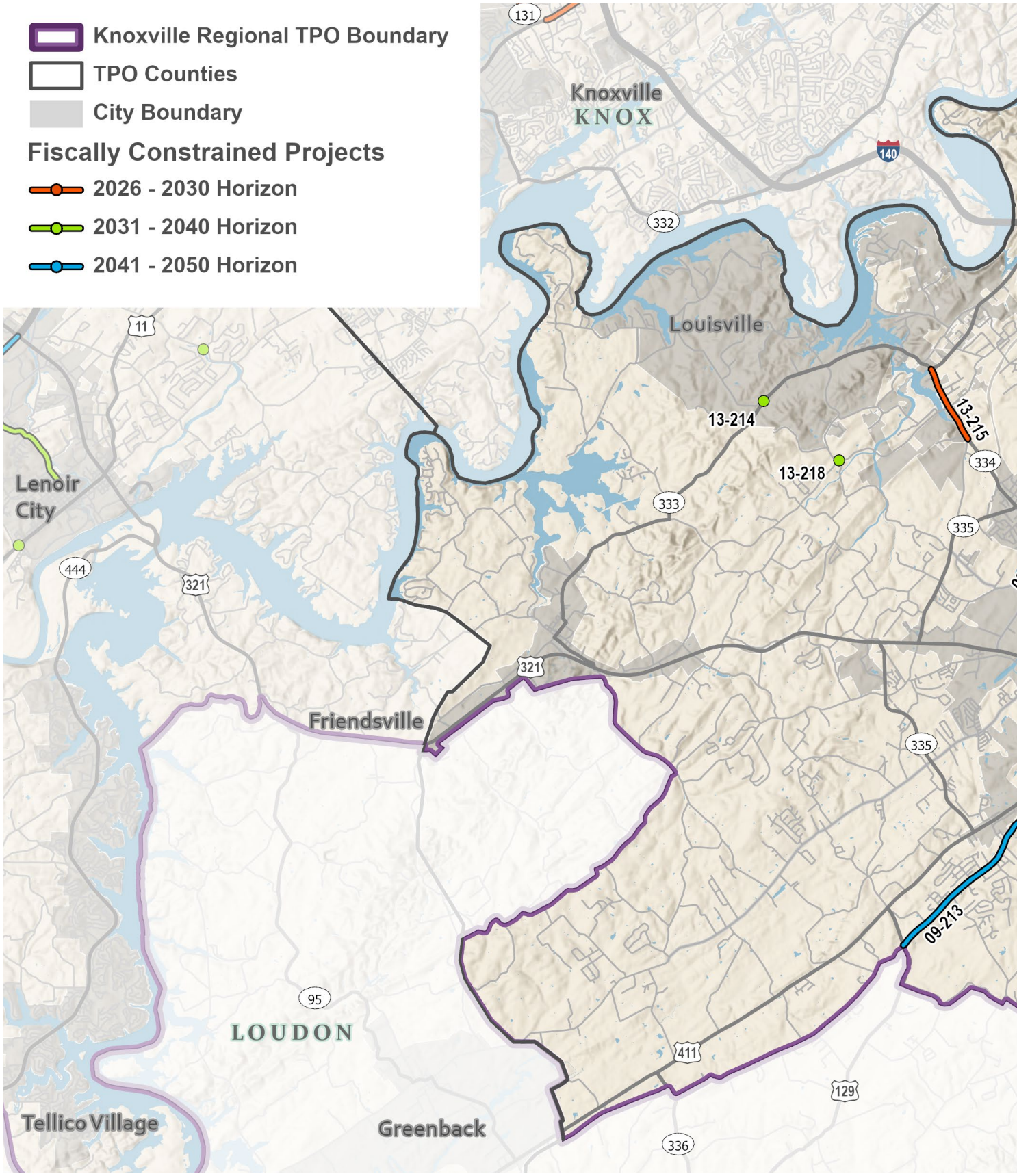
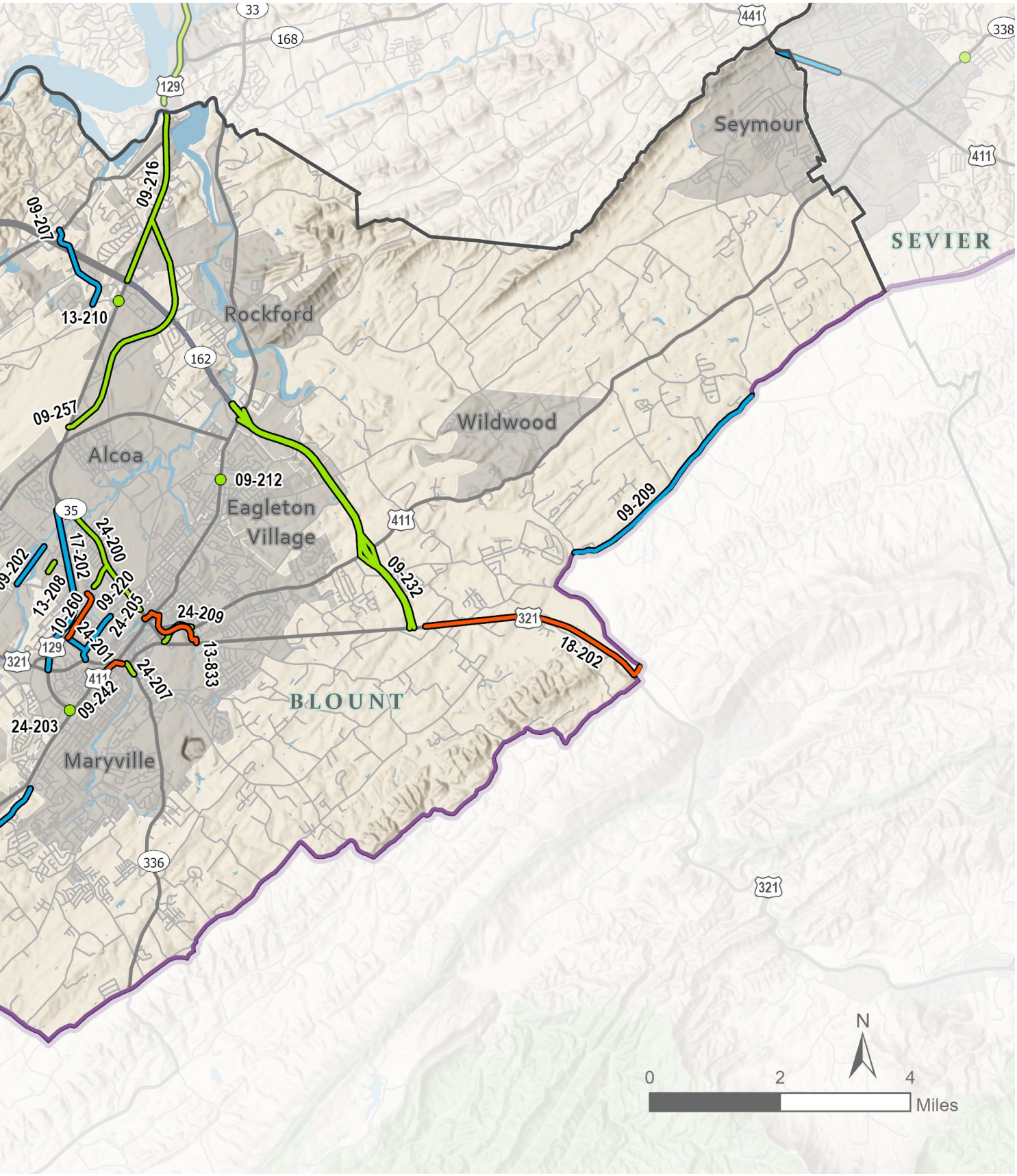


Figure 3.14: Fiscally-Constrained Projects, Blount County


33
168
129
441
338
411
Seymour
SEVIER
09-216
09-207
13-210
Rockford
162
09-257
Wildwood
Alcoa
09-212
Eagleton
Village
35
411
09-209
09-232
24-200
09-202
13-208
09-220
10-260
24-205
24-209
321
18-202
129
321
24-201
13-833
411
24-207
09-242
BLOUNT
24-203
Maryville
336
321
N
0
2
4
Miles

Knox County

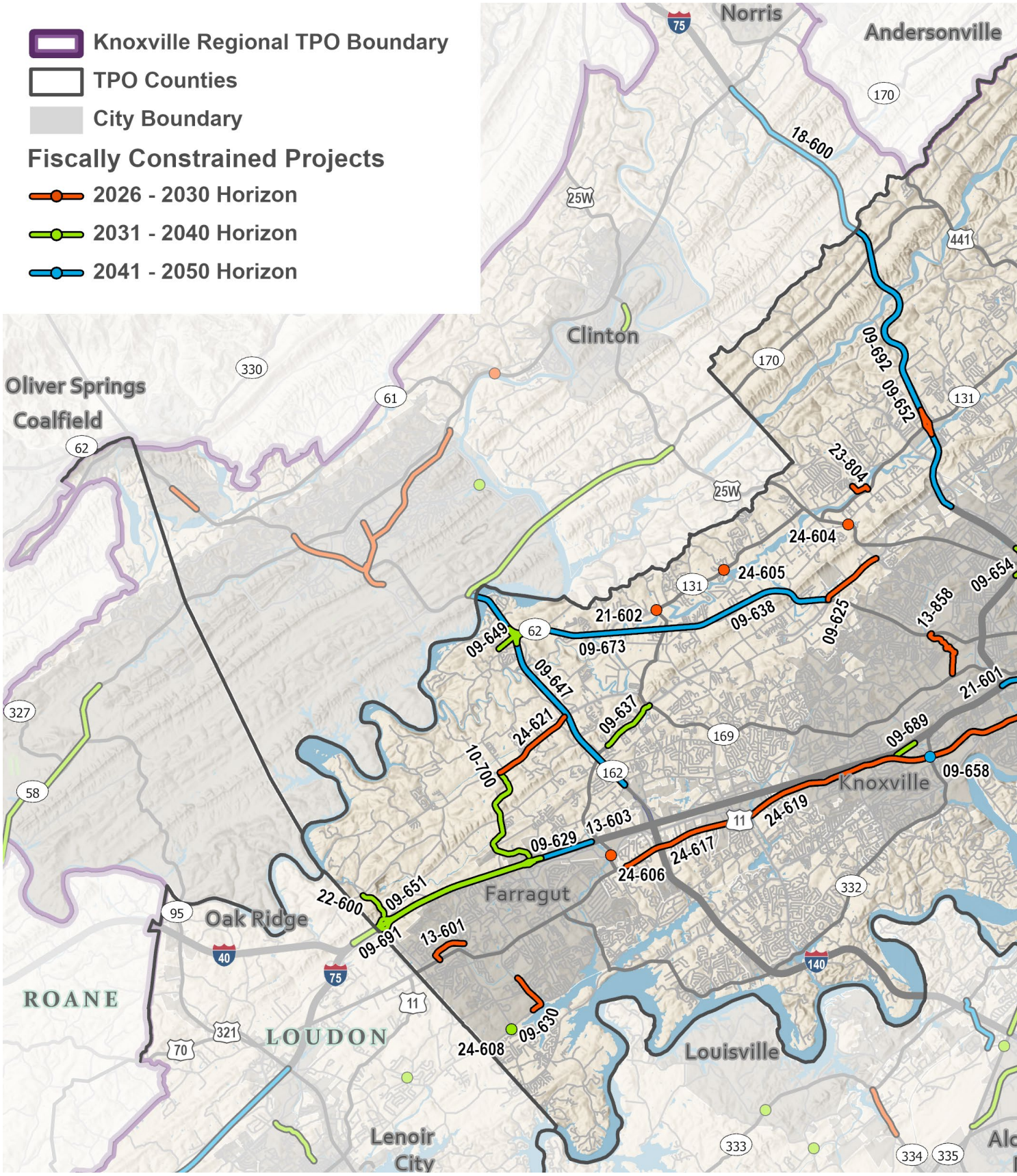
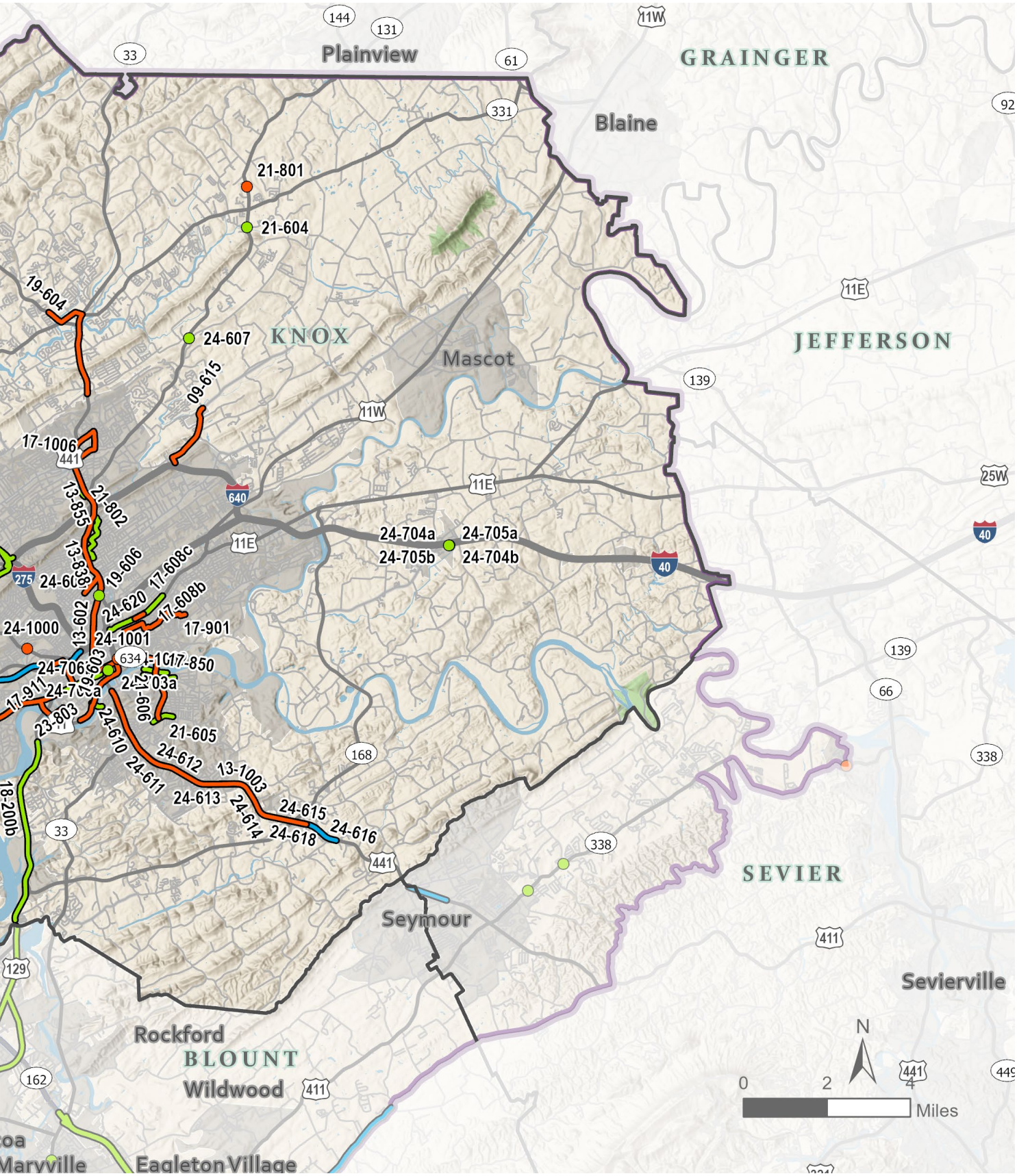


Figure 3.15: Fiscally-Constrained Projects, Knox County


Plainview
GRAINGER
Blaine
KNOX
Mascot
JEFFERSON
SEVIER
Seymour
Sevierville
Rockford
BLOUNT
Wildwood
Eagleton Village
21-801
21-604
19-604
24-607
09-615
17-1006
13-855
21-802
13-838
19-606
17-608c
17-608b
24-620
24-1000
13-602
24-1001
17-901
24-706
17-911
23-803
24-610
24-611
21-605
24-612
13-1003
24-613
24-614
24-615
24-618
24-616
24-704a
24-705a
24-705b
24-704b
N
0
2
4
Miles

Loudon County

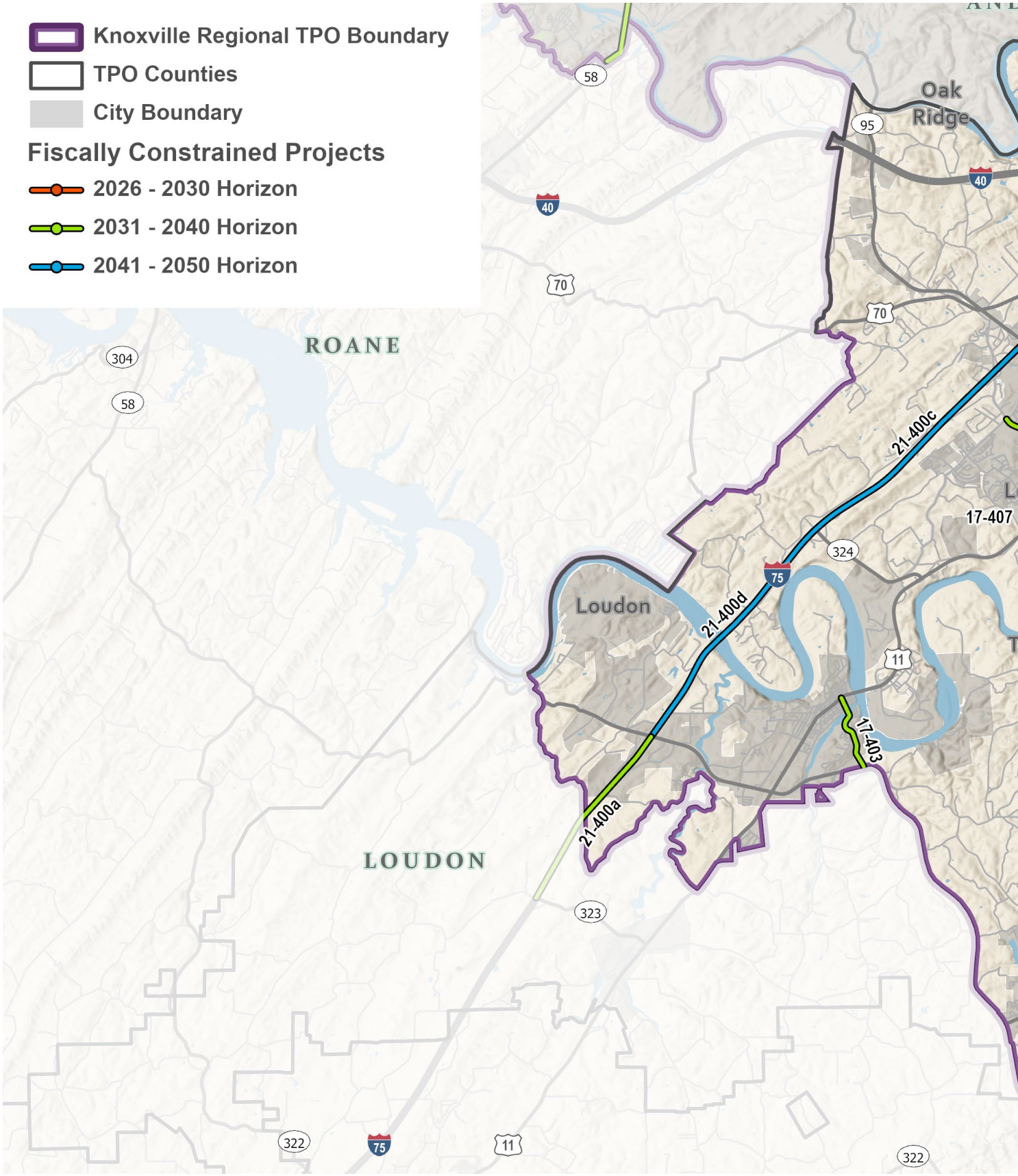
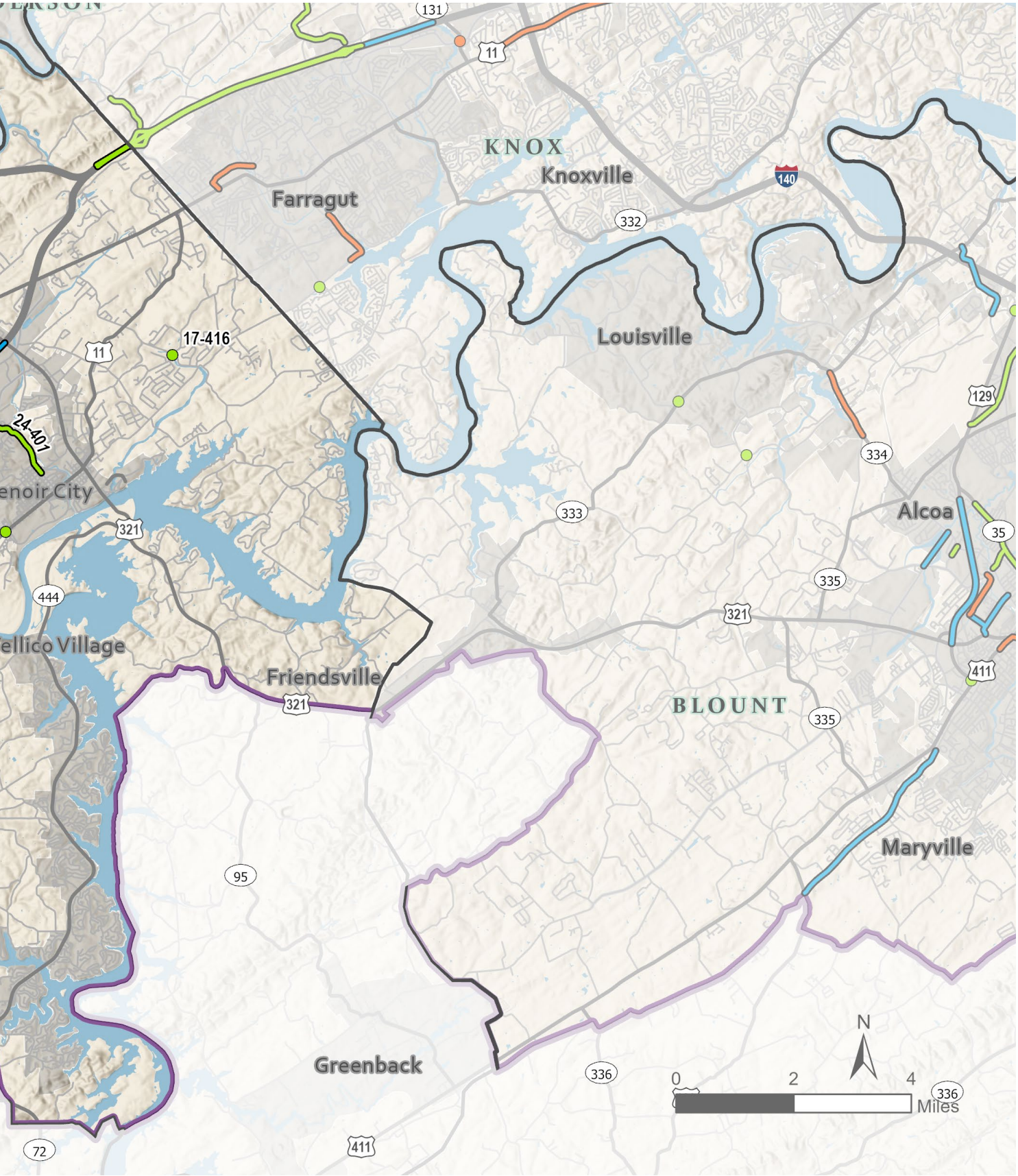


Figure 3.16: Fiscally-Constrained Projects, Loudon County


131
11
KNOX
Knoxville
140
Farragut
332
11
17-416
Louisville
129
24-407
334
enoir City
333
Alcoa
35
321
335
444
321
ellico Village
411
Friendsville
321
BLOUNT
335
Maryville
95
N
Greenback
336
0
2
4
336
Miles
72
411

Roane County

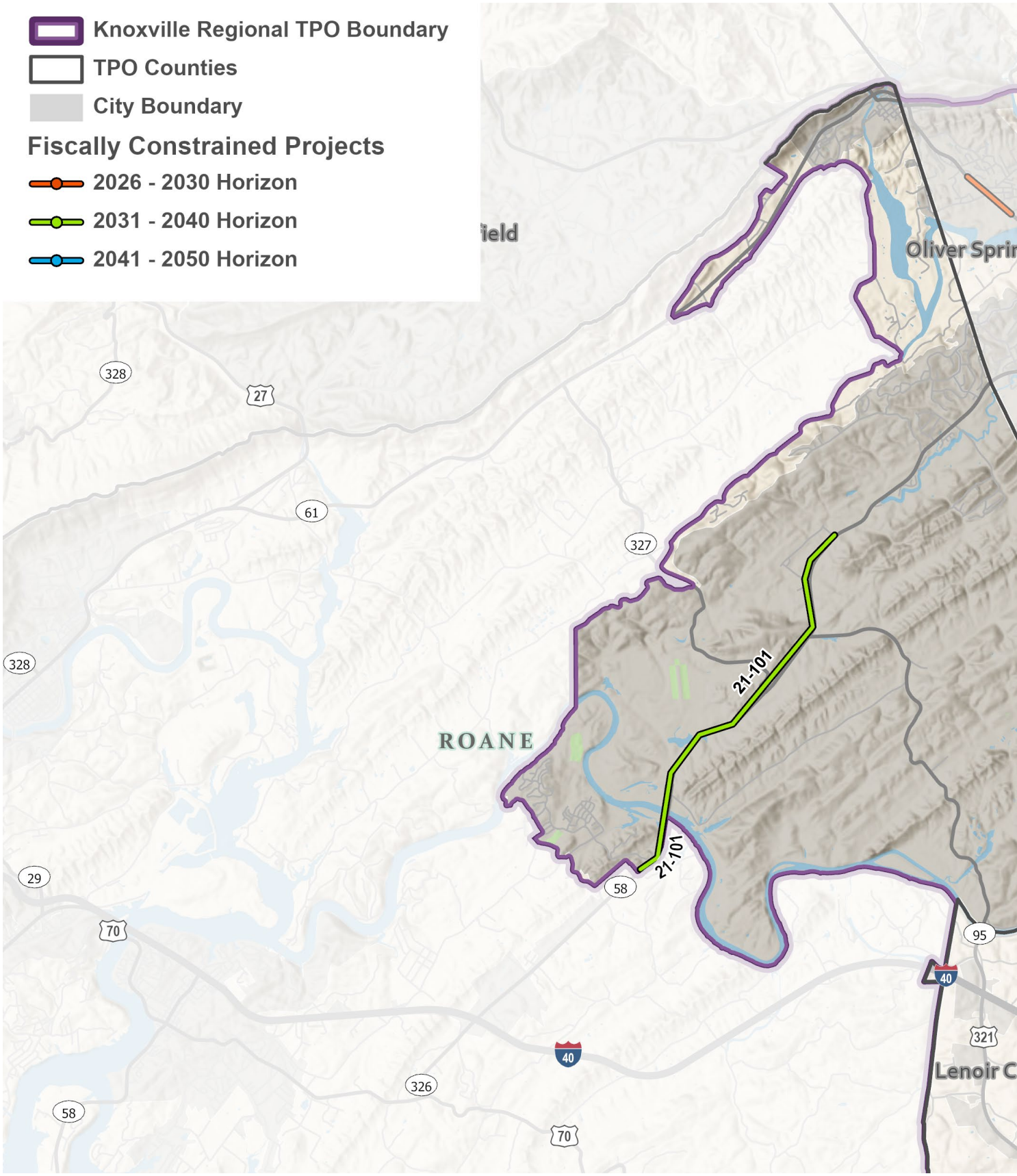


Figure 3.17: Fiscally-Constrained Projects, Roane County


61
25W
330
Clinton
ANDERSON
170
62
169
162
Knoxville
KNOX
131
11
Oak Ridge
Farragut
40
LOUDON
75
140
332
70
11
N
0
2
4
Miles
Louisville

Sevier County

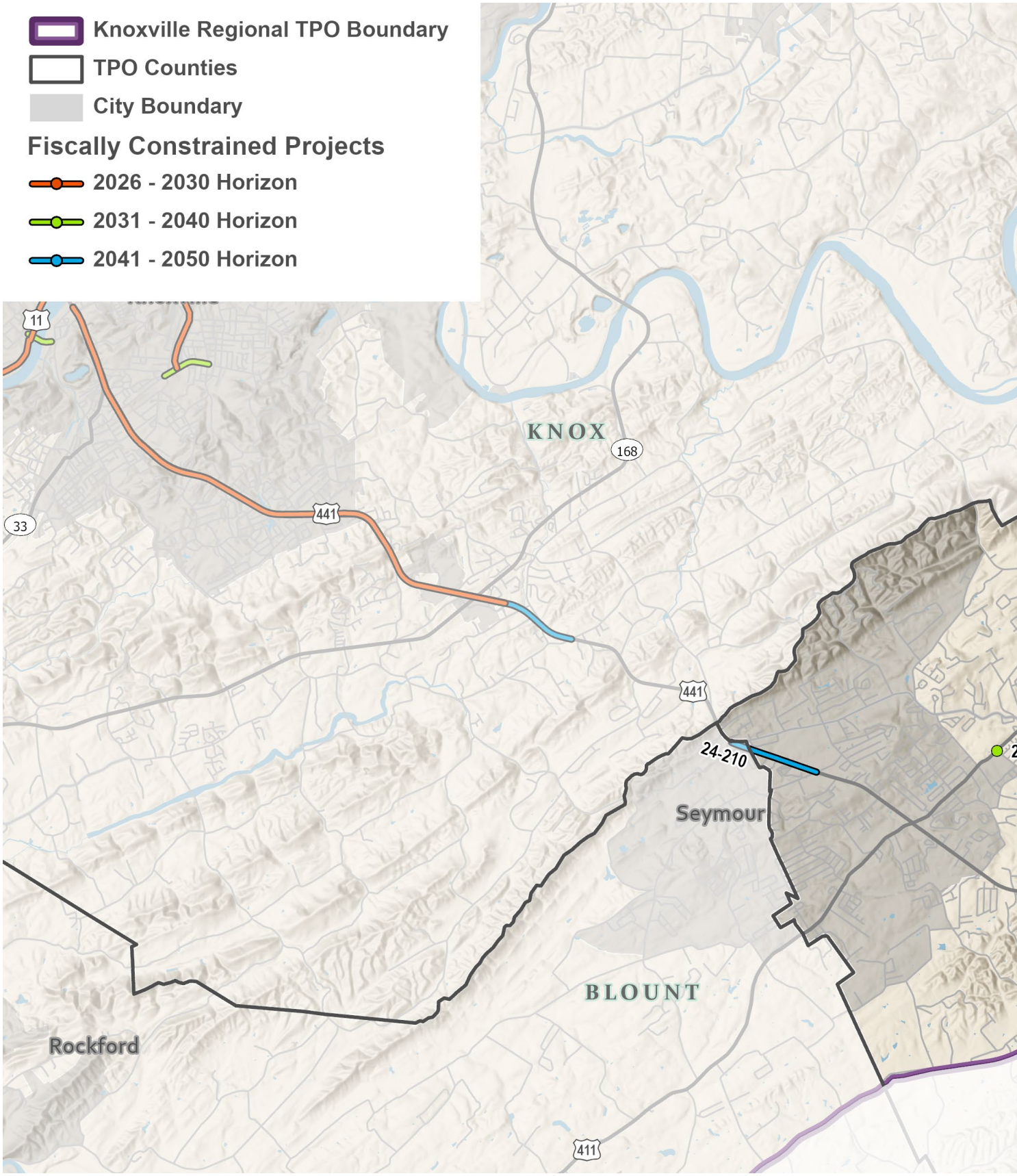
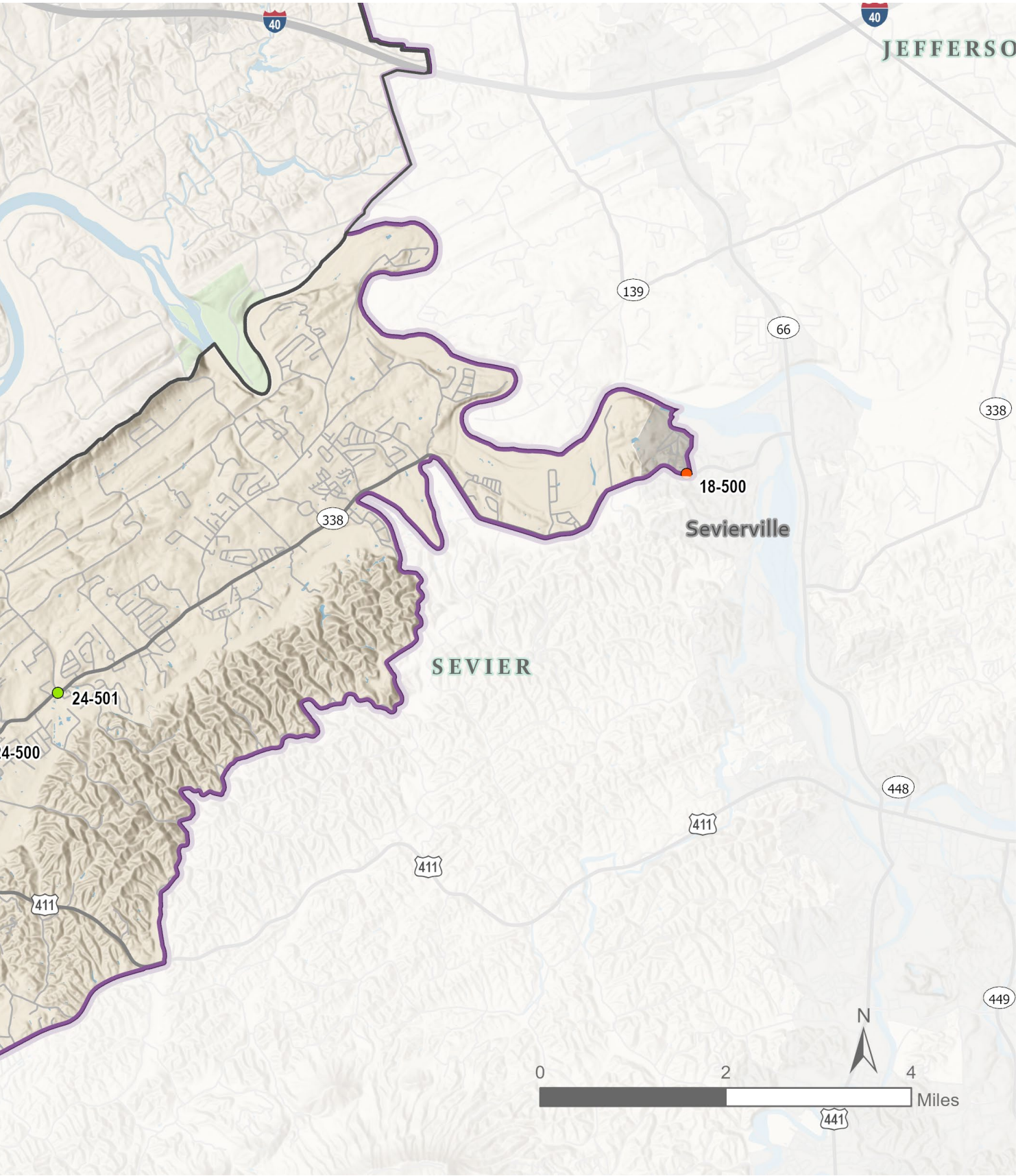


Figure 3.18: Fiscally-Constrained Projects, Sevier County


40
40
JEFFERSO
139
66
338
18-500
Sevierville
338
SEVIER
24-500
4-500
448
411
411
411
449
N
0
2
4
Miles
441

Potential Environmental Impacts

Understanding potential impacts to our natural and cultural resources now improves project development by providing realistic assumptions about project feasibility and costs. While minimal impacts are anticipated among the projects programmed in this Mobility Plan, some projects have the potential to impact our natural and cultural resources in the planning area.

Horizon Year	No. of Projects	IMPACTS				Potential Impact
		Stream & Hydro	Wetland	Flood Hazard	Environmental Burden	
2030	47	Moderate	Moderate	High	Moderate	Moderate
2040	50	Moderate	Moderate	Minimal	Minimal	Moderate
2050	27	Minimal	Moderate	Minimal	Minimal	Minimal
Illustrative	32	Minimal	Moderate	Minimal	Minimal	N/A

Figure 3.19: Potential Environmental Impacts by Horizon Years

While not every project will have impacts, and among those that do, not all will have the same impacts or require the same mitigation, steps can be taken up front with regards to protecting these communal resources:

- **Avoid the impacts:** The first strategy in the environmental process is to avoid adverse impact altogether. To do this, the project team assembled a GIS database resource with natural, cultural, and historic resources early in the process.
- **Minimize impacts:** Exploring alternative routes for a new road construction to minimize distance through a wetland, or considering access management as an alternative to widening, may reduce impacts to these resources.
- **Mitigate impacts:** Where necessary, compensation for environmental impacts by providing suitable substitute resources of value, whether on-site or off-site, may be considered during the engineering design or construction phase.

The State of Tennessee offers additional strategies to Avoid, Minimize, or Mitigate potential impacts including the below resources:

The Tennessee State Wildlife Action Plan provides more information on state specific strategies to implement conservation strategies to protect and conserve the native species.

The Land Trust for Tennessee released a first-of-its kind strategic conservation plan in September 2019 to accelerate and guide work across the state, and highlight the importance of land conservation in Tennessee.

AIR QUALITY CONFORMITY

As an air quality maintenance area for both Ozone and Fine Particulate Matter (PM2.5), the TPO must demonstrate that its transportation plans and programs will meet federal transportation air quality conformity requirements. This ensures that federal funds are not spent on projects that cause or contribute to new violations of the National Ambient Air Quality Standards (NAAQS), increase the frequency or severity of NAAQS violations, or delay timely attainment of the NAAQS.

Transportation conformity is a technical process that is performed using the TPO's regional travel demand model as well as an EPA mobile source emissions model to quantify the amount of estimated on-road motor vehicle emissions for future years throughout the life of the Mobility Plan. These models account for increasing population, implementation of roadway projects, tailpipe emission rates for different pollutants, operating speeds on the region's roadways and local weather conditions. The TPO has demonstrated that the projected emissions from on-road mobile sources will continue to be below allowable thresholds, even with implementation of all the projects selected for funding in the Mobility Plan. More detailed information on the transportation conformity analysis can be found in the Appendix as well as a standalone conformity determination report.

Currently there are no transportation control measures (TCMs) in the Tennessee SIP for the Knoxville 8-hour ozone and PM2.5 nonattainment areas. However, should TCMs be introduced in the area, nothing in the Mobility Plan 2050, nor the Transportation Improvement Program (TIP) will prohibit the timely implementation of any that are approved in the State Implementation Plan (SIP) for the Knoxville area.

Appendix

Additional technical analysis has been assembled, summarized, shared with advisory committee members to guide this plan update. These additional resources are available electronically. Appendix items include:

A. Technical Advisory Committee (TAC) meetings

B. Public Engagement Resources

C. System Performance Resources

D. Congestion Management Process (CMP)

E. ITS / System Architecture

F. Multimodal Assessment

G. Transit System Summary

H. Recommended Projects Table

I. Recommended Projects Table

J. Air Quality Confirming

K. Travel Demand Model Summary