

KINGSPORT METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION

2040 Long Range Transportation Plan (LRTP)



June 2017

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RESOLUTION
OF THE
KINGSPORT METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION
ADOPTING
THE KINGSPORT AREA 2040 LONG-RANGE TRANSPORTATION PLAN

WHEREAS, the Kingsport Metropolitan Transportation Planning Organization is responsible for carrying out a comprehensive, cooperative, and continuing transportation planning process throughout the Kingsport Urbanized / Planning Area; and

WHEREAS, the Fixing America's Surface Transportation (FAST) Act enabling legislation specifies that each Metropolitan Transportation Planning Organization (MTPO) have a current long-range transportation plan to provide the basis for transportation decisions in the urbanized / planning area; and

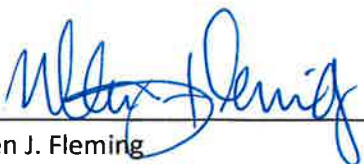
WHEREAS, the various state, local, and regional agencies involved with transportation planning for the Kingsport Urban / Planning area have cooperatively developed the 2040 Long-Range Transportation Plan to satisfy the federal planning requirements of the FAST Act; and

WHEREAS, the Kingsport Area 2040 Long-Range Transportation Plan was developed pursuant to the requirements of 23 CFR, Part 450, and


WHEREAS, the MTPO has involved the public and interested stakeholders in an open and transparent process in accordance with the MTPO's adopted Public Participation Plan (PPP).

NOW, THEREFORE BE IT RESOLVED BY THE EXECUTIVE BOARD OF THE KINGSPORT METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION, AS FOLLOWS:

The Kingsport Area 2040 Long-Range Transportation Plan is hereby approved and adopted by the Kingsport Metropolitan Transportation Planning Organization in order to ensure the continued livability, sustainability, and prosperity of the region by serving as the basis for future transportation planning and programming decisions.



Tilden J. Fleming
Chairman, Executive Board



William A. Albright
Chairman, Executive Staff

6/3/17

Date

6/2/2017

Date

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ACRONYM LIST

AADT	Annual Average Daily Traffic
ADA	Americans with Disabilities Act (ADA) of 1990
ADT	Average Daily Traffic
APD	Appalachia Development Highway System
AVL	Automated Vehicle Locator System
BEA	Bureau of Economic Analysis Economic Areas
BLOS	Bicycle Level of Service
BRR or BR	Bridge Replacement and Rehabilitation
CAA/CAAA	Clean Air Act or Clean Air Act Amendments
CBD	Central Business District
CIP	Capital Improvement Program
CMAQ	Congestion Mitigation and Air Quality Improvement Program
CO	Carbon Monoxide
CPTHSTP	Coordinated Public Transit Human Services Transportation Plan
CSS	Context Sensitive Solutions
E+C	Existing Plus Committed
EJ	Environmental Justice
EPA/USEPA	United States Environmental Protection Agency
FAA	Federal Aviation Administration
FAST Act	Fixing America's Surface Transportation Act
FH/PLHP	Forest Highway/Public Lands Highway Program
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	Fiscal Year
GHG	Greenhouse Gas
GIS	Geographic Information System
HOV	High-Occupancy Vehicle Lanes
HPP	High Priority Projects
HSIP	Highway Safety Improvement Program
I	Interstate
IAC	Interagency Consultation
IM	Interstate Maintenance
IMC	Instrument Meteorological Conditions
ITS	Intelligent Transportation Systems
JIT	Just-In-Time Delivery
KATS	Kingsport Area Transit Services
KRITS	Kingsport Regional Intelligent Transportation System
LOS	Level of Service
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
MEOC	Mountain Empire Older Citizens Agency
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MTPO	Metropolitan Transportation Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices

NAAQS	National Ambient Air Quality Standards
NCPD	National Corridor Planning and Development
ND	National Defense
NEPA	National Environmental Policy Act
NHFP	National Highway Freight Program
NHPP	National Highway Performance Program
NHS	National Highway System
NOx	Nitrogen Oxide
PGA	Planned Growth Area
PLOS	Pedestrian Level of Service
PPP	Public Participation Plan
RA	Rural Area
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SP	State Construction Program
SPPR	State Primary Pavement Rehabilitation
SR	State Route
STB	Surface Transportation Board
STBG	Surface Transportation Block Grant Program
STIP	State Transportation Improvement Program
TAZ	Traffic Analysis Zone
TCA	Tennessee Code Annotated
TDM	Travel Demand Management
TDOS	Tennessee Department of Safety
TDOT	Tennessee Department of Transportation
TE	Transportation Enhancement
TEA-21	Transportation Equity Act of the 21 st Century of 1998
TIP	Transportation Improvement Program
TN	Tennessee
TSM	Transportation System Management
UGB	Urban Growth Boundary
US	United States
USC	United States Code
V/C Ratio	Volume to Capacity Ratio
VA	Virginia
VDOT	Virginia Department of Transportation
VDRPT	Virginia Department of Rail and Public Transportation
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

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1.0 INTRODUCTION

The Kingsport Metropolitan Transportation Planning Organization (MTPO) was established in 1977, pursuant to federal requirements, to provide a coordinated, cooperative, and comprehensive approach to transportation planning for the Kingsport urbanized area (which today, based on the 2010 US Census, includes the cities of Kingsport, Mount Carmel, and Church Hill, Tennessee; Weber City and Gate City, Virginia; and portions of Hawkins County, Sullivan County, and Washington County Tennessee as well as portions of Scott County, Virginia).

Since that time, the region has experienced steady population and employment growth and has seen a shift in its employment base from largely manufacturing to one of service and retail. Another change in the region has been an increase in the percent of persons over the age of 65. In the 1970s less than 10% of the population was over 65 years of age. Today, nearly 20% of the population is over the age of 65, and that trend is projected to increase to over 25% by the year 2040.

With these changes has come the challenge of being able to provide transportation infrastructure and services to meet the region's growing mobility demands. In 1980, 103,000 persons resided in the Kingsport MTPO area. Today, the number of residents is over 132,000, and by 2040, the population is projected to be over 152,000.

In the 1980s, roadways, such as Interstate 26 had less than 16,000 vehicles a day and are now carrying over 40,000 vehicles and are only projected to increase in the future. In 1996, public transit was just starting in the City of Kingsport. Today, over 100,000 transit trips are made annually on the Kingsport Area Transit Service (KATS).

As the region develops this transportation plan, it must address three important questions. What does the future hold in store for this area relative to future growth and development? How well will the region's transportation system function? Lastly, how does the region balance these demands with the desires of existing residents and businesses when it comes to providing adequate and sound transportation choices?

The plan presented in this document provides a 25-year blueprint for transportation investments in the MTPO area through the year 2040. This plan is multimodal, meaning it addresses travel by all modes of the transportation system -- streets and highways, bikeways and walkways, public transportation, aviation, and rail. Consideration is given to population and employment trends, land development patterns, travel characteristics, current and future transportation system performance, and other planning factors. This plan was developed in coordination with the state and local agencies that are responsible for transportation, roadway safety, economic development and tourism, health and physical activity, environmental protection, land use management, natural resources, and historic preservation. The recommended plan is based on a series of stated community goals, financial capability, environmental considerations, and public guidance.

The plan is organized into eight sections:

- 1.0 Introduction - the legal basis of the plan and planning requirements
- 2.0 Guiding Principles - plan goals, objectives, and program initiatives
- 3.0 Planning Area and Region - current and future demographic and development conditions
- 4.0 Public and Stakeholder Participation - outreach, involvement, and consultation efforts during the planning effort with the public, stakeholders, and interested parties
- 5.0 Transportation System - current and future conditions of the transportation system
- 6.0 Financial Plan - current and future funding for transportation
- 7.0 Recommended Planned Improvements - recommended capital and operating improvements
- 8.0 Environmental Review - an assessment of the planned improvements on the physical and social environment

1.1 METROPOLITAN PLANNING

Federal law requires metropolitan areas (defined as urbanized areas with a population of greater than 50,000 people, based on the latest US Census) undertake a continuous, cooperative, and comprehensive transportation planning process. The Kingsport Metropolitan Transportation Planning Organization (MTPO) is the governing entity that is charged with carrying out this process for the Kingsport Urbanized Area. The planning area of the Kingsport MTPO consists of the cities of Kingsport, Mount Carmel, Church Hill, Gate City, Weber City, and portions of Sullivan, Hawkins, Washington, and Scott Counties.

The Kingsport MTPO is comprised of an Executive Board, Technical Coordinating Committee (or Executive Staff), and MTPO staff. The Executive Board is made up of elected officials (Mayors, County Executives, and Governors) from the following jurisdictional members:

In Tennessee

- City of Kingsport
- Town of Mount Carmel
- City of Church Hill
- Hawkins County
- Sullivan County
- Washington County
- State of Tennessee

In Virginia

- Weber City
- Gate City
- Scott County
- State of Virginia

LENOWISCO, a regional council of local governments that represents the counties of Lee, Wise, Scott and the City of Norton, Virginia serves as the voting member for Scott County, Weber City, Gate City, and all areas of Virginia in the Kingsport urbanized area. Additional

members who have an advisory role include the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and the First Tennessee Development District.

The MTPO Executive Board has periodic meetings to discuss and vote on various policies and products. Final responsibility for transportation planning and programming is vested with the Executive Board.

The MTPO Technical Coordinating Committee (Executive Staff) is comprised of a diverse group of transportation professionals, who advise the Executive Board members on all aspects of the planning process. The Executive Staff includes engineers, transportation and land use planners, from federal, state, and local agencies, as well as representatives from transit operators.

The MTPO staff is physically housed in the City of Kingsport and is responsible for all planning and administrative functions of the MTPO. The MTPO staff serve as a liaison between the MTPO Executive Board, TDOT, VDOT, FHWA, FTA, local governments, and other groups and individuals interested in transportation issues within the MTPO area. The MTPO staff takes their direction from, and are accountable to the Executive Board and Executive Staff.

1.2 LEGAL REQUIREMENTS OF THE PLAN

Federal legislation provides the guiding framework that governs the transportation planning process for all metropolitan planning organizations (MPOs) including the Kingsport MTPO. The Fixing America's Surface Transportation (FAST) Act of 2015 continues the previously established requirement that each MPO develop a transportation plan with at least a 20-year horizon of both long-range and short-range strategies/actions. The plan is intended to lead to the development of an integrated multimodal transportation system to facilitate the safe and efficient movement of people and goods in addressing current and future transportation demand. The plan must be updated every five years to keep consistent with existing conditions, re-evaluate proposed plans, programs and projects, and validate air quality conformity analysis.

The FAST Act legislation places continued emphasis on the relationships between land use, air quality, and transportation, including modes other than automobile. The Clean Air Act Amendments (CAAA) of 1977 and 1990 require that transportation plans, programs, and projects in non-attainment areas not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS).

In late 2002, the counties within the Kingsport MTPO, with the exception of Scott County, Virginia, joined an Early Action Compact (EAC) with the US Environmental Protection Agency (EPA) due to non-compliance with the national 8-hour ozone standards which were established in 1997 by the EPA but delayed nationally in implementation due to legal challenges which were ultimately resolved in 2002. Entering into the EAC (formally known as the Tri-Cities EAC) allowed the region to avoid being designated non-attainment as long as the area is making voluntary improvements to air quality. In 2008, the Kingsport MTPO area was officially designated as attainment for the 8-hour 0.08 ppm ozone standard by EPA.

Currently the region is not required to undertake air quality conformity analysis of its Long Range Transportation Plan (LRTP); however, the MTPO has developed the 2040 LRTP so that conformity testing can be undertaken should the region be designated non-attainment in the future.

Other requirements of the MPO planning process include compliance with a number of existing laws and regulations, which are described below.

- The Americans with Disabilities Act (ADA) of 1990 mandates equal opportunity for, and prohibits discrimination against, individuals with disabilities. In particular, Title II of the ADA and Section 504 of the Rehabilitation Act of 1973 requires State, local, and regional agencies to provide transportation programs, services, and activities that are accessible to all individuals.
- Title VI of the Civil Rights Act of 1964 prohibits discrimination on the basis of race, color, or national origin. Section 162a of the Federal-Aid Highway Act of 1973 (section 324, Title 23 U.S.C.), the enabling legislation of the Federal Highway Administration, prohibits discrimination based on sex.
- The Uniform Relocation Assistance and Real Property Acquisition Act of 1970 prohibits unfair and inequitable treatment of persons as a result of projects that are undertaken with federal financial assistance. The Civil Rights Restoration Act of 1987 clarified the intent of Title VI to include all programs and activities of federal aid recipients and contractors whether those programs and activities are federally-funded or not. Environmental Justice is a concept founded in the intent of the non-discrimination prohibitions of the federal legislation.
- The incorporation of Environmental Justice and nondiscrimination principles into transportation planning and decision-making processes as well as project-specific environmental reviews as founded in Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and reaffirmed in both the United States Department of Transportation (US DOT) Order 5610.2 (a), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and FTA Circular 4703.1 *Environmental Justice Policy Guidance for Federal Transit Administration Recipients*. These policy directives require federal agencies and grant recipients of federal funds to identify and address disproportionately high and/or adverse environmental or human health effects that any of its programs, policies, and/or activities may have on minority populations and low-income populations. Further, each agency and grant recipient must work to prevent the denial, reduction, or delay of benefits received by minority populations and low-income populations and must develop policies and strategies to ensure full and fair participation by affected populations in transportation decisions.
- There are two important aspects to climate change when it comes to planning for transportation investments. While a much debated topic, there is general scientific consensus that the earth is experiencing a warming trend and that human-induced increases in atmospheric greenhouse gases (GHGs) are a contributing factor. Because transportation-related GHG emissions are a large contributor to atmospheric GHGs, MPOs, through their transportation planning and investment decisions, are

called to increase their considerations and strategies to mitigate the effects of global climate change by reducing GHG emissions from transportation. Secondly, US DOT also encourages MPOs to consider transportation vulnerability due to climate change and extreme weather events and options for improving resiliency of transportation facilities or systems to climate changes and/or extreme weather events. The LRTP provides an excellent forum for laying the groundwork for this consideration.

- In 2009, the US DOT, the US Department of Housing and Urban Development (HUD), and US EPA announced a new Interagency Partnership for Sustainable Communities to improve access to affordable housing, provide more transportation options, and lower transportation costs while protecting the environment in communities nationwide. The partnership established six livability principles: provide more transportation choices; promote equitable-affordable housing; enhance economic competitiveness; support existing communities; coordinate and leverage policies and investments; and value communities and neighborhoods. MPOs are encouraged to incorporate these livability principles into their plans and programs to ensure that transportation investments support both mobility and broader community goals.

The 2040 LRTP for the Kingsport MTPO reflects compliance with the federal requirements of the FAST Act, the CAAA, and the above provisions. Throughout this document, data and analysis are presented illustrating consideration and compliance with these requirements.

1.3 PLAN ADOPTION AND AMENDMENT PROCESS

Developing and updating a long range transportation plan (LRTP) takes considerable time (generally 12 to 18 months or longer) given the amount of data and information that must be considered in the plan. As part of the plan development process, opportunities are provided for public and stakeholder input, which is an important activity in determining transportation needs and priorities, and aiding in the ultimate recommendations of the plan. Appendix I provides details on the outreach and involvement processes used in the development of the 2040 LRTP and the input received.

Once a draft plan has been developed, a formal review process is required of the draft document. This review process includes an initial review by state and federal agencies of the draft plan to ensure compliance with various federal transportation planning requirements. Once this review is completed a formal public review and comment period of the draft LRTP is conducted, which is a minimum of 30-days. After the MTPO has initiated the public review process on the draft LRTP, the MTPO generally holds an advertised public meeting to review and obtain final comments from the public. At the end of the public comment period and after public comments have been addressed or considered, the MTPO endorses/adopts the LRTP and submits it to the appropriate state and federal agencies so that final determination of compliance with various federal transportation planning and air quality conformity requirements can be made. Once compliance with federal requirements has been determined, the plan becomes an approved document.

Amendments to the LRTP can and do occur once a plan has been adopted. These amendments can occur for various reasons, but primarily relate to changes in the fiscal

constraint of the plan such as changes in project schedules or priorities, or changes in development patterns that may justify transportation improvements. While the intent is to avoid such mid-cycle changes, amendments do occur. Any such amendment to the LRTP must follow the same public review process and procedures as that of adopting the plan, as per the MTPO's Public Participation Plan (PPP) (available at: <http://mtpo.kingsporttn.gov/PPP>).

1.4 PLAN IMPLEMENTATION

Implementation of project recommendations from the LRTP occurs through the programming of transportation improvements on a scheduled basis which is linked to annual state and federal funding appropriations. For projects within the MTPO area that are federally or state funded or considered regionally significant, the MTPO, in consultation with the appropriate city, county, and state transportation agency, determines which projects are to be advanced from the LRTP into the MTPO's short-term Transportation Improvement Program (TIP).

The TIP is a planning/programming document developed and adopted by the MTPO in response to the transportation needs in the MTPO area. The TIP updates and advances a four-year implementation program for all modes of transportation. This document is important because it not only addresses major transportation improvements (constructing a new bridge or road), but it also contains small-scale transportation improvements (intersection improvements, etc.). All projects that are added to the TIP for funding and implementation must be consistent with the LRTP. This consistency ensures for a continuing, cooperative, and comprehensive planning process that guides development of integrated planning and decision-making by the MTPO.

The MTPO also maintains an annual work program (referred to as the Unified Planning Work Program or UPWP) which outlines the planning activities in the region to be undertaken by the MTPO during the fiscal year. Planning activities of the MTPO are influenced by the goals and priorities of the LRTP and frame a large portion of the MTPO's work program activities. Examples of these activities, which support implementation of the MTPO's LRTP, include undertaking subarea and sub-regional studies that allow for the MTPO to better understand transportation needs in the region, maintaining avenues and opportunities for public and stakeholder input on projects and decisions by the MTPO, and updating planning data and tools for future analysis of transportation needs in the region. Additionally, the MTPO is actively involved in monitoring and coordinating projects from the LRTP into the TIP. Through this continuous planning process the MTPO plays an active role in implementing the recommendations of the LRTP and supporting an integrated planning process within the MTPO area.

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2.0 GUIDING PRINCIPLES

This section describes a set of stated goals, objectives, and measures that have been developed to guide the 2040 LRTP. During 2011, the MTPO Executive Board and Executive Staff, with the assistance of the public, established a series of guiding principles, which were revised in 2016, to align with national transportation policy and to serve in the development of the 2040 MTPO LRTP. From each goal, a set of objectives intended to move the region closer to the stated guiding principles has been established.

2.1 NATIONAL EMPHASIS

The FAST Act, which was signed into law in 2015, is the current national transportation legislation providing the guiding principles behind transportation decision-making throughout the United States in metropolitan areas.

The FAST Act established the following ten Planning Factors to guide transportation decisions:

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.
2. Increase the safety of the transportation system for motorized and non-motorized users.
3. Increase the security of the transportation system for motorized and non-motorized users.
4. Increase the accessibility and mobility options available to people and for freight.
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.
7. Promote efficient system management and operation.
8. Emphasize the preservation of the existing transportation system.
9. Enhance travel and tourism.
10. Improve the resiliency of the transportation system and reduce or mitigate stormwater impacts of surface transportation.

In addition to the above Planning Factors, federal transportation legislation (first enacted under MAP-21) outlines the following national performance management measures to guide the focus of the Federal-aid highway program:

- Safety - To achieve a significant reduction in traffic fatalities and serious injuries on all public roads
- Infrastructure Condition - To maintain the highway infrastructure asset system in a state of good repair
- Congestion Reduction - To achieve a significant reduction in congestion on the National Highway System
- System Reliability - To improve the efficiency of the surface transportation system

- Freight Movement and Economic Vitality - To improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- Environmental Sustainability - To enhance the performance of the transportation system while protecting and enhancing the natural environment
- Reduced Project Delivery Delays - To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion through eliminating delays in the project development and delivery process, including reducing regulatory burdens and improving agencies' work practices

These factors and goals provide the foundation for which locally desired regional outcomes are established. Table 2-1 illustrates how the 2040 LRTP goals, which are further described in the following section and throughout the LRTP, address each of these planning factors.

2.2 REGIONAL GOALS

The following goals and objectives have been established with full consideration of the above FAST Act Planning Factors and national transportation policy emphasis. The goals are intended to guide future transportation decisions in the region. For each of the following goals, a corresponding set of objectives has been established to help the region move closer to the intended goal.

Table 2-1
LRTP Goals Addressing FAST Act Planning Factors

FAST Act Planning Factor	Plan Goal
1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency.	3
2. Increase the safety of the transportation system for motorized and non-motorized users.	1,3
3. Increase the security of the transportation system for motorized and non-motorized users.	1
4. Increase the accessibility and mobility options available to people and for freight.	1,3
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.	2,3
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight.	1,3
7. Promote efficient system management and operation.	1,3
8. Emphasize the preservation of the existing transportation system.	2
9. Enhance travel and tourism	3
10. Improve the resiliency of the transportation system and reduce or mitigate stormwater impacts of surface transportation	2

Goals

Goal 1 - Livability - Provide safe, secure, convenient, and active transportation choices to all citizens that strengthen the livability and health of our communities and region.

- Improve safety by reducing transportation-related fatalities and injuries
- Make streets a place for all users - “Complete Streets”
- Promote active transportation by increasing opportunities for short trips through improved accessibility to alternative modes
- Increase transit and other transportation demand management opportunities as a means of providing affordable transportation options
- Strive to balance capacity and mobility needs for all users whereby connections to and across modes and land uses function harmoniously

Goal 2 - Sustainability - Promote and advance sustainable transportation choices for the greater Kingsport Region that support long-term economic, social, and environmental sustainability within and throughout the region.

- Maintain what we have – take a “state of good repair” approach to our community’s transportation assets
- Seek cost-effective management solutions and new technologies as a means of addressing congestion, improving travel time reliability, reducing transportation delay, and improving system operations
- Seek improvement options which minimize adverse impacts of surface transportation to historical, social, cultural, and natural environments, including stormwater impacts
- Promote investment solutions that improve the resiliency of the transportation system and reduce transportation impacts on air-quality

Goal 3 - Prosperity - Promote transportation policies and investments that advance quality economic development and redevelopment, economic competitiveness, and efficient access to people, places, and goods and services within and throughout the region.

- Strategically target transportation investments to areas supportive and conducive to growth and redevelopment initiatives
- Support transportation investments and policies that work to create jobs, efficiently move freight, promote tourism, and improve access to all modes and destinations while embracing access management and corridor management strategies that preserve the long-term functionality of a roadway’s capacity and safety
- Support land use and development patterns that reduce transportation costs and expenditures and improve accessibility for all
- Continue to promote and foster an environment by which citizens, communities, jurisdictions, elected officials, and other stakeholders can collaboratively advance a sustainable multimodal transportation system that provides safe and secure connections throughout a livable and prosperous region

2.3 PROJECT EVALUATION CRITERIA

To create a stronger link between the stated goals and objectives of the 2040 LRTP and transportation improvements ultimately selected for funding by the MTPO, the MTPO Executive Board at their November 3, 2016 meeting established evaluation criteria to guide the review and development of projects ultimately selected for inclusion into the 2040 LRTP. The following are the criteria and associated points for each project selection criteria:

Priority	Measure	Points
Safety	Number of auto and non-auto crashes, crash rate, and geometrics	25 points
Operational Efficiency	Current and future level of service (LOS), traffic operations, traffic volume, and system redundancy	20 points
Accessibility	Population and employment growth served, and improved system connectivity	10 points
Active Transportation	Non-motorized demand, targeted populations served (65+, low income, disabled), and improvement of LOS for pedestrian and bicyclist	15 points
Environmental	Avoidance of floodplains, historical areas, steep slopes, and parks, and capacity projects without widening or adding a new facility	10 points
Economic	Proximity to freight dependent industries, truck trip origins and destinations, percentage of trucks, educated workforce and jobs, and tourist destinations served	20 points

Each transportation recommendation considered for inclusion in the 2040 LRTP was evaluated by comparing the project's need with the above project selection criteria. Appendix II provides greater detail on each criterion and the results of the assessment that aided in the ultimate selection of the recommended transportation improvements, which are presented in Section 7.0.

The resulting score for each project is an indication of the transportation project's consistency with the MTPO's stated goals. The higher the score, the more consistent the project is with the region's desires for transportation investments. Conversely, the lower the score, the less consistent the project is with the region's desires for transportation investments, indicating that the project does not fully meet or achieve all the stated goals and objectives of the MTPO.

2.4 PERFORMANCE MEASURES

As previously stated, federal transportation legislation places greater emphasis on system performance and national performance management measures to guide a performance-based planning process at the metropolitan and state level. States, MPOs, and operators of public transportation are required to establish and coordinate targets they set in key national performance areas, linking planning and programming to performance targets.

In January 2017, FHWA and FTA promulgated a remaining set of final rules on performance measures to assess performance in 12 areas of the Federal-aid highway program and for transit agencies that receive FTA Federal financial assistance (under 49 U.S.C.) to set performance targets to monitor, assess, and utilize to improve the state of good repair of their capital assets and the safety performance of their public transportation systems.

Table 2-2 provides a summary of these nationally-established measures. Over the course of the next two years, states, MPOs, and operators of public transportation will be working to fully implement these performance measures and targets. The MPO's next LRTP will be highly influenced by these performance measures and established targets.

Table 2-2
National Transportation Performance Measures

Rulemaking	23 CFR & 49 CFR	Final Performance Measures	Measure Applicability
Safety PM Final Rule			
	Part 490.207(a)(1)	Number of fatalities	All public roads
	Part 490.207(a)(2)	Rate of fatalities	All public roads
	Part 490.207(a)(3)	Number of serious injuries	All public roads
	Part 490.207(a)(4)	Rate of serious injuries	All public roads
	Part 490.207(a)(5)	Number of non-motorized fatalities and non-motorized serious injuries	All public roads
Infrastructure PM Final Rule			
	Part 490.307(a)(1)	Percentage of pavements of the Interstate System in Good condition	The Interstate System
	Part 490.307(a)(2)	Percentage of pavements of the Interstate System in Poor condition	The Interstate System
	Part 490.307(a)(3)	Percentage of pavements of the non-Interstate NHS in Good condition	The non-Interstate NHS
	Part 490.307(a)(4)	Percentage of pavements of the non-Interstate NHS in Poor condition	The non-Interstate NHS
	Part 490.407(c)(1)	Percentage of NHS bridges classified as in Good condition	NHS
	Part 490.407(c)(2)	Percentage of NHS bridges classified as in Poor condition	NHS
System Performance PM Final Rule			
	Part 490.507(a)(1)	Percent of the Person-Miles Traveled on the Interstate that are Reliable	The Interstate System
	Part 490.507(a)(2)	Percent of the Person-Miles Traveled on the Non-Interstate NHS that are Reliable	The non-Interstate
	Part 490.507(b)	Percent Change in Tailpipe CO2 Emissions on the NHS Compared to the Calendar Year 2017 Level	NHS
	Part 490.607	Truck Travel Time Reliability (TTTR) Index	The Interstate System
	Part 490.707(a)	Annual Hours of Peak Hour Excessive Delay Per Capita	The NHS in urbanized areas with a population over 1 million for the first performance period and in urbanized areas with a population over 200,000 for the second and all other performance periods that are also in nonattainment or maintenance areas for ozone (O3), carbon monoxide (CO), or particulate matter (PM10 and PM2.5)
	Part 490.707(b)	Percent of Non-SOV Travel	
	Part 490.807	Total Emissions Reduction	All projects financed with funds from the 23 U.S.C. 149 CMAQ program apportioned to State DOTs in areas designated as non-attainment or maintenance for ozone (O3), carbon monoxide (CO), or particulate matter (PM10 and PM2.5)
Transit Performance PM Final Rule			
	Part 670	Public Transportation Safety Program - provides the framework for FTA to monitor, oversee, and enforce transit safety, based on the methods and principles of Safety Management Systems.	Performance targets based on the safety performance criteria
	Parts 625 and 630	Transit Asset Management - defines the term "state of good repair" and establishes minimum Federal requirements for transit asset management.	Performance measures for Equipment, Rolling Stock, Infrastructure, and Facilities

3.0 PLANNING AREA AND REGION

The Kingsport region is situated along the borders of northeastern Tennessee and southwestern Virginia in an area commonly referred to as the Tri-Cities region. The Kingsport MTPO planning area is one of three urban areas in the Tri-Cities region and comprises nearly 183,000 acres incorporating the cities of Kingsport, Mount Carmel, and Church Hill, Tennessee; Weber City and Gate City, Virginia; and portions of the Tennessee counties of Hawkins, Sullivan, and Washington as well as portions of Scott County, Virginia. Figure 3-1 illustrates the planning area of the Kingsport MTPO.

As previously mentioned, since 1977, when the Kingsport area was first designated by the federal government as a metropolitan area, the region has experienced steady population and employment growth and has seen a shift in its employment base from largely manufacturing to one of service and retail. Another change in the region has been an increase in the percent of persons over the age of 65. In the 1970s, less than 10% of the population was over 65 years of age. Today, nearly 20% of the population is over the age of 65, and that trend is projected to increase to over 25% by the year 2040.

This section describes the community structure of the MTPO area - relative to population and employment trends and forecasts, the region's natural and cultural environment, and current and future land use activities as well as plans and policies that guide growth and development within the region. State and local agencies assisted in determining the latest available estimates and assumptions for land-use, population, travel, employment, congestion, and economic activity, which were utilized in the development of this plan.

3.1 DEMOGRAPHICS

This sub-section discusses the population, age, housing, and employment characteristics of the MTPO area.

3.1.1 Population Trends and Forecasts

The total population of the Kingsport MTPO area in 2015 was 132,212, which represented 37% of the total populations of the four counties partially within the MTPO area. By 2040, the Kingsport MTPO area is projected to have 152,066 persons, which is a 15% increase over the 2010 population count. Table 3-1 depicts recent population trends and projections for the MTPO area. Figure 3-2 illustrates the projected absolute increase in population for the MTPO area from 2015 to 2040.

**Table 3-1
Total Population (2010-2040)**

	2010	2015	2040	% Change (2010-2015)	Absolute Change (2015-2040)	% Change (2015-2040)
Kingsport MTPO Area	131,042	132,212	152,066	0.89%	19,854	15.0%
Sullivan County, TN	90,993	91,289	98,357	0.33%	7,068	7.7%
Hawkins County, TN	23,248	23,632	30,874	1.65%	7,242	30.6%
Washington County, TN	8,501	8,845	12,582	4.05%	3,737	42.2%
Scott County, VA	8,300	8,446	10,253	1.75%	1,808	21.4%
Total Population (4 Counties)	360,170	366,101	428,515	1.65%	62,414	17.0%
MTPO% of 4 County Population	36.4%	36.1%	35.5%			

Sources: U.S. Census, Woods & Poole Economics, Inc.

Figure 3-1
Kingsport MTPO Planning Area Map

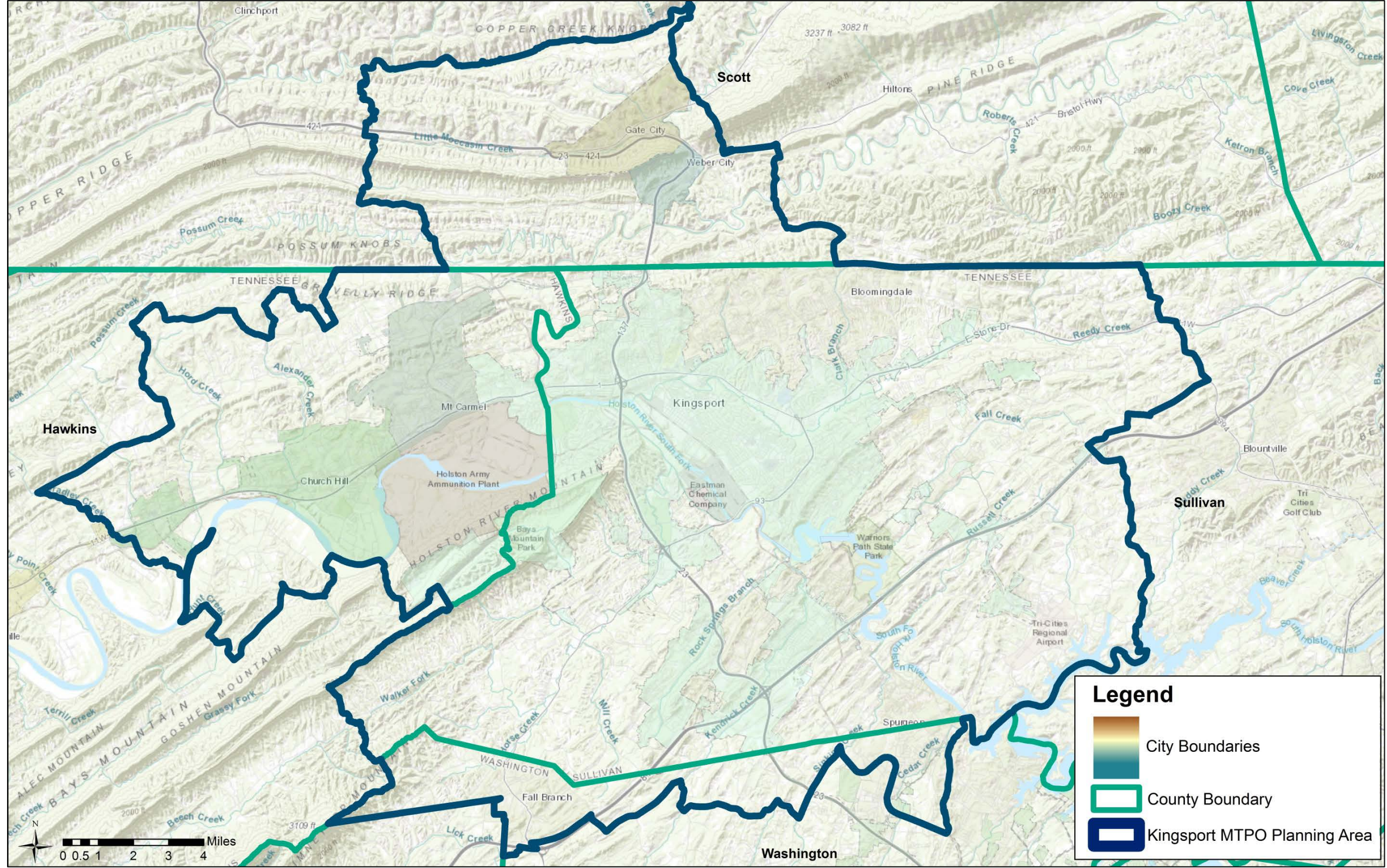


Figure 3-2
Population Change (2015-2040) Map

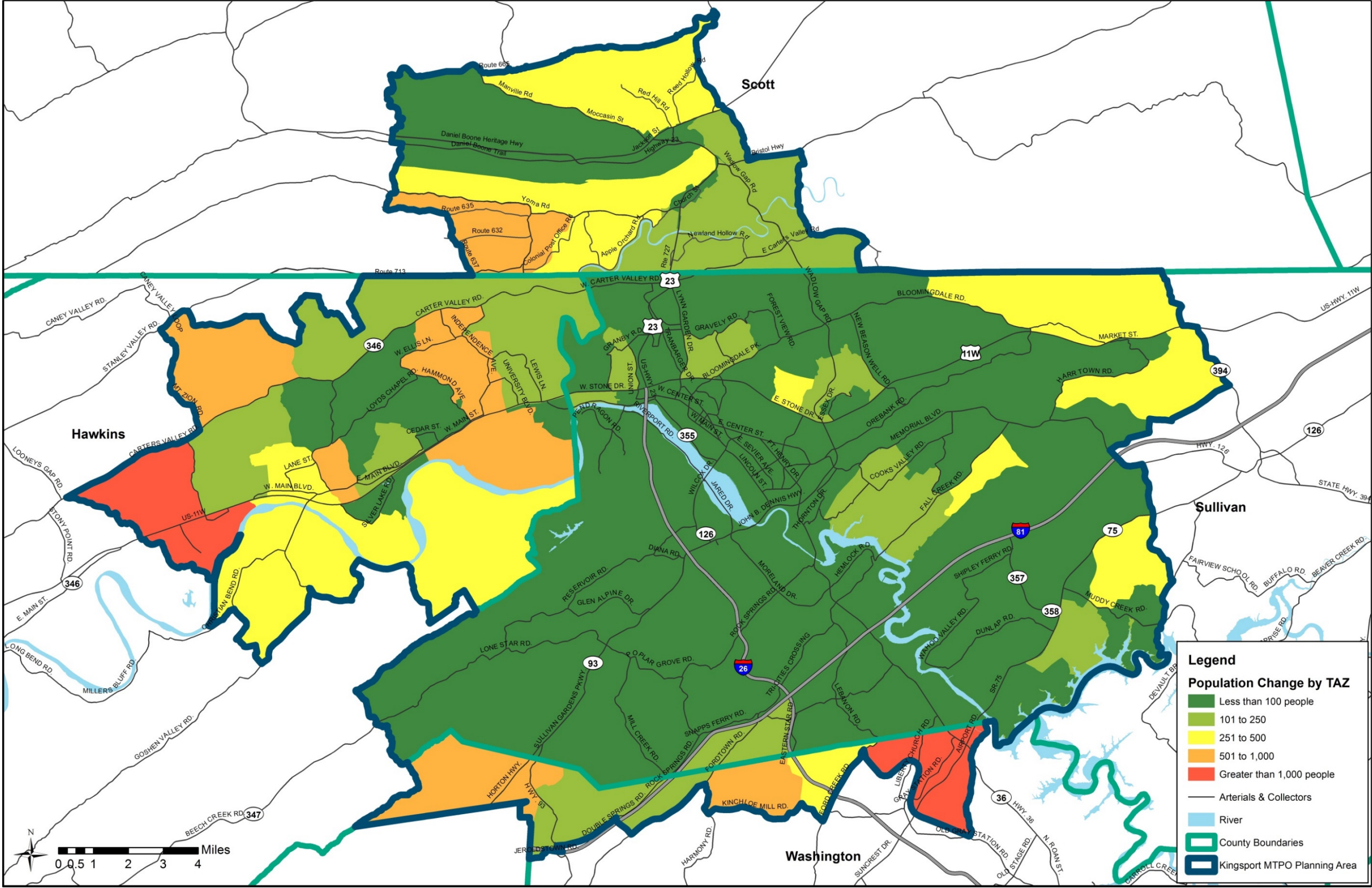


Table 3-2 and Figure 3-3 illustrate the number of persons per square mile (or density level) within the MTPO area. The population density in 2015 for the MTPO area was approximately 0.72 people per acre. The current MTPO planning boundary is intended to reflect the area of the region which is likely to be urbanized in the next 20 years. Assuming the MTPO planning boundary remained the same as it is today – the population density of the MTPO area would increase to 0.83 people per acre.

Table 3-2
MTPO Area Population Density (2010-2040)

	2010	2015	2040
Total Population	131,042	132,212	152,066
Land Area (acres)	183,830	183,830	183,830*
Population per Acre	0.71	0.72	0.83*

Sources: U.S. Census, Woods & Poole Economics, Inc.

* For illustration purposes only – assuming no geographic expansion of the MTPO area

3.1.2 Age Trends and Forecasts

Another trend in the MTPO area that has continued to increase over time and is projected to continue to increase is the number of persons aged 65 and older. In 1970, nearly all four counties in the MTPO region had less than 10% persons aged 65 and older. Today that number is closer to 20% and by 2040 approximately 25% of the region's population will be aged 65 and older with Sullivan, Hawkins, and Scott Counties having nearly 30% of their populations 65 and older. Table 3-3 depicts these changing age demographics within the MTPO area counties.

Table 3-3
MTPO Area County Population Aged 65 and Over Trends (2010-2040)

	2010	2015	2040	Percent Change (2010-2015)	Percent Change (2015-2040)
Sullivan County, TN	18%	21%	28%	12%	42%
Hawkins County, TN	16%	20%	27%	22%	62%
Washington County, TN	15%	17%	21%	17%	57%
Scott County, VA	20%	22%	30%	7%	35%

Source: Woods & Poole Economics, Inc.

Providing transportation options within the region will require higher levels of investments in walking, biking, and transit services over time in meeting the needs of this growing population group. Equally important will be housing placement in relation to other uses (e.g. grocery, stores, medical, recreation, etc.) to reduce transportation costs and provide mobility independence.

3.1.3 Household Trends and Forecasts

The number of households within the MTPO area is projected to mirror the rate of increase in population over the 25-year planning horizon.

In 2015, the number of households within the MTPO area was 62,422. By 2040, the number of households is projected to grow to nearly 71,670. Table 3-4 and Figure 3-4 illustrate the number of households and density level of households within the MTPO area.

As illustrated in the household density map, while outward growth is projected, density levels are expected to increase from current concentration areas. Higher residential density makes walking, biking, and transit transportation a more viable option compared to serving a region with leapfrog low density and outward development.

Table 3-4
MTPO Area Household Density (2010-2040)

	2010	2015	2040	Percent Change (2015-2040)
Total Households	52,846	62,422	71,670	14.8%
Land Area (Acres)	182,830	182,830	182,830	--
Households per Acre	0.29	0.34	0.39	14.8%

Sources: U.S. Census, Woods & Poole Economics, Inc.

Figure 3-3
Population Density (2015-2040) Map

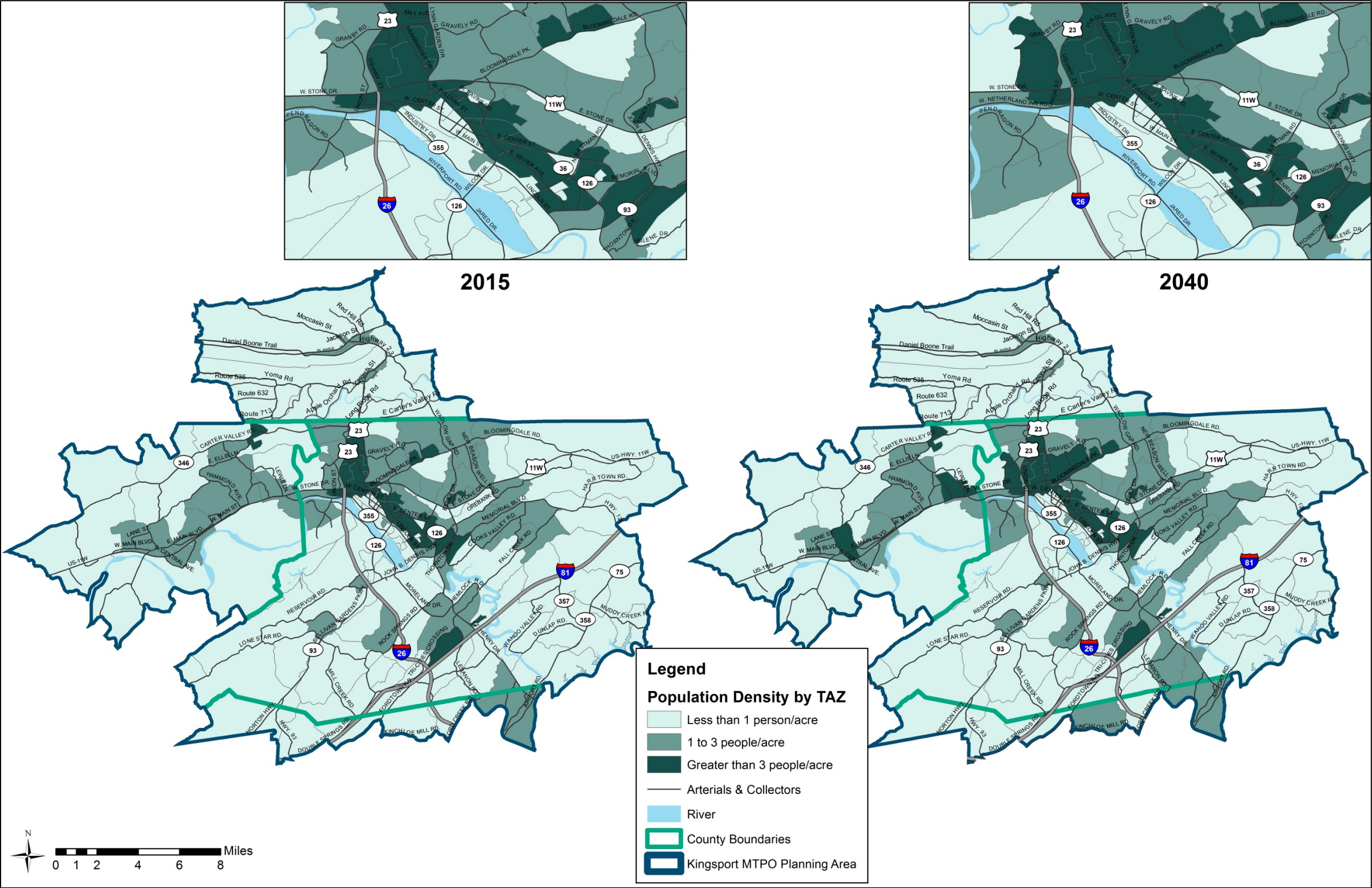
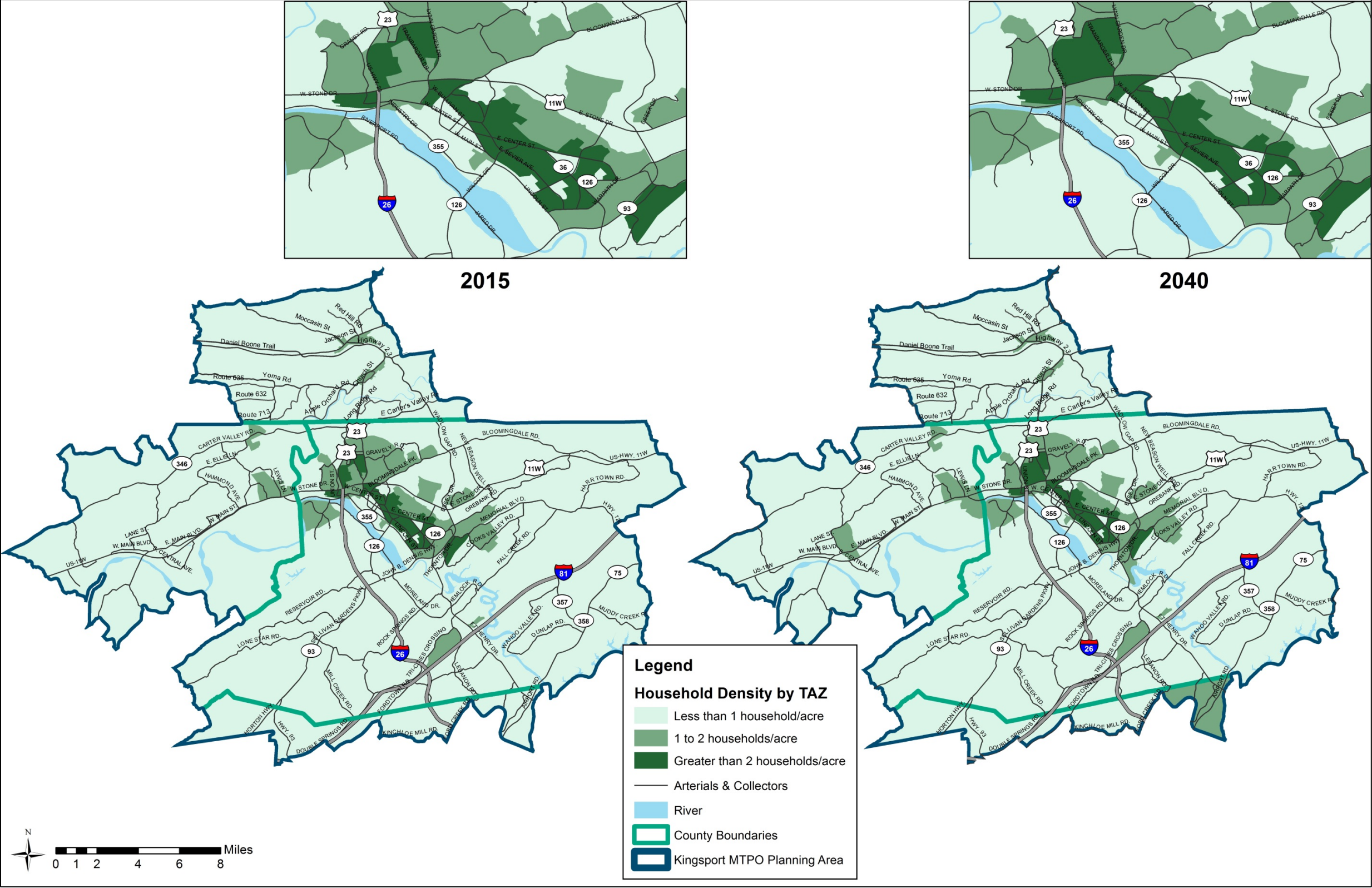


Figure 3-4
Household Density (2015-2040) Map



3.1.4 Employment Trends and Forecasts

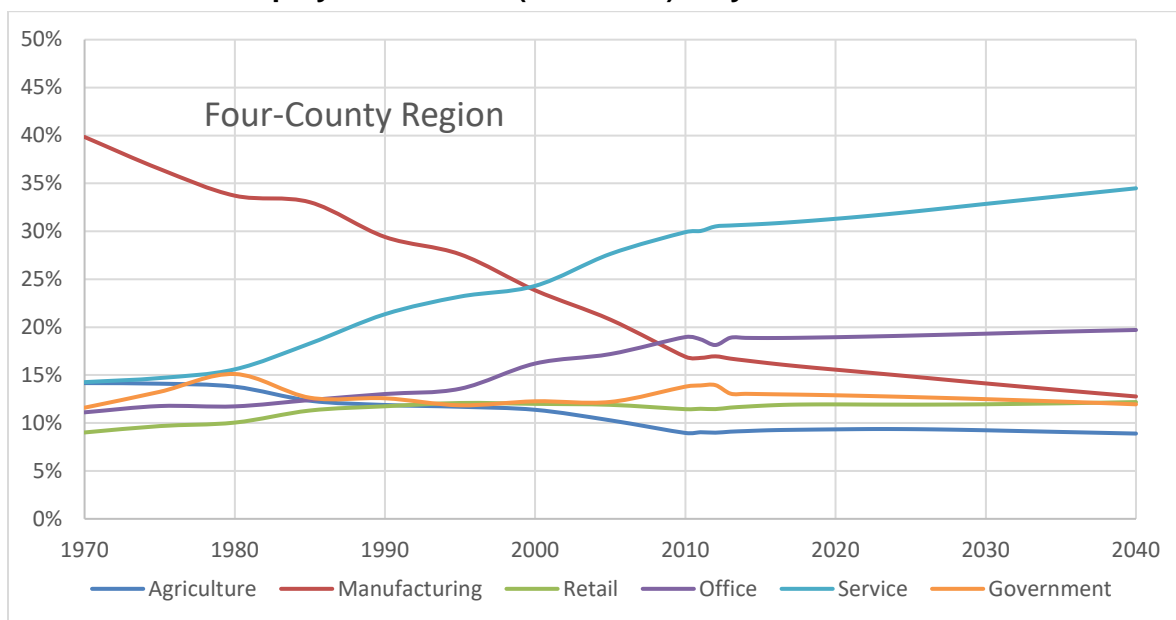
Employment conditions within the MTPO area, much like in many communities in the southeast, have seen dramatic changes over the last several decades relative to the number of jobs and types of jobs, which make up the local economy.

Figure 3-5 illustrates the change in the number of jobs and types of jobs within Sullivan, Hawkins, and Washington County, Tennessee and Scott County, Virginia (which encompasses the Kingsport MTPO area) from 1970 to 2040 for the employment sectors of service, retail, medical, manufacturing, and farming. The types of business included in these six employment types are as follows:

- Agriculture: Farm, Forestry, Fishing, Related Activities and Other, Mining, Construction
- Manufacturing: Utilities, Manufacturing, Wholesale Trade, Transportation and Warehousing
- Retail: Retail Trade
- Office: Information, Finance and Insurance, Real Estate and Rental and Lease, Professional and Technical Services, Management of Companies and Enterprises, Administrative and Waste Services
- Service: Educational Services, Health Care and Social Assistance, Arts, Entertainment, and Recreation, Accommodation and Food Services, Other Services, Except Public Administration
- Government: Federal Civilian Government, Federal Military, State and Local Government

In the 1970s, the employment of the four-county region and the Kingsport MTPO was largely dominated by manufacturing jobs, but like the rest of the US, the region has seen a downturn in manufacturing employment since that time. While manufacturing is no longer the leading employment sector in the region, the Kingsport MTPO area and the region have continued to see positive employment growth in service, retail, and office employment.

**Figure 3-5
Employment Trends (1970-2040) – By Sector**



Today, these three employment sectors (service, office, and retail) account for 61% of the jobs within the MTPO area while manufacturing has continued to decline. Over the next 25 years, employment in the Kingsport MTPO area is projected to receive new jobs. Of this growth, approximately 84% of it is projected to occur in the service, office, and retail sectors.

Table 3-5 and Figure 3-6 illustrate employment trends and forecasts within the MTPO area including projected employment concentrations.

**Table 3-5
MTPO Area Total Employment (2015-2040)**

Kingsport MTPO Area						
MTPO Counties	2015 Jobs	Percent of MTPO Area's 2015 Jobs	2040 Jobs	Percent of MTPO Area's 2040 Jobs	Absolute Change (2015-2040)	Percent Change (2015-2040)
Sullivan County	46,055	84%	55,509	81%	9,454	20.5%
Hawkins County	4,549	8%	6,371	9%	1,822	40.1%
Washington County	1,415	3%	3,474	5%	2,059	145.5%
Scott County, VA	2,561	5%	3,236	5%	675	26.3%
MTPO Area Total	54,580	100%	68,590	100%	14,010	25.7%

Sources: U.S. Census, Woods & Poole Economics, Inc.

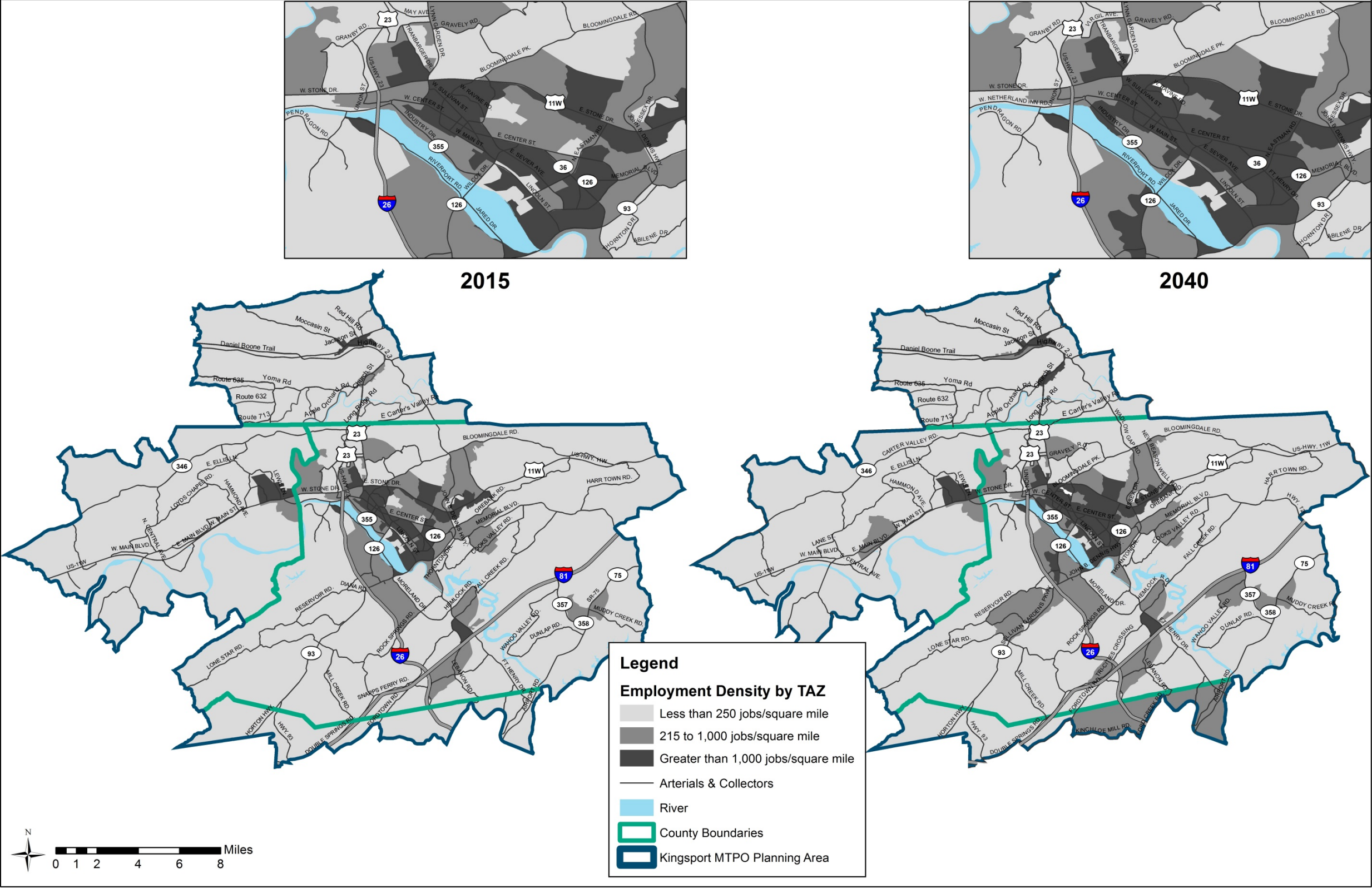
Table 3-6 identifies the ten largest non-government employers (in terms of number of employees) within the MTPO area. These ten employers account for approximately 25% of all jobs (or 13,994 jobs) within the MTPO area.

**Table 3-6
10 Largest Private Employers**

Employer	Type of Industry	Number of Employees
Eastman Chemical Company	Manufacturing	6,700
Brock Services	Construction	1,500
Holston Valley Medical Center	Medical	1,500
Indian Path Medical Center	Medical	900
Wellmont Medical Associates	Medical	713
Hutchinson Sealing Systems, Inc.	Manufacturing	600
US Army Ammunition Plant	Manufacturing	600
Eastman Credit Union	Financial	501
Quad/Graphics Inc.	Manufacturing	500
Kingsport Times-News	Manufacturing	480

Sources: Tennessee Department of Economic and Community Development, InfoGroup

Figure 3-6
Employment Density (2015-2040) Map



With a projected 26% increase in employment over the 25-year planning horizon, job opportunities within the MTPo area appear to be strong. As previously mentioned, job growth in the region has seen a shift from largely manufacturing to a more service-related economy. Changes in employment type from shift work to one that is consumer dependent will result in changing travel patterns over time. An example of this type of travel behavior change can be seen on corridors such as Stone Drive with high amounts of commercial development and traffic volumes during mid-day that are reaching the traditional AM and PM commuting traffic volumes.

3.2 NATURAL & CULTURAL ENVIRONMENT AND LAND DEVELOPMENT PATTERNS

This sub-section describes the MTPo area's natural and cultural environmental features, current and future land use activities, and plans and policies that guide growth and development activities.

3.2.1 Natural Environment

The natural environment often dictates the pattern of land use and development in a community as well as influences the type and location of its transportation infrastructure. Climate, air and water quality, topography and geology, and watersheds and tributaries are significant natural factors that effect growth and development and are important to understand and consider in the development of a community's transportation system. The following is a listing of these factors and the region's transportation system:

Climate

The climate of the MTPo region can be characterized as continental and warm-to-temperate. Winters are short and cool with the average temperature being about 30 degrees Fahrenheit. The summer season is warm with an approximate average temperature of 77 degrees Fahrenheit. The mean annual rainfall, which is fairly well distributed throughout the year, averages approximately 43.1 inches. Severe storms are rare, and winters are generally mild and clear.

Climate change has become an increasingly important policy issue. While a much debated topic, there is general scientific consensus that the earth is experiencing a warming trend and that human-induced increases in atmospheric greenhouse gases (GHGs) are a significant cause. The combustion of fossil fuels is by far the biggest source of GHG emissions. In the United States, transportation is the largest source of GHG emissions, after electricity generation. Transportation accounts for 26% of United States greenhouse gas emissions based on 2014 data.

Scientists refer to what has been happening in the earth's atmosphere over the past century as the "enhanced greenhouse effect." By pumping man-made greenhouse gases into the atmosphere, humans are altering the process by which naturally occurring greenhouse gases trap the sun's heat before it can be released back into space. Since the beginning of the industrial revolution, atmospheric concentrations of carbon dioxide have increased nearly 30%, methane concentrations have more than doubled, and nitrous oxide concentrations have risen by about 15%. These increases have enhanced the heat-trapping capability of the earth's atmosphere which has led to a decrease in the polar ice caps and an increase in sea levels. Such trends are a particular threat to coastal

communities in the US and around the world due to their vulnerability to flooding and increased tropical storm activity.

A wide range of strategies are available to reduce GHG emissions from the transportation sector. Section 8.0 of this Plan describes these strategies and what actions the Kingsport MTPo can undertake to contribute to reductions in GHG emissions.

Air Quality

The US Environmental Protection Agency (EPA) sets national standards for pollutants such as volatile organic compounds (VOCs) and nitrogen oxides (NOx), which are precursors of ozone formation. The EPA designates areas that exceed the set pollutant levels as "non-attainment." The FAST Act legislation places continued emphasis on the relationships between land use, air quality, and transportation, including modes other than single-occupancy automobiles. The Clean Air Act Amendments (CAAA) of 1977 and 1990 require that transportation plans, programs, and projects in non-attainment areas not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS). In the 1970's, EPA established a 1-hour ozone standard. Originally set at 0.08 parts per million (ppm) in 1971, the 1-hour ozone standard was revised in 1979 to 0.12 ppm. In July 1997, EPA replaced the 1-hour standard with an 8-hour standard of 0.08 ppm. The 8-hour standard was delayed nationally in implementation due to legal challenges which were ultimately resolved in 2002.

In late 2002, the counties within the Kingsport MTPo, with the exception of Scott County, Virginia, joined an Early Action Compact (EAC) with the EPA due to non-compliance with the national 8-hour ozone standards. Entering into the EAC allowed the region to avoid being designated non-attainment as long as the area is making voluntary improvements to air quality. In 2008, the Kingsport MTPo area was officially designated as attainment for the 8-hour 0.08 ppm ozone standard by EPA.

Currently, the region is not required to undertake air quality conformity analysis of its LRTP; however, the MTPo has developed the 2040 LRTP so that conformity testing can be undertaken should the region be designated non-attainment in the future. This is particularly of importance since EPA in 2015 revised the 8-hour standard to 0.070 ppm and compliance with this new standard is unknown at this time.

Topography and Geology

Topography is defined as the general configuration of the earth's surface, including its slope, geological characteristics, and other natural features. Topography in this region of Tennessee and Virginia is among the most varied in the United States. The MTPo region located in the Ridge-and-Valley Appalachians, which is a physiographic province of the larger Appalachian Mountains extending from southeastern New York through northwestern New Jersey, westward into Pennsylvania and southward into Maryland, West Virginia, Virginia, Tennessee, Georgia and Alabama.

These mountains are characterized by long, even ridges, with long, continuous valleys in between. From a great enough altitude, they almost look like corduroy, except that the widths of the valleys are somewhat variable and ridges sometimes meet in a vee. The ridge and valley system presents an important obstacle to east-west land travel even with today's technology. Elevations within the MTPo area range from 1,200 feet along the

Holston River to 2,400 feet on Bays Mountain. Slopes in the region range from below 5% to nearly 50%. In areas greater than 20% slope, limitations to development are severe.

Karst terrain makes up a large part of the northeastern Tennessee and southwestern Virginia landscape and is very problematic in locating, designing, and constructing highways. Karst topography is the name given to an area underlain by rocks such as limestone and is characterized by caves, sinkholes, and depressions. Figure 3-7 illustrates the regional context of karst development areas within Tennessee and Virginia and the MTPo region.

Watersheds and Tributaries

As a result of the mountainous region, the drainage patterns in the Kingsport area are well developed. A major portion of the watershed is drained by the Holston River, which flows through the central part of Sullivan and Hawkins counties and the North Fork of the Clinch River, which flows through Scott County, Virginia into Tennessee. Both of these waterways are major river systems in southwestern Virginia and east Tennessee. In the 1800s, these waterways were used for transportation and commerce; however, today, neither is navigable for freight transportation.

The three major forks of the Holston River (its North, Middle and South Forks) rise in southwestern Virginia and have their confluence in Kingsport. From there, the main stem of the Holston River flows 136 miles roughly southwestward, just north of Bays Mountain, until it reaches its confluence with the French Broad River just east of downtown Knoxville, Tennessee. This confluence is considered to be the start of the Tennessee River. The Clinch River rises in southwest Virginia near Tazewell, Virginia and flows southwest through the Great Appalachian Valley, gathering various tributaries including the Powell River before joining the Tennessee River west of Knoxville. Other streams, creeks, and branches in the region include: Gaines Branch, Gravelly Branch, Horse Creek, Miller Branch, Cooks Valley Branch, Reedy Creek, Clark Branch, Slate Branch, Copper Creek, and Cowan Branch.

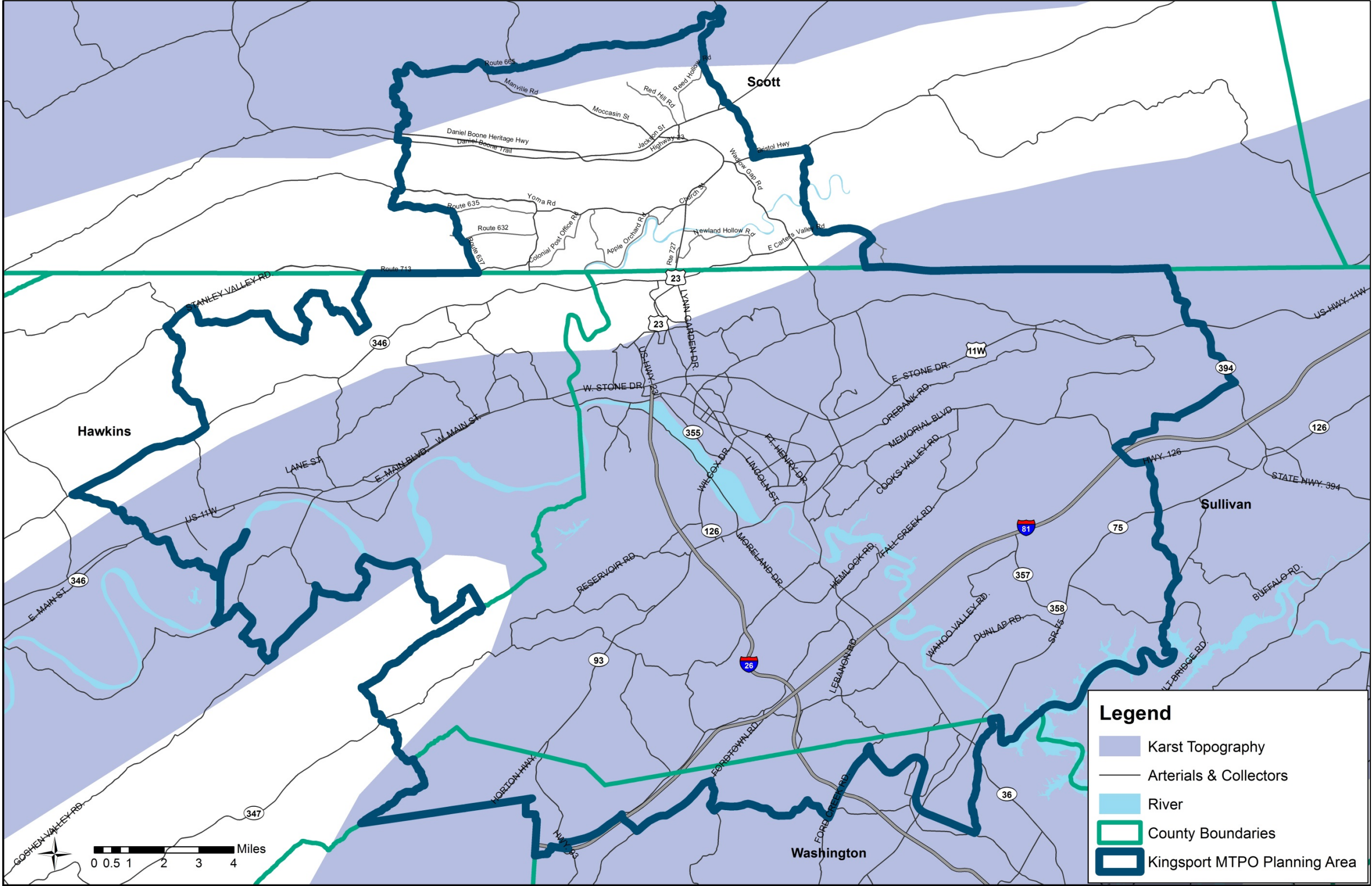
While these rivers, creeks and branches carry off most of the drainage, subterranean drainage and stream piracy is fairly common. Figure 3-8 illustrates the floodplains of these rivers and tributaries in the Kingsport MTPo area. As the region develops and implements needed transportation improvements, it is important that transportation investments avoid or minimize impacts to these important watersheds.

3.2.2 Historic and Cultural Environment

In addition to the natural environment, there is a cultural and historic environment in the Kingsport MTPo area with a long and rich history. The fascinating history of the area includes Cherokee Indians, early colonial pioneers, Revolutionary war heroes, Civil War battles, and beneficial government planning. This area of east Tennessee and southwest Virginia had been of strategic value since the railroad served as a vital link between the upper Confederacy of Virginia and the States of the lower south. The area is rich in history ranging as far back as the 1700s. Historic districts, homes, inns, churches, cemeteries, and living museums can be found within the MTPo planning area. Figure 3-9 depicts the locations of these historic resources within the Kingsport MTPo planning area.

Numerous laws and regulations call for preservation and/or enhancement of cultural resources through various local, state, and federal agencies. Historic preservation has become a major factor in the community and economic development of towns and cities throughout Tennessee and Virginia. Historic preservation is now incorporated in many city and county planning efforts. As the Kingsport area grows and needed transportation facilities are planned, it is important that these improvements avoid and/or minimize impacts to these cultural resources.

Figure 3-7
Potential Karst Development Map



Notes: Purple areas depict locations with high potential for karst development.

Figure 3-8
Floodplain Map

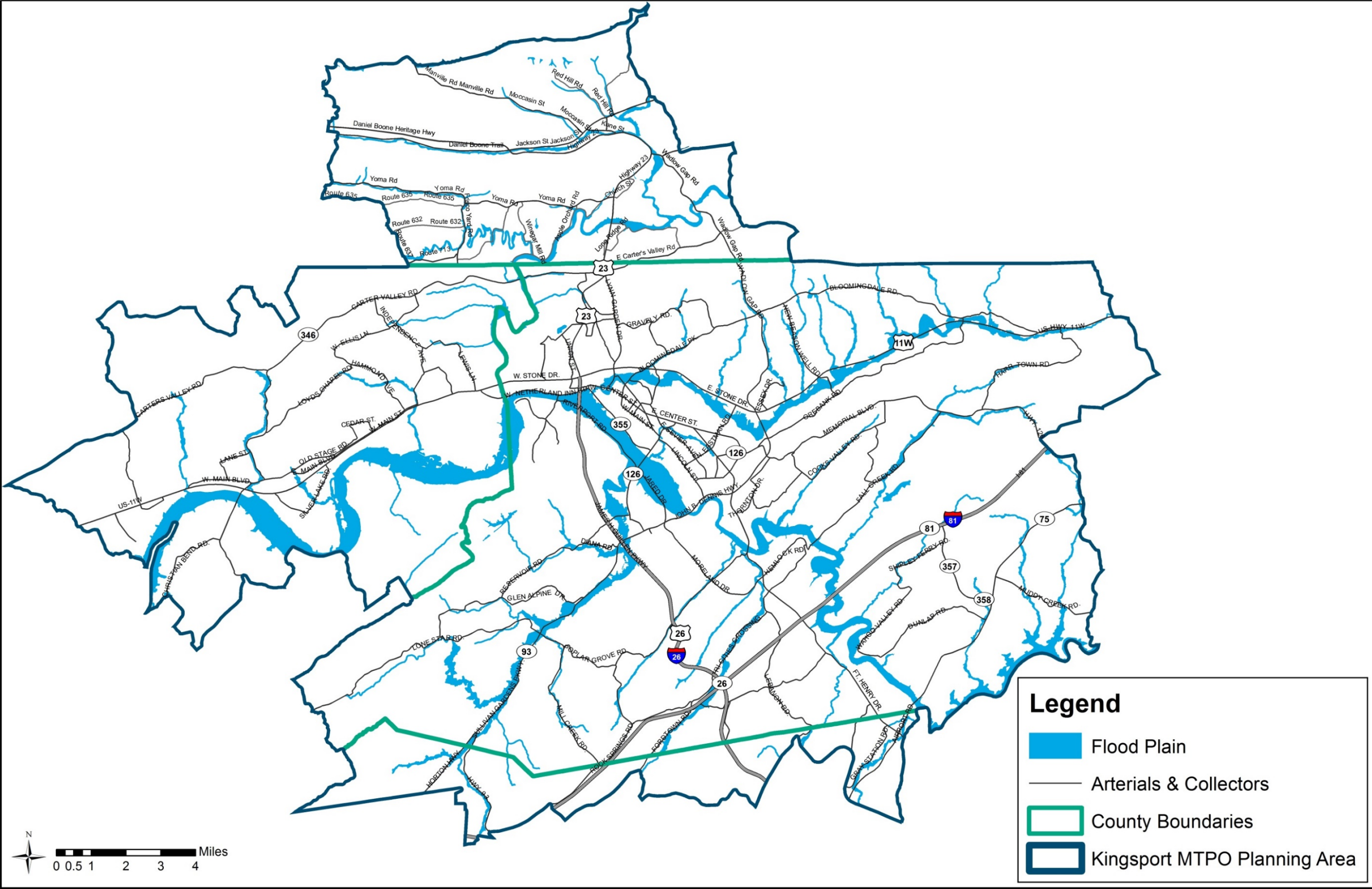
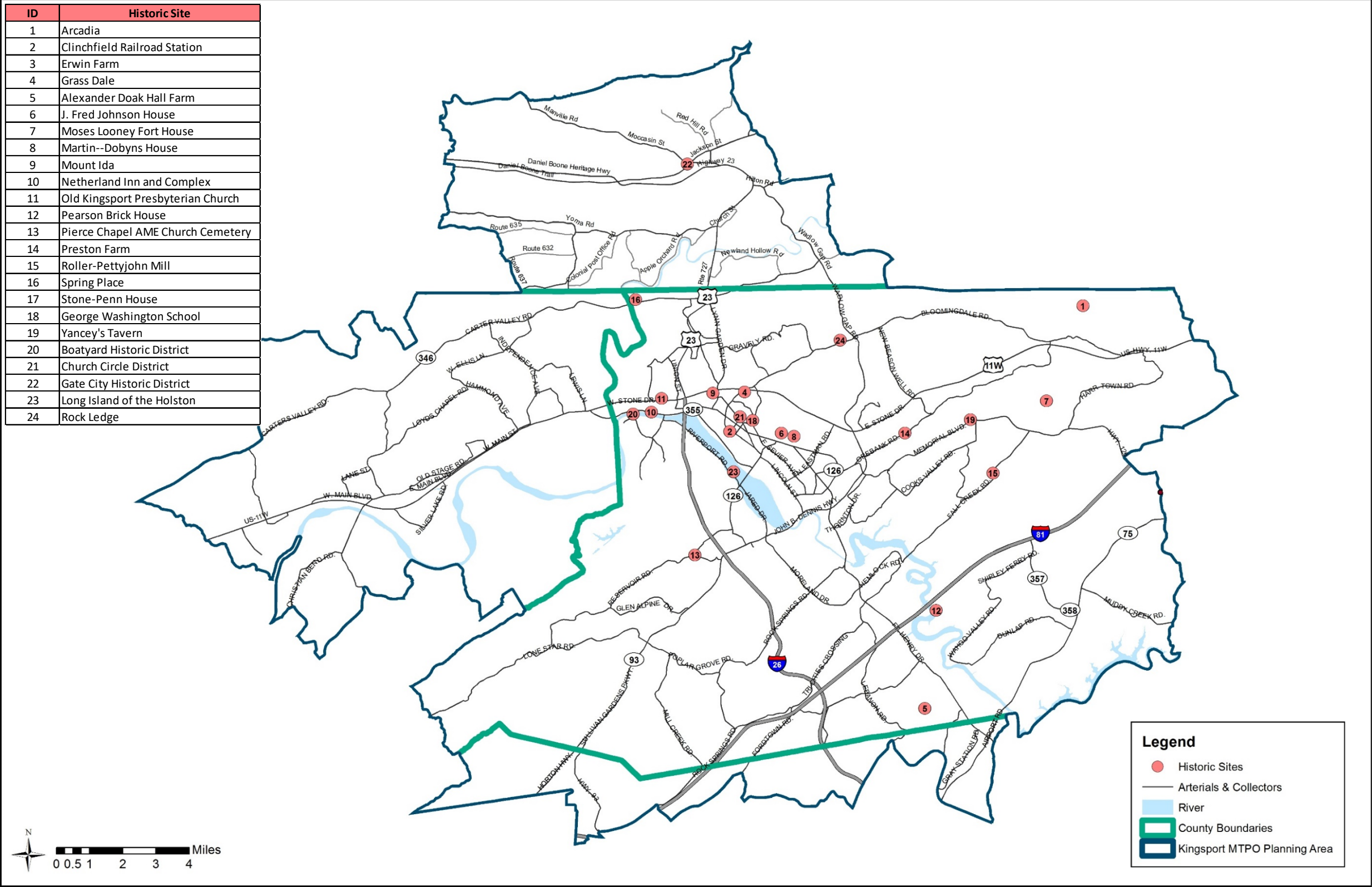


Figure 3-9
Historic Districts Map



3.2.3 Current and Future Land Use

Understanding land use and development activity is an important element when planning for transportation infrastructure and services. How a region grows or intends to grow has a direct impact on the type and level of investments a community must make to its transportation system.

The Kingsport region has a long history of planning dating back to 1919 with the creation of a model city plan for the City of Kingsport by the renowned city planner and landscape architect John Nolen. Nolen's accomplishments as a city planner are quite impressive. He was the head landscape architect for not only Kingsport, but other successful American cities like Madison, Wisconsin; Roanoke, Virginia; San Diego, California; New London, Connecticut; and Savannah, Georgia. Nolen integrated ideas such as roundabouts, which were common around his home in Massachusetts. Areas for commerce and industry were set up and strategically outlined among the residential areas. The school system was set up based on a model developed at Columbia University.

Today, much of Kingsport's urban core continues to embrace this design while outlying portions of the region are more typical of post-World War II development, suburban in nature and highly auto oriented. Despite this development trend, the region has attempted to direct growth into areas that are most suitable for development and to a degree contiguous to existing corporate limits as a means of cost effectively providing city services. Additionally, the region has successfully maintained a large portion of its planning area as rural in character and has preserved several large open space areas such as Bays Mountain and Warrior's Path State Park. Figure 3-10 illustrates the current land use within the MTPO area.

The largest share of land in the MTPO area (43%) is classified as agricultural, which includes large rural residential tracts of land that are intended to remain rural in nature, farm and forest lands. The second largest classification of lands is residential, accounting for approximately 35% of the land area in the MTPO region. The third largest classification of lands is public lands (e.g. city, county, state, and federal). The vast majority of this classification is Bays Mountain Park, Warrior's Path State Park, and the Holston Army Ammunition Plant. Other existing land uses within the MTPO planning area include commercial activity, which is largely clustered in the downtown areas of Kingsport and Gate City and along major corridors such as US-11W (Stone Drive/Lee Highway) and SR-36 (Lynn Garden Drive/Center Street/Fort Henry Drive), and industrial uses that straddle the Holston River between downtown Kingsport and SR-93 (John B. Dennis Highway) and other areas of the region including SR-357 (Airport Parkway) and I-81 near I-26.

Future land use plans for the MTPO area support a continued infill of residential development and continued commercial development along major corridors such as US-11W (Stone Drive/Lee Highway) and SR-36 (Lynn Garden Drive/Center Street/Fort Henry Drive) and near each of the existing interstate interchanges of I-26 and I-81. Commercial expansion is expected in the vicinity of the I-26 and I-81 interchange including the interchanges of I-81 and Tri-Cities Crossings and I-26 and Eastern Star Road. Industrial development is planned for continued infill in current industrial locations as well as further industrial growth along SR-357, while other areas of the MTPO are intended to remain rural and/or undeveloped.

3.2.4 Growth Boundaries

While not inclusive of the complete MTPO area, Public Chapter 1101 (T.C.A. § 6-58-106) requires Tennessee's counties and their municipal governments to develop countywide growth plans. Public Chapter 1101 signaled a substantial change in the way growth planning, annexation, and incorporation could be accomplished by counties and municipalities within Tennessee. Public Chapter 1101 requires local officials within each of the 93 non-metropolitan counties to work together to shape growth policy through the development of 20-year growth plans.

Each plan must identify three distinct areas: an "urban growth boundary," a "planned growth area" and a "rural area." The "urban growth boundary" (UGB) territory contains the corporate limits of a municipality and the adjoining territory where growth is expected. The "planned growth area" (PGA) includes sections outside current municipalities and UGBs where growth is expected. The "rural area" (RA) includes land that is to be preserved for agriculture, recreation, forest, wildlife and uses other than high-density commercial or residential development.

Figure 3-11 provides the approved Growth Boundary Map within the MTPO region. Of the MTPO's planning area, approximately 35% is contained within an UGB. As illustrated on the map, areas outside the UGB are intended to remain rural areas, to be preserved for agriculture, recreation, forest, wildlife, or uses other than high-density commercial or residential development.

Figure 3-10
Current Land Use Map

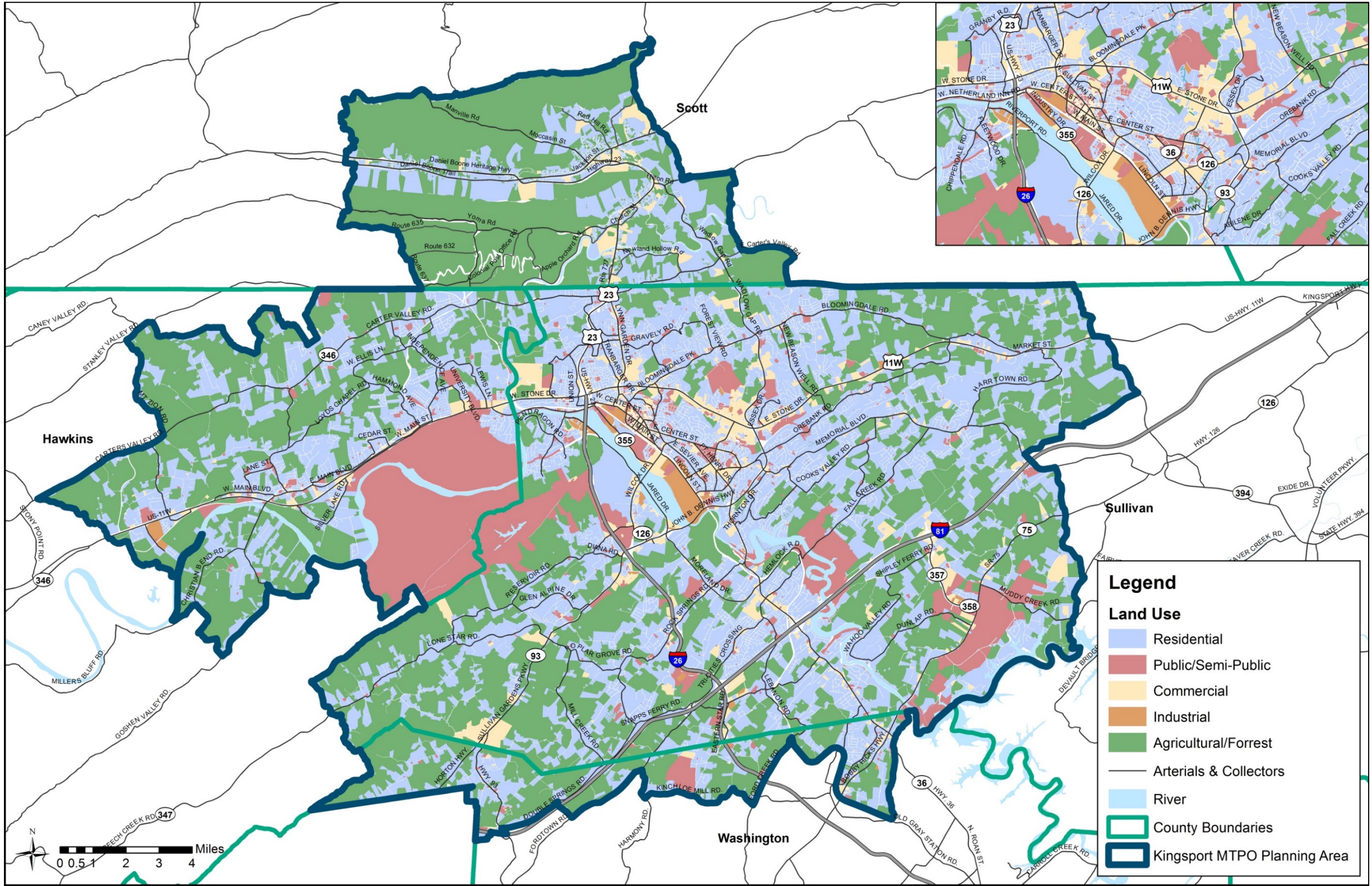
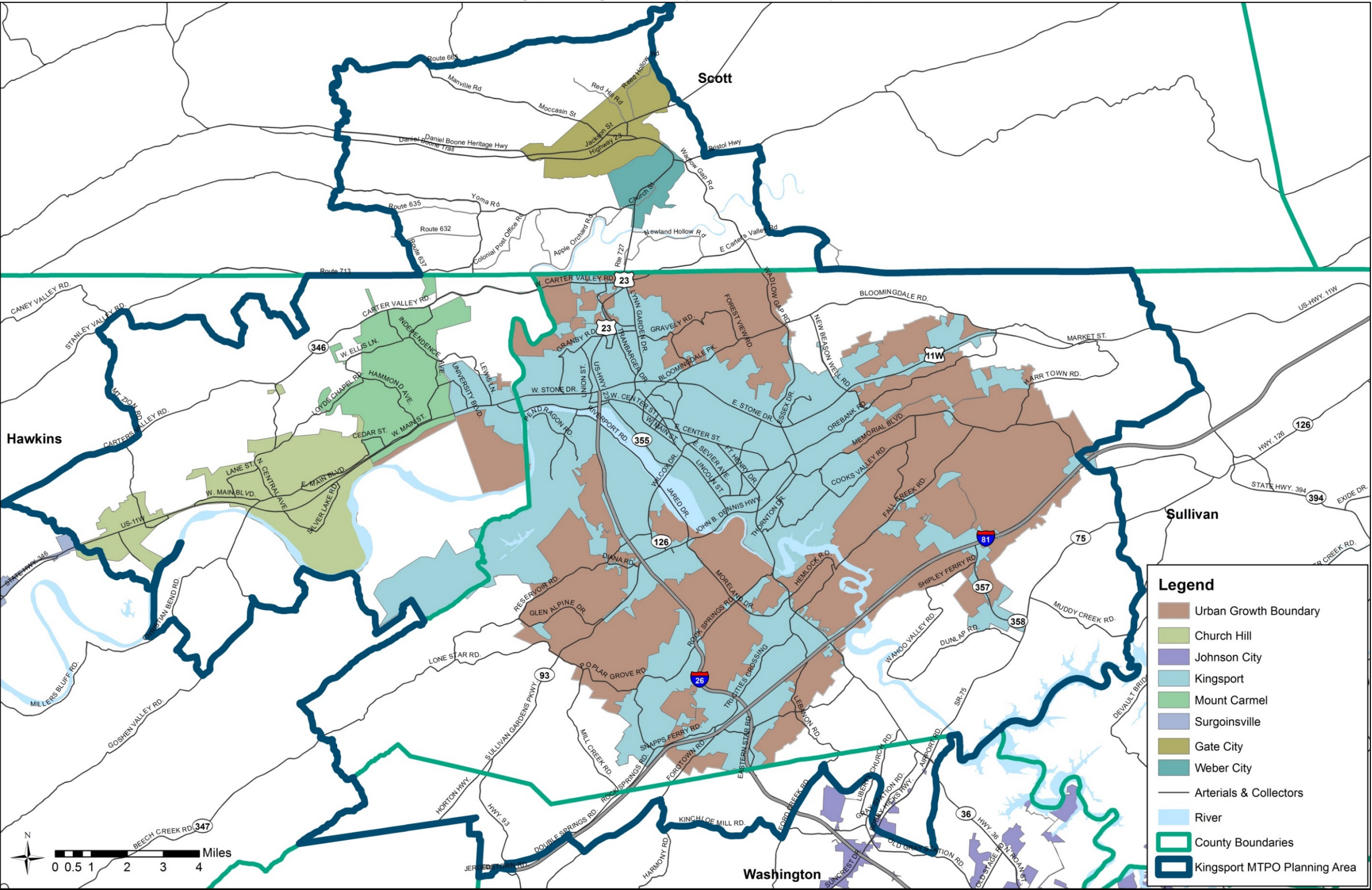


Figure 3-11
Kingsport Region County Growth Boundary Map



3.2.5 Plans, Programs, and Policies

In addition to land use and growth boundary plans, there are a number of other local, state, and regional plans, programs, and policies that dictate growth and development within a community. In developing the 2040 LRTP, the following plans, programs, and policies were reviewed and incorporated into the analysis and recommendations of the 2040 LRTP. These documents were used in establishing future year development allocations (e.g. the allocation of future year population and employment) and are reflected in the growth trends for the region over the 25-year plan horizon.

Local Plans, Programs, and Policies

City and county governments have direct jurisdiction over land use and growth decisions within their communities. The following are other planning items that were reviewed and considered in the development of the 2040 LRTP:

City of Church Hill, TN

- Zoning Ordinance – Church Hill, TN (2010)
- Subdivision Regulations – Church Hill, TN (2009)

City of Kingsport, TN

- Model City Coalition Update (2012)
- Subdivision Regulations – City of Kingsport, TN (2012)
- Zoning Regulations – City of Kingsport, TN (2016)
- Kingsport Historic Zoning Commission Design Guidelines (Various)
- Gateway District Ordinance and Gateway District Development Guide (2003)
- Bays Mount Long Term Strategic Plan – City of Kingsport, TN (2010)

Scott County, VA

- Zoning Regulations – Scott County, VA (2010)
- Subdivision Regulations – Scott County, VA (2007)
- Comprehensive Plan – Scott County, VA (2011)

Sullivan County, TN

- Zoning Regulations – Sullivan County, TN (2014)
- Subdivision Regulations – Sullivan County, TN (2012)

Town of Gate City, VA

- Comprehensive Zoning Ordinance – Gate City, VA (2009)
- Gate City Incentive Zones Ordinance – Gate City, VA (2010)
- Comprehensive Plan – Gate City, Virginia (2014)

Town of Mount Carmel, TN

- Zoning Ordinance – Mount Carmel, TN (2010)

State & Regional Plans, Programs, Policies

State and regional plans, programs, and policies can also and do also influence growth and development activities locally, regionally, and statewide. The following state and regional initiatives were reviewed:

Appalachian Regional Commission (TN/VA)

- Moving Appalachia Forward Appalachian Regional Commission Strategic Plan 2011–2016 (2010)

LENOWISCO Planning District Commission (VA)

- LENOWISCO 2015 Comprehensive Economic Development Strategy (2015)

NETWORKS - Sullivan Partnership (TN)

- Target Sectors, Community Data, and Incentives (2016)

Tennessee Department of Economic and Community Development (TN)

- Target Sections, Initiatives, and Programs (2016)

3.3 SUMMARY

Development of the LRTP is based on the existing and future land use policies described within this document. Plans, policies, and anticipated growth areas within the region were considered in the development of the future population and employment forecasts for the MTPO region. As part of this effort, close coordination with local and regional planning agencies within the Kingsport region was undertaken to best match anticipated development activities within the MTPO area in the coming years.

As previously described, the MTPO area has seen and is projected to see positive population and employment growth over the next 25 years. Population and housing growth is planned to occur largely within the designated UGB with both infill and outward residential expansion. Areas outside the UGB will see some residential growth but at a much lower level. As for projected employment growth, a large number of these jobs are planned to occur in and around the same geographic areas of current employment activity. In addition to these locations, future employment concentrations are planned near the interchanges of I-81 and Tri-Cities Crossings and I-26 and Eastern Star Road. Other employment growth areas include the SR-357 corridor (Airport Parkway) and along the US-11W corridor throughout the MTPO planning area.

This projected increase in population and employment will not only require the need for additional roadway capacity (both in terms of new roads and improvements to existing roads) but will also create greater demand for public transportation services and bicycle and pedestrian facilities, which may not currently exist in certain areas of the region. An equally important challenge during the 25-year planning horizon is how to encourage development and growth that balances the need for expansion with the need for preservation.

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4.0 TRANSPORTATION SYSTEM

This section of the plan provides an assessment of the existing and future transportation system conditions within the MTPO planning area. As part of this assessment, future transportation system needs are discussed. Additionally, specific attention is paid to freight transportation within the Kingsport MTPO area.

4.1 EXISTING AND FUTURE TRANSPORTATION SYSTEM CONDITIONS

The Kingsport MTPO area transportation system includes streets and highways, a public transportation system, walkways and bikeways, an airport, and a railroad system. All of these transportation elements comprise the transportation system within the MTPO area and provide for the movement of people and goods.

The following subsections describe each component of the transportation system relative to existing and future conditions.

4.1.1 Streets and Highways

The roadway network in the Kingsport MTPO area consists of several classifications of roadways. The majority of roadways within the MTPO area, as with most metropolitan areas, are classified as local roads. Local roads include those roadways that are typically low-volume roadways that provide direct frontage to residential developments. There are over 1,000 miles of local roads within the MTPO area.

Figure 4-1 illustrates the roadway functional classification for the MTPO area, including collector roadways and higher classifications. Table 4-1 summarizes the total miles of these classified roadways by functional classification.

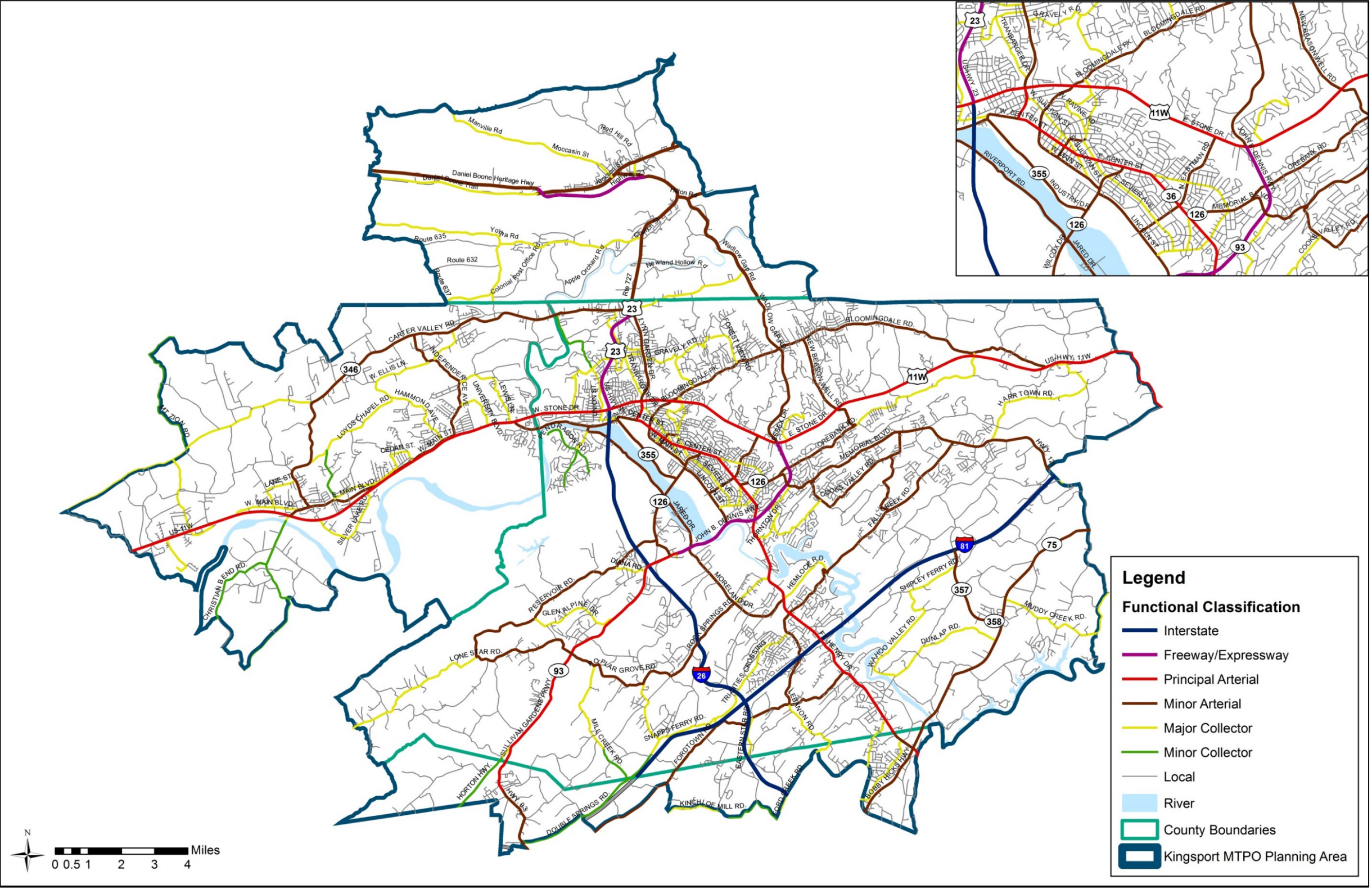
Table 4-1
Existing Miles of Classified Roadways (2015)

Roadway Functional Classification	Total Miles
Collector	166
Minor Arterial	139
Principal Arterial	59
Interstate & Expressway	86
Total Miles	450

Source: Kingsport MTPO Regional Model, 2016

Interstates and expressways are full-access controlled roadways that carry the majority of through-traffic volumes entering and exiting an urban area. Expressways, to a degree, also facilitate major cross-town uninterrupted travel movements in urban areas. In the Kingsport MTPO area there are two roadways classified as interstate, I-81 and I-26. Both of these corridors account for the largest amount of through-travel within the region. These corridors are important corridors of commerce providing commuters, shippers, and travelers access to and from the region as well as throughout the U.S. John B. Dennis Highway (SR-93) is an expressway that is partially access controlled with grade-separated interchanges at major roadway crossings. Figure 4-1 shows John B. Dennis Highway as a principal arterial because only a portion of the roadway functions as an expressway.

Figure 4-1
Roadway Functional Classification Map



Principal arterials are roadways that serve major activity centers, such as downtown Kingsport or highly developed residential and commercial areas. Principal arterials generally carry high traffic volumes and accommodate the longest trip length desires of the region. Principal arterials also carry high traffic volumes into and out of the urban area. Examples of principal arterial roadways in the MTPO area include Stone Drive (US-11W), Fort Henry Drive (SR-36), and US-23 in Virginia.

Minor arterials interconnect with principal arterials and collectors and typically provide more frequent access to commercial developments than principal arterials allow. Minor arterials typically do not accommodate traffic volumes as high as those experienced on principal arterials. In the MTPO area, examples of minor arterials include Memorial Boulevard (SR-126), Wilcox Drive (SR-126), and Airport Road (SR-75).

Collector roadways provide both land access and circulation within residential neighborhoods and commercial or industrial areas. Collectors typically function to connect neighborhoods and local roads with the arterial roadway network. Collector roadways generally carry lower traffic volumes and accommodate shorter trip lengths than arterials.

4.1.1.1 Existing Conditions

Roadway travel within the MTPO area is greatest along major roadways such as Stone Drive (US-11W), Fort Henry Drive (SR-36), I-26, and I-81 in and around the Kingsport region. Figure 4-2 illustrates the 2015 Average Daily Traffic (ADT) volumes for major corridors within the MTPO area. As depicted on the map, traffic volumes are greatest along I-26, I-81, Stone Drive (US-11W), John B. Dennis Highway (SR-93), Fort Henry Drive (SR-36), and US-23.

4.1.1.2 Future Conditions

The MTPO region has made considerable progress since 2009 in advancing needed transportation improvements. In total, 31 transportation roadway projects have been completed, are under construction, or are in the development process with construction scheduled by 2040 (committed projects). Table 4-2 and Figure 4-3 illustrate the projects that have been completed since the last plan and those projects that are considered committed projects.

A common practice in looking at long-term transportation demands is to assess future transportation needs based on impacts to the transportation system if no more improvements were made beyond current roadway facilities and those projects that are currently committed to be improved. In undertaking this assessment, committed improvements are added to the existing transportation network of the MTPO's travel demand model - which is termed an existing plus committed (E+C) network. The E+C network provides the "base roadway network" and allows for the assessment of travel impact, today and in the future, under a "no additional transportation improvement scenario". For planning purposes, committed projects on the E+C network are those projects in the MTPO's current TIP, with an environmental document (i.e. NEPA documentation) complete or significantly underway or funded through the right-of-way or construction phase. This level of analysis allows for the evaluation of needed transportation improvements over the 25-year planning horizon.

Figure 4-2
2015 Average Annual Daily Traffic (AADT) Map

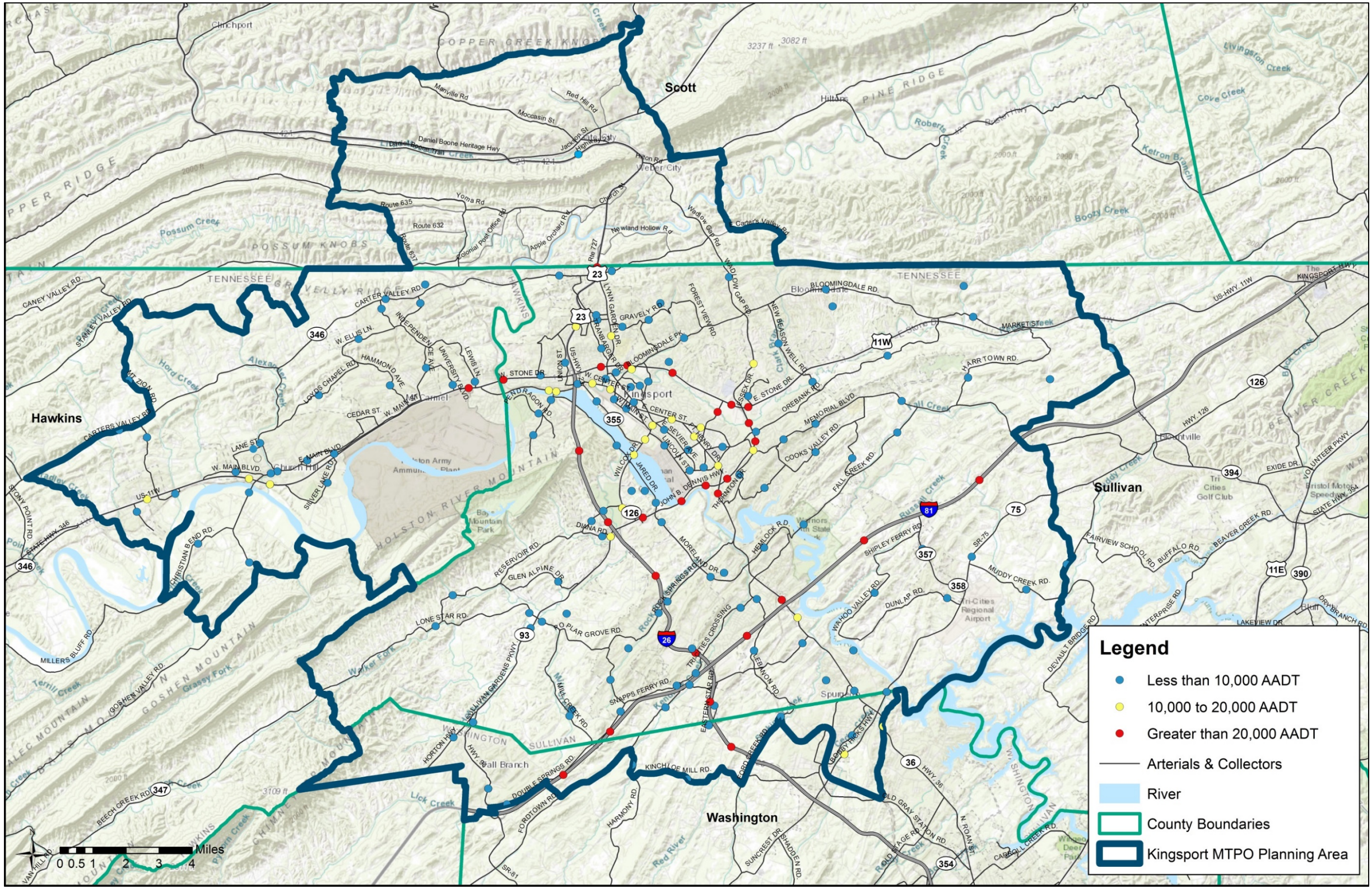
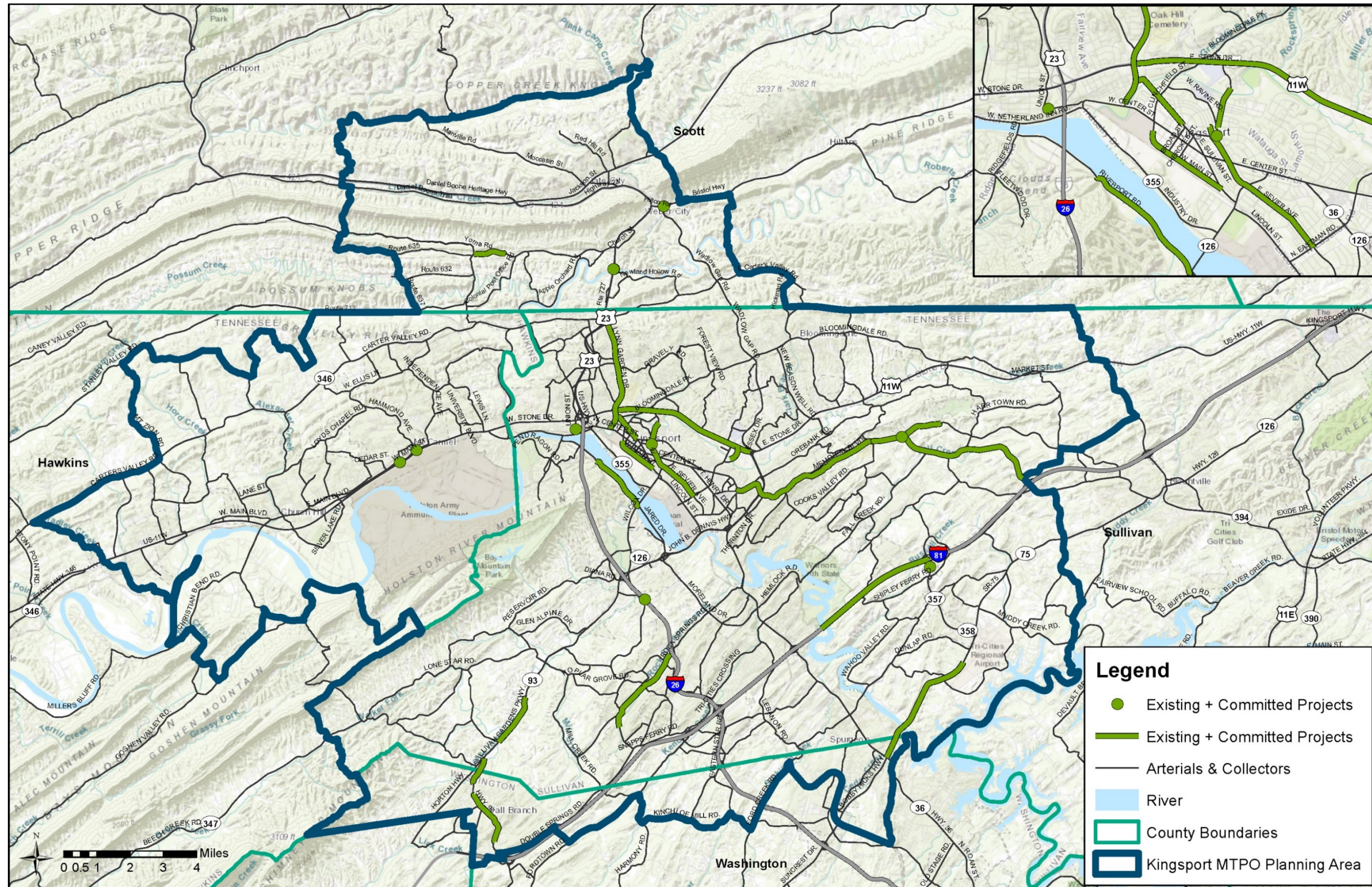


Table 4-2
Projects Completed Since 2009 & Committed Improvements (E+C Network)

TDOT/VA #	Project/Route	From/To	Type of Improvement	Improvement Description	Status	Funding Source
Projects Completed Since Last Plan						
17747.00	Intersection of SR-224, US-23, & US-58 (RTE 58) (Moccasin Gap)	From: 0.486 Kilometer West ECL Weber City to: 0.491 Kilometer East ECL Weber City	New Intersection	Modify intersection to accommodate the Moccasin Gap Bypass	Completed	--
112789.00	SR-1 - Main Street / Hammond Avenue Signalization & Geometric Improvements	Intersection of SR-1/Hammond Avenue and Main Street/Hammond Avenue	Intersection	Dual signal arrangement with a coordinated timing plan along with the installation of additional geometric improvement to add turning lanes and other safety improvements as designed.	Completed	--
040028.01	I-26 Tennessee Welcome Center	Proposed Welcome Station South of Bell Ridge Road	Welcome Center	Construct New Tennessee Welcome Station	Completed	--
101397.00	SR-75	SR-36 to SR-357 (HPP ID# 2026, 388 & 4969)	Widening	Widen from 2 lanes to 5 lanes	Completed	--
City of Kingsport	Gibson Mill	From Gibson Street to Watauga Street	Reconstruction	Reconstruct to 3 lanes as part of Gibson Mill Rd Improvements (transition to 2 lanes near Robertson St) (Phase V from Stone Drive (US-11) to Bloomingdale Pike is forthcoming)	Completed	--
City of Kingsport	Rock Springs Road	From Edinburgh Channel Road (entrance to new elementary school) to Cox Hollow/Rock Springs Drive	Safety/ Reconstruction	Add shoulders, multi-use path, and eliminate horizontal/vertical curves	Completed	--
15-TSTI	Stone Drive East (US-11W/SR-1)	John B. Dennis (SR-93) to Lynn Garden Drive (SR-36)	Signal Synchronization	Improve intersections and coordinate signal timings	Completed	--
13-TSTI	Sevier Avenue	From Eastman Road to East Ravine Road	Intersection Improvements	Add turning lanes at various intersections as part of redevelopment corridor study	Completed	--
13-TC	Sullivan Street West	Church Circle Drive to Roller Lane	Reconstruction	Reconstruct existing 2-lane roadway to include a center turn lane (paved shoulder and other geometric improvements at select locations/intersections as determined thru the project development process)	Completed	--
Committed Projects						
86598.00	US-23 (RTE 23)	SBL Over North Fork Holston River (VA Structure #1103)	Bridge Replacement	Bridge Replacement	Design Complete	State STP
101389.00	US-23 (RTE 23)	NBL Over North Fork Holsten River (VA Structure #1108)	Bridge Replacement	Bridge Replacement	Design Complete	State STP
13-TC	Sullivan Street West	From Roller Lane to Lynn Garden Drive (SR-36)	Reconstruction	Reconstruct existing 2-lane roadway to include a center turn lane (paved shoulder and other geometric improvements at select locations/intersections as determined thru the project development process)	Under Design	City of Kingsport
293.00	Route 614 (Yuma Road)	From .06 miles west of intersection Route 713 to .02 miles east of Route 867 West	Reconstruction	Reconstruction to widen shoulders and straighten curves	Under Construction	State STP
114173.00	I-81	Eastbound truck climbing lane at mile marker 60 to Exit 63	Widening	Add an eastbound truck climbing lane from mile marker 60 to Exit 63 to improve congestion.	Design Complete	State STP
105467.00	SR-126 (Memorial Blvd)	From East Center Street in Kingsport to East of Cooks Valley Road	Widening	Widening from 3 to 4 lanes with grass median from East Center Street to Harbor Chapel Road, adding sidewalk and widening shoulders from Harbor Chapel Road to Old State Road, and widening from 2 to 3 lanes (no median) from Old Stage Road to Cooks Valley Road	Design Complete, ROW	State STP (IMPROVE)
8-TC	SR-126 (Memorial Blvd)	Cooks Valley Road to Interstate 81	Reconstruction	Reconstruct existing 2 lane roadway to include a center turn lane (paved shoulder and other geometric improvements at select locations/intersections as determined thru the project development process)	Design	State STP (IMPROVE)
112834.03	SR-93 (Sullivan Gardens Pkwy) Phase I	From Derby Drive to Murrell Road	Safety/Geometric Improvements	Various safety spot improvements along the corridor at five locations. Improvements range from the addition of a center turn lane at two locations, the flattening of existing horizontal curves, the addition of paved shoulders at several locations, and sidewalk improvements at one location.	ROW	State STP (IMPROVE)
112834.02	SR-93 (Sullivan Gardens Pkwy) Phase II	Morgan Lane to South of Baileyton Road	Safety/Geometric Improvements	Various safety spot improvements along the corridor at five locations. Improvements range from the addition of a center turn lane at two locations, the flattening of existing horizontal curves, the addition of paved shoulders at several locations, and sidewalk improvements at one location.	ROW	State STP (IMPROVE)
112834.01	SR-93 (Sullivan Gardens Pkwy) Phase III	From Warren Street to Davis Road	Safety/Geometric Improvements	Various safety spot improvements along the corridor at five locations. Improvements range from the addition of a center turn lane at two locations, the flattening of existing horizontal curves, the addition of paved shoulders at several locations, and sidewalk improvements at one location.	ROW	State STP (IMPROVE)
11-TC	Rock Springs Road	Interstate 26 (I-26) to Cox Hollow Road	Reconstruction	Reconstruct existing 2 lane roadway to include a center turn lane (paved shoulder and other geometric improvements at select locations/intersections as determined thru the project development process)	Under TDOT Contract	Local STP/MPO and State STP and City of Kingsport
3-TSTI	US-11W/SR-1	Intersection with Englewood Avenue and Belmont Avenue	Intersection Improvements Signalization	Install new signal at Englewood and US-11W. Correct median alignment and turning lanes for Belmont and US-11W.	Design	Federal HSIP

TDOT/VA #	Project/Route	From/To	Type of Improvement	Improvement Description	Status	Funding Source
Committed Projects (cont.)						
7-TSTI	Lynn Garden Drive (SR-36)	West Center Street to West Carters Valley Road (SR-346)	Signalization	Intersection and signalization improvements (including signal system interconnection and signal timing/coordination)	Under Contract	Local STP
1-TSTI	Airport Pkwy (SR-357)	At Flagship Drive	Intersection Improvements	Install new signal at Flagship Dr - Add turning lanes & improve geometry	Design Complete	Federal HSIP
34-TSTI	Riverport Road	From Holston River Sluice Bridge to Wilcox Drive (SR-126)	Safety/Geometric Improvements	Perform slope stabilization to correct erosion and maintenance issues	Under Design	City of Kingsport
City of Kingsport	Indian Trail Drive	From Reedy Creek Road to Stone Drive	New Roadway	Construct new 2 lane roadway to divert traffic from Eastman Road and Stone Drive	Design Complete	City of Kingsport
City of Kingsport	Main Street	From Clinchfield Street to Sullivan Street	Reconstruction	Resurfacing, repairing curb, sidewalk, additions of bulbouts, ADA enhancements, removal of rail siding, diamond grinding, specific areas of sub-surface repair and rebuild.	Under Design	Local STP (MPO)
121031.00	SR-126 (Memorial Blvd)	At Island Road	Signalization and Geometric Improvements	Installation of new 4-way traffic signal and associated equipment; geometric improvements to lane configuration (4 th access will be from existing shopping center and planned multifamily development)	ROW	Local STP (MPO)
122156.00	Fort Robinson Bridge Replacement		Bridge Replacement	Bridge Replacement	Under Contract	Federal BR program (IMPROVE)
City of Kingsport	Sevier Avenue (Crosstown Connector from Gibson Mill to Sevier to Centre)	At Boone Street, Tennessee Street, and East Ravine Road	Reconstruction	Realign portion of Sevier Avenue to link with Gibson Mill and existing Sevier Avenue. improve intersections and turning movements	Under Design	City of Kingsport
City of Kingsport	Island Road Improvements	From Memorial Blvd to Golf Ridge Drive	Multimodal Improvements	Correct geometric deficiencies, widen shoulders and provide buffered multiuse path	Under Design	City of Kingsport

Figure 4-3
Projects Completed Since 2009 & Committed Improvements (E+C Network)



4.1.1.3 Level of Service

Traffic volume data derived from the MTPO's travel demand model, along with roadway characteristics such as number of lanes, facility type, etc., helps in defining traffic operations or level of service (LOS) conditions along a roadway. The transportation industry categorizes LOS into one of six traffic operation conditions, as illustrated in Table 4-3.

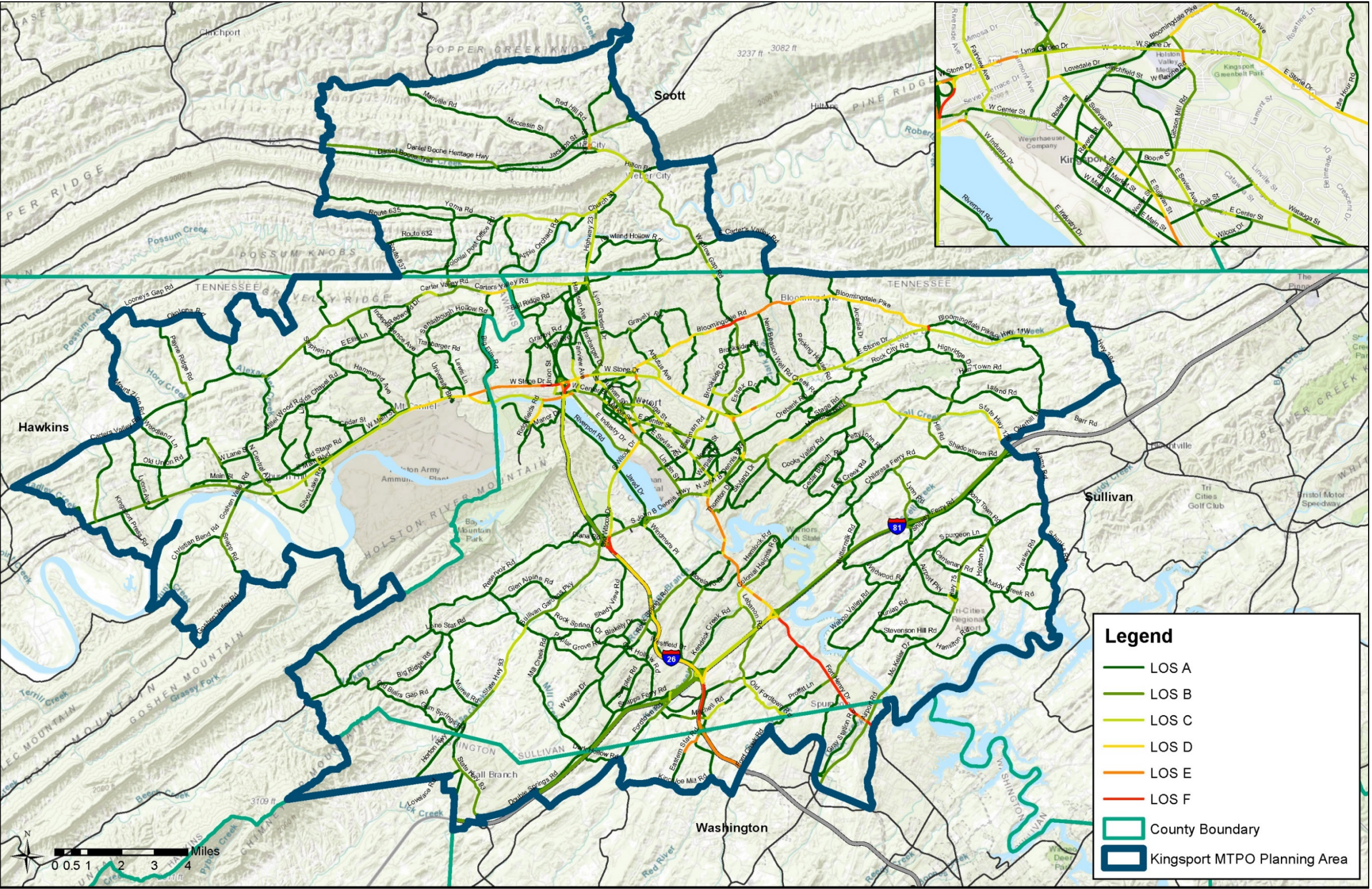
Table 4-3
General Descriptions of Levels of Service (LOS)

Level of Service	Description
A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to maneuver within the traffic stream is extremely high.
B	Within the range of stable flow, but the presence of others in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver within the traffic stream from LOS A.
C	Within the range of stable flow, but LOS C marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	LOS D represents high-density, but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.
E	LOS E represents operating conditions at or near capacity levels. Freedom to maneuver within the traffic stream is extremely difficult. Comfort and convenience levels are extremely poor and driver frustration is generally high.
F	LOS F is used to define forced or breakdown flow. This condition exists when the amount of traffic approaching a point exceeds the amount that can traverse the point.

Source: Highway Capacity Manual, TRB 2010

Average Daily Traffic (ADT) is the total number of vehicle trips on a roadway in a 24 hour period. Based on the ADT, number of lanes, and classification of the roadway, a LOS is assigned to the roadway segment. Figure 4-4 illustrates the future level of service of the MTPO area roadways in 2040, assuming no additional improvements to the transportation system beyond the E+C network (as described in Table 4-2).

Figure 4-4
2040 Level of Service - Without Additional Transportation Improvements



The level of service capacity analysis of the existing plus committed transportation system shows that transportation improvements, beyond those already committed, will be necessary to provide acceptable traffic operations for the year 2040. As shown in Figure 4-4, a number of roadways within the MTPo region are expected to experience severe capacity deficiencies in the year 2040, should no additional roadway projects be constructed beyond those currently under construction and/or in the development process.

From a systems level, with projected increases in population and employment in the region over the next 25 years, travel conditions (delay) within the region in 2040 would be nearly 60% worse than today if the region were to construct no additional transportation improvements over those currently committed (the E+C network). Table 4-4 illustrates the vehicle hours traveled (VHT) in the region currently, versus 2040 conditions were the region to add no more lanes or roadways over the 25-year period beyond what is currently under construction and/or in the development process.

**Table 4-4
Current & Future Vehicle Hours Traveled
Without Additional Improvements**

Roadways	2015 (Base Year)	2040 (E+C)	Percent Change
Collector	7,907	10,596	34%
Minor Arterial	21,495	27,474	28%
Principal Arterial	28,254	40,984	45%
Interstate	20,255	44,804	121%
Total VHT	77,911	123,858	59%

Notes: Vehicle Hours Traveled (VHT) are daily totals. The table represents a comparison between current travel and development conditions (2015 population and employment on the 2015 base year highway network) to the future travel and development conditions (2040 population and employment on the 2040 E+C highway network – as described in Table 4-2)

As illustrated in the table above, significant increased hours of travel are projected to occur over the 25-year planning horizon. To address these system failures and to adequately accommodate the projected population and employment growth of the region, a list of transportation roadway improvements was established and tested as a Vision Plan Scenario. The Vision Plan Scenario was created to assess needed transportation improvements without consideration of funding constraints. The results of the Vision Plan test, coupled with the findings of the 2040 E+C Scenario, became the basis of the recommended Cost Feasible 2040 LTRP project improvements (see Section 7.0 of the Plan for a listing of the transportation projects considered as part of the Vision Plan as well as projects in the Cost Feasible Plan analysis).

Figure 4-5 illustrates the predicted roadway level of service conditions in 2040 based on implementing recommended improvements as part of the Vision Plan Scenario. From this analysis, a Cost Feasible Plan Scenario was developed (e.g. project recommendations that could be implemented based on projected revenues to the region over the 25-year planning horizon). Figure 4-6 illustrates the results of the Cost Feasible Plan Scenario. Table 4-5 also provides a comparison of the three scenarios.

Figure 4-5
2040 Level of Service – Vision Plan Scenario

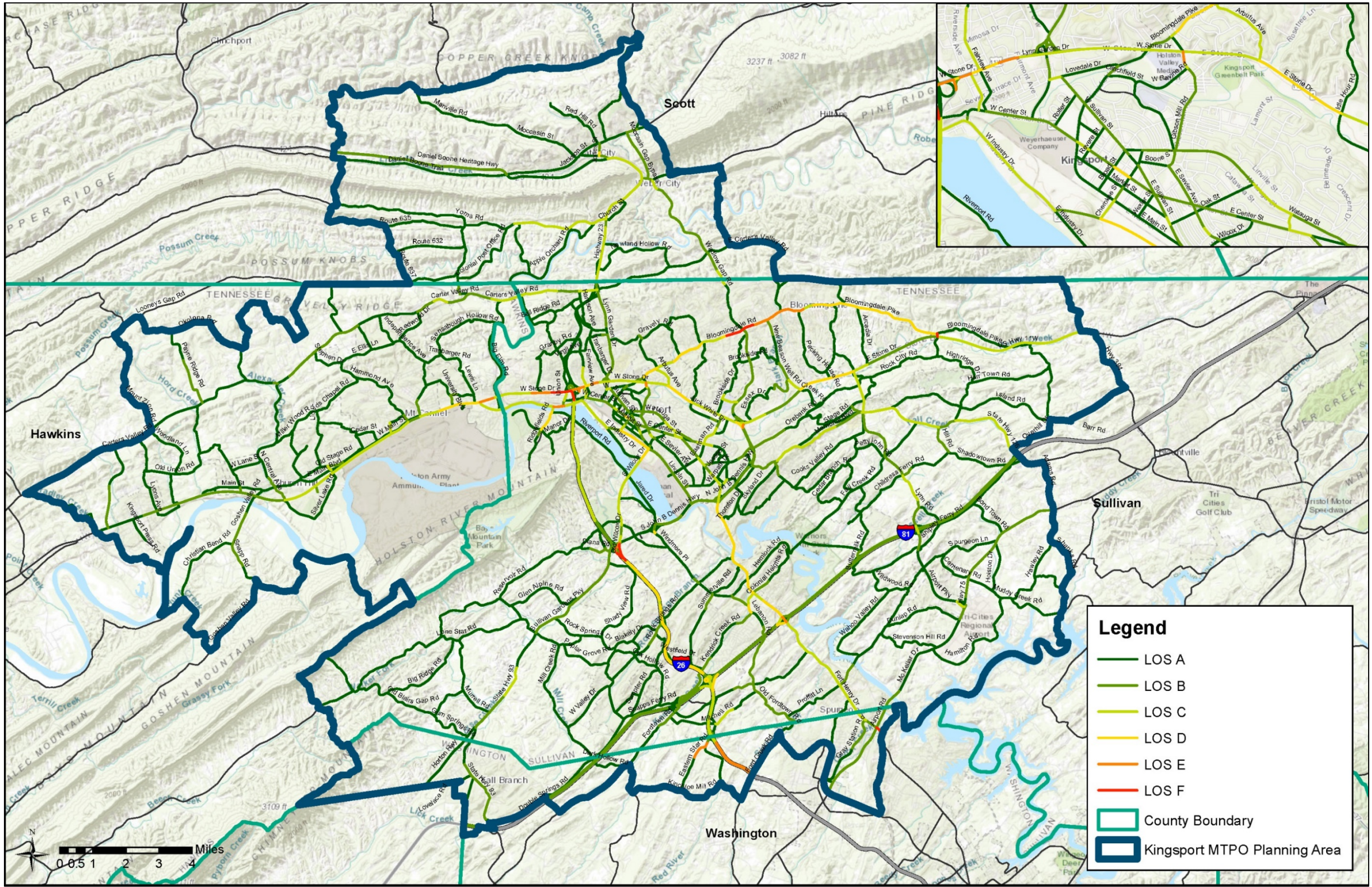


Figure 4-6
2040 Level of Service – Cost Feasible Plan

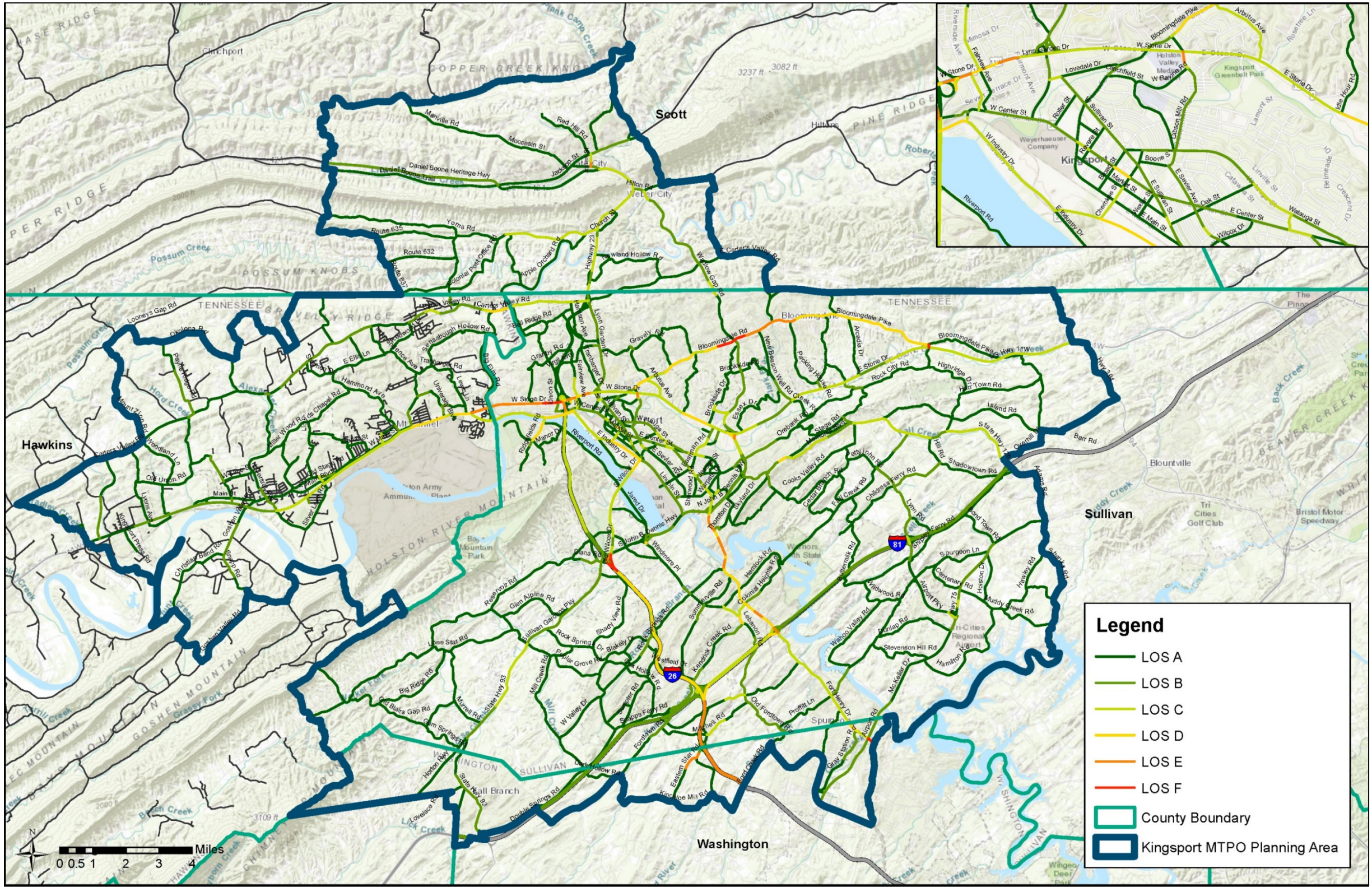


Table 4-5
2040 Vehicle Hours Traveled
With & Without Future Planned Improvements

Roadways	E+C Scenario Without Improvements*	Vision Plan Scenario With Improvements**	Cost Feasible Scenario With Improvements***
Collector	10,596	10,451	10,491
Minor Arterial	27,474	27,169	27,557
Principal Arterial	40,984	38,129	39,001
Interstate	44,804	44,164	45,810
Total VHT	123,858	119,913	122,859

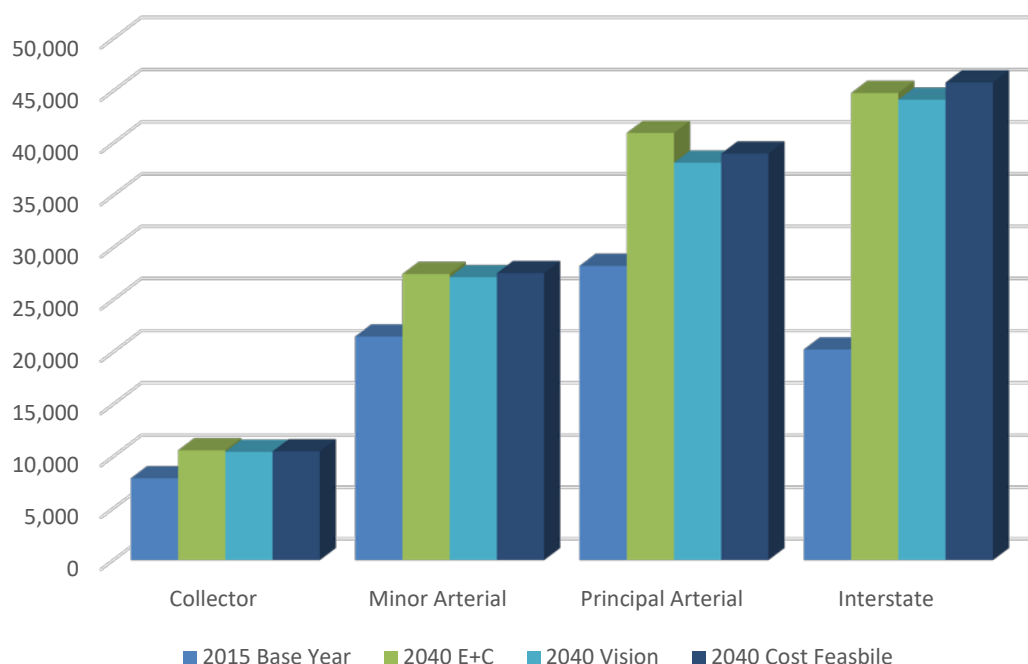
* Without additional road improvements beyond transportation improvements currently under construction/development as described in the existing and committed (E+C) roadway network – as described in Table 4-2.

** With improvement recommendations listed in Section 7.0 (without consideration of funding constraints)

*** With improvement recommendations listed in Section 7.0 (with consideration of funding constraints)

Figure 4-7 illustrates the projected vehicle hours traveled (VHT) by facility type for 2015 (the base year), the 2040 E+C Scenario, the 2040 Vision Plan Scenario, and the 2040 Cost Feasible Plan Scenario. As illustrated from the analysis, implementation of the Cost Feasible planned improvements by 2040 should accommodate the region's growing travel demands.

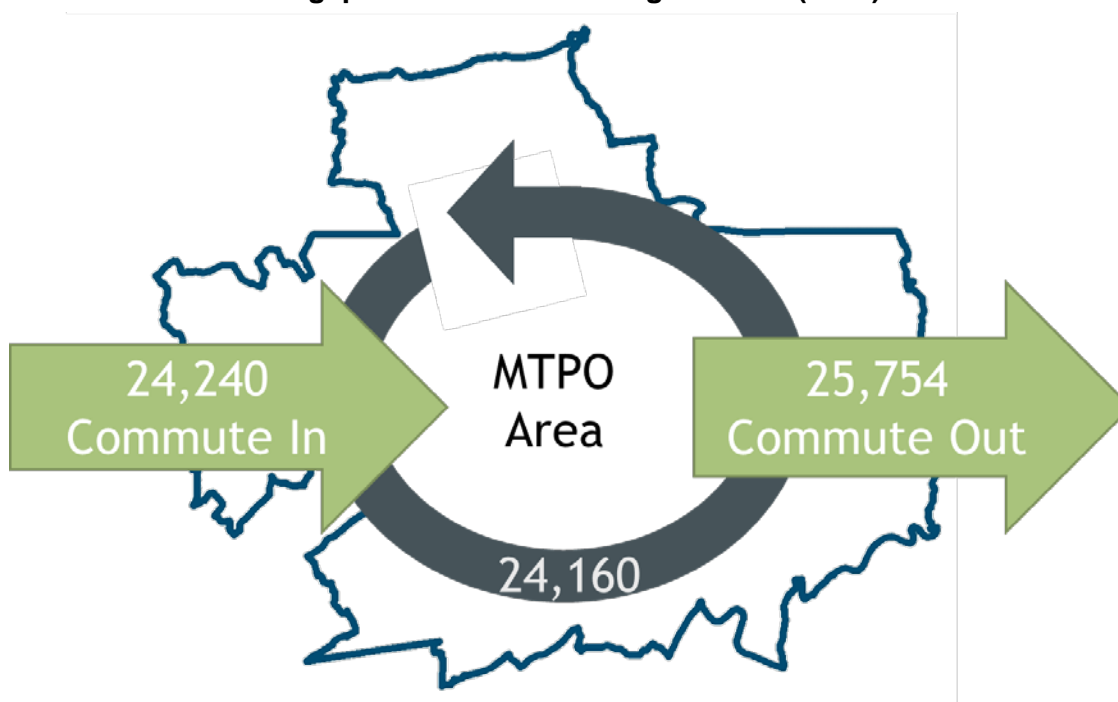
Figure 4-7
Vehicle Hours Traveled by Roadway Type – 2040 LRTP Scenario Results



4.1.2 Regional Commuting Patterns

According to US Census data, in 2014 nearly 3,400 Scott County residents commuted to Kingsport and Sullivan County each weekday for employment. Figure 4-8 illustrates commuter patterns for the Kingsport MTPo region. As seen in the figure, approximately 25,000 residents living within the MTPo area commute to other areas of the region for employment. Approximately 24,000 employees commute into the MTPo area from other residential areas in the region, and approximately 24,000 employees live and work within the Kingsport MTPo area. While informal ridesharing activities currently meet the demands of this commuting pattern, future demand is likely to reach such a level that scheduled commuter bus service or high capacity transit service will become an appropriate service addition.

Figure 4-8
Kingsport MTPo Commuting Patterns (2014)



Note: Number of persons commuting each weekday – 2014 LEHD data

4.1.3 Public Transportation

A variety of public transportation and transit services are offered throughout the Kingsport MTPo area. These services range from fixed-route services in the City of Kingsport to flexible, demand-response service in the rural portions of the MTPo area, as well as national intercity bus services via Greyhound. The combination of transit provisions in the cities and rural areas is intended to meet the varied needs of the MTPo's population. The Kingsport Area Transit Service or "KATS" provides fixed route and demand response services in the City of Kingsport. Northeast Tennessee Transit System or "NET Trans" provides service to the rural areas of Sullivan, Hawkins, and Washington counties in Tennessee, with a focus on the cities of Church Hill and Mount Carmel. Mountain Empire Older Citizens Agency or "MEOC" is the rural service provider in the Virginia areas of Scott County Virginia, Gate City, and Weber City. Figure 4-9 illustrates these transit services available in the Kingsport area.

The following five subsections (4.1.3.1 through 4.1.3.4) provide an assessment of current public transportation conditions (fixed route, demand response, and other transit and travel demand management programs and services) within the MTPO area. Subsection 4.1.3.5 discusses future transit needs.

4.1.3.1 Fixed Route Services

KATS is the only fixed route bus service offered in the MTPO region. KATS began in 1995 providing one fixed route and one ADA/paratransit vehicle. Today, KATS operates six fixed routes, Monday through Friday from 7:30 am - 5:30 pm. The service is designed as a “pulse system” requiring all the routes to originate downtown, from KATS downtown station currently located at 109 Clay Street, and pulsing outward into the community and then returning back to the downtown station. KATS fixed routes connect to each other throughout the city, allowing passengers to transfer to alternating routes. Figure 4-9 illustrates the five routes that comprise the existing service network for KATS fixed route bus service.

KATS regular fare to ride the bus is \$1.00. For anyone 65 or older, the fare is \$0.50. Students can ride the bus for free with a valid ID card. KATS offers monthly passes that allow passengers to utilize the bus system an unrestricted amount times. Transfers to other bus routes are free at designated locations. KATS has installed benches and bus shelters at various locations throughout Kingsport for rider’s convenience. All KATS bus signs are posted with the route schedule.

Figure 4-10 illustrates annual ridership for the fixed route bus service from fiscal year 2006 through 2015. As shown, bus ridership has increased over the past five years with the strategic marketing plan that has been aggressively adopted and thus, has elevated public transportation awareness in Kingsport.

Figure 4-9
Fixed Route Transit Services in the Kingsport Area

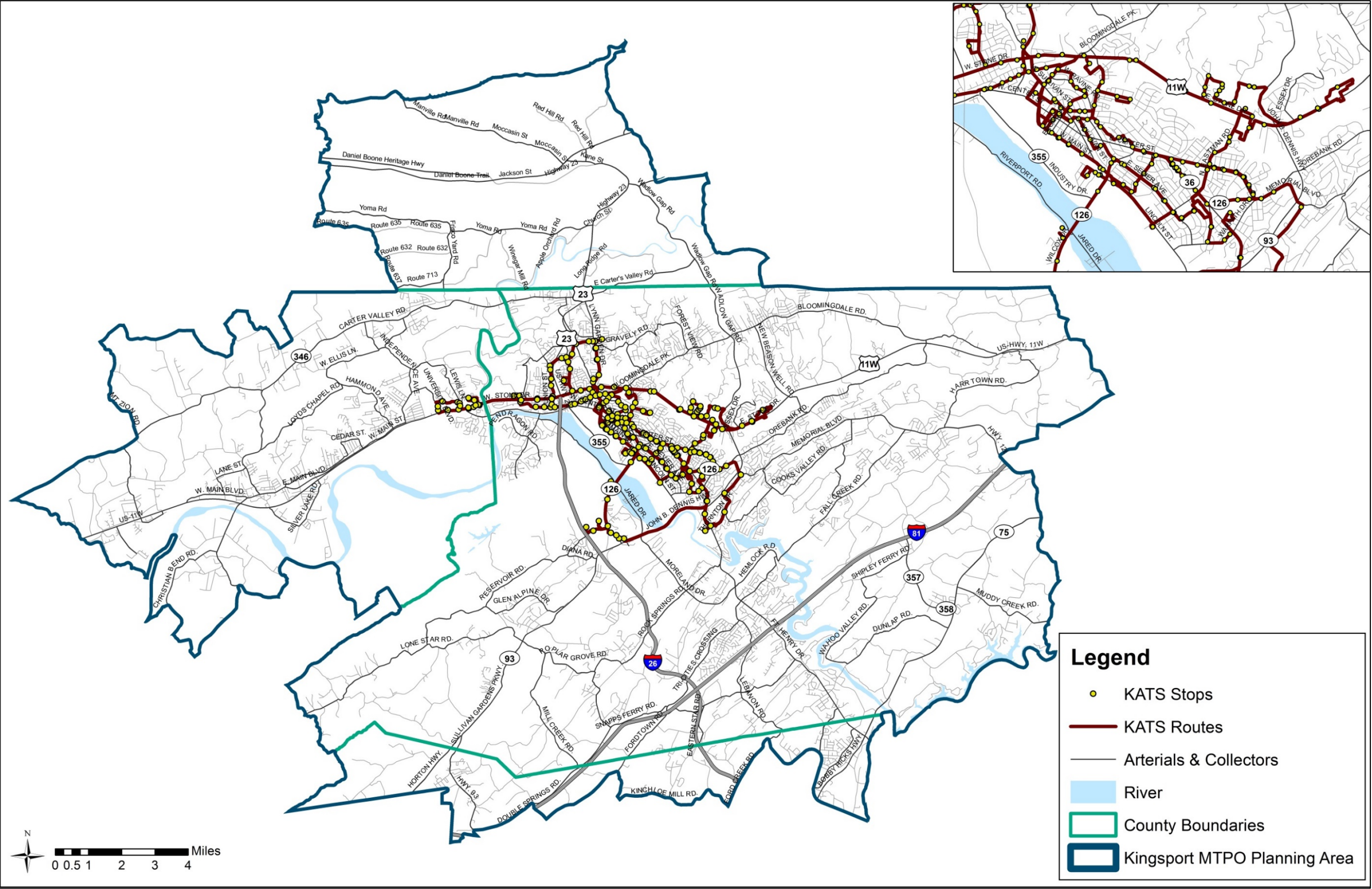
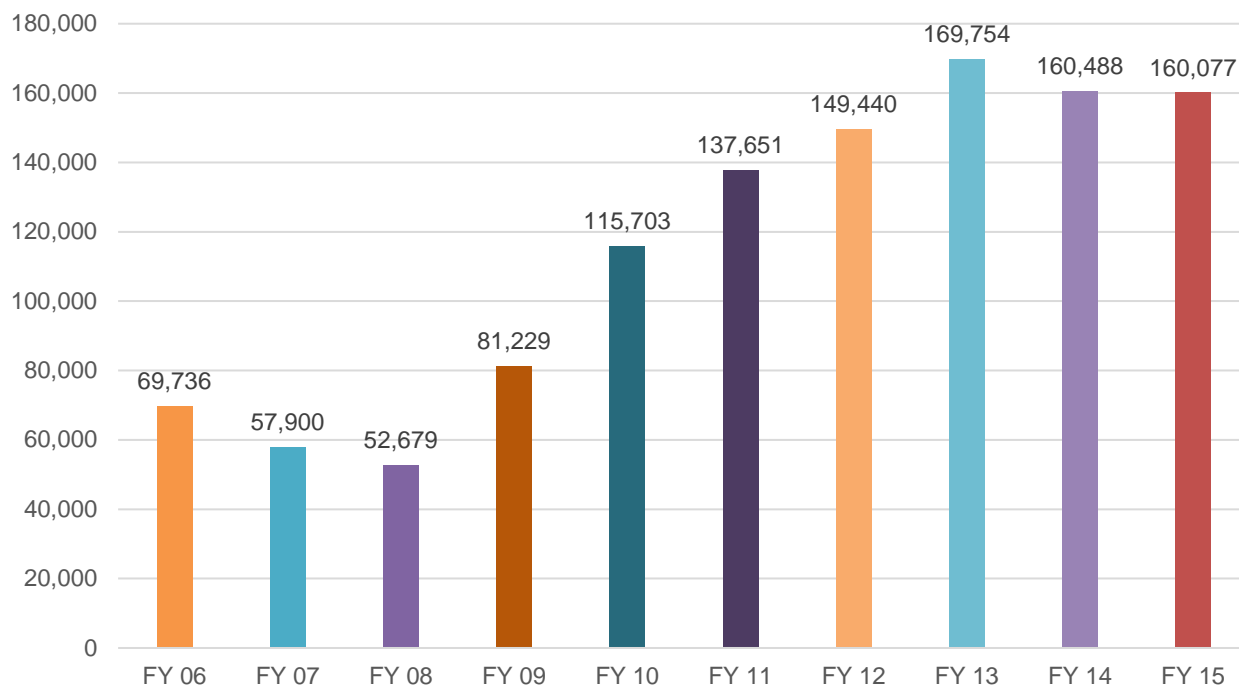


Figure 4-10
KATS Annual Fixed Route Ridership (2006-2015)



Source: Kingsport Area Transit Service, 2016

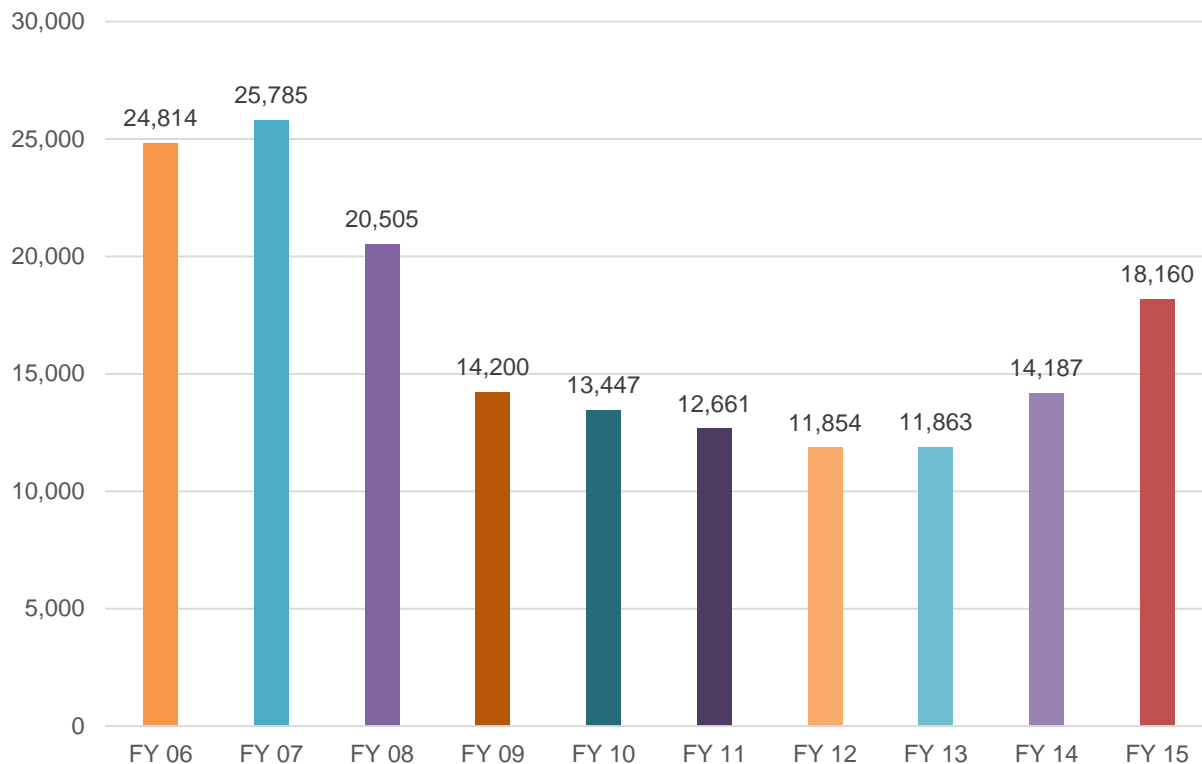
4.1.3.2 Demand Response Services

Within the MTPO region there are three public transit demand response service providers - KATS, NET TRANS, and MEOC. Each service system is described below.

KATS

In addition to the fixed route service, KATS also offers demand response service which includes ADA paratransit service to the entire Kingsport City Limits to persons who qualify under ADA guidelines, Dial-A-Ride 65 service to Kingsport residents age 65 or older, and a Job Assist program for City residents attempting to go to work. KATS demand response ridership has declined from a high of 25,000 trips in FY 2007 to approximately 14,000 trips in FY 2014; however, ridership has begun to increase with over 18,000 trips provided in FY 2015. Figure 4-11 illustrates ridership trends of KATS's demand response services over the last ten years.

Figure 4-11
KATS - Demand Response Service Ridership (2006-2015)



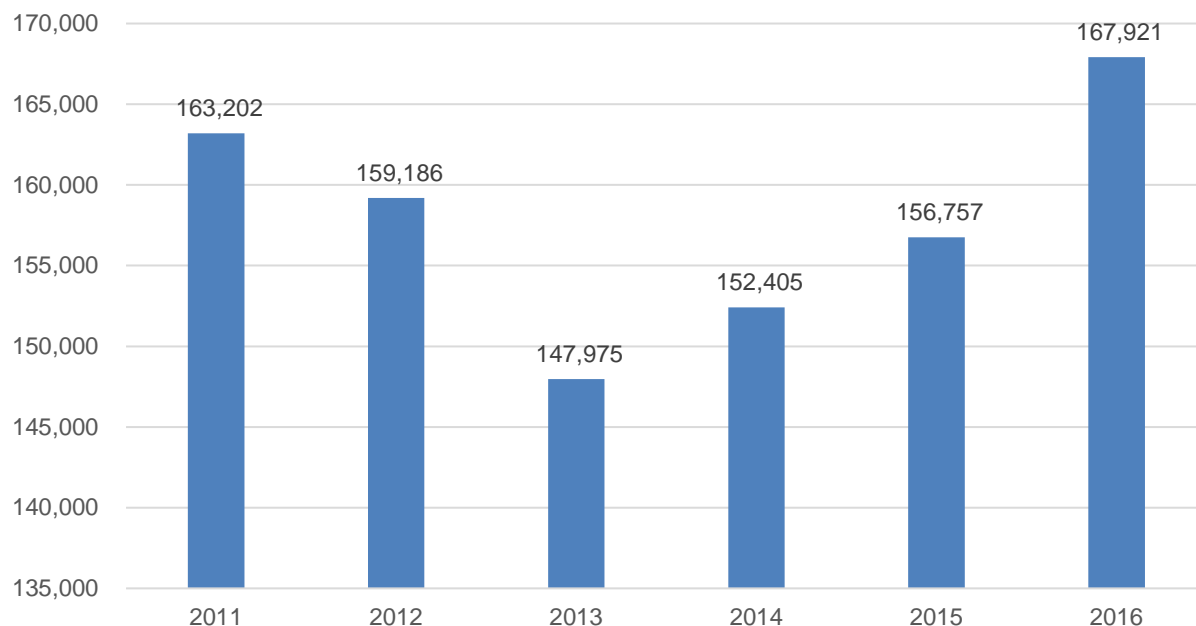
Source: Kingsport Area Transit Service 2016

NET Trans

NET Trans (Northeast Tennessee Rural Public Transit) is the service provider of First Tennessee Human Resource Agency (FTHRA) with services to an eight-county region, which includes Sullivan, Hawkins, and Washington Counties. NET Trans has built a quality rural public transportation program using local, state, and federal dollars. NET Trans does not provide services when a trip origination and destination are within the Kingsport Urbanized Area, but rather provides service to and from the urbanized area when a trip is needed from or to rural areas that NET Trans serves. NET Trans primarily use 15-passenger, lift-equipped vans and generally operate on routes and schedules dictated by the needs of patrons. Operating hours are Monday through Friday, between the hours of 6:00 am and 6:00 pm, excluding holidays, and fares are zone-based, ranging from \$2.00 to \$12.00 per one-way trip.

NET Trans provided nearly 168,000 trips in 2016, running over 3.2 million miles. Figure 4-12 illustrates ridership trends of NET Trans's demand response services over the last five years for the eight-county FTHRA Region.

Figure 4-12
NET Trans - Demand Response Service Ridership (2011-2016)



Note: Graphic above depicts ridership numbers for 8-County FTHRA Region

MEOC Transit

Mountain Empire Older Citizens Agency or “MEOC”, an Area Agency on Aging, has been providing some form of transportation service in the counties of Lee, Scott, and Wise, Virginia since its inception in 1974. MEOC added rural public transportation services in 1983 with federal funding assistance through the Virginia Department of Rail and Public Transportation (VDRPT). Today, MEOC Transit provides coordinated transportation on a demand-response basis throughout a four-county region, which includes the northern portion of the Kingsport MTPO area.

MEOC Transit services are generally provided Monday-Friday from 7:00 am to 5:00 pm. MEOC Transit requires that riders call 24 hours in advance to schedule trips. While all of the services provided are open to the general public, the majority are considered to be general public transportation trips with the minority focusing on particular programs. These programs include adult daycare; congregate meals/home delivered meals/home delivered supplements; developmental services; independence house; Medicaid; PACE; and Pulmocare. The adult fare to ride MEOC Transit is \$1.50 per trip. The fare is discounted to \$0.75 per trip for adults ages 60 and above and for people under the age of 18. As a demand response regional transit provider, MEOC Transit provides some level of service to all of the trip generators in the counties of Lee, Scott, and Wise in Virginia, but does not serve Kingsport on a regular basis.

4.1.3.3 Transit Fleets

The following is a snapshot of the level of capital investments that exist in the MTPO region relative to available transit vehicles.

KATS currently maintains a fleet of 20 vehicles in total. Twelve of these vehicles are buses, which are part of the fixed route bus service system. These vehicles have a total seating capacity of 236 seats system-wide (with an average of 20 seats per vehicle). The average vehicle age of the fixed route fleet of buses is 7.4 years old. KATS has eight demand response vehicles, which are all wheelchair lift-equipped raised-roof vans. The vehicles have a combined seating capacity of 72 and an average age of 7.6 years old.

Table 4-6 provides a detailed listing of the current KATS transit fleet all of which are for exclusive service in the MTPO region.

Table 4-6
KATS – Transit Fleet

Vehicle Description	Year	Fuel	Seats
Fixed Route Vehicles			
Bus	2006	Diesel Fuel	17
Bus	2008	Diesel Fuel	17
Bus	2008	Diesel Fuel	17
Bus	2008	Diesel Fuel	17
Bus	2010	Gasoline	19
Bus	2010	Gasoline	19
Bus	2010	Gasoline	19
Bus	2010	Gasoline	19
Bus	2011	Gasoline	23
Bus	2011	Gasoline	23
Bus	2011	Gasoline	23
Bus	2012	Gasoline	23
Demand Response Vehicles			
Van	2009	Gasoline	9
Van	2009	Gasoline	9
Van	2009	Gasoline	9
Van	2009	Gasoline	9
Van	2009	Gasoline	9
Van	2010	Gasoline	9
Van	2010	Gasoline	9
Van	2010	Gasoline	9

Source: National Transit Database, 2014

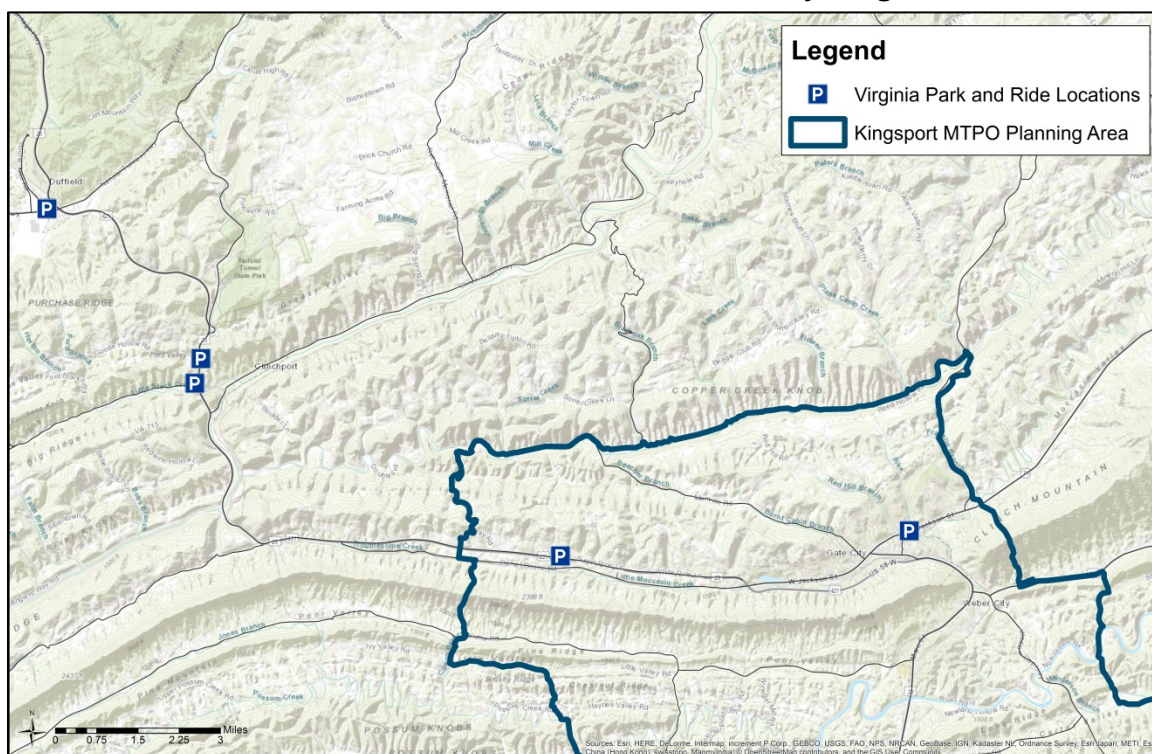
According to data reported to the National Transit Database in 2015, NET Trans maintains a fleet of 91 vehicles, which are available for service in the eight-county First Tennessee Human Resource Agency Region.

4.1.3.4 Other Transit and Travel Demand Management Activities

In addition to public transportation services provided by KATS, NET Trans, and MEOC Transit, there are other passenger bus services operating within the MTPO area. Greyhound offers passenger bus service to and from Kingsport via its national service network. Greyhound has one bus stop terminal in Kingsport, which is located in the downtown area. Greyhound bus service offers travelers longer distance travel options throughout the continental United States.

Lastly, there are a number of formal and informal park-and-ride lots in the MTPO region. The largest share of these lots is in the Virginia portion of the MTPO planning area. As part of VDOT's statewide park-and-ride lot program, there are two lots in the Virginia portion of the Kingsport MTPO, and another three lots outside the planning area as depicted in Figure 4-13.

Figure 4-13
Official Park-and-Ride Lots in Scott County, Virginia



4.1.3.5 Future Conditions

The need and demand for public transportation services in the MTPO region is clearly demonstrated as seen in the ridership numbers of the KATS, NET Trans, and MEOC Transit. Transit services, both fixed route and demand response within the MTPO area are an integral part of the current transportation system.

In 2011, MEOC Transit, in cooperation with VDOT, and LENOWISCO developed the MEOC Transit Development Plan for the four-county LENOWISCO region. The MEOC Transit Development Plan largely speaks to the service needs outside of the Kingsport

MTPO area. However, the plan does identify service needs between the LENOWISCO region and Kingsport. The plan calls for a regional connector service to provide regional connectivity, both within the LENOWISCO region, and to Kingsport and Johnson City.

In 2016, TDOT developed a Coordinated Public Transit-Human Services Transportation Plan (CPHSTP) for the Tri-Cities region which includes the Kingsport MTPo area and encompasses a ten county area including the counties of Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi, and Washington counties in Tennessee and Scott and Washington counties in Virginia.

The Tri-Cities region CPHSTP outlines current service providers in the region for both rural and urban areas, identifies service gaps and unmet needs, and suggests short- and long-term strategies to address those needs. Among these needs are lack of available information and marketing for all services, insufficient connectivity or coverage between urbanized areas, urban centers, and rural areas, and the lack of funding to expand and maintain the existing transit services. Short-term strategies include:

- Enhancing planning activities and public education efforts to raise awareness of transit opportunities within the region.
- Exploring the development of a one-stop transportation call center to coordinate services.
- Reviewing service routes and expanding service to key activity centers currently underserved or not served by transit, paratransit, or service agencies.
- Evaluating current accessibility to transit stops and identify ways to improve first-mile and last mile connections.
- Expanding service hours to include weekday early morning and evening service.
- Expanding service hours to include weekend service.
- Identifying funding opportunities for capital improvements or service expansion.
- Identifying funding opportunities to purchase technology systems to improve operations and customer service.

Summary

Transit services in the MTPo area must continue to expand in order to meet the growing mobility needs of the region, and to provide transportation options that help to reduce exclusive dependence on the automobile. Necessary improvements needed to accommodate these demands include adequate rolling stock for service expansion, transfer stations, and other capital and operating investments for the Kingsport region's fixed route service provider, KATS. Additionally, with KATS maintaining a rolling stock of vehicles that are nearly five years old, a considerable amount of future resources must be committed over the planning horizon for vehicle replacement. Making the most of these resources will be key to KATS remaining at the top of its class when it comes to service efficiency. In terms of demand response service, KATS, NET Trans, and MEOC Transit will need to continue investments in automatic vehicle locator (AVL) systems. This intelligent transportation systems (ITS) technology is important to coordinating/scheduling trips by knowing the exact locations and speeds of vehicles. These improvements coupled with the recommendations of the strategic plan will be necessary for KATS, NET Trans, and MEOC Transit to meet the projected demand within the MTPo area over the next 25 years. Additionally, continued coordination and cooperation of all transit service providers in the MTPo region will need to continue.

4.1.4 Walkways and Bikeways

While non-motorized travel traditionally does not receive the same level of visibility as automobile travel, in recent years the Kingsport MTPO area has begun to undertake initiatives to ensure that infrastructure for non-motorized travel is provided, and that such travel is an integral component of the overall transportation system.

When one considers that almost all trips, at some point, include walking (be it from the parking location of the automobile to one's final destination – work, shop, or home) the importance of non-motorized travel is somewhat overwhelming. Additionally the same is true for individuals who walk to a KATS bus stop to use the bus, for an individual who rides their bike to the store or to the library, for the person who commutes to work by bike, or simply for recreational purposes.

Interest in active transportation solutions within the region is growing among citizens, the business community, and local leaders across all spectrums and age genres. In response to this growing interest, the MTPO initiated the development of the Kingsport Regional Bicycle and Pedestrian Plan in 2011 to establish a comprehensive bikeway and pedestrian network, which enables regional jurisdictions to plan and implement facilities that improve safety, enhance mobility, and promote a higher quality of life throughout the region.

The following subsection provides an assessment of current conditions (sidewalks, bikeways, and greenways) within the MTPO area, an assessment of sidewalk, bikeway, and greenway needs, and recommended improvements for walking and biking within the MTPO area based on the findings of the Regional Bicycle and Pedestrian Plan.

4.1.4.1 Current Conditions

Currently, approximately 46 miles of roadway with sidewalk and 30 miles of official bicycle accommodations exist within the region. The bulk of the sidewalk is centered in downtown Kingsport, with other notable segments along Lynn Garden Drive and Orebank Road. Short segments exist in key commercial locations in Gate City, Weber City, Mt. Carmel, and Church Hill. Commercial development along roads like Stone Drive, Fort Henry Drive, and Wilcox Drive did not include sidewalk construction, which creates a barrier to pedestrian travel. On-street bicycle facilities generally consist of shared lanes or the use of paved shoulders. Other bike routes are signed in the area of Warriors Path State Park.

The vast majority of potential walking and biking trips go unrealized for many reasons. One reason is the lack of adequate infrastructure. As part of the Regional Bicycle and Pedestrian Plan, the demand for walking and biking trips in the Kingsport area was analyzed based on existing conditions. Using a unique procedure developed by RPM Transportation Consultants, non-motorized trip demand within the MTPO area was estimated for 13 unique walk and bike trip types. Trips are concentrated in areas where people reside in proximity to schools, parks, shopping areas, and other destinations. As shown in Figure 4-14 high demand areas exist in downtown, in commercial areas like Kingsport Town Center, and adjacent neighborhoods with higher densities.

Bicycle Level of Service Conditions

Using the procedures documented in National Cooperative Highway Research Program (NCHRP) Report 616, a bicycle level of service (BLOS) analysis was determined for

regional collector and arterial roads. BLOS is a way to objectively rate the quality of roadways for cyclists. The BLOS score is based on research, which gauged the comfort level of cyclists of all age groups and riding capabilities when asked to ride on a variety of roadway conditions. The roadway condition factors used in the BLOS calculation include the Average Daily Traffic (ADT) volume, number of through lanes on the roadway segment, speeds, percentage of trucks, the width of the outside travel lane, shoulder, and bike lane, the condition of the pavement, and the occupancy rate of on-street parking. The result is a score ranging from A to F, with A being the best conditions and F the worst conditions.

As shown in Figure 4-15, approximately 85 miles of roadway in the region are identified as BLOS A, B, or C. However, these miles are far from contiguous, making moderate to long distance trips through the region difficult for most would-be cyclists.

Segments of several major arterial roads like Stone Drive, Wadlow Gap Road, Airport Parkway, John B. Dennis Parkway, and Sullivan Gardens Road are considered to have good cycling conditions because of wide paved shoulders. These existing facilities can become the backbone of a more comprehensive regional network. Other more rural roads like segments of Carters Valley Road, VA 665, Fordtown Road, and Rock Springs Road have a marginal rating (LOS D) due to a combination of low traffic volumes and little or no paved shoulder.

In downtown Kingsport, primary east-west traffic is along Center Street, resulting in good BLOS on low volume alternatives like Market and Main Streets. Because of traffic dispersion across redundant north-south streets, most are good for bike travel (Revere, Clay, Broad, Cherokee, etc.). Some attractions such as the Allandale Mansion, the Netherland Inn, and Exchange Place are readily accessible by bike and could be promoted as such with modest improvements. Unfortunately, access to two regional natural destinations, Bays Mountain Park and Warriors Path State Park, is difficult by bike on today's road network.

Figure 4-14
Non-Motorized Demand in the Kingsport Area

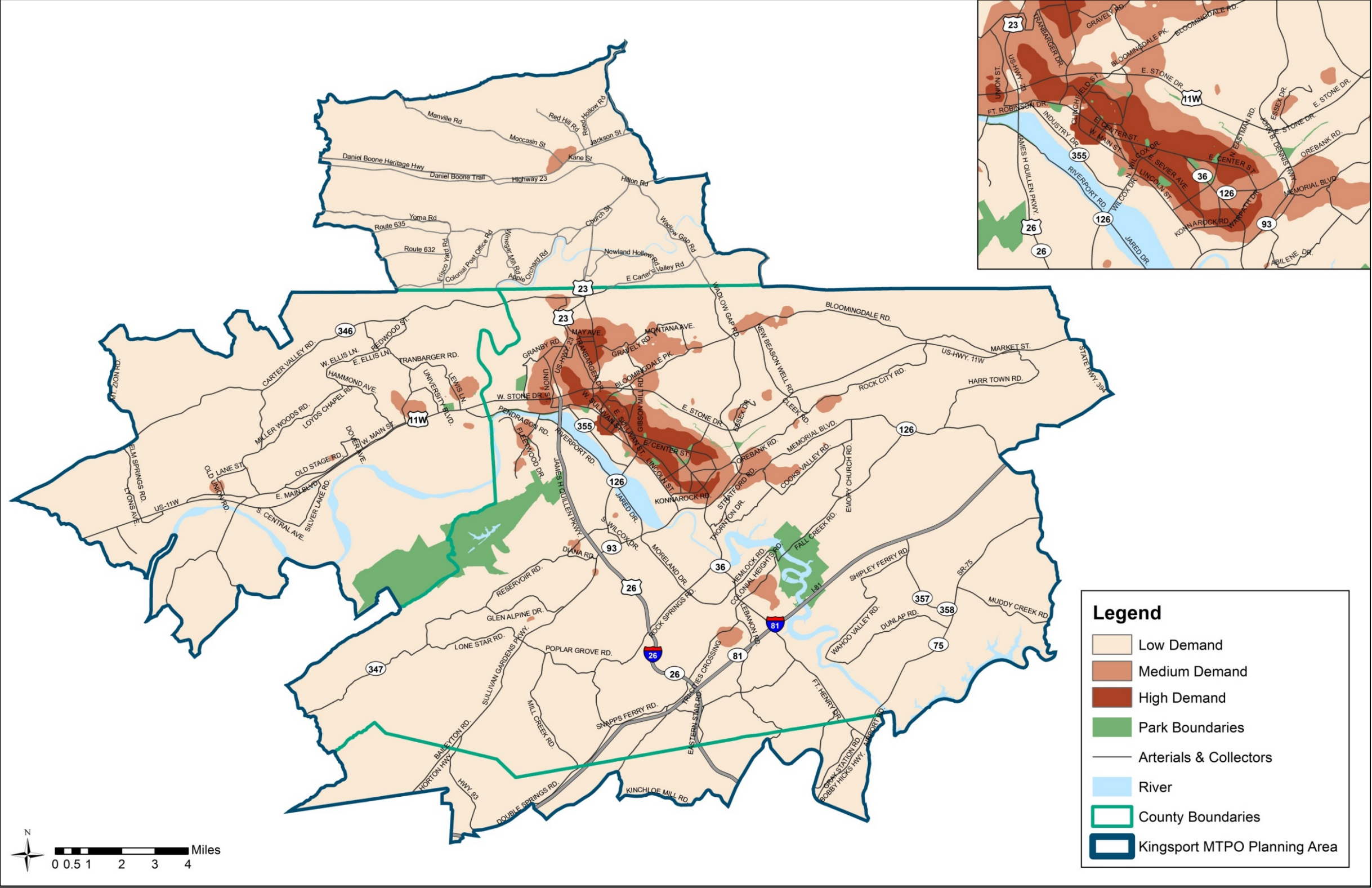
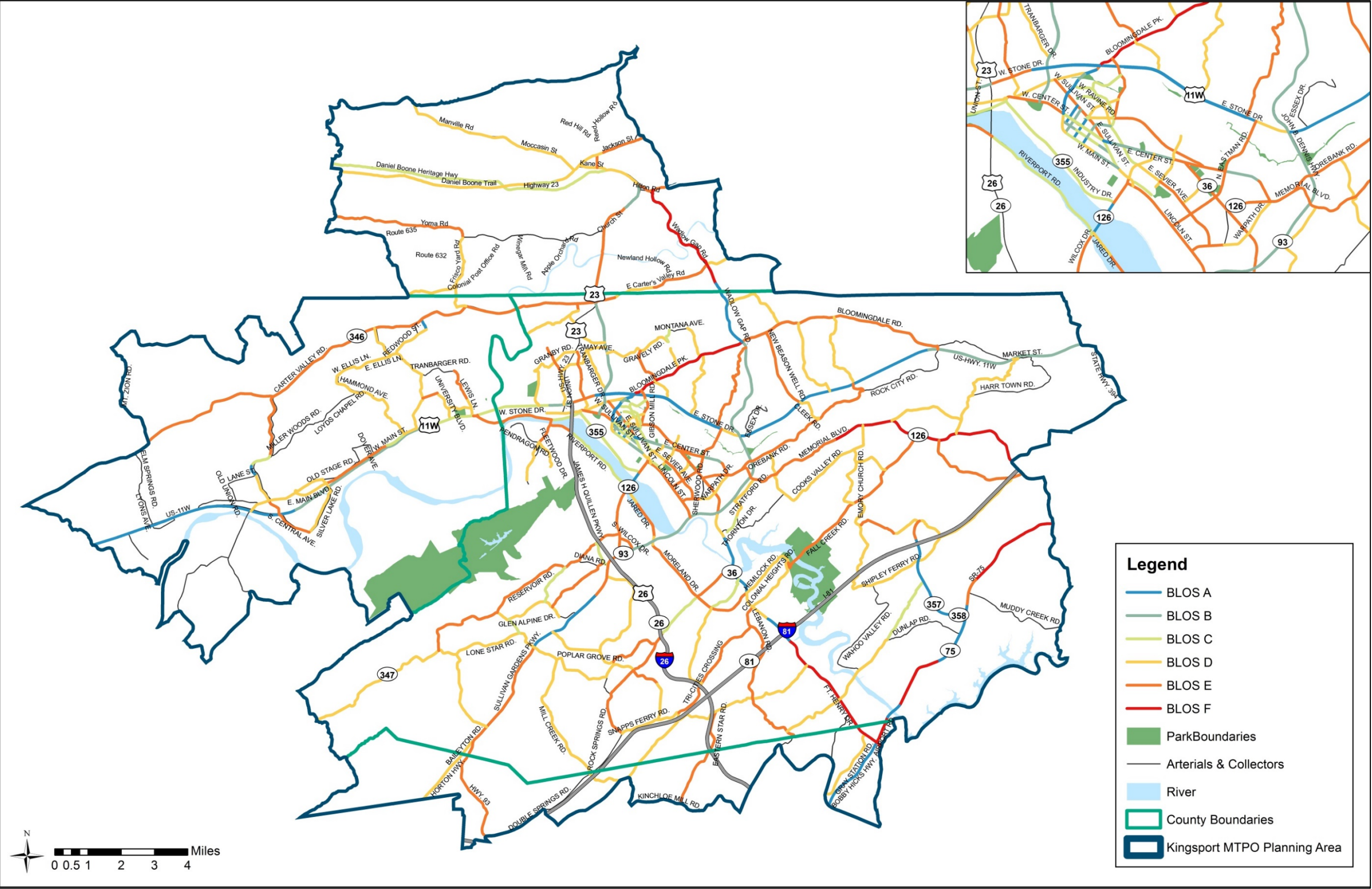


Figure 4-15
Bicycle Level of Service (BLOS) Map



Pedestrian Level of Service Conditions

Like BLOS, a pedestrian level of service (PLOS) analysis was determined for regional collector and arterial roads. The model reflects the effect on walking suitability or “compatibility” due to factors such as roadway width, presence of intervening buffers between the sidewalk and the road, barriers (such as street trees) within those buffers, traffic volume, motor vehicles speed, and on-street parking. Of course, the most influential factor on PLOS is the presence of sidewalk itself.

Pedestrian accommodations are usually defined as sidewalks and, in some cases, wide shoulders. Figure 4-16 shows that the pedestrian accommodations in Kingsport are good within the area bounded by the Holston River, I-26, Stone Drive, and John B. Dennis Highway. However, all of these boundaries present some barrier to expanding the pedestrian network. Main Street in Weber City, Kane and Jackson Streets in Gate City, Main Street in Mt. Carmel, and Main Boulevard in Church Hill are examples of long-standing pedestrian accommodations in core business areas. North Central Avenue in Church Hill is a particularly good example of the incorporation of sidewalks into a street’s reconstruction.

4.1.4.2 Future Conditions

From the Regional Bicycle and Pedestrian Plan, proposed bicycle and pedestrian networks were developed using the analysis conducted on the existing bicycle and pedestrian conditions. The following subsection presents these non-motorized network recommendations, which are an integral element of the region’s overall transportation system and support the region’s desires to promote active transportation choices.

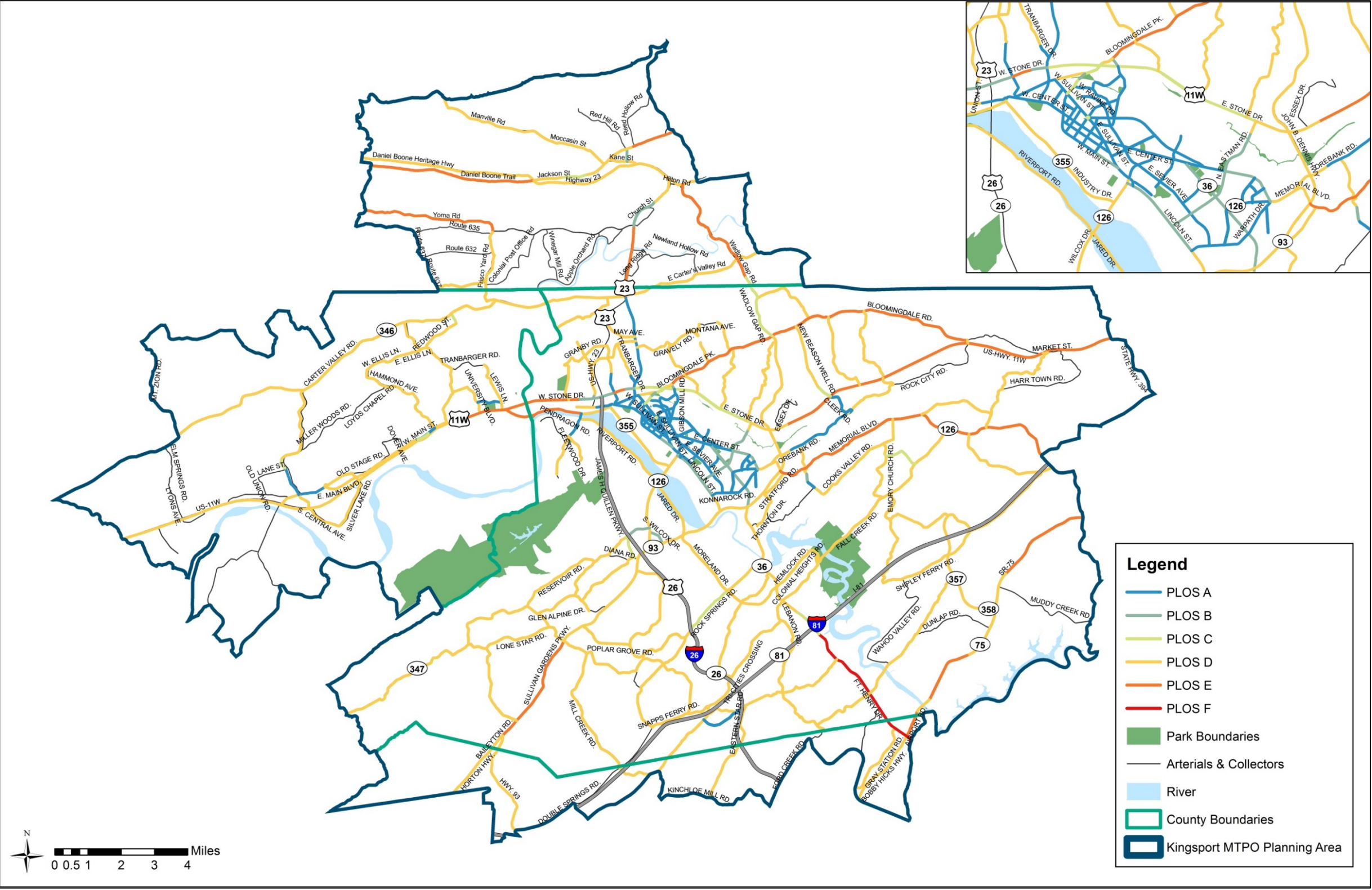
Proposed Bicycle Network

Planned bicycle routes were developed to provide linkages between regional-scale destinations using functionally classified roadways within the MTPO area. Connections to and through the region are considered to be primary objectives of the identified routes of the bicycle network, as shown in Figure 4-17. Local connections providing short distance linkages between local destinations, or linkages to the regional system, are also shown as part of the bicycle network.

The roadway segments comprising the regional bicycle network were identified for two major reasons. First, the segment must contribute to a regional connection, either as a long-distance transportation route, or to a significant regional destination. Many of the region’s state routes are included as part of the network because these routes generally make these important regional connections. Second, the segment will preferably have either an adequate BLOS or will be included in future roadway improvement plans.

Through the Regional Bicycle and Pedestrian Plan development process conducted in 2009, stakeholders stressed the importance of off-street facilities and in particular the important role of the Greenbelt. To increase the impact of the Greenbelt as a transportation facility, several new facilities are proposed to connect the Greenbelt to planned regional on-street facilities. This provides needed connections between origin and destination-based land uses, which is the best way to enhance the Kingsport Greenbelt as a premier transportation facility and increase its usage.

Figure 4-16
Pedestrian Level of Service (PLOS) Map



Proposed Pedestrian Network

The Regional Bicycle and Pedestrian Plan is supportive of the development of local sidewalk improvements, but places emphasis on regional accommodations as an MTPO-based priority. As a regional priority, sidewalk accommodations on all federally-classified arterial roadways within a City Limit or an Urban Growth Boundary of the MTPO, on which pedestrians are not prohibited, constitute the recommended regional sidewalk recommendations of the Regional Bicycle and Pedestrian Plan for the MTPO.

These roadways serve as major commuting corridors, commercial corridors, and corridors of commerce; and they connect communities, activity centers, transit, and major destinations throughout the region, as shown in Figure 4-18. As such, they serve as the backbone to other roadways and streets in the region which, combined with local sidewalks and streets, link neighborhoods, businesses, and other community facilities to one another.

The Urban Growth Boundary (as defined by TN Public Chapter 1101) was selected as the policy boundary as these areas of the region are expected to be urban in form over the next 20 years.

Policies and Procedures

Policies and programs directed toward improving conditions for walking and bicycling can have a major impact on non-motorized transportation in Kingsport. The Kingsport Regional Bicycle and Pedestrian Plan includes recommended policies and programs that promote bicycling and walking, education for bicyclists, pedestrians, and motorists, and ideas that promote a more institutionalized process for implementing facilities for non-motorized travel. These recommendations are organized by the plan's goals of Livability, Sustainability, and Prosperity and can be found specifically in the plan. It is important for the Kingsport Region to implement the policies and procedures to ensure the non-motorized transportation facilities are considered as part of the future transportation system.

Figure 4-17
Proposed Bicycle Network Map

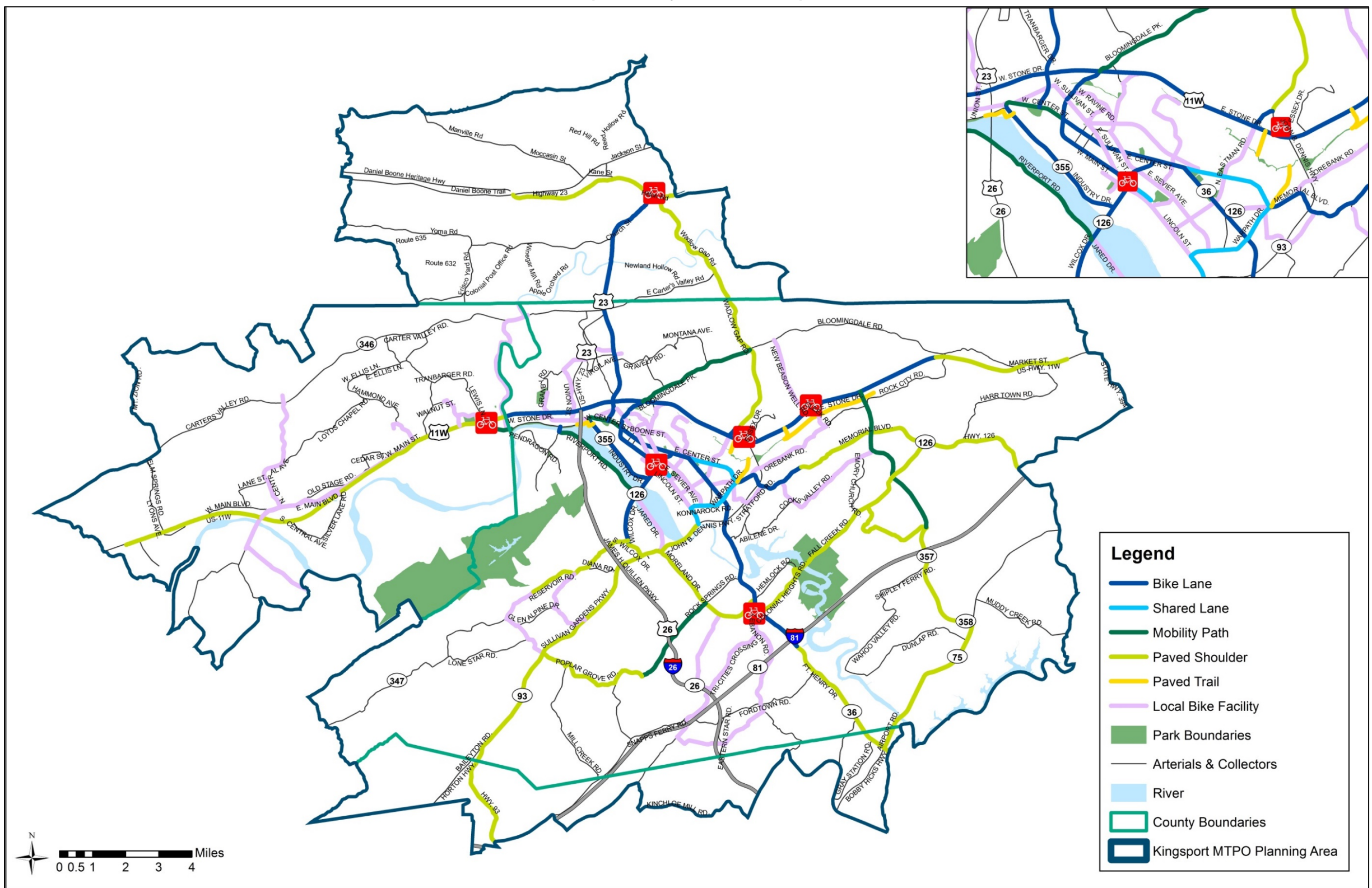
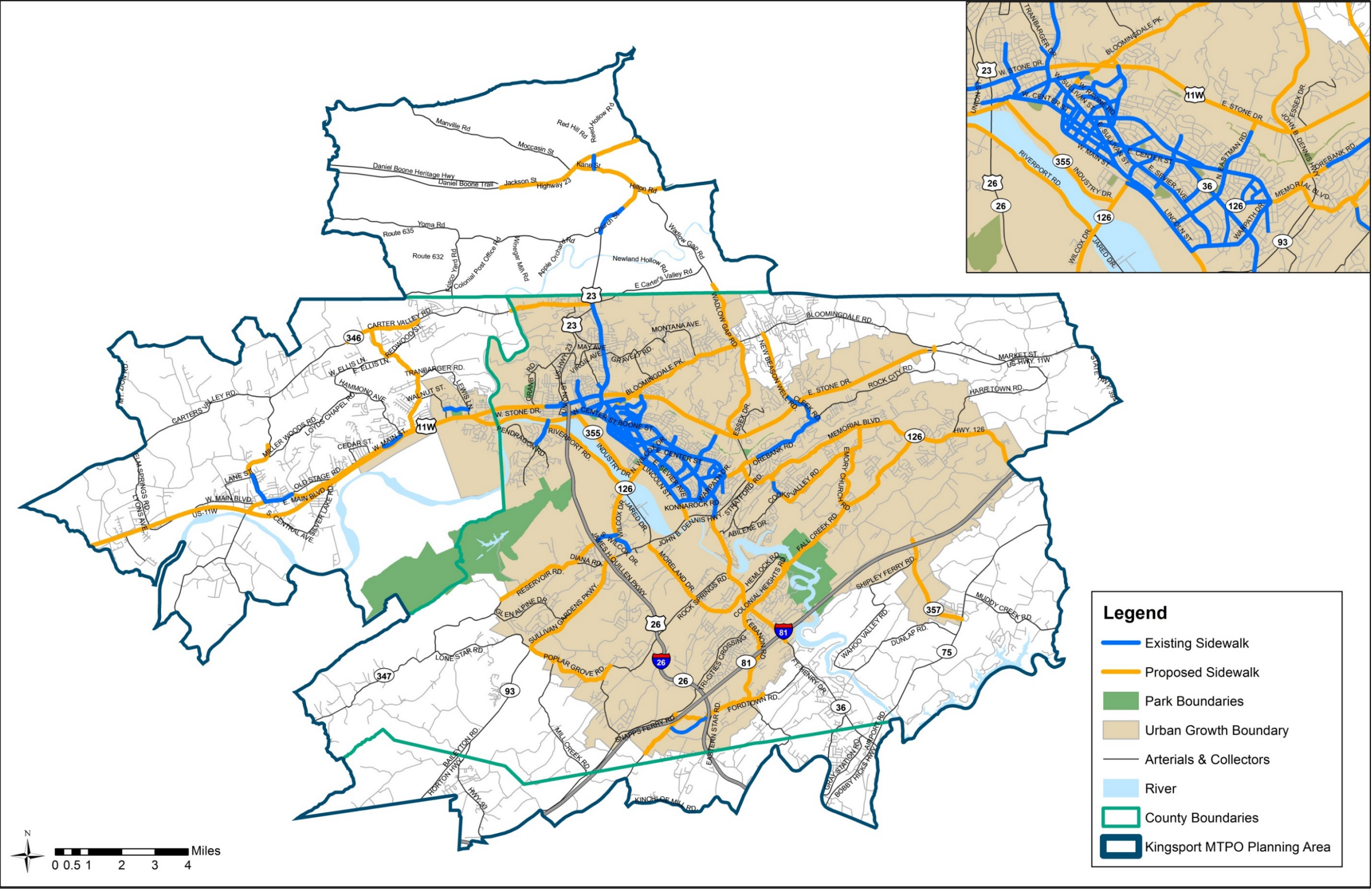


Figure 4-18
Proposed Pedestrian Network Map



4.1.5 Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems (ITS) refers to use of technological innovation to manage the existing transportation system more effectively, improve its efficiency, and to make the system more user friendly. A wide variety of ITS technologies are under development or are being used in cities and towns throughout the U.S. and internationally, ranging from motorist message signs to automatic vehicle locator (AVL) systems on transit vehicles.

In order to be eligible for federal transportation funding, regions must show that their ITS projects conform to their Regional ITS Architecture. A Regional ITS Architecture is developed in order to identify the types of ITS services that are planned for implementation in the region. This requirement was first established in 1998 by the Transportation Equity Act for the 21st Century, and implemented in 2001 by the Federal Highway Administration's and Federal Transit Administration's policy on the National ITS Architecture. This requirement was continued in 2015 by the FAST Act.

The most recent Kingsport Regional Intelligent Transportation System (KRITS) Architecture was completed in 2017 to organize the implementation of ITS technologies in the Kingsport region. The primary goals of the architecture were to steer the creation of a functional ITS program that satisfies the demands of local and regional transportation stakeholders and to formulate a realistic vision for the future of Kingsport's ITS network. The architecture was developed in conjunction with the existing Tennessee ITS Statewide Architecture and existing Virginia Statewide ITS Architecture.

In development of the KRITS architecture, 34 local, regional, state, and federal stakeholders, in addition to the MTPO, were consulted for input and assistance in defining the operation of the KRITS networks. The KRITS stakeholders included:

- Bristol TN/VA MTPO
- City of Church Hill Police
- City of Kingsport Fire Department
- City of Kingsport Police Department
- City of Kingsport Police Department - Traffic Unit
- City of Kingsport Public Works
- City of Kingsport Schools
- FHWA - Tennessee Division
- FHWA Virginia
- First TN RPO
- Hawkins County Emergency Management Agency & Homeland Security
- Hawkins County Highway Department
- Hawkins County Schools
- Hawkins County Sheriff's Office
- Johnson City MTPO
- Kingsport Area Transit Service
- LENWISCO
- Mountain Empire Older Citizens, Inc. NET Trans
- Scott County VA Sheriff's Office
- Sullivan County Emergency Management
- Sullivan County EMS
- Sullivan County Highway Department
- Sullivan County Schools
- Sullivan County Sheriff's Office
- TDOT - Region 1
- TDOT - Long Range Planning
- Tennessee Highway Patrol - District 5 Fall Branch
- Town of Mt Carmel Fire Department
- Town of Mt Carmel Police Department
- Town of Weber City Fire Department
- Town of Weber City Police Department
- VDOT Southwestern Region
- VDOT Bristol District

Table 4-7 contains a listing of ITS project recommendations from the KRITS Architecture for the Kingsport area.

Table 4-7
Kingsport Regional ITS Architecture Recommendations

Project	Project Description	Deployment Timeframe and Responsible Agency	Applicable ITS Service Packages
TDOT/VDOT Combined Regional TMC	Establish a combined TMC for the Tri- Cities Region that will be jointly operated by TDOT and VDOT with coordination with the cities of Bristol, TN; Bristol, VA; Johnson City, and Kingsport.	Long-Term: TDOT/VDOT and Municipal Government	ATMS07 – Regional Traffic Management
TDOT HELP Vehicle Service Area Expansion	Expand the TDOT Region 1 HELP service area to include vehicles stationed in the Kingsport Region. HELP vehicles stationed in the area would facilitate incident management as well as special event management.	Mid to Long-Term: TDOT	EM04 – Roadway Service Patrols
TDOT SmartWay Installation on I-26	Install CCTV camera, dynamic message sighs (DMS), and highway advisory radio (HAR) equipment along I-26 from Virginia state line to Johnson City.	Mid to Long-Term: TDOT	ATMS01 – Network Surveillance ATMS07 – Regional Traffic Management ATMS06 – Traffic Information Dissemination
CCTV Camera Expansion	Install additional CCTV cameras along I- 81 at each interchange.	Mid to Long-Term: TDOT	ATMS01 – Network Surveillance ATMS07 – Regional Traffic Management
TDOT Active ITS Access for Local Governments	Active ITS is a software program that is currently used internally by TDOT to view real-time CCTV camera video in addition to other functions. This program allows local government agencies the ability to view TDOT CCTV cameras feeds and offer additional viewing capabilities that are not available to the general public on the SmartWay website. TDOT is currently working with local agencies to obtain signed MOUs regarding access to Active ITS and data sharing.	Short-Term: TDOT and Counties/ Municipalities	ATMS01 – Network Surveillance ATMS07 – Regional Traffic Management
TDOT Weather Detection	Implement additional weather detection in the Kingsport Region for snow and ice detection. The bridges on I-26 and I-81 were identified as priority needs because these bridges are most likely to freeze during winter storms.	Mid-Term: TDOT	MC03 – Road Weather Data Collection MC04 – Weather Information Processing and Distribution MC06 - Winter Maintenance
TDOT Overheight Detection	Install overheight detection equipment in strategic locations to warn driver of low height crossings to prevent damage to existing infrastructure.	Long-Term: TDOT	ATMS19 – Speed Warning and Enforcement ATMS24 – Dynamic Roadway Warning
TDOT Variable Speed Limits	Implement variable speed limits at certain locations for the races at Bristol Motor Speedway.	Mid to Long-Term: TDOT and Counties/ Municipalities	ATMS22 – Variable Speed Limits
TDOT and THP Colocation	Relocate THP dispatch to the TDOT Region 1 TMC in Knoxville for improved coordination	Short-Term: TDOT and THP	ATMS07 – Regional Traffic Management EM01 – Emergency Call-Taking and Dispatch
TDOT Smart Work Zones	Continue to implement smart work zone technologies for maintenance and construction projects where appropriate	Short-Term: TDOT	MC07 – Roadway Maintenance and Construction MC08 – Work Zone Management MC09 – Work Zone Safety Monitoring
VDOT DMS on US-23 and SR-224	Implement dynamic message signs (DMS) in the Kingsport Region to disseminate incident, weather, construction, and general traffic information. The priority locations that were identified included SR-71 and SR-224.	Short-Term: VDOT	ATMS06 – Traffic Information Dissemination
VDOT Highway Advisory Radio	Implement highway advisory radios (HAR), which allows for more detailed messages and information to be provided to motorist than can be given with a DMS. The priority locations that were identified include SR-71 and SR-224.	Mid-Term: VDOT	ATMS06 – Traffic Information Dissemination
VDOT CCTV Cameras	Implement additional closed circuit television (CCTV) cameras in the Kingsport Region for monitoring traffic conditions and to aid in incident management.	Short to Mid-Term: VDOT	ATMS01 – Network Surveillance
VDOT Signal Controllers	Implement a statewide traffic signal controller platform for better uniformity and coordination among agencies.	Long-Term: VDOT and Municipal Government	ATMS03 – Traffic Signal Control
VDOT Emergency Vehicle Preemption	Implement emergency vehicle preemption for fire, police, and EMS at traffic signals where appropriate.	Short to Mid-Term: VDOT	ATMS03 – Traffic Signal Control EM02 – Emergency Routing
VDOT Snow Plow Vehicle Location	Continue the installation of automatic vehicle location (AVL) technology on snow plows and provide this information to the public in VDOT’s Bristol District	Short-Term: VDOT	MC01 – Maintenance and Construction Vehicle and Equipment Tracking
VDOT Drone Network Surveillance	Use emerging drone technology to dynamically monitor locations instead of installing static CCTV cameras on poles.	Mid-Term: VDOT	ATMS01 – Network Surveillance
City of Kingsport TN TOC Upgrades	Continue expansion and update of the City of Kingsport TMC including a new video wall and possibly co-locating the City's TOC and 911 Dispatch at some point in the future. Co-location will assist in the sharing of road closure and incident information between traffic personnel and 911 dispatchers and facilitate coordination during large incidents or evacuations.	Short-Term: City of Kingsport	ATMS01 – Network Surveillance ATMS07 – Regional Traffic Management EM01 – Emergency Call-Taking and Dispatch
City of Kingsport TN Signal System Communications	Continue installing a fiber optic communications system to connect existing traffic signals to the City of Kingsport centrally controlled signal system. Replace existing twisted pair cable. Priority areas include W. Stone Drive and Fort Henry Drive in the Colonial Heights area.	Short to Mid-Term: City of Kingsport	ATMS03 – Traffic Signal Control
City of Kingsport TN Ramp Queue Detection and Signal Preemption	Implement a queue detection system at off- ramps where traffic queues from a nearby traffic signal may block through lanes of the freeway. The system will include traffic signal preemption to prevent backups beyond a predetermined point. Priority locations that were identified included I-26 at SR-93 / SR-126, SR-36 at I-81, and SR-93 at SR-36.	Short to Mid-Term: City of Kingsport	ATMS03 – Traffic Signal Control ATMS26 – Dynamic Roadway Warning
City of Kingsport TN Speed Monitoring System	Implement portable and permanent speed monitoring systems at locations throughout the City. The speed monitoring systems can be deployed with or without a driver feedback sign.	Short to Mid-Term: City of Kingsport	ATMS19 – Speed Warning and Enforcement
City of Kingsport TN CCTV Cameras	Implement additional CCTV cameras on key sections of roadway within the City of Kingsport.	Short to Mid-Term: City of Kingsport	ATMS01 – Network Surveillance

Project	Project Description	Deployment Timeframe and Responsible Agency	Applicable ITS Service Packages
City of Kingsport TN TOC Coordination with TDOT Region 1 TMC – Knoxville and VDOT TOC - Salem	Establish a communications connection between the City of Kingsport TOC and the TDOT Region 1 TMC in Knoxville and the VDOT TOC - Salem for the coordination of traffic information.	Short to Mid-Term: City of Kingsport, TDOT, and VDOT	ATMS07 – Regional Traffic Management
City of Kingsport TN Fire and EMS AVL and MDTs	Implement automated vehicle location (AVL) and mobile data terminals (MDTs) for City of Kingsport Fire and EMS vehicles (this capability exists for the Police Department). In conjunction with the project to integrate the 911 Dispatch computer aided dispatch (CAD) system with the City of Kingsport TOC, this project will support real-time routing of emergency vehicles taking into account current traffic conditions.	Short to Mid-Term: City of Kingsport	EM01 – Emergency Call-Taking and Dispatch EM02 – Emergency Routing
City of Kingsport TN Emergency Vehicle Signal Preemption	Implement emergency vehicle signal preemption in the City of Kingsport for Fire and EMS vehicles. High priority locations include: SR-36 from US-23 to US-11, US-11 at SR-36, and Eastman Road between US-11 and Fort Henry Blvd. (SR-36)	Long-Term: City of Kingsport	ATMS03 – Traffic Signal Control EM02 – Emergency Routing
City of Kingsport TN DMS	Deploy DMS in the City of Kingsport to provide traveler information, incident management, and special event management capabilities. Priority locations include deployments on US-11, SR-36, and SR-93.	Mid-Term: City of Kingsport	ATMS06 – Traffic Information Dissemination
City of Kingsport TN Railroad Grade Crossing Improvements	Implement advanced warning signs at railroad crossings to alert motorists, The Kingsport TOC, and emergency personnel of road blockages due to stopped trains.	Mid-Term: City of Kingsport	ATMS13 – Standard Railroad Grade Crossing
City of Kingsport TN TOC Coordination with Kingsport TN 911	Establish a connection to allow sharing of CCTV camera images with 911 Dispatch to aid in incident management. Integration of the 911 Dispatch CAD system will allow the TOC to receive automated notification about incidents that might affect the roadway network and the use of real-time traffic information from the TOC in emergency vehicle dispatch.	Short to Mid-Term: City of Kingsport	ATMS08 – Traffic Incident Management System EM02 – Emergency Routing
City of Kingsport TN Public Works Department Vehicle AVL	Implement AVL on City of Kingsport Public Works Department vehicles. Cost represents in-vehicle equipment as well as supporting software.	Mid-Term: City of Kingsport	MC01 – Maintenance and Construction Vehicle and Equipment Tracking
City of Kingsport Flood Detection and Warning System	Implement a system to provide automated flood detection, road closure, and advanced warning on roads with low water crossings that frequently flood.	Mid-Term: City of Kingsport	ATMS24 – Dynamic Roadway Warning MC03 – Road Weather Data Collection
Municipal Railroad Grade Crossing Improvements	Implement advanced warning signs at railroad crossings to alert motorists of road blockages due to stopped trains.	Mid-Term: City of Kingsport	ATMS13 - Standard Railroad Grade Crossing
City of Mt Carmel TN Speed Monitoring System	Implement detection to monitor roadway speeds and determine locations for targeted enforcement. The detection can also include driver feedback signs to inform the driver of their speed.	Mid-Term: City of Kingsport	ATMS19 - Speed Warning and Enforcement
Sullivan County 911 Dispatch and EOC CCTV Camera Image Sharing	Establish a connection to share TDOT and City of Kingsport closed circuit television (CCTV) camera images with the Sullivan County 911 Dispatch and Emergency Operations Center (EOC).	Mid-Term: Sullivan County 911, City of Kingsport, and TDOT	ATMS01 – Network Surveillance ATMS07 – Regional Traffic Management EM01 – Emergency Call-Taking and Dispatch EM02 – Emergency Routing
Kingsport Area Transit Service AVL	Continue to implement AVL on buses for real-time vehicle location of the Kingsport Area Transit fleet.	Short-Term: Kingsport Area Transit	APTS01 – Transit Vehicle Tracking
Kingsport Area Transit Service Real-time Bus Arrival Information	Provide real-time bus arrival information and information about routes at the central station and bus shelters. The Kingsport Area Transit Service is also considering adding real time bus arrival information on the web to improve the user friendliness of the transit system.	Short-Term: Kingsport Area Transit	APTS01 – Transit Vehicle Tracking APTS08 – Transit Traveler Information
Kingsport Area Transit Service Electronic Fare Collection	Implement electronic fare collection capabilities on Kingsport Area Transit Service vehicles. The system will also include kiosks for purchasing or recharging fare cards at transit transfer stations.	Mid to Long-Term: Kingsport Area Transit	APTS04 – Transit Fare Collection Management
Kingsport Area Transit Service Automatic Passenger Counters	Implement passenger counters on Kingsport Area Transit Service vehicles to record boarding and alighting.	Mid to Long-Term: Kingsport Area Transit	APTS10 – Transit Passenger Counting
Kingsport Area Transit Service On-Board Security Monitoring	Continue to implement video surveillance on Kingsport Urban Area Transit System vehicles to improve patron and driver safety. Video surveillance is included on new buses that are purchased.	Short-Term: Kingsport Area Transit	APTS05 – Transit Security
Kingsport Area Transit Service Security Monitoring	Implement video surveillance at the Kingsport Area Transit Service Central Station and select stops and transfer points to improve patron and driver safety.	Mid-Term: Kingsport Area Transit	APTS05 – Transit Security
Kingsport Area Transit Service Signal Priority	Provide transit priority capability for Kingsport Area Transit Service buses at the City of Kingsport traffic signals.	Long-Term: Kingsport Area Transit	APTS09 – Transit Signal Priority
MEOC Transit AVL and MDTs	Implement automated vehicle location (AVL) and mobile data terminals (MDTs) on buses. AVL will allow for real-time vehicle location of the MEOC Transit fleet and MDTs will allow MEOC Transit Dispatchers to provide information directly to drivers.	Short-Term: MEOC Transit	APTS01 – Transit Vehicle Tracking
MEOC Transit On- Board Security Monitoring	Implement video surveillance on MEOC Transit vehicles to improve patron and driver safety.	Short-Term: MEOC Transit	APTS05 – Transit Security
Kingsport MPO Archive Data Warehouse	Establish a data warehouse to archive data from cities and transit agencies in the metropolitan planning organization (MPO) service area for use in regional planning. Cost for this project represents an average range for developing a data warehouse system.	Long-Term: Kingsport Metro TPO	AD2 – ITS Data Warehouse
Kingsport Regional Roadway Service Patrol	Implement a roadway service patrol similar to TDOT’s HELP program and VDOT’s SSP program in the Kingsport Region.	Short to Mid-Term: Kingsport Metro TPO	EM04 – Roadway Service Patrol
School Bus AVL	Install and AVL system on department buses to help track their location and adherence to schedules.	Short to Mid-Term: Sullivan County Department of Education	APTS01 – Transit Vehicle Tracking

The use of ITS technologies will become an increasingly important component of the transportation system within the MTPO area as a means of better managing traffic flows and incidents on heavily traveled roadways, both today and in the future. ITS improvements, such as signal coordination, traffic monitoring, and message signs are but a few of the ITS applications that can improve traffic operations within the MTPO area over the 25-year planning horizon.

4.1.6 Aviation

There is one airport facility located in the MTPO area, the Tri-Cities Regional Airport, serving the entire northeast Tennessee and southwestern Virginia region. The facility is jointly owned by the cities of Kingsport, Johnson City, Bristol Tennessee/Virginia, and Sullivan and Washington Counties with the percentage of ownership determined by their investment. The airport is centrally located, which accommodates the Tri-Cities region as illustrated in Figure 4-19.

American Airlines pioneered commercial airline service nationally in 1937 and expanded services in the early 1940's throughout the US, with two daily flights from Tri-Cities Regional Airport to Los Angeles and another two to New York. About 30,000 passengers passed through the Tri-Cities Regional Airport in 1948. This more than doubled to about 66,000 in 1952 and increased to over 446,000 in 1999. It decreased to 391,000 in 2003, primarily due to the downsizing of flight schedules, as well as increased security post September 11, 2001 terrorist attacks in the US. The airport has recently expanded services to better serve the Tri-Cities area with passenger, charters, and air cargo activity. It has an asphalt surface primary runway length of 8,000 feet and a secondary runway length of 4,447 feet. Airlines servicing the Tri-Cities area include American Airlines, Delta, and Allegiant Airlines. Top destinations served by the Tri-Cities airport include Atlanta, GA and Charlotte, NC.

The Bureau of Transportation Statistics publishes data related to passenger enplanements for each year. For the year ending July 2015, there were approximately 216,000 passenger arrivals and 218,000 passenger departures. As of July 2016, the passenger arrivals and departures had decreased to approximately 207,000 and 208,000, respectively. This represents an approximate 4% decrease in passenger enplanements over the past year. Despite the fact that there are less passengers flying out of the airport, the number of flight departures has increased from 4,060 in 2015 to 4,116 in 2016, which is approximately a 1.4% increase. The total tonnage of freight mail passing through the airport decreased by approximately 53% in the past year, from 83,000 pounds in 2015 to 39,000 pounds in 2016.

Air cargo volumes have fluctuated over the years, going from less than 200,000 pounds in 1948 to a high of about 10.3 million pounds in 1987. In the 1990s air cargo volumes dropped to a low of roughly 3 million pounds and fluctuated between 4 and 5 million pounds in the early 2000s. Changes in air freight business and an increasing reliance on cheaper ground transportation has made traditional air cargo carrier service extremely challenging for smaller communities. The reduction in size of airline aircraft over the past 20 years and the decrease in "belly" cargo capacities have significantly shifted the emphasis towards scheduled and non-scheduled air cargo carriers. The combination of smaller airline aircraft and faster/cheaper truck transportation has also contributed to a downward trend in airmail processed through the Airport over the last two decades.

As revealed in the Tennessee Statewide Aviation System Plans, major capital improvements for Tri-Cities Regional Airport through 2020 include further expansion of the cargo area and additional corporate hangar development. Major improvements through 2030 include multiple runway extensions and parallel taxiways, as well as a new runway, parallel taxiway, and taxiway extension. Proposed capital improvements through 2030 are detailed in Figure 4-20 from the 2004 Tennessee Aviation Systems Plan.

Figure 4-19
Tri-Cities Regional Airport Map

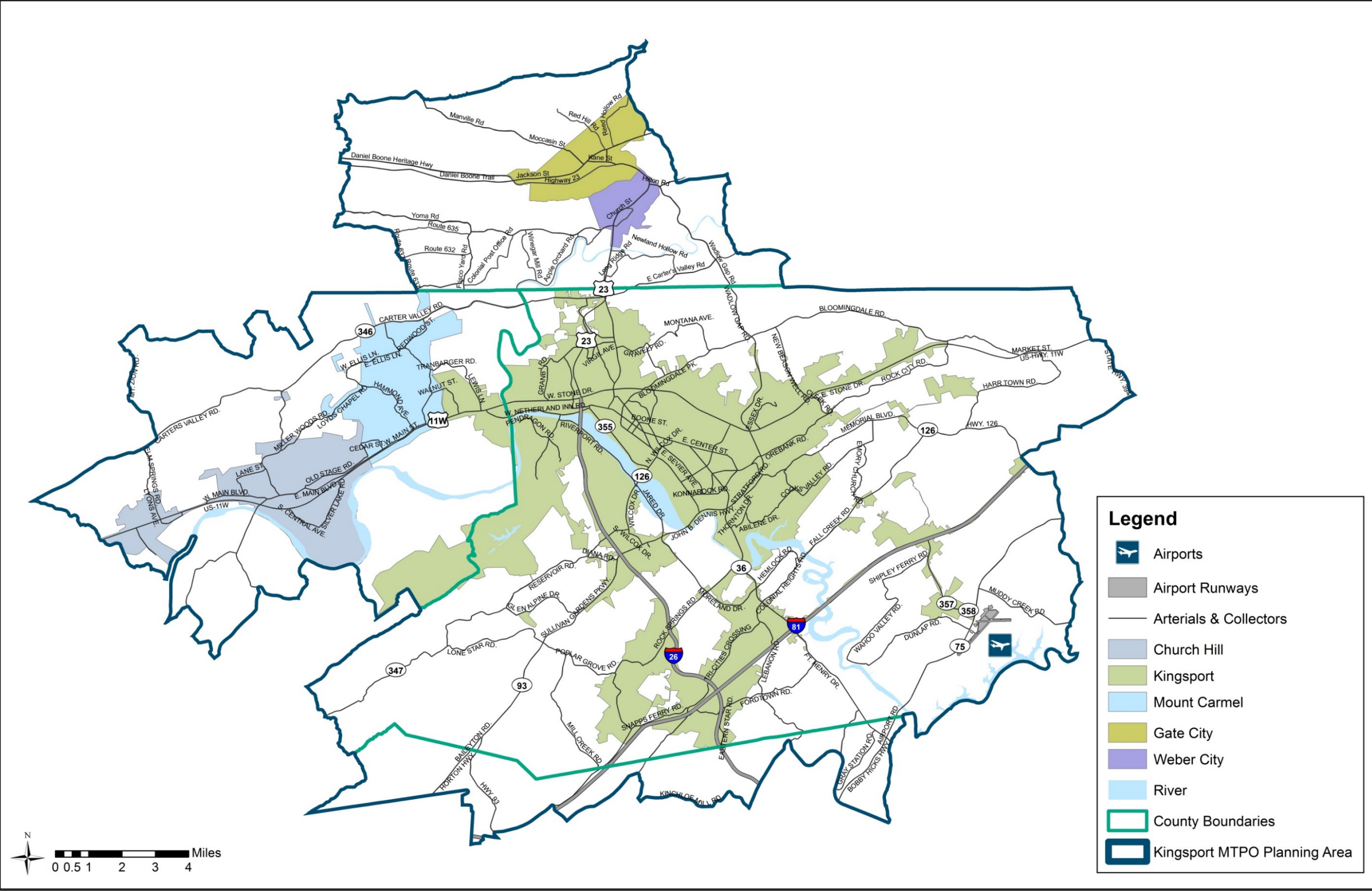
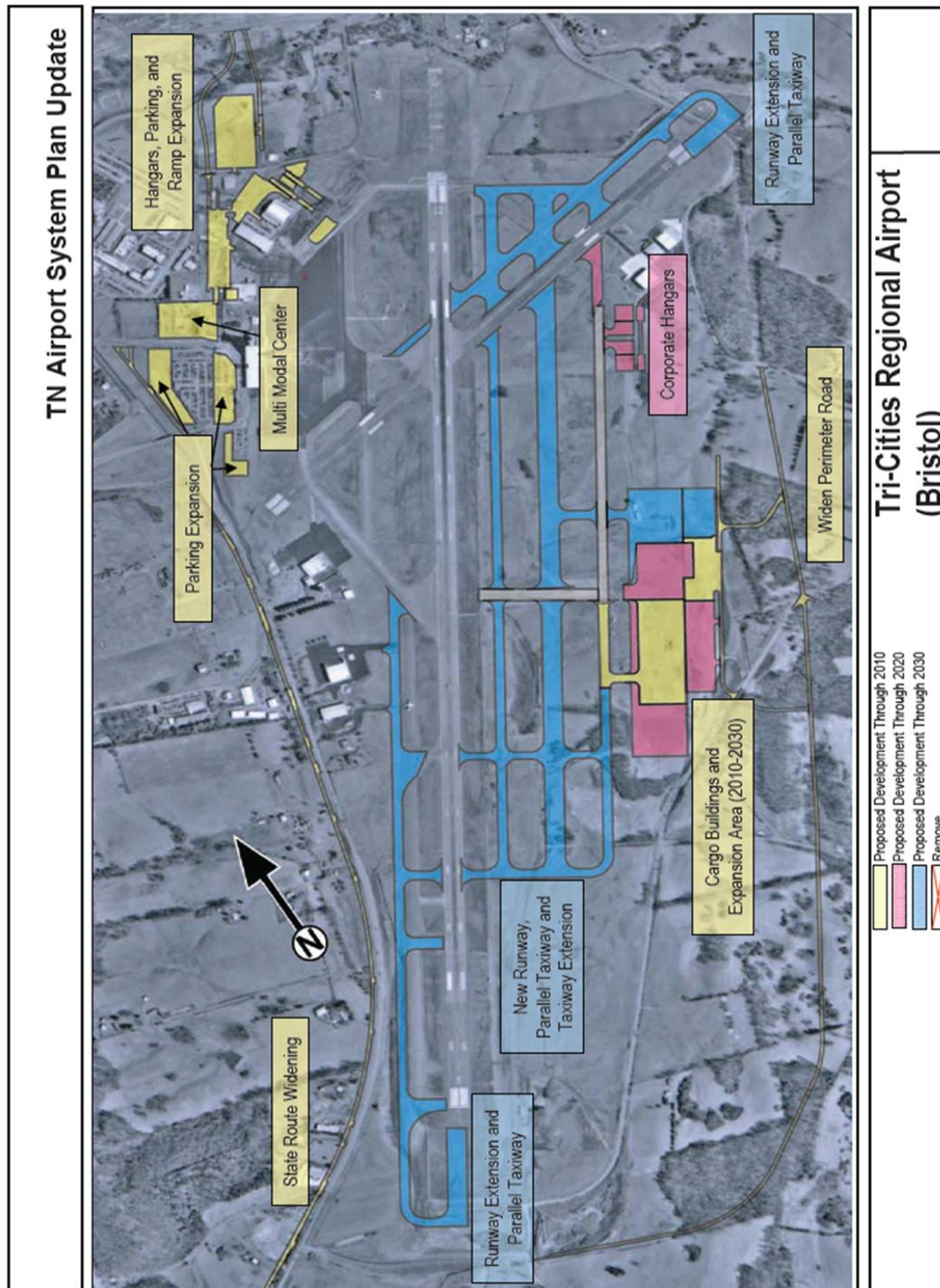


Figure 4-20
Tri-Cities Regional Airport Proposed Master Plan Improvements



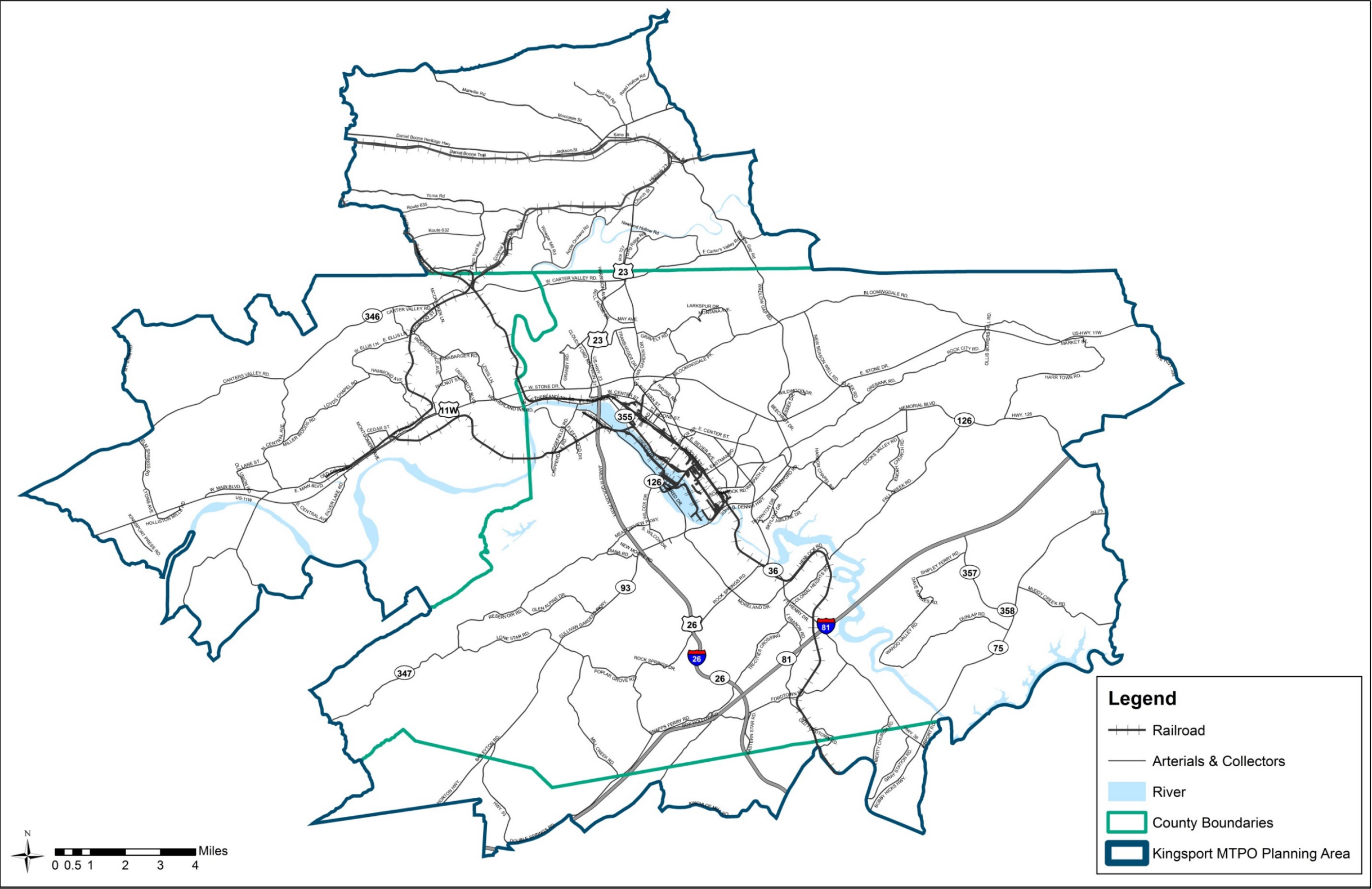
4.1.7 Rail

Two Class I railroads, Norfolk Southern and CSX, currently operate in the Kingsport MTPO area. In addition, two primary intermodal facilities, or rail yards, are located in Kingsport - one is the internal Eastman Chemical Company yard and the other is the Kingsport Yards, owned and operated by CSX Intermodal. Figure 4-21 shows the locations of the rail lines and rail facilities.

At one time, the Eastman Chemical Company intermodal facility was one of the largest rail intermodal operations in east Tennessee. While intermodal operations have changed in the Kingsport area, Norfolk Southern is expanding its intermodal capabilities as part of Norfolk Southern's Crescent Corridor, a 1,400-mile rail route that will link key markets in 11 states across the Northeast and Southeast with high-quality rail intermodal services. In Tennessee, the Crescent Corridor runs from Bristol to Chattanooga and could provide direct benefit to the Kingsport area.

Despite changes by CSX and Eastman in the Kingsport area, rail investments at the national level are beginning to increase as fuel and transportation costs rise relative to over-the-road freight shipping. The Kingsport region is in a position of strength relative to rail transportation, given its proximity to I-81 and I-26, and the fact that the region is served by two Class I railroads, as well as having air cargo freight capabilities at the Tri-Cities Regional Airport.

Figure 4-21
Rail System Map



4.1.8 Freight Transportation and Intermodal Connectivity

The increasing economic competitiveness among regions within the US and the globalization of the economy has further increased the importance of a metropolitan area's freight transportation infrastructure. The deregulation of freight transportation dramatically changed business practices and created new competitive opportunities across modes. The changing nature of business practices, with an emphasis on reliable, just-in-time delivery (JIT), places a premium on the efficient operation of the freight transportation system. Globalization of the economy has also changed the transportation and service requirements of shippers and receivers. Manufacturers can serve markets globally, but this requires a greater reliance on and greater efficiencies in the transportation system. Additionally, with the passage of the FAST Act in December of 2015, a renewed emphasis on freight was incorporated into the long-range planning process through the creation of a freight funding program. All of these changes continually speak to the importance of freight, not only for the economy, but also for analyzing the impacts that freight traffic has on the transportation infrastructure.

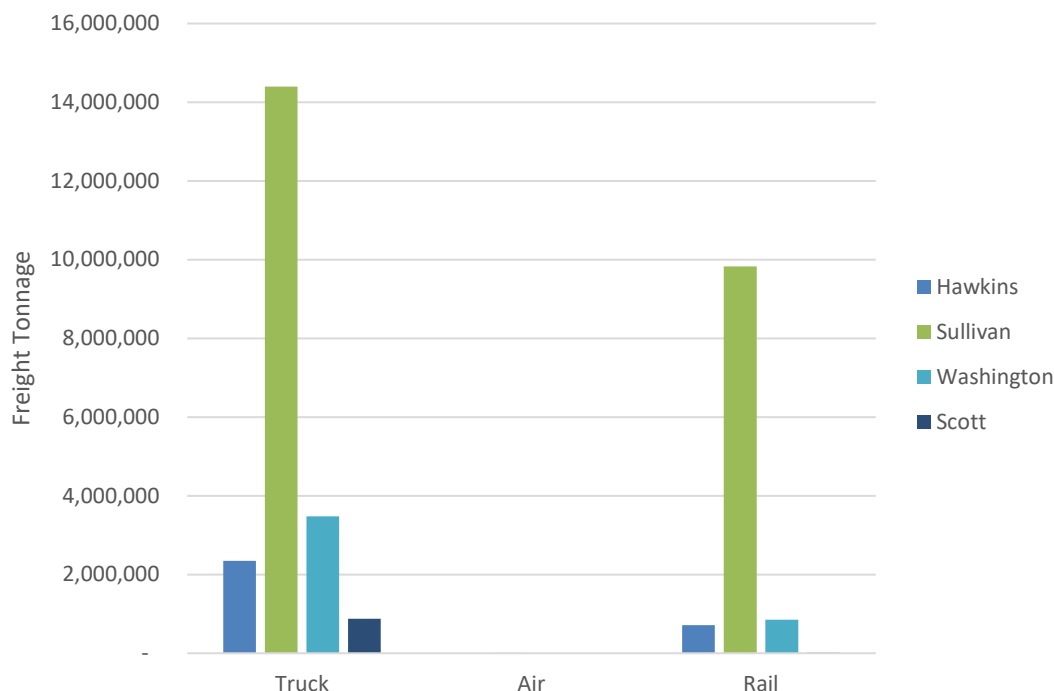
The following subsections describe the current commodity flows within and throughout the region, a general understanding of intermodal connections (highway, rail, and air) within the region, and a comparison of these modal demands to the recommended planned transportation improvements (presented in Section 7.0).

4.1.8.1 Commodity Flows

An analysis of commodity flows was performed based on the 2012 TRANSEARCH commodity flow data purchased by TDOT from IHS Global Insight. This data provides freight flows by weight moving into, out of, within, and through the State of Tennessee for 2012. This data is disaggregated by commodity, mode, and origin/destination pair. The commodity flow analysis provides summaries of these characteristics.

In total, nearly 2,000,000 trucks annually are transporting just over 21 million tons of goods in and out of the counties of Sullivan, Washington, and Hawkins, TN and Scott, VA each year. Truck transport represents about 65% of all commodities flowing into and out of the region. Rail transport represents about 35% of all commodities flowing into and out of the region. Drayage transport and air cargo represent less than 1% combined of all commodities flowing into and out of the region. Figure 4-22 identifies the total freight share by mode for Sullivan, Washington, and Hawkins Counties, TN and Scott County, VA.

Figure 4-22
Total Freight Share (By Weight & Mode) for MTPO Counties (2012)



Source: IHS Global Insight Transearch, 2012

Freight Flows by Truck

As illustrated, one of the primary means of transporting goods to and from Sullivan, Washington, and Hawkins County, TN, and Scott County, VA is by truck. Table 4-8 shows the top ten imports by tonnage coming into each of the four MTPO counties via trucks. Table 4-9 shows the top ten exports by tonnage leaving each of the four MTPO counties via truck. Table 4-10 shows the top ten origins by BEA economic areas and tonnage for truck traffic entering the MTPO counties. Table 4-11 shows the top ten destinations by BEA economic areas and tonnage for freight truck traffic leaving the MTPO counties. BEA economic areas define the relevant regional markets surrounding metropolitan statistical areas and are used by both public and private sectors to monitor and evaluate changes in economic growth for labor, products, and information.

It can be seen that the top ten commodities, both in terms of imports and exports, largely relate to the predominant industries found in the MTPO area, namely the chemical and plastic industries. Additionally, gravel and sand are some of the top import and export commodities based on tonnage as expected. The primary origins and destinations for the goods brought in and shipped out of the four-county region are primarily located in the southeastern US. BEA geographies in North Carolina, Alabama, Georgia, Kentucky, and Tennessee comprise the top five freight origins and destinations for the Kingsport MTPO area.

**Table 4-8
Top Ten Imports by Tonnage – 4 County MTPO Area**

County	Top Import Commodities by Truck Tonnage	Tonnage	Percent of County
Hawkins County, TN	Waste and Scrap	152,664	19%
	Gravel and Crushed Stone	69,877	9%
	Non-Metallic Mineral Products	63,795	8%
	Agricultural Products Except for Animal Feed	60,735	8%
	Gasoline	46,345	6%
	Articles of Base Metal	33,320	4%
	Other Coal and Petroleum Products	27,366	3%
	Other Prepared Foodstuffs, and Fats and Oils	26,656	3%
	Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes	25,000	3%
	Fuel Oils	20,138	3%
Sullivan County, TN	Basic Chemicals	1,316,391	14%
	Agricultural Products Except for Animal Feed	1,230,919	14%
	Other Chemical Products and Preparations	1,056,052	12%
	Gravel and Crushed Stone	1,007,361	11%
	Waste and Scrap	857,035	9%
	Fertilizers	676,974	7%
	Non-Metallic Mineral Products	360,423	4%
	Other Prepared Foodstuffs, and Fats and Oils	198,322	2%
	Other Coal and Petroleum Products	192,458	2%
	Gasoline	157,488	2%
Washington County, TN	Gravel and Crushed Stone	465,286	21%
	Non-Metallic Mineral Products	226,322	10%
	Waste and Scrap	128,719	6%
	Agricultural Products Except for Animal Feed	107,177	5%
	Other Prepared Foodstuffs, and Fats and Oils	97,624	4%
	Gasoline	93,234	4%
	Other Coal and Petroleum Products	82,630	4%
	Natural Sands	61,306	3%
	Articles of Base Metal	46,638	2%
	Milled Grain Products and Preparations, and Bakery Products	44,522	2%
Scott County, VA	Gasoline	54,027	14%
	Agricultural Products Except for Animal Feed	49,816	13%
	Cereal Grains	24,402	6%
	Fuel Oils	23,475	6%
	Other Coal and Petroleum Products	19,748	5%
	Logs and Other Wood in the Rough	19,614	5%
	Animal Feed and Products of Animal Origin	18,770	5%
	Non-Metallic Mineral Products	14,103	4%
	Articles of Base Metal	10,244	3%
	Gravel and Crushed Stone	10,096	3%

Source: IHS Global Insight Transearch, 2012

**Table 4-9
Top Ten Export by Tonnage – 4 County MTPO Area**

County	Top Export Commodities by Tonnage	Tonnage	Percent of County
Hawkins County, TN	Gravel and Crushed Stone	417,525	27%
	Non-Metallic Mineral Products	239,768	15%
	Glass and glass products	205,576	13%
	Agricultural Products Except for Animal Feed	156,083	10%
	Waste and Scrap	45,113	3%
	Articles of Base Metal	41,709	3%
	Plastics and Rubber	33,136	2%
	Wood Products	18,132	1%
	Machinery	17,441	1%
	Motorize and Other Vehicles (including parts)	15,629	1%
Sullivan County, TN	Gravel and Crushed Stone	1,608,420	30%
	Basic Chemicals	1,056,781	20%
	Other Chemical Products and Preparations	495,539	9%
	Non-Metallic Mineral Products	477,510	9%
	Plastics and Rubber	328,143	6%
	Waste and Scrap	172,118	3%
	Articles of Base Metal	138,265	3%
	Base Metal in Primary or Semi-Finished Forms and in Finished Basic Shapes	131,587	2%
	Other Non-Metallic Minerals	98,066	2%
	Agricultural Products Except for Animal Feed	89,460	2%
Washington County, TN	Waste and Scrap	234,665	18%
	Agricultural Products Except for Animal Feed	155,150	12%
	Non-Metallic Mineral Products	119,505	9%
	Gasoline	108,936	8%
	Other Prepared Foodstuffs, and Fats and Oils	97,441	8%
	Wood Products	49,168	4%
	Fuel Oils	47,333	4%
	Articles of Base Metal	41,961	3%
	Machinery	41,921	3%
	Other Coal and Petroleum Products	27,673	2%
Scott County, VA	Gravel and Crushed Stone	120,190	24%
	Gasoline	95,107	19%
	Agricultural Products Except for Animal Feed	81,440	17%
	Fuel Oils	41,324	8%
	Logs and Other Wood in the Rough	41,078	8%
	Other Coal and Petroleum Products	24,546	5%
	Plastics and Rubber	21,684	4%
	Wood Products	16,269	3%
	Waste and Scrap	11,641	2%
	Other Prepared Foodstuffs, and Fats and Oils	10,170	2%

Source: IHS Global Insight Transearch, 2012

Table 4-10
Top Ten Imports by Tonnage – BEA

County	Top Import BEA Origins	Tonnage	Percent of County
Hawkins County, TN	Lexington, KY	174,106	22%
	Asheville, NC	102,942	13%
	Hickory, NC	99,626	13%
	Johnson City, TN	88,062	11%
	Huntsville, AL	41,735	5%
Sullivan County, TN	Lexington, KY	1,912,714	21%
	Johnson City, TN	1,764,406	19%
	Asheville, NC	1,229,479	14%
	Huntsville, AL	731,961	8%
	Hickory, NC	701,838	8%
Washington County, TN	Lexington, KY	413,104	19%
	Hickory, NC	344,739	16%
	Asheville, NC	335,332	15%
	Johnson City, TN	297,594	14%
	Huntsville, AL	94,809	4%
Scott County, VA	Lexington, KY	128,793	34%
	Johnson City, TN	60,602	16%
	Hickory, NC	50,243	13%
	Asheville, NC	37,707	10%
	Huntsville, AL	18,094	5%

Source: IHS Global Insight Transearch, 2012

Table 4-11
Top Ten Export by Tonnage – BEA

County	Top Export BEA Destinations	Tonnage	Percent of County
Hawkins County, TN	Lexington, KY	372,678	24%
	Asheville, NC	273,100	18%
	Johnson City, TN	220,480	14%
	Hickory, NC	147,412	9%
	Huntsville, AL	78,565	5%
Sullivan County, TN	Johnson City, TN	1,444,133	27%
	Asheville, NC	823,497	15%
	Lexington, KY	752,215	14%
	Huntsville, AL	638,659	12%
	Hickory, NC	470,320	9%
Washington County, TN	Lexington, KY	219,470	17%
	Asheville, NC	195,051	15%
	Johnson City, TN	192,730	15%
	Hickory, NC	190,838	15%
	Huntsville, AL	41,759	3%
Scott County, VA	Lexington, KY	157,412	32%
	Johnson City, TN	87,535	18%
	Hickory, NC	68,733	14%
	Asheville, NC	46,462	9%
	Huntsville, AL	15,024	3%

Source: IHS Global Insight Transearch, 2012

Figure 4-23 below shows the relation of the Kingsport MTPO area to the most common origins and destinations of freight tonnage transported by truck.

Figure 4-23
Geographic Relation of Freight Origins and Destinations

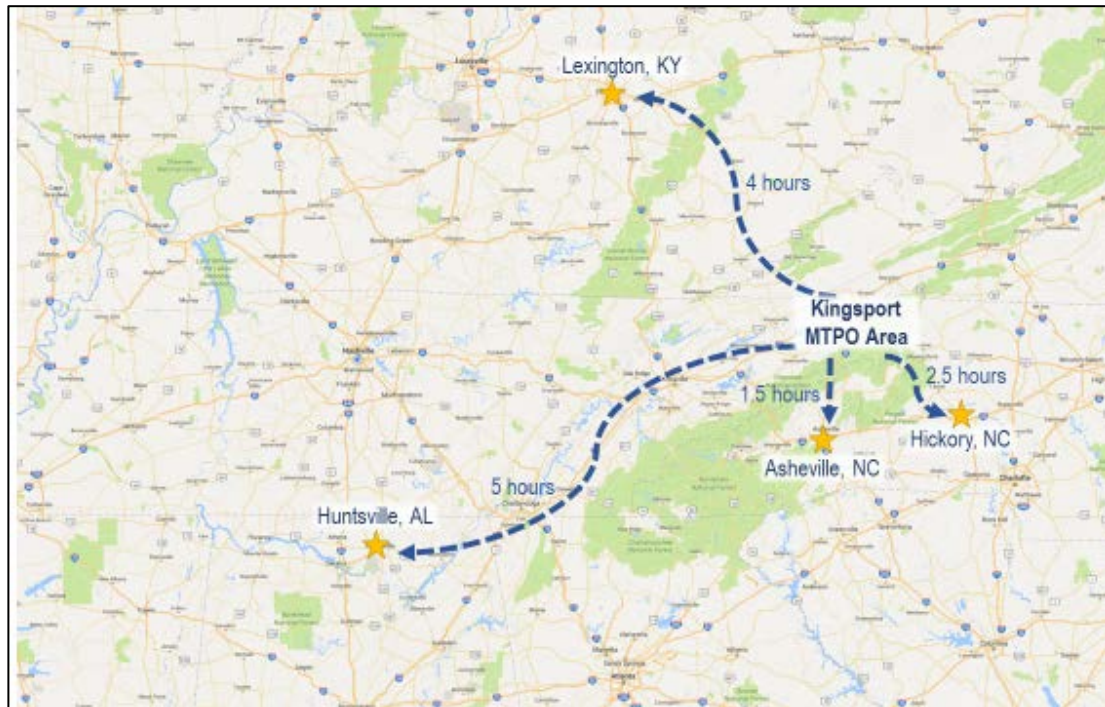
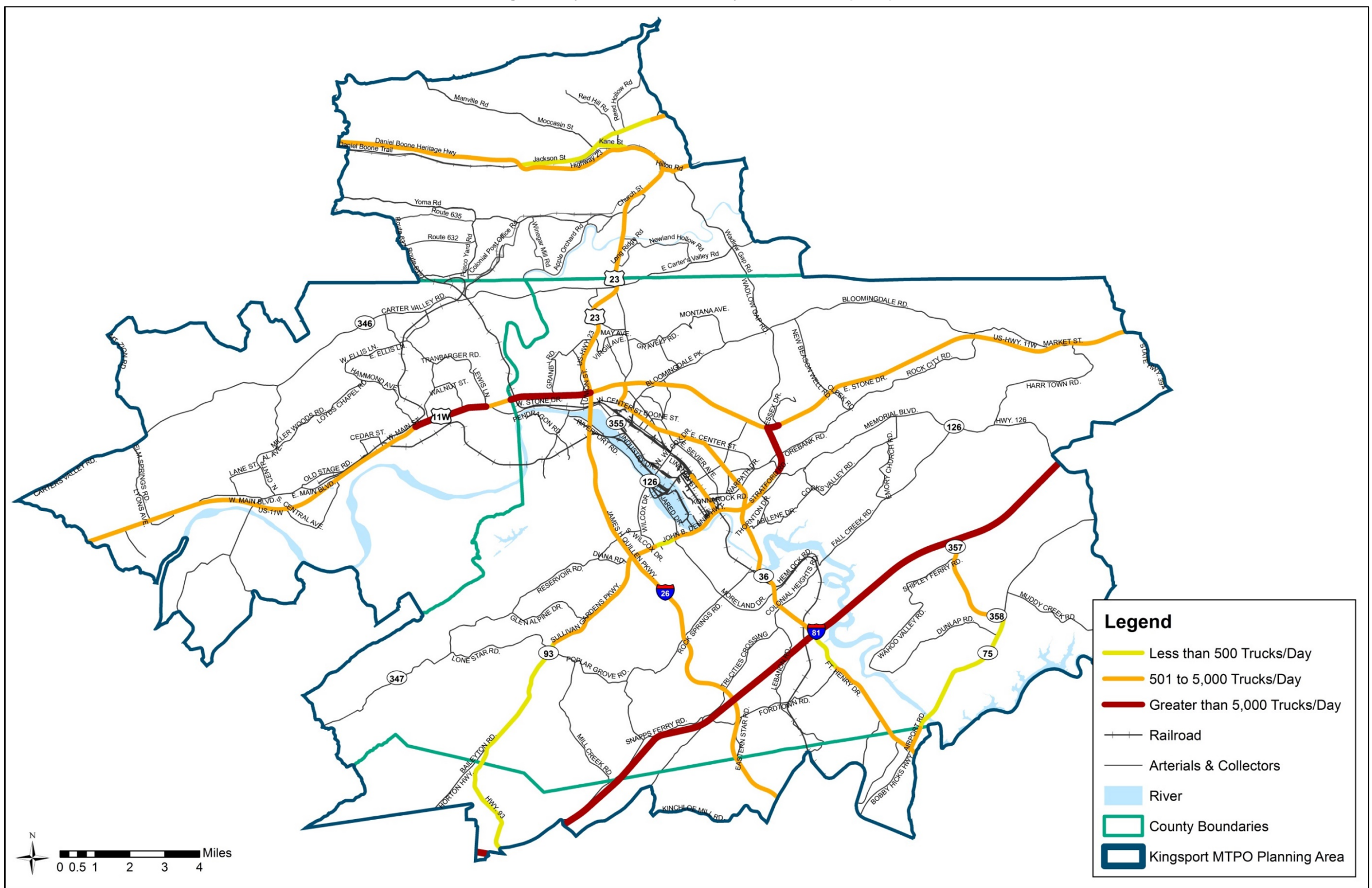


Figure 4-24 illustrates daily commercial vehicle truck flows (e.g. semi-trucks) through the MTPO planning area based on FHWA's Freight Analysis Framework (FAF³) data for the year 2045. As illustrated in the figure, the transport of goods to and from the region is projected to increase with the greatest volume of truck traffic occurring along I-26 and I-81 throughout the MTPO planning area and along the major corridors such as SR-36 (Fort Henry Drive/Center Street), US-11/SR-1 (Stone Drive), SR-93 (John B. Dennis Highway/Sullivan Gardens Parkway), and US-23.

Figure 4-24
Freight Analysis Framework Daily Truck Flows (2045)



4.1.8.2 Intermodal Connections

In total, 103 companies were identified as being freight-dependent industries within the MTPO area, with Eastman Chemical Company being one of the largest. The term 'freight-dependent' means that the company depends on the freight system, most often the roadway system, to transport its products. Most of these facilities are located along roadways with direct access to a major highway and/or rail line.

Figure 4-25 illustrates the existing transportation system – rail, air, and truck that serve the area. A major determinant of current and future freight movement patterns is the location of industrial employers. The key to achieving greater efficiency in freight movement is the placement of these sites relative to existing transportation infrastructure. Figure 4-26 illustrates areas of industrial use within the MTPO area and how these locations are served by the various transportation systems.

As depicted in Figure 4-26, industrial use concentrations are mostly located near the existing railroad in downtown Kingsport, near the Tri-Cities Airport, and at the I-26 and I-81 interchange. Ensuring that uses are compatible and strategically placed improves the intermodal exchange of goods and helps to reduce costs in transport – both directly and indirectly.

Figure 4-25
Air, Rail & Truck Facilities Map

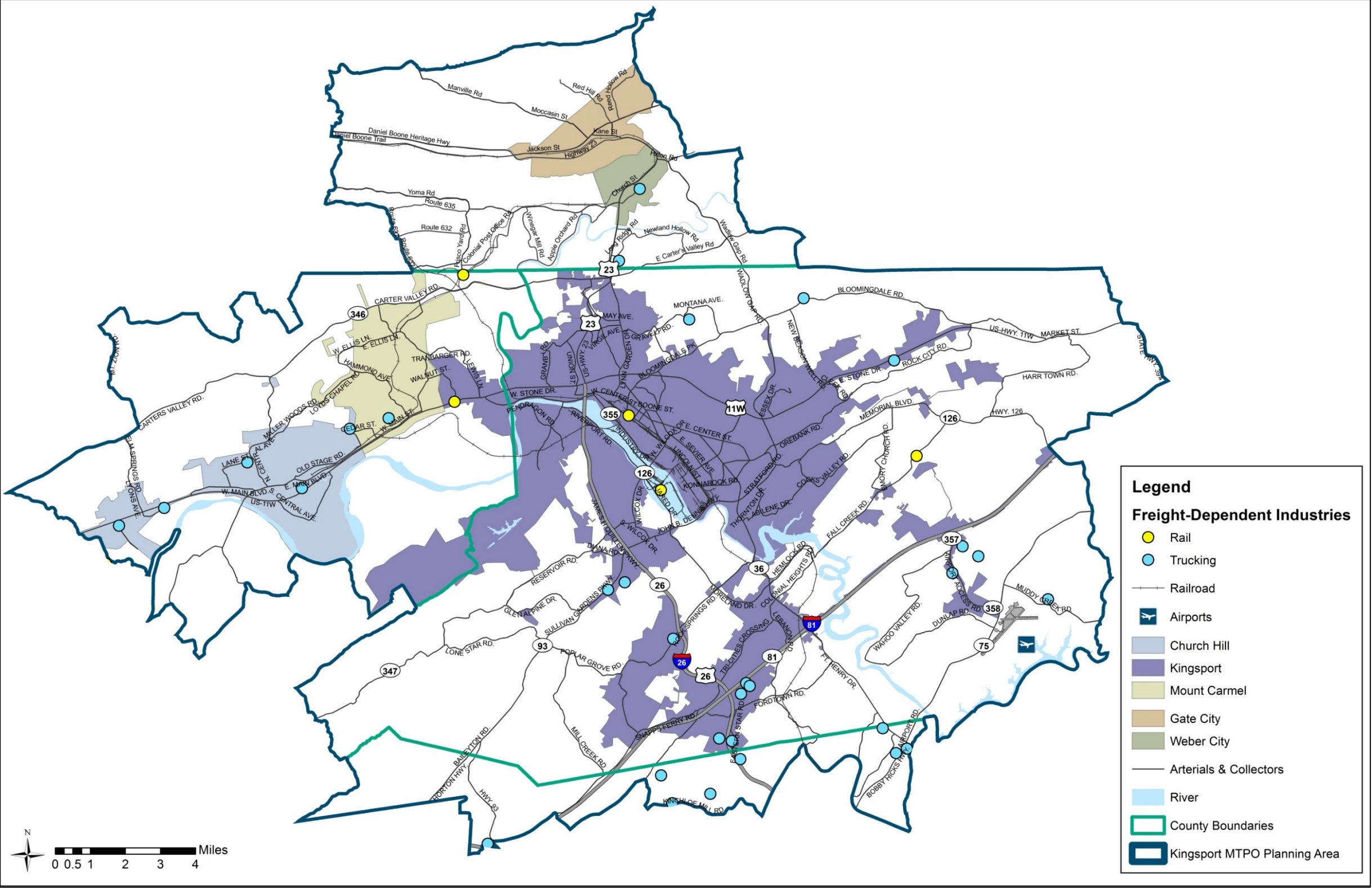
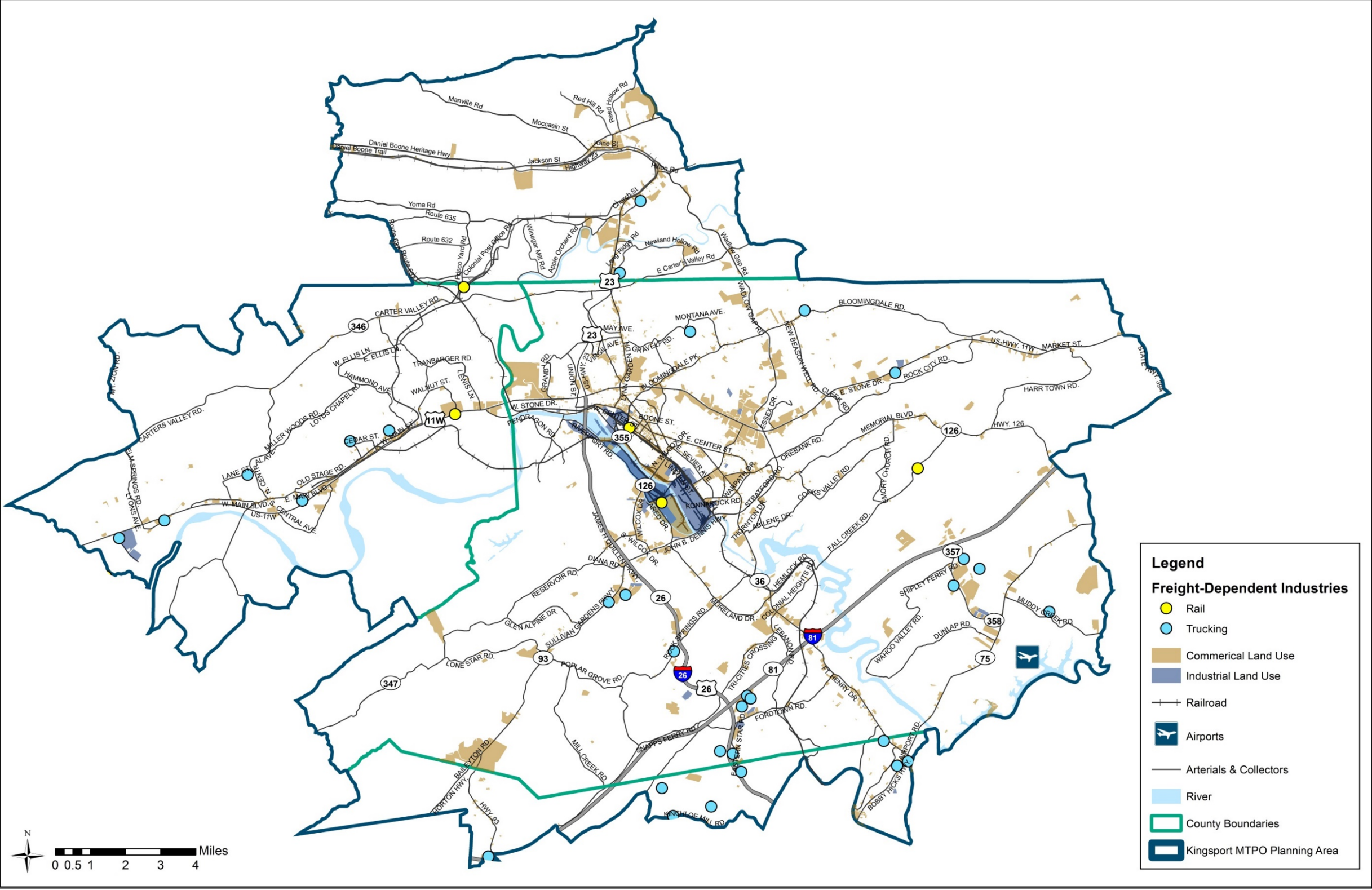


Figure 4-26
Freight System & Industrial Lands Map



4.1.8.3 Future Conditions

As discussed in earlier sections of this plan, the Kingsport area has a diverse transportation system that is conducive to the movement of goods and services. The recommended improvements of this plan illustrate considerable benefits across and between modes, and to each respective transportation system.

Numerous improvements to the transportation system over the next 25 years, such as the I-81 truck climbing lane, are intended to ensure adequate capacity and connectivity within the transportation system relative to transporting goods. These projects, along with other improvements within the plan, are intended to facilitate greater opportunities for the movement of goods and services within and through the MTPO area. Implementing the recommendations of the plan (described in Section 7.0) is key to this objective and the region's long term economic vitality.

4.1.9 Transportation Safety

Federal legislation (FAST Act) requires that an MPO's LRTP include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects for the MPO area that are contained in the State's Strategic Highway Safety Plans. As a bi-state MPO, the Kingsport region must address both Tennessee's and Virginia's Strategic Highway Safety Plans. The discussions in this section are provided in accordance with these requirements and are intended to increase transportation safety for all roadway users within the Kingsport MTPO area.

4.1.9.1 Vehicular Crashes

Communities everywhere are searching for ways to make their roadways safer. In 2015 alone, there were approximately 6.3 million crashes resulting in over 35,000 fatalities and 2.4 million injuries. In relation to 2014, this represents a 7.2% increase in fatalities and a 4.3% increase in injuries. Overall, the total number of crashes on US roadways rose by 3.8% from 2014. The national fatality rate per 100 million vehicle miles traveled increased to 1.12 from 1.08 in 2014, which was the historic low for this statistic.

Table 4-12 illustrates the number of vehicular crashes by type within Sullivan, Washington, and Hawkins Counties, TN and Scott County, VA since 2011. From 2011-2015, the Kingsport region has seen a slight increase in the total number of crashes in the region from 9,201 to 9,359, as increase of 2%. The number of fatal and property damage crashes have increased over the past five years by 17% and 8%, respectively. Injury crashes are the only crash type to see a decrease of 15% from 2011-2015.

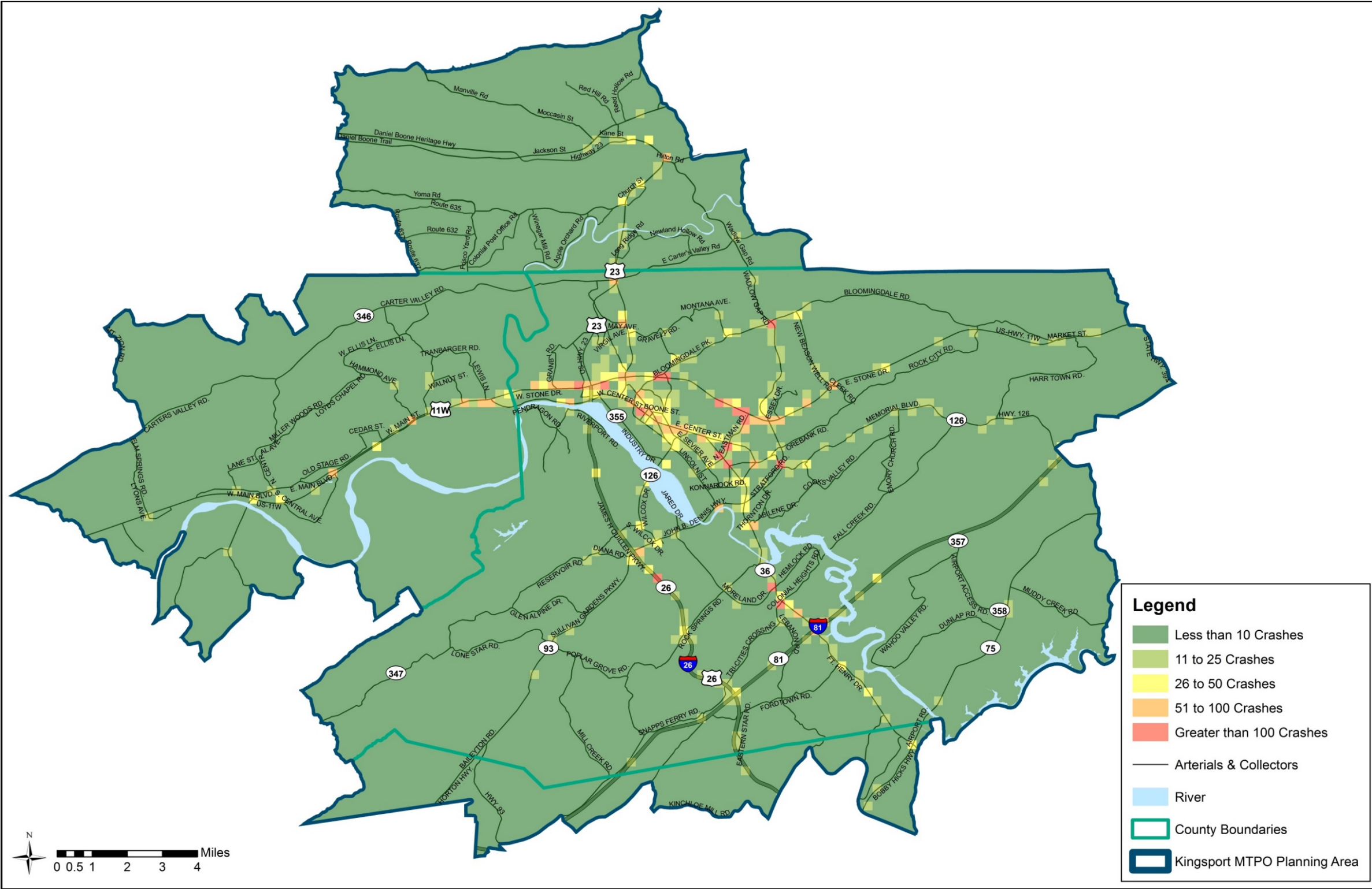
Figure 4-27 shows the concentrations of all crashes in the MTPO area from 2011-2015. Each cell in the map represents a quarter mile block in which all crashes were totaled. As expected, major facilities such as Stone Drive, the Interstates, Fort Henry Drive, and others saw the most crashes during this time period.

**Table 4-12
Number of Crashes by Type (2011-2015)**

Year	Number of Fatal Crashes	Number of Injury Crashes	Number of PDO Crashes	Total Number of Crashes
<i>Sullivan County</i>				
2011	15	1,240	2,785	4,040
2012	29	1,193	2,890	4,112
2013	24	932	2,815	3,771
2014	20	983	2,870	3,873
2015	14	1,037	3,117	4,168
Percent Change (2011-2015)	-7%	-16%	12%	3%
<i>Hawkins County</i>				
2011	7	340	709	1,056
2012	7	267	734	1,008
2013	7	323	766	1,096
2014	13	234	547	794
2015	9	224	601	834
Percent Change (2011-2015)	29%	-34%	-15%	-21%
<i>Washington County</i>				
2011	8	665	3,094	3,767
2012	10	683	3,107	3,800
2013	12	631	2,978	3,621
2014	8	647	3,019	3,674
2015	17	683	3,360	4,060
Percent Change (2011-2015)	113%	3%	9%	8%
<i>Scott County</i>				
2011	6	153	179	338
2012	2	143	201	346
2013	3	127	206	336
2014	2	101	238	341
2015	2	93	202	297
Percent Change (2011-2015)	-67%	-39%	13%	-12%
<i>Total Region</i>				
2011	36	2,398	6,767	9,201
2012	48	2,286	6,932	9,266
2013	46	2,013	6,765	8,824
2014	43	1,965	6,674	8,682
2015	42	2,037	7,280	9,359
Percent Change (2011-2015)	17%	-15%	8%	2%

Source: TN Department of Safety and Homeland Security and VDOT Tableau Crash Tool

Figure 4-27
Analysis of Crash Data



4.1.9.2 Vehicular Fatalities

Table 4-13 illustrates the number of vehicular fatalities since 2011 for each county within the Kingsport region. Over the 5 year time period on average, 43 people lost their lives annually in vehicular crashes on roadways within the region. From 2011 to 2015 the Kingsport region experienced a 17% increase in the number of vehicular fatalities.

**Table 4-13
Number of Fatalities (2011-2015)**

	2011	2012	2013	2014	2015	Percent Change (2011-2015)
Sullivan County	15	29	24	20	14	-7%
Hawkins County	7	7	7	13	9	29%
Washington County	8	10	12	8	17	113%
Scott County	6	2	3	2	2	-67%
Total	36	48	46	43	42	17%

Source: TDOT and VDOT

Table 4-14 shows the number of alcohol-related fatalities from 2011-2015. During this time period, the region saw a 350% increase in alcohol-related vehicular fatalities.

**Table 4-14
Alcohol Related Fatalities (2011-2015)**

	2011	2012	2013	2014	2015	Percent Change (2011-2015)
Sullivan County	1	6	4	7	2	100%
Hawkins County	0	1	0	2	3	300%
Washington County	1	4	4	2	4	400%
Scott County	0	0	0	0	0	0%
Total	2	11	8	11	9	350%

Source: TDOT and VDOT

Tennessee and Virginia, along with many other states, use a variety of media campaigns to increase awareness of the dangers of driving while drunk, distracted driving, and the importance of seatbelt use, especially child restraint systems. These campaigns along with publicized enforcement have proven to be effect and will be an important strategy for the region to continue in reducing vehicular fatalities.

4.1.9.3 Bicycle and Pedestrian Crashes

Bicycle and Pedestrian travel along a roadway puts a person in a vulnerable situation. The state of Tennessee had 108 pedestrian fatalities and 10 cyclist fatalities during 2015. Table 4-15 shows the pedestrian and cyclists crashes in each of the three counties in the region from 2011 to 2015.

**Table 4-15
Bicycle and Pedestrian Crashes (2011-2015)**

Year	Sullivan County		Hawkins County		Washington County		Scott County		Total	
	Cyclist	Pedestrian	Cyclist	Pedestrian	Cyclist	Pedestrian	Cyclist	Pedestrian	Cyclist	Pedestrian
2011	11	35	2	4	16	20	0	0	29	59
2012	7	27	2	4	10	26	0	2	19	59
2013	6	28	1	8	13	13	1	2	21	51
2014	12	34	2	0	12	16	0	1	26	51
2015	9	37	2	3	8	42	0	1	19	83

As pedestrian and bicycle travel increases in the MTPO area, it is important for the Kingsport region to design facilities that accommodate walking and biking. Policies should be created that encourage the evaluation of bicycle and pedestrian facilities as part of new roadway projects. Where the facilities are deemed necessary, the type of facility should be designed with consideration of the safety of all roadway users.

4.1.9.4 Tennessee and Virginia Strategic Highway Safety Plans

Improvement of highway and traffic safety depends on the “4-Es”: engineering, enforcement, emergency services, and education. Engineering involves the built roadway and transportation infrastructure and encapsulates design standards; warrants; materials and construction practices; and signage, striping, and signalization policies. Enforcement is aimed toward modifying (enforcing) human behavior. Enforcement affects drivers in the following way: a law will be enforced, an offender will be detected, the adjudicatory process will be swift and certain, and punishment will follow conviction. Emergency services include the assemblage of ambulance companies, fire rescue services, and third party emergency response units and emergency rooms/trauma centers. Obtaining accurate post-crash diagnosis and high quality post-crash care is a critical factor in transportation safety. Finally, similar to the enforcement programs that modify behavior through enforcement, education programs are intended to modify behavior through knowledge. Education encompasses driver licensing programs, driver remediation programs (e.g. traffic school), advanced driving courses, educational campaigns such as “Click It or Ticket” and “Booze it & Lose It,” and school education programs aimed at K-12 and college level students. Combined, the 4-Es capture the range of transportation safety related investments that are needed to improve safety within any jurisdiction.

As previously mentioned, the FAST Act legislation requires that the MPO’s LRTP include a safety element that incorporates or summarizes the priorities, goals, countermeasures, or projects for the MPO area that are contained in the State’s Strategic Highway Safety Plan. Since the Kingsport MTPO is a bi-state MPO, the discussions in this section, incorporate both the Tennessee and Virginia Strategic Highway Safety Plans and are provided to address the federal requirements.

Safety Plan in Tennessee

The general and specific goals and strategies for improving the safety of the region’s transportation system are predominantly based on the Tennessee Strategic Highway Safety Plan, which was completed in 2014. The mission, vision, and goal statements of the Tennessee Strategic Highway Safety Plans are as follows:

- *Tennessee's Mission Statement* – Using education, enforcement, engineering, and emergency response initiatives, work toward zero deaths and serious injuries by reducing the number and severity of crashes on Tennessee's roadways.
- *Tennessee's Vision Statement* – Federal, state, and local agencies, civic groups, and private industries unified as safety partners and all working together toward zero fatalities and serious injuries on Tennessee roadways.
- *Tennessee's Goals Statements* – Reduce the number of fatalities by 10% within the next five years. Reduce the rate of fatalities by 10% within the next five years. Reduce the current trend of increasing serious injuries by not exceeding the 2012 total value of 7,574 as an average over the next five years. Reduce the current trend of an increasing serious injury rate by not exceeding the 2012 total value of 10.65 serious injuries per hundred million vehicle miles traveled as an average over the next five years.

To provide the most efficient and safest highway facilities, the Tennessee Strategic Highway Safety Plan identifies data-driven emphasis areas and strategies to accomplish the goals laid out in the plan. The identified emphasis areas and strategies include:

Data Collection and Analysis

- Improve traffic data collection systems, hardware, and technology to provide data more timely and efficiently.
- Improve data collection in the field and data distribution to expedite and improve delivery of relevant data for safety analysis, infrastructure improvement, and law enforcement.

Driver Behavior

- Reduce the number of impaired drivers on Tennessee's roadways.
- Reduce aggressive driving practices among motorized road users.
- Increase usage of proper vehicle occupant restraint.
- Increase education and enforcement targeted at reducing distracted driving.
- Reduce crashes involving teen drivers.

Infrastructure Improvements

- Reduce the likelihood and severity of crashes involving vehicles departing the travel lane at high crash locations by improving roadway geometry, roadway pavement surfaces, roadsides, roadside barriers, and traffic control devices.
- Reduce the likelihood and severity of intersection-related crashes with improvements to intersection geometry, traffic control, and visibility.
- Reduce the likelihood of conflict between trains and vehicles at railroad crossings with improvements to geometry, traffic control and visibility.
- Educate roadway users and local agencies to the factors contributing to intersection, roadway departure and railroad crossing crashes. Raise awareness of roadway users to the importance of observing traffic control and adhering to traffic laws.

- Reduce the lengths of interchange exit ramp queues with improvements to interchange off-ramp capacity, geometry, and visibility.
- Improve the safety of senior drivers by reducing roadway geometric deficiencies and enhancing roadway visibility on state and interstate highways.

Vulnerable Road Users

- Improve infrastructure for bicyclists and pedestrians.
- Increase awareness of vulnerable road users.
- Improve safety of vulnerable road users on existing routes.
- Increase the effectiveness of enforcing current laws protecting vulnerable road users.
- Assess growing needs and concerns of vulnerable road users.
- Improve and strengthen laws pertaining to vulnerable road users.
- Develop and implement programs that reduce the frequency and severity of crashes specifically involving senior drivers and pedestrians.

Operational Improvements

- Reduce the number and severity of secondary roadway crashes by effective emergency response.
- Develop inter-agency memorandums of understanding.
- Improve incident response and reduce the clearance time for crashes.
- Reduce the severity and number of crashes occurring in work zones.
- Manage congestion.
- Reduce the severity of crashes involving senior drivers.

Motor Carrier Safety

- Reduce occurrence of CMV crashes.
- Improve CMV safety inspections.
- Increase inspections and training for CMV hazardous material safety.

Safety Plan in Virginia

Since a portion of the MTPPO region is located within the State of Virginia, the general and specific goals and strategies for improving the safety of the region's transportation system for this portion of the region are also based on the 2012-2016 Virginia Strategic Highway Safety Plan. The mission, vision, and goal statements of the Virginia Strategic Highway Safety Plans are as follows:

- *Virginia's Mission Statement:* The mission of the Strategic Highway Safety Plan is to save lives and reduce motor vehicle crashes and injuries through a data-driven, strategic approach that uses enforcement, education, engineering, and emergency response strategies.
- *Virginia's Vision Statement:* Virginia adopts the vision of Toward Zero Deaths. All roadway users should arrive safely at their destinations.
- *Virginia's Goals:* The goal of the Strategic Highway Safety Plan is to reduce deaths and severe injuries by half by the year 2030 (an average decline of approximately three percent per year).

To provide the most efficient and safest highway facilities, the Virginia Strategic Highway Safety Plan identifies data-driven emphasis areas and strategies to reduce the number of fatal and serious injury crashes. The identified emphasis areas and strategies include:

Speeding

- Implement engineering countermeasures to synchronize traffic flow to prevailing conditions and surroundings with particular attention to high-crash locations.
- Develop and implement a speed campaign incorporating media, enforcement, education, and evaluation where speed-related deaths and severe injuries are elevated.
- Identify and implement effective speed management measures.

Young Drivers

- Review and make recommendations as necessary to improve Virginia's Graduated Driver Licensing (GDL) law.
- Review and recommend changes to enhance the effectiveness of Virginia's driver education process.
- Develop and implement strategic and effective educational messages.
- Provide information to judges on young driver issues.
- Implement programs focused on behavior and attitude change on traffic safety among 18- to 20-year olds.

Occupant Protection

- Educate the public on the importance of using safety belts.
- Conduct high-visibility safety belt enforcement campaigns, e.g., "Click It or Ticket."
- Improve child occupant protection through education, outreach, and enforcement.

Impaired Driving

- Identify and promote initiatives to prevent impaired driving.
- Strengthen DUI/DUID enforcement programs.
- Conduct education and training on impaired driving.
- Develop and implement programs to reduce underage drinking and driving.
- Develop and implement programs to decrease recidivism.

Roadway Departure

- Reduce the likelihood of vehicles leaving the travel lane(s) at high-crash and risk locations by improving the roadway, the roadside, and traffic control devices.
- Minimize the adverse consequences of leaving the roadway by improving the roadside, safety equipment and traffic control devices.
- Educate roadway users to understand the contributing factors in roadway departure crashes comply with traffic control devices and provide proper right-of-way to all users.
- Develop an effective, consistent, and coordinated incident response program in accordance with the National Incident Management System (NIMS) at the state and local level to ensure timely response and incident clearance to reduce secondary crashes.

Intersection

- Reduce the frequency and severity of crashes at intersections and interchanges by limiting conflicts through geometric design, traffic control, and lighting improvements.
- Improve user awareness of and compliance with intersection and interchange traffic control devices.
- Educate roadway users so they understand the contributing factors associated with intersection crashes, comply with traffic control devices, and provide proper right-of-way to all road users.
- Develop an effective, consistent, and coordinated incident response program in accordance with the National Incident Management System (NIMS) at the state, regional, and local level to improve traffic operations and safety at intersections during incidents on limited access facilities.

Data Emphasis

- Maintain the Traffic Records Coordinating Committee (TRCC) with a multidisciplinary membership from DMV, DOT, MPOs, Health and EMS, Police, the Supreme Court, and other users, such as researchers.
- Continue Traffic Records Electronic Data System (TREDS) enhancements for data integration. Continue to improve data reporting and mapping.
- Monitor and maintain FMCSA objectives and measures for information regarding the commercial vehicle crash reporting system (SafetyNet) and continue to obtain good state data quality ratings.
- Implement improved tools and methodologies for safety analysis and research incorporating highway inventory, traffic, crash, and related data for all public roads.

The MTPO has been involved in a number of the initiatives described within these Highway Safety Plans and is an active participant in each state's highway safety programs. Several specific initiatives of important focus to the MTPO include improved crash data records management, improved intersection safety, improved driver behavior, and increased educational and awareness programs intended to improve transportation safety for all roadway users.

4.1.10 Security Element

Awareness of both man-made and natural security concerns has increased in the last few decades due to events such as international and domestic terrorist activities, civil unrest, and natural disasters such as Hurricanes Katrina and Sandy and rock slides in east Tennessee. The vulnerability of the transportation system and its use in emergency evacuations are issues receiving new attention. Federal requirements include security as a factor to be considered in transportation planning processes at both the metropolitan and statewide levels, stating that the planning process should provide for consideration and implementation of projects, strategies, and services that will increase the security of the transportation system for motorized and non-motorized users.

Transportation system security can be defined as the freedom from intentional harm and tampering that affects both motorized and non-motorized travelers, as well as natural disasters. Security goes beyond safety and includes the planning to prevent, manage, or respond to threats of a region and its transportation system and users. Though the MTPO is often not involved in specific security or emergency planning activities, the MTPO does communicate with state and local emergency management and law enforcement

agencies, local engineering officials, and emergency personnel on major transportation plans and projects with the intention of developing a transportation system that is as secure as possible. An example of this can be seen in the MTPO's recent efforts in 2016 in planning for ITS technologies within the region. The MTPO's Regional ITS architecture helps to ensure that the planned ITS projects will be implemented with specific protocols and standards that allow for complete ITS interoperability. The architecture ensures that all agencies involved in transportation (emergency responders, law enforcement, transit agencies, local and regional transportation agencies) have the ability to share resources and information to better manage the overall daily operations of the transportation system.

Additionally, the implementation of ITS technologies is more than an ability to reduce congestion or respond to a traffic incident. ITS technologies provide enhanced management and operations of transportation facilities and often include surveillance equipment to monitor roadways for congestion and incidents; variable message signs that display traffic information to motorists; vehicle detection devices that report traffic counts, speed, and travel time; and motorist service patrols that respond to incidents in a timely manner. These technologies are equally important in providing a secure transportation system.

At many levels, ITS elements can have significant benefits in the event of an emergency. For example, both Tennessee and Virginia have a 511 traveler information system. The 511 traveler information system allows travelers to dial "511" on their cell phone and get real-time travel information for most of the major roadways in Tennessee and Virginia. These systems can be used in the event of an emergency to disperse road closure and detour information as well as alternate route information to travelers, thus helping avoid further incident-related congestion.

Local transit agencies have always placed an emphasis on providing a safe, secure, and reliable service for its passengers and employees. These efforts are continuing and are an integral part of providing transit service. While transit must be concerned about safety and security as it relates to the provision of service, transit itself can be a valuable resource to a community in providing rescue or evacuation services. Local transit providers can participate as part of the larger community emergency preparedness efforts.

Lastly, each jurisdiction within the MTPO has an emergency operation plan and/or equivalent hazard mitigation plan that includes measures for homeland security factors for the region. These documents identify various potential man-made and natural hazards that could occur in the region and identify agency responsibilities in the event of an incident. Locally, the MTPO has attended meetings and provided input in the development of mitigation plans. Typically, the content of a hazard mitigation plan provides a risk and vulnerability assessment and establishes mitigation strategies. Both TDOT and VDOT have developed I-81 incident response plans, which define alternate routes if sections of the interstate are closed.

Emergency preparedness and hazard mitigation planning are important elements in providing a safe and secure transportation system. The MTPO is committed to continued participation in these efforts whereby transportation infrastructure and transportation decisions play an important role in protecting human life.

5.0 PUBLIC & STAKEHOLDER PARTICIPATION

Public and stakeholder input are critical components of the MTPO planning process and are required by federal law. The public and stakeholder involvement process of the 2040 LRTP consisted of a variety of communication and outreach means. The primary means of involvement largely consisted of public and stakeholder meetings and presentations, the use of an online survey and mapping application, and media outreach. The following depict the various means of each in this process:

5.1 PUBLIC MEETINGS

October 4-5, 2016 consisted of a series of five public meetings held at various locations throughout the MTPO. Specifically, the meetings were held at the following locations and times in order to provide ample opportunity to participate at various locations across the region:

- Kingsport Public Library - 400 Broad Street, October 4, 2016, 4:30-7:30 pm
- LaQuinta Inn & Suites - 10150 Airport Parkway, October 4, 2016, 4:30-7:30 pm
- Kingsport Improvement Building - 201 W. Market Street, October 5, 2016, 10:00 am - 2:00 pm
- Kingsport University Center - 1501 University Blvd., October 5, 2016, 4:30-7:30 pm
- Scott County VA Board of Supervisors Auditorium - 336 Water Street, October 5, 2016, 4:30-7:30 pm

The purpose of these meetings was to present an overview of the MTPO, the MTPO planning process including the development of the 2040 LRTP, and solicit input. Of the participants in attendance at the meeting, general input themes included a call for increased highway safety, greater consideration of walking and biking needs as well as transit services, and addressing traffic operational issues at known high volume locations. Meeting notices were available in Spanish through the MPO's website, and directional signs were posted outside meeting locations in Spanish in an effort to reach the Hispanic and Latino communities in the MPO area. Additionally, two of the public meetings were held in locations accessible via Kingsport's fixed route transit service (KATS).

On May 17, 2017 a second round of public meetings were held as part of the public review and comment period on the proposed draft 2040 LRTP. Meetings were conducted at the Kingsport Development Service Building Bob Clear Conference Room – 201 West Market Street from 11 a.m. until 1:30 p.m. and at V.O. Dobbins Senior Complex – Douglass Room, 301 Louis Street, from 11 a.m. until 1:30 p.m. and from 4 p.m. until 7:30 p.m.

Appendix I contains copies of the meeting notices, sign-in sheets, and other meeting materials from these meetings.

5.2 ONLINE PUBLIC SURVEY AND MAPPING APPLICATION

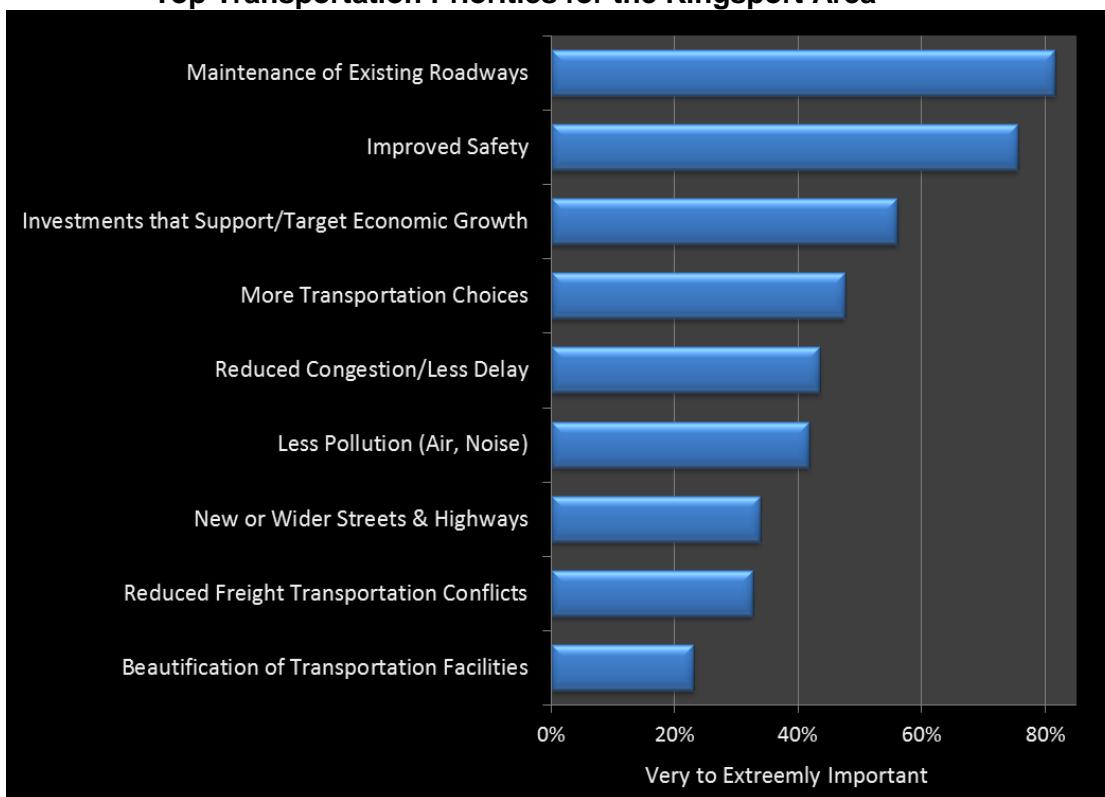
In developing the 2040 LRTP, information on the project was disseminated via the Kingsport MTPO website. The MTPO website was used to promote an online survey and mapping application as well as display ongoing information regarding opportunities for

public input. The online survey was created in order to afford individuals an opportunity to share their thoughts and opinions on transportation needs within the region. The online mapping application, Wikimaps, was made available so that residents and stakeholders could provide site-specific information on transportation needs using a map interface. This tool also allowed participants to categorize their comments as they related to emphasis areas such as safety, congestion, maintenance, bicycle and pedestrian, freight and economic development, and others.

A total of 280 individuals participated in the online survey. From the online survey and mapping application, the MTPO was able to gather specific public input that lead to the development of the MTPO's LRTP project selection criteria and other plan recommendations.

Key findings from the survey revealed strong support for maintenance of existing roadways followed by a desire for improved roadway safety. The third highest priority was transportation investments that support/target economic growth. Figure 5-1 illustrates the top transportation priorities in the region identified by survey participants.

Figure 5-1
Top Transportation Priorities for the Kingsport Area



Appendix I contains a summary of the results from the online survey.

5.3 MEDIA OUTREACH

Local news media (print and live) were approached to help disseminate information about the project and the public meetings. Advertisements were posted in the Kingsport Times News along with a number of press releases and cover stories as well as news interviews by the Kingsport Times.

Appendix I contains copies of the advertisements and press releases associated with the MTPO's efforts to increase awareness of the plan via the media.

5.4 STAKEHOLDER MEETINGS & EVENTS

In addition to meetings with the public, consultation with other stakeholders within the MTPO including local and regional planning agencies, transit operators, and various state and federal agencies, as defined in the MTPO's Public Participation Plan (PPP) were also conducted in the development of the 2040 LRTP.

Specific meetings held with stakeholders occurred on the following dates:

- November 11, 2015 (Project Kick-Off Meeting)
- February 9, 2016 (Land Use/Growth Allocation Meetings)
- March 21, 2016 (Freight and Logistics, Tri-Cities Area MPOs, City of Kingsport)
- March 22, 2016 (Safety and Law Enforcement, Economic Development, Local Agencies)
- March 23, 2016 (Transit, Active Transportation, and Health, Virginia Localities)
- August 4, 2016 (Needs Assessment, Project Evaluation Criteria)

General items discussed with these stakeholders included:

- Planning Assumptions including Growth and Development (e.g. land use, transportation, population, employment, revenues and funding, etc.)
- Plans, Programs, Projects, and Policies
- Regional Goals and Objectives
- Current and Future Transportation Issues and Solutions

Appendix I contains copies of the agendas, sign-in sheets, and other meeting materials from these stakeholder meetings. It should be noted that early consultation with the housing authority in Kingsport occurred in an effort to engage representatives of the low-income populations in the MPO area. In addition to these formal meetings, numerous other means of communication were held with various stakeholders (e.g. TDOT, VDOT, etc.) throughout the process. A final step in the consultation process included sending a special invitation letter to stakeholders defined within the MTPO's PPP soliciting comments on the MTPO's proposed draft 2040 LRTP. Documentation of this consultation is also provided in Appendix I.

5.5 MTPO BOARD PRESENTATIONS

Presentations were made to the MTPO Board throughout the development of the 2040 LRTP. Project status updates and presentations on the development of the 2040 LRTP were made to the MTPO Board at the following meetings:

- December 3, 2015
- February 9, 2016
- May 5, 2016
- November 3, 2016
- February 9, 2017

Appendix I contains materials presented and discussed at the MTPO Board meetings.

5.6 DISPOSITION OF COMMENTS

A wide range of public comments were provided as part of the development of the LRTP. Issues raised related to increased emphasis on highway safety and maintenance, greater opportunities for walking and biking as well as transit services, using transportation investments to encourage economic development, and a desire to focus on mitigating traffic impacts through operational improvements.

Comments received were given careful consideration during the development of the LRTP. Table 5-1 lists the general issues identified by the public and includes a disposition of how these categories of issues are addressed in the LRTP.

**Table 5-1
Disposition of Public Comments**

Issues Raised	Disposition of Issues/Concerns
Safety - Support greater investments in safety (35 Comments)	
	<i>Goal 1 (page 2-3); Section 4.1.8 Transportation Safety (pages 4-50 thru 4-58); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Pedestrian Accommodations – Support greater investments in sidewalk improvements (33 Comments)	
	<i>Goal 1 (page 2-3); Section 4.1.3 Walkways and Bikeways (pages 4-22 thru 4-30); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Maintenance – Support greater investments in roadway maintenance (11 Comments)	
	<i>Goal 2 (page 2-3); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Economic Development – Support transportation investments that promote economic development (10 Comments)	
	<i>Goal 3 (page 2-3); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Bicycle Accommodations – Support investments in bicycle accommodations (9 Comments)	
	<i>Goal 1 (page 2-3); Section 4.1.3 Walkways and Bikeways (pages 4-22 thru 4-30); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Congestion – Support investments that address traffic congestion (9 Comments)	
	<i>Goal 2 (page 2-3); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Transit – Support investments in transit services and accommodations (9 Comments)	
	<i>Goal 1 (page 2-3); Section 4.1.2 Public Transportation (pages 4-14 thru 4-21); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Other Improvements – Support investments in ITS projects (4 Comments)	
	<i>Goal 2 (page 2-3); Section 4.1.4 Intelligent Transportation Systems (pages 4-31 thru 4-34); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>
Freight – Support investments in truck climbing lanes (3 Comments)	
	<i>Goal 3 (page 2-3); Section 6 Financial Plan (pages 6-1 thru 6-18); Section 7 Recommended Planned Improvements (pages 7-1 thru 7-10)</i>

6.0 FINANCIAL PLAN

The ability to maintain, improve and enhance transportation facilities and services in the MTPO area depends on adequate financial resources. This section includes:

- A description of the various revenue sources available to the MTPO for transportation-related improvements;
- A summary of the MTPO area's historic transportation revenue trends; and
- A forecast of future years' anticipated revenue for the MTPO region over the 25-year planning horizon.

The section concludes with a demonstration of fiscal constraint (i.e. demonstrating that transportation operations, maintenance, and recommended capital improvements can be afforded and adequately maintained into the future).

Financial assumptions of the LRTP were developed in consultation with the Tennessee Department of Transportation; the Virginia Department of Transportation; the cities of Kingsport, Mount Carmel, Church Hill, Weber City, and Gate City; and Sullivan, Hawkins, and Scott Counties; and the Kingsport Area Transit Service. Revenue forecasts were developed based on historical funding levels and anticipated future inflationary factors. To account for anticipated future funding increases, an annual inflation factor of 3% was applied to each future year through 2040.

The basis of the Financial Plan (i.e. revenue assumptions, funding levels, and forecasts) is further documented in Appendix I.

6.1 OVERVIEW OF FUNDING SOURCES

Funding for transportation facilities and services comes from a variety of sources – federal, state, local, and private. This subsection provides a brief description of the funding sources and categories that are available for transportation expenditures within the MTPO area.

Federal

There are a variety of federal transportation funds available to MTPO areas. This list is not all-inclusive, but serves to highlight the major Federal funding categories. General rules for the funding ratio of projects by type of funding program are also provided (percent of Federal compared to percent of state or local funds). This table is intended to be used only as a general guideline, as there are situations where the funding ratios may vary depending on the particular details of the project (see [23 USC 120](#) for reference in these situations). Table 6-1 provides a summary of the funding categories. It is important to note that many of the previously used funding programs were eliminated under MAP-21.

Table 6-1
Federal Transportation Funding Programs

Federal Programs	Description	Funding Ratio
Appalachian Development Highway System (APD)	Provides funding for routes with remaining work deemed eligible as approved by the Appalachian Regional Commission in the most recent APD Cost Estimate. This funding program was eliminated under MAP-21. The FAST Act continues that precedent with the elimination of a standalone funding category for APD. APD projects may be eligible for FAST Act STBG and NHPP funds.	100% Federal or 80% Federal, 20% Non-Federal
Bridge Replacement and Rehabilitation State & Local (BRR or BR)	State - Provides funding for on-system bridge replacement, or to rehabilitate aging or substandard bridges based on bridge sufficiency ratings. Local - Provides funding for off-system bridge replacement, or to rehabilitate aging or substandard bridges based on bridge sufficiency ratings.	80% Federal, 20% Non-Federal
Congestion Mitigation and Air Quality Improvement Program (CMAQ)	Provides funding for transportation projects in air quality non-attainment or maintenance areas. CMAQ projects are designed to contribute toward meeting the national ambient air quality standards.	80% Federal, 20% Non-Federal
Federal Lands Transportation Program (FLTP) and Federal Lands Access Program (FLAP)/Forest Highway/Public Lands or Public Lands Highways Discretionary (FH/PL or PLHD)*	Provides funding for projects on Federal Lands Access Transportation Facilities that are located on, adjacent to, or that provide access to Federal lands. A Federal Lands access transportation facility is defined as a public highway, road, bridge, trail, or transit system that is located on, adjacent to, or provides access to Federal lands for which title or maintenance responsibility is vested in a State, county, town, township, tribal, municipal, or local government.	100% Federal or 80% Federal, 20% Non-Federal
High Priority Projects Set Aside of SAFETEA-LU (HPP)*	Provides designated funding for specific projects identified by Congress. This program was discontinued by MAP-21 though some funding has yet to be spent.	80% Federal, 20% Non-Federal
Highway Safety Improvement Program (HSIP)	Provides funding to be used for safety projects that are consistent with the State's Strategic Highway Safety Plan (SHSP) and that correct or improve a hazardous road location or feature or address a highway safety problem	90% Federal, 10% Non-Federal
Local - Surface Transportation Block Group Program (L-STBG)	Provides funding to areas of 5,000 to 50,000 in population for improvements on routes functionally classified urban collectors or higher.	80% Federal, 20% Non-Federal
National Highway Freight Program (NHFP)	Provides funding to improve the efficient movement of freight on the National Highway Freight Network (NHFN) and support several goals laid out in the FAST Act.	90% Federal, 10% Non-Federal
National Highway Performance Program (NHPP)	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.	80% Federal, 20% Non-Federal

Federal Programs	Description	Funding Ratio
Section 154	Provides funding to help save lives, prevent injuries, and reduce economic costs due to road traffic crashes, through education, research, safety standards, and enforcement activity.	100% Federal
Surface Transportation Block Group Program (STBG) (also known as S-STBG when programed by TDOT)	Provides funding for to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals. STBG projects may not be located on local or rural minor collectors. Projects previously authorized under the Recreational Trails (RTP), Safe Routes to School (SRTS), and Transportation Alternatives programs (TAP) are now eligible under the STBG program.	80% Federal, 20% Non-Federal
Transportation Enhancement Set Aside of the STP (TE/ENH) / Transportation Alternatives Program (TAP) from the STBG Program	Provides funding for a set of exclusive activities such as pedestrian facilities, rehabilitation and restoration of historic transportation related structures, and environmental mitigation to address water pollution due to highway runoff.	80% Federal, 20% Non-Federal
FTA Section 5307 (Urbanized Area Formula Grants)	Section 5307 is a formula grant program for urbanized areas for transit capital and operating assistance in urbanized areas and for transportation-related planning. Formula Grants provide funding to urbanized areas for public transportation capital, planning, job access and reverse commute projects, as well as transit operating assistance.	80% Federal, 20% Non-Federal (Capital) 50% Federal, 50% Non-Federal (Operating)
FTA Section 5309 (Capital Investment)*	Provides funding for major transit capital investments, including heavy rail, commuter rail, light rail, streetcars, and bus rapid transit.	80% Federal, 20% Non-Federal
FTA Section 5310 (Enhanced Mobility of Seniors and Individuals with Disabilities)	This program provides transit capital and operating assistance, through the state, to private non-profit organizations and public bodies that provide specialized transportation services to elderly and/or persons with disabilities.	80% Federal, 20% Non-Federal (Capital) 50% Federal, 50% Non-Federal (Operating)
FTA Section 5339 (Buses and Bus Facilities)	This program provides for capital funding to replace, rehabilitate and purchase buses, vans, and related equipment and to construct bus related facilities including technological changes or innovations to modify low or no emission vehicles or facilities.	80% Federal, 20% Non-Federal
Airport Improvement Program (AIP)	Provides grants for planning, development, or noise compatibility projects at or associated with individual public-use airports (including heliports and seaplane bases).	Varies – Federal and Non-Federal

* Discretionary funding programs whereby project funding is determined by Congress

State and Local

Both Tennessee and Virginia have dedicated state revenue sources that provide funding for transportation investments. These funds are used primarily to match the federal programs listed above and fund the various functions of each state's department of transportation. Additionally, a large portion of these funds are redistributed back to local jurisdictions to use for their individual transportation needs.

Periodically states undertake taxing initiatives to generate additional state revenues for transportation needs. In 2015, Tennessee began the process of exploring fuel tax changes to increase transportation revenues for the state as well as cities and counties within Tennessee. Tennessee's 110th General Assembly was presented a comprehensive transportation funding initiative known as the IMPROVE Act (Improving Manufacturing, Public Roads, and Opportunities for a Vibrant Economy), the first significant update to Tennessee's transportation funding program since 1989.

Key aspects of the IMPROVE Act include:

- Increasing the road user fee for gas and diesel.
- Increasing car registration fees.
- Placing an annual fee on electric vehicles and increasing charges on vehicles using alternative fuels.
- Changing the state's open container law to allow TDOT the flexibility to use existing federal funds on roads.

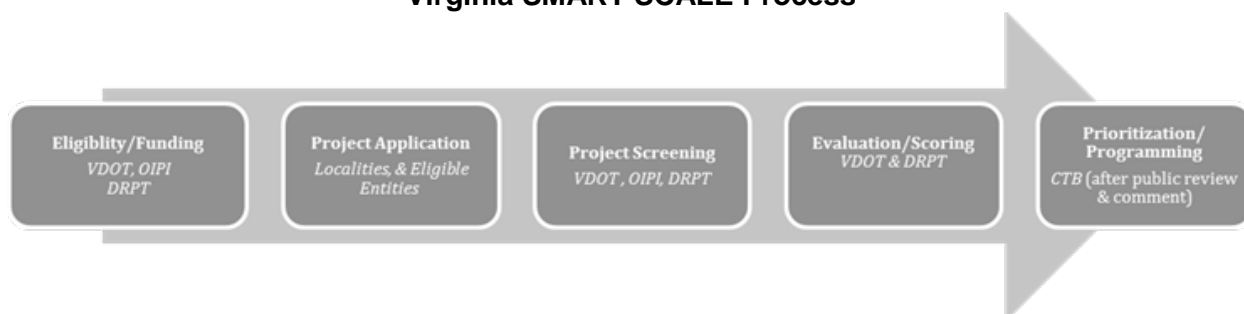
Overall, the IMPROVE Act brings in new dollars annually to fund 962 transportation projects across all 95 counties, with 52% of the projects going to urban areas and 48% to rural areas. These projects include safety and interstate improvements, congestion reduction, economic corridors and 536 bridges repaired. Additionally, dollars will be provided to cities and counties for local transportation projects.

For the Kingsport MTPO area, the IMPROVE Act translates into \$195,368,676 in projects (18 projects in total) and a projected increase in state-aid highway funds to local municipalities within the MTPO area. Of the 18 projects, six are projects that are currently under development as shown on Table 4-2 of the 2040 LRTP. The remaining 12 projects, account for \$80,647,000 and are contained in Section 7.0 of the MTPO's fiscally constrained recommended LRTP.

In Virginia, SMART SCALE ([§33.2-214.1](#)) is the State's transportation funding and project prioritization process for picking transportation projects for funding and ensuring the best use of limited tax dollars. It is the method of scoring planned projects included in VTrans that are funded by [House Bill \(HB\) 1887](#) including apportioned funds under [23 USC §104](#). Transportation projects are scored based on an objective and transparent outcome-based process. Once projects are scored and prioritized, the Commonwealth Transportation Board (CTB) has objective and quantifiable data to select projects for funding.

Virginia's SMART SCALE Process includes five overarching steps, as identified in Figure 6-1. The preliminary step requires project sponsors to determine their eligibility prior to beginning the SMART SCALE applications process. The final step in the prioritization process includes programming of selected projects.

**Figure 6-1
Virginia SMART SCALE Process**



** The responsible agency for each process step is identified in italics in the figure above.*

Funding for project prioritization comes from two main pathways - the construction District Grants Program (DGP) and the High-Priority Projects Program (HPPP) – both established in 2015 under the Code of Virginia §33.2-358. The DGP is open only to localities. Projects applying for the DGP funds compete with other projects from the same construction district. Projects applying for HPP funds compete with projects from across the Commonwealth. A project sponsor may request funding under both programs. Table 6-2 illustrates these two pathways and the corridors, networks, and areas that are eligible under each.

**Table 6-2
Virginia SMART SCALE Programs**

	High Priority Projects Program	Construction District Grant Program*
Capacity Need on Corridors of Statewide Significance	Yes	Yes
Capacity Need on Regional Networks	Yes	Yes
Improvement to Support Urban Development Areas	No	Yes

**Only projects submitted by localities are eligible. Projects addressing a safety need identified in VTrans2040 are also eligible under the Construction District Grant Program.*

Certain fund types are not distributed through the project prioritization process, but may be used as a matching fund to the project, reducing the amount of SMART SCALE funds needed, including Congestion Mitigation and Air Quality Funding (CMAQ), Regional Surface Transportation Block Grant Program (RSTBG), Revenue Sharing, Transportation Alternatives (TA) Set-Aside funds, Highway Safety Improvement Program (HSIP) and Other Safety Program Funds, Northern Virginia and Hampton Roads Regional Funding, Tele-fees and Unpaved Road related Funds, Dedicated Bridge Program Funds (through FY2020), and State of Good Repair.

Other Potential Funding Options

While not considered part of the 2040 LRTP Financial Plan, other funding sources for transportation improvements may be available over time which the MTPo and its member jurisdictions could explore for furthering transportation investments within the region. Example revenue sources include:

- Creation and use of tax increment financing and capital improvement district funds for targeted areas within the region
- Creation and use of funds from the Tennessee Border Region Retail Tourism Development District Act, which the City of Kingsport and Sullivan County are exploring
- Creation and use of local adequacy fees which some communities in Tennessee use to offset development infrastructure costs

6.2 HISTORIC TRANSPORTATION REVENUE TRENDS

Historic funding trends provide a reasonable foundation for estimating likely future funding levels over the next 25-year period in the MTPO area. As previously described, numerous revenue sources provide funding for transportation in the MTPO area. These revenue sources have, and continue to provide, a steady stream of funding for transportation infrastructure and services in the MTPO area.

Appendix I provides documentation of the review and development of the 2040 LRTP revenue forecasts for the LRTP financial Plan.

6.2.1 Funding Forecast

Historic revenue trends provide a foundation for making realistic projections on potential future funding. This subsection provides a projection of likely funds available for transportation in the MTPO area over the plan horizon based on historic trends. Assumptions on available revenues and assumptions on likely increases in revenues over time were derived by reviewing historic funding levels from the revenue sources presented in subsections 6.1 and 6.2. Additionally, the MTPO reviewed various tax revenue publications from both the State of Tennessee and the State of Virginia. This information, coupled with discussions with TDOT, VDOT, and KATS, resulted in the revenue assumptions and likely annual increases in revenues over the 25-year planning horizon for the MTPO region.

6.2.2 Streets and Highways

Historic funding trends for streets and highways operations and maintenance and capital investments from all previously discussed funding sources over the 25-year planning horizon resulted in an availability of:

- \$ 821,982,000 for operating/maintenance funds, and
- \$ 449,038,000 for capital investments.

Operating and maintaining existing infrastructure is a sizable portion of the overall transportation budget accounting for nearly two-thirds of funds available of all streets and highway funds. The expense of maintaining the current transportation system is typically shared between state and local governments. State highway maintenance funds are provided through the Tennessee Department of Transportation and the Virginia Department of Transportation for items such as pavement markings, signage, resurfacing, snow removal, and minor repairs.

Local governments provide a substantial amount of equipment and manpower to maintain local streets and roads, including some state routes. Local government budgets specify funding through public works departments for maintaining streets in a variety of activities,

including resurfacing, cleaning, right-of-way mowing, litter control, signage, pavement markings, snow removal, and others.

A conservative 3% compounded annual growth rate was assumed over the 25-year planning horizon. Table 6-3 and Table 6-5 illustrate the funding availability by horizon year for streets and highways within the MTPO area and include federal, state, and local revenues. Since operations and maintenance funding is largely derived from historic revenues, revenue assumptions for operations and maintenance at this time do not reflect increased dollars that would come to the MTPO area from the IMPROVE Act. Over time, these increased revenues would be reflected in the MTPO's future LRTPs.

Table 6-3
2040 Streets & Highways Operating and Maintenance Funding Forecast

Operations and Maintenance Funding					
Revenue Source	Annual Average *	Inflation Factor **	Revenue Projections		
			2025 Horizon Year	2040 Horizon Year	Total 2015 - 2040
Tennessee Revenue Sources					
TDOT (Various State Sources) ***	\$ 4,260,000	1.03	\$ 56,198,000	\$ 112,965,000	\$ 169,163,000
City of Kingsport - State & Local Gas/State Aid Funds	\$ 2,230,000	1.03	\$ 29,418,000	\$ 59,134,000	\$ 88,552,000
Sullivan County - State & Local Gas/State Aid Funds ****	\$ 8,100,000	1.03	\$ 106,855,000	\$ 214,793,000	\$ 321,648,000
Town of Mt Carmel - State & Local Gas/State Aid Funds	\$ 146,000	1.03	\$ 1,926,000	\$ 3,872,000	\$ 5,798,000
City of Church Hill - State & Local Gas/State Aid Funds	\$ 174,000	1.03	\$ 2,295,000	\$ 4,614,000	\$ 6,909,000
Hawkins County - State & Local Gas/State Aid Funds ****	\$ 3,000,000	1.03	\$ 39,576,000	\$ 79,553,000	\$ 119,129,000
Sub-Total (TN)	\$ 17,910,000		\$ 236,268,000	\$ 474,931,000	\$ 711,199,000
Virginia Revenue Sources					
VDOT (State) *****	\$ 4,431,320		\$ 40,134,000	\$ 70,649,000	\$ 110,783,000
Sub-Total (VA)	\$ 4,431,320		\$ 40,134,000	\$ 70,649,000	\$ 110,783,000
Total	\$ 22,341,320		\$ 276,402,000	\$ 545,580,000	\$ 821,982,000

* Tennessee and Virginia's annual average revenues are based on a review of historic funding levels to the MTPO region.

** Revenue forecasts assume a 3 percent annual growth rate of funding unless otherwise noted.

*** TDOT maintenance funds shown are for state maintained roadways for the complete counties of Sullivan and Hawkins Counties

**** County maintenance funds shown are for the complete counties of Sullivan and Hawkins Counties

***** VDOT maintenance funds were developed based on a review of VDOT's Maintenance and Operations Budgets 2012 thru 2017 for the Bristol District and derived from VDOT's Financial Planning Division, Assumptions - Constrained Long Range Plan documentation (October 2015)

Projections rounded to the nearest thousands

Table 6-4
2040 Streets & Highways Capital Funding Forecast - Tennessee

Capital Funding - Tennessee							
Revenue Source	Annual Average*				Revenue Projections		
Tennessee Revenue Sources	Federal Share	Non-Federal Share	Total	Inflation Factor **	2025 Horizon Year	2040 Horizon Year	Total 2015-2040
National Highway Performance Program (NHPP) (80%/20%)	\$ 2,200,000	\$ 550,000	\$ 2,750,000	1.03	\$ 36,278,000	\$ 72,923,000	\$ 109,201,000
Surface Transportation Block Grant Program (S-STBG) Funds State Selected Projects (80%/20%)	\$ 1,300,000	\$ 325,000	\$ 1,625,000	1.03	\$ 21,437,000	\$ 43,091,000	\$ 64,528,000
Safety Funding (90%/10%)	\$ 450,000	\$ 50,000	\$ 500,000	1.03	\$ 6,596,000	\$ 13,259,000	\$ 19,855,000
Bridge Rehabilitation & Replacement (BRR or BR) (80%/20%)	\$ 455,000	\$ 113,750	\$ 568,750	1.03	\$ 7,503,000	\$ 15,082,000	\$ 22,585,000
Surface Transportation Block Grant Program (L-STBG) Funds MPO Selected Projects (80%/20%)	\$ 1,400,000	\$ 350,000	\$ 1,750,000	1.03	\$ 23,086,000	\$ 46,406,000	\$ 69,492,000
Enhancement Funds (EHN, TAP, or RTP) (80%/20%)	\$ 200,000	\$ 50,000	\$ 250,000	1.03	\$ 3,298,000	\$ 6,629,000	\$ 9,927,000
Other Federal-Aid Programs & Discretionary Funds (e.g. APD, ARRA, TIGER, NHFP) (80%/20%)	\$ 320,000	\$ 80,000	\$ 400,000	1.03	\$ 5,277,000	\$ 10,607,000	\$ 15,884,000
State Funds (STA or SP and SPPR) (100% State)		\$ 400,000	\$ 400,000	1.03	\$ 5,277,000	\$ 10,607,000	\$ 15,884,000
City of Kingsport, TN (100% Local)		\$ 1,800,000	\$ 1,800,000	1.03	\$ 23,746,000	\$ 47,732,000	\$ 71,478,000
Sullivan County, TN (100% Local)		\$ 190,000	\$ 190,000	1.03	\$ 2,506,000	\$ 5,038,000	\$ 7,544,000
Town of Mt Carmel TN (100% Local)		\$ 14,000	\$ 14,000	1.03	\$ 185,000	\$ 371,000	\$ 556,000
City of Church Hill, TN (100% Local)		\$ 58,000	\$ 58,000	1.03	\$ 765,000	\$ 1,538,000	\$ 2,303,000
Hawkins County, TN (100% Local)		\$ 65,000	\$ 65,000	1.03	\$ 857,000	\$ 1,724,000	\$ 2,581,000
Sub-Total (TN)	\$ 6,325,000	\$ 4,045,750	\$ 10,370,750		\$ 136,811,000	\$ 275,007,000	\$ 411,818,000

* Based on a review of historic funding levels to the MTPO region.
** Revenue forecasts assume a 3 percent annual growth rate of funding.
Projections rounded to the nearest thousands

Table 6-5
2040 Streets & Highways Capital Funding Forecast - Virginia

Capital Funding - Virginia							
Revenue Source	Annual Average*				Revenue Projections		
Virginia Revenue Sources	Federal Share	Non-Federal Share	Total	Inflation Factor**	2025 Horizon Year	2040 Horizon Year	Total 2015 - 2040
Interstate, Primary, Secondary, and Statewide Construction***	\$ 1,191,040	\$ 297,760	\$ 1,488,800		\$ 25,690,000	\$ 11,530,000	\$ 37,220,000
Gate City, VA (100% Local)		\$ -	\$ -		\$ -	\$ -	\$ -
Weber City, VA (100% Local)		\$ -	\$ -		\$ -	\$ -	\$ -
Sub-Total (VA)	\$ 1,191,040	\$ 297,760	\$ 1,488,800		\$ 25,690,000	\$ 11,530,000	\$ 37,220,000

* Annual Average figures are presented for illustrative purposes only. Figures are presented to illustrate a hypothetical annual amount of revenues and share splits to the MTPO area. Actual annual projections are reflected in the Revenue Projections provided to the MTPO by VDOT.

** Revenue forecasts are derived from VDOT's Financial Planning Division, Assumptions - Constrained Long Range Plan documentation (October 2015)

*** VDOT manages highway revenues through a variety of Construction Programs (Interstate, Primary, Secondary, Statewide, etc.). Through these Programs Virginia revenues (state and federal revenues) are allocated. The following revenues are reflected in these Construction Programs and assumed available to the MTPO area: Bridge Replacement\Rehabilitation (BR/BROS), Interstate Maintenance (IM), National Highway Systems (NHS), National Highway Performance Program (NHPP) Hazard Elimination (HSIP), Surface Transportation Block Grant (STBG), Transportation Alternative Program/Enhancement (TAP/EN), High Priority Projects (HPP), Appalachian Development (APD), Federal Demonstration (DEMO), Safe Routes to School (SRS), High Priority Development (HPD), Intelligent Technology Systems (ITS), Regional STP (RSTP), and Equity Bonus/Minimum Guarantee (EB/MG)

Projections rounded to the nearest thousands

6.2.3 Public Transportation

As previously discussed, a variety of transit services are offered throughout the Kingsport MTPo area. These services range from fixed-route and demand-response services in the City of Kingsport to flexible, demand-response service in the rural portions of the MTPo area.

Historic funding trends for transit operating assistance and capital investments from all transit related funding sources resulted in availability over the 25-year planning horizon of:

- \$61,550,000 for operating assistance; and
- \$35,244,000 for capital investments.

A conservative 3% compounded annual growth rate was assumed for operating and capital funds over the 25-year planning horizon.

Table 6-6 and Table 6-7 illustrate the funding availability by transit agency by horizon year for public transportation within the MTPo area. The majority of these funds are associated with KATS, as they are the largest provider of services in the MTPo area.

Table 6-6
2040 Public Transportation Operating Funding Forecast

Transit - Operating Funding					
Revenue Source	Annual Average*	Inflation Factor**	2025 Horizon Year	2040 Horizon Year	Total 2015 - 2040
KATS					
Operating Assistance - FTA 5307 (Federal) 50%	\$ 750,000	1.03	\$ 9,894,000	\$ 19,888,000	\$ 29,782,000
Operating Assistance - TN (Non-Federal Match) 50%	\$ 750,000	1.03	\$ 9,894,000	\$ 19,888,000	\$ 29,782,000
FTA 5307 Tennessee Total	\$ 1,500,000		\$ 19,788,000	\$ 39,776,000	\$ 59,564,000
Other Transit Providers Including KATS, MEOC, & NET Trans					
Operating Assistance - Other FTA Programs (Federal) 50%	\$ 25,000	1.03	\$ 330,000	\$ 663,000	\$ 993,000
Operating Assistance - Other FTA Programs (Non-Federal Match) 50%	\$ 25,000	1.03	\$ 330,000	\$ 663,000	\$ 993,000
Other FTA Programs (FTA 5310) & Discretionary Funds *** Total	\$ 50,000		\$ 660,000	\$ 1,326,000	\$ 1,986,000
Total Operating Assistance	\$ 1,550,000		\$ 20,448,000	\$ 41,102,000	\$ 61,550,000

* Based on a review of historic and current funding levels to the MTPO region (FY11-FY14 MTPO TIP, FY14-FY17 MTPO TIP, and FY17-FY21 MTPO TIP)

** Revenue forecasts assume a 3 percent annual growth rate of funding.

*** Conservative estimate of FTA funds likely to be available within the MTPO region over the 25-Year Planning Horizon

Projections rounded to the nearest thousands

Table 6-7
2040 Public Transportation Capital Funding Forecast

Transit - Capital Funding					
Revenue Source	Annual Average*	Inflation Factor**	2025*** Horizon Year	2040 Horizon Year	Total 2015 - 2040
KATS					
Capital Assistance - FTA 5307 (Federal) 80%	\$ 520,000	1.03	\$ 9,640,000	\$ 13,789,000	\$ 23,429,000
Capital Assistance - TN (State) 10%	\$ 65,000	1.03	\$ 1,205,000	\$ 1,724,000	\$ 2,929,000
Capital Assistance - Kingsport (Local) 10%	\$ 65,000	1.03	\$ 1,205,000	\$ 1,724,000	\$ 2,929,000
FTA 5307 Total	\$ 650,000		\$ 12,050,000	\$ 17,237,000	\$ 29,287,000
Capital Assistance - Other FTA Programs (Federal) 80%	\$ 120,000	1.03	\$ 1,583,000	\$ 3,182,000	\$ 4,765,000
Capital Assistance - Other FTA Programs (Non-Federal Match) 20%	\$ 30,000	1.03	\$ 396,000	\$ 796,000	\$ 1,192,000
Other Transit Providers Including KATS, MEOC, & NET Trans					
Other FTA Programs (FTA 5310, 5339) & Discretionary Funds**** Total	\$ 150,000		\$ 1,979,000	\$ 3,978,000	\$ 5,957,000
Total Capital Assistance	\$ 800,000		\$ 14,029,000	\$ 21,215,000	\$ 35,244,000

* Based on a review of historic and current funding levels to the MTPO region (FY11-FY14 MTPO TIP, FY14-FY17 MTPO TIP, and FY17-FY21 MTPO TIP)

** Revenue forecasts assume a 3 percent annual growth rate of funding.

*** Revenue forecasts for the 2025 horizon are derived from the FY17-FY21 MTPO TIP for FTA 5307 funding levels.

**** Conservative estimate of FTA funds likely to be available within the MTPO region over the 25-Year Planning Horizon

Projections rounded to the nearest thousands

6.2.4 Relationship of LRTP to the Transportation Improvement Program

As part of the MTPo planning process, the interaction of the LRTP with the Transportation Improvement Program (TIP) is important in facilitating a smooth transition, from the planning stages of a project to implementation. The LRTP identifies needed transportation improvements over a 20-plus year planning horizon and is used to identify the list of projects for inclusion into the MTPo's TIP. MTPo member governments select these projects, based on funding, schedule, priorities, and citizen input. The TIP thus reflects specific long-range plan projects, according to several factors, including needs, costs, and overall design ensuring adequate mobility in the region is maintained bearing in mind fiscal constraints. The TIP presents a listing of the selected projects scheduled for the next four years. It also presents a more detailed project cost estimate, description of the type of improvements associated with the project, the funding sources and mixture, and the funding amounts for the specific project.

6.3 FISCAL CONSTRAINT

Demonstrating that transportation operations, maintenance, and capital investments can be funded and adequately maintained into the future is not only mandated by federal law but is an essential component of good planning. This subsection demonstrates fiscal accountability by presenting a financially constrained plan for:

- Operations and Maintenance - for both roadways and public transportation
- Capital Investments - for streets and highways, which includes roadway widening and new roads, bridges, transportation system management and intelligent transportation systems (ITS), walkways and bikeways, as well as public transportation

through the year 2040 for the MTPo area. All revenues and expenses in this analysis represent year of expenditure (YOE) dollars as required by federal transportation regulations.

Year of Expenditure Costs

To comply with the requirement of 23 CFR 450.324 (g) (11) (iv) "year of expenditure dollars", US inflation rate data were evaluated. Inflation is an increase in the price you pay or a decline in the purchasing power of money. In other words, Price Inflation is when prices get higher or it takes more money to buy the same item. Inflation is measured by the Bureau of Labor Statistics in the United States using the Consumer Price Index. Long-term US inflation trends (over a 25 to 30 year time period) track at about 3% per year (source: <http://inflationdata.com>). Based on the long-term average 3%, revenues have been projected to increase at a 3% annual growth rate compounded annually over current funding levels. Consequently, project costs and program categories of the 2040 LRTP have been escalated at the same rate to reflect a likely project cost at "year of expenditure".

6.3.1 Operations and Maintenance – Revenue & Expenses

This subsection summarizes the operating and maintenance revenues and expenditures of the 2040 LRTP. Revenues are consistent with the financial analysis as described in Subsection 6.2 and expenditures are described in Section 7.0.

Streets and Highways

The most expensive non-capital highway activity is roadway maintenance and operations. Maintenance costs include routine and regular expenditures required to keep highways, streets, and rights-of-way in usable conditions such as patching repairs, bridge painting, and other maintenance activities. Additionally, there are other traffic service costs such as snow and ice-removal, pavement marking, signs, and litter removal.

The MTPO, in consultation with TDOT and VDOT was able to determine future operations and maintenance funding levels for streets and highways for the MTPO area based on historic funding trends. A 3% annual growth rate, compounded annually over current funding levels, was determined to be appropriate for operations and maintenance funding based on past funding growth trends within the MTPO area. While maintenance expenditures within the MTPO area are estimated to increase in the future, various safeguards are in place to ensure the continued long-term maintenance of streets and highways within the region. For example, within Tennessee, to remain eligible for state gas tax revenues, Tennessee law requires that local governments annually appropriate and allocate funds for road maintenance purposes from local revenue sources in an amount not less than the average of the five preceding fiscal years. If a jurisdiction fails to meet this provision, they in turn lose out on the State Gas Tax revenues that otherwise would have come to that jurisdiction. In addition, Tennessee law requires TDOT to set-aside State Highway funds for accelerating the resurfacing of the state system of highways in order to establish a 12-year cycle for resurfacing of state roads and eight years on the interstate system. Similarly, in Virginia, state law requires VDOT to prioritize maintenance needs over the construction of new highway capacity.

Operating and maintenance expenses are assumed to grow at a similar rate accounting for incremental increases in operating and maintenance costs and the additional lane-miles that are to be added to the roadway system through system expansion over the next 25 years. Table 6-8 illustrates the anticipated revenues and expenditures for operation and maintenance (O&M) activities within the MTPO area over the 25-year plan horizon. As previously stated, IMPROVE Act revenues for O&M activities are not reflected at this time, given that operating and maintenance revenues and expenditures are derived from a historic perspective. As increased funds are realized and expended, future LRTP updates will account for these additional dollars and expenditures for O&M activities.

Table 6-8
Streets & Highways Operations & Maintenance Revenues and Expenditures

Revenue Source	Anticipated O & M Revenues (2015-2040)	Anticipated O & M Costs (2015-2040)	Fiscal Constraint Summary*
Tennessee Revenue Sources			
TDOT**	\$ 169,163,000	\$ 169,163,000	\$0
City of Kingsport	\$ 88,552,000	\$ 88,552,000	\$0
Sullivan County***	\$ 321,648,000	\$ 321,648,000	\$0
Town of Mt Carmel	\$ 5,798,000	\$ 5,798,000	\$0
City of Church Hill	\$ 6,909,000	\$ 6,909,000	\$0
Hawkins County***	\$ 119,129,000	\$ 119,129,000	\$0
Sub-Total (TN)	\$ 711,199,000	\$ 711,199,000	\$0
Virginia Revenue Sources			
VDOT****	\$ 110,783,000	\$ 110,783,000	\$0
Sub-Total (VA)	\$ 110,783,000	\$ 110,783,000	\$0
Total TN and VA	\$ 821,982,000	\$ 821,982,000	\$0

* Funding balance after subtracting planned expenditures from anticipated revenues

** TDOT maintenance funds shown are for state maintained roadways for the complete counties of Sullivan and Hawkins Counties

*** County maintenance funds shown are for the complete counties of Sullivan and Hawkins Counties

**** VDOT maintenance funds were developed based on a review of VDOT's Maintenance and Operations Budgets 2012 thru 2017 for the Bristol District and derived from VDOT's Financial Planning Division, Assumptions - Constrained Long Range Plan documentation (October 2015)

Projections rounded to the nearest thousands

Public Transportation

The MTPO, in consultation with KATS, TDOT, and VDOT determined future operating revenue levels for transit for the MTPO area based on historic funding trends. Table 6-9 illustrates the revenues and expenditures for transit operations within the MTPO area over the 25-year plan horizon.

Table 6-9
Transit Operations & Maintenance Revenues and Expenditures

Revenue Source	Anticipated O & M Revenues (2015-2040)	Anticipated O & M Costs (2015-2040)	Fiscal Constraint Summary*
Tennessee Revenue Sources			
Operating Assistance - FTA 5307 (Federal)	\$ 29,782,000	\$ 29,782,000	\$0
Operating Assistance – Non-Federal Match	\$ 29,782,000	\$ 29,782,000	\$0
Total Operating Assistance	\$ 59,564,000	\$ 59,564,000	\$0

* Funding disposition after subtracting planned expenditures from anticipated revenues

Since MEOC and NET Trans largely operate outside of the MTPO area, operations and maintenance revenues and expenditures are not included in the 2040 LRTP.

6.3.2 Capital – Revenue & Expenses

This subsection summarizes the capital revenues and expenditures of the recommended 2040 LRTP, which is presented in Section 7.0 of this Plan.

The following is a summary of the 2040 LRTP's planned transportation improvements (by Streets and Highways and Public Transportation funding programs) balanced against anticipated revenues using Year of Expenditure (YOE) dollars, which have been forecasted to the year 2040.

Streets and Highways

The MTPO, in consultation with TDOT and VDOT, was able to determine future capital revenues for Streets and Highways for the MTPO area based on historic funding trends. A summary of planned improvements to roads and bridges, which includes roadway widening and new roads, transportation system management and intelligent transportation systems (ITS), and walkways and bikeways, are presented in Section 7.0.

Table 6-10 illustrates the revenues and expenditures of transportation improvements over the planning horizon within the Tennessee portion of the MTPO. The total budget for these planned improvements is \$492,465,000. Table 6-11 illustrates the revenues and expenditures of transportation improvements over the planning horizon within the Virginia portion of the MTPO. The total budget for these planned improvements is \$37,220,000. All anticipated funding is allocated on a project or program with no anticipated surplus in funds for streets and highways.

Public Transportation

Table 6-12 illustrates the revenues and expenditures of the planned improvements for transit projects over the planning horizon. A sizable amount of future revenues will be used for completion of KATS new transit facility and rolling stock replacement of existing and future year vehicles. Additionally, future year transit dollars are identified for service expansion, bus stops, benches, shelters, signs, technology improvements, and funds for pedestrian accommodations in support of KATS service.

As illustrated in Table 6-10 through Table 6-12, the MTPO's Financial Plan of the 2040 LRTP demonstrates fiscal constraint and complies with the federal requirement for developing a financially constrained long range transportation plan.

Table 6-10
Streets & Highways
Capital Revenues and Expenditures - Tennessee

2025		Budgeted				Remainder
Funding Programs	Revenue	Project Specific	Bridge Program	Safety/Traffic Program	Bike/Ped Program	
National Highway Performance Program (NHPP)	\$31,120,000	\$27,680,000		\$3,440,000		\$0
Surface Transportation Block Grant Program (S-STBG) State	\$2,169,000	\$530,000		\$1,093,000	\$546,000	\$0
NHPP Grouping, STBG Grouping, Safety Grouping, ITS/Traffic Operations/Safety	\$5,158,000			\$31,022,000		\$0
	\$19,268,000					
	\$6,596,000					
Bridge Rehabilitation & Replacement (BRR or BR)	\$7,503,000		\$7,503,000			\$0
Surface Transportation Block Grant Program (L-STBG) Local	\$23,086,000	\$21,870,000			\$1,216,000	\$0
Enhancement Funds (EHN, TAP, or RTP)	\$3,298,000				\$3,298,000	\$0
Other Federal-Aid Programs & Discretionary Funds	\$5,277,000	\$2,790,000			\$2,487,000	\$0
Local (All allocations in Sullivan County/Kingsport)	\$28,059,000	\$19,170,000			\$8,889,000	\$0
STA	\$5,277,000			\$5,277,000		\$0
IMPROVE Act	\$80,647,000	\$80,647,000				\$0
Totals	\$217,458,000	\$152,687,000	\$7,503,000	\$40,832,000	\$16,436,000	\$0

2040		Budgeted				Remainder
Funding Programs	Revenue	Project Specific	Bridge Program	Safety/Traffic Program	Bike/Ped Program	
National Highway Performance Program (NHPP)	\$62,555,000	\$62,490,000		\$65,000		\$0
Surface Transportation Block Grant Program (S-STBG) State	\$4,361,000	\$2,260,000		\$2,101,000		\$0
NHPP Grouping, STBG Grouping, Safety Grouping, ITS/Traffic Operations/Safety	\$10,368,000			\$62,357,000		\$0
	\$38,730,000					
	\$13,259,000					
Bridge Rehabilitation & Replacement (BRR or BR)	\$15,082,000		\$15,082,000			\$0
Surface Transportation Block Grant Program (L-STBG) Local	\$46,406,000	\$44,070,000		\$500,000	\$1,836,000	\$0
Enhancement Funds (EHN, TAP, or RTP)	\$6,629,000				\$6,629,000	\$0
Other Federal-Aid Programs & Discretionary Funds	\$10,607,000	\$5,780,000		\$827,000	\$4,000,000	\$0
Local (All allocations in Sullivan County/Kingsport)	\$56,403,000	\$36,120,000		\$4,958,500	\$15,324,500	\$0
STA	\$10,607,000			\$10,607,000		\$0
						\$0
Totals	\$275,007,000	\$150,720,000	\$15,082,000	\$81,415,500	\$27,789,500	\$0

2025 TN Capital Expenditures	
LRTP Roadway Projects	\$72,040,000
IMPROVE Roadway Projects	\$44,100,000
LRTP Bridge Program	\$7,503,000
IMPROVE Bridge Projects	\$34,767,000
LRTP Safety/Traffic Program	\$40,832,000
IMPROVE ITS	\$1,780,000
LRTP Bike/Ped Program	\$16,436,000
Total	\$217,458,000

2025 - Investments	
Roadway Improvements	53%
Bridge Improvements	19%
Safety/Traffic Operations	20%
Bike/Ped Improvements	8%
Total	100%

2040 TN Capital Expenditures	
LRTP Roadway Projects	\$150,720,000
LRTP Bridge Program	\$15,082,000
LRTP Safety/Traffic Program	\$81,415,500
LRTP Bike/Ped Program	\$27,789,500
Total	\$275,007,000

2040 - Investments	
Roadway Improvements	55%
Bridge Improvements	5%
Safety/Traffic Operations	30%
Bike/Ped Improvements	10%
Total	100%

	2025	2040	Total
TN - Capital Revenues	\$136,811,000	\$275,007,000	\$411,818,000
IMPROVE Act	\$80,647,000		\$80,647,000
Total Capital Revenues	\$217,458,000	\$275,007,000	\$492,465,000

2025 & 2040 TN Capital Expenditures	
LRTP Roadway Projects	\$222,760,000
IMPROVE Roadway Projects	\$44,100,000
LRTP Bridge Program	\$22,585,000
IMPROVE Bridge Projects	\$34,767,000
LRTP Safety/Traffic Program	\$122,247,500
IMPROVE ITS	\$1,780,000
LRTP Bike/Ped Program	\$44,225,500
Total	\$492,465,000

2025 & 2040 - Investments	
Roadway Improvements	54%
Bridge Improvements	12%
Safety/Traffic Operations	25%
Bike/Ped Improvements	9%
Total	100%

Table 6-11
Streets & Highways
Capital Revenues and Expenditures - Virginia

2025		Budgeted				Remainder
Funding Programs	Revenue	Project Specific	Bridge Program	Safety/Traffic Program	Bike/Ped Program	
Interstate, Primary, Secondary, and Statewide Construction	\$25,690,000	\$17,220,000	\$3,388,000	\$3,388,000	\$1,694,000	\$0
Totals	\$25,690,000	\$17,220,000	\$3,388,000	\$3,388,000	\$1,694,000	\$0

2040		Budgeted				Remainder
Funding Programs	Revenue	Project Specific	Bridge Program	Safety/Traffic Program	Bike/Ped Program	
Interstate, Primary, Secondary, and Statewide Construction	\$11,530,000		\$4,612,000	\$4,612,000	\$2,306,000	\$0
Totals	\$11,530,000	\$0	\$4,612,000	\$4,612,000	\$2,306,000	\$0

2025 VA Capital Expenditures	
LRTP Roadway Projects	\$17,220,000
LRTP Bridge Program	\$3,388,000
LRTP Safety/Traffic Program	\$3,388,000
LRTP Bike/Ped Program	\$1,694,000
Total	\$25,690,000

2025 - Investments	
Roadway Improvements	67%
Bridge Improvements	13%
Safety/Traffic Operations	13%
Bike/Ped Improvements	7%
Total	100%

	2025	2040	Total
VA - Capital Revenues	\$25,690,000	\$11,530,000	\$37,220,000
Total Capital Revenues	\$25,690,000	\$11,530,000	\$37,220,000

2040 VA Capital Expenditures	
LRTP Roadway Projects	\$0
LRTP Bridge Program	\$4,612,000
LRTP Safety/Traffic Program	\$4,612,000
LRTP Bike/Ped Program	\$2,306,000
Total	\$11,530,000

2040 - Investments	
Roadway Improvements	0%
Bridge Improvements	40%
Safety/Traffic Operations	40%
Bike/Ped Improvements	20%
Total	100%

2025 & 2040 VA Capital Expenditures	
LRTP Roadway Projects	\$17,220,000
LRTP Bridge Program	\$8,000,000
LRTP Safety/Traffic Program	\$8,000,000
LRTP Bike/Ped Program	\$4,000,000
Total	\$37,220,000

2025 & 2040 - Investments	
Roadway Improvements	46%
Bridge Improvements	21%
Safety/Traffic Operations	21%
Bike/Ped Improvements	11%
Total	100%

Table 6-12
Public Transportation
Capital Revenues and Expenditures

Transit - Capital Funding									
Revenue Source	2025 Horizon Year Rev Est.	2025 Horizon Year (Cost)	2025 Horizon Year (Difference)	2040 Horizon Year Rev Est	2040 Horizon Year (Cost)	2040 Horizon Year (Difference)	Total 2015 - 2040 Rev Est	Total 2015-2040 Horizon Year (Cost)	Total 2015 - 2040 Difference
KATS									
FTA 5307 Capital Assistance - Total	\$ 12,050,000	\$ 12,050,000	\$ -	\$ 17,237,000	\$ 17,237,000	\$ -	\$ 29,287,000	\$ 29,287,000	\$ -
Other Transit Providers Including KATS, MEOC, & NET Trans									
Other FTA Programs (FTA 5310, 5339) & Discretionary Funds - Total	\$ 1,979,000	\$ 1,979,000	\$ -	\$ 3,978,000	\$ 3,978,000	\$ -	\$ 5,957,000	\$ 5,957,000	\$ -
Total Capital Assistance	\$ 14,029,000	\$ 14,029,000	\$ -	\$ 21,215,000	\$ 21,215,000	\$ -	\$ 35,244,000	\$ 35,244,000	\$ -

7.0 RECOMMENDED PLANNED IMPROVEMENTS

This section includes the recommended planned improvements for the Kingsport MTPO area over the next 25 years. Needed transportation improvements were identified based on a review of previous planning efforts, agency involvement, citizen and stakeholder input, and results from the MTPO's regional travel demand model. Each transportation recommendation was evaluated based on the MTPO's established LRTP project selection criteria as presented in Section 2.0 and Appendix II. This information was then balanced against the MTPO's projected financial revenue availability.

Transportation improvements within the recommended plan are financially constrained (i.e. have been balanced against forecasted revenues presented in Section 6.0 of the LRTP).

7.1 PLANNED TRANSPORTATION IMPROVEMENTS

This subsection provides a complete listing of the 2040 LRTP planned transportation improvements, which are to be implemented over the 25-year plan horizon within the Kingsport MTPO area. These improvements can be implemented within the anticipated revenues that have been forecasted over the planning horizon. These improvements can be broken into two categories, programs and projects, as described below.

7.1.1 Improvement Programs

The 2040 LRTP includes the allocation of transportation revenues for three major programs: Transportation System Management (TSM)/ITS/Safety, Bridges, and Bicycle and Pedestrian improvements (i.e. Non-Motorized Modes).

7.1.1.1 Transportation System Management (TSM)/ITS/Safety

In an effort to address systems operations and management needs in a more short-term approach, funding has been allocated for the implementation of transportation system management (TSM) and intelligent transportation systems (ITS) solutions along with program funding for safety projects.

Table 7-1 contains allocated funding levels for these improvement project solutions which may include intersection and signal improvements, minor ramp improvements, and various other geometric, safety, and operational related improvements including ITS applications. As part of the MTPO's TIP development, project needs will be identified and funded from this program approach.

Table 7-1
2040 Planned TSM/ITS/Safety Improvements

Type of Improvement	Time Frame	Anticipated Funding Source	Total Estimated Funding
TSM/ITS/Safety Improvements - TN	2025	STBG/NHPP/HISP/Local	\$40,832,000
TSM/ITS/Safety Improvements - TN	2040	STBG/NHPP/HISP/Local	\$81,415,500
TSM/ITS/Safety Improvements - VA	2025	VDOT	\$3,388,000
TSM/ITS/Safety Improvements - VA	2040	VDOT	\$4,612,000
Total			\$130,247,500

Notes: TSM projects include a broad range of management and operational techniques designed to improve traffic flow, air quality, and movement of vehicles and goods, as well as enhance system accessibility and safety. TSM projects may include: interchange improvements on interstates (e.g. additional turning lanes and/or ramp reconfigurations, and/or signal improvements, signage, and lighting); intersection improvements on non-interstates (e.g. additional turning lanes and/or signal improvements, including pedestrian signals (when warranted), and/or signage and lighting); and other traffic operational improvements (e.g. signal timing, access management, traffic calming, etc.). Additionally, ITS projects are to be based on the Regional ITS Architecture which includes the following categories of project recommendations: Travel and Traffic Management, Public Transportation Management, Emergency Management, and Maintenance and Construction Management).

7.1.1.2 Bridge Rehabilitation and Replacement

In an effort to provide the MTPO with the ability to readily address bridge needs, funding has been allocated as shown in Table 7-2 for improvements to local and state bridges. These improvements could include activities such as bridge replacement or rehabilitation of aging or substandard bridges. As part of the MTPO's TIP development, project needs will be identified and funded from this program approach.

Table 7-2
2040 Planned Bridge Improvements

Type of Improvement	Time Frame	Anticipated Funding Source	Total Estimated Funding
Bridge Improvements - TN	2025	BRR/BR	\$ 7,503,000
Bridge Improvements - TN	2040	BRR/BR	\$15,082,000
Bridge Improvements - VA	2025	VDOT	\$3,388,000
Bridge Improvements - VA	2040	VDOT	\$4,612,000
Total			\$30,585,000

7.1.1.3 Alternative Transportation (Non-Motorized Modes)

Funding for transportation alternatives support greater travel and trip making by non-motorized modes (e.g. walking and biking). Improvements under this program may include bicycle and pedestrian facilities (e.g. sidewalks, bicycle lanes, bicycle routes, mobility paths, and greenways) and other accommodations (e.g. crosswalks, bike racks, wayfinding signs, lighting, etc.) that promote and support safe and convenient travel by non-motorized modes. Implementation strategies to accommodate facility improvements such as reducing the number of travel lanes or lane widths (i.e. a road diet) to add a bicycle facility or providing a neighborhood connection for safe and convenient walking and biking are considered transportation alternative solutions.

Table 7-3 provides a summary of funding levels for walkway and bikeway improvements within the MTPO area as part of the 2040 LRTP. Section 4.1.4 of the LRTP discusses sidewalk and bikeway recommendations within the MTPO area. Projects to be implemented from this program will come from the Kingsport MTPO's Regional Bicycle and Pedestrian Plan and those projects supportive of the 2040 LRTP goals, objectives, and Plan project selection criteria. The selection of pedestrian and bikeway improvements is to occur as part of the MTPO's TIP development to allow for coordination with other transportation improvements and programming decisions.

Table 7-3
2040 Planned Alternative Transportation Improvements

Type of Improvement	Time Frame	Anticipated Funding Source	Total Estimated Funding
Transportation Alternatives (Bicycle & Pedestrian Improvements) – TN	2025	Enhancement/RTP/NHPP /STBG/Local	\$16,436,000
Transportation Alternatives (Bicycle & Pedestrian Improvements) – TN	2040	Enhancement/RTP/NHPP /STP/Local	\$27,789,500
Transportation Alternatives (Bicycle & Pedestrian Improvements) – VA	2025	VDOT	\$1,694,000
Transportation Alternatives (Bicycle & Pedestrian Improvements) – VA	2040	VDOT	\$2,306,000
Total			\$48,225,500

7.1.2 Transportation Projects

This category includes planned, project-specific improvements for roadways (i.e. roadway widening, new roadway construction, and roadway reconstruction), bridges, transportation system management/safety, and intelligent transportation systems, which were prioritized according to the selection criteria outline in Section 2.3 and included in Appendix II. Projects shown in the following tables are expected to be implemented over the next 25 years. As shown in the tables, these projects are expected to be funded with dollars from the IMPROVE Act as well as traditional highway funding programs.

Planned roadway improvements of the Tennessee portion of the MTPO are contained in Table 7-4 and the planned roadway improvements of the Virginia portion of the MTPO are contained in Table 7-5. It is important to note that projects in the following tables are presented by state portion of the MTPO planning area (i.e. Tennessee and Virginia) for funding purposes only and that projects are assumed to be implemented and constructed based on a logical terminus. Being a bi-state MPO area, there are a number of projects that connect at the state line. It is assumed that these projects would logically be developed as a complete project in concept with logical segments (e.g. segments of independent utility) for implementation.

**Table 7-4
Planned Project Improvements (Cost Feasible) - Tennessee**

ID	Horizon Year	Route	From Road	To Road	Description	Length (miles)	YOE Cost	Funding
L1	-	Fort Henry Drive (SR-36)	Interstate 81	Airport Road (SR-75)	Widen existing 2 lane road to 4 lanes to match Washington County portion	3.5	\$44,100,000	IMPROVE
L70	-	Interstate 81	Interstate 26 Interchange (Exit 57)	Virginia State Line	ITS expansion	18.8	\$1,780,000	IMPROVE
P22	-	Stone Drive (US-11)	Bridge over North Fork Holston River		Bridge replacement/rehabilitation	0.1	\$ 2,947,000	IMPROVE
P21	-	Stone Drive (US-11)	Bridge over North Fork Holston River		Bridge replacement/rehabilitation	0.1	\$1,745,000	IMPROVE
P27	-	Industry Drive	Bridge over Reedy Creek		Bridge replacement/rehabilitation	0.1	\$2,831,000	IMPROVE
P23	-	Fordtown Road	Bridge over CSX Railroad		Bridge replacement/rehabilitation	0.1	\$1,505,000	IMPROVE
P28	-	John B. Dennis (SR-93)	Bridge over CSX Railroad		Bridge replacement/rehabilitation	0.1	\$2,081,000	IMPROVE
P20	-	Fort Henry Drive (SR-36)	Wesley Road	Rock Springs Road	Replace northbound bridge over the South Fork Holston River for safety	0.1	\$9,250,000	IMPROVE
L57	-	Fort Henry Drive (SR-36)	Wesley Road	Rock Springs Road	Replace southbound bridge over the South Fork Holston River for safety	0.2	\$12,829,000	IMPROVE
P24	-	Old Blair Gap Road	Bridge over Walker Fort Creek		Bridge replacement/rehabilitation	0.1	\$496,000	IMPROVE
P25	-	Reedy Creek Lane	Bridge over Reedy Creek		Bridge replacement/rehabilitation	0.1	\$232,000	IMPROVE
P26	-	Meadow Brooke Lane	Bridge over Reedy Creek		Bridge replacement/rehabilitation	0.1	\$851,000	IMPROVE
L54	2025	Clinchfield Street	Main Street	Stone Drive (US-11)	Coordinate signal system to improve traffic flow	1.2	\$320,000	L-STBG
L62	2025	Stone Drive (US-11)	Gibson Mill Road	Deneen Lane	Coordinate signal system	2.8	\$190,000	NHPP
L22	2025	Stone Drive (US-11)	John B. Dennis (SR-93)	Cleek Road	Improve intersections and coordinate signal timings	3.1	\$1,080,000	NHPP
L12	2025	Fort Henry Drive (SR-36)	Moreland Drive/ Hemlock Road	Interstate 81 (I-81)	Improve intersections, coordinate signal timings, and evaluate driveway cuts	1.4	\$1,900,000	NHPP
L20	2025	Stone Drive West (US-11)	Kaywood Avenue	Granby Road	Install signal system with advanced warning signals to improve safety at intersections	2.5	\$80,000	NHPP
L53	2025	Bloomingtondale Pike	John B. Dennis (SR-93)	Packinghouse Road	Improve shoulders and geometry with spot safety improvements	1.5	\$1,270,000	Local
L35	2025	East Sullivan Street	Church Circle	Main Street	Widen to 2/3 lanes with multimodal and aesthetic improvements	1.0	\$6,330,000	Local
L11	2025	Fort Henry Drive (SR-36)	John B Dennis (SR-93)	Moreland Drive / Hemlock Road	Improve intersections and coordinate signal timings; install median where non-existent	2.0	\$950,000	NHPP
L17	2025	Tranbarger Drive	Lynn Garden Drive (SR-36)	Virgil Avenue	Improve shoulders and geometry with spot safety improvements with additional safety improvements	1.0	\$920,000	Local
L65	2025	Interstate 26	John B. Dennis (SR-93)	I-26 Exit 6 (SR-347 Rock Springs Road)	Add eastbound truck climbing lane	1.9	\$2,790,000	NHFP
L60	2025	Lincoln Street	John B. Dennis (SR-93)	Wilcox Drive (SR-126)	Coordinate signal system	1.7	\$630,000	NHPP
L58	2025	John B. Dennis (SR-93)	Stone Drive (US-11)	Bloomingtondale Pike	Implement access management	2.4	\$760,000	NHPP

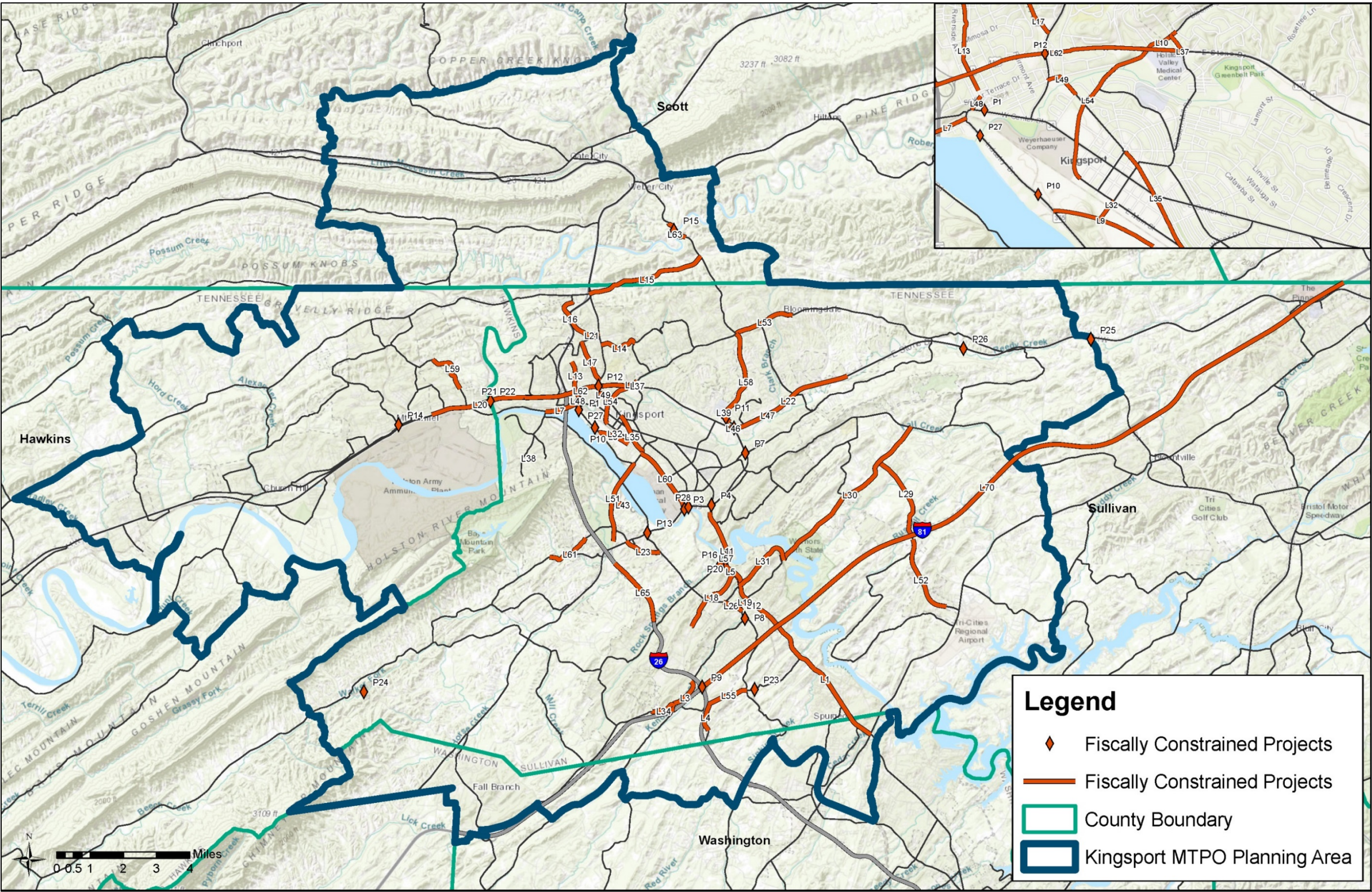
ID	Horizon Year	Route	From Road	To Road	Description	Length (miles)	YOE Cost	Funding
L49	2025	West Sullivan Street	Roller Street	Lynn Garden Drive	Widen from 2 to 3 lanes	0.3	\$3,170,000	Local
L43	2025	Jared Drive	Sluice Bridge	Wilcox Drive (SR-126)	New 2-lane roadway linking Moreland Drive and Wilcox Drive at Jan Way	0.2	\$2,280,000	Local
L14	2025	Gravelly Road	Lynn Garden Drive (SR-36)	Shipps Spring Road	Improve shoulders and geometry with spot safety improvements	0.9	\$840,000	L-STBG
L21	2025	May Avenue	Bell Ridge Drive	Lynn Garden Drive	Improve shoulders and geometry with spot safety improvements	0.4	\$320,000	HSIP
L52	2025	Airport Parkway (SR-357)	Interstate 81	Airport Road (SR-75)	Improve median breaks and add left turn lanes at various intersections	2.0	\$570,000	NHPP
L59	2025	Lewis Lane	Rearden Lane	Ripley Street	Improve shoulders and geometry with spot safety improvements	1.2	\$1,040,000	Local
L19	2025	Lebanon Road	At Fort Henry Road (SR-36)	Colonial Heights Road	Improve sight distance and extend left turn lanes	0.1	\$440,000	L-STBG
L37	2025	Gibson Mill Road	Stone Drive (US-11)	Bloomingtondale Pike	Widen from 2 to 3 lanes as part of Gibson Mill Road improvements	0.1	\$2,410,000	Local
P12	2025	Lynn Garden Drive	Stone Drive (US-11)		Improve interchange ramps to alleviate weaving issues	-	\$530,000	S-STBG
L13	2025	Fairview Avenue	Stone Drive West (US-11)	Virgil Avenue	Improve shoulders and geometry with spot safety improvements	0.9	\$790,000	Local
L16	2025	Bell Ridge Road / Drive	May Avenue	Harrison Avenue	Improve shoulders and geometry with spot safety improvements	1.1	\$960,000	Local
L46	2025	Stone Drive (US-11)	John B. Dennis (SR-93)		Extend left turn lanes on Stone Drive under John B. Dennis interchange	0.2	\$7,600,000	NHPP
L61	2025	Reservoir Road	Saratoga Road	Hood Road	Improve shoulders and geometry with spot safety improvements	1.1	\$990,000	HSIP
P3	2025	John B. Dennis (SR-93)	Lincoln Street		Extend length of interchange ramps	-	\$270,000	NHPP
P4	2025	John B. Dennis (SR-93)	Fort Henry Drive (SR-36)		Extend length of interchange ramps	-	\$2,530,000	NHPP
P5	2025	John B. Dennis (SR-93)	Stone Drive (US-11)		Extend length of interchange ramps	-	\$2,530,000	NHPP
P7	2025	John B. Dennis (SR-93)	Orebank Road		Construct new interchange exit ramp northbound	-	\$2,150,000	NHPP
L5	2025	Fort Henry Drive (SR-36)	Holston River Bridge	Hemlock Road	Safety improvements, install median, add center turn lane (consider widening bridge over railroad tracks and widening lanes near railroad bridge)	0.8	\$4,560,000	NHPP
P13	2025	John B. Dennis (SR-93)	Moreland Drive		Improve interchange ramps on south side	-	\$610,000	NHPP
P11	2025	John B. Dennis (SR-93)			Realign intersections at Indian Path Medical Center and Kroger to improve safety	-	\$1,270,000	NHPP
L23	2025	Wilcox Drive (SR-126)	John B Dennis (SR-93)	Moreland Drive	Extend 4-lane roadway as economic development occurs	0.9	\$20,270,000	L-STBG
L47	2040	Stone Drive (US-11)	John B. Dennis (SR-93)	New Beasonwell Road	Widen from 4/5 to 6 lanes	1.7	\$37,930,000	NHPP
L30	2040	Fall Creek Road	Colonial Heights Road	Memorial Blvd (SR-126)	Improve shoulders and geometry with spot safety improvements	4.6	\$5,780,000	L-STBG
L51	2040	Wilcox Drive (SR-126)	John B. Dennis (SR-93)	Industry Drive	Replace center turn lane with raised landscaped median, providing left turn lanes where needed	2.0	\$450,000	S-STBG
L31	2040	Hemlock Road	Fort Henry Drive (SR-36)	Fall Creek Road	Improve shoulders and geometry with spot safety improvements, add multiuse path on north side of roadway to link to park	1.6	\$2,350,000	Local

ID	Horizon Year	Route	From Road	To Road	Description	Length (miles)	YOE Cost	Funding
L10	2040	Bloomingtondale Pike	Stone Drive West (US-11)	Orbin Drive	Widen from 2 to 3 lanes to include center turn lane with paved shoulders and other safety and geometric spot safety improvements	0.2	\$3,250,000	L-STBG
P1	2040	Center Street	Sullivan Street	Fairview Avenue	Reconfigure turning movements with roundabout	-	\$1,810,000	S-STBG
L32	2040	Cherokee Street Viaduct	MLK Extension	Main Street	Construct vehicular and non-motorized bridge over railroad tracks	0.2	\$5,780,000	HSIP
L4	2040	Eastern Star Road	Mitchell Road	Fordtown Road	Widen from 2 to 3 lanes as economic development occurs	0.7	\$4,150,000	Local
L55	2040	Fordtown Road	Eastern Star Road	Lebanon Road	Install left turn lanes at key intersections through industrial park	1.0	\$6,140,000	Local
L34	2040	Cox Hollow Road	Snapps Ferry	Interstate 81 MM 56	Widen from 2 to 3 lanes as economic development occurs	0.6	\$4,520,000	Local
P10	2040	Industry Drive	At CSX railroad overpass		Replace/widen railroad overpass approximately .25 miles east of Kingsport City garage with possibility to convert to at-grade crossing	-	\$7,220,000	L-STBG
P8	2040	Lebanon Road	Kendricks Creek Road	Grove Drive	Replace signalized intersection with roundabout	-	\$1,440,000	Local
L29	2040	Airport Parkway (SR-357)	Fall Creek Road	Interstate 81	Extend SR-357 northbound with limited access 2-lane cross section with wide shoulders	2.1	\$14,450,000	NHPP
L3	2040	Tri-Cities Crossing	Kendricks Creek Road	Fordtown Road	Widen from 2 to 3 lanes with improved left turns as economic development occurs	1.0	\$4,880,000	L-STBG
P14	2040	Hammond Avenue	Near Main Street		Replace railroad overpass to improve traffic flow and emergency services	-	\$7,220,000	HSIP
L9	2040	Lincoln Street/MLK Jr Drive Connector	Lincoln Street/MLK Jr Drive	Industry Drive (SR-355)	Extend Lincoln Street/MLK JR Drive to Industry Drive	0.8	\$11,920,000	L-STBG
L7	2040	Netherland Inn Road	Center Street (SR-36)	Ridgefields Road	Widen from 2 to 3 lanes	0.7	\$9,030,000	Local
L48	2040	Stone Drive (US-11) / Center Street Connector	Stone Drive (US-11) near Interstate 26 ramp	Center Street	New 3-lane roadway connecting Stone Drive to Downtown Kingsport via Riverside Drive and Interstate 26 ramp	0.1	\$5,420,000	Local
L18	2040	Summerville Road	Fort Henry Drive (SR-36)	New Summerville Road	Improve shoulders and geometry with spot safety improvements	1.8	\$2,170,000	Local
P16	2040	Rock Springs Road	Railroad Tunnel		Replace / widen railroad tunnel	-	\$3,790,000	NHPP
P9	2040	Interstate 26	Interstate 81		Add capacity at intersections including study of frontage roads along interstates	-	\$6,320,000	NHPP
L39	2040	Indian Trail Drive North	Stone Drive (US-11)	John B. Dennis (SR-93)	Re-alignment of existing horizontal curves and new two-lane roadway connection to John B. Dennis (SR-93)	0.1	\$2,350,000	L-STBG
L26	2040	Moreland Drive - Lebanon Road Connector	Near Shady Side Drive	Kendricks Creek Road	New 3-lane bypass away from Fort Henry Drive	0.5	\$8,670,000	L-STBG
L38	2040	Huntington Hills Connector	Birchwood Road	Burke Road	New 2-lane roadway to provide additional access	0.1	\$900,000	Local

Table 7-5
Planned Project Improvements (Cost Feasible) - Virginia

ID	Horizon Year	Route	From Road	To Road	Description	Length (miles)	YOE Cost	Funding
L15	2025	Carters Valley Rd East (SR-704)	Lynn Garden Diver (SR-36)	Wadlow Gap Road (SR-224)	Improve shoulders and geometry with spot safety improvements	2.9	\$2,530,000	VDOT
L63	2025	Wadlow Gap Road (SR-224)	Near North Fork Holston River		Straighten horizontal curves near North Fork Holston River bridge	0.6	\$7,600,000	VDOT
P15	2025	Wadlow Gap Road (SR-224)	North Fork Holston River		Replace bridge over North Fork Holston River	-	\$7,090,000	VDOT

Figure 7-1
2040 Planned Cost Feasible Roadway Improvements



7.1.3 Public Transportation

This category includes planned improvements for transit and transit related investments.

7.1.3.1 Transit

Table 7-6 contains a listing of the public transportation improvements of the 2040 LRTP.

Table 7-6
2040 Planned Transit Improvements (Cost Feasible)

Fixed Route Service - Vehicle Replacements							
2025	2040	Total Vehicles		2025	2040		Total
1	2	3		\$180,000	\$390,000		\$570,000
2	2	4		\$361,000	\$390,000		\$751,000
2	2	4		\$361,000	\$390,000		\$751,000
1	1	2		\$282,000	\$305,000		\$587,000
1	1	2		\$282,000	\$305,000		\$587,000
1	2	3		\$180,000	\$390,000		\$570,000
1	2	3		\$180,000	\$390,000		\$570,000
1	2	3		\$180,000	\$390,000		\$570,000
2	2	4		\$361,000	\$390,000		\$751,000
2	2	4		\$361,000	\$390,000		\$751,000
2	2	4		\$361,000	\$390,000		\$751,000
2	2	4		\$361,000	\$390,000		\$751,000
18	22	40	Sub-Total	\$3,450,000	\$4,510,000		\$7,960,000

ADA / Paratransit Service - Demand Response - Vehicle Replacements							
2025	2040	Total Vehicles		2025	2040		Total
2	3	5		\$180,000	\$293,000		\$473,000
2	3	5		\$180,000	\$293,000		\$473,000
2	3	5		\$180,000	\$293,000		\$473,000
2	3	5		\$180,000	\$293,000		\$473,000
2	3	5		\$180,000	\$293,000		\$473,000
2	3	5		\$180,000	\$293,000		\$473,000
2	3	5		\$180,000	\$293,000		\$473,000
14	21	35	Sub-Total	\$1,260,000	\$2,051,000		\$3,311,000

32	43	75	Grand Total	\$4,710,000	\$6,561,000		\$11,271,000	Existing Vehicles (Replacements)
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2025	2040	Total Vehicles		2025	2040			New Service
2	6	8		\$180,000	\$586,000		\$766,000	East Side Route (Additional Service in 2025)
2	6	8		\$180,000	\$586,000		\$766,000	Demand Response Service (Additional in 2025)
4	12	16	Sub-Total	\$360,000	\$1,172,000		\$1,532,000	New Vehicles

36	55	91	Grand Total	\$5,070,000	\$7,733,000		\$12,803,000	Grand Total
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	2025	2040			Other Transit Items
	\$8,250,000	\$5,000,000		\$13,250,000	Transit Facility & Additional in 2025
	\$150,000	\$2,482,000		\$2,632,000	Bus Shelters & Benches
	\$130,000	\$2,000,000		\$2,130,000	System Signs & Amenities
	\$129,000	\$1,500,000		\$1,629,000	IVR Software / ITS-AVL
	\$150,000	\$500,000		\$650,000	Automatic Passenger Counters
	\$150,000	\$2,000,000		\$2,150,000	Active Transportation Improvements
Sub-Total	\$8,959,000	\$13,482,000		\$22,441,000	Other Transit Items
Grand Total	\$14,029,000	\$21,215,000		\$35,244,000	Grand Total

7.2 UN-FUNDED NEEDS (ILLUSTRATIVE LIST)

Table 7-7 provides a listing of un-funded transportation improvement projects within the MTPO area. These projects, which are illustrated on Figure 7-2, are not financially affordable, given current assumptions on availability of future transportation funds over the plan horizon. As funding becomes available, these projects will need to be amended into the financially constrained portion of the 2040 LRTP in order to be funded.

7.3 SHORT RANGE STRATEGIES

Short-range strategies (3-5 year horizon) have been identified through the development of this plan. Implementation of these strategies is intended to result in a more detailed understanding of specific elements and demands on the transportation system, and ultimately aid in advancing sound transportation investments within the region. The short range strategies the MTPO should undertake in the next 3-5 years include:

- Evaluation of regional transportation service options between major regional commuting corridors (i.e. Johnson City, Scott County, VA, and Bristol)
- Conducting land use and transportation plans for high growth areas within the region (i.e. I-81 & I-26 area)
- Continued participation in local, regional, and state hazard mitigation and emergency preparedness plans
- Continued planning of active transportation solutions within the region

Figure 7-2
Illustrative Vision Plan Projects (Unfunded) Roadway Improvements

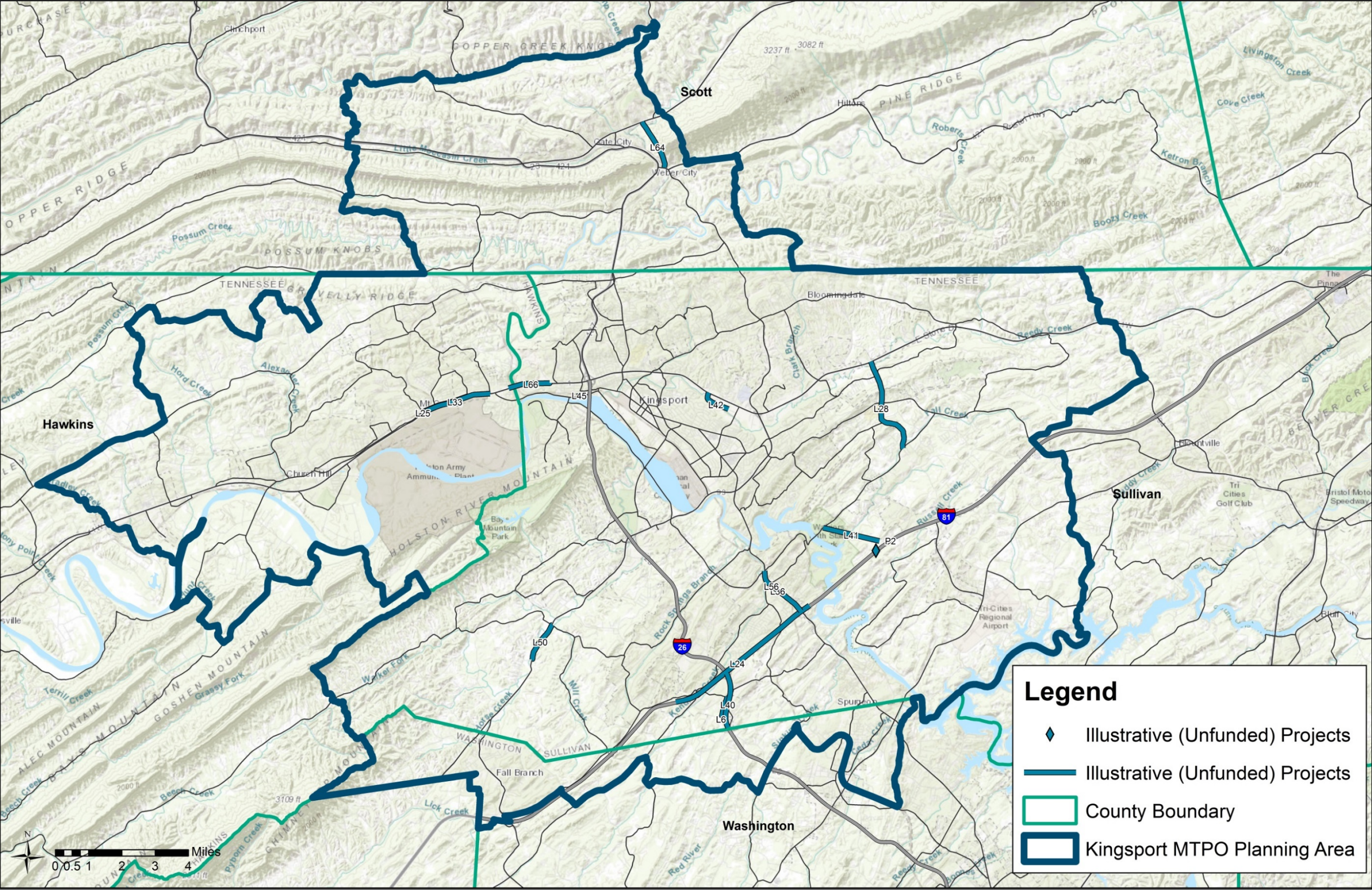


Table 7-7
Unfunded Illustrative Vision Plan Projects

ID	Horizon Year	Route	From Road	To Road	Description	Length (miles)	Estimated Projected Cost (2017 \$)
L36	Illustrative	Fort Henry Drive (SR-36)	Moreland Drive	Interstate 81	Frontage road to improve traffic along Fort Henry Drive	1.4	\$12,000,000
L33	Illustrative	BAE Frontage Road	Old Armory	Hammond Avenue	Develop in conjunction with economic development along Netherland Inn Road	1.7	\$12,000,000
L25	Illustrative	Stone Drive (US-11)	Hammond Avenue	East Avenue	Widen from 4 to 6 lanes	1.2	\$22,000,000
L50	Illustrative	Sullivan Garden Parkway (SR-93)	Lonestar Road	Derby Drive	Widen from 2 to 4 lanes	1.0	\$8,200,000
L24	Illustrative	Interstate 81	Fort Henry Drive (SR-36)	Tri-Cities Crossing (MM 56)	Widen from 4 to 6 lanes	4.0	\$18,000,000
L56	Illustrative	Fort Henry Drive (SR-36)	Lebanon Road	Wendover Drive	Improve vertical geometry	0.1	\$3,300,000
L66	Illustrative	Stone Drive (US-11)	Deneen Lane	East Avenue	Widen from 4 to 6 lanes	1.0	\$11,000,000
L40	Illustrative	Interstate 26	MM 8	MM 10	Widen from 4 to 6 lanes	1.4	\$13,000,000
L28	Illustrative	Airport Parkway (SR-357)	Stone Drive East (US-11 W/SR-1)	Fall Creek Road	Extend SR-357 northbound with limited access 2-lane cross section with wide shoulders	2.5	\$19,000,000
L6	Illustrative	Mitchell Road Connector	Fordtown Road	Eastern Star Road	Construct new 3 lane roadway to link Fordtown Rd to Eastern Star at I-26 Interchange	0.6	\$5,100,000
L64	Illustrative	Moccasin Gap Bypass	Route 71	Wadlow Gap Road	Construct new 2-lane divided highway with connection to Filter Plant Road	1.2	\$46,811,000
L45	Illustrative	Netherland Inn Road / Stone Drive Connector	Union Street	Netherland Inn Road	Realign and reconstruct Union Street to improve access to Netherland Inn Road and economic redevelopment areas	0.1	\$5,000,000
P2	Illustrative	Interstate 81	Buttermilk Road		Construct new interchange		\$3,200,000
L42	Illustrative	Jack White Drive	Idel Hour Road		Extend west to connect to Stone Drive at Idel Hour Road	0.7	\$11,000,000
L41	Illustrative	I-81 Buttermilk Road Connection	Buttermilk Road	Fall Creek Road	New 2-lane connector to link proposed interchange at Buttermilk Road	1.4	\$8,000,000

8.0 ENVIRONMENTAL REVIEW

The FAST Act calls for greater environmental consideration in the development of long range transportation plans. The Kingsport MTPO, as part of the 2040 LRTP, has developed an initial understanding of environmental conditions, which can be used to assist in the project development process once a project has moved from the planning stage of this document to the programming stage (e.g. the TIP) for ultimate project implementation.

The following section includes an initial review of the proposed LRTP projects (presented in Section 7.0 of this Plan) relative to environmental features such as, communities of concern (e.g. environmental justice populations), historic and cultural resources, wetlands, and floodplain areas. It also provides a discussion of potential environmental mitigation activities at the regional level. Lastly, a discussion on climate change and greenhouse gas reduction (GHG) strategies is reflected in the MTPO's 2040 LRTP along with transportation resiliency strategies as they relate to mitigating the impacts of climate change and extreme weather events on the region's transportation systems.

8.1 TITLE VI AND ENVIRONMENTAL JUSTICE

Federal law requires that MPOs ensure that individuals not be excluded from participating in, denied the benefit of, or subject to discrimination under any program or activity receiving federal funding on the basis of race, color, national origin, age, sex, or disability.

While Title VI and Environmental Justice (EJ) concerns have most often been raised during project development, it is important to recognize that the law also applies equally to the processes and products of planning. Title VI of the Civil Rights Act prohibits discrimination on the basis of race, color, or national origin. Environmental Justice Executive Order 12898, Federal Actions to Address Environmental Justice (EJ) in Minority and Low-Income Populations, calls for the identification and addressing of disproportionately high and adverse human health or environmental effects of its programs, policies and activities on minority populations and low-income populations.

Appendix III – Title VI and Environmental Justice Assessment documents the MTPO's efforts to determine benefits and burdens to EJ communities within the MTPO area relative to the 2040 LRTP. The analysis indicates that in general, neither low-income nor minority populations in the region would endure high and disproportionate impacts due to the projects proposed by the 2040 LRTP. Complete findings of this assessment, potential project impacts, and mitigation strategies are presented in Appendix III.

8.2 HISTORIC, CULTURAL, AND NATURAL RESOURCES

As part of the 2040 LRTP, an environmental assessment of historic, cultural, and natural resources was utilized in the development of project scoring criteria, as found in Section 2.3 and Appendix II. The intent of including the environmental, cultural, and historical scoring criteria is to incorporate environmental considerations early in the planning process so that the project development processes are more streamlined, by including realistic assumptions of potential environmental considerations, impacts, and costs.

Appendix IV – Environmental Review, documents the MTPO’s efforts to understand environmental conditions within the MTPO early in the planning process. The environmental assessment includes:

- a discussion of potential environmental impacts and avoidance and mitigation activities at the policy/strategy level based on environmental regulatory framework,
- a comparison of project recommendations in the 2040 LRTP with available local, state and federal, maps and inventories of historic and natural resources, and
- identification of environmentally sensitive areas and mitigation strategies that could be considered to reduce potential impacts related to transportation improvement projects.

Equally as important to this process is Title 23 U.S.C. 139: Efficient Environmental Reviews for Project Decision-making, which provides for increased participation and coordination early in the planning process, as projects move from the MTPO’s LRTP into the project development process. This early coordination and consultation with the various responsible resource agencies is documented in Appendix I. Complete findings of this assessment, potential project impacts, and mitigation strategies are also presented in Appendix IV.

8.3 ENVIRONMENTAL MITIGATION STRATEGIES

As previously discussed, the FAST Act continues the SAFETEA-LU intention to enhance the consideration of environmental issues and impacts within the transportation planning process. As such, metropolitan and statewide transportation plans must include a discussion of types of potential environmental mitigation activities as part of their plans. The following strategies will be utilized by the MTPO to address and consider environmental impacts relative to the decisions of the MTPO early in the planning process:

- Embrace the principles of Context Sensitive Solutions (CSS) as a means of developing transportation facilities that fit its physical setting and preserves scenic, aesthetic, historic, and environmental resources, while maintaining safety and mobility.
- Continue to utilize the Region’s GIS to identify environmental features (both physical and social) early in the planning process as a means of avoidance and/or to establish early corrective action plans prior to project construction.
- Partner with local, state, and federal resource agencies early in the planning process to identify potential issues relative to projects under consideration in the MTPO’s plans and programs to develop appropriate solutions prior to actually beginning the project development process.
- Minimize the construction of transportation investments that would impact wetlands.
- Construct greenways as a means of preserving environmentally sensitive lands from inappropriate development.

Environmental impacts cannot always be avoided. Mitigation is the attempt to offset potential adverse effects of human activity on the environment. Mitigation, as listed below,

is one of the last steps in the avoidance and minimization process. The mitigation areas and activities will be consistent with legal and regulatory agencies pertaining to human and natural environments. Steps to take in the project development process include the following in relation to environmental impacts:

- Avoid Impacts - The first strategic step in the environmental process is to avoid negative impacts altogether.
- Minimize Impacts - If impacts cannot be avoided, they should be minimized by limiting the degree or magnitude of the proposed activity or project.
- Mitigate Impacts – Typical approaches to mitigation include:
 - Rectifying impacts - Repair, rehabilitate, or restore the impacted resource.
 - Reducing or eliminating impacts - Preservation and maintenance operations during the life of the proposed activity or project should seek to reduce or eliminate environmental impacts over time.
 - Compensating for impacts - A substitute or replacement resource or environmental function of equivalent or greater value could be implemented.

The MTPO will continue to work with the agencies, as defined in the MTPO's Public Participation Plan and Consultation process as projects proceed in the project development process, as appropriate. The MTPO recognizes that not every project will require the same level of mitigation; different projects may utilize more mitigation while others require very little. All impacts on environmentally sensitive areas will be analyzed on a project by project basis to examine what mitigation strategies are appropriate.

The following mitigation activities will be considered on a project by project basis. For major construction projects, such as new roadways, or for projects that may have a region-wide environmental impact, a context sensitive solution process should be considered in which considerable public participation and alternative design solutions are used to lessen the impact of the project.

Table 8-1 details mitigation activities that could be considered to deal with the primary areas of concern.

**Table 8-1
Potential Mitigation Activities**

Environmental Concern	Potential Mitigation Activities
Water Quality and Hydrology	Avoidance, Minimization, Mitigation; Maintain meanders in streams; minimize concrete channelization of streams; reduce use of riprap on river banks opting instead for natural vegetation; wetland mitigation banking; implementation of green infrastructure; bridge sensitive areas; improve stormwater management; compensation (could include preservation, creation, restoration, in lieu fees, riparian buffers); use of reduced-salt or reduced-sand road treatment mixtures in sensitive areas; use of best practices regarding herbicide use
Threatened and Endangered Species, Natural Areas	Avoidance, Minimization, Mitigation; reduction of habitat fragmentation; habitat banking; Smart Growth Concepts; wildlife fencing; maintenance of vegetation along infrastructure rights-of-way; use of native trees, shrubs, and warm season grasses for stabilization of disturbed areas; maintenance of important wildlife movement corridors, possible provision of wildlife crossings; Memoranda of Agreements for species management
Noise	Avoidance, Minimization, Mitigation; Truck restrictions such as the use of engine brakes; noise barriers; construction schedule considerations; speed control; pavement material considerations; roadway design (Context Sensitive Design)
Air Quality and Climate Change	Minimization, Mitigation, Adaptation; Establishing a low-carbon fuel standard (lcfs); Setting regional targets for per capita GHG Green House Gas (GHG) reductions from passenger vehicles; facility energy code standards; reduce and minimize impacts of exposed soils; minimization of idling, both passenger and commercial vehicles through congestion reduction and on-board technologies for freight transport
Neighborhoods, Communities, Homes & Businesses	Minimization, Mitigation; Context Sensitive Design; transit-oriented development (TOD); Smart Growth concepts; noise abatement; ensuring environmental justice; avoidance, minimization of agricultural lands; construction schedule coordination with farm operators; reimbursements to farm operators for loss of income; traffic calming design considerations
Cultural Resources	Avoidance, Minimization, Mitigation: Design considerations, design exceptions, and variances that avoid or minimize impacts to historic properties should be considered first. If avoidance or minimization isn't possible mitigation measures should be considered in cooperation with the appropriate resource agencies and depend on the type of resource being impacted.
Parks and Recreation Areas	Avoidance, Minimization, Mitigation; design considerations; replacement of impacted facilities
Underground Storage Tanks & Contaminated Sites	Avoidance, Minimization, Mitigation; design exceptions and variances; environmental compliance monitoring

8.4 CLIMATE CHANGE

Climate change has become an increasingly important policy issue in transportation given, not only the negative impacts of human activity and carbon emissions from vehicles, but also the associated impacts of climate change and extreme weather events on our transportation systems assets. While a much debated topic, there is general scientific consensus that the earth is experiencing a warming trend and that human-induced increases in atmospheric greenhouse gases (GHGs) are a significant cause. The combustion of fossil fuels is by far the biggest source of GHG emissions. Additionally, our nation's transportation infrastructure is vulnerable to associated weather patterns and extreme weather events (e.g. flooding, drought, tornadoes, fog, etc.) that impact our transportation assets (i.e. roads, bridges, transit systems, etc.) today and in the future.

Greenhouse Gas Emissions

In the United States, transportation is the second largest source of GHG emissions, after electricity generation. Transportation accounts for 26% of United States greenhouse gas emissions based on recent data. The largest sources of transportation-related GHG emissions include passenger cars and light-duty trucks, including sport utility vehicles, pickup trucks, and minivans.

A wide range of strategies are available to reduce GHG emissions from the transportation sector. The Center for Climate Strategies, a nonpartisan nonprofit organization that assists governments with climate change issues, maintains a catalog of sample state-level GHG-reducing actions and policy options based on actions undertaken or considered by state, local, and private actors.

Table 8-2 provides a comparison of select transportation and land use GHG-reducing actions (from the Center for Climate Strategies Catalog of Sample State-Level GHG-Reducing Actions) to recommendations of the MTPO's 2040 LRTP. As illustrated in the table, there are a number of plan recommendations that work to reduce GHG emissions within the MTPO region.

Table 8-2
2040 LRTP Greenhouse Gas Reduction Strategies

Center for Climate Strategies Sample Transportation & Land Use GHG-Reducing Action	2040 LRTP
<p>PASSENGER VEHICLES</p> <p>Passenger Vehicle Technology</p> <ul style="list-style-type: none"> Hybrid buses <p>Passenger Vehicle Operations</p> <ul style="list-style-type: none"> Enforce speed limits <p>Fuel-Related Measures</p> <ul style="list-style-type: none"> Biodiesel expansion (biodiesel, liquefied petroleum gas, ethanol) Alternative fuel infrastructure development 	<ul style="list-style-type: none"> A number of the 2040 LRTP goals and objectives (see Section 2.0) relate to promoting investment solutions that reduce carbon and other harmful emissions from transportation. Efforts within the MTPO region and at a state level do exist relative to passenger vehicle GHG-reduction initiatives. For example, throughout TN the use of alternative fuel buses are being promoted and efforts are in place for expanding the infrastructure of available biodiesel facilities along the TN's interstate system. I-81 and I-26 through the MTPO area are part of TN's Biofuel Green Island Corridor Network with facilities available.
<p>LAND USE EFFICIENCY AND MODAL OPTIONS</p> <p>General Location Efficiency</p> <ul style="list-style-type: none"> Statewide growth management plan Smart growth planning, modeling, tools Land use, zoning, tax, & building code reform Use of flexible federal transportation funding Downtown revitalization Brownfield redevelopment Infill redevelopment Traffic calming <p>Increasing Low-GHG Travel Options</p> <ul style="list-style-type: none"> Full use of Congestion Mitigation and Air Quality (CMAQ) funds Improve transit service (frequency, convenience, quality) Transit marketing & promotion, including individualized transit marketing Expand transit infrastructure Guaranteed ride home Bike and pedestrian infrastructure Vanpooling and carpooling Park-and-ride lots Car sharing Telecommute, live-near-your-work, and compressed work week Require government agencies to use telecommuting Telecommuting centers, support, and incentives <p>Incentives and Disincentives</p> <ul style="list-style-type: none"> Commuter choice programs/parking cash-out 	<ul style="list-style-type: none"> Growth management provisions exist in Tennessee and the largest and fastest growing portion of the MTPO area is covered by growth management provisions (PC 1101). Additionally, Virginia State law requires jurisdictions to develop comprehensive plans which are linked to a community's zoning and subdivision regulations. Scott County and its municipalities have an adopted comprehensive plan which as prepared by LENOWISCO and used in the development of the 2040 LRTP. Land use, zoning, and revitalization and infill plans are in place in the MTPO area. Downtown Kingsport has seen great success in downtown redevelopment as a result of these plans. The City of Kingsport has a neighborhood traffic calming program and the MTPO has stated goals and objectives (see Section 2.0) that are consistent with location efficiency strategies. The MTPO and the 2040 LRTP fully support greater use of low-GHG travel options such as expanded transit services, promotion of TDM strategies as well as greater opportunities for sidewalk and bikeway infrastructure.
<p>HEAVY-DUTY VEHICLES</p> <p>Heavy-Duty Vehicle Operations</p> <ul style="list-style-type: none"> Enforce speed limits Improve traffic flow Truck stop electrification <p>Increasing Low-GHG Heavy-Duty Travel Options</p> <ul style="list-style-type: none"> Intermodal freight initiatives Feeder barge container service Increase rail capacity and address rail freight system bottlenecks 	<ul style="list-style-type: none"> There are a number of goals, objectives, and projects within the 2040 LRTP that address GHG reduction strategies for heavy duty vehicles and other vehicle operations. These include: <ul style="list-style-type: none"> Nearly \$124 million (25% of the MTPO region's transportation capital funds) in ITS, safety, and other traffic operational investments within the MTPO region over the next 25 years. Continued support for enhancements at the Tri-Cities airport including air cargo transportation

Center for Climate Strategies Sample Transportation & Land Use GHG-Reducing Action	2040 LRTP
<ul style="list-style-type: none"> • Shift freight movements from truck to rail • Promote strategies to ease the movement of freight to reduce GHG <p>Heavy-Duty Vehicle Incentives & Disincentives</p> <ul style="list-style-type: none"> • Procurement of efficient fleet vehicles (public, private, or other) <p>Intercity Passenger Travel: Aviation, Rail, & Bus</p> <ul style="list-style-type: none"> • Airport ground equipment • Intercity bus incentives and subsidies <p>Off-Road Vehicles (E.G., Construction Equipment, Etc.)</p> <ul style="list-style-type: none"> • Incentives for purchase of efficient vehicles and equipment • Improved operations, operator training • Increased use of alternative fuels or low-sulfur diesel 	<ul style="list-style-type: none"> ➢ Continued support of intercity bus service between surrounding communities ➢ Continued support of improvements to railroad infrastructure ➢ Continued support of improved traffic flow, signal operations, and access management.

In addition to the above GHG-reduction items for the Kingsport region, the State of Virginia has developed *A Climate Change Action Plan* under the direction of the Governor's Commission on Climate. The plan outlines recommendations for Virginia to reduce GHG emissions and includes transportation and land use strategies. Additionally, in 2009 TDOT developed a report titled, *Sustainable Transportation in Tennessee*, as a means of promoting greater internal awareness of sustainable transportation strategies, which TDOT could implement as part of their overall operations. The report defines sustainable transportation as a means of providing access and mobility across Tennessee in the most efficient and effective manner, while being a good steward of public funds and environmental resources, today and in the future.

Extreme Weather and Climate Related Events

Weather- and climate-related events are already affecting our transportation systems locally and across the United States. Impacts on the transportation system can be divided into several categories:

- Damage or destruction of key infrastructure,
- Upgrading existing infrastructure to prevent damage,
- Weather-related closure or disruption of transportation,
- Safety impacts of adverse weather,
- Health impacts on vulnerable populations from loss of access to services, and
- Changes in maintenance and operations costs for pavement or maintenance and/or snow or debris removal.

Specific areas of concerns for the Kingsport MTPO area that can impact the transportation system's resiliency that deal with the natural environment and disasters include:

- Severe weather (tornados, blizzards, etc.)
- Flooding
- Seismic events
- Rockslides
- Train wrecks

In 2015, TDOT participated in one of seven pilot projects funded by FHWA that assesses the vulnerability of the state's transportation infrastructure to extreme weather. The statewide vulnerability assessment included all transportation infrastructures (roads, rivers, rail, transit, and aviation) and identified the associated impacts of extreme weather on those transportation assets. While the Kingsport region scores relatively low in terms of vulnerability compared to other regions of the state, the MTPo area does contain a number of critical corridors (roadways and rail) and bridges vital to commerce and individual travel.

The MTPo will continue to work with TDOT, VDOT, and other stakeholders on options to evaluate and improve projects, practices, and programs in response climate impacts on transportation infrastructure and services in the MTPo area. As opportunities present themselves, the Kingsport MTPo will work to incorporate future vulnerability assessments and transportation resiliency practices into the MTPo's planning processes.