

# KINGSPORT METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION

## 2035 Long Range Transportation Plan (LRTP)



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## TABLE OF CONTENTS

|         |   |      |
|---------|---|------|
| 1.0     | Introduction .....  | 1-1  |
| 1.1     | Metropolitan Planning .....                                       | 1-2  |
| 1.2     | Legal Requirements of the Plan.....                               | 1-3  |
| 1.3     | Plan Adoption and Amendment Process.....                          | 1-4  |
| 1.4     | Plan Implementation.....  | 1-5  |
| 2.0     | Guiding Principles .....  | 2-1  |
| 2.1     | National Emphasis.....  | 2-1  |
| 2.2     | Regional Goals.....   | 2-1  |
| 2.3     | Program Initiative.....   | 2-4  |
| 3.0     | Planning Area and Region.....                                     | 3-1  |
| 3.1     | Demographics .....  | 3-1  |
| 3.1.1   | Population Trends and Forecasts .....                             | 3-1  |
| 3.1.2   | Age Trends and Forecasts .....                                    | 3-4  |
| 3.1.3   | Household Trends and Forecasts.....                               | 3-4  |
| 3.1.4   | Employment Trends and Forecasts .....                             | 3-8  |
| 3.2     | Natural & Cultural Environment and Land Development Patterns..... | 3-11 |
| 3.2.1   | Natural Environment.....  | 3-11 |
| 3.2.2   | Historic and Cultural Environment .....                           | 3-13 |
| 3.2.3   | Current and Future Land Use .....                                 | 3-17 |
| 3.2.4   | Growth Boundaries.....  | 3-18 |
| 3.2.5   | Plans, Programs, and Policies .....                               | 3-22 |
| 3.3     | Summary .....   | 3-23 |
| 4.0     | Public & Stakeholder Participation.....                           | 4-1  |
| 4.1     | Public Meetings .....   | 4-1  |
| 4.2     | Project Website and Online Public Survey.....                     | 4-1  |
| 4.3     | Media Outreach.....   | 4-2  |
| 4.4     | IAC Meetings.....   | 4-2  |
| 4.5     | Stakeholder Meetings & Events.....                                | 4-3  |
| 4.6     | MTPO Board Presentations .....                                    | 4-3  |
| 4.7     | Disposition of Comments .....                                     | 4-4  |
| 5.0     | Transportation System .....                                       | 5-1  |
| 5.1     | Existing and Future Transportation System Conditions.....         | 5-1  |
| 5.1.1   | Streets and Highways.....   | 5-1  |
| 5.1.1.1 | Existing Conditions .....   | 5-3  |
| 5.1.1.2 | Future Conditions .....   | 5-3  |
| 5.1.1.3 | Level of Service .....  | 5-7  |
| 5.1.2   | Public Transportation.....  | 5-14 |
| 5.1.2.1 | Fixed Route Services .....  | 5-14 |
| 5.1.2.2 | Demand Response Services .....                                    | 5-16 |
| 5.1.2.3 | Transit Fleets.....   | 5-19 |

|         |  |      |
|---------|--|------|
| 5.1.2.4 | Other Transit and Travel Demand Management Activities .....          | 5-20 |
| 5.1.2.5 | Future Conditions .....  | 5-22 |
| 5.1.3   | Walkways and Bikeways .....  | 5-24 |
| 5.1.3.1 | Current Conditions.....  | 5-24 |
| 5.1.3.2 | Future Conditions .....  | 5-28 |
| 5.1.4   | Intelligent Transportation Systems (ITS) .....                       | 5-33 |
| 5.1.5   | Aviation .....   | 5-34 |
| 5.1.5.1 | Recent Studies .....   | 5-35 |
| 5.1.5.2 | Future Conditions .....  | 5-35 |
| 5.1.6   | Rail.....  | 5-38 |
| 5.1.7   | Freight Transportation and Intermodal Connectivity.....              | 5-40 |
| 5.1.7.1 | Commodity Flows .....  | 5-40 |
| 5.1.7.2 | Intermodal Connections.....  | 5-51 |
| 5.1.7.3 | Future Conditions .....  | 5-54 |
| 5.1.8   | Transportation Safety .....  | 5-54 |
| 5.1.8.1 | Vehicular Crashes .....  | 5-54 |
| 5.1.8.2 | Vehicular Fatalities .....   | 5-56 |
| 5.1.8.3 | Bicycle and Pedestrian Crashes .....                                 | 5-57 |
| 5.1.8.4 | Tennessee and Virginia Strategic Highway Safety Plans.....           | 5-57 |
| 5.1.9   | Security Element .....   | 5-67 |
| 6.0     | Financial Plan.....  | 6-1  |
| 6.1     | Overview of Funding Sources.....                                     | 6-1  |
| 6.2     | Historic Transportation Revenue Trends .....                         | 6-4  |
| 6.2.1   | Funding Forecast.....  | 6-4  |
| 6.2.2   | Streets and Highways.....  | 6-4  |
| 6.2.3   | Public Transportation.....   | 6-8  |
| 6.2.4   | Relationship of LRTP to the Transportation Improvement Program ..... | 6-10 |
| 6.3     | Fiscal Constraint.....   | 6-10 |
| 6.3.1   | Operations and Maintenance – Revenue & Expenses.....                 | 6-10 |
| 6.3.2   | Capital – Revenue & Expenses .....                                   | 6-13 |
| 7.0     | Recommended Planned Improvements.....                                | 7-1  |
| 7.1     | Planned Transportation Improvements .....                            | 7-1  |
| 7.1.1   | Streets & Highways .....   | 7-1  |
| 7.1.1.1 | Roadways.....  | 7-1  |
| 7.1.1.2 | Active Transportation Solutions .....                                | 7-7  |
| 7.1.2   | Public Transportation.....   | 7-8  |
| 7.1.2.1 | Transit .....  | 7-8  |
| 7.2     | Un-Funded Needs (Illustrative List).....                             | 7-9  |
| 7.3     | Short Range Strategies .....   | 7-9  |
| 8.0     | Environmental Review .....   | 8-1  |
| 8.1     | Title VI and Environmental Justice.....                              | 8-1  |
| 8.2     | Historic, Cultural, and Natural Resources .....                      | 8-1  |
| 8.3     | Environmental Mitigation Strategies.....                             | 8-2  |
| 8.4     | Climate Change.....  | 8-4  |

## **APPENDIX**

- Appendix I: Kingsport MTPO 2035 LRTP Plan Development Documentation
- Appendix II: Project Assessment
- Appendix III: Title VI and Environmental Justice Assessment
- Appendix IV: Environmental Review

## TABLES

|            |  |      |
|------------|--|------|
| Table 2-1  | LRTP Goals Addressing SAFETEA-LU Planning Factors.....                       | 2-2  |
| Table 3-1  | Total Population (2000-2035) .....   | 3-1  |
| Table 3-2  | MTPO Area Population Density (2000-2035) .....                               | 3-4  |
| Table 3-3  | MTPO Area Population Aged 65 and Over Trends (1970-2035).....                | 3-4  |
| Table 3-4  | MTPO Area Household Density (2000-2035) .....                                | 3-5  |
| Table 3-5  | MTPO Area Total Employment (2010-2035) .....                                 | 3-9  |
| Table 3-6  | 10 Largest Private Employers .....   | 3-9  |
| Table 4-1  | Disposition of Public Comments .....   | 4-4  |
| Table 5-1  | Existing Miles of Classified Roadways (2009) .....                           | 5-1  |
| Table 5-2  | Projects Completed Since 2008 & Committed Improvements (E+C Network) ....    | 5-5  |
| Table 5-3  | General Descriptions of Levels of Service (LOS).....                         | 5-7  |
| Table 5-4  | Level of Service (LOS) Thresholds by Roadway Type.....                       | 5-8  |
| Table 5-5  | Current & Future Vehicle Hours Traveled Without Additional Improvements .... | 5-10 |
| Table 5-6  | 2035 Vehicle Hours Traveled With & Without Future Planned Improvements ..    | 5-13 |
| Table 5-7  | KATS – Transit Fleet.....  | 5-20 |
| Table 5-8  | Top Ten Commodities (By Weight) From Sullivan County By Truck (2007).....    | 5-44 |
| Table 5-9  | Top Ten Commodities (By Weight) From Hawkins County By Truck (2007).....     | 5-44 |
| Table 5-10 | Top Five Commodities (By Weight) From Scott County By Truck (2007).....      | 5-45 |
| Table 5-11 | Top Ten Commodities (By Weight) To Sullivan County By Truck (2007).....      | 5-45 |
| Table 5-12 | Top Ten Commodities (By Weight) To Hawkins County By Truck (2007).....       | 5-46 |
| Table 5-13 | Top Five Commodities (By Weight) To Scott County By Truck (2007).....        | 5-46 |
| Table 5-14 | Top Ten Destinations (By Weight) From Sullivan County By Truck (2007).....   | 5-47 |
| Table 5-15 | Top Ten Destinations (By Weight) From Hawkins County By Truck (2007).....    | 5-47 |
| Table 5-16 | Top Five Destinations (By Weight) From Scott County By Truck (2007).....     | 5-48 |
| Table 5-17 | Top Ten Destinations (By Weight) To Sullivan County By Truck (2007).....     | 5-48 |
| Table 5-18 | Top Ten Destinations (By Weight) To Hawkins County By Truck (2007).....      | 5-49 |
| Table 5-19 | Top Five Destinations (By Weight) To Scott County By Truck (2007).....       | 5-49 |
| Table 5-20 | Number of Crashes by Type (2006-2010) .....                                  | 5-55 |
| Table 5-21 | Number of Fatalities (2006-2010).....  | 5-56 |
| Table 5-22 | Alcohol Related Fatalities per 100,000 Population (2006-2010) .....          | 5-56 |
| Table 5-23 | Unrestrained Fatalities per 100,000 Population (2006-2010).....              | 5-56 |
| Table 5-24 | Bicycle and Pedestrian Crashes (2006-2010) .....                             | 5-57 |
| Table 6-1  | Federal Transportation Funding Programs .....                                | 6-2  |

|            |  |      |
|------------|--|------|
| Table 6-2  | 2035 Streets & Highways Operating and Maintenance Funding Forecast ..... | 6-5  |
| Table 6-3  | 2035 Streets & Highways Capital Funding Forecast - Tennessee .....       | 6-6  |
| Table 6-4  | 2035 Streets & Highways Capital Funding Forecast - Virginia.....         | 6-7  |
| Table 6-5  | 2035 Public Transportation Operating Funding Forecast.....               | 6-9  |
| Table 6-6  | 2035 Public Transportation Capital Funding Forecast .....                | 6-9  |
| Table 6-7  | Streets & Highways Operations & Maintenance Revenues and Expenditures..  | 6-12 |
| Table 6-8  | Transit Operations & Maintenance Revenues and Expenditures.....          | 6-12 |
| Table 6-9  | Streets & Highways Capital Revenues and Expenditures - Tennessee .....   | 6-14 |
| Table 6-10 | Streets & Highways Capital Revenues and Expenditures - Virginia.....     | 6-15 |
| Table 6-11 | Public Transportation Capital Revenues and Expenditures .....            | 6-16 |
| Table 7-1  | 2035 Planned Improvements - Tennessee .....                              | 7-2  |
| Table 7-2  | 2035 Planned Improvements - Virginia.....                                | 7-4  |
| Table 7-3  | 2035 Planned Transit Improvements.....                                   | 7-8  |
| Table 7-4  | Unfunded Illustrative Vision Plan Projects .....                         | 7-11 |
| Table 8-1  | Potential Mitigation Activities .....                                    | 8-4  |
| Table 8-2  | 2035 LRTP Greenhouse Gas Reduction Strategies .....                      | 8-5  |

## FIGURES

|             |  |      |
|-------------|--|------|
| Figure 3-1  | Kingsport MTPO Planning Area Map .....                                       | 3-2  |
| Figure 3-2  | Population Change (2010-2035) Map .....                                      | 3-3  |
| Figure 3-3  | Population Density (2010-2035) Map .....                                     | 3-6  |
| Figure 3-4  | Household Density (2010-2035) Map .....                                      | 3-7  |
| Figure 3-5  | Employment Trends (1970-2035) – By Sector.....                               | 3-8  |
| Figure 3-6  | Employment Density (2010-2035) Map .....                                     | 3-10 |
| Figure 3-7  | Potential Karst Development Map .....  | 3-14 |
| Figure 3-8  | Floodplain Map .....   | 3-15 |
| Figure 3-9  | Historic Districts Map .....   | 3-16 |
| Figure 3-10 | Current Land Use Map .....   | 3-19 |
| Figure 3-11 | Future Land Use Map .....  | 3-20 |
| Figure 3-12 | Kingsport Region County Growth Boundary Map .....                            | 3-21 |
| Figure 4-1  | Top Transportation Priorities for the Kingsport Area.....                    | 4-2  |
| Figure 5-1  | Roadway Functional Classification Map .....                                  | 5-2  |
| Figure 5-2  | 2010 Average Daily Traffic (ADT) Map.....                                    | 5-4  |
| Figure 5-3  | Projects Completed Since 2008 & Committed Improvements (E+C Network) ....    | 5-6  |
| Figure 5-4  | 2035 Level of Service - Without Additional Transportation Improvements ..... | 5-9  |
| Figure 5-5  | 2035 Level of Service – Vision Plan Scenario .....                           | 5-11 |
| Figure 5-6  | 2035 Level of Service – Cost Feasible Plan .....                             | 5-12 |
| Figure 5-7  | Vehicle Hours Traveled by Roadway Type – 2035 LRTP Scenario Results .....    | 5-13 |
| Figure 5-8  | Transit Services in the Kingsport Area .....                                 | 5-15 |
| Figure 5-9  | KATS Annual Fixed Route Ridership (2000-2010) .....                          | 5-16 |
| Figure 5-10 | KATS - Demand Response Service Ridership (2000-2010) .....                   | 5-17 |
| Figure 5-11 | NET Trans - Demand Response Service Ridership (2002-2009) .....              | 5-18 |
| Figure 5-12 | MEOC Transit - Demand Response Service Ridership (2006-2010) .....           | 5-19 |
| Figure 5-13 | Official Park-and-Ride Lots in Scott County, Virginia.....                   | 5-21 |
| Figure 5-14 | Commuting Patterns (2000) .....  | 5-22 |
| Figure 5-15 | Non-Motorized Demand in the Kingsport Area .....                             | 5-26 |
| Figure 5-16 | Bicycle Level of Service (BLOS) Map.....                                     | 5-27 |
| Figure 5-17 | Pedestrian Level of Service (PLOS) Map .....                                 | 5-29 |
| Figure 5-18 | Proposed Bicycle Network Map .....   | 5-31 |
| Figure 5-19 | Proposed Pedestrian Network Map .....  | 5-32 |
| Figure 5-20 | Tri-Cities Regional Airport Map .....  | 5-36 |

Figure 5-21 Tri-Cities Regional Airport Proposed Master Plan Improvements ..... 5-37

Figure 5-22 Norfolk Southern Crescent Corridor Map ..... 5-38

Figure 5-23 Rail System Map ..... 5-39

Figure 5-24 Total Freight Share (By Weight & Mode) For MTPO Counties (2007) ..... 5-43

Figure 5-25 Freight Analysis Framework Daily Truck Flows (2007–2040) ..... 5-50

Figure 5-26 Air, Rail & Truck Facilities Map ..... 5-52

Figure 5-27 Freight System & Industrial Lands Map ..... 5-53

Figure 7-1 2035 Planned Cost Feasible Roadway Improvements ..... 7-6

Figure 7-2 Illustrative Vision Plan Projects (Unfunded) Roadway Improvements ..... 7-10

## ACRONYM LIST

|           |   |
|-----------|---|
| ADA       | Americans with Disabilities Act (ADA) of 1990                 |
| ADT       | Average Daily Traffic   |
| APD       | Appalachia Development  |
| AVL       | Automated Vehicle Locator System                              |
| 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                               |
| 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  |
| 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  |
| L RTP     | Long Range Transportation Plan                                |
| 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                             |
| 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   |
| STIP       | State Transportation Improvement Program   |
| STP        | Surface Transportation 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 <sup>st</sup> Century of 1998                    |
| TIP        | Transportation Improvement Program   |
| TN         | Tennessee  |
| TSM        | Transportation System Management   |
| UGB        | Urban Growth Boundary  |
| US         | United States  |
| 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 2000 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 percent of the population was over 65 years of age. Today, nearly 16 percent of the population is over the age of 65, and that trend is projected to increase to nearly 30 percent by the year 2035.

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 125,000, and by 2035, the population is projected to be nearly 153,000.

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 2035. 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, 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 continuing, comprehensive, and cooperative 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

Additional members who have an advisory role include the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), First Tennessee Development District, and the LENOWSICO Virginia Planning District Commission (representing Gate City and Weber City).

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 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005 requires 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 SAFETEA-LU 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. 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 2035 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.
- Executive Order #12898 reaffirms that each federal agency must make Environmental Justice part of its mission. Each agency must 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 and low-income populations. Further, each agency must work to prevent the denial, reduction, or delay of benefits received by minority and low-income populations. Most importantly, each agency must develop policies and strategies to ensure full and fair participation by affected populations in transportation decisions.

The 2035 LRTP for the Kingsport MTPO reflects compliance with the federal requirements of SAFETEA-LU, 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 2035 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 – changes in project schedules, unknown development changes, or changes in priorities. 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://mpo.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.

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. 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.

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## 2.0 GUIDING PRINCIPLES

This section describes a set of stated goals, objectives, and performance measures that have been developed to guide the 2035 LRTP. During 2011, the MTPO Executive Board and Executive Staff, with the assistance of the public, established a series of guiding principles, which are aligned with national transportation policy, to serve in the development of the 2035 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 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which was signed into law in 2005, is the current national transportation legislation providing the guiding principles behind transportation decision-making throughout the United States in metropolitan areas.

SAFETEA-LU established the following eight 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.

These factors provide the foundation for which locally desired regional outcomes are established. Table 2-1 illustrates how the 2035 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 SAFETEA-LU Planning Factors. 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. Additionally, a series of performance indicators have been established to assist in monitoring the progress of this plan.

**Table 2-1  
LRTP Goals Addressing SAFETEA-LU Planning Factors**

| SAFETEA-LU 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         |

## 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”
- Increase opportunities for short trips to be made by non-motorized modes to promote active transportation
- Increase transit and other transportation demand management opportunities
- 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, reducing transportation delay, and improving system operations
- Seek improvement options which minimize adverse impacts to historical, social, cultural, and natural environments
- Promote investment solutions that reduce carbon and other harmful emissions from transportation

**Goal 3 - Prosperity** - Promote transportation policies and investments that advance quality economic development and redevelopment, economic competitiveness, and increased 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 and improve access to people, places, and goods 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 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

### Performance Measures

The following performance measures have been established to monitor improvement and make resource and project investment decisions. These measures are directly linked to the stated goals and objectives and will be used by the MTPO to monitor progress and transportation decisions within the region over time.

- **Livability**

- Safety

- ☞ Per Capita Transportation-Related Fatalities and Crashes
  - ☞ Per Capita Bicycle & Pedestrian-Related Fatalities and Crashes

- Mobility

- ☞ Number of Regional Corridors Operating in Non-Congested Conditions
  - ☞ Percent of Region with Access to Transit
  - ☞ Percent of Region's Senior Population Served by Transit

- Active Transportation

- ☞ Percent of the Region within 1-Mile of Sidewalk Facilities, Greenways, Bicycle Facilities, Transit Routes, and Parks

- **Sustainability**

- Maintenance

- ☞ Percent of the Region's Transportation Dollars Expended on Maintenance, Rehabilitation, and Reconstruction

- Operations

- ☞ Percent of the Region's Transportation Dollars Expended on Transportation Management Solutions

Environment

- Percent of the Region's Transportation Dollars Expended that Avoid Environmentally Sensitive Lands and Historic Properties, Adverse Environmental Impacts, and Negative Impacts to Environmental Justice (EJ) Populations

- **Prosperity**

Economic Development & Redevelopment

- Percent of the Region's Transportation Dollars Expended in Designated Target Growth Areas

Economic Competitiveness

- Percent of the Region's Transportation Dollars Linked to Job Growth Investments

## 2.3 PROGRAM INITIATIVE

To create a stronger link between the stated goals and objectives of the 2035 LRTP and transportation improvements ultimately selected for funding by the MTPO, the MTPO Executive Board at their November 29, 2011 meeting established a program approach to funding transportation improvements. The MTPO Executive Board adopted the following program initiatives and targeted funding levels as a means of guiding future transportation investments within the MTPO region:

- Safety & Transportation System Management (TSM) / Intelligent Transportation System (ITS) Solutions (28-30%)  
Projects under this category are intended to address highway safety improvement needs and traffic operational deficiencies solved through transportation system management (TSM) and intelligent transportation system (ITS) solutions. Example safety and TSM/ITS 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. Safety and TSM/ITS projects may include: geometric safety improvements including shoulder and center turn lane improvements, and other traffic operational improvements (e.g. signal timing, access management, traffic calming, etc.); interchange improvements on interstates (e.g. additional turning lanes, ramp reconfigurations, and/or signal improvements, signage, and lighting); intersection improvements on non-interstates (e.g. additional turning lanes, signal improvements, and/or signage and lighting); and ITS projects based on Kingsport's Regional ITS Architecture, which may include: surface street management, freeway management, and incident management (surveillance, detection, and traffic control); traveler information (information dissemination, e.g. dynamic message signs); and transit management (dynamic routing, fleet management, information dissemination, and electronic payment systems/transit fare payment). Under this program bridge rehabilitation and bridge replacement projects are considered given the safety nature of these improvements.
- Capacity Improvements (22-26%)  
Projects under this category are intended to address existing and/or proposed highway capacity needs through roadway widening and/or the construction of new roadways. Capacity improvements are intended to address system failures

and/or increase the overall system operations through new and expanded roadways.

- Economic Development & Access to Jobs (22-26%)  
Projects under this category are intended to promote investments in the region's economy and jobs through increased transportation system capacity and access. Improvements under this program may include roadway widenings, new roadways, and/or other transportation improvements that promote economic development and redevelopment consistent with regional plans.
- Active Transportation (18-28%)  
Projects under this category are intended to promote active transportation solutions. Active transportation solutions are investments that 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. Under this program public transit projects are considered active transportation solutions given the high correlation between access to and from transit stops and walking and biking.

The intent of this program approach is to fund transportation improvements in the region over the next 25-years whereby a set percentage of transportation dollars are targeted toward improvements in the above four categories. While the MTPO does not directly control all transportation funds in the region, and certain funding programs are limited in their use, the objective of the program approach is to advance transportation investments in the region that are most reflective of the stated 2035 LRTP goals.

As part of this program approach, the MTPO Executive Board at their November 29, 2011 meeting adopted LRTP project selection criteria, which are associated with each of the program categories. The following are the criteria and associated points for each project selection criteria:

- Safety & TSM/ITS Solutions
  - Number of crashes & geometric deficiencies (Maximum 25 points)
- Capacity Improvements
  - Operational efficiency (current and future year roadway level of service (LOS) (Maximum 20 points)
- Economic Development & Access to Jobs
  - Proximity to interchange, manufacturing/freight employment, urban growth boundary (Maximum 20 points)
- Active Transportation
  - Non-motorized demand and proximity to transit service (Maximum 25 points)

Lastly, an additional criterion presented below was added to the selection criteria to account for environmental impacts and provide a complete set of criteria consistent with the 2035 LRTP's stated goals and objectives:

- Environmental Impact
  - Avoidance of historic properties and floodways (Maximum 10 points)

Each transportation recommendation considered for inclusion in the 2035 LRTP was evaluated by comparing the project's need with the above project selection criteria. Appendix II provides 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. 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.

### 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 286 miles 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 percent of the population was over 65 years of age. Today, nearly 16 percent of the population is over the age of 65, and that trend is projected to increase to nearly 30 percent by the year 2035.

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

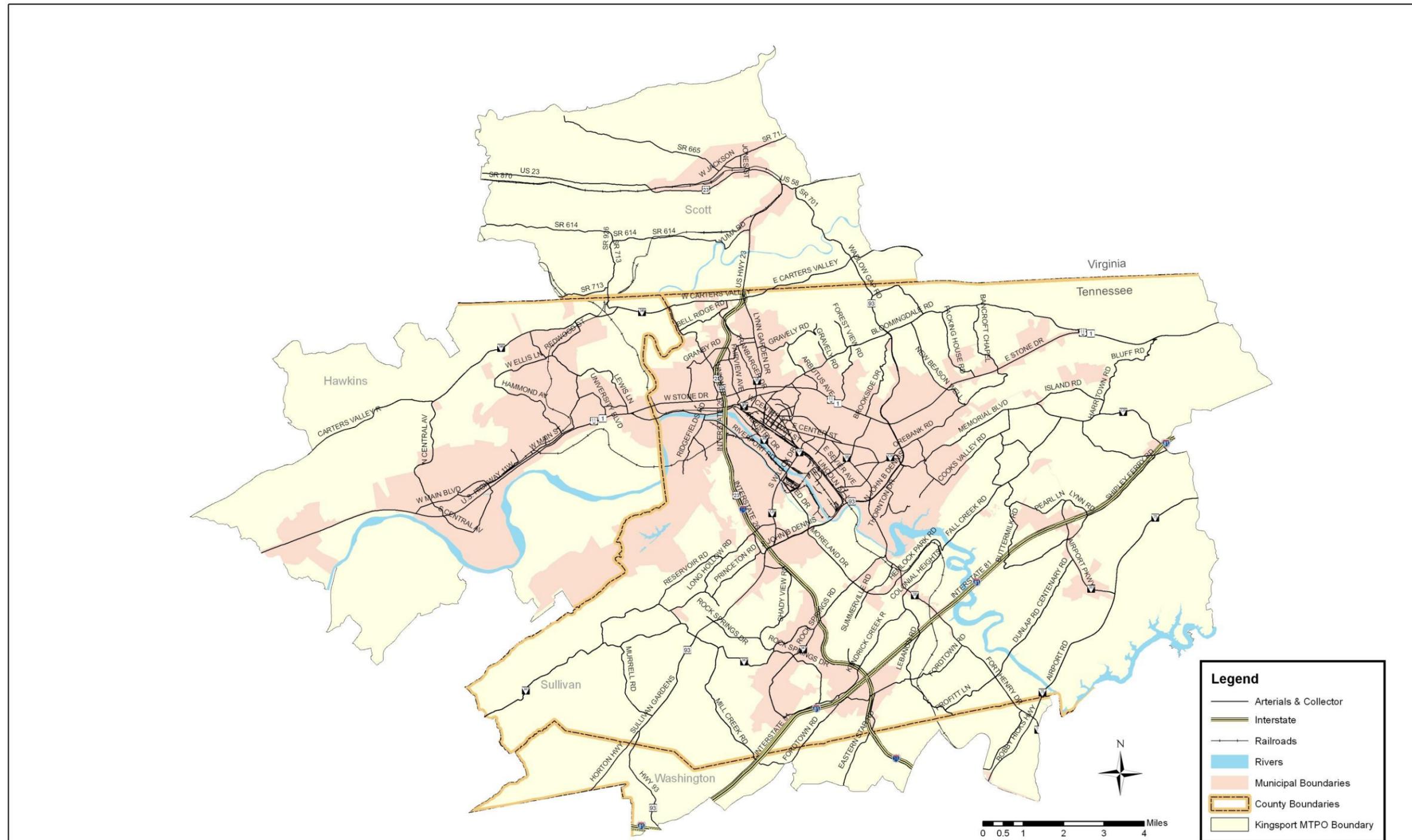
The total population of the Kingsport MTPO area in 2000 was 121,220, which represented 36 percent of the total populations of the four counties partially within the MTPO area. By 2035, the Kingsport MTPO area is projected to have 152,868 persons, which is a 21 percent increase over the 2010 population 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 2010 to 2035.

**Table 3-1  
Total Population (2000-2035)**

|                                      | 2000           | 2010           | 2035           | % Change (2000-2010) | Absolute Change (2010-2035) | % Change (2010-2035) |
|--------------------------------------|----------------|----------------|----------------|----------------------|-----------------------------|----------------------|
| <b>Kingsport MTPO Area</b>           | <b>121,220</b> | <b>125,950</b> | <b>152,868</b> | <b>4%</b>            | <b>26,918</b>               | <b>21%</b>           |
| Sullivan County, TN                  | 153,048        | 156,823        | 171,629        | 2%                   | 14,806                      | 9%                   |
| Hawkins County, TN                   | 53,563         | 56,833         | 75,803         | 6%                   | 18,970                      | 33%                  |
| Washington County, TN                | 107,198        | 122,979        | 142,617        | 15%                  | 19,638                      | 16%                  |
| Scott County, VA                     | 23,403         | 23,177         | 22,109         | -1%                  | -1,068                      | -5%                  |
| <b>Total Population (4 Counties)</b> | <b>337,212</b> | <b>359,812</b> | <b>412,158</b> | <b>7%</b>            | <b>52,346</b>               | <b>15%</b>           |
| <b>MTPO% of 4 County Population</b>  | <b>36%</b>     | <b>35%</b>     | <b>37%</b>     |                      |                             |                      |

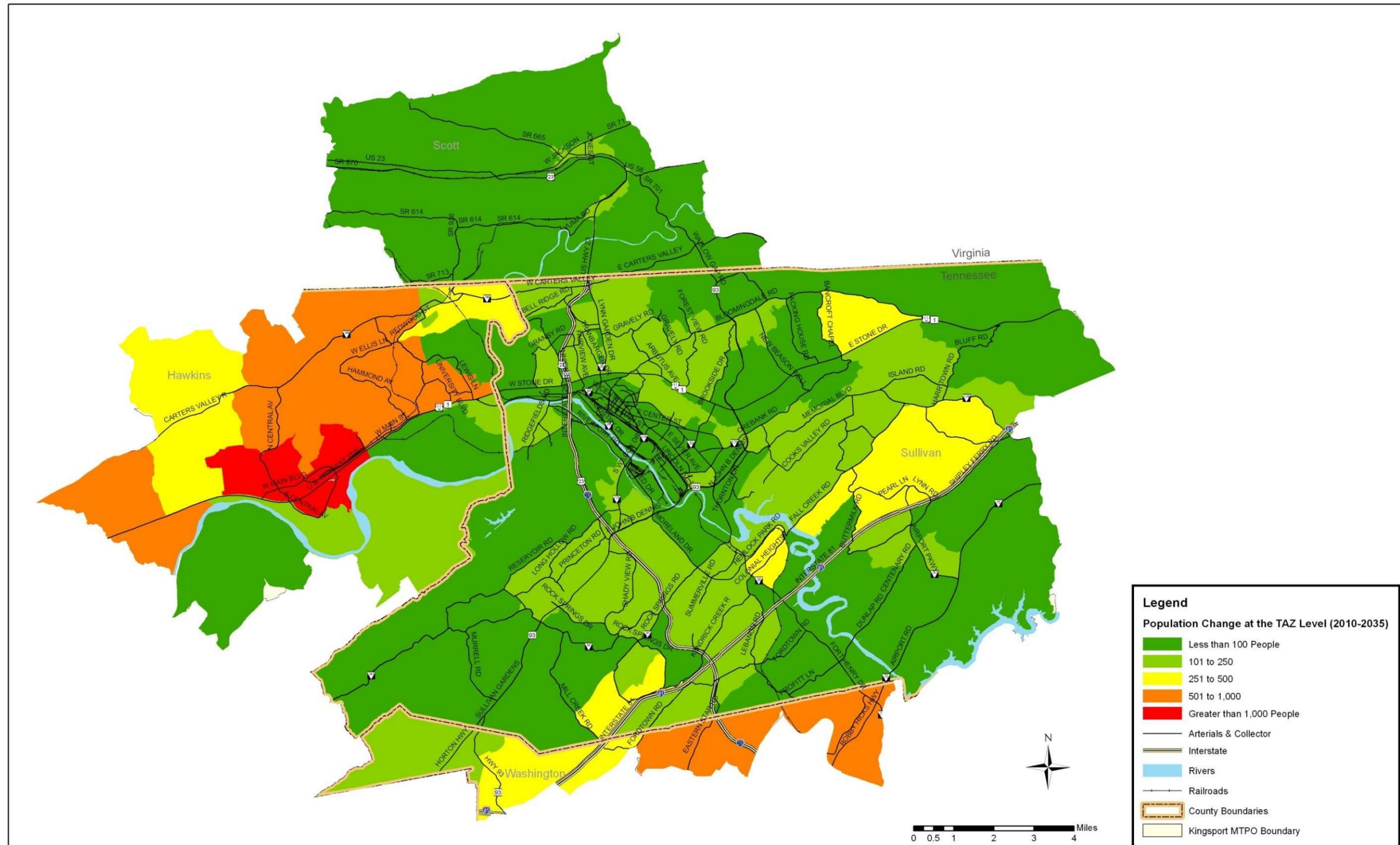
Sources: U.S. Census, Woods & Poole Economics, Inc.

Figure 3-1  
Kingsport MTPO Planning Area Map



Kingsport MTPO 2035 Long Range Transportation Plan

Figure 3-2  
Population Change (2010-2035) Map



Kingsport MTPO 2035 Long Range Transportation Plan

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 2010 for the MTPO area was 448 persons per square mile. 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 542 persons per square mile.

**Table 3-2  
MTPO Area Population Density (2000-2035)**

|                         | 2000    | 2010    | 2035    |
|-------------------------|---------|---------|---------|
| Total Population        | 121,220 | 125,950 | 152,868 |
| Land Area (sq. miles)   | 286     | 286     | 286*    |
| Population per Sq. Mile | 432     | 448     | 542*    |

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 percent persons aged 65 and older. Today that number is closer to 16 percent and by 2035 nearly 25 percent of the region’s population will be aged 65 and older with Sullivan and Scott Counties having almost 28 percent of their populations 65 and older. Table 3-3 depicts these changing age demographics within the MTPO area.

**Table 3-3  
MTPO Area Population Aged 65 and Over Trends (1970-2035)**

|                       | 1970 | 2000 | 2010 | 2035 | Percent Change<br>(1970-2000) | Percent Change<br>(2010-2035) |
|-----------------------|------|------|------|------|-------------------------------|-------------------------------|
| Sullivan County, TN   | 8%   | 16%  | 18%  | 28%  | 104%                          | 50%                           |
| Hawkins County, TN    | 9%   | 13%  | 16%  | 24%  | 44%                           | 44%                           |
| Washington County, TN | 10%  | 14%  | 15%  | 21%  | 35%                           | 36%                           |
| Scott County, VA      | 11%  | 18%  | 20%  | 28%  | 60%                           | 41%                           |

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 2000, the number of households within the MTPO area was 50,649. By 2035, the number of households is projected to grow to nearly 64,480. 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,

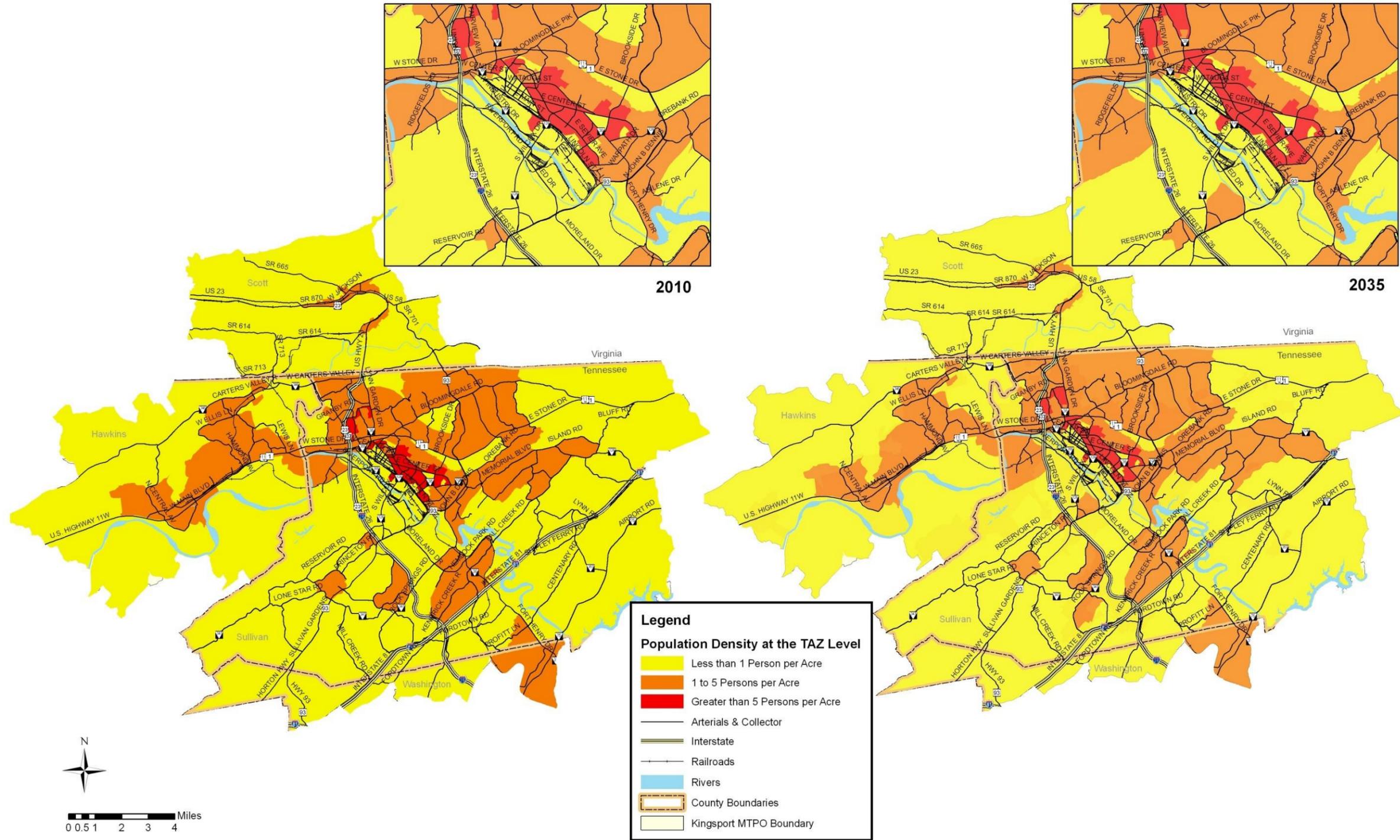
density levels are expected to increase from current concentration areas. Higher residential density makes walking, biking, and transit transportation a more viable option compared to serving a region with leapfrog low density and outward development.

**Table 3-4  
 MTPO Area Household Density (2000-2035)**

|                         | 2000   | 2010   | 2035   | Percent Change<br>(2010-2035) |
|-------------------------|--------|--------|--------|-------------------------------|
| Total Households        | 50,649 | 52,846 | 64,480 | 22%                           |
| Land Area (Sq. miles)   | 286    | 286    | 286    | -                             |
| Households per Sq. Mile | 185    | 193    | 234    | 21%                           |

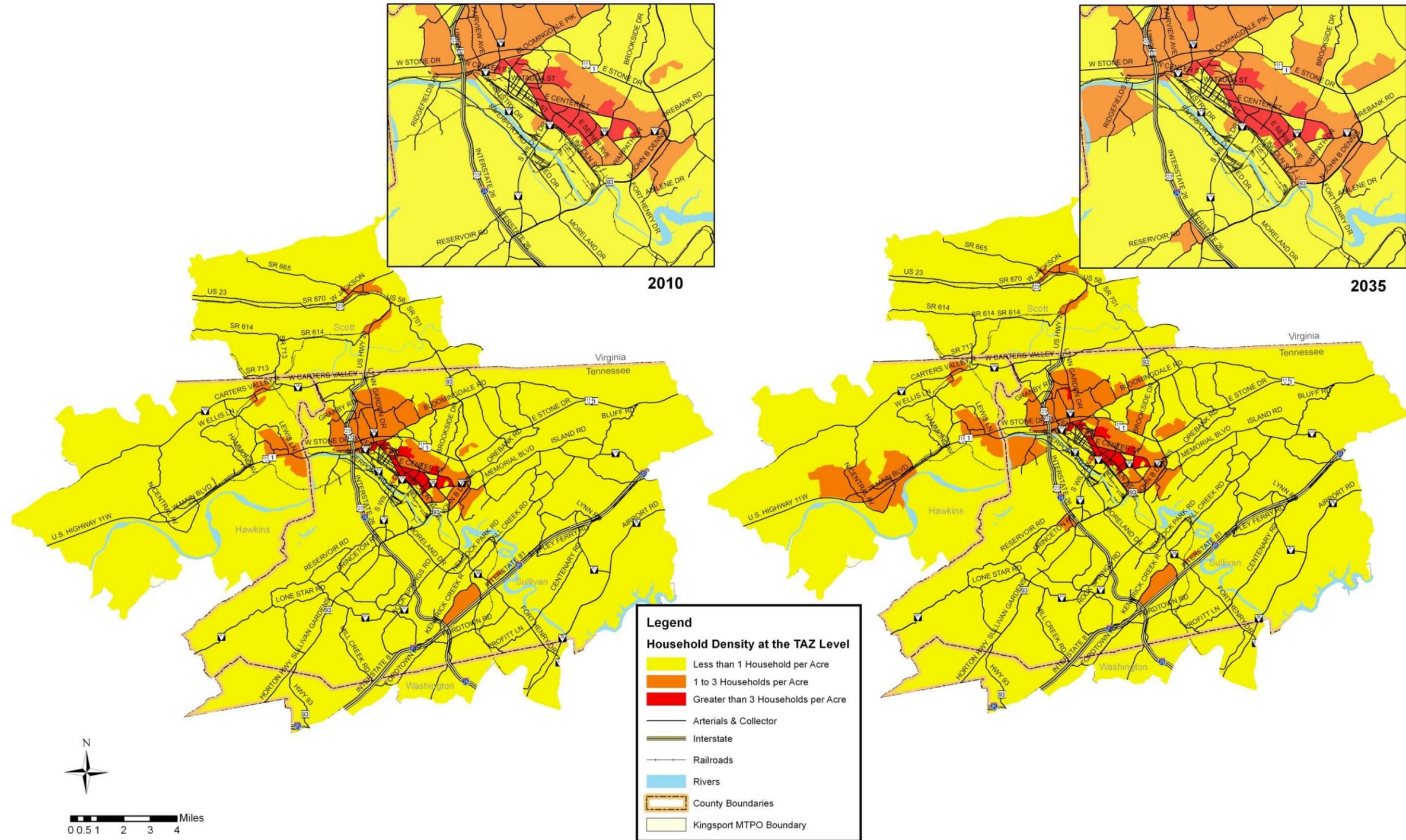
Sources: U.S. Census, Woods & Poole Economics, Inc.

Figure 3-3  
Population Density (2010-2035) Map



Kingsport MTPO 2035 Long Range Transportation Plan

Figure 3-4  
Household Density (2010-2035) Map



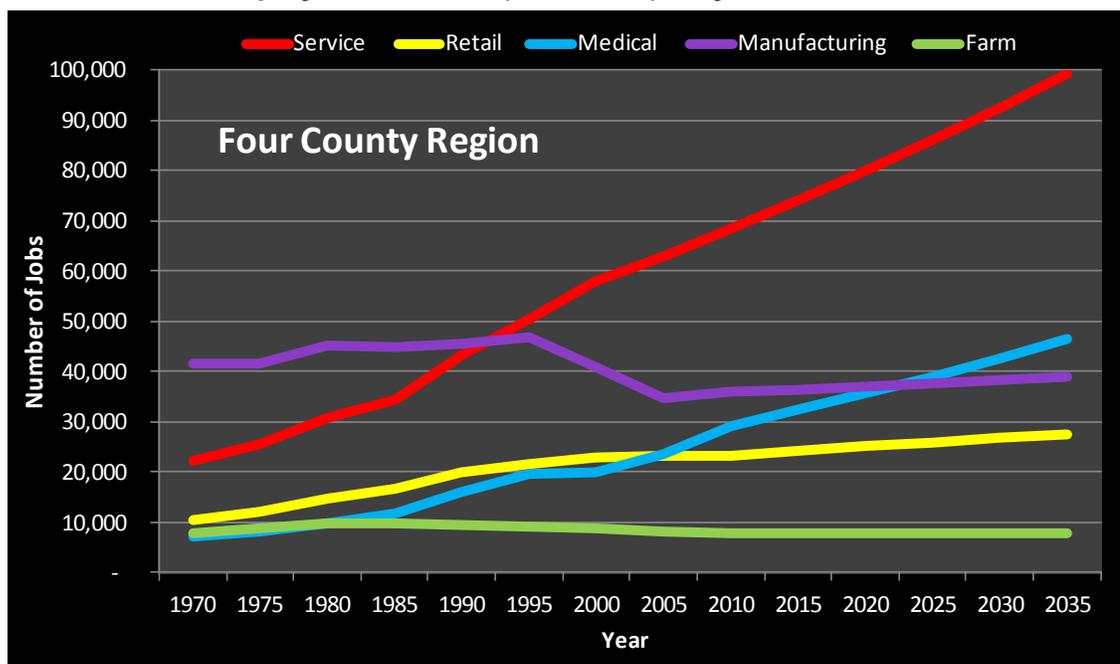
Kingsport MTPO 2035 Long Range Transportation Plan

### 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 2035 for the employment sectors of service, retail, medical, manufacturing, and farming. 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 medical employment.

**Figure 3-5  
Employment Trends (1970-2035) – By Sector**



Note: Figure does not include all employment sectors  
Source: Woods & Poole Economics, Inc.

Today, these three employment sectors (service, medical, and retail) account for 59 percent of the jobs within the MTPO area while manufacturing has remained somewhat constant. Over the next 25 years, employment in the four county region is projected to reach 272,717 (adding 67,053 new jobs to the four county region). Of this growth, the Kingsport MTPO area is projected to receive 20,589 new jobs (accounting for 31 percent of the four county region's 25 year employment growth).

Table 3-5 and Figure 3-6 illustrate employment trends and forecasts within the MTPO area (and four-county region) including projected employment concentrations.

**Table 3-5  
MTPO Area Total Employment (2010-2035)**

| Kingsport MTPO Area      |                |  |                |  |                             |                            |
|--------------------------|----------------|--|----------------|--|-----------------------------|----------------------------|
| MTPO Counties            | 2010 Jobs      | Percent of 4 County Region's 2010 Jobs | 2035 Jobs      | Percent of 4 County Region's 2035 Jobs | Absolute Change (2010-2035) | Percent Change (2010-2035) |
| Sullivan County          | 57,035         | 60%                                    | 73,795         | 59%                                    | 16,760                      | 29%                        |
| Hawkins County           | 5,880          | 30%                                    | 7,383          | 30%                                    | 1,503                       | 26%                        |
| Washington County        | 3,271          | 4%                                     | 4,495          | 4%                                     | 1,225                       | 37%                        |
| Scott County, VA         | 3,890          | 45%                                    | 4,991          | 45%                                    | 1,101                       | 28%                        |
| <b>MTPO Area Total</b>   | <b>70,075</b>  | <b>34%</b>                             | <b>90,664</b>  | <b>33%</b>                             | <b>20,589</b>               | <b>29%</b>                 |
| Four County Region       |                |  |                |  |                             |                            |
| MTPO Counties            | 2010 Jobs      | Percent of 4 County Region's 2010 Jobs | 2035 Jobs      | Percent of 4 County Region's 2035 Jobs | Absolute Change (2010-2035) | Percent Change (2010-2035) |
| Sullivan County, TN      | 95,622         | 46%                                    | 124,690        | 46%                                    | 29,068                      | 30%                        |
| Hawkins County, TN       | 19,600         | 10%                                    | 24,610         | 9%                                     | 5,010                       | 26%                        |
| Washington County, TN    | 81,763         | 40%                                    | 112,378        | 41%                                    | 30,615                      | 37%                        |
| Scott County, VA         | 8,679          | 4%                                     | 11,039         | 4%                                     | 2,360                       | 27%                        |
| <b>Four County Total</b> | <b>205,664</b> | <b>100%</b>                            | <b>272,717</b> | <b>100%</b>                            | <b>67,053</b>               | <b>33%</b>                 |

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

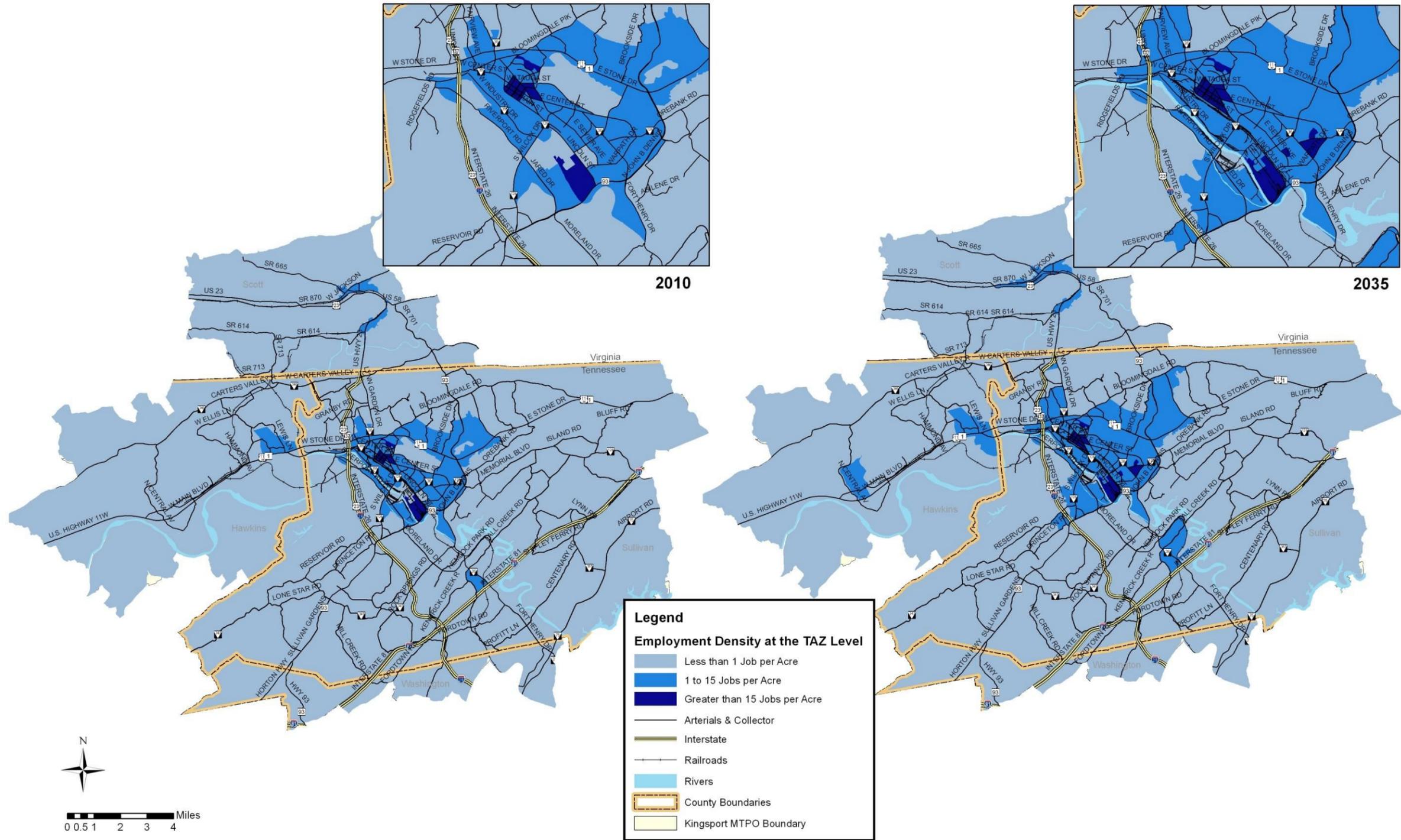
Table 3-6 identifies the ten largest non-government employers (in terms of number of employees) within the MTPO area. These ten employers account for nearly 20 percent of all jobs (or 17,425 jobs) within the MTPO area.

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

| Employer                                  | Type of Industry | Number of Employees |
|---|------------------|---------------------|
| Eastman Chemical Company                  | Manufacturing    | 10,000              |
| Holston Valley Medical Center             | Medical          | 1,500               |
| AFG Industries, Inc.                      | Manufacturing    | 1,300               |
| A&L Industrial Construction & Maintenance | Construction     | 1,000               |
| Frontier Health Inc.                      | Medical          | 1,000               |
| AGC Flat Glass North America              | Manufacturing    | 750                 |
| Hutchinson Sealing Systems, Inc.          | Manufacturing    | 600                 |
| Cooper Standard Automotive                | Automotive       | 450                 |
| Weyerhaeuser Company                      | Paper Mill       | 425                 |
| BAE Systems                               | Wholesale Trade  | 400                 |

Sources: Tennessee Department of Economic and Community Development, InfoGroup

Figure 3-6  
Employment Density (2010-2035) Map



Kingsport MTPO 2035 Long Range Transportation Plan

With a projected 29 percent 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 43.8 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 28 percent of United States greenhouse gas emissions based on recent 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 percent, methane concentrations have more than doubled, and nitrous oxide concentrations have risen by about 15 percent. 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 SAFETEA-LU 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 parts per million. 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. Currently, the region is not required to undertake air quality conformity analysis of its LRTP; however, the MTPO has developed the 2035 LRTP so that conformity testing can be undertaken should the region be designated non-attainment in the future.

### **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 (e.g. Cumberland Plateau) 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 percent to nearly 50 percent. In areas greater than 20 percent 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.

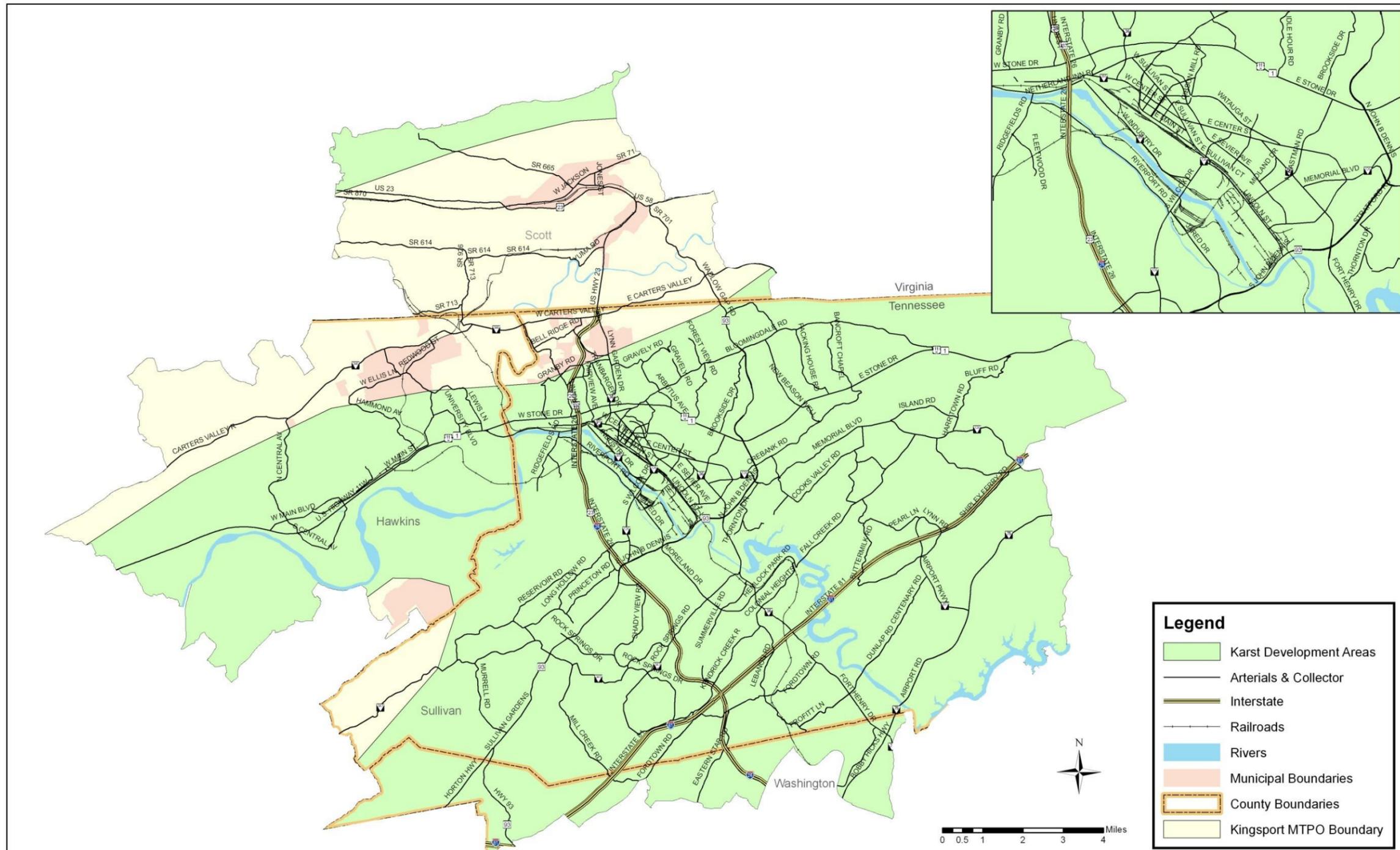
While these rivers, creeks and branches carry off most of the drainage, subterranean drainage and stream piracy is fairly common. Figure 3-8 illustrates the floodplains of these rivers and tributaries in the Kingsport MTPO area. As the region develops and implements needed transportation improvements, 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.

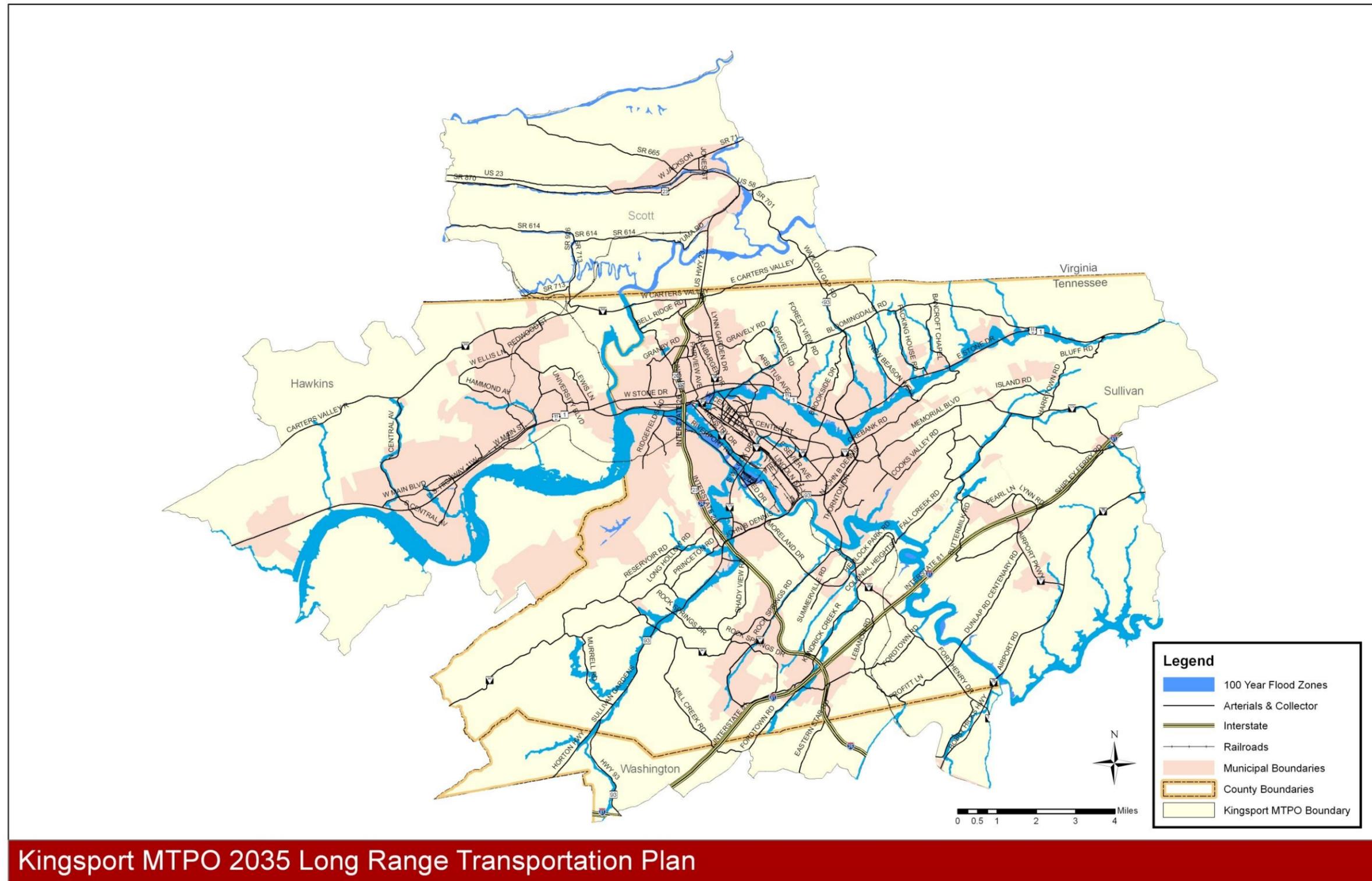
Figure 3-7  
Potential Karst Development Map



Kingsport MTPO 2035 Long Range Transportation Plan

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

Figure 3-8  
Floodplain Map



Kingsport MTPO 2035 Long Range Transportation Plan



### 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 (49 percent) 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 about 37 percent 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 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.

Figure 3-11 illustrates the proposed future land use conditions of the MTPO area, which to a large degree mirrors that of existing land use patterns. The future land use map is conceptual in nature and was prepared based on a review of existing local city and county future land use plans and current zoning maps. 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.

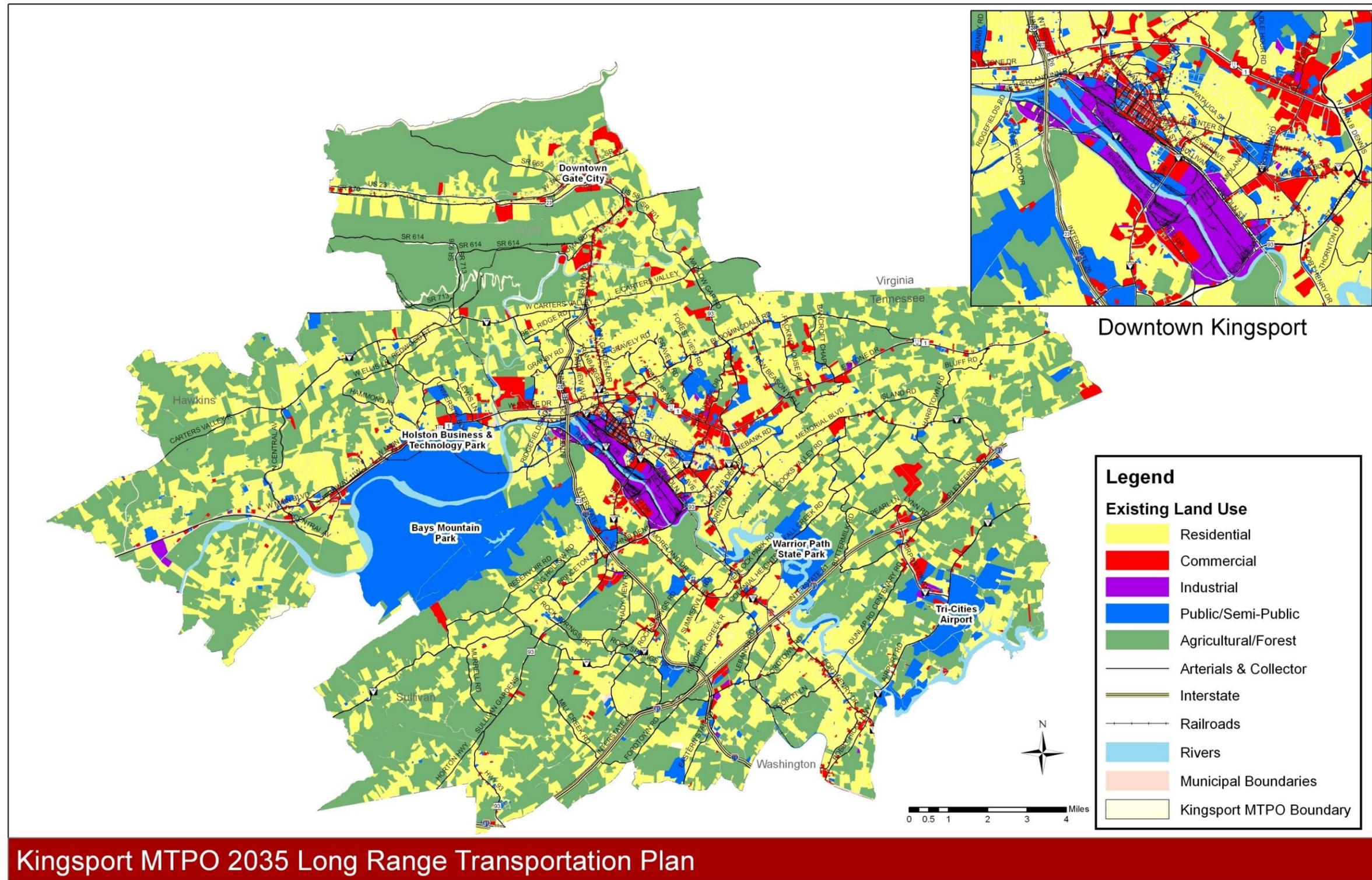
### **3.2.4 Growth Boundaries**

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 3-12 provides the approved Growth Boundary Map within the MTPO region. Of the MTPO's planning area, approximately 40 percent is contained within a UGB. Of this area, approximately 52 percent is within the corporate limits of an existing municipality and the remaining 48 percent is located within a PGA. As illustrated on the map, areas outside the UGB contain some PGAs but for the most part 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



Kingsport MTPO 2035 Long Range Transportation Plan

Figure 3-11  
Future Land Use Map

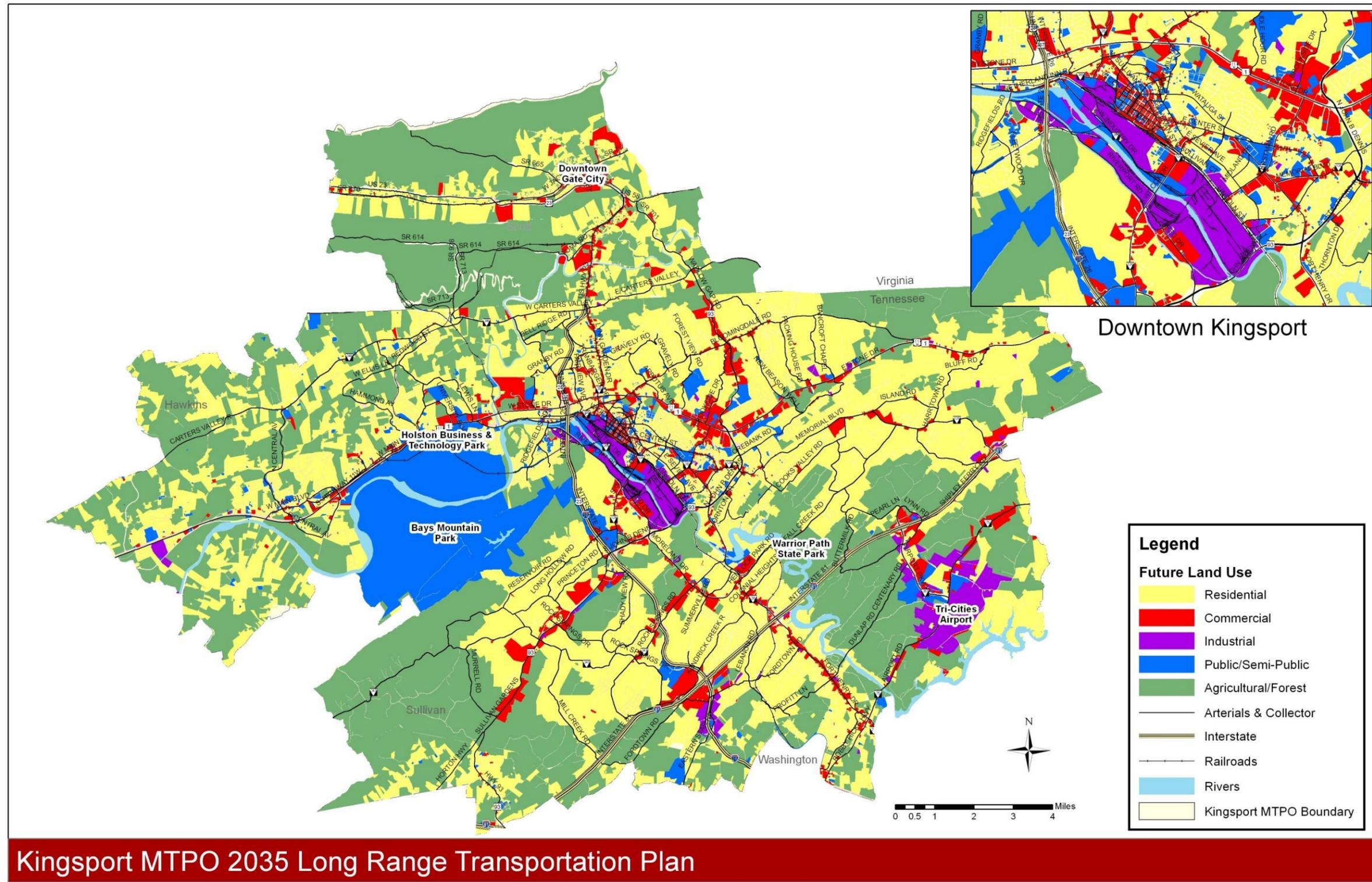
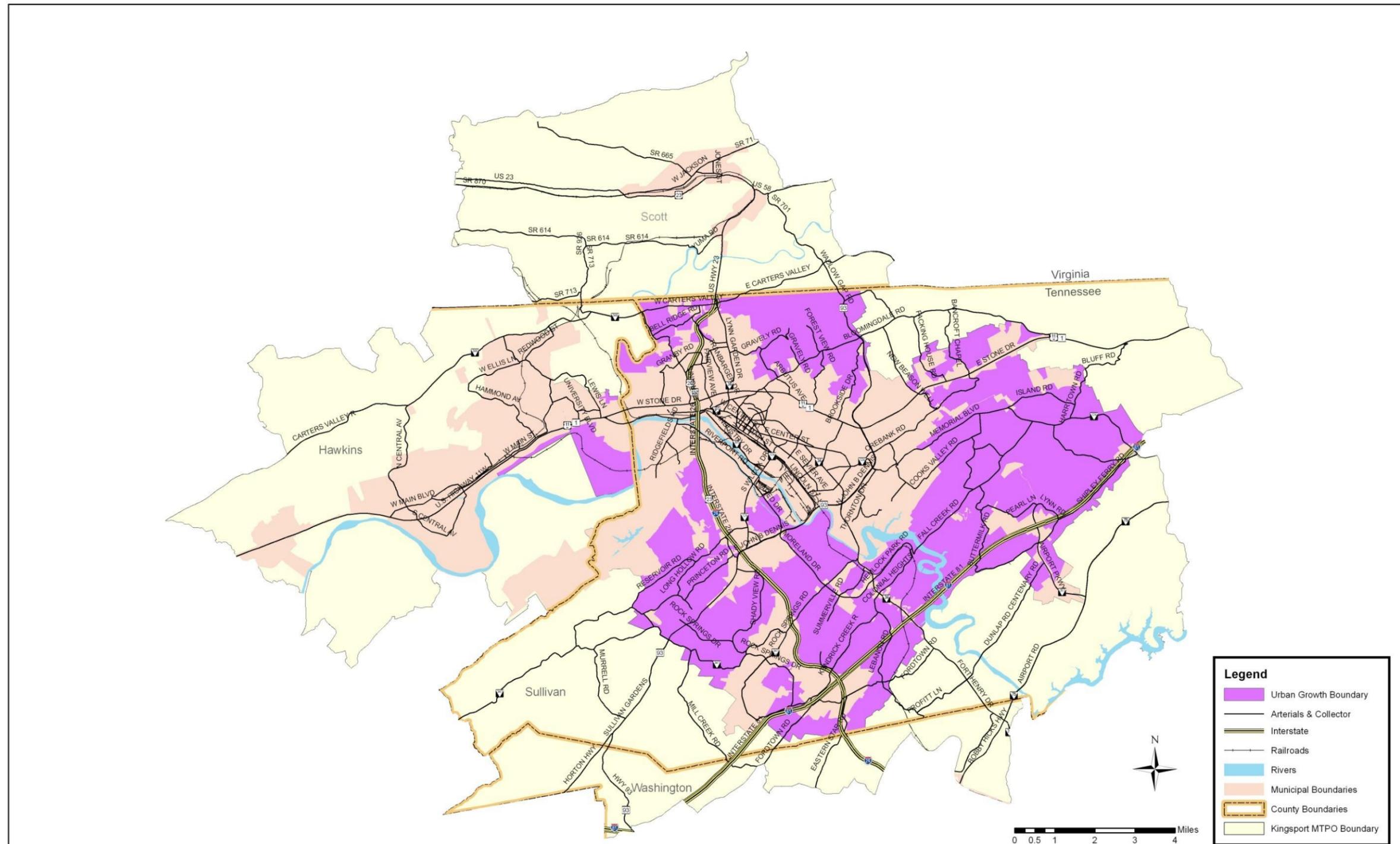


Figure 3-12  
Kingsport Region County Growth Boundary Map



Kingsport MTP0 2035 Long Range Transportation Plan

### 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 2035 LRTP, the following plans, programs, and policies were reviewed and incorporated into the analysis and recommendations of the 2035 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 2035 LRTP:

##### City of Church Hill, TN

- Zoning Ordinance – Church Hill, TN (2007)
- Subdivision Regulations – Church Hill, TN (2009)

##### City of Kingsport, TN

- Mayor's Blue Ribbon Task Force on Livability Report (2011)
- Model City Coalition (1997)
- Model City Coalition Update (2001)
- Model City Coalition Update (2005)
- Mayor's Downtown Plan Committee (2005)
- VISSCOR - Visual Image Study Code and Ordinance Review (2005)
- Subdivision Regulations – City of Kingsport, TN (2008)
- Zoning Regulations – City of Kingsport, TN (2010)
- 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 (2010)
- Sullivan County Regional Plan: A Guide for Future Land Use & Transportation Development (2008)
- Subdivision Regulations – Sullivan County, TN (2010)

##### Town of Gate City, VA

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

##### Town of Mount Carmel, TN

- Zoning Ordinance – Mount Carmel, TN (2009)

### **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 2011 Comprehensive Economic Development Strategy (2011)

#### NETWORKS - Sullivan Partnership (TN)

- Sullivan County Economic Opportunities Interchange Map (2006)

#### Tennessee Department of Economic and Community Development (TN)

- Northeast Tennessee Regional Strategic Plan (2011)

### **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 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 2035 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 project website, and media outreach. The following depict the various means of each in this process:

### 4.1 PUBLIC MEETINGS

On June 9, 2011, a public meeting at the Kingsport Public Library was held. The purpose of the meeting was to present an overview of the MTPO, the MTPO planning process including the development of the 2035 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.

On April 19, 2012 a second public meeting was held as part of the public review and comment period on the proposed draft 2035 LRTP.

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

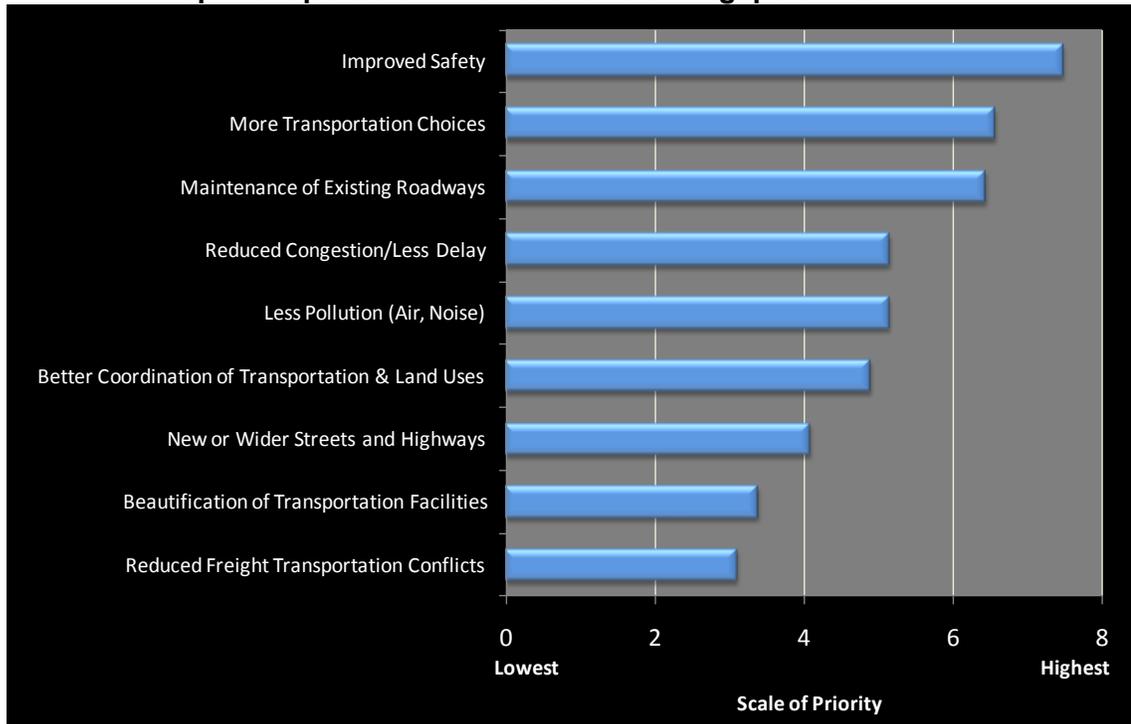
### 4.2 PROJECT WEBSITE AND ONLINE PUBLIC SURVEY

In developing the 2035 LRTP, a project website ([www.myregionmoves.com](http://www.myregionmoves.com)) was created to share information on the project and to solicit public input on needed transportation improvements. In conjunction with the project website, an online survey was created in order to afford individuals an additional opportunity to share their thoughts and opinions on transportation needs within the region.

A total of 248 visits were recorded to the project website, and 87 individuals participated in the online survey. From the online survey, 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 improved roadway safety followed by a desire for more transportation choices. A close third in priority was maintenance of existing facilities. Figure 4-1 illustrates the top transportation priorities in the region identified by survey participants.

**Figure 4-1  
Top Transportation Priorities for the Kingsport Area**



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

#### 4.3 MEDIA OUTREACH

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

#### 4.4 IAC MEETINGS

While the region is not officially a non-attainment area for air quality, the MTPO has participated in a number of Interagency Consultation (IAC) meetings with state and federal officials in the development of the 2035 LRTP. Working with representatives from TDOT, the Tennessee Department of Environment and Conservation (TDEC) as well as from the agencies of the Federal Highway Administration (FHWA), Federal Transit Administration (FTA), and US Environmental Protection Agency (EPA) the MTPO has taken steps to ensure that the 2035 LRTP meets certain documentation and planning assumption requirements of a region required to demonstrate conformity of its LRTP. Early in the development of the 2035 LRTP, the MTPO participated in an IAC meeting (conference call) in which key planning assumptions were presented and discussed. In addition to this meeting, the MTPO also participated in a number of Tennessee’s statewide air quality conference calls.

Appendix I contains a copy of the agenda and meeting minutes of the January 20, 2011 IAC meeting, which documents actions and discussions from the meeting including agency participation.

#### **4.5 STAKEHOLDER MEETINGS & EVENTS**

In addition to the IAC meetings, 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 2035 LRTP.

Specific meetings held with stakeholders occurred on the following dates:

- August 3, 2010 (Project Kick-Off Meeting)
- December 16, 2010 (Land Use/Growth Allocation Meetings)
- March 9 and 10, 2011 (Kingsport's Pioneering Healthier Communities)
- June 9, 2011 (Regional Stakeholders Meeting)
- November 2, 2011 (Transit Needs Meeting)

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

Appendix I contains copies of the agendas, sign-in sheets, and other meeting materials from these stakeholder meetings. 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 2035 LRTP. Documentation of this consultation is also provided in Appendix I

#### **4.6 MTPO BOARD PRESENTATIONS**

Presentations were made to the MTPO Board throughout the development of the 2035 LRTP. Project status updates and presentations on the development of the 2035 LRTP were made to the MTPO Board at the following meetings:

- August 3, 2010
- January 24, 2011
- February 1, 2011
- May 3, 2011
- November 29, 2011
- February 14, 2012
- April 19, 2012

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

#### 4.7 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, greater opportunities for walking and biking as well as transit services, 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 4-1 lists the general issues identified by the public and includes a disposition of how these categories of issues are addressed in the LRTP.

**Table 4-1  
Disposition of Public Comments**

| <b>Issues Raised</b>                                | <b>Disposition of Issues/Concerns (See)</b>   |
|---|---|
| <b>Improved Safety</b>                              |   |
|   | <i>Goal 1 (pg 2-2); Safety Program Initiative (pg 2-4); Transportation Safety (pg 5-54 thru 5-67); Financial Plan (pg 6-13 thru pg 6-15); Recommended Planned Improvements (pg 7-1 and pg 7-6)</i>                  |
| <b>More Transportation Choices</b>                  |   |
|   | <i>Goal 1 (pg 2-2); Active Transportation Program Initiative (pg 2-5); Walkways and Bikeways (pg 5-24 thru pg 5-32); Recommended Planned Improvements (pg 7-1 and pg 7-8)</i>                                       |
| <b>Maintenance of Existing Roadways</b>             |   |
|   | <i>Goal 2 (pg 2-2); TSM/ITS Program Initiative (pg 2-4); Financial Plan (pg 6-1 thru pg 6-12)</i>   |
| <b>Make Streets a Place for All Users</b>           |   |
|   | <i>Goal 1 (pg 2-2); Active Transportation Program Initiative (pg 2-5); Walkways and Bikeways (pg 5-24 thru pg 5-32); Recommended Planned Improvements (pg 7-1 and pg 7-8)</i>                                       |
| <b>Greater Opportunity for Non-Motorized Travel</b> |   |
|   | <i>Goal 1 (pg 2-2); Active Transportation Program Initiative (pg 2-5); Walkways and Bikeways (pg 5-24 thru pg 5-32); Recommended Planned Improvements (pg 7-1 and pg 7-8)</i>                                       |
| <b>Increased Transit Services</b>                   |   |
|   | <i>Goal 1 (pg 2-2); Active Transportation Program Initiative (pg 2-5); Public Transportation (pg 5-22 and pg 5-24); Financial Plan (pg 6-13 thru pg 6-16); Recommended Planned Improvements (pg 7-1 and pg 7-8)</i> |

## 5.0 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.

### 5.1 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.

#### 5.1.1 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 5-1 illustrates the roadway functional classification for the MTPO area, including collector roadways and higher classifications. Table 5-1 summarizes the total miles of these classified roadways by functional classification.

**Table 5-1  
Existing Miles of Classified Roadways (2009)**

| Roadway Functional Classification | Total Miles |
|-----------------------------------|-------------|
| Collector                         | 164         |
| Minor Arterial                    | 109         |
| Principal Arterial                | 66          |
| Interstate & Expressway           | 46          |
| <b>Total Miles</b>                | <b>385</b>  |

Source: Kingsport MTPO Regional Model, 2009

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 US. John B. Dennis Highway (SR 93) is an expressway that is partially access controlled with grade-separated interchanges at major roadway crossings. Figure 5-1 shows John B. Dennis Highway as a principal arterial because only a portion of the roadway functions as an expressway.



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.

#### **5.1.1.1 Existing Conditions**

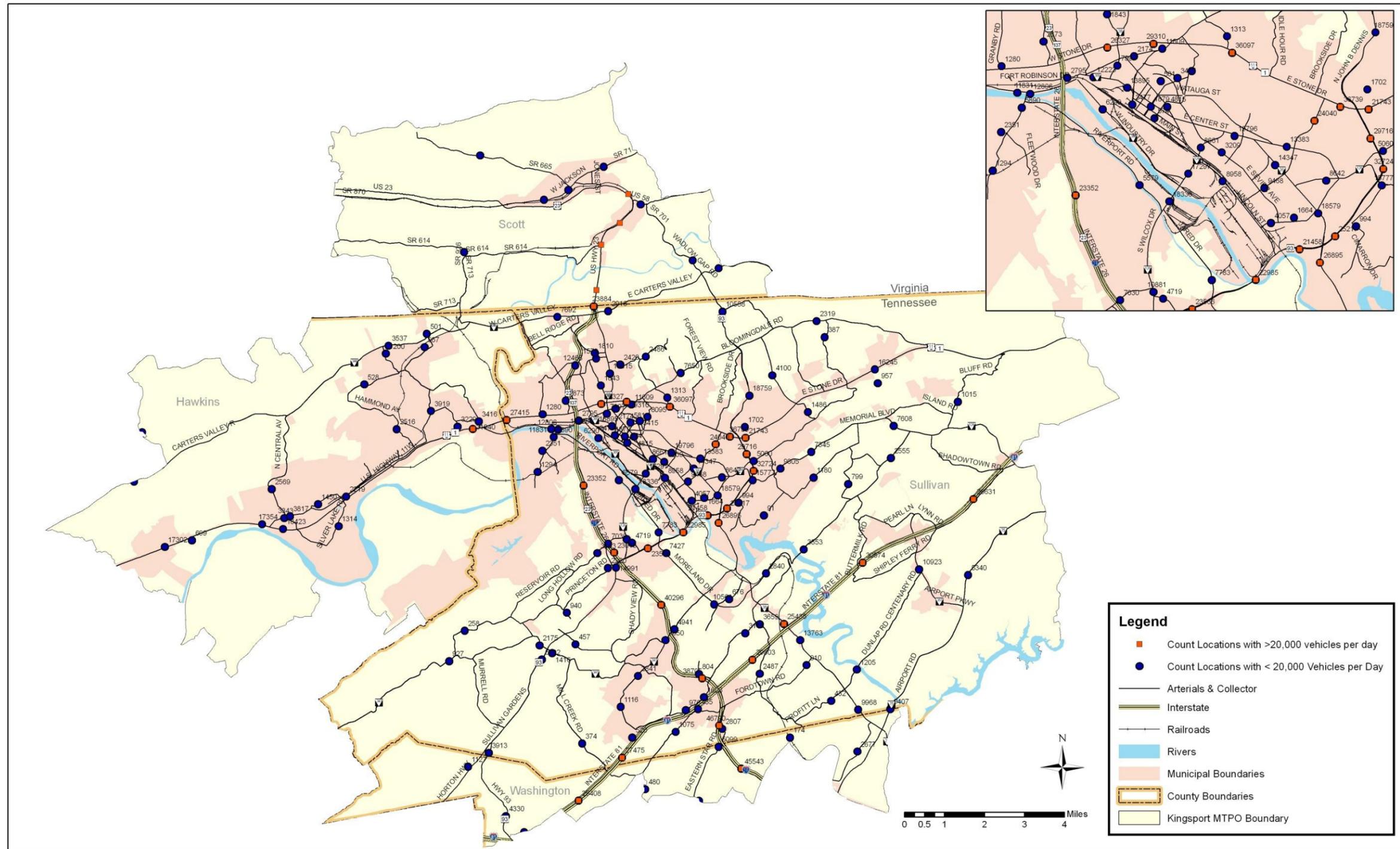
Roadway travel within the MTPO area is greatest along major roadways such as Stone Drive (US 11W), Fort Henry Drive (SR 36), I-26, and I-81 in and around the Kingsport region. Figure 5-2 illustrates the 2010 Average Daily Traffic (ADT) volumes for major corridors within the MTPO area. As depicted on 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), US 23, and Lynn Garden Drive (SR 36).

#### **5.1.1.2 Future Conditions**

The MTPO region has made considerable progress since 2008 in advancing needed transportation improvements. In total, 20 transportation roadway projects have been completed, are under construction, or are in the development process with construction scheduled by 2015 (committed projects). Table 5-2 and Figure 5-3 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 5-2  
2010 Average Daily Traffic (ADT) Map



Kingsport MTPo 2035 Long Range Transportation Plan

**Table 5-2  
Projects Completed Since 2008 & Committed Improvements (E+C Network)**

| TDOT/VA #                                 | Project/Route   | From/To  | Type of Improvement        | Improvement Description  | Status             |
|---|---|--|----------------------------|--|--------------------|
| Projects Completed Since Last Plan (2008) |   |  |                            |  |                    |
| 10614.00                                  | Fordtown Road   | End of I-81 Exit Ramps (at Exit 56) to Near Eastern Star Road  | Safety                     | Relocate and widen to 3 lanes along new corridor.  | Completed          |
| TN-4                                      | I-81  | Along I-81 corridor at the I-26 interchange Exit 57, MM 53.0, MM 54.8, MM 56.8, MM 59.3, and MM 61.4   | ITS                        | Install the required number of traffic cameras needed to monitor traffic along the I-81 corridor and their associated hardware/software, etc.  | Completed          |
| City of Kingsport                         | Gibson Mill   | Intersection of East Stone Drive; West Ravine Road; and South to Watauga Street  | Intersection/Realignment   | Realignment at intersection of East Stone Dr, add roundabout at West Ravine Road, and add turn lane south to Watauga Street  | Completed          |
| City of Kingsport                         | Cleek Road  | Intersection of East Stone Drive and New Beasonwell Road. Realignment of Cleek Road from East Stone Drive to new intersection on Orebank Road. | Safety/Reconstruction      | Intersection improvements and realignment as well as the addition of a multi-use path  | Completed          |
| Committed Projects                        |   |  |                            |  |                    |
| 112789.00                                 | SR-1 - Main St / Hammond Ave Signalization & Geometric Improvements   | Intersection of SR 1/Hammond Ave and Main St/Hammond Ave   | 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.   | Under Construction |
| 040028.01                                 | I-26 Tennessee Welcome Center   | Proposed Welcome Station South of Bell Ridge Road  | Welcome Center             | Construct New Tennessee Welcome Station  | Under Construction |
| 101397.00                                 | SR-75   | SR-36 to SR-357 (HPP ID# 2026, 388 & 4969)   | Widening                   | Widen from 2 lanes to 5 lanes  | Under Construction |
| 70080.00                                  | Route 72 - Phase II (Moccasin Gap Bypass)                             | From: 0.394 Kilometer South ECL Weber City To: West ECL Weber City (3.5 KM)  | Reconstruction/Realignment | Construct to 4 lanes   | Under Construction |
| 86598.00                                  | US-23 (RTE 23)  | SBL Over North Fork Holston River VA Structure #1003   | Bridge Replacement         | Bridge Replacement   | Under Construction |
| 101389.00                                 | US-23 (RTE 23)  | NBL over North Fork Holston River (VA STR1108)   | Bridge Replacement         | Bridge Replacement   | Under Construction |
| 293.00                                    | Route 614 (Yuma Road)   | From .06 miles west of intersection Route 713 to .02 miles east of Route 867 West  | Reconstruction             | Reconstruction   | Under Construction |
| City of Kingsport                         | Gibson Mill   | Gibson Mill Rd (Phase V) from Gibson St to Watauga St  | Reconstruction             | Reconstruct to 3 lanes as part of Gibson Mill Rd Improvements (transition to 2 lanes near Robertson St)  | Under Construction |
| City of Kingsport                         | Rock Springs Road   | From Edinburgh Channel Rd (entrance to new elementary school) to Cox Hollow/Rock Springs Drive   | Safety/Reconstruction      | Add shoulders, multi-use path, and eliminate horizontal/vertical curves  | Under Construction |
| STP-5                                     | Netherland Inn Road   | Realignment of Union St from US-11W to Netherland Inn Rd   | Reconstruction/Realignment | Realign and reconstruct Union St to improve access to Netherland Inn Rd and economic redevelopment area along the Holston River.   | Under Development  |
| 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.   | Under Development  |
| 17747.00                                  | Intersection of SR-224, US-23, & US-58 (RTE 58) (Moccasin Gap Bypass) | From: 0.486 Kilometer West ECL Weber City To: 0.491 Kilometer East ECL Weber City  | New Interchange            | New Interchange  | Under Development  |
| 12764.00                                  | Route 72 (RTE 72) (Moccasin Gap Bypass)                               | From: 0.394 Kilometer South ECL Weber City To: 0.120 Kilometer North Route 71  | Reconstruction/Realignment | Roadway Reconstruction (New Alignment)   | Under Development  |
| 86594.00                                  | Route 687 (Gate Road)   | Over Big Moccasin Creek VA Structure #6102   | Bridge Replacement         | Bridge Replacement   | Under Development  |
| 105467.00                                 | SR-126 (Memorial Blvd)  | From East Center Street in Kingsport to East of Cooks Valley Road  | Widening                   | Widening project from 2 to 4 lanes   | Under Development  |
| 112834.00                                 | SR-93 (Sullivan Gardens Parkway)                                      | From I-81 to SR-347  | Safety                     | 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. | Under Development  |



### 5.1.1.3 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 5-3.

**Table 5-3  
General Descriptions of Levels of Service (LOS)**

| Level of Service | Description  |
|------------------|--|
| <b>A</b>         | 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>B</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. |
| <b>C</b>         | 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.   |
| <b>D</b>         | 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.   |
| <b>E</b>         | 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.                                  |
| <b>F</b>         | 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 an LOS is assigned to the roadway segment. Table 5-4 presents the level of service thresholds by functional classification that were used to evaluate the roadway network in the Kingsport MTPO region.

**Table 5-4  
Level of Service (LOS) Thresholds by Roadway Type**

| Roadway Type             | LOS/Roadway Average Daily Traffic Volumes |        |        |         |         |
|--------------------------|---|--------|--------|---------|---------|
|                          | A   | B      | C      | D       | E       |
| <b>2-Lane Urban</b>      | 6,500                                     | 9,700  | 13,800 | 16,150  | 18,700  |
| <b>2-Lane Rural</b>      | 7,900                                     | 10,000 | 14,900 | 18,000  | 23,400  |
| <b>3-Lane</b>            | 6,400                                     | 9,200  | 11,300 | 15,300  | 17,100  |
| <b>4-Lane</b>            | 10,700                                    | 17,500 | 26,000 | 32,700  | 34,500  |
| <b>5-Lane</b>            | 13,400                                    | 20,200 | 27,300 | 34,400  | 37,500  |
| <b>6-Lane</b>            | 20,500                                    | 29,400 | 36,400 | 44,000  | 58,700  |
| <b>4-Lane Interstate</b> | 31,700                                    | 45,300 | 56,200 | 68,000  | 90,700  |
| <b>6-Lane Interstate</b> | 47,600                                    | 68,000 | 84,300 | 102,000 | 136,000 |

Source: Highway Capacity Manual, RPM Transportation Consultants

Note: If the ADT is greater than the LOS E volume, the roadway operates at LOS F.

Figure 5-4 illustrates the future level of service of the MTPO area roadways in 2035, assuming no additional improvements to the transportation system beyond the E+C network (as described in Table 5-2).



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 2035. As shown in Figure 5-4, a number of roadways within the MTPO region are expected to experience severe capacity deficiencies in the year 2035, 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 2035 would be nearly sixty percent worse than today if the region were to construct no additional transportation improvements over those currently committed (the E+C network). Table 5-5 illustrates the vehicle hours traveled (VHT) in the region currently, versus 2035 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 5-5  
Current & Future Vehicle Hours Traveled  
Without Additional Improvements**

| Roadways           | 2009<br>(Base Year) | 2035<br>(E+C)  | Percent<br>Change |
|--------------------|---------------------|----------------|-------------------|
| Collector          | 13,268              | 25,017         | 89%               |
| Minor Arterial     | 19,745              | 31,820         | 61%               |
| Principal Arterial | 33,421              | 45,469         | 36%               |
| Interstate         | 19,902              | 33,061         | 66%               |
| <b>Total VHT</b>   | <b>86,336</b>       | <b>135,367</b> | <b>57%</b>        |

Notes: Vehicle Hours Traveled (VHT) are daily totals. The table represents a comparison between current travel and development conditions (2009 population and employment on the 2009 base year highway network) to the future travel and development conditions (2035 population and employment on the 2035 E+C highway network – as described in Table 5-2)

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 2035 E+C Scenario, became the basis of the recommended Cost Feasible 2035 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 5-5 illustrates the predicted roadway level of service conditions in 2035 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 5-6 illustrates the results of the Cost Feasible Plan Scenario. Table 5-6 also provides a comparison of the three scenarios.

Figure 5-5  
2035 Level of Service – Vision Plan Scenario

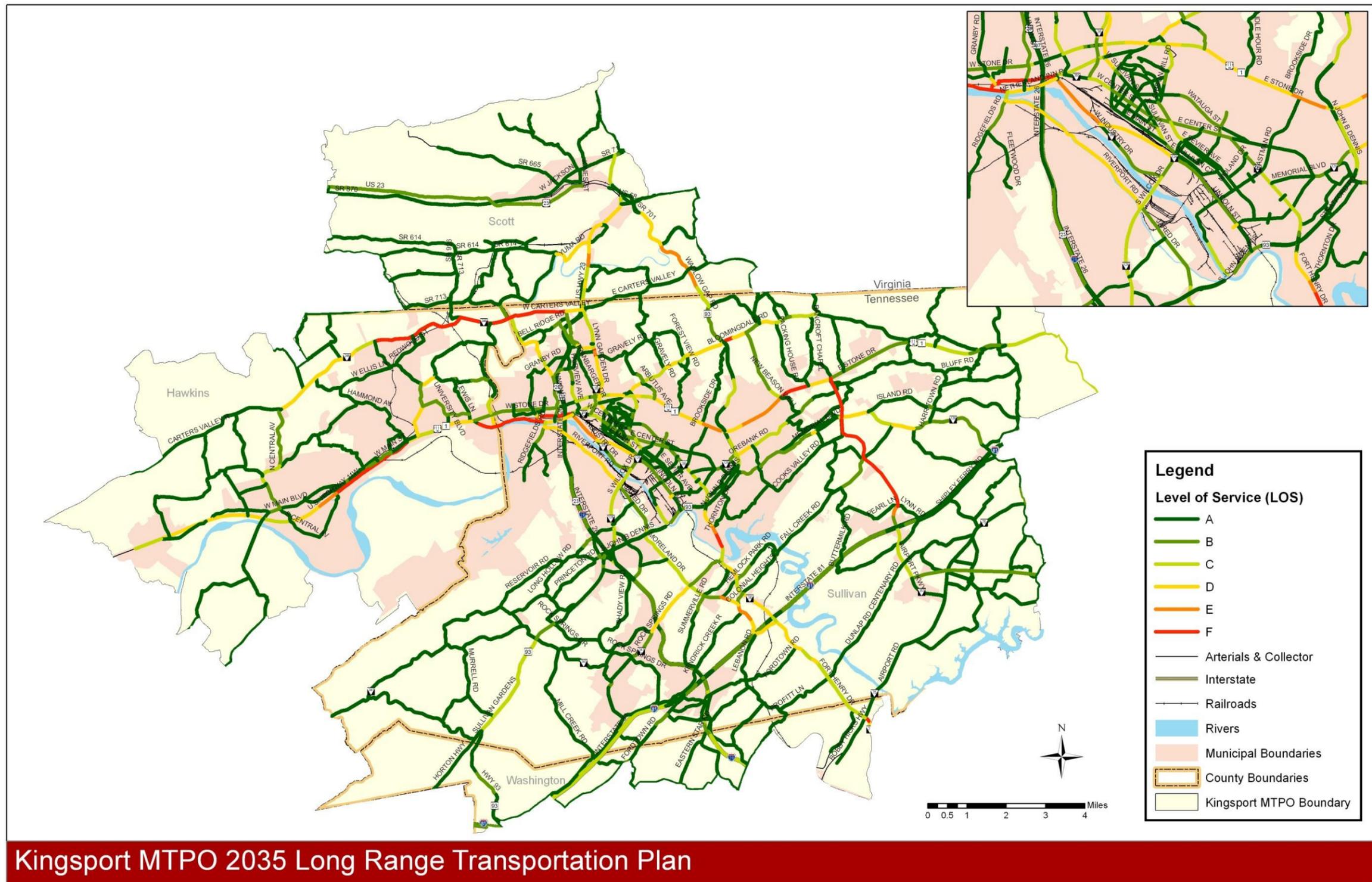
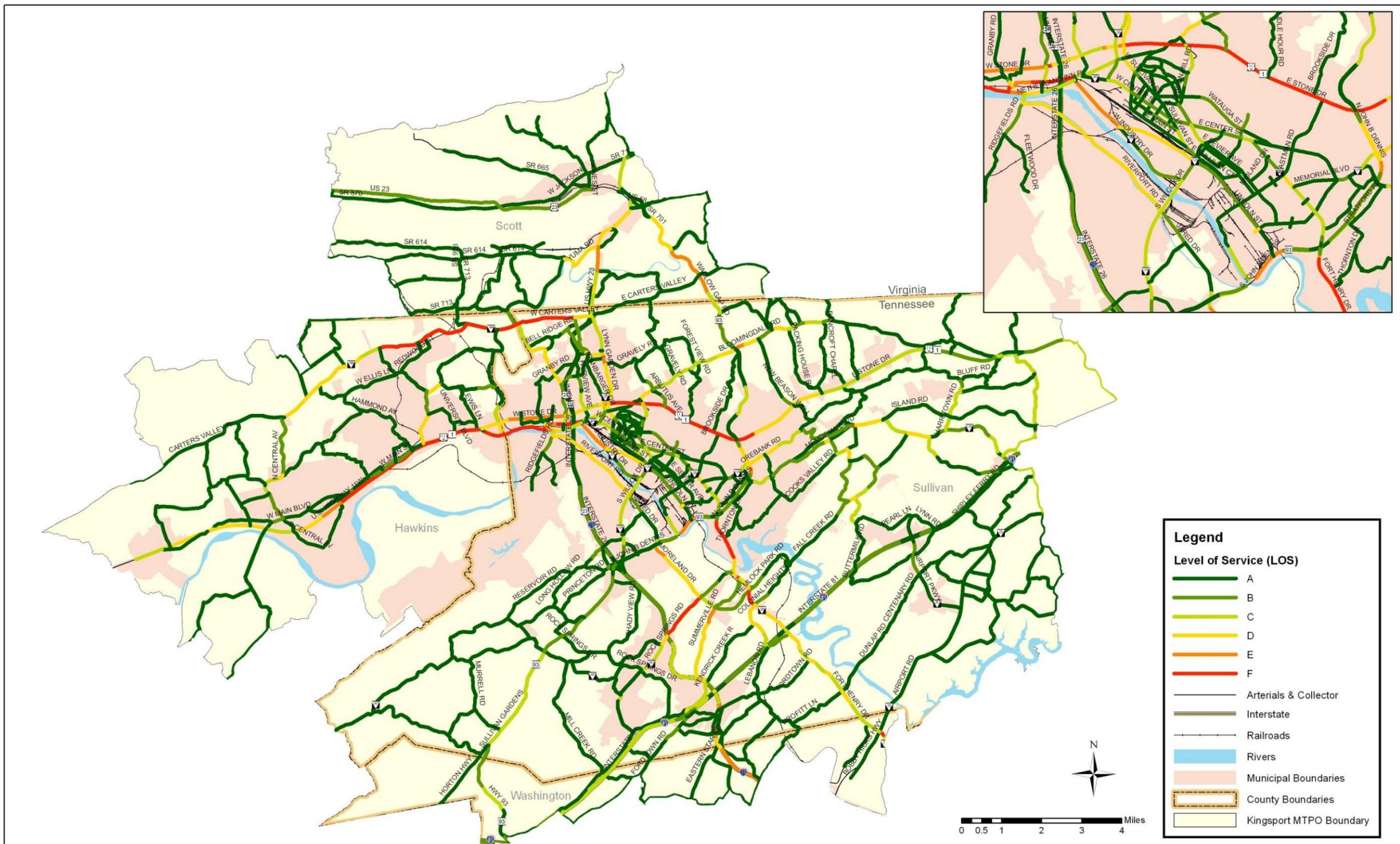


Figure 5-6  
2035 Level of Service – Cost Feasible Plan



Kingsport MTPO 2035 Long Range Transportation Plan

**Table 5-6  
2035 Vehicle Hours Traveled  
With & Without Future Planned Improvements**

| Roadways           | E+C Scenario          | Vision Plan Scenario | Cost Feasible Scenario |
|--------------------|-----------------------|----------------------|------------------------|
|                    | Without Improvements* | With Improvements**  | With Improvements***   |
| Collector          | 25,017                | 19,302               | 24,426                 |
| Minor Arterial     | 31,820                | 33,527               | 30,686                 |
| Principal Arterial | 45,469                | 44,136               | 44,461                 |
| Interstate         | 33,061                | 35,071               | 34,827                 |
| <b>Total VHT</b>   | <b>135,367</b>        | <b>132,036</b>       | <b>134,401</b>         |

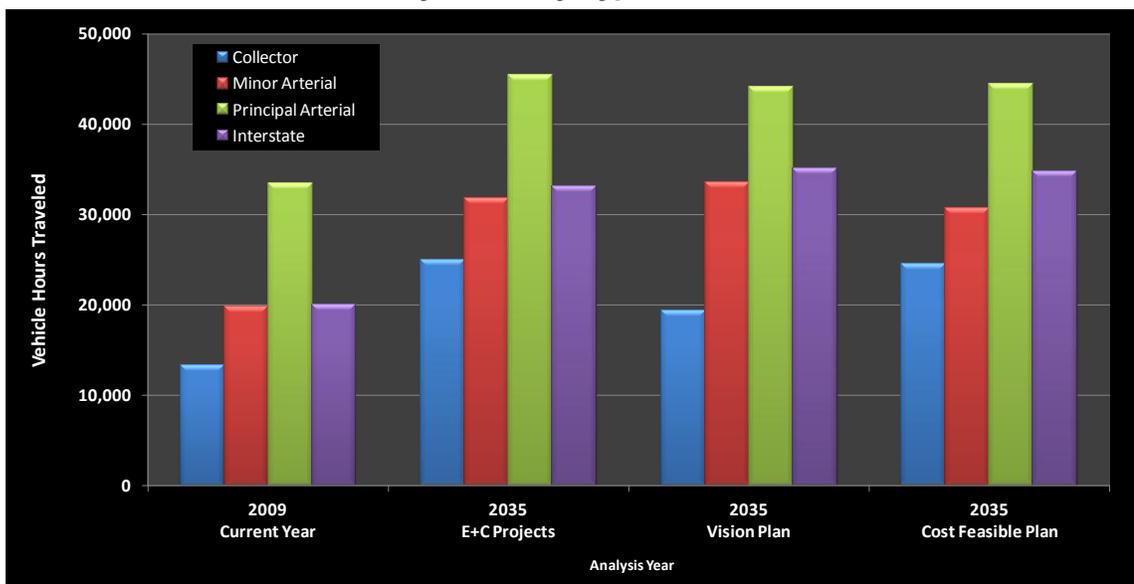
\* Without additional road improvements beyond transportation improvements currently under construction/development as described in the existing and committed (E+C) roadway network– as described in Table 5-2.

\*\* 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 5-7 illustrates the projected vehicle hours traveled (VHT) by facility type for 2009 (the base year), the 2035 E+C Scenario, the 2035 Vision Plan Scenario, and the 2035 Cost Feasible Plan Scenario. As illustrated from the analysis, implementation of the Cost Feasible planned improvements by 2035 should accommodate the region’s growing travel demands.

**Figure 5-7  
Vehicle Hours Traveled by Roadway Type – 2035 L RTP Scenario Results**



Source: Kingsport MTPO Travel Demand Model, 2012

## 5.1.2 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 5-8 illustrates these transit services available in the Kingsport area.

The following five subsections (5.1.2.1 through 5.1.2.4) 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 5.1.2.5 discusses future transit needs.

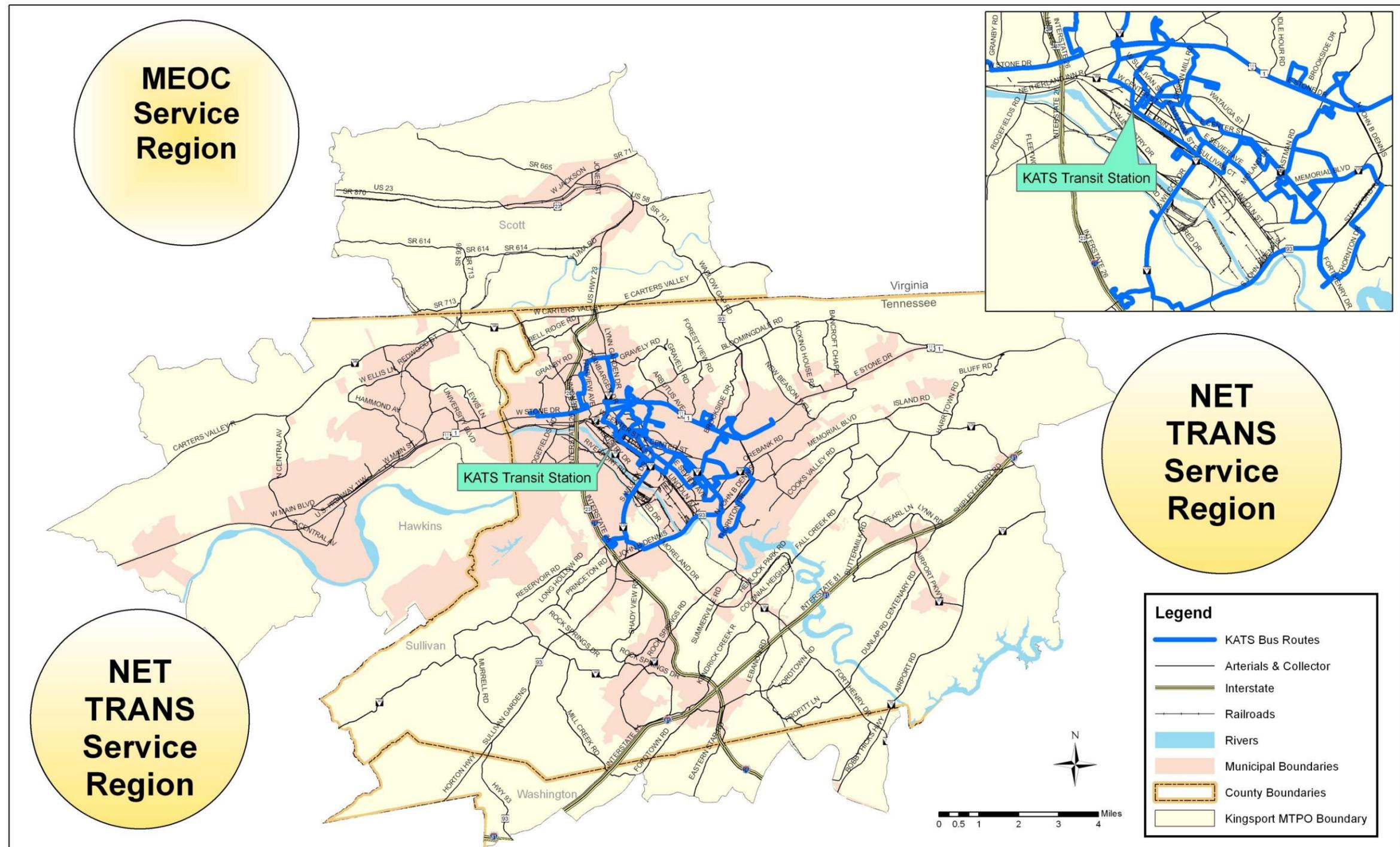
### 5.1.2.1 Fixed Route Services

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 five 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 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 5-8 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.

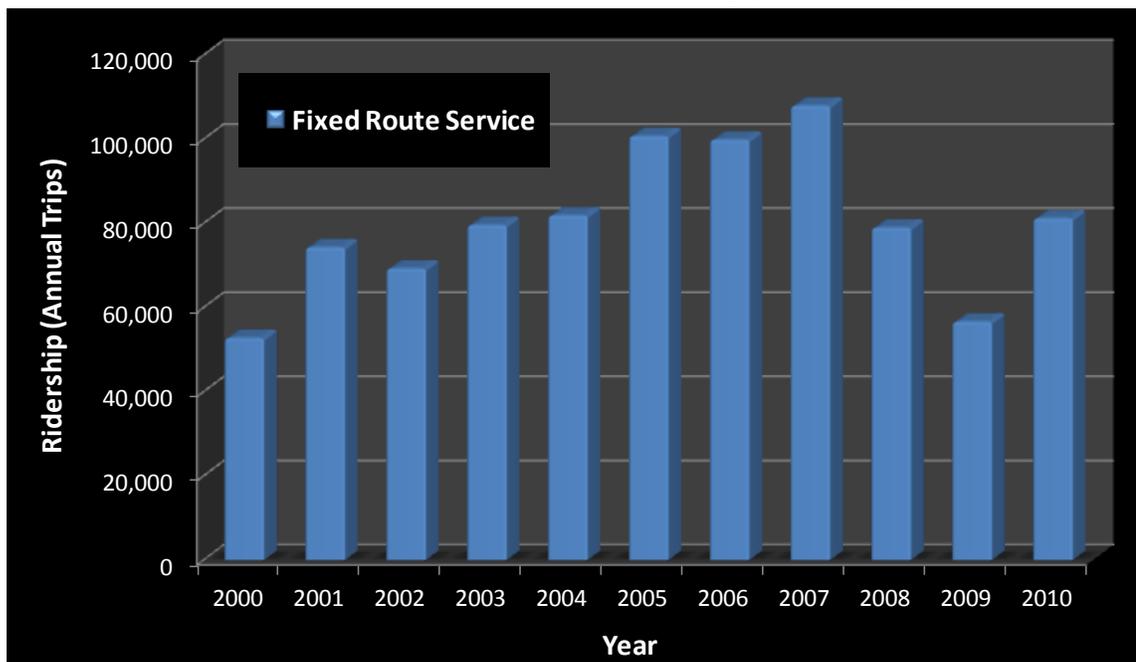
Figure 5-9 illustrates annual ridership for the fixed route bus service from 2000 through 2010. As shown, bus ridership has increased over the past three years with the implementation of monthly passes and the number of students traveling to the newly constructed Kingsport Academic Village. Another factor that has impacted ridership is the strategic marketing plan that has been aggressively adopted and thus, has elevated public transportation awareness in Kingsport.

Figure 5-8  
Transit Services in the Kingsport Area



Kingsport MTPO 2035 Long Range Transportation Plan

**Figure 5-9  
KATS Annual Fixed Route Ridership (2000-2010)**



Source: Kingsport Area Transit Service, 2011

Average weekday ridership on the fixed route service is approximately 370 passengers when school is in session and decreases to an average weekday ridership of approximately 266 passengers when school is not in session. The decrease in ridership is partly due to fewer trips by the Boys & Girls Club and Girls Incorporated. KATS has an arrangement with these organizations whereby children are picked up at five middle schools and transported to their facilities. The organizations reimburse KATS the cost of the fare (\$0.25) for each child transported.

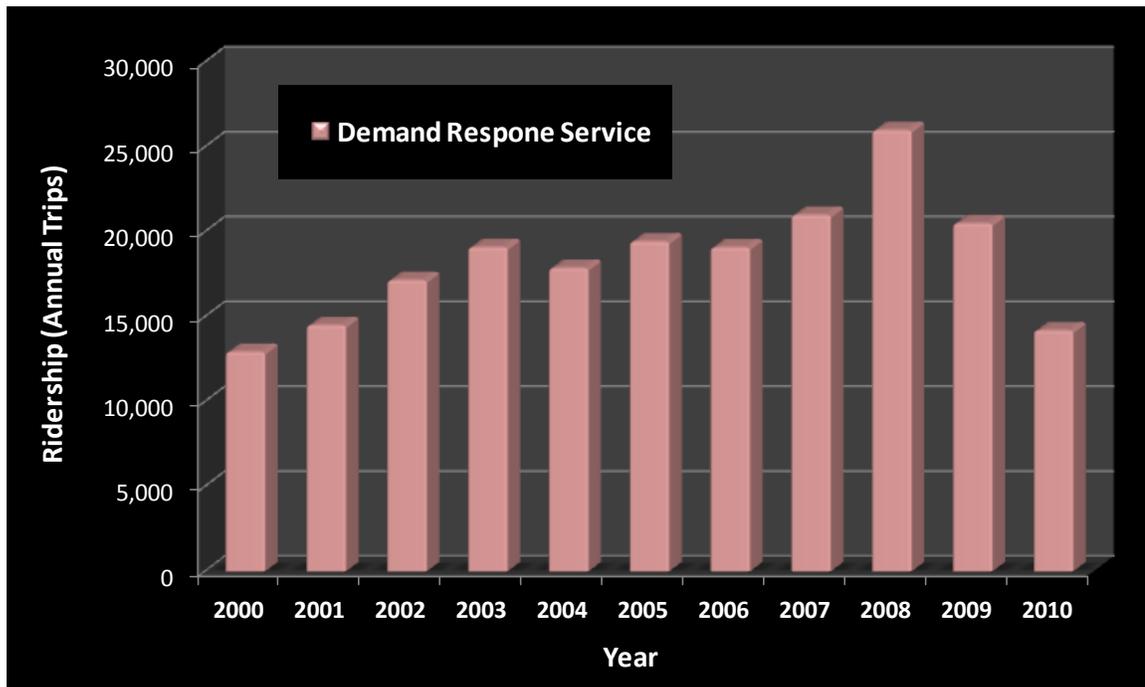
#### 5.1.2.2 Demand Response Services

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 a supplemental ADA paratransit service or demand response service. The demand response service, which is required by federal regulations, operates within the requisite ¾ mile of the fixed route system. This service is available to persons who qualify under ADA guidelines. KATS demand response ridership has grown from under 15,000 trips in 2000 to a high of 25,000 trips in 2008. Figure 5-10 illustrates ridership trends of KATS's demand response services over the last twelve years.

**Figure 5-10**  
**KATS - Demand Response Service Ridership (2000-2010)**



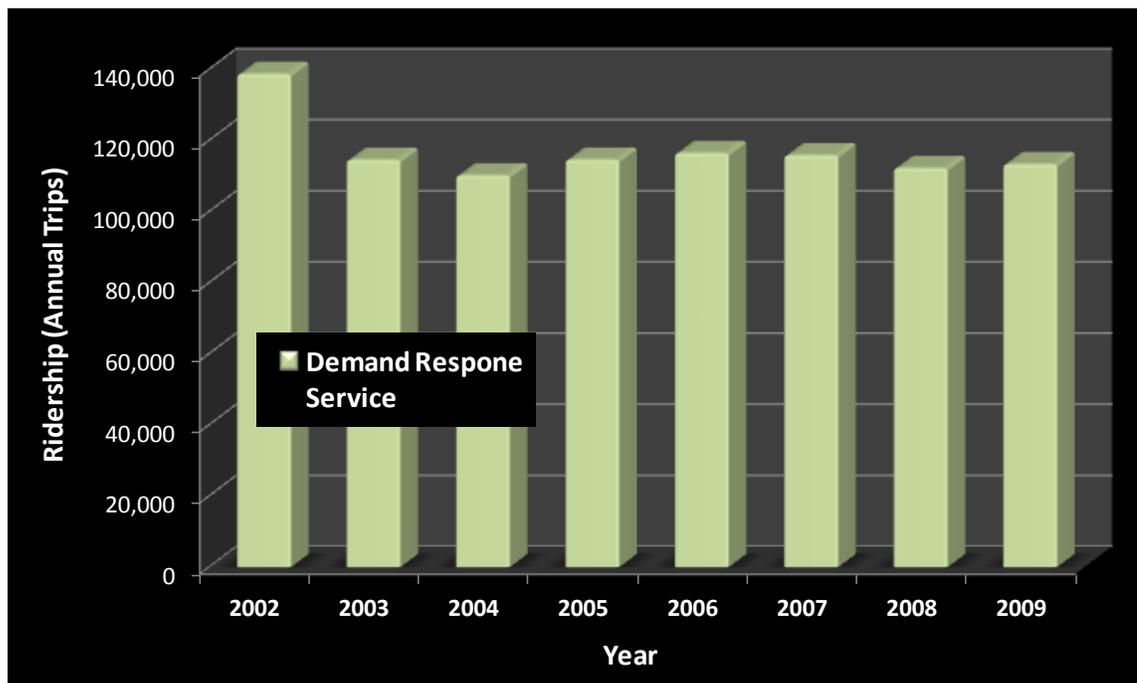
Source: Kingsport Area Transit Service 2011

#### NET TRANS

NET TRANS (Northeast Tennessee Rural Public Transit) is the service provider of First Tennessee Human Resource Agency (FTHRA) with services to a seven-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. They 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 8:00 am and 5:00 pm, and fares are zone-based, ranging from \$1.50 to \$8.50 per one-way trip.

NET TRANS provided 113,000 trips in 2009, running over 2 million miles. Figure 5-11 illustrates ridership trends of NET TRANS's demand response services over the last eight years for the seven-county FTHRA Region.

**Figure 5-11  
NET Trans - Demand Response Service Ridership (2002-2009)**



Note: Graphic above depicts ridership numbers for 7-County FTHRA Region

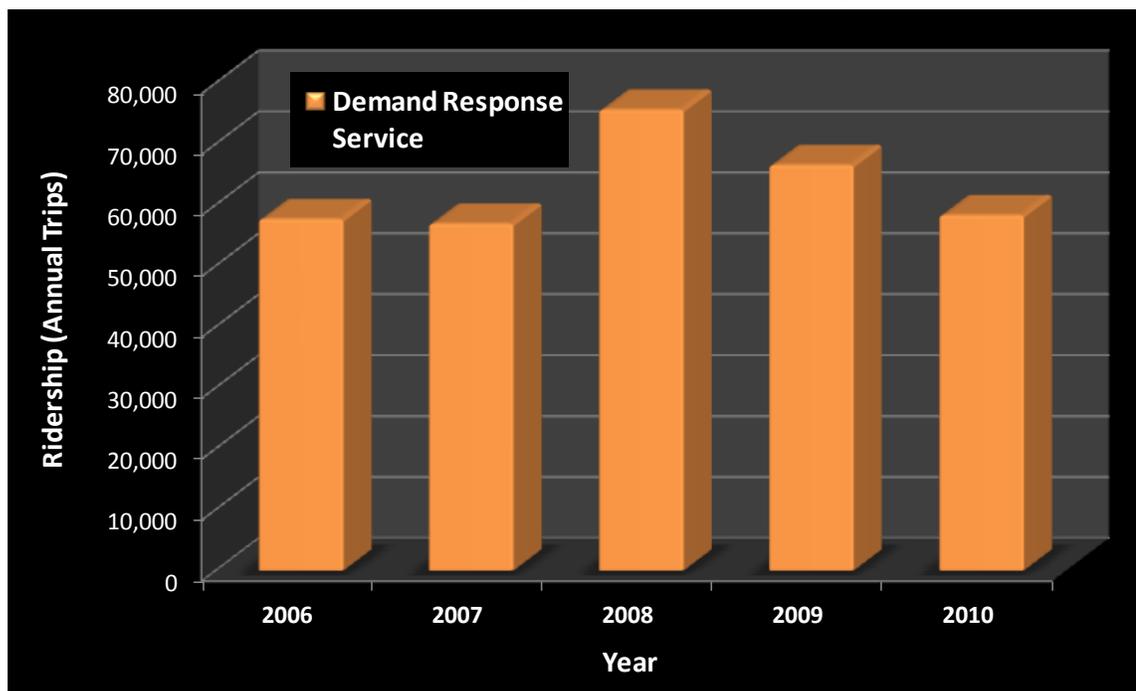
#### MEOC Transit

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, about 71 percent are considered to be general public transportation trips with the remaining 29 percent 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. Figure 5-12 illustrates ridership trends of MOEC Transit’s demand response services over the last five years for the four-county MOEC Region.

**Figure 5-12**  
**MEOC Transit - Demand Response Service Ridership (2006-2010)**



Note: Graphic above depicts ridership numbers for 4-County MEOC Region

In 2010, MOEC Transit provided 58,319 trips running 742,810 miles throughout its four-county region. MOEC Transit operations are funded through a variety of local, state, and federal funding sources including federal Section 5310, 5311, 5316, and 5317.

### 5.1.2.3 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

KATS currently maintains a fleet of 19 vehicles. Ten of these vehicles are buses, which are part of the fixed route bus service system. These vehicles have a total seating capacity of 168 seats system-wide (or 17 seats per vehicle). The average vehicle age of the fixed route fleet of buses is 4.2 years old.

KATS has seven demand response vehicles, which are all wheelchair lift-equipped raised-roof vans. The seating capacity of these vehicles is 44 (or 6 seats per vehicle). The average vehicle age of this fleet is 4.4 years old. KATS also has two rubber tire, non-electric trolleys with a combined seating capacity of 52 persons. The average vehicle age of this fleet is 7 years old. Table 5-7 provides a detailed listing of the current KATS transit fleet all of which are for exclusive service in the MTPO region.

**Table 5-7  
KATS – Transit Fleet**

| Vehicle Description             | Year | Unit No. | Fuel     | Seats |
|---------------------------------|------|----------|----------|-------|
| <b>Buses</b>                    |      |          |          |       |
| Cutaway Bus                     | 2006 | 1745     | Diesel   | 18    |
| Cutaway Bus                     | 2004 | 1618     | Diesel   | 10    |
| Cutaway Bus                     | 2004 | 1619     | Diesel   | 10    |
| Cutaway Bus                     | 2008 | 1853     | Diesel   | 18    |
| Cutaway Bus                     | 2008 | 1854     | Diesel   | 18    |
| Cutaway Bus                     | 2008 | 1852     | Diesel   | 18    |
| Cutaway Bus                     | 2010 | 1937     | Gasoline | 19    |
| Cutaway Bus                     | 2010 | 1938     | Gasoline | 19    |
| Cutaway Bus                     | 2010 | 1939     | Gasoline | 19    |
| Cutaway Bus                     | 2010 | 1940     | Gasoline | 19    |
| <b>Demand Response Vehicles</b> |      |          |          |       |
| Van- Raised Roof                | 2004 | 1646     | Gasoline | 7     |
| Van- Raised Roof                | 2004 | 1645     | Gasoline | 7     |
| Van- Raised Roof                | 2009 | 1910     | Gasoline | 6     |
| Van- Raised Roof                | 2009 | 1911     | Gasoline | 6     |
| Van- Raised Roof                | 2009 | 1912     | Gasoline | 6     |
| Van- Raised Roof                | 2009 | 1913     | Gasoline | 6     |
| <b>Trolleys</b>                 |      |          |          |       |
| Trolley                         | 2005 | 1673     | Diesel   | 26    |
| Trolley                         | 2005 | 1674     | Diesel   | 26    |

Source: Kingsport Area Transit Service, 2012

#### NET TRANS

NET TRANS maintains a fleet of 84 vehicles, which are available for service in the seven-county First Tennessee Human Resource Agency Region. Seventy-eight percent of the vehicles are wheelchair lift-equipped with an average vehicle seating capacity of 11 seats per vehicle.

#### MEOC Transit

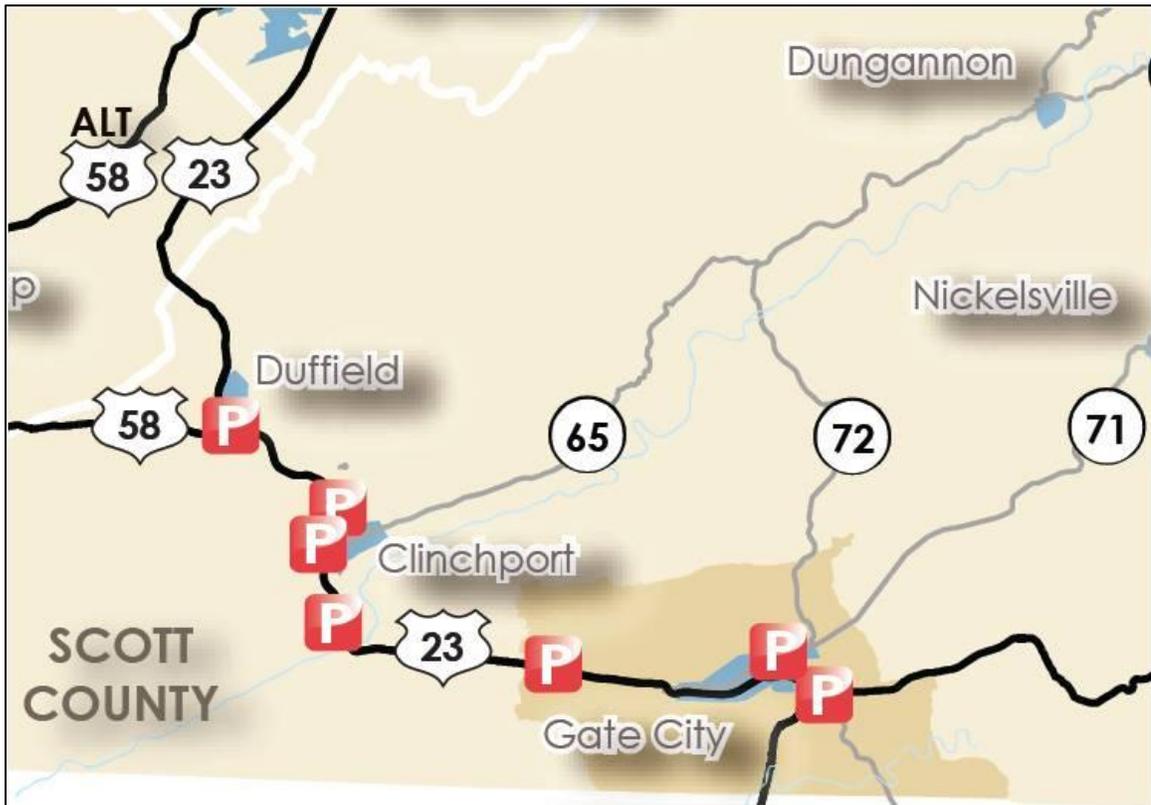
MEOC Transit's current public transit vehicle fleet includes 59 vehicles, including 50 small buses, five sport utility vehicles, three vans, one shop truck, and one sedan.

#### **5.1.2.4 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 daily 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 three lots along US 23 in the Virginia portion of the Kingsport MTPO, and another four lots outside the planning area along US 23 as depicted in Figure 5-13.

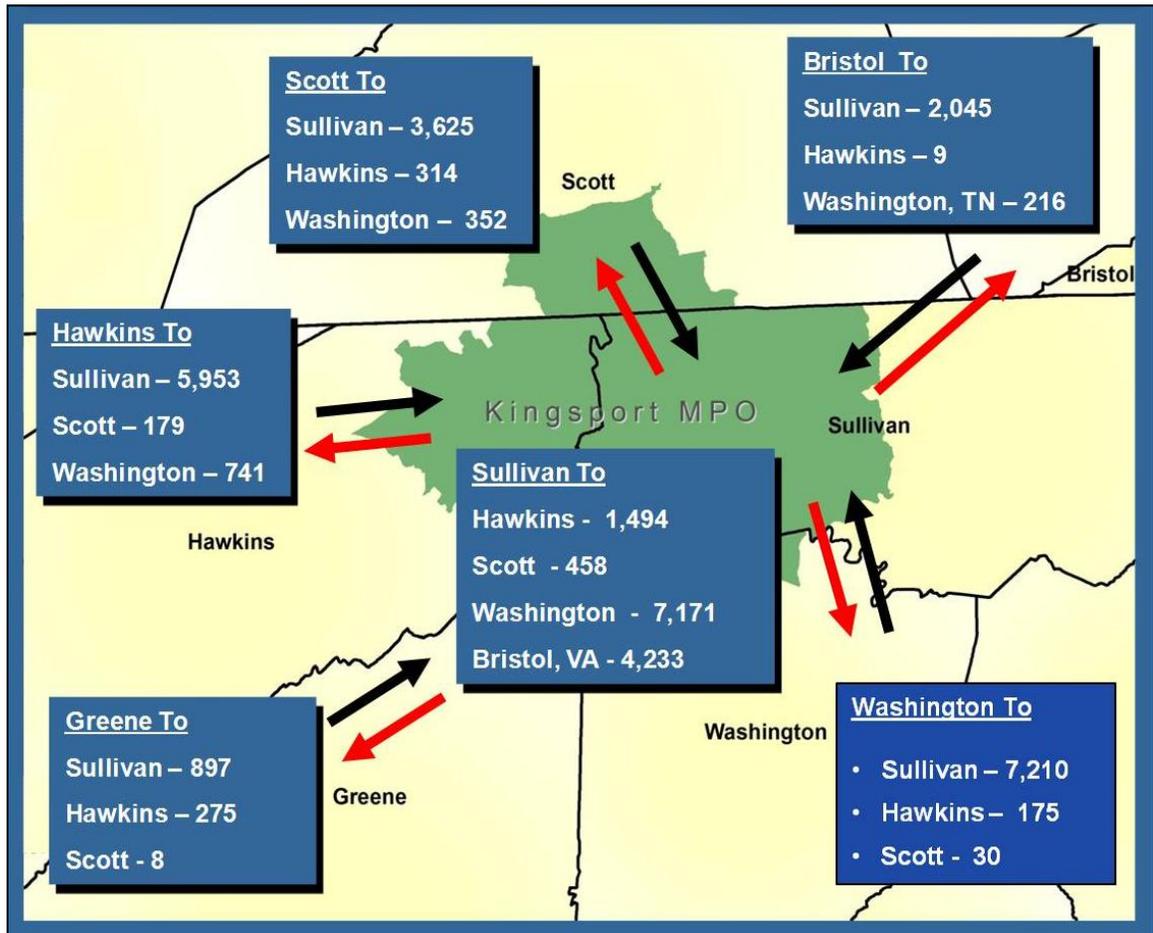
**Figure 5-13**  
**Official Park-and-Ride Lots in Scott County, Virginia**



Source: LENOWISCO, 2035 Rural Long Range Transportation Plan, 2011

According to US Census data, in 2000 nearly 3,700 Scott County residents commuted to Kingsport and Sullivan County each weekday for employment. Figure 5-14 illustrates commuter patterns within the Tri-Cities Region. Commuting between Johnson City and Kingsport (and vice versa) is sizable with over 14,000 commuters traveling between the two regions. 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 5-14  
Commuting Patterns (2000)**



Note: Number of persons commuting each weekday – 2000 data  
Source: 2000 U.S. Census

### 5.1.2.5 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.

Several recently completed studies, which were developed at the local, regional, and state levels, provide the foundation for understanding and planning for future public transportation with the Kingsport MTPO area. These efforts include:

#### City of Kingsport Service Design Report

This study was undertaken in 2007 by KATS to look at service option changes. The report included a review of current fixed route services, service hour operations, headway schedules, and other operational improvements to current services within the City of Kingsport by KATS. Key recommendations from the report included:

- Development of multiple hubs
- Shorter and more direct routes
- Reducing headways from 80-minutes to 60-minutes
- Establishment of transit on demand zones
- East side service routes
- Use of AVL and other technologies
- Expansion of bus shelters, benches, and signs

Since the completion of this report KATS has implemented a number of the service recommendations. The 2035 LRTP incorporates the recommendations of this report and the 2035 LRTP Cost Feasible Plan accounts for the necessary funds to move forward with these service recommendations.

#### Coordinated Public Transit-Human Services Transportation Plan

Under SAFETEA-LU Coordinated Public Transit-Human Services Transportation Plan (CPTHSTP). In general the CPTHSTP includes:

- An identification of transportation needs of individuals with disabilities, older adults, and people with low-incomes within the MTPO area,
- Strategies for meeting those needs, and
- The prioritization of transportation services for funding and implementation.

A CPTHSTP serves as the framework for how Job Access and Reverse Commute (JARC), New Freedom, and Section 5310 (Elderly Individuals and Individuals with Disabilities) grant funds are distributed locally to address transportation needs of individuals with disabilities, older adults, and people with low incomes within a region. Currently the Kingsport MTPO area does not have a CPTHSTP, which limits KATS and other service providers the use of these funds.

In 2011 MEOC Transit, in cooperation with VDOT, and LENOWISCO developed the MEOC Transit Development Plan, which is the CPTHSTP 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.

It is recommended that in the next three years the Kingsport region develop a CPTHSTP for the MTPO area and further explore service options such as the regional connectivity service proposed in MEOC's Transit Development Plan.

#### 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.

### **5.1.3 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 just 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.

#### **5.1.3.1 Current Conditions**

Currently, approximately 41 miles of roadway with sidewalk and 23 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 5-15 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.

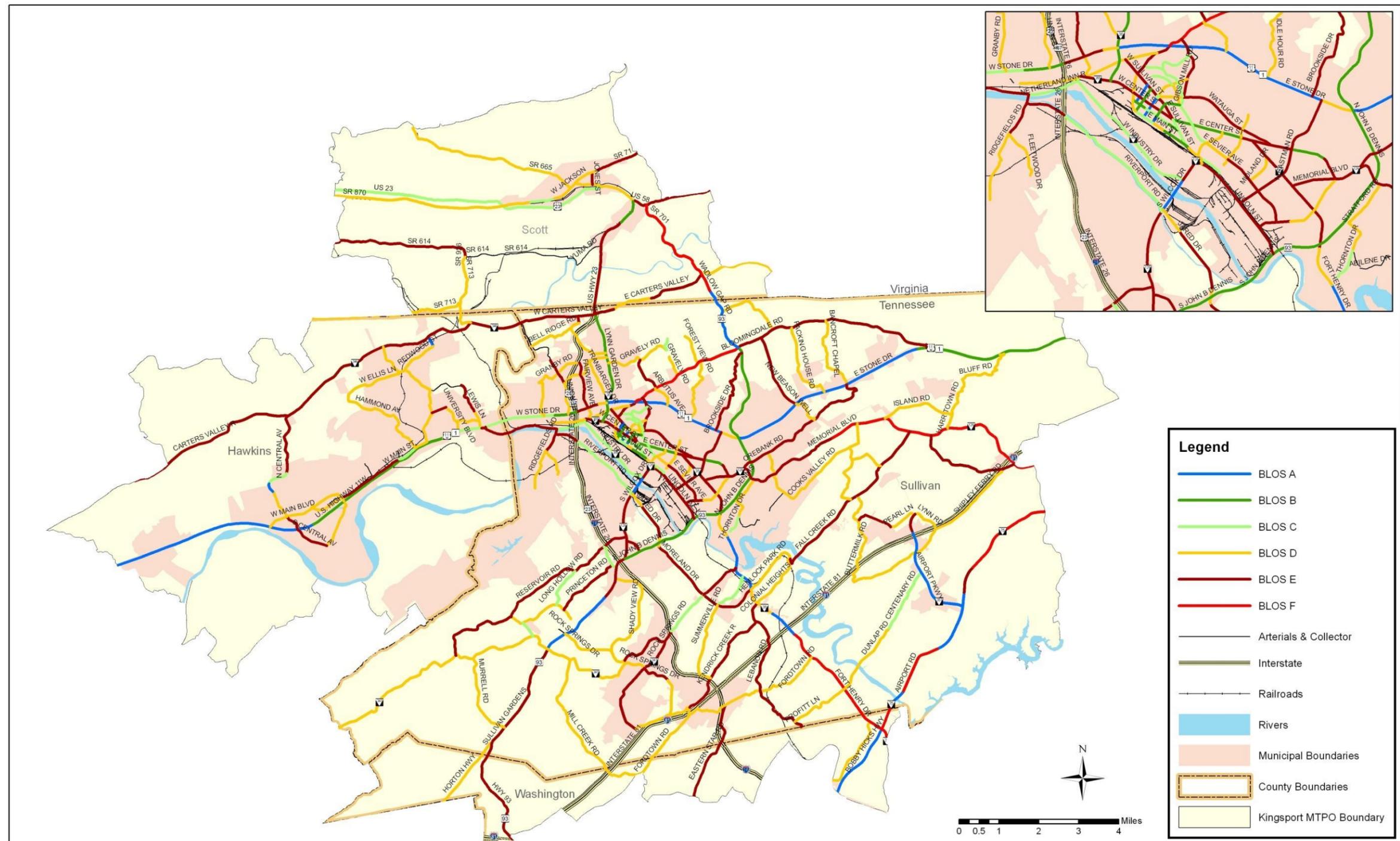
As shown in Figure 5-16, approximately 75 miles of roadway in the region are identified as BLOS A, B, or C. However, these miles are far from contiguous, making moderate to long distance trips through the region difficult for most would-be cyclists.

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 like 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 5-16  
Bicycle Level of Service (BLOS) Map



Kingsport MTPO 2035 Long Range Transportation Plan

### **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 5-17 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.

#### **5.1.3.2 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.

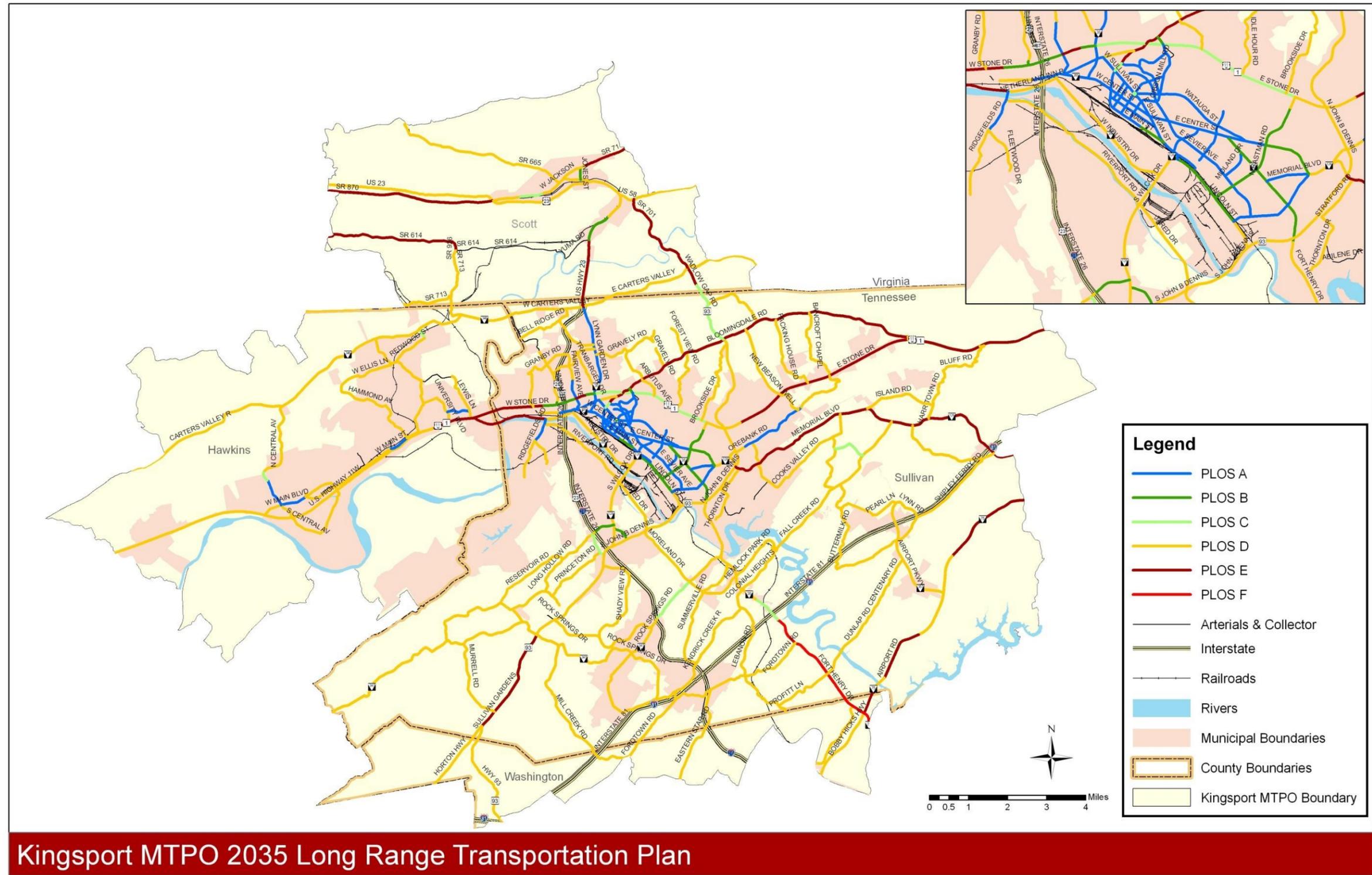
#### **Proposed Bicycle Network**

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 5-18. 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, 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 5-17  
Pedestrian Level of Service (PLOS) Map



Kingsport MTPO 2035 Long Range Transportation Plan

### **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.

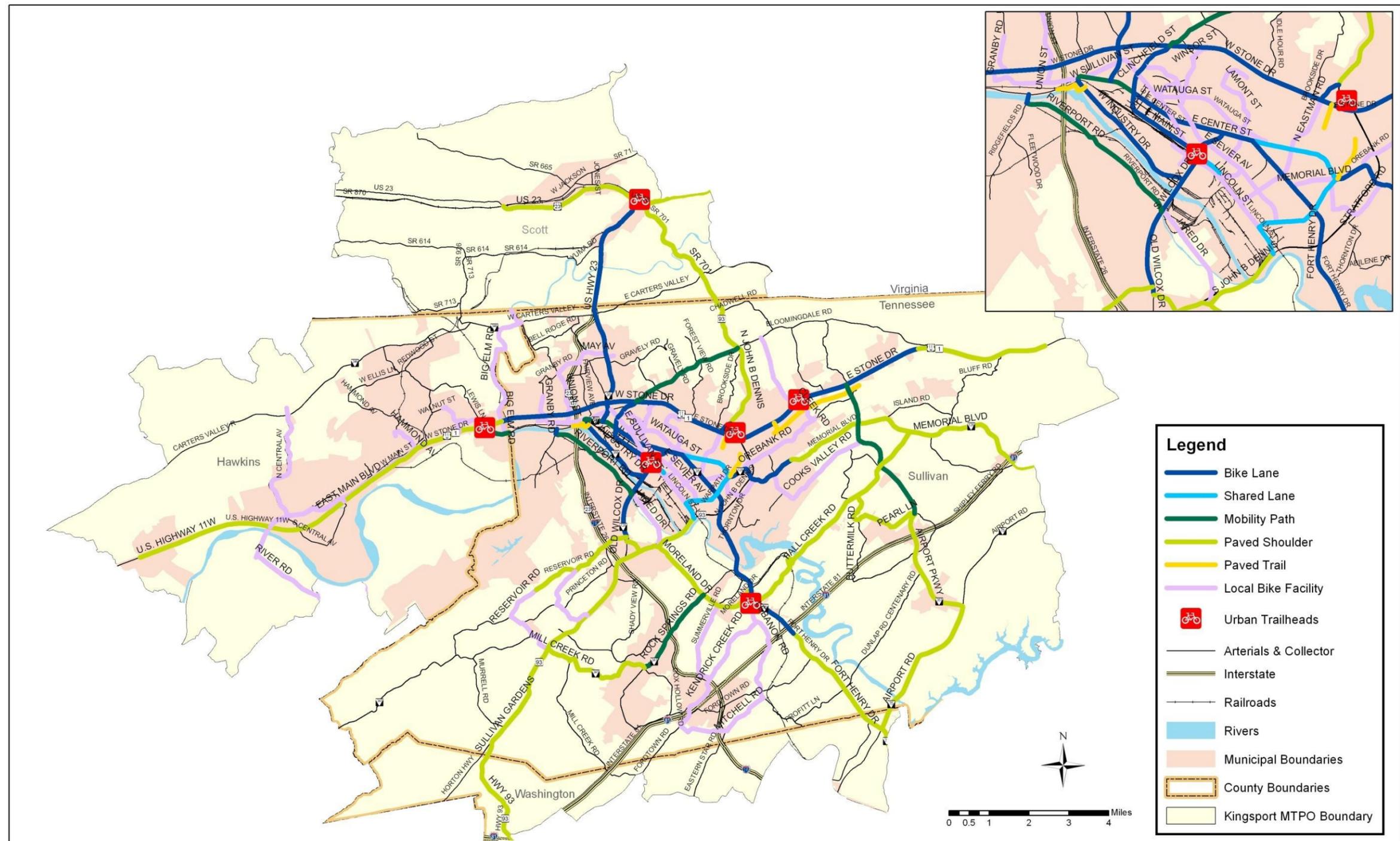
These roadways serve as major commuting corridors, commercial corridors, and corridors of commerce; and they connect communities, activity centers, transit, and major destinations throughout the region, as shown in Figure 5-19. As such, they serve as the backbone to other roadways and streets in the 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 MTPO'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 5-18  
Proposed Bicycle Network Map



Kingsport MTPO 2035 Long Range Transportation Plan



#### 5.1.4 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 US 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 2005 by SAFETEA-LU.

The Kingsport Regional Intelligent Transportation System (KRITS) Architecture was developed in 2008 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, 12 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:

- City of Kingsport Fire Department
- City of Kingsport Police Department
- City of Kingsport Public Works
- City of Mt Carmel Police Department
- KATS
- FHWA – TN Division
- Johnson City MTPO
- MEOC Transit
- Sullivan County Sheriff's Office
- TDOT
- Tennessee Highway Patrol
- VDOT

The KRITS Architecture contains 18 of the 85 market packages defined in the National ITS Architecture. The services (either existing or to be implemented in the future) in the KRITS are listed as follows:

##### **Traffic Management**

- Network Surveillance
- Surface Street Control
- Traffic Information Dissemination
- Traffic Incident Management System

##### **Emergency Management**

- Emergency Call-Taking and Dispatch
- Emergency Routing
- Wide-Area Alert
- Disaster Traveler Information

### **Traveler Information**

- Broadcast Traveler Information
- Interactive Traveler Information

### **Maintenance and Construction Management**

- Road Weather Data Collection
- Weather Information Processing and Distribution
- Work Zone Management
- Maintenance and Construction Activity Coordination

### **Public Transportation Management**

- Transit Vehicle Tracking
- Transit Fixed-Route Operations
- Demand Response Transit Operations
- Transit Security

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.

#### **5.1.5 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 5-20.

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 terrorists' 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 to the length of 8,000 feet and a secondary runway to 4,447 feet. Airlines servicing the Tri-Cities area include American Connection, Delta Connection, Northwest AirlinK, and US Airways Express. Daily flight activity includes approximately 28 departure flights and approximately 31 arrival flights.

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.

In August 2005, a new 13,000-square foot air cargo logistics center was opened. The new facility offers 174,000 square feet of cargo apron space and 4,000 linear feet of parallel taxiway and a new cargo apron connector. In addition, heavy truck traffic can access the facility via a newly built industrial access road. There are also plans for future air cargo expansion via a 35-acre development area capable of accommodating approximately 220,000 square feet of direct aircraft access facilities and/or warehousing and distribution operations. Air cargo volumes for 2005 totaled approximately 2,000 tons. The airport offers full customs and border protection services and, in 1994, was awarded a Grant of Authority to establish, operate and maintain a Foreign Trade Zone. The zone currently comprises eight (8) general-purpose sites and one (1) subzone.

A number of air cargo carriers, expeditors, freight forwarders, and contract carriers have used the Airport over the years. Familiar names such as Burlington Northern, DHL, Emery Worldwide, FedEx, and UPS are only a few of the companies that have operated on a scheduled basis.

#### **5.1.5.1 Recent Studies**

The two most recent aviation-related studies that impact aviation conditions within the MTPO area include:

Tennessee Statewide Aviation System Plan – commissioned in 2002 by TDOT to develop a statewide long range aviation plan to assist airports within Tennessee to grow as a part of the State’s aviation transportation economy.

Tennessee 2004 Updated Aviation System Plan – an update to the 2002 plan by TDOT to account for major events that had changed aviation planning assumptions. Items considered included September 11, 2001 terrorist attacks, recent economic downturn, and cargo trends.

Both studies project positive growth in commercial as well as air cargo transportation over the next 20 to 25-years.

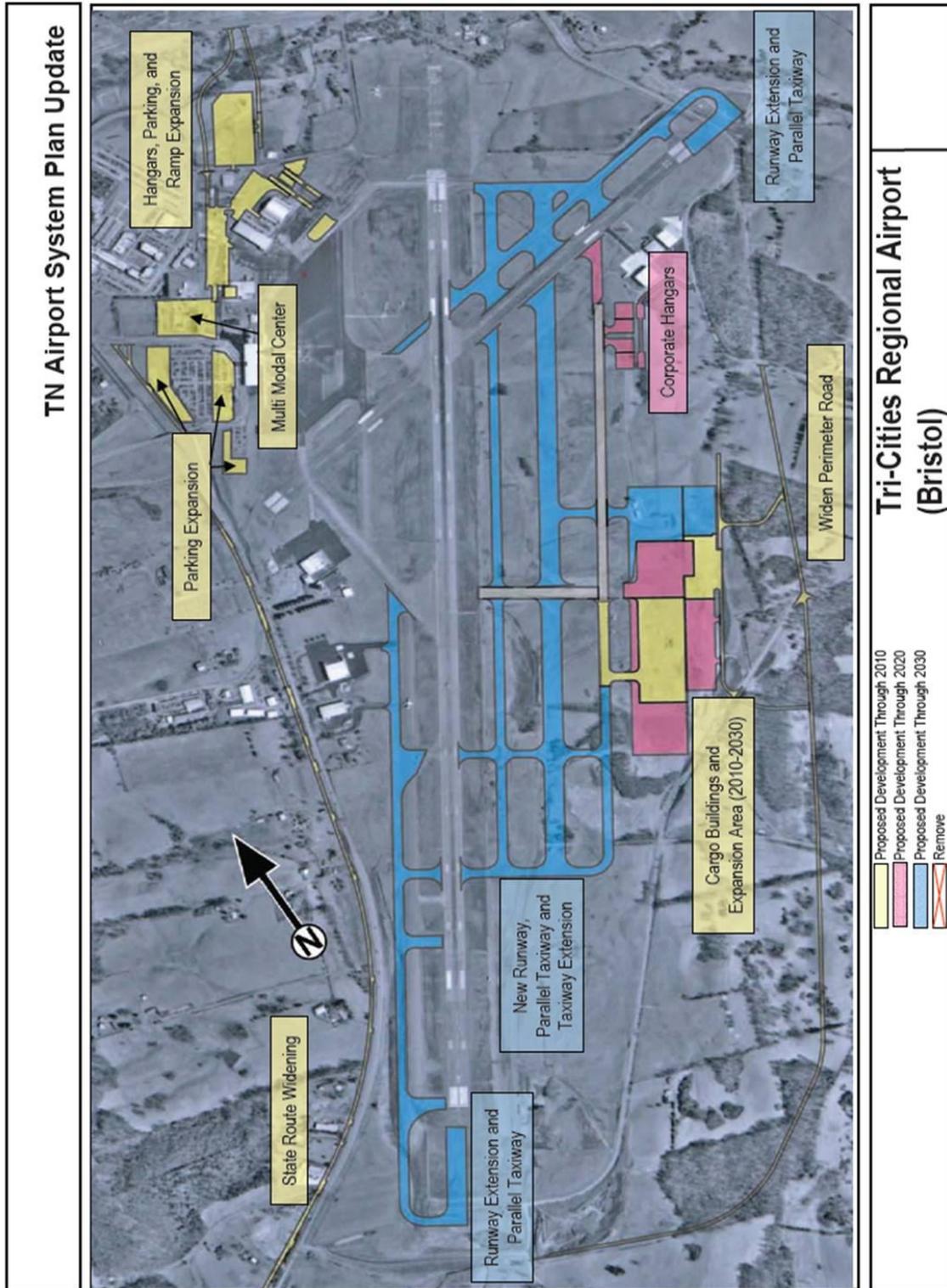
#### **5.1.5.2 Future Conditions**

As revealed in the Tennessee Statewide Aviation System Plans, major capital improvements for Tri-Cities Regional Airport in the near term (by 2015) include parking and ramp expansions, a multi-modal center, expansion of the cargo area and new cargo buildings, widening of the airport perimeter road, and widening of the state route west of the airport (SR 75). Major improvements 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 5-21 from the 2004 Tennessee Aviations Systems Plan.

**Figure 5-21  
 Tri-Cities Regional Airport Proposed Master Plan Improvements**

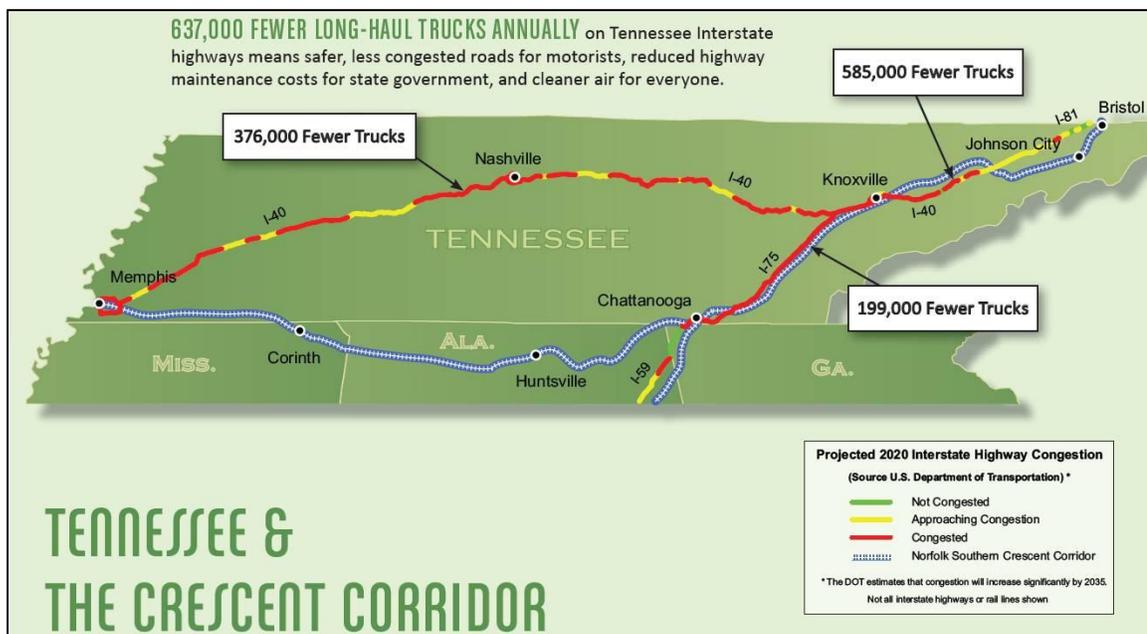


### 5.1.6 Rail

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 5-23 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 2,500-mile rail route that will link key markets in the Northeast and Southeast with high-quality rail intermodal services. Figure 5-22 depicts some of the benefits of Norfolk's Crescent Corridor investments to Tennessee and the I-81 corridor, which provide direct benefit to the Kingsport area.

**Figure 5-22**  
**Norfolk Southern Crescent Corridor Map**



Source: Norfolk Southern

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.



### 5.1.7 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. It also increases the burden on that infrastructure.

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.

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).

#### 5.1.7.1 Commodity Flows

An analysis of commodity flows was performed based on the 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 2007. This data is disaggregated by commodity, mode, and origin/destination pair. The commodity flow analysis provides summaries of these characteristics.

The following highlights key findings from the analysis:

##### From Sullivan County, TN (in 2007)

- Approximately 4.8 million tons of commodities were shipped from Sullivan County to other parts of the US
- 85 percent (or over 4 million tons) of the commodities (in terms of weight) shipped from Sullivan County were transported by truck in 376,00 truckloads, over 187,000 of which were leaving Sullivan County empty
- 15 percent (or 720,000 tons) of the commodities (in terms of weight) shipped from Sullivan County were transported by rail
- Approximately 31,000 tons were shipped by drayage, most of which was transported from truck to rail
- The county receiving the largest number of goods by truck (in terms of weight) was Washington County, Tennessee, which received 912,000 tons (or 51,000 truckloads), which was mostly broken stone or riprap
- The region receiving the largest number of goods (in terms of weight) by trucks from Sullivan County were other counties in Tennessee, which received over 2 million tons
- The region receiving the largest number of goods (in terms of weight) by rail was the Middle Atlantic region of the US, which received nearly 112,000 tons consisting mostly of miscellaneous industrial organic chemicals
- Nearly 3,000 tons of air cargo was shipped from Sullivan County
- No commodities were shipped by water from Sullivan County

To Sullivan County, TN (in 2007)

- Approximately 7.6 million tons of commodities were shipped to Sullivan County from other parts of the US
- 52 percent (nearly 4 million tons) of all commodities (in terms of weight) shipped to Sullivan County were transported by truck in 368,000 truckloads, nearly 177,000 of which returned to Sullivan County empty
- The area shipping the largest number of goods to Sullivan County by truck (in terms of weight) was Shelby County, TN, which shipped 819,000 tons (or 9 percent) most of which was warehouse and distribution goods
- The number one commodity transported to Sullivan County by truck (in terms of weight) was warehouse and distribution center goods at 2.3 million tons. 755,000 tons came from Shelby County, Tennessee, which is located in the southwest corner of the state, the farthest point from the MTPO area.
- 48,000 tons of commodities were shipped by drayage to Sullivan County nearly all of which was transferred from truck to rail and all of the loads were empty
- 48 percent (3.7 million tons) was shipped by rail, with bituminous coal being the largest commodity
- Nearly 1,000 tons of air cargo was shipped to Sullivan County

From Hawkins County, TN (in 2007)

- Nearly 1.8 million tons of commodities were shipped from Hawkins County to other parts of the US
- 96 percent (or 1.7 million tons) of all commodities (in terms of weight) shipped from Hawkins County were transported by truck in 106,000 truckloads, nearly 21,000 of which were leaving Hawkins County empty
- 4 percent (or 72,000 tons) of all commodities (in terms of weight) shipped from Hawkins County were transported by rail
- The county receiving the largest number of goods by truck (in terms of weight) was Shelby County, TN, which received 151,000 tons (or nearly 8 percent) most of which was warehouse and distribution center goods, treated wood, and primary forest materials
- The region receiving the largest number of goods (in terms of weight) by trucks from Hawkins County were other counties in Tennessee, which received over 800,000 tons
- Tuscaloosa County, Alabama received the largest amount of freight by rail (in terms of weight) from Hawkins County, which received nearly 24,000 tons of metal scrap or tailings
- No commodities were shipped by air or water from Hawkins County

To Hawkins County, TN (in 2007)

- Over 2.3 million tons of commodities were shipped to Hawkins County from other parts of the US
- 17 percent (409,000 tons) of all commodities (in terms of weight) shipped to Hawkins County were transported by truck in 104,000 truckloads, nearly 82,000 of which returned to Hawkins County empty
- 83 percent (or over 1.9 million tons) was shipped by rail, with bituminous coal being the largest commodity

- The area shipping the largest number of goods to Hawkins County by truck (in terms of weight) was Shelby County, TN, which shipped 44,000 tons (or 11 percent) most of which was warehouse and distribution center goods
- No commodities were shipped by air or water to Hawkins County

The following Scott County analysis is a partial snapshot of freight activity based on available TRANSEARCH commodity flow data purchased by TDOT from IHS Global Insight.

From Scott County, VA (in 2007)

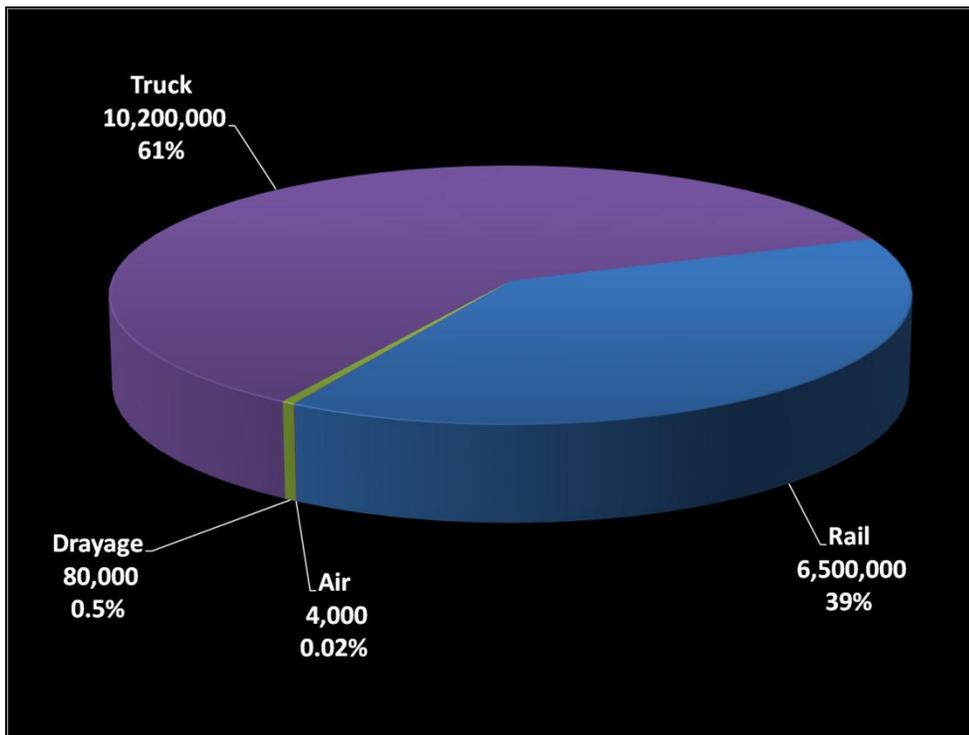
- Approximately 135,000 tons of commodities were shipped from Scott County to a Tennessee county
- 93 percent (or 125,000 tons) of these commodities (in terms of weight) shipped from Scott County were transported by truck in 6,600 truckloads, over 1,400 of which were leaving Scott County empty
- 7 percent (or 9,600 tons) of these commodities (in terms of weight) shipped from Scott County were transported by rail
- The Tennessee county receiving the largest number of goods by truck (in terms of weight) was Washington County which received 48,000 tons, all of which was broken stone or riprap
- The region receiving the largest number of goods (in terms of weight) by rail was Sullivan County, Tennessee, which received nearly 2,200 tons of pulp or pulp mill products

To Scott County, VA (in 2007)

- Nearly 1,900 tons of commodities were shipped to Scott County from a Tennessee county by truck using 4,600 truckloads consisting of 4,500 semi-trailers returning empty
- The Tennessee county shipping the largest number of goods to Scott County by truck (in terms of weight) was Haywood County, Tennessee, which shipped approximately 888 tons of warehouse and distribution center goods
- Approximately 1,000 truckloads traveled to Scott County from Sullivan County with nearly all of them returning empty
- Approximately 20,000 tons of commodities shipped to Scott County by rail, all of which contained fertilizer
- Freight coming to Scott County by rail originated in Yazoo, MS, Richmond County, GA, and Pike County, MO.

Over 492,000 trucks annually are transporting nearly 10.3 million tons of goods in and out of the counties of Sullivan and Hawkins, TN and Scott, VA each year. Truck transport represents about 61 percent of all commodities flowing into and out of the region. Rail transport represents about 39 percent of all commodities flowing into and out of the region. Drayage transport and air cargo represent less than 1 percent each of all commodities flowing into and out of the region. Figure 5-24 identifies the total freight share by mode for Sullivan and Hawkins Counties, TN and Scott County, VA.

**Figure 5-24**  
**Total Freight Share (By Weight & Mode) For MTPO Counties (2007)**



Source: IHS Global Insight Transearch, 2007

CSX Corporation and the Eastman Chemical Company have ceased operation of an intermodal station located in Kingsport. The companies decided to transport chemicals from the plant by truck since the majority of the chemicals are being transported to Savannah, Georgia and Charleston, South Carolina. Both of these cities are less than 500 miles from Kingsport. More than 25,000 trucks per year have been added to the highways in Kingsport, since the closing of the intermodal station in 2007.

Freight Flows by Truck

As illustrated, one of the primary means of goods transport to and from Sullivan and Hawkins County, TN, and Scott County, VA is by truck. Table 5-8 and Table 5-9 provide a summary of the top ten commodities (by weight) shipped by truck from Sullivan and Hawkins Counties, respectively. Table 5-10 provides a summary of the top five commodities shipped by truck from Scott County to Tennessee.

**Table 5-8  
Top Ten Commodities (By Weight)  
From Sullivan County By Truck (2007)**

| COMMODITY                              | TRUCK TONS       |
|--|------------------|
| Broken Stone Or Riprap                 | 2,038,967        |
| Plastic Mater and Synthetic Fiber      | 458,278          |
| Warehouse and Distribution Center      | 222,773          |
| Ready-mix Concrete, Wet                | 105,384          |
| Potassium or Sodium Compound           | 102,217          |
| Miscellaneous Agricultural Chemicals   | 90,016           |
| Clay Brick or Tile                     | 83,108           |
| Motor Vehicle Parts Or Accessories     | 72,510           |
| Containers or Boxes, paper             | 61,379           |
| Crude Products of Coal, gas, petroleum | 55,643           |
| Other Commodities                      | 797,026          |
| <b>Total Tons</b>                      | <b>4,087,301</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-9  
Top Ten Commodities (By Weight)  
From Hawkins County By Truck (2007)**

| COMMODITY                         | TRUCK TONS       |
|-----------------------------------|------------------|
| Gravel or Sand                    | 405,325          |
| Warehouse and Distribution Center | 318,006          |
| Flat Glass                        | 255,179          |
| Treated Wood Products             | 127,582          |
| Motor Vehicle Parts or Acc.       | 110,555          |
| Primary Forest Material           | 106,770          |
| Fabricated Metal Product, Nec.    | 80,369           |
| Broken Stone Or Riprap            | 39,322           |
| Concrete Products                 | 37,159           |
| Iron or Steel Forgings            | 35,096           |
| Other Commodities                 | 79,727           |
| <b>Total Tons</b>                 | <b>1,717,264</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-10  
 Top Five Commodities (By Weight)  
 From Scott County By Truck (2007)**

| COMMODITY                          | TRUCK TONS     |
|------------------------------------|----------------|
| Broken Stone or Riprap             | 125,144        |
| Primary Forest Material            | 74             |
| Motor Vehicle Parts or Accessories | 11             |
| Motor bus or Truck Bodies          | 5              |
| Warehouse and Distribution         | 1              |
| Other Commodities                  | 1              |
| <b>Total Tons</b>                  | <b>125,236</b> |

Source: IHS Global Insight Transearch, 2007

Note: Data is only provided for freight flows from Scott County, VA to TN

Table 5-11 and Table 5-12 provide a summary of the top ten commodities (by weight) shipped by truck to Sullivan and Hawkins counties, respectively. Table 5-13 summarizes the top five commodities shipped by truck to Scott County from Tennessee.

**Table 5-11  
 Top Ten Commodities (By Weight)  
 To Sullivan County By Truck (2007)**

| COMMODITY                          | TRUCK TONS       |
|------------------------------------|------------------|
| Warehouse and Distribution Center  | 2,417,954        |
| Broken Stone or Riprap             | 188,980          |
| Gravel or Sand                     | 138,473          |
| Ready-mix Concrete, Wet            | 102,111          |
| Clay Ceramic or Refrac Minerals    | 67,894           |
| Biscuits, Crackers, or Pretzels    | 58,027           |
| Non-Metal Minerals, Processed      | 56,164           |
| Bituminous Coal                    | 55,841           |
| Motor Vehicle Parts or Accessories | 44,896           |
| Petroleum Refining Products        | 43,289           |
| Other Commodities                  | 781,642          |
| <b>Total Tons</b>                  | <b>3,955,271</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-12  
Top Ten Commodities (By Weight)  
To Hawkins County By Truck (2007)**

| COMMODITY                          | TRUCK TONS     |
|------------------------------------|----------------|
| Warehouse and Distribution Center  | 130,654        |
| Ready-mix Concrete, Wet            | 64,211         |
| Broken Stone Or Riprap             | 23,140         |
| Primary Forest Materials           | 18,338         |
| Soft Drinks or Mineral Water       | 13,114         |
| Motor Vehicle Parts or Accessories | 12,296         |
| Misc Plastic Products              | 11,629         |
| Cut Stone or Stone Products        | 10,758         |
| Concrete Products                  | 10,526         |
| Books                              | 8,387          |
| Other Commodities                  | 106,272        |
| <b>Total Tons</b>                  | <b>409,325</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-13  
Top Five Commodities (By Weight)  
To Scott County By Truck (2007)**

| COMMODITY                          | TRUCK TONS   |
|------------------------------------|--------------|
| Warehouse and Distribution         | 1,094        |
| Flour or other Grain Mill Products | 220          |
| Scales or Balances                 | 212          |
| Primary Forest Materials           | 173          |
| Primary Iron or Steel Products     | 139          |
| Other Commodities                  | 26           |
| <b>Total Tons</b>                  | <b>1,864</b> |

Source: IHS Global Insight Transearch, 2007

Note: Data is only provided for freight flows to Scott County, VA from TN

Table 5-14 and Table 5-15 provide a summary of the top ten destinations (by weight) for truck commodity flows from Sullivan County and Hawkins County, respectively. Table 5-16 provides a summary of the top five Tennessee destinations for truck commodity flows from Scott County.

**Table 5-14**  
**Top Ten Destinations (By Weight)**  
**From Sullivan County By Truck (2007)**

| DESTINATION                     | TRUCK TONS       | PERCENTAGE  |
|---------------------------------|------------------|-------------|
| Washington County, TN           | 912,272          | 22.3%       |
| Carter County, TN               | 713,449          | 17.5%       |
| Smyth County, VA                | 303,616          | 7.4%        |
| Middle Atlantic Region of US    | 255,131          | 6.2%        |
| Mountain Region                 | 180,567          | 4.4%        |
| Shelby County, TN               | 167,495          | 4.1%        |
| South Atlantic Region of US     | 141,965          | 3.5%        |
| Pacific Region of US            | 134,734          | 3.3%        |
| Johnson City, TN                | 93,773           | 2.3%        |
| West South Central Region of US | 82,672           | 2.0%        |
| Other Destinations              | 1,101,627        | 27.0%       |
| <b>Total Tons</b>               | <b>4,087,301</b> | <b>100%</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-15**  
**Top Ten Destinations (By Weight)**  
**From Hawkins County By Truck (2007)**

| DESTINATION                  | TRUCK TONS       | PERCENTAGE  |
|------------------------------|------------------|-------------|
| Shelby County, TN            | 150,596          | 8.8%        |
| Sullivan County, TN          | 130,956          | 7.7%        |
| Middle Atlantic Region of US | 86,581           | 5.0%        |
| Knox County, TN              | 69,146           | 4.0%        |
| South Atlantic Region of US  | 66,660           | 3.9%        |
| West South Central of US     | 63,666           | 3.7%        |
| Washington County, TN        | 63,621           | 3.7%        |
| Lake City, TN                | 62,006           | 3.6%        |
| Lee County, VA               | 49,937           | 2.9%        |
| Pacific Region of US         | 48,874           | 2.8%        |
| Other Destinations           | 404,511          | 53.9%       |
| <b>Total Tons</b>            | <b>1,717,264</b> | <b>100%</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-16**  
**Top Five Destinations (By Weight)**  
**From Scott County By Truck (2007)**

| DESTINATION           | TRUCK TONS     | PERCENTAGE  |
|-----------------------|----------------|-------------|
| Washington County, TN | 48,068         | 38.4%       |
| Carter County, TN     | 43,169         | 34.4%       |
| Sullivan County, TN   | 20,917         | 16.7%       |
| Johnson County, TN    | 5,582          | 4.5%        |
| Greene County, TN     | 2,542          | 2.0%        |
| Other TN Destinations | 125,236        | 4.0%        |
| <b>Total Tons</b>     | <b>125,236</b> | <b>100%</b> |

Source: IHS Global Insight Transearch, 2007

Note: Data is only provided for freight flows from Scott County, VA to TN

Table 5-17 and Table 5-18 provide a summary of the top ten origins (by weight) for truck commodity flows to Sullivan County and Hawkins County, respectively. Table 5-19 lists the top five Tennessee origins for truck commodity flows to Scott County.

**Table 5-17**  
**Top Ten Destinations (By Weight)**  
**To Sullivan County By Truck (2007)**

| ORIGIN                          | TRUCK TONS       | PERCENTAGE  |
|---------------------------------|------------------|-------------|
| Shelby County, TN               | 819,631          | 20.7%       |
| Hamilton County, TN             | 637,665          | 16.1%       |
| Hawkins County, TN              | 130,956          | 3.3%        |
| West South Central Region of US | 114,382          | 2.9%        |
| Davidson County, TN             | 97,480           | 2.5%        |
| Green County, TN                | 91,921           | 2.3%        |
| Russell County, VA              | 87,377           | 2.2%        |
| Washington County, TN           | 81,961           | 2.1%        |
| Rutherford County, TN           | 87,377           | 1.8%        |
| Knox County, TN                 | 65,657           | 1.7%        |
| Other Origins                   | 535,419          | 44.4%       |
| <b>Total Tons</b>               | <b>3,955,271</b> | <b>100%</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-18  
Top Ten Destinations (By Weight)  
To Hawkins County By Truck (2007)**

| ORIGIN                          | TRUCK TONS     | PERCENTAGE  |
|---------------------------------|----------------|-------------|
| Shelby County, TN               | 44,125         | 10.8%       |
| Hamilton County, TN             | 31,332         | 7.7%        |
| Washington County, TN           | 25,462         | 6.2%        |
| Sullivan County, TN             | 21,144         | 5.2%        |
| West South Central Region of US | 11,383         | 2.8%        |
| Sevier County, TN               | 10,509         | 2.5%        |
| Davidson County, TN             | 9,872          | 2.4%        |
| Johnson County, TN              | 9,304          | 2.3%        |
| Middle Atlantic Region of US    | 8,465          | 2.1%        |
| South Atlantic Region of US     | 8,240          | 2.0%        |
| Other Origins                   | 229,489        | 56.0%       |
| <b>Total Tons</b>               | <b>409,325</b> | <b>100%</b> |

Source: IHS Global Insight Transearch, 2007

**Table 5-19  
Top Five Destinations (By Weight)  
To Scott County By Truck (2007)**

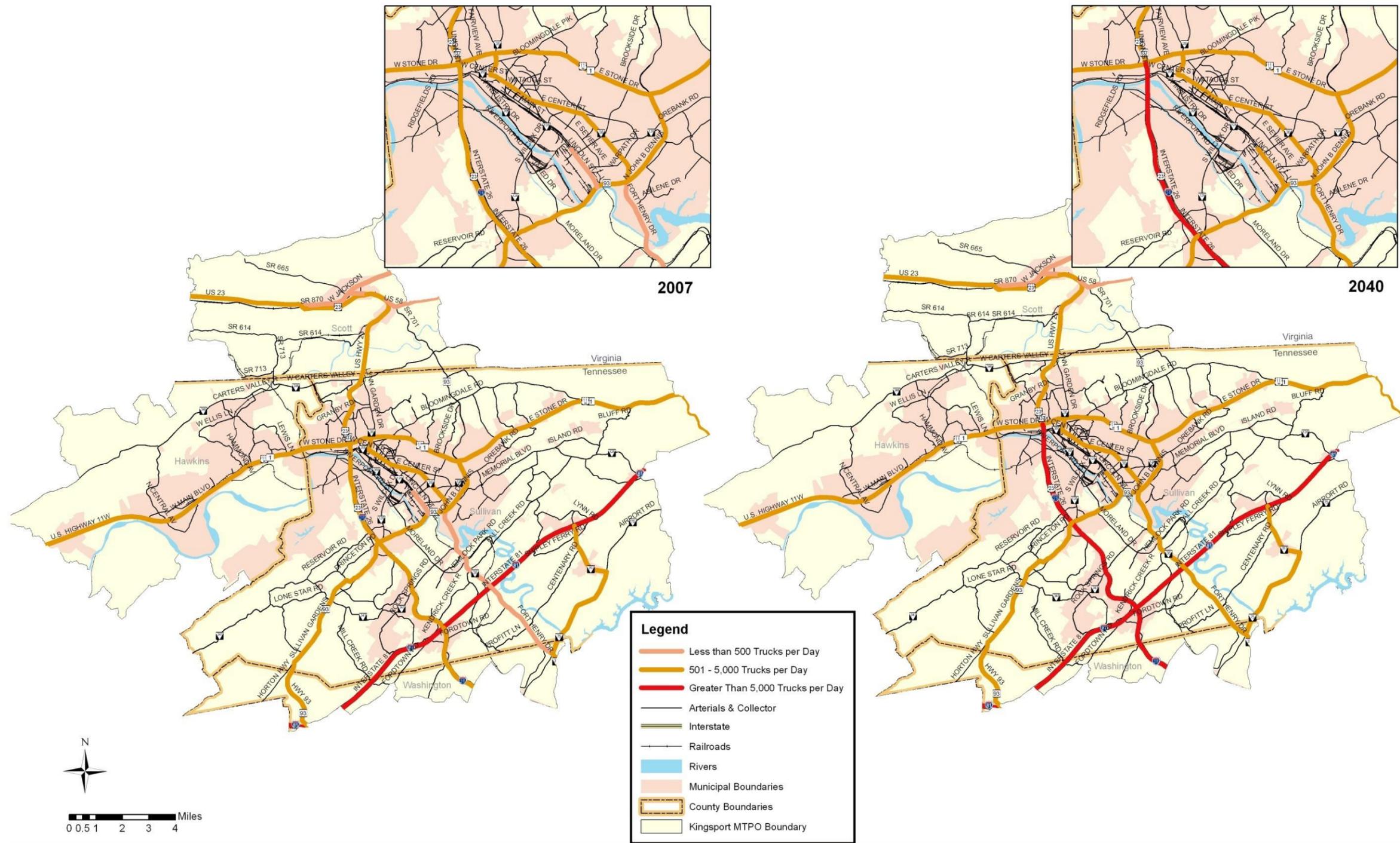
| ORIGIN                | TRUCK TONS   | PERCENTAGE  |
|-----------------------|--------------|-------------|
| Haywood County, TN    | 888          | 47.6%       |
| Shelby County, TN     | 296          | 15.9%       |
| Knox County, TN       | 153          | 8.2%        |
| Davidson County, TN   | 78           | 4.2%        |
| Hawkins County, TN    | 72           | 3.9%        |
| Other TN Destinations | 377          | 20.2%       |
| <b>Total Tons</b>     | <b>1,864</b> | <b>100%</b> |

Source: IHS Global Insight Transearch, 2007

Note: Data is only provided for freight flows to Scott County, VA from TN

Figure 5-25 illustrates daily commercial vehicle truck flows (e.g. semi-trucks) through the MTPO planning area based on FHWA's Freight Analysis Framework (FAF<sup>3</sup>) data for the years 2007 and 2040. 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), and US 23.

**Figure 5-25**  
**Freight Analysis Framework Daily Truck Flows (2007–2040)**



**Kingsport MTPO 2035 Long Range Transportation Plan**

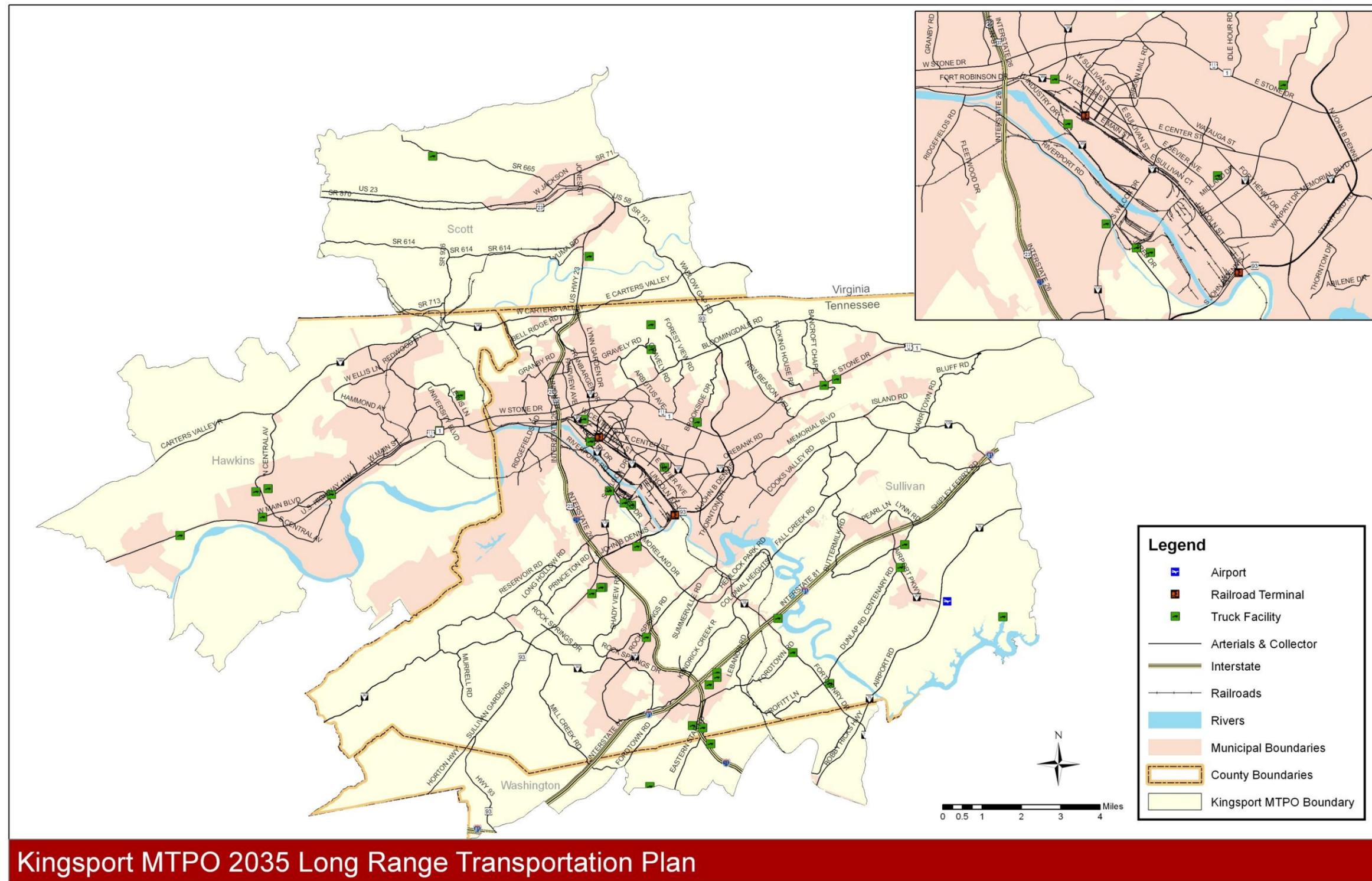
### 5.1.7.2 Intermodal Connections

In total, 41 major freight facilities were identified within the MTPO area, with Eastman Chemical Company being one of the largest. Most of these facilities are located along roadways with direct access to a major highway and/or rail line.

Figure 5-26 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 5-27 illustrates areas of industrial use within the MTPO area and how these locations are served by the various transportation systems.

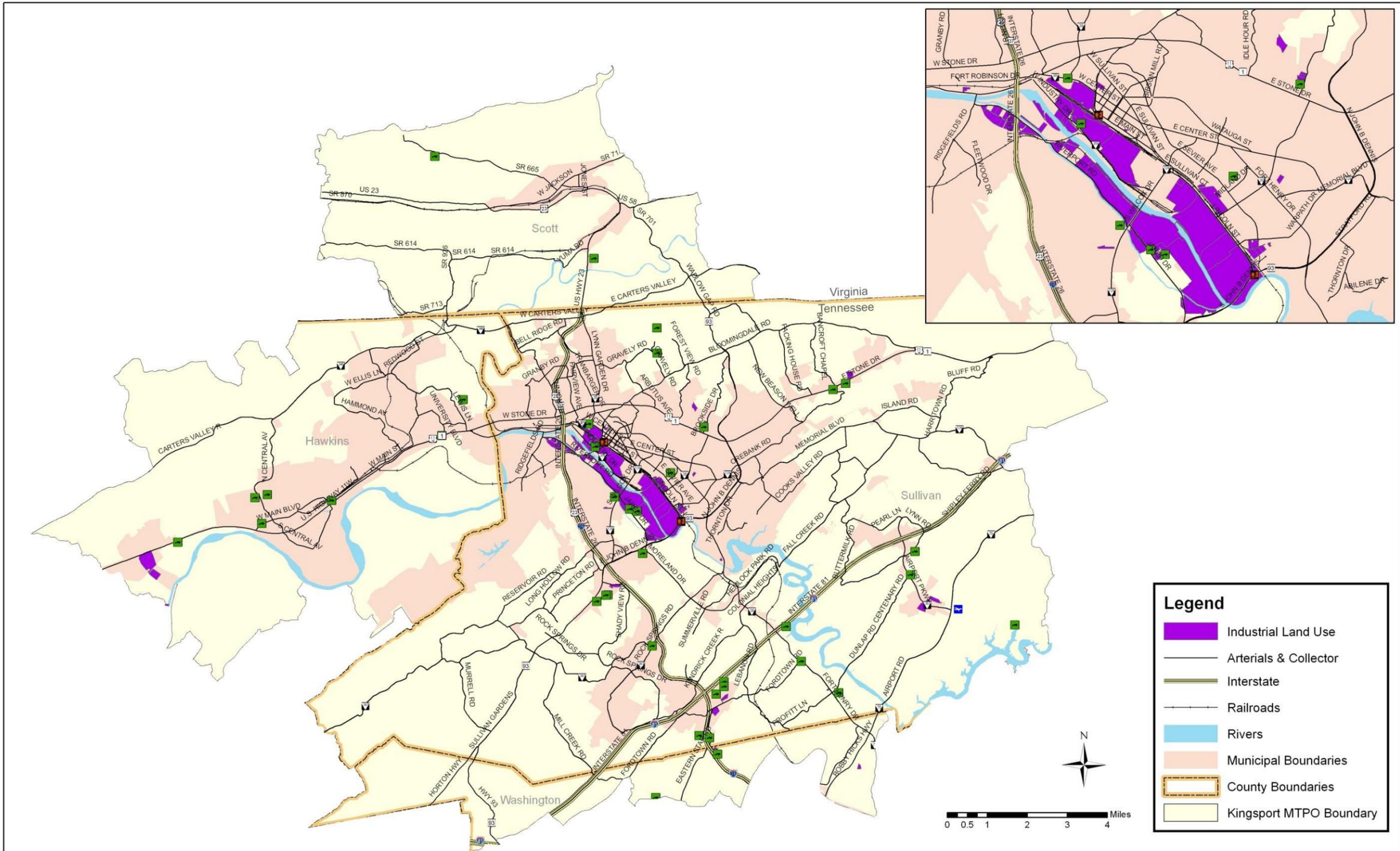
As depicted in Figure 5-27, industrial use concentrations are mostly located near the existing railroad in downtown Kingsport, near the Tri-Cities Airport, and at the I-26 and I-81 interchange. Ensuring that uses are compatible and strategically placed improves the intermodal exchange of goods and helps to reduce costs in transport – both directly and indirectly.

Figure 5-26  
Air, Rail & Truck Facilities Map



Kingsport MTPO 2035 Long Range Transportation Plan

Figure 5-27  
Freight System & Industrial Lands Map



Kingsport MTPO 2035 Long Range Transportation Plan

### 5.1.7.3 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 ITS project on I-81 and adding the truck climbing lane on I-81 between Fort Henry Drive and Airport Parkway 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.

### 5.1.8 Transportation Safety

Federal legislation (SAFETEA-LU) 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.

#### 5.1.8.1 Vehicular Crashes

Communities everywhere are searching for ways to make their roadways safer. In 2010 alone, there were 5.4 million crashes with over 30,000 fatalities, 1.5 million injury crashes, and 3.8 million crashes where property damage occurred on roadways throughout the US. The total number of people injured in motor vehicle accidents during 2010 was 2.2 million. The national fatality rate per 100 million vehicle miles traveled fell in 2010 to a historic low of 1.10.

Table 5-20 illustrates the number of vehicular crashes by type within Sullivan and Hawkins Counties, TN and Scott County, VA since 2006. From the year 2006 to 2010, the Kingsport region has seen a drop in the total number of crashes in the region from 5,580 to 5,296, a decrease of 5 percent. All three types of crashes - fatal, injury crashes, and property damage only (PDO) - showed a decrease from 2006 to 2010. The largest decrease was seen in the total number of injury crashes, which dropped from 3,477 crashes in 2006 to 3,351 crashes in 2010, a decrease of 10 percent.

**Table 5-20  
Number of Crashes by Type (2006-2010)**

| Year                              | Number of Fatal Crashes | Number of Injury Crashes | Number of PDO Crashes | Total Number of Crashes |
|-----------------------------------|-------------------------|--------------------------|-----------------------|-------------------------|
| <b><i>Sullivan County</i></b>     |                         |                          |                       |                         |
| 2006                              | 24                      | 1,222                    | 2,824                 | 4,070                   |
| 2007                              | 18                      | 1,247                    | 2,829                 | 4,094                   |
| 2008                              | 15                      | 1,116                    | 2,764                 | 3,895                   |
| 2009                              | 12                      | 1,115                    | 2,620                 | 3,747                   |
| 2010                              | 28                      | 1,097                    | 2,691                 | 3,816                   |
| <b>Percent Change (2006-2010)</b> | <b>17%</b>              | <b>- 17%</b>             | <b>- 5%</b>           | <b>- 10%</b>            |
| <b><i>Hawkins County</i></b>      |                         |                          |                       |                         |
| 2006                              | 12                      | 372                      | 653                   | 1,037                   |
| 2007                              | 13                      | 414                      | 844                   | 1,271                   |
| 2008                              | 14                      | 363                      | 674                   | 1,051                   |
| 2009                              | 11                      | 367                      | 758                   | 1,136                   |
| 2010                              | 10                      | 339                      | 660                   | 1,009                   |
| <b>Percent Change (2006-2010)</b> | <b>- 17%</b>            | <b>- 16%</b>             | <b>- 6%</b>           | <b>- 8%</b>             |
| <b><i>Scott County</i></b>        |                         |                          |                       |                         |
| 2006                              | 6                       | 194**                    | ***                   | 473                     |
| 2007                              | 3                       | 189**                    | ***                   | 486                     |
| 2008                              | 5                       | 201**                    | ***                   | 448                     |
| 2009                              | 5                       | 181**                    | ***                   | 412                     |
| 2010                              | 3                       | 174**                    | ***                   | 471                     |
| <b>Percent Change (2006-2010)</b> | <b>- 50%</b>            | <b>- 10%</b>             | <b>***</b>            | <b>- 0.4%</b>           |
| <b><i>Total Region</i></b>        |                         |                          |                       |                         |
| 2006                              | 42                      | 1,788                    | 3,477***              | 5,580                   |
| 2007                              | 34                      | 1,850                    | 3,673***              | 5,851                   |
| 2008                              | 34                      | 1,680                    | 3,438***              | 5,394                   |
| 2009                              | 28                      | 1,663                    | 3,378***              | 5,295                   |
| 2010                              | 41                      | 1,610                    | 3,351***              | 5,296                   |
| <b>Percent Change (2006-2010)</b> | <b>- 2%</b>             | <b>- 10%</b>             | <b>- 4%</b>           | <b>- 5%</b>             |

Source: TN Crash Reporting System and VDOT – Virginia Traffic Crash Facts

\*\*This number is calculated by multiplying the number of injuries in Scott County by the injury rate for the state of VA.

\*\*\*This is the total number of PDO crashes in Sullivan and Hawkins Counties. The data was not available for Scott County, VA.

### 5.1.8.2 Vehicular Fatalities

Table 5-21 illustrates the number of vehicular fatalities since 2006 for each county within the Kingsport region. Over the 5 year time period on average, 38 people lost their lives annually in vehicular crashes on roadways within the region. From 2006 to 2010 the Kingsport region experienced a 13 percent drop in the number of vehicular fatalities.

**Table 5-21  
Number of Fatalities (2006-2010)**

|                        | 2006      | 2007      | 2008      | 2009      | 2010      | Percent Change (2006-2010) |
|------------------------|-----------|-----------|-----------|-----------|-----------|----------------------------|
| <b>Sullivan County</b> | 27        | 18        | 15        | 14        | 28        | 4%                         |
| <b>Hawkins County</b>  | 13        | 14        | 17        | 10        | 10        | - 23%                      |
| <b>Scott County</b>    | 7         | 3         | 5         | 5         | 3         | - 57%                      |
| <b>Total</b>           | <b>47</b> | <b>35</b> | <b>37</b> | <b>29</b> | <b>41</b> | <b>- 13%</b>               |

Source: National Highway Traffic Safety Administration

Table 5-22 shows the number of alcohol-related fatalities per 100,000 population from 2006-2010. During this time period, the region saw a 55 percent decrease in alcohol-related vehicular fatalities per 100,000 population.

**Table 5-22  
Alcohol Related Fatalities per 100,000 Population (2006-2010)**

|                        | 2006         | 2007         | 2008         | 2009         | 2010         | Percent Change (2006-2010) |
|------------------------|--------------|--------------|--------------|--------------|--------------|----------------------------|
| <b>Sullivan County</b> | 8.43         | 3.22         | 1.28         | 7.02         | 3.19         | - 62%                      |
| <b>Hawkins County</b>  | 10.71        | 7.09         | 17.64        | 3.52         | 7.04         | - 34%                      |
| <b>Scott County</b>    | 12.89        | 0.00         | 12.91        | 8.62         | 4.32         | - 66%                      |
| <b>Total</b>           | <b>32.03</b> | <b>10.31</b> | <b>31.83</b> | <b>19.16</b> | <b>14.55</b> | <b>- 55%</b>               |

Source: National Highway Traffic Safety Administration

Table 5-23 illustrates the number of unrestrained fatalities per 100,000 population for each of the three counties in the Kingsport region. Although both Sullivan and Hawkins Counties showed an increase from 2006 to 2010, Scott County saw a significant decrease, which resulted in a net decrease of 40 percent for the region.

**Table 5-23  
Unrestrained Fatalities per 100,000 Population (2006-2010)**

|                        | 2006         | 2007         | 2008         | 2009         | 2010         | Percent Change (2006-2010) |
|------------------------|--------------|--------------|--------------|--------------|--------------|----------------------------|
| <b>Sullivan County</b> | 7.13         | 3.22         | 1.92         | 2.55         | 8.93         | 25%                        |
| <b>Hawkins County</b>  | 12.49        | 15.96        | 19.40        | 10.55        | 14.07        | 13%                        |
| <b>Scott County</b>    | 25.78        | 4.29         | 17.21        | 12.92        | 4.32         | - 83%                      |
| <b>Total</b>           | <b>45.40</b> | <b>23.47</b> | <b>38.53</b> | <b>26.02</b> | <b>27.32</b> | <b>- 40%</b>               |

Source: National Highway Traffic Safety Administration

National studies have shown that the use of seat belts has increased in states that have used the “Click It or Ticket” campaign along with publicized enforcement efforts. Tennessee is among the states that showed more than a 10 percent increase in seat belt usage after implementing the program. *NCHRP Report 500 Volume 11: A Guide for Increasing Seatbelt Use* contains strategies to increase seat belt usage and programs to ensure proper use of restraint systems, especially child restraint systems. The Kingsport region should make an exerted effort to increase the education campaign and the enforcement of using the proper vehicular restraints for occupants.

### 5.1.8.3 Bicycle and Pedestrian Crashes

Bicycle and Pedestrian travel along a roadway puts a person in a vulnerable situation. The state of Tennessee had 87 pedestrian fatalities and 4 cyclist fatalities during 2010. From 2006 to 2010, there were 10 pedestrian fatalities and zero cyclist fatalities in the Kingsport region. Table 5-24 shows the pedestrian and cyclists crashes in each of the three counties in the region from 2006 to 2010. The number of pedestrian and cyclist crashes in the region was less than 1 percent per 100,000 population.

**Table 5-24  
Bicycle and Pedestrian Crashes (2006-2010)**

| Year | Sullivan County |            | Hawkins County |            | Scott County |            | Total   |            |
|------|-----------------|------------|----------------|------------|--------------|------------|---------|------------|
|      | Cyclist         | Pedestrian | Cyclist        | Pedestrian | Cyclist      | Pedestrian | Cyclist | Pedestrian |
| 2006 | 13              | 22         | 1              | 3          | 0            | 3          | 14      | 28         |
| 2007 | 14              | 28         | 3              | 4          | 1            | 1          | 18      | 33         |
| 2008 | 9               | 19         | 1              | 5          | 0            | 1          | 10      | 25         |
| 2009 | 9               | 19         | 1              | 5          | 1            | 0          | 11      | 24         |
| 2010 | 4               | *          | 3              | *          | 0            | 3          | 7       | 3*         |

\*The number of pedestrian crashes in Sullivan and Hawkins counties has not been reported for 2010.

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.

### 5.1.8.4 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 SAFETEA-LU legislation requires that 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 SAFETEA-LU 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. The mission, vision, and goal statements of the Tennessee Strategic Highway Safety Plans are as follows:

- *Tennessee’s Mission Statement* – Through coordination of education, enforcement, engineering, and emergency response initiatives reduce the number of crashes that result in fatalities, injuries, and related economic losses on Tennessee’s roadways.
- *Tennessee’s Vision Statement* – All roadway users arrive safely at their destination.
- *Tennessee’s Goal Statement* – Achieve fewer than 900 fatalities annually by the end of calendar year 2012.

To provide the most efficient and safest highway facilities, the Tennessee 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 are as follows with those efforts that the MTPO and/or its member jurisdictions are involved in denoted with an asterisk (\*):

#### Improve Crash Data

- Improve timeliness and accuracy of data collection, analysis processes, and traffic safety data systems including the linkage of crash, roadway, driver, medical, enforcement, conviction, criminal, and homeland security data.\*
- Improve and expand the storage and accessibility of safety data. Expansion will include additional data from local roads which is currently limited.\*
- Continually update data definitions defined by Model Minimum Uniform Crash Criteria (MMUCC) and D-20.
- Maintain the Traffic Records Coordinating Committee (TRCC) and include stakeholders who require traffic safety information.
- Promote and expand the implementation of electronic data collection systems for traffic safety information.\*
- Improve safety and access to resources by expanding local partner agencies’ participation in the collection and use of traffic information.\*

- Provide training to State and local partner agencies on data collection, submission, analysis, definitions, importance, and appropriate uses for traffic safety data.\*
- Improve access to highway improvement and traffic safety information by communicating to the media and general public via the Internet.
- Independently verify data validity.\*
- Develop standard methodologies for the state-wide analysis of Work Zone Crash Data consistent with the requirements of the Work Zone Safety and Mobility Rule.

#### Reduce Lane Departures

- Continue implementation of Lane Departure Action Plan.
- Identify locations with significant crash history or the potential for drivers to unintentionally leave their travel lane and develop and implement a comprehensive and coordinated initiative of Engineering, Education, Enforcement, and Emergency Response.
- Identify corridors and locations with a disproportionately large number of actual and/or potential for run-off-road and head-on crashes.\*
- Develop standard operating procedures for the implementation of roadway safety system-wide improvements such as:
  - Centerline rumble strips and stripes
  - Shoulder rumble strips and stripes
  - All Weather Pavement Markings including quality of materials\*
  - Longitudinal and Median barriers
  - Elimination of road-side hazards
  - Guardrail placement and end treatment upgrades
  - *Safety Edge* treatment for shoulders
  - Highway signage (inventory, engineering studies and analysis of existing signs and upgrade all to MUTCD minimum standards on all roadways)\*
  - Raised pavement markers (RPMs)
- Apply the concepts of forgiving roadway design.\*
- Achieve increased safety through the implementation of the latest designs and technology.\*
- Investigate improved lighting at rural interchanges based on 2006 TDOT Customer Satisfaction Survey findings.
- Removal of hazardous obstacles in the clear zone on right-of-way.
- Encourage safer mailbox structures.\*
- Consider motorcycle travel when designing strategies for preventing lane departures.

#### Improve Intersection Safety

- Identify intersections that qualify for the Highway Safety Improvement Program based on severity due to the number of fatal and serious injury crashes on the State and local systems.
- Implement cost effective intersection safety improvements that address project specific fatal and serious injury crash data.\*
- Achieve increased safety through the implementation of the latest designs and technology.\*
- Provide appropriate warnings at all highway-rail grade crossings.\*
- Increase enforcement at intersections and highway-rail grade crossings.
- Provide public information on the importance of compliance with traffic control devices.

- Inventory and bring up to MUTCD standards all signs on Tennessee roadways (state and county).\*

#### Improve Work Zone Safety

- Provide work zone training and information for public agencies and industry personnel.
- Ensure appropriate work zone traffic control including pavement marking and signing.
- Implement the updated work zone temporary striping policy.
- Prepare and air Public Service Announcements on work zone safety.
- Continue “Between the Barrels” teenage driver work zone training program instituted in 2006.
- Provide practices and policies to improve the safe travel of motor carriers in work zones.
- Achieve increased safety through the implementation of innovative designs and technology.\*
- Provide incident management training for all responders to highway incidents.
- Publish work zone booklet.
- Provide funding to state and local law enforcement to help control speeding in major work zones.
- Use “Merge Left” lane drops wherever practical.
- Use the 511 system to relay important work zone information to the public.
- Expand use of coordinated incident management (including HELP Program) in work zones to minimize effects on traffic flow and decrease secondary incidents.
- Implement Quick Clearance on all highway incidents and in work zones as a means of minimizing effects of secondary incidents.
- Conduct comprehensive review of current procedures as required by TDOT’s Work Zone Safety and Mobility Manual.
- Implement state-wide standardized inspection procedures for work zones.
- Provide Emergency Reference Markers on urban Interstates and other controlled access highways to improve emergency response and crash data.\*

#### Improve Motor Carrier Safety

- Combine Safety Education efforts.
- Improve the effectiveness and reporting of CMV violation citations.
- Restrict trucks to right two lanes in urban areas and outside city limits.
- Identify and manage problem drivers more effectively in high crash counties.
- Develop and implement targeted enforcement initiatives.
- Provide technological infrastructure and solutions.
- Continue to implement National and State Specific Program Elements:
  - Driver/Vehicle Inspections
  - Compliance Reviews and New Entrant Safety Audits
  - Traffic Enforcement
  - Public Education and Awareness
  - Data Collection
  - School Bus Program (State Specific)
  - Drug and Alcohol Interdiction (State Specific)
  - Hazardous Materials (State Specific)
  - Motor Coach Program (State Specific)
  - CMV Seat Belt Usage

### Improve Driver Behavior

- Alcohol
  - Develop public information and education campaigns targeting all drivers, especially those engaged in high risk driving behaviors. Venues for these activities include print and electronic media as well as classroom instruction.
  - Coordinate comprehensive sobriety checkpoints and saturation blitzes statewide.\*
  - Coordinate conference and training programs for law enforcement officers, prosecutors, and judges to facilitate in the detection, arrest, adjudication and conviction of alcohol and/or drug impaired drivers.
  - Coordinate DUI enforcement projects that provide highly visible patrols and selective enforcement methods utilizing up to date field sobriety techniques.
  - Support efforts to implement a statewide uniform traffic DUI tracking system incorporating all law enforcement agencies.
  - Support efforts to establish linked data bases with the ability to track offenders or citations from arrest/issuance through sanction completion or dismissal.
  - Form an Alcohol Countermeasures Advisory Council statewide or by region.
  - Pilot a community wide alcohol countermeasures intervention.
  - Establish a statewide tracking system for Blood Alcohol Concentration (BAC) levels of offenders.
  - Support specialized prosecution of driving under the influence including the placement of specially trained traffic safety prosecutors in each of the 31 Judicial Districts.
  - Reduce the number of repeat DUI offenses by supporting the recommendations of the Governors DUI Task Force including increased treatment and monitoring of offenders through the use of transdermal monitoring of the individual and ignition interlock monitoring of the offenders vehicle.
  - Target enforcement in areas with a high percentage of alcohol involvement.\*
- Aggressive Driving
  - Develop and implement enforcement programs aimed at aggressive driving in high frequency areas.\*
  - Encourage public information and education programs to help define and inform the public about the dangers of aggressive driving.
  - Evaluate the adoption of a statutory traffic law through the legislative process to clearly define aggressive driving for enhanced enforcement efforts.
  - Evaluate the adoption of a uniform citation for enforcement that will serve as a tracking mechanism for courts and traffic records analysis.
  - Continue formation and deployment of targeted aggressive driving enforcement units.
- Occupant Protection
  - Develop targeted public information and education campaigns addressing critical usage areas; i.e., vehicle categories, socioeconomic groups and youth.
  - Provide training and technical assistance on correct use of child passenger safety seats through law enforcement agencies, emergency medical services personnel, health care providers, healthcare educators, pediatric nurses, foster care and human service social workers, child care providers, firefighter personnel, rural transportation supervisors and highway safety advocacy representatives.\*

- Coordinate and promote child passenger safety (CPS) initiatives: i.e., 24 CPS technician classes and 158 child safety seat checkpoints in FFY 2008.\*
- Increase monitoring of seat belt usage and provide advice on usage to both the traveling public and CMV drivers.
  
- Young Drivers
  - Develop an active youth advocacy group for the State.
  - Provide high-risk driver education programs targeting drivers age 15 – 21 with injury prevention, occupant protection, DUI, speed, and “attention” messages.
  - Develop public information and education campaigns with activities targeting behaviors that endanger younger drivers. Selective targeting of ages with tailored messages.
  - Promote youth oriented traffic patrols.
  - Reduce minor’s access to alcohol and other drugs, including vendor education and enforcement of underage sale laws.
  - Continue to address college campus impaired driving and other high risk transportation related behavior issues.
  - Collaborate with other agencies and organizations that address youth alcohol and other drug problems i.e., Select Committee on Children and Youth, Tennessee Council of Juvenile and Family Court Judges.
  - Continue to host elementary, high school and parent traffic safety conferences that provide traffic safety awareness education, injury prevention education, advocacy education, and training in educational strategies.
  - Continue to support youth seatbelt programs.\*
  - Disseminate videos, curriculum materials, and posters to classroom teachers and schools.
  - Participate with national legislative advocacy groups such as Mothers Against Drunk Driving (MADD) and National Student Safety Program.\*
  - Continue to inform young drivers and parents of the graduated drivers’ license restrictions and encourage law enforcement to enforce the GDL laws strictly
  
- Older Drivers
  - Utilize safety conscious planning with the aging population in mind.
  - Provide advance warning and guide signs.\*
  - Increase size and legibility of guide, street and roadway signs.\*
  - Partner with organizations to retrain older drivers to increase their proficiency and help them understand their limitations.
  - Provide optimum timing at signalized intersections.\*
  - Improve lighting at problem areas.\*
  - Improve roadway delineation (especially under low light and inclement weather conditions).\*
  - Improve traffic control in work zones.
  - Develop a handbook that contains resource materials needed to educate older drivers on self assessing driving skills.
  - Implement the handbook developed to train trainers on educating older drivers to drive more safely.
  - Continue support of AARP and AAA older driver training.\*
  - Provide older drivers information on alternate public transportation in the urban and rural areas in Tennessee.\*

- Educate family members/caregivers of driving risks associated with physical conditions associated with aging.
- Provide the “Physician’s guide to Assessing and Counseling to Older Drivers” to statewide physicians specializing in Geriatrics care.
- Enhance TDOT and other state governmental agencies website with resource information on older drivers’ safety.
- Review the driving patterns of Tennessee’s older drivers by assessing the results of a survey produced by AAA.
- Support legislation reform to encourage vision retesting for license renewal.
- Inventory and bring up to MUTCD standards all signs on Tennessee roadways (state and local).\*
- Other Modes
  - Encourage driver education courses to teach students about sharing the road safely with motorcyclists and bicyclists and about yielding right-of-way to pedestrians.
  - Promote the statewide law requiring motor vehicles to provide a minimum of three feet when passing bicyclists.
  - Continue to support Federal, State and local Safe Routes to School Programs which teach students how to safely walk and bicycle to school and can raise awareness for motorists about traveling safely through school zones.\*
- Legislation
  - Pursue and support legislation in the following areas:
    - Open Container Law
    - Mandatory BAC testing for all fatalities per the National Committee on Uniform Traffic Laws and Ordinances (NCUTLO) model law
    - Mandatory Drivers’ Education
    - Administrative License Revocation
    - Passage of DWI law revisions as proposed by Gubernatorial Task Group
    - Aggressive Driving
    - “Workers Present” law
    - Automated Speed Enforcement in Work Zones
    - Mandatory motorcycle helmet laws
    - Vehicle safety inspections
    - Increase in seatbelt law penalties to include court costs and drivers’ license “points”
    - Require motorists to yield to pedestrians at marked mid-block and marked or unmarked intersection crosswalks

#### Educational and Awareness Programs

- Conduct a needs assessment survey for municipal and county law enforcement agencies to determine specialized highway safety and traffic enforcement training courses.
- Offer more regional based highway safety and traffic courses to meet the demand for specialized traffic enforcement training.
- Conduct training for local and State engineering forces on integration of safety into the project development process (planning, design, construction, maintenance and operations) of the highway system.
- Implement a Local Roads Safety Initiative.\*

- Provide training to representatives of Metropolitan Planning Organizations and Rural Planning Organizations for Road Safety Audit Reviews.
- Continue to bring in Federal Highway Administration sponsored safety training.
- Continue “Between the Barrels” teenage driver work zone training.
- Provide law enforcement training for work zones and incident management.
- Continue training for law enforcement, prosecutors and judges for impaired driver enforcement. Collaborate with other agencies and organizations to establish standardization of traffic schools in Tennessee, i.e. licensing, curriculum, minimum hours, and qualification of instructors.
- Provide law enforcement agencies training about the laws that apply to bicyclists and sharing the road with bicyclists.\*
- Continue to promote and fund Safe Routes to School programs to enable communities to educate schools, law enforcement, parents, students and motorists about the benefits of walking and bicycling to school for reduction of traffic congestion and promotions of student health and environmental health.\*
- Continue utilization of driver awareness messages and programs aimed at reminding drivers to watch for motorcycles while on the road as a venue for reducing avoidable accidents from occurring.\*
- Partner with the Motorcycle Awareness Foundation to educate local and state law and emergency officials to train in the proper techniques for handling a motorcycle accident and motorcycle victims.

### **Safety Plan in Virginia**

Since a portion of the MTPO 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 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:* To save lives and to reduce injuries from motor vehicle crashes in Virginia through the integration of education, enforcement, engineering, and emergency response actions
- *Virginia’s Vision Statement:* To make Virginia’s surface transportation system the safest in the nation by 2025
- *Virginia’s Goals:* To reduce from 2005 levels, the annual number of injuries and deaths due to motor vehicle crashes in Virginia by 100 deaths and 4,000 injuries by 2010.

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 are as follows with those efforts that the MTPO and/or its member jurisdictions are involved in denoted with an asterisk (\*):

### Human Factors

- *Driver Behavior – Aggressive Drivers*
  - There are seven strategies in the plan that target the issue of aggressive drivers. The strategies include programs involving awareness and education of aggressive driving behavior.

- *Driver Behavior – Occupant Protection*
  - There are six major strategies in the plan targeting the issue of occupant protection. The strategies include education of occupant protection through ad campaigns, partnerships, and legislation.\*
- *Driver Behavior – Impaired Drivers*
  - There are twenty-five major strategies listed in the plan targeting Impaired Drivers. These initiatives include legislation, enforcement, and education programs targeting DUI offenders and prevention of underage and excessive drinking. Several initiatives are targeted at preventing drowsy and distracted driving.
- *Driver Behavior – Unlicensed/Suspended/Revoked Drivers*
  - The plan includes seven major strategies that target unlicensed, suspended, and revoked drivers. The strategies include identification programs, coordination with other states and databases, and driver skill improvement strategies.\*
- *Special Users – Young Drivers*
  - There are seven major strategies listed in the plan to target young drivers. The strategies are intended to improve young drivers skills through legislation of Graduated Driver License Program, strengthening parent involvement, reviewing and improving driver education, and increased enforcement of speeding and safety belt violations.
- *Special Users – Senior Drivers*
  - The plan includes five major strategies that target senior drivers. These strategies range from driver assessment and evaluation to education programs targeting seniors and their physicians.
- *Special Users – Commercial Vehicle Operators*
  - Educate drivers on the affects of fatigue and hours of service as well as speed and use of safety belts. Use Drive Smart Virginia’s guide to running a successful safety belt campaign for truckers.
  - Continue to review through engineering analysis the adequacy of truck routes and recommend restrictions or geometric improvements.\*
  - Increase targeted enforcement in high crash areas of speed, equipment, and weight enforcement violations based on crash data analysis.\*
- *Special Users – Motorcycle Operators*
  - Increase the number of training schools around the state.
  - Increase education and awareness statewide.
  - Encourage all motorcyclists to complete a training program.
  - Increase enforcement of non-compliant helmets and lack of proper endorsements.
- *Special Users – Limited English Proficiency Drivers*
  - Identify opportunities to provide safety messages in other languages.
  - Improve information provided on crash reports to better understand LEP crashes.
  - Develop new outreach and educational initiatives in multiple languages. Partner with schools, refugee and immigrant placement services (i.e. faith-based

- initiatives), LEP programs, and ethnic advisory councils to provide educational and outreach materials.
- Encourage widespread use of signs, markings, and traffic signal indications using symbols instead of words, where appropriate.
- *Pedestrian and Bicyclist Safety*
  - The plan includes sixteen major strategies that target pedestrian and bicyclist safety. The strategies include education for pedestrians, cyclists, and motor vehicle drivers, improving facilities through maintenance and design, and targeting policies and guidelines at state and local levels.\*

#### Environmental

- *Intersection Safety*
  - Seven major strategies are listed in the plan targeting intersection safety. The initiatives target high crash locations, improving driver compliance with traffic control devices through enforcement and upgrading current traffic control devices when necessary. Also, strategies are listed that include educating the driver about intersection safety such as complying with traffic control devices, judging vehicle speeds and available gaps.\*
- *Roadway Departures*
  - There are nine major strategies listed in the plan targeting roadway departures. The strategies include various ways to identify departure crashes, and improve the conditions. Also, included are enforcement strategies and education geared towards drivers and EMS response.\*
- *Work Zone Safety*
  - Seven major strategies targeting work zone safety are included in the plan. Strategies target design of work zone areas, improving information to drivers, improving visibility of work zones, using traffic calming methods such as speed trailers, and increasing public awareness of safely navigating work zones.

#### Fundamental Emphasis Areas

- *Traffic Records*
  - The plan includes six major strategies that target traffic records. The strategies target improving the Traffic Records Coordinating Committee (TRCC), implementing the Traffic Records Electronic Data system (TREDS), and capturing specific information related to crashes.\*
- *Transportation Safety Planning*
  - Six major strategies targeting transportation safety planning are included in the plan. The strategies include incorporating safety planning and best practices into all roadway policies and procedures, identify high crash areas and mitigate crash trends, and coordinate with local, regional, and state partners.\*

#### Legislative Issues

- Amend primary safety belt law to allow law enforcement to pull over and fine those who are driving without a safety belt on.

- Extend protections of the current graduated driver's license (GDL) program by creating an intermediate license period of six months for teen drivers between the learner's permit and full license.
- Give emergency responders the authority to expeditiously remove accidents from the roadways by codifying a driver stop law, driver remover law, authority removal law, authority tow law, and hold harmless law.
- Authorize law enforcement to confiscate a driver's operating license immediately if the person is found to be driving under the influence.
- Implement multi-faceted package specific to coal trucks that includes several components for increasing safety such a fine for illegal loading, requirement to display a toll free number and the permit holder's DOT number and provision for improved visibility of trucks while hauling extended loads.

The MTPO has been involved in a number of the initiatives described within these Highway Safety Plans (as denoted above) 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.

#### **5.1.9 Security Element**

Awareness of both man-made and natural security concerns has increased in the last decade due to events like September 11, 2001 and Hurricanes Katrina and Rita. 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 efforts in 2008 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 telephone 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.

## 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 percent was applied to each future year through 2035.

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. Table 6-1 provides a summary of the funding categories.

**Table 6-1  
Federal Transportation Funding Programs**

| <b>Federal Programs</b>   | <b>Description</b>  | <b>Funding Ratio</b>                               |
|---|---|--|
| 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.<br><br>Local - Provides funding for off-system bridge replacement, or to rehabilitate aging or substandard bridges based on bridge sufficiency ratings. | 80% Federal,<br>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,<br>20% Non-Federal                    |
| TRANSPORTATION ENHANCEMENT SET ASIDE OF THE STP (TE)                                | Provides funding for 12 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,<br>20% Non-Federal                    |
| FOREST HIGHWAY/PUBLIC LANDS OR PUBLIC LANDS HIGHWAYS DISCRETIONARY (FH/PL or PLHD)* | Provides funding for improvements on any roads serving Federal and Indian lands. There are five programs funded under this category: Park Roads/Parkways, Indian Reservation Roads, Public Lands Highways, Forest Highways, and Refuge Roads.   | 100% Federal or<br>80% Federal,<br>20% Non-Federal |
| HIGH PRIORITY PROJECTS SET ASIDE OF TEA-21 (HPP)*                                   | Provides designated funding for specific projects identified by Congress.   | 80% Federal,<br>20% Non-Federal                    |
| DEFENSE ACCESS ROAD PROGRAM (DAR)*  | Provides funding for public highway improvements associated with military installation impacts of a defense activity.   | 100% Federal or<br>80% Federal,<br>20% Non-Federal |
| INTERSTATE MAINTENANCE (IM)   | Provides funding to rehabilitate, restore, and resurface the Interstate System. Reconstruction is also eligible if it does not add new capacity, with the exception of High-Occupancy-Vehicle (HOV) lanes or auxiliary lanes in non-attainment areas, which can be added.                               | 90% Federal,<br>10% Non-Federal                    |
| NATIONAL HIGHWAY SYSTEM (NHS)   | Provides funding for major roads including the Interstate System, a large percentage of urban and rural principal arterials, the Strategic Defense Highway Network (STRAHNET), and strategic highway connectors.  | 80% Federal,<br>20% Non-Federal                    |
| RECREATIONAL TRAILS (RTP)   | Provides funding for the creation, rehabilitation and maintenance of multi-use recreational trails.   | 80% Federal,<br>20% Non-Federal                    |
| SAFE ROUTES TO SCHOOL (SRTS)  | Provides funding to the States to substantially improve the ability of primary and middle school students to walk and bicycle to school safely.   | 100% Federal                                       |
| SURFACE TRANSPORTATION PROGRAM (STP or S-STP)                                       | Provides funding for roads functionally classified as rural major collector and above. Funds may be utilized on projects in Rural Areas, Urbanized Areas, Small Urban Areas, Enhancement, Safety and Rail-Highway Crossings.  | 80% Federal,<br>20% Non-Federal                    |
| LOCAL-SURFACE TRANSPORTATION PROGRAM (L-STP)  | Provides funding to areas of 5,000 to 50,000 in population for improvements on routes functionally classified urban collectors or higher.   | 80% Federal,<br>20% Non-Federal                    |
| SAFETY SET ASIDE OF STP   | Provides funding for making high hazard improvements on state highways.   | 80% Federal,<br>20% Non-Federal                    |

| Federal Programs                           | Description   | Funding Ratio  |
|--|---|--|
| FEDERAL TRANSIT ADMINISTRATION (FTA-5307)  | Section 5307 is a formula grant program for urbanized areas providing capital, operating, and planning assistance for mass transportation.  | 80% Federal, 20% Non-Federal (Capital)<br><br>50% Federal, 50% Non-Federal (Operating) |
| FEDERAL TRANSIT ADMINISTRATION (FTA-5309)* | Provides funding for the establishment of new rail or busway projects (new starts), the improvement and maintenance of existing rail and other fixed guideway systems that are more than seven years old, and the upgrading of bus systems.   | 80% Federal, 20% Non-Federal   |
| JOB ACCESS/REVERSE COMMUTE (JARC-5316)     | A Job Access project provides new or expanded transportation service designed to fill gaps that exist for welfare recipients and other low-income individuals to and from jobs and other employment-related services. Reverse Commute projects facilitate the provision of new or expanded public mass transportation services for the general public from urban, suburban, and rural areas to suburban work sites. | 80% Federal, 20% Non-Federal (Capital)<br><br>50% Federal, 50% Non-Federal (Operating) |
| FEDERAL AVIATION PROGRAM (FAA)             | These funds are used for statewide grants to Tennessee and Virginia air carrier and general aviation airports and can cover up to 90 percent of the total cost of airport projects, depending on the type of project. Eligible projects include: Safety Projects, Airside Improvement and Enhancement Projects, Landside Improvement and Enhancement Projects, and Planning Projects                                | 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.

### Other Potential Funding Options

While not considered part of the 2035 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

In addition to these local initiatives, the MTPO will continue to work with TDOT and VDOT on future state transportation revenue options over traditional fuel based taxes.

## 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 2035 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:

- \$ 816,546,000 for operating/maintenance funds, and
- \$ 413,752,000 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 three percent compounded annual growth rate was assumed over the 25-year planning horizon. Table 6-2 and Table 6-4 illustrate the funding availability by horizon year for streets and highways within the MTPO area and include federal, state, and local revenues.

Table 6-2  
2035 Streets & Highways Operating and Maintenance Funding Forecast

| <b>Operations and Maintenance Funding</b>                |                      |                     |                       |                       |                       |                       |
|--|----------------------|---------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Revenue Source   | Annual Average *     | Inflation Factor ** | Revenue Projections   |                       |                       |                       |
|  |                      |                     | 2015 Horizon Year     | 2025 Horizon Year     | 2035 Horizon Year     | Total 2010 - 2035     |
| <b>Tennessee Revenue Sources</b>                         |                      |                     |                       |                       |                       |                       |
| TDOT (Various State Sources) ***                         | \$ 4,500,000         | 1.03                | \$ 29,981,000         | \$ 63,446,000         | \$ 85,266,000         | \$ 178,693,000        |
| City of Kingsport - State & Local Gas/State Aid Funds    | \$ 2,121,000         | 1.03                | \$ 14,131,000         | \$ 29,904,000         | \$ 40,189,000         | \$ 84,224,000         |
| Sullivan County - State & Local Gas/State Aid Funds **** | \$ 8,300,000         | 1.03                | \$ 55,298,000         | \$ 117,023,000        | \$ 157,269,000        | \$ 329,590,000        |
| Town of Mt Carmel - State & Local Gas/State Aid Funds    | \$ 142,000           | 1.03                | \$ 946,000            | \$ 2,002,000          | \$ 2,691,000          | \$ 5,639,000          |
| City of Church Hill - State & Local Gas/State Aid Funds  | \$ 175,000           | 1.03                | \$ 1,166,000          | \$ 2,467,000          | \$ 3,316,000          | \$ 6,949,000          |
| Hawkins County - State & Local Gas/State Aid Funds ****  | \$ 2,900,000         | 1.03                | \$ 19,321,000         | \$ 40,887,000         | \$ 54,949,000         | \$ 115,157,000        |
| <b>Sub-Total (TN)</b>                                    | <b>\$ 18,138,000</b> |                     | <b>\$ 120,843,000</b> | <b>\$ 255,729,000</b> | <b>\$ 343,680,000</b> | <b>\$ 720,252,000</b> |
| <b>Virginia Revenue Sources</b>                          |                      |                     |                       |                       |                       |                       |
| VDOT (State) *****                                       | \$ 4,187,000         | -                   | \$ 12,372,000         | \$ 37,691,000         | \$ 46,231,000         | \$ 96,294,000         |
| <b>Sub-Total (VA)</b>                                    | <b>\$ 4,187,000</b>  |                     | <b>\$ 12,372,000</b>  | <b>\$ 37,691,000</b>  | <b>\$ 46,231,000</b>  | <b>\$ 96,294,000</b>  |
| <b>Total</b>   | <b>\$ 22,325,000</b> |                     | <b>\$ 133,215,000</b> | <b>\$ 293,420,000</b> | <b>\$ 389,911,000</b> | <b>\$ 816,546,000</b> |

\* Tennessee annual average revenues are based on a review of historic funding levels to the MPO region. Virginia annual average revenues are for illustrative purposes (a hypothetical annual amount of revenues to the MPO area) - actual annual projections are reflected in the Revenue Projections provided to the MPO by VDOT.

\*\* 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 VDOT's statewide revenue forecasts for the Kingsport MPO area. VDOT is responsible for all roadway maintenance within the Virginia portion of the MPO planning area

Projections rounded to the nearest thousands

Table 6-3  
2035 Streets & Highways Capital Funding Forecast - Tennessee

| <b>Capital Funding - Tennessee</b>  |                     |                     |                     |                     |                      |                       |                       |                       |
|---|---------------------|---------------------|---------------------|---------------------|----------------------|-----------------------|-----------------------|-----------------------|
| Revenue Source  | Annual Average*     |                     |                     |                     |                      |                       |                       |                       |
| Tennessee Revenue Sources   | Federal Share       | Non-Federal Share   | Total               | Inflation Factor ** | 2015 Horizon Year    | 2025 Horizon Year     | 2035 Horizon Year     | Total 2010-2035       |
| National Highway System (NHS) (80%/20%)   | \$ 900,000          | \$ 225,000          | \$ 1,125,000        | 1.03                | \$ 7,495,000         | \$ 15,862,000         | \$ 21,317,000         | \$ 44,674,000         |
| Interstate Maintenance (I/M) Funds (90%/10%)  | \$ 900,000          | \$ 100,000          | \$ 1,000,000        | 1.03                | \$ 6,662,000         | \$ 14,099,000         | \$ 18,948,000         | \$ 39,709,000         |
| Surface Transportation Program (S-STP) Funds<br>State Selected Projects (80%/20%)     | \$ 600,000          | \$ 150,000          | \$ 750,000          | 1.03                | \$ 4,997,000         | \$ 10,574,000         | \$ 14,211,000         | \$ 29,782,000         |
| Safety Funding (90%/10%)  | \$ 900,000          | \$ 100,000          | \$ 1,000,000        | 1.03                | \$ 6,662,000         | \$ 14,099,000         | \$ 18,948,000         | \$ 39,709,000         |
| Bridge Rehabilitation & Replacement (BRR or BR)<br>(80%/20%)                          | \$ 400,000          | \$ 100,000          | \$ 500,000          | 1.03                | \$ 3,331,000         | \$ 7,050,000          | \$ 9,474,000          | \$ 19,855,000         |
| Surface Transportation Program (L-STP) Funds<br>MPO Selected Projects (80%/20%)       | \$ 1,320,000        | \$ 330,000          | \$ 1,650,000        | 1.03                | \$ 10,993,000        | \$ 23,264,000         | \$ 31,264,000         | \$ 65,521,000         |
| Enhancement Funds (80%/20%)   | \$ 400,000          | \$ 100,000          | \$ 500,000          | 1.03                | \$ 3,331,000         | \$ 7,050,000          | \$ 9,474,000          | \$ 19,855,000         |
| Safe Routes to School (100% Federal)  | \$ 250,000          | \$ -                | \$ 250,000          | 1.03                | \$ 1,666,000         | \$ 3,525,000          | \$ 4,737,000          | \$ 9,928,000          |
| Other Federal-Aid Programs & Discretionary Funds<br>(e.g. APD, ARRA, TIGER) (80%/20%) | \$ 200,000          | \$ 50,000           | \$ 250,000          | 1.03                | \$ 1,666,000         | \$ 3,525,000          | \$ 4,737,000          | \$ 9,928,000          |
| State Funds (STA or SP and SPPR) (100% State)   |                     | \$ 400,000          | \$ 400,000          | 1.03                | \$ 2,665,000         | \$ 5,640,000          | \$ 7,579,000          | \$ 15,884,000         |
| City of Kingsport, TN (100% Local)  |                     | \$ 1,500,000        | \$ 1,500,000        | 1.03                | \$ 9,994,000         | \$ 21,149,000         | \$ 28,422,000         | \$ 59,565,000         |
| Sullivan County, TN (100% Local)  |                     | \$ 200,000          | \$ 200,000          | 1.03                | \$ 1,332,000         | \$ 2,820,000          | \$ 3,790,000          | \$ 7,942,000          |
| Town of Mt Carmel TN (100% Local)   |                     | \$ 30,000           | \$ 30,000           | 1.03                | \$ 200,000           | \$ 423,000            | \$ 568,000            | \$ 1,191,000          |
| City of Church Hill, TN (100% Local)  |                     | \$ 160,000          | \$ 160,000          | 1.03                | \$ 1,066,000         | \$ 2,256,000          | \$ 3,032,000          | \$ 6,354,000          |
| Hawkins County, TN (100% Local)   |                     | \$ 30,000           | \$ 30,000           | 1.03                | \$ 200,000           | \$ 423,000            | \$ 568,000            | \$ 1,191,000          |
| <b>Sub-Total (TN)</b>   | <b>\$ 5,870,000</b> | <b>\$ 3,475,000</b> | <b>\$ 9,345,000</b> |                     | <b>\$ 62,260,000</b> | <b>\$ 131,759,000</b> | <b>\$ 177,069,000</b> | <b>\$ 371,088,000</b> |

\* Based on a review of historic funding levels to the MPO region.

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

Projections rounded to the nearest thousands

Table 6-4  
2035 Streets & Highways Capital Funding Forecast - Virginia

| <b>Capital Funding - Virginia</b> |                        |                          |                     |                         |                            |                          |                          |                          |
|-----------------------------------|------------------------|--------------------------|---------------------|-------------------------|----------------------------|--------------------------|--------------------------|--------------------------|
| <b>Revenue Source</b>             | <b>Annual Average*</b> |                          |                     |                         | <b>Revenue Projections</b> |                          |                          |                          |
| <b>Virginia Revenue Sources</b>   | <b>Federal Share</b>   | <b>Non-Federal Share</b> | <b>Total</b>        | <b>Inflation Factor</b> | <b>2015 Horizon Year</b>   | <b>2025 Horizon Year</b> | <b>2035 Horizon Year</b> | <b>Total 2010 - 2035</b> |
| Interstate Construction**         | \$ 24,000              | \$ 6,000                 | \$ 30,000           | 1.03                    | \$ 31,000                  | \$ 354,000               | \$ 476,000               | \$ 861,000               |
| Primary Construction**            | \$ 321,600             | \$ 80,400                | \$ 402,000          | 1.03                    | \$ 9,658,000               | \$ 4,747,000             | \$ 6,379,000             | \$ 20,784,000            |
| Secondary Construction**          | \$ 108,000             | \$ 27,000                | \$ 135,000          | 1.03                    | \$ 621,000                 | \$ 1,594,000             | \$ 2,142,000             | \$ 4,357,000             |
| Statewide Construction**          | \$ 394,400             | \$ 98,600                | \$ 493,000          | 1.03                    | \$ 3,018,000               | \$ 5,821,000             | \$ 7,823,000             | \$ 16,662,000            |
| Gate City, VA (100% Local)        |                        | \$ -                     | \$ -                |                         | \$ -                       | \$ -                     | \$ -                     | \$ -                     |
| Weber City, VA (100% Local)       |                        | \$ -                     | \$ -                |                         | \$ -                       | \$ -                     | \$ -                     | \$ -                     |
| <b>Sub-Total (VA)</b>             | <b>\$ 848,000</b>      | <b>\$ 212,000</b>        | <b>\$ 1,060,000</b> |                         | <b>\$ 13,328,000</b>       | <b>\$ 12,516,000</b>     | <b>\$ 16,820,000</b>     | <b>\$ 42,664,000</b>     |

\*\*\* VDOT provided revenue projections to the MPO for each Construction Program, by year, based on Virginia's statewide revenue forecasting efforts. Projections are derived from statewide assumptions for the Kingsport MPO area which fluctuate from year-to-year. Revenue Projections by Horizon Year are from Virginia's forecasts for the Virginia portion of the Kingsport MPO area. Annual Average figures are presented were derived from VDOT's forecasts with a 3 percent growth rate starting in 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 MPO area: Bridge Replacement/Rehabilitation (BR), Interstate Maintenance (IM), National Highway Systems (NHS), Hazard Elimination (HES/HSIP), Surface Transportation (STP), Transportation Enhancement (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)

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

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:

- \$53,012,000 for operating assistance; and
- \$25,214,000 for capital investments.

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

Table 6-5 and Table 6-6 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 6-5  
2035 Public Transportation Operating Funding Forecast**

| <b>Transit - Operating Funding</b>   |                     |                    |                     |                      |                      |                      |
|--|---------------------|--------------------|---------------------|----------------------|----------------------|----------------------|
| Revenue Source   | Annual Average*     | Inflation Factor** | 2015 Horizon Year   | 2025 Horizon Year    | 2035 Horizon Year    | Total 2010 - 2035    |
| <b>KATS</b>  |                     |                    |                     |                      |                      |                      |
| Operating Assistance - FTA 5307 (Federal)                                      | \$ 647,500          | 1.03               | \$ 4,314,000        | \$ 9,129,000         | \$ 12,269,000        | \$ 25,712,000        |
| Operating Assistance - TN (State)  | \$ 323,750          | 1.03               | \$ 2,157,000        | \$ 4,565,000         | \$ 6,134,000         | \$ 12,856,000        |
| Operating Assistance - Kingsport (Local)                                       | \$ 323,750          | 1.03               | \$ 2,157,000        | \$ 4,565,000         | \$ 6,134,000         | \$ 12,856,000        |
| <b>FTA 5307 Tennessee Total</b>  | <b>\$ 1,295,000</b> |                    | <b>\$ 8,628,000</b> | <b>\$ 18,259,000</b> | <b>\$ 24,537,000</b> | <b>\$ 51,424,000</b> |
| <b>Other Transit Providers Including KATS, MEOC, &amp; NET Trans</b>           |                     |                    |                     |                      |                      |                      |
| Operating Assistance - Other FTA Programs (Federal) 50%                        | \$ 20,000           | 1.03               | \$ 133,000          | \$ 282,000           | \$ 379,000           | \$ 794,000           |
| Operating Assistance - Other FTA Programs (Non-Federal Match) 50%              | \$ 20,000           | 1.03               | \$ 133,000          | \$ 282,000           | \$ 379,000           | \$ 794,000           |
| <b>Other FTA Programs (FTA 5316, 5317) &amp; Discretionary Funds *** Total</b> | <b>\$ 40,000</b>    |                    | <b>\$ 266,000</b>   | <b>\$ 564,000</b>    | <b>\$ 758,000</b>    | <b>\$ 1,588,000</b>  |
| <b>Total Operating Assistance</b>  | <b>\$ 1,335,000</b> |                    | <b>\$ 8,894,000</b> | <b>\$ 18,823,000</b> | <b>\$ 25,295,000</b> | <b>\$ 53,012,000</b> |

\* Based on a review of historic funding levels to the MPO region (FY08-FY11 MPO and FY11-FY14 MPO TIP)  
 \*\* Revenue forecasts assume a 3 percent annual growth rate of funding.  
 \*\*\* Conservative estimate of FTA funds likely to be available within the MPO region over the 25-Year Planning Horizon  
 Projections rounded to the nearest thousands

**Table 6-6  
2035 Public Transportation Capital Funding Forecast**

| <b>Transit - Capital Funding</b>  |                   |                    |                     |                     |                      |                      |
|---|-------------------|--------------------|---------------------|---------------------|----------------------|----------------------|
| Revenue Source  | Annual Average*   | Inflation Factor** | 2015 Horizon Year   | 2025 Horizon Year   | 2035 Horizon Year    | Total 2010 - 2035    |
| <b>KATS</b>   |                   |                    |                     |                     |                      |                      |
| Capital Assistance - FTA 5307 (Federal) 80%   | \$ 488,000        | 1.03               | \$ 3,251,000        | \$ 6,880,000        | \$ 9,247,000         | \$ 19,378,000        |
| Capital Assistance - TN (State) 10%   | \$ 61,000         | 1.03               | \$ 406,000          | \$ 860,000          | \$ 1,156,000         | \$ 2,422,000         |
| Capital Assistance - Kingsport (Local) 10%  | \$ 61,000         | 1.03               | \$ 406,000          | \$ 860,000          | \$ 1,156,000         | \$ 2,422,000         |
| <b>FTA 5307 Total</b>   | <b>\$ 610,000</b> |                    | <b>\$ 4,063,000</b> | <b>\$ 8,600,000</b> | <b>\$ 11,559,000</b> | <b>\$ 24,222,000</b> |
| Capital Assistance - Other FTA Programs (Federal) 80%                                     | \$ 20,000         | 1.03               | \$ 133,000          | \$ 282,000          | \$ 379,000           | \$ 794,000           |
| Capital Assistance - Other FTA Programs (Non-Federal Match) 20%                           | \$ 5,000          | 1.03               | \$ 33,000           | \$ 70,000           | \$ 95,000            | \$ 198,000           |
| <b>Other Transit Providers Including KATS, MEOC, &amp; NET Trans</b>                      |                   |                    |                     |                     |                      |                      |
| <b>Other FTA Programs (FTA 5309, 5310, 5316, 5317) &amp; Discretionary Funds*** Total</b> | <b>\$ 25,000</b>  |                    | <b>\$ 166,000</b>   | <b>\$ 352,000</b>   | <b>\$ 474,000</b>    | <b>\$ 992,000</b>    |
| <b>Total Capital Assistance</b>   | <b>\$ 635,000</b> |                    | <b>\$ 4,229,000</b> | <b>\$ 8,952,000</b> | <b>\$ 12,033,000</b> | <b>\$ 25,214,000</b> |

\* Based on a review of historic funding levels to the MPO region (FY08-FY11 MPO and FY11-FY14 MPO TIP)  
 \*\* Revenue forecasts assume a 3 percent annual growth rate of funding.  
 \*\*\* Conservative estimate of FTA funds likely to be available within the MPO 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 2035 for the MTPO area. All revenues and expenses in this analysis represent year of expenditure (YOE) dollars as required by SAFETEA-LU.

#### Year of Expenditure Costs

To comply with the requirement of 23 CFR 450.322 (10), (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 percent per year (source: <http://inflationdata.com>). Based on the long-term average 3 percent, revenues have been projected to increase at a 3 percent annual growth rate compounded annually over current funding levels. Consequently, project costs and program categories of the 2035 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 2035 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 three percent 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-a-side 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 6-7 illustrates the anticipated revenues and expenditures for operation and maintenance (O&M) activities within the MTPO area over the 25-year plan horizon.

**Table 6-7  
Streets & Highways Operations & Maintenance Revenues and Expenditures**

| Revenue Source                   | Anticipated O & M Revenues (2010-2035) | Anticipated O & M Costs (2010-2035) | Fiscal Constraint Summary* |
|----------------------------------|--|-------------------------------------|----------------------------|
| <b>Tennessee Revenue Sources</b> |  |                                     |                            |
| TDOT**                           | \$ 178,693,000                         | \$ 178,693,000                      | \$0                        |
| City of Kingsport                | \$ 84,224,000                          | \$ 84,224,000                       | \$0                        |
| Sullivan County***               | \$ 329,590,000                         | \$ 329,590,000                      | \$0                        |
| Town of Mt Carmel                | \$ 5,639,000                           | \$ 5,639,000                        | \$0                        |
| City of Church Hill              | \$ 6,949,000                           | \$ 6,949,000                        | \$0                        |
| Hawkins County***                | \$ 115,157,000                         | \$ 115,157,000                      | \$0                        |
| <b>Sub-Total (TN)</b>            | <b>\$ 720,252,000</b>                  | <b>\$ 720,252,000</b>               | <b>\$0</b>                 |
| <b>Virginia Revenue Sources</b>  |  |                                     |                            |
| VDOT****                         | \$ 96,294,000                          | \$ 96,294,000                       | \$0                        |
| <b>Sub-Total (VA)</b>            | <b>\$ 96,294,000</b>                   | <b>\$ 96,294,000</b>                | <b>\$0</b>                 |
| <b>Total TN and VA</b>           | <b>\$ 816,546,000</b>                  | <b>\$ 816,546,000</b>               | <b>\$0</b>                 |

- \* 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 VDOT's statewide revenue forecasts for the Kingsport MTPO area. VDOT is responsible for all roadway maintenance within the Virginia portion of the MTPO planning area.

**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 6-8 illustrates the revenues and expenditures for transit operations within the MTPO area over the 25-year plan horizon.

**Table 6-8  
Transit Operations & Maintenance Revenues and Expenditures**

| Revenue Source                            | Anticipated O & M Revenues (2010-2035) | Anticipated O & M Costs (2010-2035) | Fiscal Constraint Summary* |
|---|--|-------------------------------------|----------------------------|
| <b>Tennessee Revenue Sources</b>          |  |                                     |                            |
| Operating Assistance - FTA 5307 (Federal) | \$ 25,712,000                          | \$ 25,712,000                       | \$0                        |
| Operating Assistance - TN (State)         | \$ 12,856,000                          | \$ 12,856,000                       | \$0                        |
| Operating Assistance - Kingsport (Local)  | \$ 12,856,000                          | \$ 12,856,000                       | \$0                        |
| <b>Total Operating Assistance</b>         | <b>\$ 51,424,000</b>                   | <b>\$ 51,424,000</b>                | <b>\$0</b>                 |

- \* 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 2035 LRTP.

### 6.3.2 Capital – Revenue & Expenses

This subsection summarizes the capital revenues and expenditures of the recommended 2035 LRTP which is presented in Section 7.0 of this Plan.

The following is a summary of the 2035 LRTP's planned transportation improvements (by Streets and Highways and Public Transportation funding programs) balanced against anticipated revenues, which have been forecasted to the year 2035.

#### 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 6-9 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 \$371,088,000. Table 6-10 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 \$42,664,000. All anticipated funding is allocated on a project or program with no anticipated surplus in funds for streets and highways.

#### Public Transportation

Table 6-11 illustrates the revenues and expenditures of the planned improvements for transit projects over the planning horizon. Approximately \$7.9 million of surplus is envisioned. Historically, KATS does not expend all of its capital transit funding.

As illustrated in Table 6-9 through Table 6-11, the MTPO's Financial Plan of the 2035 LRTP demonstrates fiscal constraint and complies with the federal requirement for developing a financially constrained long range transportation plan.

**Table 6-9  
Streets & Highways  
Capital Revenues and Expenditures - Tennessee**

| Capital Funding - Tennessee  |                      |                      |                      |                       | Program Approach (Funding Target Levels) |  |   |  |                       |
|--|----------------------|----------------------|----------------------|-----------------------|--|--|---|--|-----------------------|
| Revenue Source   | 2015<br>Horizon Year | 2025<br>Horizon Year | 2035<br>Horizon Year | Total<br>2010-2035    | Safety/TSM/ITS<br>Geometrics)<br>28-30%  | Capacity<br>Improvements<br>(Capacity)<br>22-26% | Economic<br>Development/Access<br>(Access & Jobs)<br>22-26% | Active Transportation<br>Demand)<br>18-28% |                       |
| <b>Tennessee Revenue Sources</b>   |                      |                      |                      |                       |  |  |   |  |                       |
| National Highway System (NHS) (80%/20%)  | \$ 7,495,000         | \$ 15,862,000        | \$ 21,317,000        | \$ 44,674,000         | \$ 14,891,333                            | \$ 14,891,333                                    | \$ 14,891,333   |  | \$ 44,674,000         |
| Interstate Maintenance (IM) Funds (90%/10%)  | \$ 6,662,000         | \$ 14,099,000        | \$ 18,948,000        | \$ 39,709,000         | \$ 13,236,333                            | \$ 13,236,333                                    | \$ 13,236,333   |  | \$ 39,709,000         |
| Surface Transportation Program (S-STP) Funds State Selected Projects (80%/20%)     | \$ 4,997,000         | \$ 10,574,000        | \$ 14,211,000        | \$ 29,782,000         | \$ 7,445,500                             | \$ 7,445,500                                     | \$ 7,445,500  | \$ 7,445,500                               | \$ 29,782,000         |
| Safety Funding (90%/10%)   | \$ 6,662,000         | \$ 14,099,000        | \$ 18,948,000        | \$ 39,709,000         | \$ 33,752,650                            |  |   | \$ 5,956,350                               | \$ 39,709,000         |
| Bridge Rehabilitation & Replacement (BRR or BR) (80%/20%)                          | \$ 3,331,000         | \$ 7,050,000         | \$ 9,474,000         | \$ 19,855,000         | \$ 6,618,333                             | \$ 6,618,333                                     | \$ 6,618,333  |  | \$ 19,855,000         |
| Surface Transportation Program (L-STP) Funds MPO Selected Projects (80%/20%)       | \$ 10,993,000        | \$ 23,264,000        | \$ 31,264,000        | \$ 65,521,000         | \$ 15,725,040                            | \$ 15,725,040                                    | \$ 15,725,040   | \$ 18,345,880                              | \$ 65,521,000         |
| Enhancement Funds (80%/20%)  | \$ 3,331,000         | \$ 7,050,000         | \$ 9,474,000         | \$ 19,855,000         |  |  |   | \$ 19,855,000                              | \$ 19,855,000         |
| Safe Routes to School (100% Federal)   | \$ 1,666,000         | \$ 3,525,000         | \$ 4,737,000         | \$ 9,928,000          |  |  |   | \$ 9,928,000                               | \$ 9,928,000          |
| Other Federal-Aid Programs & Discretionary Funds (e.g. APD, ARRA, TIGER) (80%/20%) | \$ 1,666,000         | \$ 3,525,000         | \$ 4,737,000         | \$ 9,928,000          |  | \$ 4,964,000                                     | \$ 4,964,000  |  | \$ 9,928,000          |
| State Funds (STA or SP and SPPR) (100% State)                                      | \$ 2,665,000         | \$ 5,640,000         | \$ 7,579,000         | \$ 15,884,000         |  | \$ 7,942,000                                     | \$ 7,942,000  |  | \$ 15,884,000         |
| City of Kingsport, TN (100% Local)   | \$ 9,994,000         | \$ 21,149,000        | \$ 28,422,000        | \$ 59,565,000         | \$ 16,678,200                            | \$ 15,486,900                                    | \$ 15,486,900   | \$ 11,913,000                              | \$ 59,565,000         |
| Sullivan County, TN (100% Local)   | \$ 1,332,000         | \$ 2,820,000         | \$ 3,790,000         | \$ 7,942,000          | \$ 2,223,760                             | \$ 2,064,920                                     | \$ 2,064,920  | \$ 1,588,400                               | \$ 7,942,000          |
| Town of Mt Carmel TN (100% Local)  | \$ 200,000           | \$ 423,000           | \$ 568,000           | \$ 1,191,000          | \$ 333,480                               | \$ 309,660                                       | \$ 309,660  | \$ 238,200                                 | \$ 1,191,000          |
| City of Church Hill, TN (100% Local)   | \$ 1,066,000         | \$ 2,256,000         | \$ 3,032,000         | \$ 6,354,000          | \$ 1,779,120                             | \$ 1,652,040                                     | \$ 1,652,040  | \$ 1,270,800                               | \$ 6,354,000          |
| Hawkins County, TN (100% Local)  | \$ 200,000           | \$ 423,000           | \$ 568,000           | \$ 1,191,000          | \$ 333,480                               | \$ 309,660                                       | \$ 309,660  | \$ 238,200                                 | \$ 1,191,000          |
| <b>Sub-Total (TN)</b>  | <b>\$ 62,260,000</b> | <b>\$131,759,000</b> | <b>\$177,069,000</b> | <b>\$ 371,088,000</b> | <b>\$ 113,017,230</b>                    | <b>\$ 90,645,720</b>                             | <b>\$ 90,645,720</b>  | <b>\$ 76,779,330</b>                       | <b>\$ 371,088,000</b> |
|  |                      |                      |                      |                       | <b>30%</b>                               | <b>24%</b>                                       | <b>24%</b>  | <b>21%</b>                                 | <b>100%</b>           |
|  |                      |                      |                      |                       | <b>Target Achieved</b>                   | <b>Target Achieved</b>                           | <b>Target Achieved</b>                                      | <b>Target Achieved</b>                     |                       |
| <b>Budget</b>  | <b>2015</b>          | <b>2025</b>          | <b>2035</b>          | <b>Budget</b>         | <b>Target</b>                            |  |   |  |                       |
| Safety/TSM/ITS (Interstate)  | \$6,662,000          | \$14,099,000         | \$18,948,000         | \$39,709,000          | \$39,709,000                             |  |   |  |                       |
| Safety/TSM/ITS (Non-Interstate)  | \$23,665,000         | \$35,020,000         | \$36,432,000         | \$95,117,000          | \$73,308,230                             |  |   |  |                       |
| Capacity/Access/Jobs   | \$26,094,000         | \$35,915,000         | \$97,473,670         | \$159,482,670         | \$181,291,440                            |  |   |  |                       |
| Active Transportation  | \$5,839,000          | \$46,725,000         | \$24,215,330         | \$76,779,330          | \$76,779,330                             |  |   |  |                       |
| <b>Total</b>   | <b>\$62,260,000</b>  | <b>\$131,759,000</b> | <b>\$177,069,000</b> | <b>\$371,088,000</b>  | <b>\$371,088,000</b>                     |  |   |  |                       |
| <b>Expenses</b>  | <b>2015</b>          | <b>2025</b>          | <b>2035</b>          | <b>Expenses</b>       | <b>Budget</b>                            |  |   |  |                       |
| Safety/TSM/ITS (Interstate)  | \$6,662,000          | \$14,099,000         | \$18,948,000         | \$39,709,000          | \$39,709,000                             |  |   |  |                       |
| Safety/TSM/ITS (Non-Interstate)  | \$23,665,000         | \$35,020,000         | \$36,432,000         | \$95,117,000          | \$73,308,230                             |  |   |  |                       |
| Capacity/Access/Jobs   | \$26,094,000         | \$35,915,000         | \$97,473,670         | \$159,482,670         | \$181,291,440                            |  |   |  |                       |
| Active Transportation  | \$5,839,000          | \$46,725,000         | \$24,215,330         | \$76,779,330          | \$76,779,330                             |  |   |  |                       |
| <b>Total</b>   | <b>\$62,260,000</b>  | <b>\$131,759,000</b> | <b>\$177,069,000</b> | <b>\$371,088,000</b>  | <b>\$371,088,000</b>                     |  |   |  |                       |
| <b>Difference</b>  | <b>2015</b>          | <b>2025</b>          | <b>2035</b>          | <b>Difference</b>     | <b>Difference</b>                        |  |   |  |                       |
| Safety/TSM/ITS (Interstate)  | \$0                  | \$0                  | \$0                  | \$0                   | \$0                                      |  |   |  |                       |
| Safety/TSM/ITS (Non-Interstate)  | \$0                  | \$0                  | \$0                  | \$0                   | \$0                                      |  |   |  |                       |
| Capacity/Access/Jobs   | \$0                  | \$0                  | \$0                  | \$0                   | \$0                                      |  |   |  |                       |
| Active Transportation  | \$0                  | \$0                  | \$0                  | \$0                   | \$0                                      |  |   |  |                       |
| <b>Total</b>   | <b>\$0</b>           | <b>\$0</b>           | <b>\$0</b>           | <b>\$0</b>            | <b>\$0</b>                               |  |   |  |                       |
| <b>Fiscal Constraint by Horizon Year</b>   | <b>Achieved</b>      | <b>Achieved</b>      | <b>Achieved</b>      | <b>Achieved</b>       | <b>Achieved</b>                          |  |   |  |                       |

**Table 6-10  
Streets & Highways  
Capital Revenues and Expenditures - Virginia**

| Capital Funding - Virginia               |                      |                      |                      |                      | Program Approach (Funding Target Levels) |  |  |   |   |                      |
|--|----------------------|----------------------|----------------------|----------------------|--|--|--|---|---|----------------------|
| Revenue Source                           | Revenue Projections  |                      |                      |                      |  | Safety/TSM/ITS<br>(Crashes & Geometrics)<br>28-30% | Capacity<br>Improvements<br>(Capacity)<br>22-26% | Economic<br>Development/Access<br>(Access & Jobs)<br>22-26% | Active Transportation<br>(Non-Motorized Demand)<br>18-28% |                      |
| Virginia Revenue Sources                 | 2015<br>Horizon Year | 2025<br>Horizon Year | 2035<br>Horizon Year | Total<br>2010 - 2035 |  |  |  |   |   |                      |
| Interstate Construction**                | \$ 31,000            | \$ 354,000           | \$ 476,000           | \$ 861,000           |  | \$ 287,000   | \$ 287,000                                       | \$ 287,000  |   | \$ 861,000           |
| Primary Construction**                   | \$ 9,658,000         | \$ 4,747,000         | \$ 6,379,000         | \$ 20,784,000        |  | \$ 5,819,520                                       | \$ 5,611,680                                     | \$ 5,611,680  | \$ 3,741,120  | \$ 20,784,000        |
| Secondary Construction**                 | \$ 621,000           | \$ 1,594,000         | \$ 2,142,000         | \$ 4,357,000         |  | \$ 1,307,100                                       | \$ 1,132,820                                     | \$ 1,132,820  | \$ 784,260  | \$ 4,357,000         |
| Statewide Construction**                 | \$ 3,018,000         | \$ 5,821,000         | \$ 7,823,000         | \$ 16,662,000        |  | \$ 5,331,840                                       | \$ 4,165,500                                     | \$ 4,165,500  | \$ 2,999,160  | \$ 16,662,000        |
| Gate City, VA (100% Local)               | \$ -                 | \$ -                 | \$ -                 | \$ -                 |  | \$ -   | \$ -   | \$ -  |   | \$ -                 |
| Weber City, VA (100% Local)              | \$ -                 | \$ -                 | \$ -                 | \$ -                 |  | \$ -   | \$ -   | \$ -  |   | \$ -                 |
| <b>Sub-Total (VA)</b>                    | <b>\$ 13,328,000</b> | <b>\$ 12,516,000</b> | <b>\$ 16,820,000</b> | <b>\$ 42,664,000</b> |  | <b>\$ 12,745,460</b>                               | <b>\$ 11,197,000</b>                             | <b>\$ 11,197,000</b>  | <b>\$ 7,524,540</b>                                       | <b>\$ 42,664,000</b> |
|  |                      |                      |                      |                      |  | <b>30%</b>   | <b>26%</b>                                       | <b>26%</b>  | <b>18%</b>  | <b>100%</b>          |
|  |                      |                      |                      |                      |  | <b>Target Achieved</b>                             | <b>Target Achieved</b>                           | <b>Target Achieved</b>                                      | <b>Target Achieved</b>                                    |                      |
| <b>Budget</b>                            | <b>2015</b>          | <b>2025</b>          | <b>2035</b>          | <b>Budget</b>        | <b>Target</b>                            |  |  |   |   |                      |
| Safety/TSM/ITS (Interstate)              | \$31,000             | \$354,000            | \$476,000            | \$861,000            | \$861,000                                |  |  |   |   |                      |
| Safety/TSM/ITS (Non-Interstate)          | \$9,658,000          | \$4,747,000          | \$6,379,000          | \$20,784,000         | \$12,745,460                             |  |  |   |   |                      |
| Capacity/Access/Jobs                     | \$3,018,000          | \$5,821,000          | \$7,823,000          | \$16,662,000         | \$21,533,000                             |  |  |   |   |                      |
| Active Transportation                    | \$621,000            | \$1,594,000          | \$2,142,000          | \$4,357,000          | \$7,524,540                              |  |  |   |   |                      |
| <b>Total</b>                             | <b>\$13,328,000</b>  | <b>\$12,516,000</b>  | <b>\$16,820,000</b>  | <b>\$42,664,000</b>  | <b>\$42,664,000</b>                      |  |  |   |   |                      |
| <b>Expenses</b>                          | <b>2015</b>          | <b>2025</b>          | <b>2035</b>          | <b>Expenses</b>      | <b>Budget</b>                            |  |  |   |   |                      |
| Safety/TSM/ITS (Interstate)              | \$787,000            |                      |                      | \$787,000            | \$861,000                                |  |  |   |   |                      |
| Safety/TSM/ITS (Non-Interstate)          | \$1,857,000          | \$700,000            | \$9,628,000          | \$12,185,000         | \$12,745,460                             |  |  |   |   |                      |
| Capacity/Access/Jobs                     | \$9,725,000          | \$11,406,000         | \$5,689,000          | \$26,820,000         | \$21,533,000                             |  |  |   |   |                      |
| Active Transportation                    | \$959,000            | \$410,000            | \$1,503,000          | \$2,872,000          | \$7,524,540                              |  |  |   |   |                      |
| <b>Total</b>                             | <b>\$13,328,000</b>  | <b>\$12,516,000</b>  | <b>\$16,820,000</b>  | <b>\$42,664,000</b>  | <b>\$42,664,000</b>                      |  |  |   |   |                      |
| <b>Difference</b>                        | <b>2015</b>          | <b>2025</b>          | <b>2035</b>          | <b>Difference</b>    | <b>Difference</b>                        |  |  |   |   |                      |
| Safety/TSM/ITS (Interstate)              | -\$756,000           | \$354,000            | \$476,000            | \$74,000             | -\$74,000                                |  |  |   |   |                      |
| Safety/TSM/ITS (Non-Interstate)          | \$7,801,000          | \$4,047,000          | -\$3,249,000         | \$8,599,000          | -\$560,460                               |  |  |   |   |                      |
| Capacity/Access/Jobs                     | -\$6,707,000         | -\$5,585,000         | \$2,134,000          | -\$10,158,000        | \$5,287,000                              |  |  |   |   |                      |
| Active Transportation                    | -\$338,000           | \$1,184,000          | \$639,000            | \$1,485,000          | -\$4,652,540                             |  |  |   |   |                      |
| <b>Total</b>                             | <b>\$0</b>           | <b>\$0</b>           | <b>\$0</b>           | <b>\$0</b>           | <b>\$0</b>                               |  |  |   |   |                      |
| <b>Fiscal Constraint by Horizon Year</b> | <b>Achieved</b>      | <b>Achieved</b>      | <b>Achieved</b>      | <b>Achieved</b>      | <b>Achieved</b>                          |  |  |   |   |                      |

**Table 6-11  
Public Transportation  
Capital Revenues and Expenditures**

| <b>Transit - Capital Funding</b>   |                                  |                                |                                      |                                  |                                |                                      |                                 |                                |                                      |                                 |  |                                    |
|--|----------------------------------|--------------------------------|--------------------------------------|----------------------------------|--------------------------------|--------------------------------------|---------------------------------|--------------------------------|--------------------------------------|---------------------------------|--|------------------------------------|
| Revenue Source   | 2015<br>Horizon Year<br>Rev Est. | 2015<br>Horizon Year<br>(Cost) | 2015<br>Horizon Year<br>(Difference) | 2025<br>Horizon Year<br>Rev Est. | 2025<br>Horizon Year<br>(Cost) | 2025<br>Horizon Year<br>(Difference) | 2035<br>Horizon Year<br>Rev Est | 2035<br>Horizon Year<br>(Cost) | 2035<br>Horizon Year<br>(Difference) | Total<br>2010 - 2035<br>Rev Est | Total<br>2010-2035<br>Horizon Year<br>(Cost) | Total<br>2010 - 2035<br>Difference |
| <b>KATS</b>  |                                  |                                |                                      |                                  |                                |                                      |                                 |                                |                                      |                                 |  |                                    |
| FTA 5307 Capital Assistance - Total  | \$ 4,063,000                     | \$ 3,760,000                   | \$ 303,000                           | \$ 8,600,000                     | \$ 7,070,000                   | \$ 1,530,000                         | \$ 11,559,000                   | \$ 6,510,000                   | \$ 5,049,000                         | \$ 24,222,000                   | \$ 17,340,000                                | \$ 6,882,000                       |
| <b>Other Transit Providers Including KATS, MEOC, &amp; NET Trans</b>           |                                  |                                |                                      |                                  |                                |                                      |                                 |                                |                                      |                                 |  |                                    |
| Other FTA Programs (FTA 5309, 5310, 5316, 5317)<br>& Discretionary Funds Total | \$ 166,000                       | \$ -                           | \$ 166,000                           | \$ 352,000                       | \$ -                           | \$ 352,000                           | \$ 474,000                      | \$ -                           | \$ 474,000                           | \$ 992,000                      | \$ -   | \$ 992,000                         |
| <b>Total Capital Assistance</b>  | <b>\$ 4,229,000</b>              | <b>\$ 3,760,000</b>            | <b>\$ 469,000</b>                    | <b>\$ 8,952,000</b>              | <b>\$ 7,070,000</b>            | <b>\$ 1,882,000</b>                  | <b>\$ 12,033,000</b>            | <b>\$ 6,510,000</b>            | <b>\$ 5,523,000</b>                  | <b>\$ 25,214,000</b>            | <b>\$ 17,340,000</b>                         | <b>\$ 7,874,000</b>                |

## 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 and the MTPO's Program Initiative of targeted funding toward:

- Safety & TSM/ITS Solutions
- Capacity Improvements
- Economic Development & Access to Jobs
- Active Transportation

Section 2.3 defines these programs and their respective target levels. 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 2035 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.

#### 7.1.1 Streets & Highways

This category includes planned improvements for roadways (i.e. roadway widening, new roadway construction, and roadway reconstruction), bridges, transportation system management/safety and intelligent transportation systems, and walkways and bikeways.

##### 7.1.1.1 Roadways

Planned roadway improvements of the Tennessee portion of the MTPO are contained in Table 7-1 and the planned roadway improvements of the Virginia portion of the MTPO are contained in Table 7-2.

Figure 7-1 illustrates the planned roadway improvement projects of the entire MTPO area.

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 7-1**  
**2035 Planned Improvements - Tennessee**

See 11X17 Project Sheets

Kingsport MTPO  
2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects  
(Capacity Improvements - Roadway Widening, Roadway Reconstruction, and New Roadways)

| Kingsport MTPO 2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects (Roadway Widening, Roadway Reconstruction, and New Roadways) |              |                                |                               |                              |                |                                   |                     |  |                              |                |                         |                        |                                  |                                     |               |                   |                                  |                               |  |
|--|--------------|--------------------------------|-------------------------------|------------------------------|----------------|-----------------------------------|---------------------|--|------------------------------|----------------|-------------------------|------------------------|----------------------------------|-------------------------------------|---------------|-------------------|----------------------------------|-------------------------------|--|
| 2035LRTP NO  | Jurisdiction | Roadway                        | From                          | To                           | Length (Miles) | Federal Functional Classification | Type of Improvement | Project Description  | Non-Motorized Accommodation* |                | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E) Exempt (N)on-Exempt | Time Frame*** | Regional Facility | Total Estimated Project Cost**** | Year of Expenditure Cost***** |  |
|  |              |                                |                               |                              |                |                                   |                     |  | Bike                         | Ped            |                         |                        |                                  |                                     |               |                   |                                  |                               |  |
| 4-TC   | Kingsport    | Stone Dr West (US 11W/SR 1)    | East Ave                      | Fairview Ave                 | 2.30           | Principle Arterial                | Widening            | Widen to 6 lanes   | Appropriate                  | Appropriate    | 4                       | 6                      | Yes                              | N                                   | 2035          | Regional          | \$17,520,000                     | \$31,643,000                  |  |
| 13-TC  | Kingsport    | Sullivan St West               | Church Circle Dr              | Lynn Garden Dr (SR 36)       | 0.75           | Minor Arterial                    | 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) | Appropriate                  | Appropriate    | 2                       | 3                      | Yes                              | E                                   | 2015          | -                 | \$3,000,000                      | \$3,278,000                   |  |
| 8-TC   | Sullivan Co  | Memorial Blvd (SR 126)         | Cooks Valley Rd               | Harr Town Rd                 | 2.46           | Minor Arterial                    | 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) | Appropriate                  | Appropriate-WC | 2                       | 3                      | Yes                              | E                                   | 2025          | Regional          | \$25,190,000                     | \$35,915,000                  |  |
| 22-TC  | Kingsport    | Fort Henry Drive (SR 36)       | Interstate 81 (I-81)          | Airport Road (SR 75)         | 3.54           | Principle Arterial                | Widening            | Widen existing 2 lane road to 4/5 lanes  | Appropriate                  | Appropriate-WC | 2                       | 4/5                    | Yes                              | N                                   | 2035          | Regional          | \$35,000,000                     | \$60,215,000                  |  |
| 9-TC   | Kingsport    | Netherland Inn Rd              | Center St (SR 36)             | Ridgefields Rd               | 0.73           | Minor Arterial                    | Reconstruction      | Reconstruct to 3 lanes (center turn lane) in coordination with roundabout  | Appropriate                  | Appropriate-WC | 2                       | 3                      | Yes                              | E                                   | 2015          | Regional          | \$3,000,000                      | \$3,278,000                   |  |
| 11-TC  | Kingsport    | Rock Springs Rd                | Interstate 26 (I-26)          | Cox Hollow Rd                | 1.16           | Minor Arterial                    | 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) | Appropriate                  | Appropriate-WC | 2                       | 3                      | Yes                              | E                                   | 2015          | -                 | \$3,000,000                      | \$3,278,000                   |  |
| 15-TC  | Kingsport    | Tri-Cities Crossing            | Kendricks Creek Rd            | Interstate 81 (I-81) Exit 58 | 0.98           | Collector                         | 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) | Appropriate                  | -              | 2                       | 3                      | Yes                              | E                                   | 2015          | -                 | \$4,000,000                      | \$4,371,000                   |  |
| 14-TC  | Kingsport    | Eastern Star Rd                | Mitchell Rd                   | Fordtown Rd                  | 0.69           | Collector                         | 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) | Appropriate                  | Appropriate-WC | 2                       | 3                      | Yes                              | E                                   | 2015          | -                 | \$4,590,000                      | \$5,016,000                   |  |
| 19-TC  | Kingsport    | Mitchell Rd Connector          | Fordtown Rd                   | Eastern Star Rd              | 0.60           | Minor Arterial                    | New Roadway         | Construct new 3 lane roadway to link Fordtown Rd to Eastern Star at I-26 Interchange   | Appropriate                  | Appropriate-WC | 0                       | 3                      | Yes                              | N                                   | 2015          | -                 | \$3,290,000                      | \$3,595,000                   |  |
| 26-TC  | Kingsport    | Granby Rd Extension            | Stone Dr West (US 11 W/ SR 1) | Fort Robinson Dr             | 0.25           | Collector                         | New Roadway         | Extend Granby Dr from Stone Dr to Fort Robinson Dr as part of improved access to Netherland Inn Rd   | Appropriate                  | Appropriate    | 2                       | 2                      | Yes                              | N                                   | 2035          | -                 | \$1,920,000                      | \$3,468,000                   |  |
| 10-TC  | Kingsport    | Reservoir Rd                   | Interstate 26 (I-26)          | Saratoga Rd                  | 0.18           | Minor Arterial                    | 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) | Appropriate                  | Appropriate    | 2                       | 3                      | Yes                              | E                                   | 2035          | -                 | \$1,185,000                      | \$2,140,000                   |  |
| 17-TC  | Kingsport    | Lincoln St/MLK Jr Dr Connector | Lincoln St/MLK Jr Dr          | Industry Dr (SR 355)         | 0.76           | Minor Arterial                    | New Roadway         | Extend Lincoln St/MLK Jr Dr to Industry Dr   | Appropriate                  | Appropriate    | 0                       | 2                      | Yes                              | N                                   | 2015          | -                 | \$3,000,000                      | \$3,278,000                   |  |

Notes: Project Numbering - TC=Tennessee Capacity Project; TSTI=Tennessee Safety/TSM/ITS Project; VC=Virginia Capacity Project; VSTI=Virginia Safety/TSM/ITS Project  
\* Consideration of non-motorized accommodation/preliminary assessment: (Appropriate = a bicycle or pedestrian facility maybe appropriate as part of the improvement; Appropriate-WC = Appropriate with conditions (conditions may depend on land use surroundings, right-of-way, or demand))  
\*\* Roadway facilities are modeled in the MTPO travel demand model according to the number of capacity lanes per horizon year  
\*\*\* Anticipated year open to traffic  
\*\*\*\* Current year dollars (2011)  
\*\*\*\*\* Estimated project cost in future year based on inflation (See Section 6.3.2 for further details)

Kingsport MTPO  
2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects  
(Transportation System Management - TSM / Intelligent Transportation System (ITS) Improvements)

| Kingsport MTPO 2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects (Transportation System Management - TSM/ITS Improvements) |                           |  |  |                                 |                |                                   |   |   |                              |     |                         |                        |                                  |                                     |                      |                   |                                  |                               |
|---|---------------------------|--|--|---------------------------------|----------------|-----------------------------------|---|---|------------------------------|-----|-------------------------|------------------------|----------------------------------|-------------------------------------|----------------------|-------------------|----------------------------------|-------------------------------|
| 2035LRTP NO   | Jurisdiction              | Roadway  | From   | To                              | Length (Miles) | Federal Functional Classification | Type of Improvement                               | Project Description   | Non-Motorized Accommodation* |     | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E) Exempt (N)on-Exempt | Time Frame***        | Regional Facility | Total Estimated Project Cost**** | Year of Expenditure Cost***** |
|   |                           |  |  |                                 |                |                                   |   |   | Bike                         | Ped |                         |                        |                                  |                                     |                      |                   |                                  |                               |
| 2-TSTI  | Kingsport                 | John B. Dennis Hwy (SR 93)   | Interstate 26 (I-26)   | Stone Dr West (US 11W/ SR 1)    | N/A            | Expressway                        | Intersection/ Interchange Improvements            | Reconstruct intersections/interchanges to improve traffic flow and upgrade signals and improve geometrics at intersections/interchanges   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2015<br>2025<br>2035 | Regional          | \$1,530,000                      | \$2,250,000                   |
| 15-TSTI   | Kingsport                 | Stone Dr East (US 11W/SR 1)  | John B. Dennis (SR 93)   | Lynn Garden Dr (SR 36)          | 3.57           | Minor Arterial                    | Signal Synchronization                            | Improve intersections and coordinate signal timings   | -                            | -   | -                       | -                      | No                               | E                                   | 2015                 | Regional          | \$390,000                        | \$426,000                     |
| 20-TSTI   | Sullivan Co<br>Hawkins Co | TSM/ITS/Safety Regional Various                                      |  |                                 | N/A            | Various                           | Intersection Improvements<br>Signalization<br>ITS | TSM projects may include intersection improvements on non-interstates (e.g. additional turning lanes and/or signal improvements, and/or signage and lighting; and other traffic operational improvements (e.g. signal timing, access management, traffic calming, etc.); and ITS projects based on Kingsport's Regional ITS Architecture. | -                            | -   | -                       | -                      | No                               | E                                   | 2015<br>2025<br>2035 | Regional          | \$1,080,000                      | \$4,500,000                   |
| 14-TSTI   | Kingsport                 | Stone Dr East (US 11W/SR 1)  | Orebank Rd/ Bancroft Chapel Rd   | John B. Dennis (SR 93)          | 3.08           | Minor Arterial                    | Signal Synchronization                            | Improve intersections and coordinate signal timings   | -                            | -   | -                       | -                      | No                               | E                                   | 2015                 | Regional          | \$390,000                        | \$426,000                     |
| 17-TSTI   | Kingsport                 | Fort Henry (SR 36)   | Moreland Dr/ Hemlock Rd  | Interstate 81 (I-81)            | 1.38           | Minor Arterial                    | Signal Synchronization                            | Improve intersections and coordinate signal timings   | -                            | -   | -                       | -                      | No                               | E                                   | 2015                 | Regional          | \$30,000                         | \$33,000                      |
| 18-TSTI   | Kingsport                 | Interstate 81 (I-81) & Interstate 26 (I-26) Interchange Improvements | Various interchanges along corridors within the MTPO Planning area                                   |                                 | N/A            | Interstate                        | Reconstruct Interchanges                          | Interchange improvements on interstates (e.g. additional turning lanes and/or ramp reconfigurations, and/or signal improvements, signage, and lighting)   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2015<br>2025<br>2035 | Regional          | \$39,709,000                     | \$39,709,000                  |
| 4-TSTI  | Kingsport                 | Stone Dr West (US 11W/SR 1)  | Kaywood Ave (City of Mt Carmel)  | Granby Rd                       | 5.10           | Principle Arterial                | Signalization                                     | Install signal system with advanced warning signals to improve safety at intersections  | -                            | -   | -                       | -                      | No                               | E                                   | 2015                 | Regional          | \$420,000                        | \$459,000                     |
| 5-TSTI  | Kingsport                 | Stone Dr East (US 11W/SR 1)  | John B. Dennis (SR 93)   |                                 | N/A            | Principle Arterial                | Signalization/ Intersection Improvement           | Extend left turn lane under John B. Dennis Hwy (SR 93)  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2015                 | Regional          | \$490,000                        | \$535,000                     |
| 16-TSTI   | Kingsport                 | Fort Henry (SR 36)   | John B. Dennis (SR 93)   | Moreland Dr/ Hemlock Rd         | 2.01           | Minor Arterial                    | Signal Synchronization                            | Improve intersections and coordinate signal timings   | -                            | -   | -                       | -                      | No                               | E                                   | 2015                 | Regional          | \$30,000                         | \$33,000                      |
| 3-TSTI  | Hawkins Co                | US 11W/SR 1  | Intersection in Mt Carmel & Church Hill  |                                 | N/A            | Principle Arterial                | Intersection Improvements/ Signalization          | Install new signal at appropriate locations. Improve turning movements at intersection with modified turn lanes and redirect traffic to reduce conflicts  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2025                 | Regional          | \$460,000                        | \$656,000                     |
| 7-TSTI  | Kingsport                 | Lynn Garden Dr (SR 36)   | West Center Street   | West Carters Valley Rd (SR 346) | 1.50           | Principle Arterial                | Signalization                                     | Intersection and signalization improvements (including signal system interconnection and signal timing/coordination)  | -                            | -   | -                       | -                      | No                               | E                                   | 2025                 | Regional          | \$120,000                        | \$171,000                     |
| 11-TSTI   | Mt Carmel                 | Main St  | Intersections of Kaywood Ave, Independence Ave, Hammond Ave, Englewood Ave, Dover Ave, & Belmont Ave |                                 | N/A            | Minor Arterial                    | Intersection Improvements                         | Coordinate traffic flow from US 11W/SR 1 - various intersection improvements to improve safety and traffic flow   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2025                 | -                 | \$360,000                        | \$513,000                     |
| 13-TSTI   | Kingsport                 | Sevier Ave   | Wilcox Dr North (SR 126)   | Holston St                      | N/A            | Collector                         | Intersection Improvements                         | Add turning lanes at various intersections as part of redevelopment corridor study  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2025                 | -                 | \$1,080,000                      | \$1,540,000                   |
| 6-TSTI  | Kingsport                 | Center St (SR 355)   | Intersection of Sullivan St West & Fairview Ave  |                                 | N/A            | Principle Arterial                | Intersection Improvements                         | Reconstruct intersection to more efficient design that includes improving left turns  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2025                 | -                 | \$360,000                        | \$513,000                     |
| 9-TSTI  | Mt Carmel                 | Independence Ave   | Intersections of Walnut St, Tranbarger Rd/Campground Rd, & Redwood St                                |                                 | N/A            | Minor Arterial                    | Intersection Improvements                         | Add left turn lanes at designated intersections and widen shoulders at selected locations   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2025                 | -                 | \$1,080,000                      | \$1,540,000                   |
| 1-TSTI  | Kingsport                 | Airport Pkwy (SR 357)  | Bristol Hwy (SR 75)  | Jericho Dr                      | N/A            | Expressway                        | Intersection Improvements                         | Improve intersections at Jericho Dr, Flagship Dr, & NE Business Park - Add turning lanes & improve geometry   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2025                 | Regional          | \$1,080,000                      | \$1,540,000                   |
| 10-TSTI   | Sullivan Co               | Lebanon Rd   | Intersection at Fort Henry Rd (SR 36)  |                                 | N/A            | Minor Arterial                    | Intersection Improvement                          | Extend left turn lane to length determined in queuing study   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2035                 | -                 | \$360,000                        | \$650,000                     |
| 12-TSTI   | Kingsport                 | Orebank Rd   | Intersections of Woodbridge Ave & Chestnut Ridge Rd  |                                 | N/A            | Minor Arterial                    | Intersection Improvements                         | Add turning lanes to selected intersections and widen shoulders at specified locations  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2035                 | -                 | \$360,000                        | \$650,000                     |
| 8-TSTI  | Sullivan Co               | Fall Creek Rd  | Memorial Blvd (SR 126)   | Hemlock Rd/ Fall Creek Rd       | N/A            | Minor Arterial                    | Intersection Improvements                         | Install left turn lanes at Petty John Rd, Emory Church Rd, & Colonial Heights Rd & eliminate left turn conflicts  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2035                 | -                 | \$1,080,000                      | \$1,951,000                   |
| 19-TSTI   | Church Hill               | Volunteer High School Traffic Signal                                 | US 11 W/SR 1   | Tipton St                       | N/A            | Principle Arterial                | Signalization                                     | Install new traffic signal on US 11W/SR 1   | -                            | -   | -                       | -                      | No                               | E                                   | 2035                 | -                 | \$130,000                        | \$235,000                     |

Notes: Project Numbering - TC=Tennessee Capacity Project; TSTI=Tennessee Safety/TSM/ITS Project; VC=Virginia Capacity Project; VSTI=Virginia Safety/TSM/ITS Project  
 \* Consideration of non-motorized accommodation/preliminary assessment: (Appropriate = a bicycle or pedestrian facility maybe appropriate as part of the improvement; Appropriate-WC = Appropriate with conditions (conditions may depend on land use surroundings, right-of-way, or demand))  
 \*\* Roadway facilities are modeled in the MTPO travel demand model according to the number of capacity lanes per horizon year  
 \*\*\* Anticipated year open to traffic  
 \*\*\*\* Current year dollars (2011)  
 \*\*\*\*\* Estimated project cost in future year based on inflation (See Section 6.3.2 for further details)

Kingsport MTPO  
2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects  
(Safety Improvements)

| Kingsport MTPO 2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects (Safety Improvements) |                           |                          |                             |                              |                |                                   |                               |   |                              |                |                         |                        |                                  |                                    |                      |                   |                                  |                               |
|---|---------------------------|--------------------------|-----------------------------|------------------------------|----------------|-----------------------------------|-------------------------------|---|------------------------------|----------------|-------------------------|------------------------|----------------------------------|------------------------------------|----------------------|-------------------|----------------------------------|-------------------------------|
| 2035LRTP NO   | Jurisdiction              | Roadway                  | From                        | To                           | Length (Miles) | Federal Functional Classification | Type of Improvement           | Project Description   | Non-Motorized Accommodation* |                | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E)Exempt (N)on-Exempt | Time Frame***        | Regional Facility | Total Estimated Project Cost**** | Year of Expenditure Cost***** |
|   |                           |                          |                             |                              |                |                                   |                               |   | Bike                         | Ped            |                         |                        |                                  |                                    |                      |                   |                                  |                               |
| 33-TSTI   | Kingsport                 | May Ave                  | Bell Ridge Dr               | Lynn Garden Dr (SR 36)       | 0.36           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate    | 2                       | 2                      | Yes                              | E                                  | 2035                 | -                 | \$470,000                        | \$849,000                     |
| 39-TSTI   | Sullivan Co<br>Hawkins Co | Bridges                  |                             |                              | 0.00           | Various                           | Safety/Geometric Improvements | Bridge Replacement/Bridge Rehabilitation  | Appropriate                  | Appropriate-WC | 0                       | 0                      | No                               | E                                  | 2015<br>2025<br>2035 | Regional          | N/A                              | \$19,855,000                  |
| 22-TSTI   | Kingsport                 | Fairview Ave             | Stone Dr West (US 1/11W)    | Virgil Ave                   | 0.88           | Minor Arterial                    | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate    | 2                       | 2                      | Yes                              | E                                  | 2035                 | -                 | \$1,540,000                      | \$2,781,000                   |
| 24-TSTI   | Kingsport                 | Gravelly Rd              | Lynn Garden Dr (SR 36)      | Shipp's Spring Rd            | 0.94           | Minor Arterial                    | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate    | 2                       | 2                      | Yes                              | E                                  | 2025                 | -                 | \$3,900,000                      | \$5,560,000                   |
| 26-TSTI   | Kingsport                 | Bell Ridge Dr            | May Ave                     | Harrison Ave                 | 1.08           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                  | 2035                 | -                 | \$1,600,000                      | \$2,890,000                   |
| 38-TSTI   | Kingsport                 | Fort Henry Dr (SR 36)    | Holston River Bridge        | Hemlock Rd                   | 1.2            | Principle Arterial                | Safety/Geometric Improvements | Widen shoulders (2' to 10') and improve turning movements/extend center turn lane   | Appropriate                  | Appropriate    | 4/5                     | 4/5                    | Yes                              | E                                  | 2025                 | Regional          | \$3,130,000                      | \$4,463,000                   |
| 28-TSTI   | Sullivan Co               | Kendricks Creek Rd       | Lebanon Rd                  | Tri-Cities Crossing          | 2.01           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                  | 2025                 | -                 | \$2,770,000                      | \$3,949,000                   |
| 40-TSTI   | Kingsport                 | Bloomingtondale Pk       | Stone Dr West (US 1/11W)    | Orbin Dr                     | 0.25           | Minor Arterial                    | Safety/Geometric Improvements | Reconstruct existing 2 lane roadway to include a center turn lane (paved shoulder and other safety/geometric improvements at select locations/intersections as determined thru the project development process)                               | Appropriate                  | Appropriate    | 2                       | 3                      | Yes                              | E                                  | 2025                 | -                 | \$1,760,000                      | \$2,509,000                   |
| 30-TSTI   | Sullivan Co               | Rock Springs Dr (SR 347) | Poplar Grove Rd (SR 347)    | Sullivan Garden Pkwy (SR 93) | 1.91           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | -              | 2                       | 2                      | Yes                              | E                                  | 2035                 | -                 | \$5,000,000                      | \$9,031,000                   |
| 31-TSTI   | Sullivan Co               | Summerville Rd           | Fort Henry Dr (SR 36)       | New Summerville Rd           | 1.77           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                  | 2025                 | -                 | \$1,940,000                      | \$2,766,000                   |
| 32-TSTI   | Kingsport                 | Tranbarger Dr            | Lynn Garden Dr (SR 36)      | Virgil Ave                   | 1.04           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate    | 2                       | 2                      | Yes                              | E                                  | 2035                 | -                 | \$1,140,000                      | \$2,059,000                   |
| 34-TSTI   | Kingsport                 | Riverport Rd             | Holston River Sluice Bridge | Wilcox Dr (SR 126)           | 1.48           | Minor Arterial                    | Safety/Geometric Improvements | Reconstruct to 2 lanes (with paved shoulder and other safety/geometric improvements at select locations/intersections as determined thru the project development process - possible relocation of roadway to mitigate reconstruction impacts) | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                  | 2035                 | -                 | \$2,000,000                      | \$3,612,000                   |
| 36-TSTI   | Sullivan Co               | Memorial Blvd (SR 126)   | Harr Town Rd                | Interstate 81 (I-81)         | 2.00           | Minor Arterial                    | Safety/Geometric Improvements | Reconstruct to 2 lanes (with paved shoulder and other safety/geometric improvements at select locations/intersections as determined thru the project development process)   | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                  | 2015                 | Regional          | \$14,800,000                     | \$16,172,000                  |

Notes: Project Numbering - TC=Tennessee Capacity Project; TSTI=Tennessee Safety/TSM/ITS Project; VC=Virginia Capacity Project; VSTI=Virginia Safety/TSM/ITS Project  
 \* Consideration of non-motorized accommodation/preliminary assessment: (Appropriate = a bicycle or pedestrian facility maybe appropriate as part of the improvement; Appropriate-WC = Appropriate with conditions (conditions may depend on land use surroundings, right-of-way, or demand))  
 \*\* Roadway facilities are modeled in the MTPO travel demand model according to the number of capacity lanes per horizon year  
 \*\*\* Anticipated year open to traffic  
 \*\*\*\* Current year dollars (2011)  
 \*\*\*\*\* Estimated project cost in future year based on inflation (See Section 6.3.2 for further details)

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**Table 7-2**  
**2035 Planned Improvements - Virginia**

See 11X17 Project Sheets

Kingsport MTPO  
2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects - Virginia

| Kingsport MTPO 2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects (Roadway Widening, Roadway Reconstruction, and New Roadways) |              |                         |                                  |   |                |                                   |                     |   |                              |                |                         |                        |                                  |                                     |               |                   |                                  |                               |  |
|--|--------------|-------------------------|----------------------------------|---|----------------|-----------------------------------|---------------------|---|------------------------------|----------------|-------------------------|------------------------|----------------------------------|-------------------------------------|---------------|-------------------|----------------------------------|-------------------------------|--|
| 2035LRTP NO  | Jurisdiction | Roadway                 | From                             | To  | Length (Miles) | Federal Functional Classification | Type of Improvement | Project Description   | Non-Motorized Accommodation* |                | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E) Exempt (N)on-Exempt | Time Frame*** | Regional Facility | Total Estimated Project Cost**** | Year of Expenditure Cost***** |  |
|  |              |                         |                                  |   |                |                                   |                     |   | Bike                         | Ped            |                         |                        |                                  |                                     |               |                   |                                  |                               |  |
| 2-VC   | Gate City VA | Jackson St East (SR 71) | SR 72 Bypass (east of Gate City) | Veterans Memorial Hwy (SR 72)                           | 0.50           | Principle Arterial                | Reconstruction      | Reconstruct existing 2 lane roadway to include a center turn lane as part of proposed Clinch Mountain/SR 72 bypass project                            | Appropriate                  | -              | 2                       | 3                      | Yes                              | E                                   | 2035          | Regional          | \$3,150,000                      | \$5,689,000                   |  |
| 1-VC   | Scott Co. VA | US 58/US 421            | Hilton Road (SR 224)             | SR 614 (East of Gate City)                              | 1.50           | Principle Arterial                | Reconstruction      | Reconstruct existing 2 lane roadway to include a center turn lane as part of Moccasin Gap project   | Appropriate                  | Appropriate-WC | 2                       | 3                      | Yes                              | E                                   | 2025          | Regional          | \$8,000,000                      | \$11,406,000                  |  |
| 3-VC   | Scott Co. VA | Wadlow Gap Rd (SR 224)  | US 58/ US 421                    | VA/TN State Line (near East Carters Valley Rd (SR 704)) | 2.22           | Minor Arterial                    | Reconstruction      | Pave gravel shoulders; provide safety and geometric improvements at select locations/intersections as determined thru the project development process | Appropriate                  | -              | 2                       | 2                      | Yes                              | E                                   | 2015          | Regional          | \$8,900,000                      | \$9,725,000                   |  |

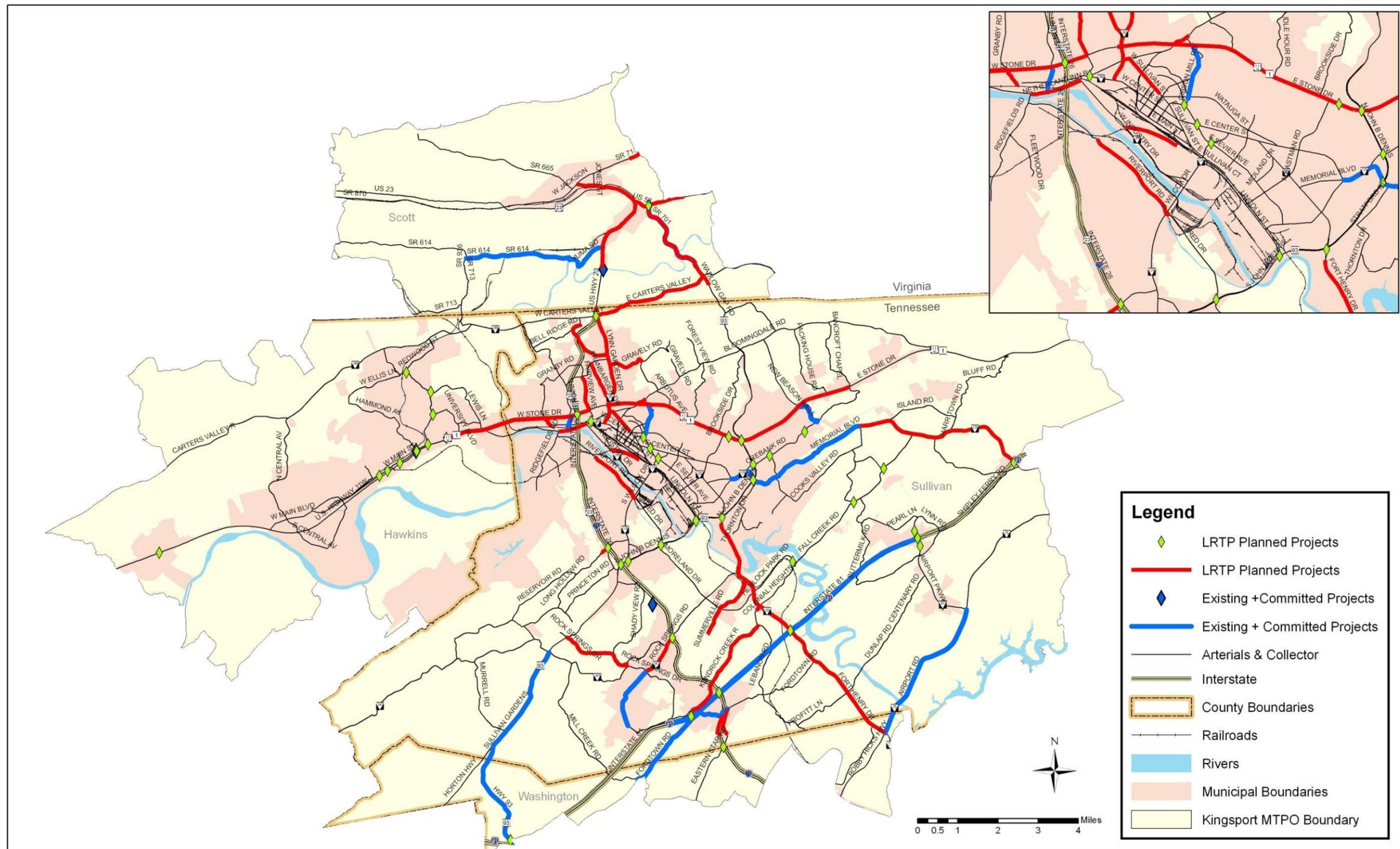
| Kingsport MTPO 2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects (Transportation System Management - TSM/ITS Improvements) |               |                                 |   |   |                |                                   |   |  |                              |     |                         |                        |                                  |                                     |                      |                   |                                  |                               |  |
|---|---------------|---------------------------------|---|---|----------------|-----------------------------------|---|--|------------------------------|-----|-------------------------|------------------------|----------------------------------|-------------------------------------|----------------------|-------------------|----------------------------------|-------------------------------|--|
| 2035LRTP NO   | Jurisdiction  | Roadway                         | From  | To  | Length (Miles) | Federal Functional Classification | Type of Improvement*                        | Project Description  | Non-Motorized Accommodation* |     | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E) Exempt (N)on-Exempt | Time Frame***        | Regional Facility | Total Estimated Project Cost**** | Year of Expenditure Cost***** |  |
|   |               |                                 |   |   |                |                                   |   |  | Bike                         | Ped |                         |                        |                                  |                                     |                      |                   |                                  |                               |  |
| 3-VSTI  | Scott Co. VA  | Wadlow Gap Rd (SR 224)          | Intersection of US 58/ US 421                       |   | N/A            | Minor Arterial                    | Roundabout                                  | Construct a roundabout at the intersection of SR 224/US 58/US 421  | -                            | -   | -                       | -                      | Yes                              | E                                   | 2035                 | Regional          | \$1,600,000                      | \$2,890,000                   |  |
| 1-VSTI  | Weber City VA | Gate City Hwy (US 23)           | Kane Street (US 23 Business)                        | VA/TN State Line                                    | N/A            | Principle Arterial                | Signalization                               | Intersection and signalization improvements (including signal system interconnection and signal timing/coordination)   | -                            | -   | -                       | -                      | No                               | E                                   | 2015                 | Regional          | \$510,000                        | \$557,000                     |  |
| 2-VSTI  | Scott Co. VA  | Wadlow Gap Rd (SR 224)          | Approx 1/4 mile north of Carters Valley Rd (SR 704) | Approx 1/4 mile south of Carters Valley Rd (SR 704) | N/A            | Minor Arterial                    | Intersection Improvements                   | Install extended turn lanes to provide easier access to surrounding properties   | -                            | -   | -                       | -                      | Yes                              | E                                   | 2015                 | Regional          | \$720,000                        | \$787,000                     |  |
| 5-VSTI  | Scott Co. VA  | TSM/ITS/Safety Regional Various |   |   | N/A            | Various                           | Intersection Improvements Signalization ITS | TSM projects may include intersection improvements (e.g. additional turning lanes and/or signal improvements, and/or signage and lighting; and other traffic operational improvements (e.g. signal timing, access management, traffic calming, etc.); and ITS projects based on Kingsport's Regional ITS Architecture. | -                            | -   | -                       | -                      | No                               | E                                   | 2015<br>2025<br>2035 | Regional          | N/A                              | \$2,872,000                   |  |

| Kingsport MTPO 2035 Long Range Transportation Plan - Proposed Cost Feasible Plan Projects (Safety Improvements) |              |                                 |                        |                        |                |                                   |                               |  |                              |                |                         |                        |                                  |                                     |                      |                   |                                  |                               |  |
|---|--------------|---------------------------------|------------------------|------------------------|----------------|-----------------------------------|-------------------------------|--|------------------------------|----------------|-------------------------|------------------------|----------------------------------|-------------------------------------|----------------------|-------------------|----------------------------------|-------------------------------|--|
| 2035LRTP NO   | Jurisdiction | Roadway                         | From                   | To                     | Length (Miles) | Federal Functional Classification | Type of Improvement*          | Project Description  | Non-Motorized Accommodation* |                | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E) Exempt (N)on-Exempt | Time Frame***        | Regional Facility | Total Estimated Project Cost**** | Year of Expenditure Cost***** |  |
|   |              |                                 |                        |                        |                |                                   |                               |  | Bike                         | Ped            |                         |                        |                                  |                                     |                      |                   |                                  |                               |  |
| 4-VSTI  | Scott Co. VA | Carters Valley Rd East (SR 704) | Lynn Garden Dr (SR 36) | Wadlow Gap Rd (SR 224) | 2.93           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements at select locations/intersections as determined thru the project development process) | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | 2035                 | Regional          | \$2,900,000                      | \$5,238,000                   |  |
| 6-VSTI  | Scott Co. VA | Bridges                         |                        |                        | 0.00           | Various                           | Safety/Geometric Improvements | Bridge Replacement/Bridge Rehabilitation   | Appropriate                  | Appropriate-WC | 0                       | 0                      | No                               | E                                   | 2015<br>2025<br>2035 | Regional          | N/A                              | \$3,500,000                   |  |

Notes: Project Numbering - TC=Tennessee Capacity Project; TSTI=Tennessee Safety/TSM/ITS Project; VC=Virginia Capacity Project; VSTI=Virginia Safety/TSM/ITS Project  
 \* Consideration of non-motorized accommodation/preliminary assessment: (Appropriate = a bicycle or pedestrian facility maybe appropriate as part of the improvement; Appropriate-WC = Appropriate with conditions (conditions may depend on land use surroundings, right-of-way, or demand))  
 \*\* Roadway facilities are modeled in the MTPO travel demand model according to the number of capacity lanes per horizon year  
 \*\*\* Anticipated year open to traffic  
 \*\*\*\* Current year dollars (2011)  
 \*\*\*\*\* Estimated project cost in future year based on inflation (See Section 6.3.2 for further details)

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Figure 7-1  
2035 Planned Cost Feasible Roadway Improvements



Kingsport MTPO 2035 Long Range Transportation Plan

### 7.1.1.2 Active Transportation Solutions

Active transportation solutions are investments that 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 active transportation solutions.

With a target funding goal of 18 to 28 percent of the MTPOs funds going toward active transportation solutions, the LRTP allocates \$76,779,330 (21 percent of Streets & Highway funds) for active transportation solutions over the 25 years. 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 2035 LRTP goals, objectives, and Plan project selection criteria.

## 7.1.2 Public Transportation

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

### 7.1.2.1 Transit

Table 7-3 contains a listing of the public transportation improvements of the 2035 LRTP.

**Table 7-3  
2035 Planned Transit Improvements**

| Fixed Route Service - Vehicle Replacements |           |           |                |                  |                    |                    |                    |  |                    |
|--|-----------|-----------|----------------|------------------|--------------------|--------------------|--------------------|--|--------------------|
| 2015                                       | 2025      | 2035      | Total Vehicles |                  | 2015               | 2025               | 2035               |  | Total              |
| 1  | 1         | 2         | 4              |                  | \$165,000          | \$180,000          | \$390,000          |  | \$735,000          |
| 1  | 2         | 1         | 4              |                  | \$165,000          | \$361,000          | \$195,000          |  | \$721,000          |
| 1  | 2         | 1         | 4              |                  | \$165,000          | \$361,000          | \$195,000          |  | \$721,000          |
| 1  | 1         | 1         | 3              |                  | \$258,000          | \$282,000          | \$305,000          |  | \$845,000          |
| 1  | 1         | 1         | 3              |                  | \$258,000          | \$282,000          | \$305,000          |  | \$845,000          |
| 1  | 1         | 1         | 3              |                  | \$165,000          | \$180,000          | \$195,000          |  | \$540,000          |
| 1  | 1         | 1         | 3              |                  | \$165,000          | \$180,000          | \$195,000          |  | \$540,000          |
| 1  | 1         | 1         | 3              |                  | \$165,000          | \$180,000          | \$195,000          |  | \$540,000          |
| 0  | 2         | 1         | 3              |                  | \$0                | \$361,000          | \$195,000          |  | \$556,000          |
| 0  | 2         | 1         | 3              |                  | \$0                | \$361,000          | \$195,000          |  | \$556,000          |
| 0  | 2         | 1         | 3              |                  | \$0                | \$361,000          | \$195,000          |  | \$556,000          |
| 0  | 2         | 1         | 3              |                  | \$0                | \$361,000          | \$195,000          |  | \$556,000          |
| <b>8</b>                                   | <b>18</b> | <b>13</b> | <b>39</b>      | <b>Sub-Total</b> | <b>\$1,506,000</b> | <b>\$3,450,000</b> | <b>\$2,755,000</b> |  | <b>\$7,711,000</b> |

| ADA / Paratransit Service - Demand Response - Vehicle Replacements |           |           |                |                  |                  |                    |                    |  |                    |
|--|-----------|-----------|----------------|------------------|------------------|--------------------|--------------------|--|--------------------|
| 2015   | 2025      | 2035      | Total Vehicles |                  | 2015             | 2025               | 2035               |  | Total              |
| 2  | 2         | 2         | 6              |                  | \$165,000        | \$180,000          | \$195,000          |  | \$540,000          |
| 2  | 2         | 2         | 6              |                  | \$165,000        | \$180,000          | \$195,000          |  | \$540,000          |
| 1  | 2         | 2         | 5              |                  | \$82,000         | \$180,000          | \$195,000          |  | \$457,000          |
| 1  | 2         | 2         | 5              |                  | \$82,000         | \$180,000          | \$195,000          |  | \$457,000          |
| 1  | 2         | 2         | 5              |                  | \$82,000         | \$180,000          | \$195,000          |  | \$457,000          |
| 1  | 2         | 2         | 5              |                  | \$82,000         | \$180,000          | \$195,000          |  | \$457,000          |
| 1  | 2         | 2         | 5              |                  | \$82,000         | \$180,000          | \$195,000          |  | \$457,000          |
| <b>9</b>   | <b>14</b> | <b>14</b> | <b>37</b>      | <b>Sub-Total</b> | <b>\$740,000</b> | <b>\$1,260,000</b> | <b>\$1,365,000</b> |  | <b>\$3,365,000</b> |

|           |           |           |           |                    |                    |                    |                    |  |                     |   |
|-----------|-----------|-----------|-----------|--------------------|--------------------|--------------------|--------------------|--|---------------------|---|
| <b>17</b> | <b>32</b> | <b>27</b> | <b>76</b> | <b>Grand Total</b> | <b>\$2,246,000</b> | <b>\$4,710,000</b> | <b>\$4,120,000</b> |  | <b>\$11,076,000</b> | <b>Existing Vehicles (Replacements)</b> |
|-----------|-----------|-----------|-----------|--------------------|--------------------|--------------------|--------------------|--|---------------------|---|

| 2015      | 2025      | 2035      | Total Vehicles |                    | 2015               | 2025               | 2035               |  | Total               |                     |
|-----------|-----------|-----------|----------------|--------------------|--------------------|--------------------|--------------------|--|---------------------|---------------------|
| 1         | 2         | 2         | 5              |                    | \$82,000           | \$180,000          | \$195,000          |  | \$457,000           | <b>New Service</b>  |
| 1         | 2         | 2         | 5              |                    | \$82,000           | \$180,000          | \$195,000          |  | \$457,000           | East Side Route     |
| <b>2</b>  | <b>4</b>  | <b>4</b>  | <b>10</b>      | <b>Sub-Total</b>   | <b>\$164,000</b>   | <b>\$360,000</b>   | <b>\$390,000</b>   |  | <b>\$914,000</b>    | <b>New Vehicles</b> |
| <b>19</b> | <b>36</b> | <b>31</b> | <b>86</b>      | <b>Grand Total</b> | <b>\$2,410,000</b> | <b>\$5,070,000</b> | <b>\$4,510,000</b> |  | <b>\$11,990,000</b> | <b>Grand Total</b>  |

|                  | 2015               | 2025               | 2035               |  | Total              |                                    |
|------------------|--------------------|--------------------|--------------------|--|--------------------|------------------------------------|
|                  | \$500,000          | \$500,000          | \$500,000          |  | \$1,500,000        | <b>Other Transit Items</b>         |
|                  | \$250,000          | \$500,000          | \$750,000          |  | \$1,500,000        | Bus Shelters & Benches             |
|                  | \$250,000          | \$250,000          | \$250,000          |  | \$750,000          | System Signs & Amenities           |
|                  | \$100,000          | \$250,000          |                    |  | \$350,000          | IVR Software / ITS-AVL             |
|                  | \$250,000          | \$500,000          | \$500,000          |  | \$1,250,000        | Automatic Passenger Counters       |
|                  |                    |                    |                    |  |                    | Active Transportation Improvements |
| <b>Sub-Total</b> | <b>\$1,350,000</b> | <b>\$2,000,000</b> | <b>\$2,000,000</b> |  | <b>\$5,350,000</b> | <b>Other Transit Items</b>         |

|                    |                    |                    |                    |  |                     |                    |
|--------------------|--------------------|--------------------|--------------------|--|---------------------|--------------------|
| <b>Grand Total</b> | <b>\$3,760,000</b> | <b>\$7,070,000</b> | <b>\$6,510,000</b> |  | <b>\$17,340,000</b> | <b>Grand Total</b> |
|--------------------|--------------------|--------------------|--------------------|--|---------------------|--------------------|

## 7.2 UN-FUNDED NEEDS (ILLUSTRATIVE LIST)

Table 7-4 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 2035 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:

- Development of a Coordinated Human Service Transportation Plan (CHSTP) for the Kingsport MTPO area
- 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



Table 7-4  
Unfunded Illustrative Vision Plan Projects

See 11X17 Project Sheets

Kingsport MTPO  
2035 Long Range Transportation Plan - Illustrative Project  
Un-Funded

| Kingsport MTPO 2035 Long Range Transportation Plan - Illustrative Projects (Un-Funded) |              |   |  |  |                |                                   |                               |   |                              |                |                         |                        |                                  |                                     |                   |                                  |
|--|--------------|---|--|--|----------------|-----------------------------------|-------------------------------|---|------------------------------|----------------|-------------------------|------------------------|----------------------------------|-------------------------------------|-------------------|----------------------------------|
| 2035LRTP NO  | Jurisdiction | Roadway                                 | From   | To   | Length (Miles) | Federal Functional Classification | Type of Improvement           | Project Description   | Non-Motorized Accommodation* |                | Current Number of Lanes | Future Number of Lanes | Modeled in Travel Demand Model** | Air Quality (E) Exempt (N)on-Exempt | Regional Facility | Total Estimated Project Cost**** |
|  |              |   |  |  |                |                                   |                               |   | Bike                         | Ped            |                         |                        |                                  |                                     |                   |                                  |
| 12-TC  | Kingsport    | Rock Springs Rd                         | Fort Henry Dr (SR 36)                          | Moreland Dr  | 1.09           | Minor Arterial                    | Reconstruction                | Reconstruct to 2 lanes (including paved shoulder and other geometric improvements at select locations/intersections as determined thru the project development process)   | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | -                 | \$8,600,000                      |
| 16-TC  | Kingsport    | Airport Pkwy (SR 357) Extension South   | SR 75 (near SR 357 and the Tri-Cities Airport) | Kingsport/Bristol MPO Planning Area Boundary (terminating at Bristol Hwy (SR 34/US 11 E/US 19 W) - located in the Bristol MPO Planning Area) | 8.64           | Expressway                        | New Roadway                   | Construct new 4 lane for access to Tri-Cities Airport and I-81; The exact alignment of this roadway is not known. This project would extend from the Kingsport MTPO Planning Area into the Bristol MPO Planning Area and connect to the corresponding project | Appropriate-WC               | -              | 0                       | 4                      | Yes                              | N                                   | Regional          | \$111,890,000                    |
| 18-TC  | Sullivan Co  | Moreland Dr-Lebanon Rd Connector        | Near Shady Side Dr                             | Kendricks Rd   | 0.50           | Minor Arterial                    | New Roadway                   | Construct new 3 lane roadway to provide back access to Colonial Heights which will eliminate congestion at Fort Henry (consider signalization needs)  | Appropriate                  | Appropriate-WC | 0                       | 3                      | Yes                              | N                                   | -                 | \$3,580,000                      |
| 1-TC   | Kingsport    | Interstate 26 (I-26)                    | Rock Springs Rd (Exit 6)                       | Mile Marker 2  | 6.57           | Interstate                        | Widening                      | Widen to 6 lanes  | -                            | -              | 4                       | 6                      | Yes                              | N                                   | Regional          | \$40,370,000                     |
| 20-TC  | Kingsport    | Interstate 26 (I-26)                    | Rock Springs Rd                                | Ford Creek Rd  | 4.91           | Interstate                        | Widening                      | Widen to 6 lanes  | -                            | -              | 4                       | 6                      | Yes                              | N                                   | Regional          | \$33,150,000                     |
| 21-TC  | Sullivan Co  | Moreland Drive Back Access              | Wilcox Dr Extension (PA-12)                    | Mooreland Dr   | 0.71           | Minor Arterial                    | New Roadway                   | Construct new 3 lane roadway  | Appropriate                  | Appropriate-WC | 0                       | 3                      | Yes                              | N                                   | -                 | \$5,100,000                      |
| 21-TSTI  | Kingsport    | Colonial Heights Rd                     | Near Hemlock Rd/Fall Creek Rd                  |  | 0.50           | Minor Arterial                    | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements at select locations/intersections as determined thru the project development process)  | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | -                 | \$1,950,000                      |
| 23-TC  | Sullivan Co  | Airport Pkwy (SR 357) Extension         | Fall Creek Rd                                  | Interstate 81 (I-81)   | 2.14           | Minor Arterial                    | New Roadway                   | Construct Super 2 lane with paved shoulders   | Appropriate                  | Appropriate-WC | 0                       | 2                      | Yes                              | N                                   | Regional          | \$20,030,000                     |
| 23-TSTI  | Sullivan Co  | Fall Creek Rd                           | Colonial Heights Rd                            | Memorial Blvd (SR 126)   | 4.55           | Minor Arterial                    | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | -              | 2                       | 2                      | Yes                              | E                                   | -                 | \$5,990,000                      |
| 24-TC  | Sullivan Co  | Airport Pkwy (SR 357) Extension North   | Stone Drive East (US 11 W/SR 1)                | Fall Creek Rd  | 2.48           | Minor Arterial                    | New Roadway                   | Construct Super 2 lane with paved shoulders   | Appropriate                  | Appropriate-WC | 0                       | 2                      | Yes                              | N                                   | Regional          | \$23,270,000                     |
| 25-TC  | Sullivan Co  | SR-394                                  | Interstate 81 (I-81)                           | US 11 W (SR 1)   | 3.04           | Minor Arterial                    | Reconstruction                | Reconstruct to Super 2 lane with paved shoulders (including turn lane/safety improvements at select intersections/locations as determined thru the project development process)   | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | Regional          | \$24,000,000                     |
| 25-TSTI  | Kingsport    | Hemlock Rd                              | Fort Henry Dr (SR 36)                          | Fall Creek Rd  | 1.63           | Minor Arterial                    | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | -                 | \$2,760,000                      |
| 27-TC  | Sullivan Co  | Airport Rd (SR 75)                      | Airport Parkway (SR 357)                       | Kingsport/Bristol MPO Planning Area Boundary (terminating at SR 126 - located in the Bristol MPO Planning Area)                              | 3.4            | Minor Arterial                    | Widening                      | Widen existing 2 lane road to 4 lanes with paved shoulders  | Appropriate                  | -              | 2                       | 4                      | Yes                              | N                                   | Regional          | \$41,210,000                     |
| 27-TSTI  | Kingsport    | Cooks Valley Rd                         | Harbor Chapel Rd                               | Emory Church Rd  | 2.30           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | -              | 2                       | 2                      | Yes                              | E                                   | -                 | \$2,460,000                      |
| 29-TSTI  | Sullivan Co  | Rock Springs Dr (SR 347)                | Rock Springs Rd (SR 347)                       | Poplar Grove Rd (SR 347)   | 0.55           | Collector                         | Safety/Geometric Improvements | Safety/geometric improvements (including paved shoulder improvements) at select locations/intersections as determined thru the project development process  | Appropriate                  | -              | 2                       | 2                      | Yes                              | E                                   | -                 | \$720,000                        |
| 2-TC   | Kingsport    | Interstate 81 (I-81)                    | Fort Henry Dr (SR 36)                          | Tri-Cities Crossing (Exit 56)  | 8.06           | Interstate                        | Widening                      | Widen to 6 lanes  | -                            | -              | 4                       | 6                      | Yes                              | N                                   | Regional          | \$49,520,000                     |
| 35-TSTI  | Kingsport    | Riverport Rd                            | Ridgefields Rd                                 | Holston River Sluice Bridge  | 1.12           | Minor Arterial                    | Safety/Geometric Improvements | Reconstruct to 2 lanes (with paved shoulder and other safety/geometric improvements at select locations/intersections as determined thru the project development process - possible relocation of roadway to mitigate reconstruction impacts)                 | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | -                 | \$5,200,000                      |
| 37-TSTI  | Kingsport    | Bloomington Pike                        | Orbin Dr                                       | John B. Dennis (SR 93)   | 2.73           | Minor Arterial                    | Safety/Geometric Improvements | Reconstruct to 2 lanes (including paved shoulder and other geometric improvements at select locations/intersections as determined thru the project development process)   | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | -                 | \$18,000,000                     |
| 3-TC   | Hawkins Co   | US 11W/SR 1                             | Hammond Ave                                    | East Ave   | 4.67           | Principle Arterial                | Widening                      | Widen to 6 lanes  | Appropriate                  | Appropriate    | 4                       | 6                      | Yes                              | N                                   | Regional          | \$37,130,000                     |
| 41-TSTI  | Mt Carmel    | Hammond Ave                             | Main St  | Cherry St  | 0.20           | Minor Arterial                    | Safety/Geometric Improvements | Reconstruct railroad overpass near Main St  | Appropriate                  | Appropriate    | 2                       | 3                      | Yes                              | E                                   | -                 | \$9,000,000                      |
| 5-TC   | Sullivan Co  | Sullivan Garden Pkwy (SR 93) - Ultimate | Lone Star Rd (SR 347)                          | Interstate 81 (I-81)   | 5.68           | Principle Arterial                | Reconstruction                | Reconstruct to Super 2 lane with paved shoulders (including turn lane/safety improvements at select intersections/locations as determined thru the project development process)   | Appropriate                  | Appropriate-WC | 2                       | 2                      | Yes                              | E                                   | Regional          | \$48,280,000                     |
| 6-TC   | Kingsport    | Wilcox Dr (SR 126)                      | John B. Dennis (SR 93)                         | Interstate 26 (I-26)   | 1.05           | Principle Arterial                | New Roadway                   | Construct new 4 lane roadway to new interchange at I-26 and the new TN Welcome Center   | Appropriate                  | Appropriate-WC | 2                       | 4                      | Yes                              | N                                   | Regional          | \$13,050,000                     |
| 7-TC   | Hawkins Co   | Carters Valley Rd (SR 346)              | Central Ave North (SR 346)                     | Lynn Garden Dr (SR 36)   | 8.48           | Minor Arterial                    | Reconstruction                | Reconstruct existing 2 lane roadway to include a center turn lane and paved shoulders in 2 phases; Phase I - N Central Ave (SR 346) to Holston River (Hawkins Co); Phase II - Holston River to Lynn Garden Dr (SR 36) (Sullivan Co)                           | Appropriate                  | Appropriate-WC | 2                       | 3                      | Yes                              | E                                   | Regional          | \$66,510,000                     |

Notes: Project Numbering - TC=Tennessee Capacity Project; TSTI=Tennessee Safety/TSM/ITS Project; VC=Virginia Capacity Project; VSTI=Virginia Safety/TSM/ITS Project  
\* Consideration of non-motorized accommodation/preliminary assessment: (Appropriate = a bicycle or pedestrian facility maybe appropriate as part of the improvement; Appropriate-WC = Appropriate with conditions (conditions may depend on land use surroundings, right-of-way, or demand))  
\*\* Roadway facilities are modeled in the MTPO travel demand model according to the number of capacity lanes per horizon year  
\*\*\* Anticipated year open to traffic  
\*\*\*\* Current year dollars (2011)  
\*\*\*\*\* Estimated project cost in future year based on inflation (See Section 6.3.2 for further details)

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## 8.0 ENVIRONMENTAL REVIEW

SAFETEA-LU calls for greater environmental consideration in the development of long range transportation plans. The Kingsport MTPO, as part of the 2035 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 2035 LRTP.

### 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 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 2035 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 2035 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 2035 LRTP, an environmental assessment of historic, cultural, and natural resources was developed to address Section 6001 provisions of SAFETEA-LU. The intent of SAFETEA-LU Section 6001 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 2035 LRTP with available local, state and federal, maps and inventories of historic and natural resources, and
- identifies 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 SAFETEA-LU Section 6002 - 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 and serves as a foundational point of the MTPO’s commitment to Section 6002. 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, SAFETEA-LU includes several provisions intended to enhance the consideration of environmental issues and impacts within the transportation planning process. Under SAFETEA-LU 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 strategy in the environmental process is to avoid adverse impacts altogether.
- Minimize Impacts - Minimizing a proposed activity / project size or its involvement may be an option.
- Mitigate Impacts (preserve, repair and restore) - Precautionary, special operational management features and / or abatement measures may be used to reduce construction impacts and repair or restore existing resource.
- Compensate for Impacts - Compensation for environmental impacts by providing suitable replacement or substitute environmental resources of equivalent or greater value on or off-site could be utilized.

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**

| <b>Environmental Concern</b>                              | <b>Potential Mitigation Activities</b>  |
|---|---|
| <b>Wetlands of Water Resources</b>                        | Mitigation sequencing requirements involving avoidance, minimization, compensation (could include preservation, creation, restoration, in lieu fees, riparian buffers); design exceptions and variances; environmental compliance monitoring.                       |
| <b>Forested and other Natural Areas</b>                   | Avoidance, minimization; replacement property for open space easements to be of equal fair market value and of equivalent usefulness; design exceptions and variances; environmental compliance monitoring.   |
| <b>Agricultural Areas</b>                                 | Avoidance, minimization; design exceptions and variances; environmental compliance monitoring.  |
| <b>Threatened and Endangered Species</b>                  | Avoidance, minimization; time of year restrictions; construction sequencing; design exceptions and sequencing; species research; species fact sheets; Memoranda of Agreements for species management; environmental compliance monitoring.                          |
| <b>Noise</b>  | Alternate roadway design, noise barriers, speed control, surface pavement selection, and truck restrictions.  |
| <b>Ambient Air Quality</b>                                | Transportation control measures, transportation emission reduction measures.  |
| <b>Mobile Source Air Toxics</b>                           | Reduce engine activity or reduce emissions per unit of operating time; operational agreements that reduce or redirect work or shift times to avoid community exposures; technological adjustments to equipment (diesel retrofit technologies)                       |
| <b>Neighborhoods, Communities, Homes &amp; Businesses</b> | Impact avoidance or minimization; context sensitive solutions for communities (appropriate functional and/or aesthetic design features).  |
| <b>Cultural Resources</b>                                 | Avoidance, minimization; landscaping for historic properties; preservation in place or excavation for archaeological sites; Memoranda of Agreement with the Department of Historic Resources; design exceptions and variances; environmental compliance monitoring. |
| <b>Parks and Recreation Areas</b>                         | Avoidance, minimization, mitigation; design exceptions and variances; environmental compliance monitoring.  |

#### 8.4 CLIMATE CHANGE

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 28 percent of United States

greenhouse gas emissions based on recent data. The largest sources of transportation GHGs in 2007 were passenger cars (33 percent), light duty trucks, which include sport utility vehicles, pickup trucks, and minivans (28 percent), freight trucks (21 percent), and commercial aircraft (8 percent).

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 2035 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  
2035 LRTP Greenhouse Gas Reduction Strategies**

| Center for Climate Strategies<br>Sample Transportation & Land Use<br>GHG-Reducing Action   | 2035 LRTP  |
|--|--|
| <p><b>PASSENGER VEHICLES</b></p> <p><b>Passenger Vehicle Technology</b></p> <ul style="list-style-type: none"> <li>• Hybrid buses</li> </ul> <p><b>Passenger Vehicle Operations</b></p> <ul style="list-style-type: none"> <li>• Enforce speed limits</li> </ul> <p><b>Fuel-Related Measures</b></p> <ul style="list-style-type: none"> <li>• Biodiesel expansion (biodiesel, liquefied petroleum gas, ethanol)</li> <li>• Alternative fuel infrastructure development</li> </ul>  | <ul style="list-style-type: none"> <li>• A number of the 2035 LRTP goals and objectives (see Section 2.0) relate to promoting investment solutions that reduce carbon and other harmful emissions from transportation.</li> <li>• 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.</li> </ul>   |
| <p><b>LAND USE EFFICIENCY AND MODAL OPTIONS</b></p> <p><b>General Location Efficiency</b></p> <ul style="list-style-type: none"> <li>• Statewide growth management plan</li> <li>• Smart growth planning, modeling, tools</li> <li>• Land use, zoning, tax, &amp; building code reform</li> <li>• Use of flexible federal transportation funding</li> <li>• Downtown revitalization</li> <li>• Brownfield redevelopment</li> <li>• Infill redevelopment</li> <li>• Traffic calming</li> </ul> <p><b>Increasing Low-GHG Travel Options</b></p> <ul style="list-style-type: none"> <li>• Full use of Congestion Mitigation and Air Quality (CMAQ) funds</li> <li>• Improve transit service (frequency, convenience, quality)</li> <li>• Transit marketing &amp; promotion, including individualized transit marketing</li> <li>• Expand transit infrastructure</li> <li>• Guaranteed ride home</li> <li>• Bike and pedestrian infrastructure</li> <li>• Vanpooling and carpooling</li> <li>• Park-and-ride lots</li> </ul> | <ul style="list-style-type: none"> <li>• 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 2035 LRTP.</li> <li>• 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.</li> <li>• 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.</li> <li>• The MTPO and the 2035 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. In fact, nearly \$76 million (26 percent of the MTPO region's transportation capital funds) is allocated for active transportation solutions (i.e. walking, biking, and transit improvements) over the next 25 years.</li> </ul> |

| Center for Climate Strategies<br>Sample Transportation & Land Use<br>GHG-Reducing Action  | 2035 LRTP   |
|---|---|
| <ul style="list-style-type: none"> <li>• Car sharing</li> <li>• Telecommute, live-near-your-work, and compressed work week</li> <li>• Require government agencies to use telecommuting</li> <li>• Telecommuting centers, support, and incentives</li> </ul> <p><b>Incentives and Disincentives</b></p> <ul style="list-style-type: none"> <li>• Commuter choice programs/parking cash-out</li> </ul>  |   |
| <p><b>HEAVY-DUTY VEHICLES</b></p> <p><b>Heavy-Duty Vehicle Operations</b></p> <ul style="list-style-type: none"> <li>• Enforce speed limits</li> <li>• Improve traffic flow</li> <li>• Truck stop electrification</li> </ul> <p><b>Increasing Low-GHG Heavy-Duty Travel Options</b></p> <ul style="list-style-type: none"> <li>• Intermodal freight initiatives</li> <li>• Feeder barge container service</li> <li>• Increase rail capacity and address rail freight system bottlenecks</li> <li>• Shift freight movements from truck to rail</li> <li>• Promote strategies to ease the movement of freight to reduce GHG</li> </ul> <p><b>Heavy-Duty Vehicle Incentives &amp; Disincentives</b></p> <ul style="list-style-type: none"> <li>• Procurement of efficient fleet vehicles (public, private, or other)</li> </ul> <p><b>Intercity Passenger Travel: Aviation, Rail, &amp; Bus</b></p> <ul style="list-style-type: none"> <li>• Airport ground equipment</li> <li>• Intercity bus incentives and subsidies</li> </ul> <p><b>Off-Road Vehicles (E.G., Construction Equipment, Etc.)</b></p> <ul style="list-style-type: none"> <li>• Incentives for purchase of efficient vehicles and equipment</li> <li>• Improved operations, operator training</li> <li>• Increased use of alternative fuels or low-sulfur diesel</li> </ul> | <ul style="list-style-type: none"> <li>• There are a number of goals, objectives, and projects within the 2035 LRTP that address GHG reduction strategies for heavy duty vehicles and other vehicle operations. These include:             <ul style="list-style-type: none"> <li>➢ Nearly \$113 million (29 percent 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.</li> <li>➢ Continued support for enhancements at the Tri-Cities airport including air cargo transportation</li> <li>➢ Continued support of intercity bus service between surrounding communities</li> <li>➢ Continued support of improvements to railroad infrastructure</li> <li>➢ Continued support of improved traffic flow, signal operations, and access management.</li> </ul> </li> </ul> |

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. The report contains five recommendation categories of focus for promoting sustainable transportation and reducing GHGs in Tennessee by TDOT.

- Improve land use planning and development to reduce VMT
- Expand transit, bike, and pedestrian infrastructure
- Promote Commuter Choice/workplace TDM
- Improve intermodal freight transportation, and
- Increase transportation system efficiency.

While the report is largely a toolbox of proposed strategies and recommendations, it does demonstrate an increased interest at the state level for implementing measures, which target reduced GHG-emissions throughout Tennessee. A number of these strategies are consistent with the goals, objectives, and projects of the MTPO's 2035 LRTP.

**Appendix I: Kingsport MTPO 2035 LRTP Plan Development Documentation**

- Public Meeting Notices and Advertisements
- IAC and Stakeholder Coordination (Agendas and Meeting Items)
- Public Meeting and Stakeholder Meeting Sign-in Sheets
- Online Survey Results
- Website Screenshot
- Public Meeting Presentation
- Documentation of Other Planning Assumptions
  - Financial Plan Documentation
  - Population and Employment Forecasts
  - Travel Demand Model Development Report

KINGSPORT TIMES-NEWS  
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Salesperson: CINDY BELLAMY

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Acct#: 73987 Ad#: 900912 Status: N  
CITY OF KINGSPORT METROPOLITAN PLAN Start: 07/27/10 Stop: 07/27/10  
SUSAN DORAN Times Ord: 1 Times Run: \*\*\*\*  
201 W MARKET ST STDAD 1.00 X 68.00 Words: 265  
KINGSPORT TN 37660 Rate: LE Cost: 82.74  
Class: 010K LEGAL NOTICES

Contact: Descript: NOTICE OF PUBLIC MEETING  
Phone: (423)229-9332 Given by: \*  
Fax#: (423)224-2756 Created: cbell 07/26/10 11:41  
Email: Doran@ci.kingsport.tn.us Last Changed: cbell 07/26/10 11:49  
Agency:  
Comments: email emailed copy

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Source: \_\_\_\_\_ Section: \_\_\_\_\_ Page: \_\_  
Not Camera Ready Group: \_\_\_\_\_ AdTyp: \_\_\_\_\_  
Misc: \_\_\_\_\_ Color: \_\_\_\_\_  
Proof: \_\_\_\_\_ Pickup Date: \_\_\_\_\_  
Changes: None \_ Copy \_ Art \_ Size \_ Coupon: \_  
Special Instr:\*

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| NET | A    | 97 | W  | 07/27/10 | 1   | 07/27/10 | SMTWTFS |

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NOTICE OF  
PUBLIC MEETING  
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PUBLIC HEARING

NOTICE IS HEREBY GIVEN to all citizens of the Kingsport Tennessee-Virginia area and the public at large, there will be a Public Meeting of the Kingsport Area Metropolitan Transportation Planning Organization (MPO) Executive Board on **Tuesday August 3, 2010 at 9:00 AM (EST) in the Kingsport City Hall Building at 225 West Center Street, Kingsport, TN 37660.** Copies of the agenda can be found in the Development Services Building, City Hall, and the Kingsport Public Library. The primary agenda items are to review and adopt the FY11 UPWP and to discuss other matters related to ongoing or potential transportation projects. A public hearing will also be held in order to receive comments and questions on these or other items pertaining to the Kingsport MPO. The public is encouraged to attend. Disabled citizens wishing to attend and needing special accommodations or anyone seeking further information on the MPO meeting should contact the MPO Coordinator at (423) 224-2670. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964. Si usted necesita la traducción por favor entre en contacto con el MPO en por el teléfono en 423-224-2670.

Kingsport MPO  
 2035 Long Range Transportation  
 Project Kick-off Meeting  
 Aug. 3, 2010

| <u>Name</u>        | <u>Agency/organization</u> |
|--------------------|----------------------------|
| Charly Anderson    | Local Planning Office      |
| Deborah Blum       | TDOT                       |
| Jary Lawson        | MT CARMEL                  |
| Chris Campbell     | Kpt MPO                    |
| Bill Albright      | Kpt Tn/tn MPO              |
| Chris Stanny       | LENOXSD                    |
| Duane Miller       | " "                        |
| Donny Necessary    | VDOT                       |
| Ben Appley         | Kingsport                  |
| Jessica Coomer     | City of Kingsport          |
| Alan Webb          | City of Kingsport          |
| JEFF JACKSON       | Town of Mount Carmel       |
| Michael Thompson   | City of Kingsport          |
| Kimberly Tarkenton | Sullivan County            |

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Acct#: 73987 Ad#: 935568 Status: N  
CITY OF KINGSPORT METROPOLITAN PLAN Start: 01/23/11 Stop: 01/23/11  
SUSAN DORAN Times Ord: 1 Times Run: \*\*\*\*  
201 W MARKET ST STDAD 1.00 X 75.00 Words: 288  
KINGSPORT TN 37660 Rate: LE Cost: 90.95  
Class: 010K LEGAL NOTICES  
Contact: Descript: NOTICE OF PUBLIC MEETING  
Phone: (423)229-9332 Given by: \*  
Fax#: (423)224-2756 Created: cbell 01/20/11 09:45  
Email: SusanDoran@KingsportTN.gov Last Changed: cbell 01/20/11 09:49  
Agency:  
Comments: email(nt) emailed copy  
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NOTICE OF  
PUBLIC MEETING  
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PUBLIC HEARING

NOTICE IS HEREBY GIVEN to all citizens of the Kingsport Tennessee-Virginia area and the public at large, there will be a Public Meeting of the Kingsport Area Metropolitan Transportation Planning Organization (MPO) Executive Board on **Tuesday February 1, 2011 at 11:00 AM (EST) in the Kingsport City Hall Building at 225 West Center Street, Kingsport, TN 37660.** Copies of the agenda can be found in the Development Services Building, City Hall, and the Kingsport Public Library. The primary agenda items are to review and discuss the ongoing efforts to develop the region's Long Range Transportation Plan (LRTP) including the goals and objectives, demographic and economic projections, travel demand model development and to discuss other matters related to ongoing or potential transportation projects. A public hearing will also be held in order to receive comments and questions on these or other items pertaining to the Kingsport MPO initiatives. The public is encouraged to attend. Disabled citizens wishing to attend and needing special accommodations or anyone seeking further information on the MPO meeting should contact the MPO Coordinator at (423) 224-2670. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964. Si usted necesita la traducción por favor entre en contacto con el MPO en por el teléfono en 423-224-2670.

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CITY OF KINGSPORT METROPOLITAN PLAN Start: 04/24/11 Stop: 04/24/11  
SUSAN DORAN Times Ord: 1 Times Run: \*\*\*\*  
201 W MARKET ST STDAD 1.00 X 78.00 Words: 301  
KINGSPORT TN 37660 Rate: LE Cost: 94.04  
Class: 010K LEGAL NOTICES  
Contact: Descript: NOTICE OF PUBLIC MEETING  
Phone: (423)229-9332 Given by: \*  
Fax#: (423)224-2756 Created: cbell 04/21/11 14:00  
Email: SusanDoran@KingsportTN.gov Last Changed: cbell 04/21/11 14:08  
Agency:  
Comments: email(nt)-susan emailed copy  
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NOTICE OF  
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PUBLIC HEARING

NOTICE IS HEREBY GIVEN to all citizens of the Kingsport Tennessee-Virginia area and the public at large, there will be a Public Meeting of the Kingsport Area Metropolitan Transportation Planning Organization (MPO) Executive Board on **Tuesday May 3, 2011 at 9:00 AM (EST) in the Kingsport City Hall Building at 225 West Center Street, Kingsport, TN 37660.** Copies of the agenda can be found in the Development Services Building, City Hall, and the Kingsport Public Library. The primary agenda items are to review and approve the Virginia portion of the UPWP, review and approve Virginia TIP amendments, take action on the efforts to develop the region's Long Range Transportation Plan (LRTP) including the goals and objectives, performance measures, and demographic and economic projections, and to discuss other matters related to ongoing or potential transportation projects. A public hearing will also be held in order to receive comments and questions on these or other items pertaining to the Kingsport MPO initiatives. The public is encouraged to attend. Disabled citizens wishing to attend and needing special accommodations or anyone seeking further information on the MPO meeting should contact the MPO Coordinator at (423) 224-2670. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964. Si usted necesita la traducción por favor entre en contacto con el MPO en por el teléfono en 423-224-2670.

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CITY OF KINGSPORT METROPOLITAN PLAN Start: 05/29/11 Stop: 05/29/11  
SUSAN DORAN Times Ord: 1 Times Run: \*\*\*\*  
201 W MARKET ST STDAD 1.00 X 55.00 Words: 210  
KINGSPORT TN 37660 Rate: LE Cost: 68.85  
Class: 010K LEGAL NOTICES

Contact: Descript: NOTICE OF PUBLIC MEETING  
Phone: (423)229-9332 Given by: \*  
Fax#: (423)224-2756 Created: cbell 05/26/11 15:14  
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NOTICE OF PUBLIC  
MEETING SEEKING INPUT

Transportation plans for the Greater Kingsport area are being developed and planning officials are seeking input from area residents. The Kingsport Metropolitan Planning Organization (MPO) is working with local governments, businesses, non-profit organizations and the public to prepare plans, which will help establish transportation priorities for the cities of Kingsport, Mount Carmel, Church Hill, Webber City, Gate City and portions of Sullivan, Hawkins and Scott counties. A public meeting to gather important input from area residents is scheduled for **June 9, 2011 at the Kingsport Public Library, 400 Broad Street - Kingsport, TN 37660 from 4:00 pm to 8:00 pm**. Citizens interested in sharing their input on needed roadway improvements as well as other transportation investments such as sidewalks, bike lanes, greenways and public transportation are encouraged to attend the meeting. The meeting is an open-house format so individuals can come and leave when they want. Additionally, please visit our website located at [www.MyRegionMoves.com](http://www.MyRegionMoves.com) to find additional information on the project and to share your input by taking the online survey. The public is also encouraged to send any comments to the MPO via email to [MPO@KingsportTn.gov](mailto:MPO@KingsportTn.gov) or US mail to MPO Coordinator, 225 W Center St, Kingsport, TN 37660.

Pub. 1T: 05/29/11

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SUSAN DORAN Times Ord: 1 Times Run: \*\*\*\*  
201 W MARKET ST STDAD 2.00 X 62.00 Words: 499  
KINGSPORT TN 37660 Rate: LE Cost: 140.52  
Class: 010K LEGAL NOTICES  
Contact: Descript: NOTICE OF PUBLIC MEETING  
Phone: (423)229-9332 Given by: \*  
Fax#: (423)224-2756 Created: cbell 11/17/11 17:20  
Email: SusanDoran@KingsportTN.gov Last Changed: cbell 11/17/11 17:27  
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Ad#: 994868 Status: N

NOTICE OF PUBLIC MEETING  
AND  
PUBLIC HEARING

NOTICE IS HEREBY GIVEN to all citizens of the Kingsport Tennessee-Virginia area and the public at large, there will be a Public Meeting of the Kingsport Area Metropolitan Transportation Planning Organization (MPO) Executive Board on **Tuesday November 29, 2011 at 9:00 AM (EST) in the Improvement Building at 201 West Market, Kingsport, TN 37660**. Copies of the agenda can be found in the Development Services Building, City Hall, Kingsport Public Library and online at [www.MPO.KingsportTn.Gov](http://www.MPO.KingsportTn.Gov). The primary agenda items are to present the US 23/SR 224 Corridor Study findings, review and discuss the 2035 LRTP candidate project list and associated financial data, approve a prioritized listing of TDOT and VDOT projects, amend the TIP for enhancement funds, and to discuss other matters related to ongoing or potential transportation projects. A public hearing will also be held in order to receive comments and questions on these or other items pertaining to the Kingsport MPO initiatives. The public is encouraged to attend. Disabled citizens wishing to attend and needing special accommodations or anyone seeking further information on the MPO meeting should contact the MPO Coordinator at (423) 224-2670. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964. Si usted necesita la traducción por favor entre en contacto con el MPO en por el teléfono en 423-224-2670.

NOTICE OF TIP AMENDMENT  
PUBLIC REVIEW PERIOD

NOTICE IS HEREBY GIVEN to all citizens of the Kingsport Tennessee-Virginia area and the public at large, an amendment to the Transportation Improvement Plan (TIP) is being proposed. Copies of the proposed amendment can be found at the Kingsport City Hall (225 W Center St), Kingsport Public Library (400 Broad St), the Office of the MPO Coordinator (201 W Market St) or online at [www.MPO.KingsportTn.Gov](http://www.MPO.KingsportTn.Gov). The public review period is open until November 28, 2011. Forward comments: MPO Coordinator, 201 West Market Street, Kingsport, TN 37660, (423) 224-2670. This public notice satisfies the Program of Projects requirements. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964. Si usted necesita la traducción por favor entre en contacto con el MPO en por el teléfono en 423-224-2670.

Pub. 1T: 11/20/11

# Kingsport MPO 2035 Long Range Transportation Plan

## Informal Tri-Cities IAC

January 20, 2011 Conference Call

### Informational Items

- **Project Update**
- **Review and Comment on Base Year and Horizon Year Assumptions**
- **Review and Comment on Existing Plus Committed (E+C) Projects List Assumptions**

- 
- **Project Update** – Attached is a summary sheet of the scope of work for the update of the Kingsport MPO's travel demand model and 2035 Long Range Transportation Plan. A project schedule is also attached.
  - **Base Year & Future Year Population & Employment Control Totals and Horizon Year Assumptions** – The Kingsport MPO is updating the region's model with a base year of 2009. The future year will be 2035 with interim horizon years of 2015 and 2025. The intent of these interim years is to match the air quality conformity horizon year standards.

Attached are three spreadsheets which provide background information on the MPO's planning assumptions relative to population and employment projections for the region over the next 25 years.

- **Existing Plus Committed (E+C) Projects List** – The Kingsport MPO is in the process of developing a listing of projects which would be considered part of the E+C Network. As part of the planning process it is standard practice to develop a highway network as part of regional travel demand model that reflects the current transportation system (roadways which are open to traffic today) plus the addition of projects which are far enough along in the project development process (i.e. funded in the MPO's TIP or State STIP) to be considered committed transportation improvements.

Attached is a preliminary listing of E+C Projects being considered by the Kingsport MPO. The structure of this table provides a number of features which will be used by the MPO for future plan projects which should provide valuable information important in the air quality conformity process.

# Kingsport Metropolitan Transportation Planning Organization

**For Immediate Release**

April 10, 2012

**Contact:** Chris Campbell, MTPO Coordinator

(423) 224.2670

ChrisCampbell@KingsportTN.gov

## **Transportation Organization Issues Draft Long Term Transportation Plan for Kingsport Region**

### *Public Input Sought on Draft Plan*

**Kingsport, TN** – Over the last year and a half the Kingsport Metropolitan Transportation Planning Organization (MTPO) has been working with local governments, businesses, non-profit organizations, and the public to prepare a long term transportation plan for the Kingsport region. The 2035 Long Range Transportation Plan is a 20-plus year blueprint for transportation investments in the Kingsport region addressing travel by all modes on the transportation system - streets and highways, bikeways and walkways, public transportation, aviation, and rail.

“Over the last 18 months we have worked closely with member governments, the States of Tennessee and Virginia, and others to develop this Plan and we are excited to unveil the draft Plan” said Chris Campbell Transportation Coordinator for the Kingsport MTPO. “The Plan presents a list of projects that can be implemented over the next 20-plus years and can be done within existing anticipated funding levels over the same time period,” noted Campbell.

The Plan indicates that over the next 20-plus years the region is projected to see positive population and employment growth. The MTPO area is forecast to add approximately 27,000 people by 2035 and grow to nearly 153,000 people. Equally, employment growth in the region shows an additional 21,000 jobs over the same time period. According to Campbell, “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 walking and bicycle facilities, which may not currently exist in certain areas of the region.”

“The Long Range Transportation Plan is an important document for the region as only projects identified in the Plan are eligible for federal and state transportation funding”, stated Campbell. The 2035 Long Range Transportation Plan includes 50 specific transportation project improvements, funding-programs for sidewalks, bikeways, safety, bridges, and intersections and funds for the Kingsport area’s transit needs. In addition to capital improvements the Plan also accounts for the long term needs of continued maintenance of the transportation system including transit operations.

The public is invited to comment of the draft 2035 Long Range Transportation Plan. On Thursday April 19, 2012 at 9:00 am a Public Hearing will be held in conjunction with the MTPO’s Executive Board Meeting. The location is 201 West Market Street - Kingsport, TN 37660. For those unable to attend the meeting, the draft Plan is available online at: [www.mpo.kingsporttn.gov](http://www.mpo.kingsporttn.gov).

Individuals are encouraged to review the draft Plan and share their comments during this public review period. Copies of the draft Plan are also available for review at the following locations during normal business hours: Kingsport City Manager’s Office - 225 West Center Street, Kingsport, TN 37660; the Kingsport MTPO’s Office - 201 West Market Street, Kingsport, TN 37660; and the Kingsport Public Library - 400 Broad Street, Kingsport, TN 37660.

All comments on the draft Plan must be provided to the MTPO no later than May 7, 2012. Formal adoption of the Plan is schedule for June 2012 after the conclusion of the public review process on the draft Plan.

The Kingsport Area MTPO is the regional organization federally established to carryout transportation planning within the greater Kingsport region. The MTPO’s policy board is comprised of local elected Mayors which guide federal and state funded transportation projects such as roads, bridges, sidewalks and bikeways, and transit within the greater Kingsport region.

Times-News Advertisement for Public Review Period

**Publish one time; Sunday April 8, 2012 (Legal Section)**

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NOTICE OF LONG RANGE TRANSPORTATION PLAN  
PUBLIC REVIEW PERIOD

The Kingsport Metropolitan Transportation Planning Organization is charged by federal requirements to develop a long range transportation plan (LRTP) with at least a 20-year horizon of both long-range and short-range strategies that lead to the development of an integrated multimodal transportation system in the Kingsport Urbanized Area. Throughout the 2035 LRTP, data and analysis are presented illustrating consideration of and compliance with these requirements. This notice begins a 30-day public review period which is open until May 7, 2012. The public is invited to review and comment on the draft LRTP. This document can be found on the MTPO website at [www.mpo.kingsporttn.gov/](http://www.mpo.kingsporttn.gov/), Office of the Kingsport City Manager in City Hall (225 W Center St), Kingsport Public Library (400 Broad St), and the Office of the MTPO Coordinator (201 W Market St). Please forward comments by May 7, 2012 to: MTPO Coordinator, 201 West Market Street, Kingsport, TN 37660, (423) 224-2670 2. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MTPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964.

Times-News Advertisement for Next MPO Meeting

**Publish one time; Wednesday April 11, 2012 (Legal Section)**

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NOTICE OF PUBLIC MEETING  
AND  
PUBLIC HEARING

NOTICE IS HEREBY GIVEN to all citizens of the Kingsport Tennessee-Virginia area and the public at large, there will be a Public Meeting of the Kingsport Metropolitan Transportation Planning Organization (MTPO) Executive Board on **Thursday April 19, 2012 at 9:00 AM in the Improvement Building at 201 West Market, Kingsport, TN 37660.** Copies of the agenda can be found in the Development Services Building, City Hall, Kingsport Public Library and online at [www.MPO.KingsportTn.Gov](http://www.MPO.KingsportTn.Gov). The primary agenda items are to review and approve the Virginia portion of the FY 13 UPWP, discuss the 2035 LRTP draft and receive inter-agency and public comment regarding the document, and to discuss other matters related to ongoing or potential transportation projects. A public hearing will also be held in order to receive comments and questions on these or other items pertaining to the Kingsport MTPO initiatives. The public is encouraged to attend. Disabled citizens wishing to attend and needing special accommodations or anyone seeking further information on the MPO meeting should contact the MTPO Coordinator at (423) 224-2670. For persons with disabilities or limited English proficiency, contact VDOT's Civil Rights Division at 804-786-2085 or by mail 1401 E Broad St, Richmond, Virginia 23219. If you have a hearing or speech disability or use a TTY please use the FCC 711 dialing code to access a Telecommunications Relay Service to forward your comment. Kingsport MTPO ensures nondiscrimination and equal employment in all programs and activities in accordance with Title VI and Title VII of the Civil Rights Act of 1964.



**Kingsport Metropolitan  
Transportation Planning  
Organization  
2035 Long Range Transportation  
Plan (LRTP)**

The Kingsport Metropolitan Transportation Planning Organization (MTPO) has been working with local governments, businesses, non-profit organizations, and the public to prepare a long term transportation plan for the Kingsport region. The 2035 Long Range Transportation Plan (LRTP) is a 20-plus year blueprint for transportation investments in the metropolitan area addressing travel by all modes - streets and highways, bikeways and walkways, public transportation, aviation, and rail.

As a valued stakeholder we invite you to review the draft 2035 LRTP. This document can be found on our website at [www.mpo.kingsporttn.gov/long-range-plan](http://www.mpo.kingsporttn.gov/long-range-plan). Please forward comments by May 21, 2012 to: Email: [MTPO@KingsportTN.gov](mailto:MTPO@KingsportTN.gov) Written: Kingsport MTPO Coordinator, 201 West Market Street, Kingsport, TN 37660 or Phone: (423) 224-2670.



**Kingsport Metropolitan  
Transportation Planning  
Organization  
2035 Long Range Transportation  
Plan (LRTP)**

The Kingsport Metropolitan Transportation Planning Organization (MTPO) has been working with local governments, businesses, non-profit organizations, and the public to prepare a long term transportation plan for the Kingsport region. The 2035 Long Range Transportation Plan (LRTP) is a 20-plus year blueprint for transportation investments in the metropolitan area addressing travel by all modes - streets and highways, bikeways and walkways, public transportation, aviation, and rail.

As a valued stakeholder we invite you to review the draft 2035 LRTP. This document can be found on our website at [www.mpo.kingsporttn.gov/long-range-plan](http://www.mpo.kingsporttn.gov/long-range-plan). Please forward comments by May 21, 2012 to: Email: [MTPO@KingsportTN.gov](mailto:MTPO@KingsportTN.gov) Written: Kingsport MTPO Coordinator, 201 West Market Street, Kingsport, TN 37660 or Phone: (423) 224-2670.



**Kingsport Metropolitan  
Transportation Planning  
Organization  
2035 Long Range Transportation  
Plan (LRTP)**

The Kingsport Metropolitan Transportation Planning Organization (MTPO) has been working with local governments, businesses, non-profit organizations, and the public to prepare a long term transportation plan for the Kingsport region. The 2035 Long Range Transportation Plan (LRTP) is a 20-plus year blueprint for transportation investments in the metropolitan area addressing travel by all modes - streets and highways, bikeways and walkways, public transportation, aviation, and rail.

As a valued stakeholder we invite you to review the draft 2035 LRTP. This document can be found on our website at [www.mpo.kingsporttn.gov/long-range-plan](http://www.mpo.kingsporttn.gov/long-range-plan). Please forward comments by May 21, 2012 to: Email: [MTPO@KingsportTN.gov](mailto:MTPO@KingsportTN.gov) Written: Kingsport MTPO Coordinator, 201 West Market Street, Kingsport, TN 37660 or Phone: (423) 224-2670.



**Kingsport Metropolitan  
Transportation Planning  
Organization  
2035 Long Range Transportation  
Plan (LRTP)**

The Kingsport Metropolitan Transportation Planning Organization (MTPO) has been working with local governments, businesses, non-profit organizations, and the public to prepare a long term transportation plan for the Kingsport region. The 2035 Long Range Transportation Plan (LRTP) is a 20-plus year blueprint for transportation investments in the metropolitan area addressing travel by all modes - streets and highways, bikeways and walkways, public transportation, aviation, and rail.

As a valued stakeholder we invite you to review the draft 2035 LRTP. This document can be found on our website at [www.mpo.kingsporttn.gov/long-range-plan](http://www.mpo.kingsporttn.gov/long-range-plan). Please forward comments by May 21, 2012 to: Email: [MTPO@KingsportTN.gov](mailto:MTPO@KingsportTN.gov) Written: Kingsport MTPO Coordinator, 201 West Market Street, Kingsport, TN 37660 or Phone: (423) 224-2670.

# *Beine & Associates*

4515 Brookridge Drive  
Kingsport, Tennessee

Cell: 423-863-3304  
e-mail: kbeine@tricon.net

May 21, 2012

Kingsport Metropolitan Transportation Planning Organization  
Attn: Kingsport MTPO Coordinator  
201 West Market Street  
Kingsport, TN 37660

RE: 2035 Long Range Transportation Plan

I reviewed with interest the entire 336 pages of the 2035 Long Range Transportation Plan. Additionally, I reviewed the KMTPO's Long Range Plan Executive Summary and the recently completed Kingsport Regional Bicycle and Pedestrian Plan. After reading the charge for the Kingsport MTPO's LRTP, then reading the documents, I was pleased to see leadership, innovation, and vision demonstrated in the plan's goals and objectives. In particular, KMTPO's addressing the critical need for active transportation facilities, especially sidewalks and bikeways, is very important.

This plan's budget maintains, improves, and enhances our existing transportation system. The bold and creative decision to allocate 22% of funds for active transportation is literally breaking new ground for improving our communities for the people who live within them. This is particularly important since currently only 41 miles of roadways with sidewalks and 23 miles of official bicycle accommodations exist within the KMTPO region (p. 5-24). Less than 7% of our streets have sidewalks, and even less have bike lanes!

I am hopeful that through the Kingsport MTPO's leadership our local community leaders will recognize the extreme need for a developing comprehensive sidewalk / bikeway / greenway plans for throughout our region and begin retrofitting our communities' local streets. Providing sidewalk facilities, greenways, bicycle facilities, transit routes, and parks are important aspects for improving livability, quality of life, health and well-being of residents. Additionally, active transportation components serve as economic development drivers since communities are perceived as being more desirable locations for individuals and businesses.

The important issues related to air quality (p. 1-3), the American with Disabilities Act (ADA) (p. 1-4), and the continued aging demographic of our region's population (p. 3-4) were included in the LRTP. With the addition of active transportation solutions (p. 7-7), over time this will help address these serious issues. Hopefully, continued progress will be made by our local communities on the issues of housing placement, mixed use design, and redevelopment throughout the region.

However, as a concern, I do not understand the many recommendations for proposed road widenings. Based on my research and studies on healthy community design and transportation, along with retrofitting sidewalks and bikeways, often road safety is improved with road diets, lane narrowing, installing low cost safety enhancements, and creating more roadway inter-connectivity. None of these additional tools were in the 2035 LRTP.

Though the MTPO officially is responsible for larger roadways, I hope that the 2035 LRTP will serve as a proactive "call-to-action" for our local communities. And, with the innovation and vision in this LRTP, it may serve as a model for other communities and regions throughout our nation.

*Kathleen S. B. Beine, M.D.*

Researcher and Consultant

*"Visualizing Healthier Communities"*

# Sidewalks – A Smart Investment<sup>®</sup>

*prepared by*

**Kathleen L. B. Beine, M.D.**

*"Communities do not embrace change. Change is hard. We must make it compelling so they will want to change." — Mark Fenton, host, "America's Walking" on PBS.*

**Unfortunately, in the United States and Tennessee we have a crisis in our health care.** Our generation of children is the first generation in 150 years that is not expected to live to be as old as their parents. With the high incidence of obesity and diabetes now being found in our children (elementary and high school age), physicians are already seeing heart attacks in 17 year-olds and expect to see more on a regular basis in the future. Is this what we want as normal for the future of our children?

**The #1 issue of CEO's in the United States is health care costs, both direct and indirect.**

There are many approaches and solutions to the crisis: recess & physical education at school, changing school lunch menus, increased physical activity for all ages and abilities. There are policy changes that the City can enact in order to accomplish these goals, and thus improve the physical health and economic well-being of our community.

**A significant part of the solutions is to make it easy to be physically active**---where you don't have to load up a car and drive someplace, or join a gym. Just make it easy by walking out your front door and lead your family on a neighborhood adventure outing, possibly to a small community park to play and visit with other neighbors.

**Sidewalks are smart investments.** Benefits of properly-designed sidewalks and connectivity include:

- improved pedestrian safety
- improved safety for young and elderly on bicycles (transit bikers should ride on the streets)
- improved safety for motorists (not worrying about hitting a pedestrian, so they have a head on collision with a car)
- improved sociability and neighborliness
- improved air quality from decreased useage of vehicles
- improved family budgets because of being able to safely walk on short trips rather than driving (25% of vehicle trips are less than 1 mile)
- improved health, ie., aerobic capacity, cardiovascular fitness, muscle strength and balance; decreased obesity, diabetes, heart disease, high blood pressure, asthma, cancers of various types
- improved mental & emotional health, ie., decreased depression, anxiety, and social isolation
- improved work performance, on the job and at school (that's where kids work)
- decreased medical costs for individuals and companies
- the cost of a mile of sidewalk is cheap compared to emergency room visits, operations, hospital stays, rehab, and sometimes, permanent disability.

**Additionally, we have the data from the Visual Image Study and VISCOR.** These scientifically designed and statistically valid studies evaluated a broad base of 1,100 citizens in our community.

**The top 5 identified findings for a positive community were:**

**" Green - Clean - Sidewalks - Parks & Playgrounds-Neighborhoods".**

**Also, AARP: "A Livable Community Survey of the Greater Kingsport, TN Area: A Place to Live, Work, and Play for a Life Time"** in 2009, with 1,439 respondents, identified many concerns, including lack of sidewalks throughout the community and neighborhoods. For full report see [www.aarp.org/tn](http://www.aarp.org/tn).

*Beine & Associates*  
*Kingsport, Tennessee*

**Item - Project Update**

## 2035 LONG RANGE TRANSPORTATION PLAN

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### PROJECT WORK PLAN

The following describes the overall work plan for updating the Kingsport Area Metropolitan Planning Organization's (MPO's) Regional Travel Demand Model and 2035 Long Range Transportation Plan (LRTP) by the RPM Team. While activities are divided between these two efforts, overall project management and project coordination is defined for both phases under Phase II – Plan Development.

#### **Phase I - Model Development**

The RPM Team shall perform the travel demand model development efforts described in this scope of services in compliance with the policies and procedures contained in the latest *Travel Demand Model Calibration and Validation Guidelines* and the *TDOT MPO Model Approval Procedures for the State of Tennessee* adopted by TDOT. The following activities provide an outline of the tasks to develop an updated Kingsport Tennessee-Virginia MPO Travel Demand Model in accordance with TDOT and VDOT standards.

**Task 1.1 Initial Model Development Meeting/Model Architecture Specification** - Meeting agenda; meeting handouts; proposed network performance measures; draft and final meeting notes; and model architecture memorandum.

**Task 1.2 Develop the 2009 Base Year Model Network and 2009 Base Year Socioeconomic TAZ Data** - Electronic copies of the updated 2009 base year street network in TransCAD as well as an updated 2009 base year TAZ file with associated socioeconomic data.

**Task 1.3 Model Calibration and Validation** - A calibrated/validated 2009 base year network in TransCAD format on CD; electronic copies of the files used for trip generation; a validation report discussing the validation process, the validation checks made, and assessment of the base year model's performance against the performance measures described in the *Travel Demand Model Calibration and Validation Guidelines for the State of Tennessee*.

**Task 1.4 Developing and Coding 2015, 2025 and 2035 Future Networks** - Electronic copies of the future networks in TransCAD format for the MPO, TDOT and VDOT review and new demographic forecasts to 2035 and selected intermediate milestone years by TAZ.

**Task 1.5 Traffic Assignment on 2015, 2025 and 2035 Future Year Networks** - Electronic copies of the loaded alternative networks in TransCAD format for the MPO's review; and spreadsheet data required for air quality purposes.

**Task 1.6 Model Documentation** - Draft and final reports describing the model development process.

**Task 1.7 Model Enhancements** - A full set of GIS DK interfaces for each future alternative network; full documentation of the process that is used to run those networks; full documentation of the process to be used for the MPO to make minor adjustments to any future network and run the model to completion; and an in-person training workshop in those operations.

## 2035 LONG RANGE TRANSPORTATION PLAN

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### **Phase II – Plan Development**

**Task 2.1 Project Management and Coordination** - Kick-off meeting agenda, refined project schedule, if necessary; and a data needs list; periodic project management communication (emails, phone calls, etc.); monthly project management meetings (via conference call and/or in person); project briefings to MPO member jurisdictions (as needed); team meeting agendas, meeting material, and meeting notes; and monthly summary project progress reports

**Task 2.2 Public & Stakeholder Participation and Air Quality Consultation** - Project level public and stakeholder participation plan, presentation and meeting materials for three public meetings, two MPO Board meetings, two stakeholder workshop, press releases, and website materials. Additionally, participation in IAC meetings (via conference call) as necessary and preparation of a Documentation Report for air quality conformity purposes.

**Task 2.3 Review Planning Requirements, Existing Plans, and Reports & Establish Modal Elements** - Summary report listing planning requirements of SAFETEA-LU (or the provisions in a new federal transportation legislation should one pass prior to completion of Tasks 2.9 and 2.10); a comparison of these requirements to the current LRTP; and draft modal elements (e.g. highway, bicycle and pedestrian, transit, freight, ITS) which will be incorporated into the 2035 LRTP (Tasks 2.9 and 2.10).

**Task 2.4 Evaluate and Document Long Range Plan Goals, Objectives, and Performance Criteria** - Draft LRTP goals, objectives, and performance criteria that will become part of the LRTP.

**Task 2.5 Develop a Financial Model for the Financial Capacity Analysis and Forecast Revenue** - A revenue forecast spreadsheet model for the MPO area; and a fiscally constrained LRTP element.

**Task 2.6 Develop a Methodology to Update Project Costs and to Develop Costs for New Projects by Year of Expenditure** - Revised project cost estimating model and revised project costs

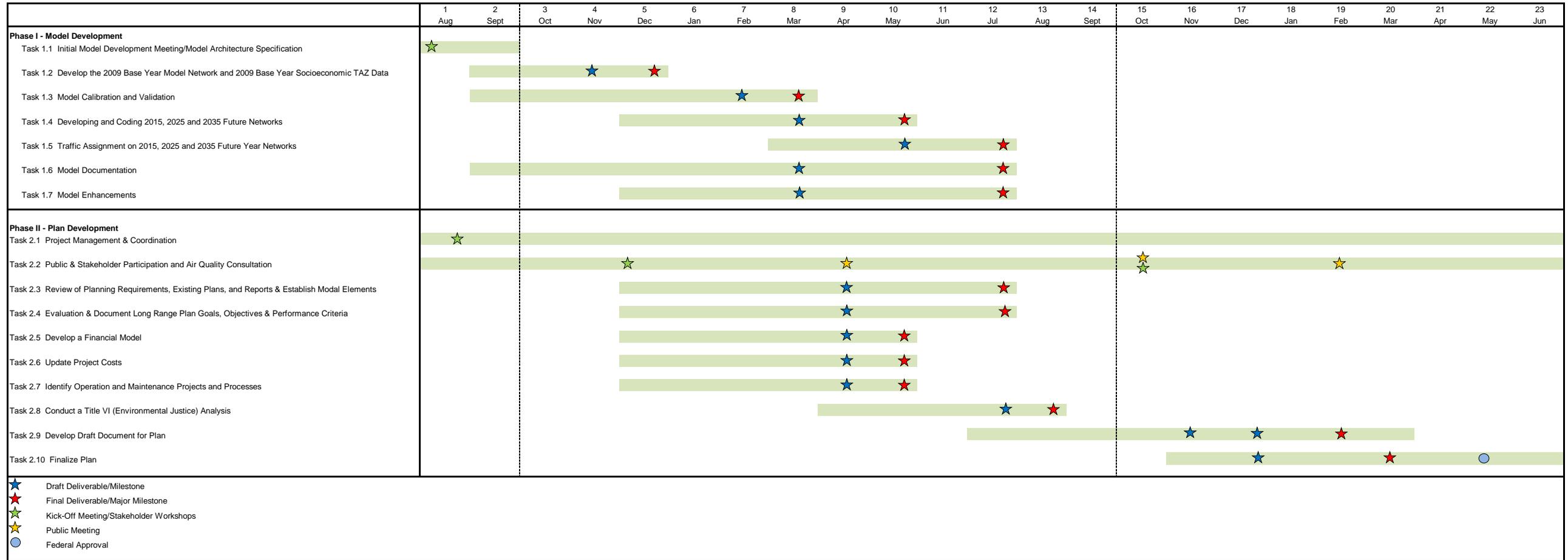
**Task 2.7 Identify Operation and Maintenance Projects and Processes** - An operations and maintenance spreadsheet model for the MPO area that will become part of the fiscally constrained LRTP element; a listing of operations and maintenance strategies that will be part of the LRTP.

**Task 2.8 Conduct a Title VI (Environmental Justice) Analysis** - Environmental Justice analysis and documentation of the updated LRTP

**Task 2.9 Develop Draft Document for Plan** - Draft LRTP (16 printed copies of the draft plan)

**Task 2.10 Finalize Plan** - A final LRTP, Executive Summary, and associated files/presentation materials for meetings with the MPO to allow for adoption of the 2035 LRTP by March 5, 2012. The LRTP will be provided as a .PDF document and a Microsoft Word/Excel/Access document. 20 copies of the Final Plan and 20 copies of the stand-alone Executive Summary will also be provided.

**Kingsport Area MPO  
Model Update and 2035 Long Range Transportation Plan  
Project Schedule**



**Item - Population & Employment**

**Kingsport MPO 2035 Long Range Transportation Plan  
Historical Population and Employment Trends**

| <b>TOTAL POPULATION</b> | <b>1970</b>    | <b>1975</b>    | <b>1980</b>    | <b>1985</b>    | <b>1990</b>    | <b>1995</b>    | <b>2000</b>    | <b>2001</b>    | <b>2002</b>    | <b>2003</b>    | <b>2004</b>    | <b>2005</b>    | <b>2006</b>    | <b>2007</b>    | <b>2008</b>    | <b>2009</b>    |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| SULLIVAN, TN            | 127,591        | 135,465        | 144,388        | 143,922        | 143,886        | 150,022        | 152,919        | 152,411        | 152,592        | 152,377        | 151,592        | 151,959        | 152,373        | 153,357        | 153,900        | 154,450        |
| HAWKINS, TN             | 34,135         | 38,740         | 43,957         | 44,913         | 44,680         | 49,108         | 53,690         | 54,148         | 54,505         | 55,000         | 55,379         | 55,966         | 56,459         | 56,928         | 57,477         | 58,116         |
| WASHINGTON, TN          | 74,328         | 81,903         | 89,157         | 90,706         | 92,732         | 100,309        | 107,496        | 107,650        | 109,277        | 110,143        | 111,093        | 112,605        | 114,636        | 116,470        | 118,639        | 119,445        |
| SCOTT, VA               | 24,476         | 24,833         | 25,029         | 24,541         | 23,216         | 23,521         | 23,364         | 23,096         | 22,965         | 22,825         | 22,750         | 22,801         | 22,905         | 22,888         | 22,850         | 22,807         |
| <b>Total</b>            | <b>260,530</b> | <b>280,941</b> | <b>302,531</b> | <b>304,082</b> | <b>304,514</b> | <b>322,960</b> | <b>337,469</b> | <b>337,305</b> | <b>339,339</b> | <b>340,345</b> | <b>340,814</b> | <b>343,331</b> | <b>346,373</b> | <b>349,643</b> | <b>352,866</b> | <b>354,818</b> |
| <b>Percent Change</b>   |                | 7.8%           | 7.7%           | 0.5%           | 0.1%           | 6.1%           | 4.5%           | 0.0%           | 0.6%           | 0.3%           | 0.1%           | 0.7%           | 0.9%           | 0.9%           | 0.9%           | 0.6%           |
| <b>Absolute Change</b>  |                | 20,411         | 21,590         | 1,551          | 432            | 18,446         | 14,509         | (164)          | 2,034          | 1,006          | 469            | 2,517          | 3,042          | 3,270          | 3,223          | 1,952          |

Source: Woods & Poole, 2010

| <b>TOTAL POPULATION</b> | <b>1970</b>    | <b>1975</b>    | <b>1980</b>    | <b>1985</b>    | <b>1990</b>    | <b>1995</b>    | <b>2000</b>    | <b>2001</b>    | <b>2002</b>    | <b>2003</b>    | <b>2004</b>    | <b>2005</b>    | <b>2006</b>    | <b>2007</b>    | <b>2008</b>    | <b>2009</b>    |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| SULLIVAN, TN            | 127,329        | 135,513        | 143,968        | 143,922        | 143,886        | 150,022        | 153,048        | 152,421        | 152,605        | 152,392        | 151,601        | 151,974        | 152,505        | 153,500        | 154,039        | 154,552        |
| HAWKINS, TN             | 33,726         | 38,779         | 43,751         | 44,913         | 44,680         | 49,108         | 53,563         | 54,147         | 54,505         | 55,002         | 55,381         | 55,967         | 56,552         | 57,025         | 57,459         | 57,784         |
| WASHINGTON, TN          | 73,924         | 81,900         | 88,755         | 90,706         | 92,732         | 100,309        | 107,198        | 107,651        | 109,294        | 110,172        | 111,133        | 112,664        | 114,895        | 116,717        | 118,874        | 120,598        |
| SCOTT, VA               | 24,376         | 24,859         | 25,068         | 24,541         | 23,216         | 23,521         | 23,403         | 23,094         | 22,962         | 22,821         | 22,743         | 22,792         | 22,899         | 22,840         | 22,738         | 22,585         |
| <b>Total</b>            | <b>259,355</b> | <b>281,051</b> | <b>301,542</b> | <b>304,082</b> | <b>304,514</b> | <b>322,960</b> | <b>337,212</b> | <b>337,313</b> | <b>339,366</b> | <b>340,387</b> | <b>340,858</b> | <b>343,397</b> | <b>346,851</b> | <b>350,082</b> | <b>353,110</b> | <b>355,519</b> |
| <b>Percent Change</b>   |                | 8.4%           | 7.3%           | 0.8%           | 0.1%           | 6.1%           | 4.4%           | 0.0%           | 0.6%           | 0.3%           | 0.1%           | 0.7%           | 1.0%           | 0.9%           | 0.9%           | 0.7%           |
| <b>Absolute Change</b>  |                | 21,696         | 20,491         | 2,540          | 432            | 18,446         | 14,252         | 101            | 2,053          | 1,021          | 471            | 2,539          | 3,454          | 3,231          | 3,028          | 2,409          |

Source: U.S. Census Bureau, Population Division, 2010

|                          |       |       |     |   |   |   |     |     |      |      |      |      |       |       |       |       |
|--------------------------|-------|-------|-----|---|---|---|-----|-----|------|------|------|------|-------|-------|-------|-------|
| <b>Source Difference</b> | 1,175 | (110) | 989 | - | - | - | 257 | (8) | (27) | (42) | (44) | (66) | (478) | (439) | (244) | (701) |
|--------------------------|-------|-------|-----|---|---|---|-----|-----|------|------|------|------|-------|-------|-------|-------|

| <b>TOTAL EMPLOYMENT</b> | <b>1970</b>    | <b>1975</b>    | <b>1980</b>    | <b>1985</b>    | <b>1990</b>    | <b>1995</b>    | <b>2000</b>    | <b>2001</b>    | <b>2002</b>    | <b>2003</b>    | <b>2004</b>    | <b>2005</b>    | <b>2006</b>    | <b>2007</b>    | <b>2008</b>    | <b>2009</b>    |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| SULLIVAN, TN            | 66,860         | 69,800         | 78,488         | 78,254         | 85,833         | 91,366         | 89,776         | 89,756         | 90,481         | 89,609         | 89,304         | 90,220         | 92,790         | 94,307         | 95,152         | 93,341         |
| HAWKINS, TN             | 8,218          | 11,263         | 14,136         | 13,093         | 16,659         | 18,409         | 19,849         | 19,843         | 19,740         | 20,235         | 20,187         | 19,802         | 19,497         | 19,197         | 19,506         | 19,190         |
| WASHINGTON, TN          | 34,952         | 39,338         | 47,492         | 49,116         | 59,722         | 69,368         | 74,936         | 73,391         | 71,964         | 72,906         | 75,710         | 76,983         | 77,916         | 80,052         | 80,738         | 79,773         |
| SCOTT, VA               | 4,564          | 5,010          | 6,420          | 7,296          | 7,472          | 7,942          | 7,598          | 7,535          | 7,624          | 7,628          | 7,762          | 7,981          | 8,385          | 8,558          | 8,690          | 8,527          |
| <b>Total</b>            | <b>114,594</b> | <b>125,411</b> | <b>146,536</b> | <b>147,759</b> | <b>169,686</b> | <b>187,085</b> | <b>192,159</b> | <b>190,525</b> | <b>189,809</b> | <b>190,378</b> | <b>192,963</b> | <b>194,986</b> | <b>198,588</b> | <b>202,114</b> | <b>204,086</b> | <b>200,831</b> |
| <b>Percent Change</b>   |                | 9.4%           | 16.8%          | 0.8%           | 14.8%          | 10.3%          | 2.7%           | -0.9%          | -0.4%          | 0.3%           | 1.4%           | 1.0%           | 1.8%           | 1.8%           | 1.0%           | -1.6%          |
| <b>Absolute Change</b>  |                | 10,817         | 21,125         | 1,223          | 21,927         | 17,399         | 5,074          | (1,634)        | (716)          | 569            | 2,585          | 2,023          | 3,602          | 3,526          | 1,972          | (3,255)        |

Source: Woods & Poole, 2010

| <b>TOTAL EMPLOYMENT</b> | <b>1970</b>    | <b>1975</b>    | <b>1980</b>    | <b>1985</b>    | <b>1990</b>    | <b>1995</b>    | <b>2000</b>    | <b>2001</b>    | <b>2002</b>    | <b>2003</b>    | <b>2004</b>    | <b>2005</b>    | <b>2006</b>    | <b>2007</b>    | <b>2008</b> | <b>2009</b> |
|-------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|-------------|
| SULLIVAN, TN            | 66,860         | 69,799         | 78,486         | 78,252         | 85,831         | 91,364         | 89,780         | 89,668         | 90,481         | 89,610         | 89,304         | 90,220         | 92,790         | 94,307         | -           | -           |
| HAWKINS, TN             | 8,218          | 11,263         | 14,135         | 13,092         | 16,661         | 18,409         | 19,850         | 19,742         | 19,740         | 20,235         | 20,187         | 19,803         | 19,497         | 19,197         | -           | -           |
| WASHINGTON, TN          | 34,952         | 39,338         | 47,495         | 49,116         | 59,722         | 69,365         | 74,936         | 73,201         | 71,964         | 72,905         | 75,710         | 76,983         | 77,916         | 80,051         | -           | -           |
| SCOTT, VA               | 4,564          | 5,013          | 6,421          | 7,298          | 7,471          | 7,942          | 7,598          | 7,616          | 7,624          | 7,628          | 7,763          | 7,982          | 8,383          | 8,559          | -           | -           |
| <b>Total</b>            | <b>114,594</b> | <b>125,413</b> | <b>146,537</b> | <b>147,758</b> | <b>169,685</b> | <b>187,080</b> | <b>192,164</b> | <b>190,227</b> | <b>189,809</b> | <b>190,378</b> | <b>192,964</b> | <b>194,988</b> | <b>198,586</b> | <b>202,114</b> | <b>-</b>    | <b>-</b>    |
| <b>Percent Change</b>   |                | 9.4%           | 16.8%          | 0.8%           | 14.8%          | 10.3%          | 2.7%           | -1.0%          | -0.2%          | 0.3%           | 1.4%           | 1.0%           | 1.8%           | 1.8%           | -           | -           |
| <b>Absolute Change</b>  |                | 10,819         | 21,124         | 1,221          | 21,927         | 17,395         | 5,084          | (1,937)        | (418)          | 569            | 2,586          | 2,024          | 3,598          | 3,528          | -           | -           |

Source: U.S. Census Bureau - Employment (Bureau of Economic Analysis), 2007

|                          |   |     |     |   |   |   |     |     |   |   |     |     |   |   |   |   |
|--------------------------|---|-----|-----|---|---|---|-----|-----|---|---|-----|-----|---|---|---|---|
| <b>Source Difference</b> | - | (2) | (1) | 1 | 1 | 5 | (5) | 298 | - | - | (1) | (2) | 2 | - | - | - |
|--------------------------|---|-----|-----|---|---|---|-----|-----|---|---|-----|-----|---|---|---|---|

**Kingsport MPO**  
**2035 Allocation Tables**  
**Historical and Projected Population Summary Tables**  
**(4 County Region, MPO Trends, and MPO Alternative Growth Scenario)**

| Four County Region - Total Population | 2009           | 2015           | 2025           | 2035           |
|---------------------------------------|----------------|----------------|----------------|----------------|
| Sullivan County, TN                   | 154,450        | 157,990        | 164,665        | 171,629        |
| Hawkins County, TN                    | 58,116         | 62,032         | 68,852         | 75,803         |
| Washington County, TN                 | 119,445        | 124,458        | 133,416        | 142,617        |
| Scott County, VA                      | 22,807         | 22,585         | 22,329         | 22,109         |
| <b>Total</b>                          | <b>354,818</b> | <b>367,065</b> | <b>389,262</b> | <b>412,158</b> |

Source: Woods & Poole, 2010

| 2035 Absolute Change |
|----------------------|
| 17,179               |
| 17,687               |
| 23,172               |
| (698)                |
| <b>57,340</b>        |

| Percent Change | Average Annual |
|----------------|----------------|
| <b>16%</b>     | <b>0.6%</b>    |

**Kingsport MPO Planning Area - Trend Scenario**

| TOTAL POPULATION          | Census         |                | Percent %    | W&P County     |                | Percent %    | Absolute Change | Absolute Adjusted | Adj. Reduction | % Distribution of 3 County | Percent to MPO Region | MPO 2009       |                |                |      |
|---------------------------|----------------|----------------|--------------|----------------|----------------|--------------|-----------------|-------------------|----------------|----------------------------|-----------------------|----------------|----------------|----------------|------|
|                           | County 2000    | MPO Area 2000  |              | 2009           | MPO Area       |              |                 |                   |                |                            |                       | Total Pop      | 2015           | 2025           | 2035 |
| Sullivan County, TN       | 153,048        | 87,392         | 57.1%        | 154,450        | 88,193         | 801          | 776             | (49)              | 25%            | 57.1%                      | 88,168                | 90,214         | 94,025         | 98,002         |      |
| Hawkins County, TN        | 53,563         | 21,115         | 39.4%        | 58,116         | 22,910         | 1,795        | 1,679           | (111)             | 57%            | 39.4%                      | 22,794                | 24,454         | 27,142         | 29,882         |      |
| Washington County, TN     | 107,198        | 5,028          | 4.7%         | 119,445        | 5,602          | 574          | 519             | (36)              | 18%            | 4.7%                       | 5,547                 | 5,838          | 6,258          | 6,689          |      |
| Scott County, VA          | 23,403         | 7,685          | 32.8%        | 22,807         | 7,489          | (196)        |                 | 196               |                | 35.0%                      | 7,685                 | 7,905          | 7,815          | 7,738          |      |
| <b>Total</b>              | <b>337,212</b> | <b>121,220</b> | <b>36.8%</b> | <b>354,818</b> | <b>124,194</b> | <b>2,974</b> | <b>2,974</b>    | <b>-</b>          | <b>100%</b>    | <b>35.0%</b>               | <b>124,194</b>        | <b>128,410</b> | <b>135,240</b> | <b>142,312</b> |      |
| <b>Total 00-09 Change</b> |                |                |              | <b>17,606</b>  | <b>Percent</b> | <b>0.8%</b>  |                 |                   |                | <b>Percent of Region</b>   | <b>35%</b>            | <b>35%</b>     | <b>35%</b>     | <b>35%</b>     |      |

| 2035 Absolute Change | Percent of 4 County 2035 Absolute Change |
|----------------------|--|
| 9,834                | 57%                                      |
| 7,088                | 40%                                      |
| 1,142                | 5%                                       |
| 53                   |  |
| <b>18,118</b>        | <b>32%</b>                               |

| Percent Change | Average Annual |
|----------------|----------------|
| <b>15%</b>     | <b>0.6%</b>    |

**Kingsport MPO Planning Area - Alternative Scenario**

| TOTAL POPULATION          | Census         |                | Percent %    | W&P County     |                | Percent %    | Absolute Change | Absolute Adjusted | Adj. Reduction | % Distribution of 3 County | Percent to MPO Region | MPO 2009       |                |                |      |
|---------------------------|----------------|----------------|--------------|----------------|----------------|--------------|-----------------|-------------------|----------------|----------------------------|-----------------------|----------------|----------------|----------------|------|
|                           | County 2000    | MPO Area 2000  |              | 2009           | MPO Area       |              |                 |                   |                |                            |                       | Total Pop      | 2015           | 2025           | 2035 |
| Sullivan County, TN       | 153,048        | 87,392         | 57.1%        | 154,450        | 88,193         | 801          | 776             | (49)              | 25%            | 59.0%                      | 88,168                | 93,214         | 97,152         | 101,261        |      |
| Hawkins County, TN        | 53,563         | 21,115         | 39.4%        | 58,116         | 22,910         | 1,795        | 1,679           | (111)             | 57%            | 46.0%                      | 22,794                | 28,535         | 31,672         | 34,869         |      |
| Washington County, TN     | 107,198        | 5,028          | 4.7%         | 119,445        | 5,602          | 574          | 519             | (36)              | 18%            | 6.0%                       | 5,547                 | 7,467          | 8,005          | 8,557          |      |
| Scott County, VA          | 23,403         | 7,685          | 32.8%        | 22,807         | 7,489          | (196)        |                 | 196               |                | 37.0%                      | 7,685                 | 8,356          | 8,262          | 8,180          |      |
| <b>Total</b>              | <b>337,212</b> | <b>121,220</b> | <b>36.8%</b> | <b>354,818</b> | <b>124,194</b> | <b>2,974</b> | <b>2,974</b>    | <b>-</b>          | <b>100%</b>    | <b>37.1%</b>               | <b>124,194</b>        | <b>137,573</b> | <b>145,091</b> | <b>152,868</b> |      |
| <b>Total 00-09 Change</b> |                |                |              | <b>17,606</b>  | <b>Percent</b> | <b>0.8%</b>  |                 |                   |                | <b>Percent of Region</b>   | <b>35%</b>            | <b>37%</b>     | <b>37%</b>     | <b>37%</b>     |      |

| 2035 Absolute Change | Percent of 4 County 2035 Absolute Change |
|----------------------|--|
| 13,093               | 76%                                      |
| 12,075               | 68%                                      |
| 3,010                | 13%                                      |
| 495                  |  |
| <b>28,674</b>        | <b>50%</b>                               |

| Percent Change | Average Annual |
|----------------|----------------|
| <b>23%</b>     | <b>0.9%</b>    |

**Kingsport MPO**  
**2035 Allocation Tables**  
**Historical and Projected Employment Summary Tables**  
**(4 County Region, MPO Trends, and MPO Alternative Growth Scenario)**

|  | 2009           | 2015           | 2025           | 2035           |
|--|----------------|----------------|----------------|----------------|
| <b>Four County Region - Total Employment</b> |                |                |                |                |
| Sullivan County, TN                          | 93,341         | 100,976        | 112,367        | 124,690        |
| Hawkins County, TN                           | 19,190         | 20,521         | 22,488         | 24,610         |
| Washington County, TN                        | 79,773         | 87,264         | 99,182         | 112,378        |
| Scott County, VA                             | 8,527          | 9,146          | 10,082         | 11,039         |
| <b>Total</b>                                 | <b>200,831</b> | <b>217,907</b> | <b>244,119</b> | <b>272,717</b> |

Source: Woods & Poole, 2010

| 2035 Absolute Change |
|----------------------|
| 31,349               |
| 5,420                |
| 32,605               |
| 2,512                |
| <b>71,886</b>        |

| Percent Change | Average Annual |
|----------------|----------------|
| <b>36%</b>     | <b>1.4%</b>    |

|   | 2009 Percentage to MPO Region | 2035 Percentage to MPO Region | 2009          | 2015          | 2025          | 2035          |
|---|-------------------------------|-------------------------------|---------------|---------------|---------------|---------------|
| <b>Kingsport MPO Planning Area - Trend Scenario</b> |                               |                               |               |               |               |               |
| Sullivan County, TN                                 | 56%                           | 55%                           | 51,884        | 55,998        | 61,949        | 68,364        |
| Hawkins County, TN                                  | 23%                           | 23%                           | 4,406         | 4,717         | 5,192         | 5,702         |
| Washington County, TN                               | 2%                            | 2%                            | 1,812         | 1,975         | 2,237         | 2,525         |
| Scott County, VA                                    | 42%                           | 42%                           | 3,550         | 3,814         | 4,219         | 4,630         |
| <b>Total</b>  | <b>31%</b>                    | <b>30%</b>                    | <b>61,652</b> | <b>66,505</b> | <b>73,597</b> | <b>81,220</b> |

| 2035 Absolute Change | Percent of 4 County 2035 Absolute Change |
|----------------------|--|
| 16,480               | 53%                                      |
| 1,296                | 24%                                      |
| 713                  | 2%                                       |
| 1,080                | 43%                                      |
| <b>19,568</b>        |  |

| Percent Change | Average Annual |
|----------------|----------------|
| <b>32%</b>     | <b>1.3%</b>    |

|   | 2009 Percentage to MPO Region | 2035 Percentage to MPO Region | 2009          | 2015          | 2025          | 2035          |
|---|-------------------------------|-------------------------------|---------------|---------------|---------------|---------------|
| <b>Kingsport MPO Planning Area - Alternative Scenario</b> |                               |                               |               |               |               |               |
| Sullivan County, TN                                       | 56%                           | 59%                           | 51,884        | 60,129        | 66,700        | 73,795        |
| Hawkins County, TN  | 23%                           | 30%                           | 4,406         | 6,156         | 6,746         | 7,383         |
| Washington County, TN                                     | 2%                            | 4%                            | 1,812         | 3,491         | 3,967         | 4,495         |
| Scott County, VA  | 42%                           | 45%                           | 3,550         | 4,110         | 4,547         | 4,991         |
| <b>Total</b>  | <b>31%</b>                    | <b>33%</b>                    | <b>61,652</b> | <b>73,886</b> | <b>81,960</b> | <b>90,664</b> |

| 2035 Absolute Change | Percent of 4 County 2035 Absolute Change |
|----------------------|--|
| 21,911               | 70%                                      |
| 2,977                | 55%                                      |
| 2,683                | 8%                                       |
| 1,441                | 57%                                      |
| <b>29,012</b>        |  |

| Percent Change | Average Annual |
|----------------|----------------|
| <b>47%</b>     | <b>1.9%</b>    |

**Item - Existing Plus Committed (E+C) Projects List**

**Kingsport MPO  
2035 Long Range Transportation Plan  
Preliminary Existing Plus Committed (E+C) Projects List**

| TIP # | TDOT/VA #        | County              | Route/Project Name  | Termini or Intersection  | Project Description   | Existing Number of Lanes | Future Number of Lanes | Type of Improvement        | Project Length | Federal Functional Classification | Exempt/Non-Exempt | TIP/STIP                        | Previous L RTP | Phases Funded                        | Regional Model |
|-------|------------------|---------------------|---|--|---|--------------------------|------------------------|----------------------------|----------------|-----------------------------------|-------------------|---------------------------------|----------------|--------------------------------------|----------------|
| STP-1 | 10614.00         | Sullivan            | Fordtown Road   | End of I-81 Exit Ramps (at Exit 56) to Near Eastern Star Road  | Relocate and widen to 3 lanes along new corridor.   | 2                        | 3                      | Safety                     | 5,000 Feet     | Urban Minor Arterial              | Exempt            | MPO TIP FY2011-2014             | Yes            | Construction                         | No             |
| STP-2 | 112798.00        | Hawkins             | SR-1 - Main St / Hammond Ave Signalization & Geometric Improvements | Intersection of SR 1/Hammond Ave and Main St/Hammond Ave   | 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 | -                        | -                      | Intersection               | -              | Urban Principal Arterial          | Exempt            | MPO TIP FY2011-2014             | Yes            | Construction                         | No             |
| STP-5 | Not Yet Assigned | Sullivan            | Netherland Inn Road   | Realignment of Union St from US-11W to Netherland Inn Rd   | Realign and reconstruct Union St to improve access to Netherland Inn Rd and economic redevelopment area along the Holston River.  | 2                        | 2                      | Reconstruction/Realignment | 750 Feet       | Urban Minor Arterial              | Exempt            | MPO TIP FY2011-2014             | Yes            | Preliminary Engineering              | Yes            |
| TN-1  | 40082.01         | Sullivan            | I-26 Tennessee Welcome Center                                       | Proposed Welcome Station South of Bell Ridge Road  | Construct New Tennessee Welcome Station   | -                        | -                      | Welcome Center             | -              | Urban Interstate                  | Exempt            | MPO TIP FY2011-2014             | Yes            | Construction                         | No             |
| TN-2  | 101397.00        | Sullivan Washington | SR-75   | SR-36 to SR-357 (HPP ID# 2026, 388 & 4969)   | Widen from 2 lanes to 5 lanes   | 2                        | 5                      | Widening                   | 3.9 Miles      | Urban Minor Arterial              | Non-Exempt        | MPO TIP FY2011-2014             | Yes            | Construction                         | Yes            |
| TN-3  | 114173.00        | Sullivan            | I-81  | Eastbound truck climbing lane at mile marker 60 to Exit 63   | Add an eastbound truck climbing lane from mile marker 60 to Exit 63 to improve congestion   | 4                        | 5                      | Widening                   | 1.2 Miles      | Urban Interstate                  | Non-Exempt        | MPO TIP FY2011-2014             | Yes            | Preliminary Engineering              | Yes            |
| TN-4  |                  | Sullivan            | I-81  | Along I-81 corridor at the I-26 interchange Exit 57, MM 53.0, MM 54.8, MM 56.8, MM 59.3, and MM 61.4 | Install the required number of traffic cameras needed to monitor traffic along the I-81 corridor and their associated hardware/software, etc.   | -                        | -                      | ITS                        | -              | Urban Interstate                  | Exempt            | MPO TIP FY2011-2014             | Yes            | Construction                         | No             |
| VA-10 | 70080.00         | Scott               | Route 72 - Widening - Phase II                                      | From: 0.394 Kilometer South ECL Weber City To: West ECL Weber City (3.5 KM)                          | Widening project from 2 to 4 lanes  | 2                        | 4                      | Widening                   | 2.2 Miles      | Rural Major Collector             | Non-Exempt        | MPO TIP FY2011-2014             | Yes            | Construction                         | Yes            |
|       | 86598.00         | Scott               | US-23   | SBL Over North Fork Holston River VA Structure #1003   | Bridge replacement  |                          |                        | Bridge Replacement         | -              | Urban Principal Arterial          | Exempt            | VDOT 6-Yr Program (FY2011-2016) | Yes            | Construction                         | No             |
|       | 17747.00         | Scott               | Intersection of SR-224, US-23, & US-58                              | From: 0.486 Kilometer West ECL Weber City To: 0.491 Kilometer East ECL Weber City                    | New Interchange   |                          |                        | New Interchange            | -              | Urban Principal Arterial          | Non-Exempt        | VDOT 6-Yr Program (FY2011-2016) | Yes            | Preliminary Engineering/Right-of-Way | Yes            |
|       | 12764.00         | Scott               | Route 72  | From: 0.394 Kilometer South ECL Weber City To: 0.120 Kilometer North Route 71                        | Roadway Reconstruction (New Alignment)  | 2                        | 2                      | Reconstruction/Realignment | 1.85 Miles     | Rural Major Collector             | Exempt            | VDOT 6-Yr Program (FY2011-2016) | Yes            | Preliminary Engineering/Right-of-Way | Yes            |
|       | 86594.00         | Scott               | Route 687 (Gate Road)   | Over Big Moccasin Creek VA Structure #6102   | Bridge replacement  | 2                        | 2                      | Bridge Replacement         | -              | Local                             | Exempt            | VDOT 6-Yr Program (FY2011-2016) | Yes            | Preliminary Engineering              | No             |
|       |                  |                     |   |  |   |                          |                        |                            |                |                                   |                   |                                 |                |                                      |                |
|       |                  |                     |   |  |   |                          |                        |                            |                |                                   |                   |                                 |                |                                      |                |

## Minutes

### Tri-Cities Informal IAC Conference Call January 20, 2011: 10:00 am EST

**Conference Call Participants:** Angela Midgett (TDOT); Britta Stein (FHWA); Chris Campbell (Kingsport MPO); David Metzger (Bristol MPO, host); Dianna B. Smith (EPA Region IV); Donny Necessary (VDOT); Glenn Berry (Johnson City MPO); Jeff Rawles (Johnson City MPO); Marc Corrigan (TDEC); Michael Thompson (City of Kingsport); Preston Elliott (RPM).

**Discussion of 2010 Ozone Data** Marc Corrigan had provided the membership prior to the IAC call with the preliminary ozone data for calendar year 2010. That data indicated a preliminary three-year average reading of 0.071 parts per million for the two Sullivan County ozone monitors. Marc Corrigan cautioned that this data was still preliminary and that EPA would run the data through a quality control process prior to finalization, which was anticipated to happen about five months from now. No changes in the Sullivan County readings were anticipated as a result of the process. A general discussion of the schedule for EPA threshold development followed. Dianna Smith indicated that EPA was still looking at a July 2011 tentative announcement date, and also indicated that the threshold would not be set at 0.075 parts per million.

**Planning Assumptions for Kingsport Regional Travel Demand Model** The Kingsport MPO desired to review some of its base planning data and assumptions before the IAC for comments, as this will be one of the functions of the IAC if it becomes official. Preston Elliott with RPM (Kingsport's consultant for both model development and plan document development) outlined some of the planning assumptions and E+C projects (these were e-mailed to the membership and are attached by reference). Kingsport's model will have a base year of 2009, a target year of 2035, and interim years of 2015 and 2025 (all of which match Bristol's at the other end of the county except the base year, for which Bristol is using 2007). David Metzger advised Angela Midgett, in response to her question, that the three Tri-Cities MPOs were aiming to synchronize their next generation of models and plans using 2010 data. Preston Elliott estimated that they were about a month away from having an E+C network. Dianna Smith indicated that the data looked good from her perspective.

**Upcoming Three-MPO Meeting** David Metzger advised the membership of the meeting between the three MPO staffs and Donny Necessary in Bristol on January 20 to coordinate and discuss the upcoming TAZ data development process through the Bureau of the Census.

#### **Member Agency Updates**

EPA: No additional updates.

FHWA: Britta Stein introduced herself to the membership; this is her first meeting in place of Tameka Macon. No additional updates.

TDOT: Angela Midgett had no additional updates.

VDOT: Donny Necessary had no additional updates.

TDEC: Marc Corrigan had no additional updates.

Johnson City MPO: Glenn Berry and Jeff Rawles had no additional updates.

Kingsport MPO: Chris Campbell had no additional updates. He did ask Angela Midgett about air quality as an agenda item for the statewide MPO meeting in March, and she replied that there may be some discussion on that.

Bristol MPO: David Metzger had no additional updates.

**Next Informal IAC Conference Call**

The next Tri-Cities IAC call would typically fall on Thursday, February 17. As this is the same date as an ITS class in Knoxville, it was decided that Chris Campbell would poll the membership a few days before then and see if there were any items to discuss. If not, the next Tri-Cities IAC would be held in March.

The next statewide IAC will be held at 3:00 pm EST on Wednesday, February 2.

The IAC was ended at 10:40 a.m. EST.

# Kingsport Area Metropolitan Planning Organization (MPO)

**For Immediate Release**  
May 31, 2011

**Contact:** Chris Campbell  
Kingsport Area MPO  
(423) 224.2670  
ChrisCampbell@KingsportTN.gov

## Regional Transportation Plans Seek Public Opinion

*Public Meeting Will Be Held June 9<sup>th</sup> for Greater Kingsport Region*

*Take The Online Survey At: [www.MyRegionMoves.com](http://www.MyRegionMoves.com)*

**Kingsport, TN** – Transportation plans for the Kingsport region are being put together and planning officials are seeking input from area residents. The Kingsport Metropolitan Planning Organization (MPO) is working with local governments, businesses, non-profit organizations and the public to prepare plans, which will help establish transportation priorities for the cities of Kingsport, Mount Carmel, Church Hill, Webber City, Gate City and portions of Sullivan, Hawkins and Scott counties.

An online survey, located at [www.MyRegionMoves.com](http://www.MyRegionMoves.com) has been created by the MPO so that area residents can quickly and easily share their input on transportation needs in the region. Additional information on the project can also be found by logging on to the MPO website at [www.mpo.kingsporttn.gov](http://www.mpo.kingsporttn.gov).

A public meeting to gather important input from area residents is scheduled for **June 9, 2011 at the Kingsport Public Library, 400 Broad Street - Kingsport, TN 37660 from 4:00 pm to 8:00 pm**. Citizens interested in sharing their thoughts on needed roadway improvements as well as other transportation investments such as sidewalks, bike lanes, greenways and public transportation are encouraged to attend the meeting and share their thoughts and ideas. The meeting is an open-house format so individuals can come and leave when they want.

“The public meeting will help the MPO understand transportation needs in the region whether it be needed intersection or roadway improvements, sidewalk or bicycle facility improvements or more public transportation options,” said Chris Campbell Transportation Coordinator for the Kingsport Area MPO.

“With rising gas prices people are seeking more cost effective transportation options. The MPO wants to make sure that our future transportation plans provide the most cost effective, sustainable and economically beneficial solutions,” noted Campbell. More than 40% of car trips nationwide are two miles or less. Most people can bicycle two miles or walk one mile in 15-20 minutes. For this reason, the MPO is placing an increased emphasis on walking and bicycle needs in the region.”

The Kingsport Area MPO is the regional organization federally established to carryout transportation planning within the greater Kingsport region. The MPO’s policy board is comprised of local elected officials and government agencies that help guide federal and state funded transportation projects such as roads, bridges, sidewalks and bikeways and public transportation within the greater Kingsport region.

Sign In Sheet  
For The  
Kingsport Area MPO 2035 Long Range Transportation Plan  
Public Meeting - Kingsport  
June 9, 2011

|     | NAME                      | EMAIL ADDRESS OR STREET ADDRESS   |
|-----|---------------------------|-----------------------------------|
| 1.  | David Redd                | dreddkpt@yahoo.com                |
| 2.  | Tim Jaynes                | TJaynes@Fthra.org                 |
| 3.  | Candace Gump              | cgump@fthra.org                   |
| 4.  | Tony DeLuca               | deluca@mail.etsu.edu              |
| 5.  | Aris Bush                 | abush@comcast.net                 |
| 6.  | Danielle Glasscock        | dglasscock@uwaykpt.org            |
| 7.  | HOWARD RAUCH              | HLRauch@chartertn.net             |
| 8.  | David Petke               | fdpetke@chartertn.net             |
| 9.  | Sharon Petke              | sspetke@mac.com                   |
| 10. | Roberta Waller, Salisbury | P.O. Box 2303 Kingsport, TN 37662 |
| 11. |                           |                                   |
| 12. |                           |                                   |
| 13. |                           |                                   |
| 14. |                           |                                   |
| 15. |                           |                                   |
| 16. |                           |                                   |
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| 21. |                           |                                   |

Transportation plans for the metro region are being developed and planning officials are seeking your input. This plan will identify potential roadway improvements, walking and biking opportunities as well as transit needs. A public meeting will be held June 9, 2011 from 4:00 pm to 8:00 pm in the Kingsport Public Library at 400 Broad St. The meeting is an open-house format so you can come and leave when you want. You can also take an online survey regarding the plan at [www.myregionmoves.com](http://www.myregionmoves.com). Find more at [www.mpo.kingsporttn.gov](http://www.mpo.kingsporttn.gov).

# KINGSPORT METROPOLITAN PLANNING ORGANIZATION

TENNESSEE: KINGSPORT, SULLIVAN COUNTY, HAWKINS COUNTY, MOUNT CARMEL, CHURCH HILL

VIRGINIA: SCOTT COUNTY, WEBER CITY, GATE CITY

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May 27, 2011

## Re: Stakeholder Consultation and Input related to Regional Transportation Plans

Dear Stakeholder:

The Kingsport Area Metropolitan Planning Organization (MPO) is a regional transportation planning agency serving the jurisdictions of Kingsport, Mount Carmel, Church Hill, Weber City, Gate City and portions of Sullivan, Hawkins and Scott Counties. The MPO is currently working with local governments, businesses, non-profit organizations and the public to prepare plans, which will help establish transportation priorities on needed roadway improvements as well as other transportation investments such as sidewalks, bike lanes, greenways and public transportation

The MPO will be hosting an early stages stakeholder meeting on **June 9, 2011 – 1:30 pm to 3:00 pm (EST) at the Kingsport Public Library, 400 Broad Street, Kingsport, TN 37660** to receive input from various federal, state and local agencies having an interest in growth, development, transportation, safety, mobility, economic development, conservation and/or other aspects related to the MPO's transportation planning process. The intent of the meeting is to share a brief trend analysis on growth and development within the Greater Kingsport urban area, discuss planning and growth assumptions related to future transportation needs and to solicit input from your agency on any plans, programs or efforts your agency is involved in that is pertinent to the MPO's effort of updating the region's long range transportation plan.

If you are unable to come and/or unable to send a representative from your agency, please feel free to visit the MPO's website at [www.MyRegionMoves.com](http://www.MyRegionMoves.com) to access information on the MPO's current plans. You are also encouraged to send any comments to the MPO via email or US mail at the appropriate address below.

As the MPO moves forward in developing an update to the region's current long range transportation plan, we will notify you of the draft document being available for public review/comment and will afford your agency an opportunity to comment on the draft plan. The current schedule for the release of the draft 2035 Long Range Transportation Plan is November 2011.

Thank you for your continued support in making the Greater Kingsport area a more livable, prosperous and sustainable community. We look forward to working with you in the future as we develop our plans for tomorrow.

Sincerely,



Chris Campbell, AICP  
Kingsport MPO Coordinator  
201 West Market St  
Kingsport, TN 37660  
423.224.2670

[ChrisCampbell@KingsportTn.gov](mailto:ChrisCampbell@KingsportTn.gov)

Sign In Sheet  
For The  
Kingsport Area MPO 2035 Long Range Transportation Plan  
Stakeholders Meeting - Kingsport  
June 9, 2011

|     | NAME                        | AGENCY/EMAIL ADDRESS  |
|-----|-----------------------------|---|
| 1.  | REED STANLEY                | James.Stanley@dep.virginia.gov.<br>VA DEPT. OF ENV. QUALITY |
| 2.  | Jack Qualls                 | KATS  |
| 3.  | Chris Crady                 | 1 <sup>st</sup> TN RPO                                      |
| 4.  | Kathleen Beine, MD          | Sidewalk Board, Kpt   |
| 5.  | Misty Keller                | Kingsport City schools                                      |
| 6.  | ERIN WATKINS                | u i   |
| 7.  | Lana Moore                  | U.S.S. Lamar Alexander                                      |
| 8.  | Tommy R. Bauld              | U.S. Senator Bob Corker                                     |
| 9.  | RANDY DODSON, JASON CARROLL | MATTERN AND CRAIG ENG                                       |
| 10. | KATHIE NOE                  | Scott County Knoe@scottcounty.tn.com                        |
| 11. | Chris Stannos               | LENOWISO cstannos@lenowiso.org                              |
| 12. | Bruce Sewalls               | K2HRA   |
| 13. | Bleau K Berry               | Johnson City MTPC   |
| 14. | David McFarquhar            | Brutal MPO  |
| 15. | Jason Meredith              | Kingsport Planning  |
| 16. | Forrest Kuder               | " "   |
| 17. |                             |   |
| 18. |                             |   |
| 19. |                             |   |
| 20. |                             |   |
| 21. |                             |   |

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# KINGSPORT AREA METROPOLITAN PLANNING ORGANIZATION 2035 LONG RANGE TRANSPORTATION PLAN STAKEHOLDER CONSULTATION MEETING

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## Agenda

1. Welcoming & Introductions
  
2. Presentation (*20 minutes*)
  - *Role of the MPO*
  - *Purpose of the Long Range Transportation Plan*
  - *Trends in the Region – Population & Employment Growth, Travel Growth*
  - *Plan Development Process & Schedule*
  
3. Group Discussion
  - *Introductions*
  - *Current Issues and Concerns*
  - *Existing Plans, Programs, & Policies*
  - *Future Opportunities/Solutions*
  
4. Summary of Discussions
  
5. Closing Remarks

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**Meeting Time & Location:**

Thursday, June 9, 2011 - 1:30 PM to 3:00 PM  
Kingsport Public Library - 400 Broad Street - Kingsport, TN 37660

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# Kingsport Area Metropolitan Planning Organization

## 2035 Long Range Transportation Plan

Public Meeting

June 9, 2011

# Items to Discuss



- Metropolitan Planning & the Kingsport MPO
- Purpose of the Long Range Transportation Plan
- Trends in the Region
- Plan Development Process & Schedule

# Metropolitan Planning



- Federal Process which began in 1960's
- Urbanized Areas with populations of 50,000 - MPO
- Kingsport Area MPO was established in 1977
- Maintaining a Continuing, Cooperative and Comprehensive Transportation Planning Process
- Planning and Programming of Transportation Improvements

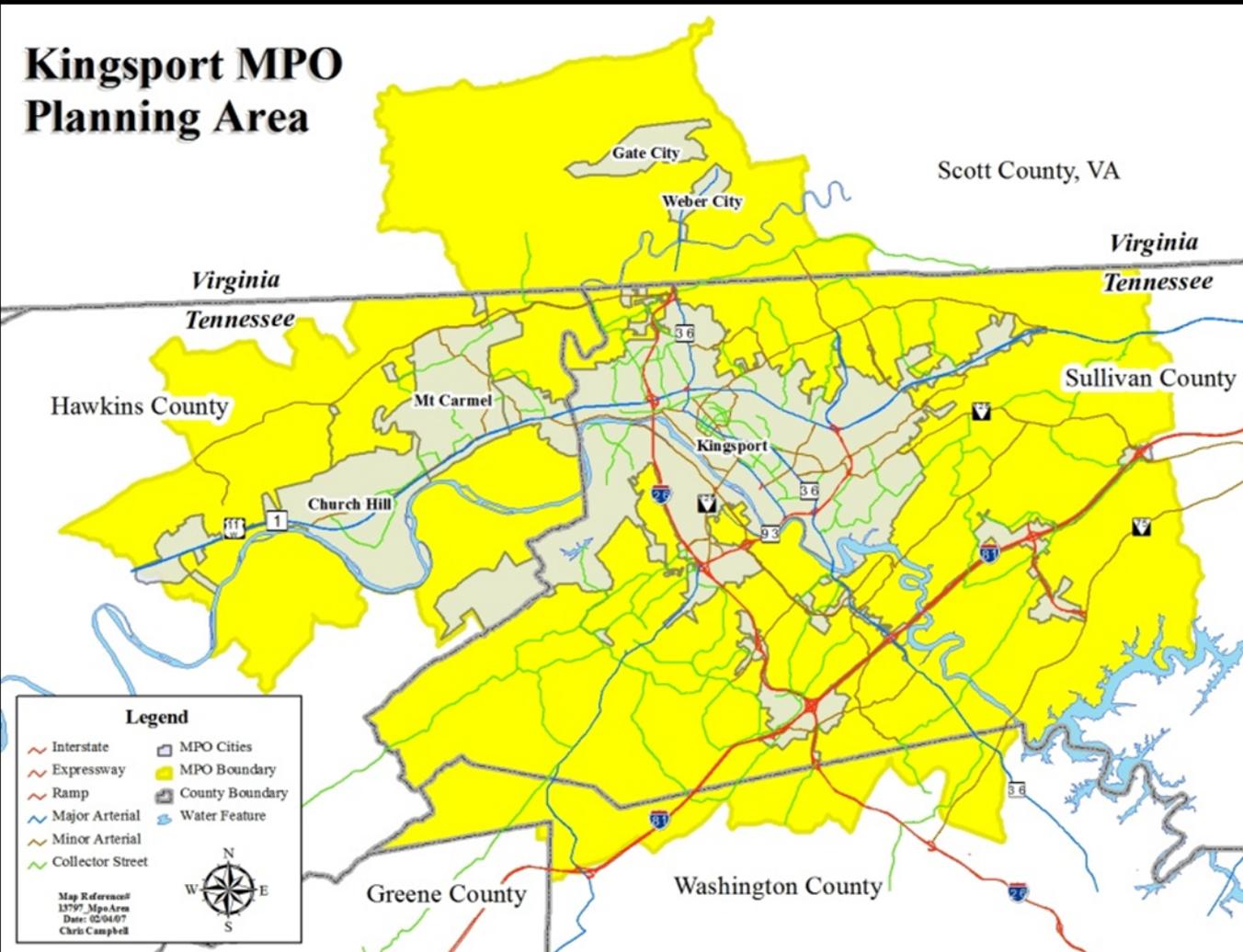
# Key Legislation

- Intermodal Surface Transportation Efficiency Act (ISTEA) - 1991
- Transportation Equity Act for the 21st Century (TEA-21) – 1998
- Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) - 2005
- NEPA and the National Clean Air Act



# Kingsport MPO Planning Area

## Kingsport MPO Planning Area



### Tennessee

- Kingsport
- Mount Carmel
- Church Hill, and
- Portions of Hawkins, Sullivan and Washington County

### Virginia

- Weber City
- Gate City, and
- Portions of Scott County

# Kingsport MPO

## MPO Structure

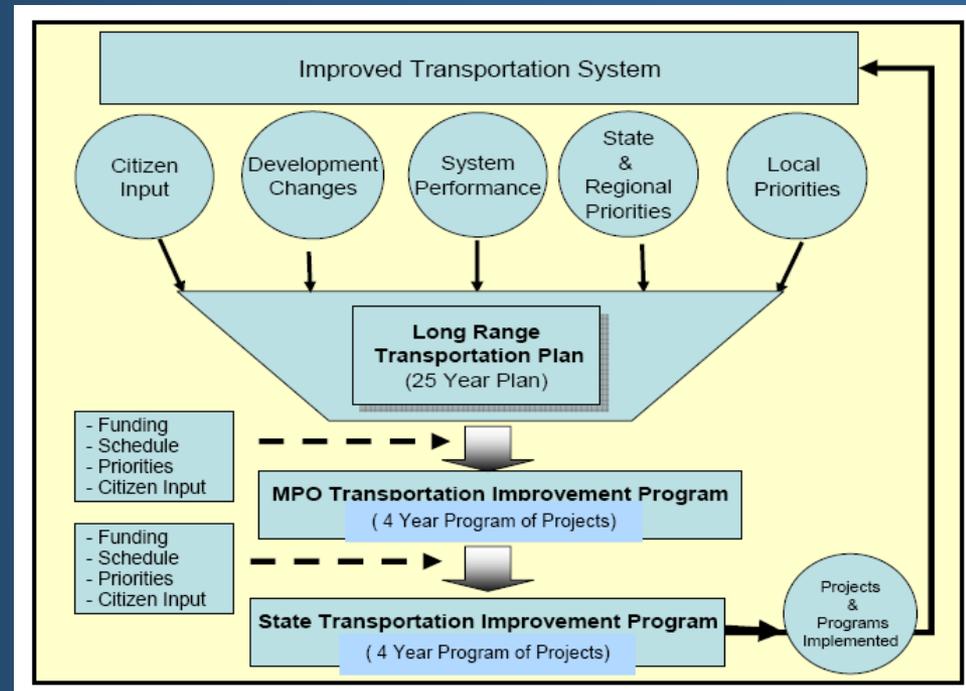
- **Executive Policy Board** - 10 Member Board
- **Executive Technical Staff** - 19 Members
- **MPO Staff** - City of Kingsport



# Kingsport MPO

## Three Main Planning Tasks

- Long-Range Transportation Plan (LRTP) - 20 Year Horizon
- Transportation Capital Program (TIP) - 4 Year Program
- Work Program (UPWP) - Annual Planning Program





# Long Range Transportation Plan

# Purpose of the Long Range Plan

- Serve as **a framework for transportation decisions** within the MPO area
- Is to **guide transportation policies** and **federal transportation funds** over the planning horizon
- The plan is to include **a vision for the future** in the region, **document existing and future transportation conditions**, and **establish a blue-print for the future investments**



# Long Range Plan - Document



- At least a 20 Year Planning Horizon
- Be Financially Feasible (Revenue & Costs)
- Be Multimodal
- Address all Federal Planning Requirements
- Comply with Air Quality Standards
- Updated Every 5 Years (4 Yrs for Non-Attainment Areas)

# Planning Factors



- Support **ECONOMIC VITALITY** of the metropolitan area
- Increase the **SAFETY** of the transportation system for all users
- Increase **SECURITY** of all motorized and non-motorized users
- Increase **ACCESSIBILITY & MOBILITY** of people and freight
- Protect and enhance the **ENVIRONMENT**, improve the **QUALITY OF LIFE**, & promote **CONSISTENCY** between improvements & plans
- Enhance the **INTEGRATION & CONNECTIVITY** of the transportation system, across and between modes, for people & freight
- Promote efficient **SYSTEM MANAGEMENT & OPERATION**
- Emphasize the **PRESERVATION** of the existing transportation system

# Plan Schedule



**Stakeholder/Public Meetings** – June 9, 2011

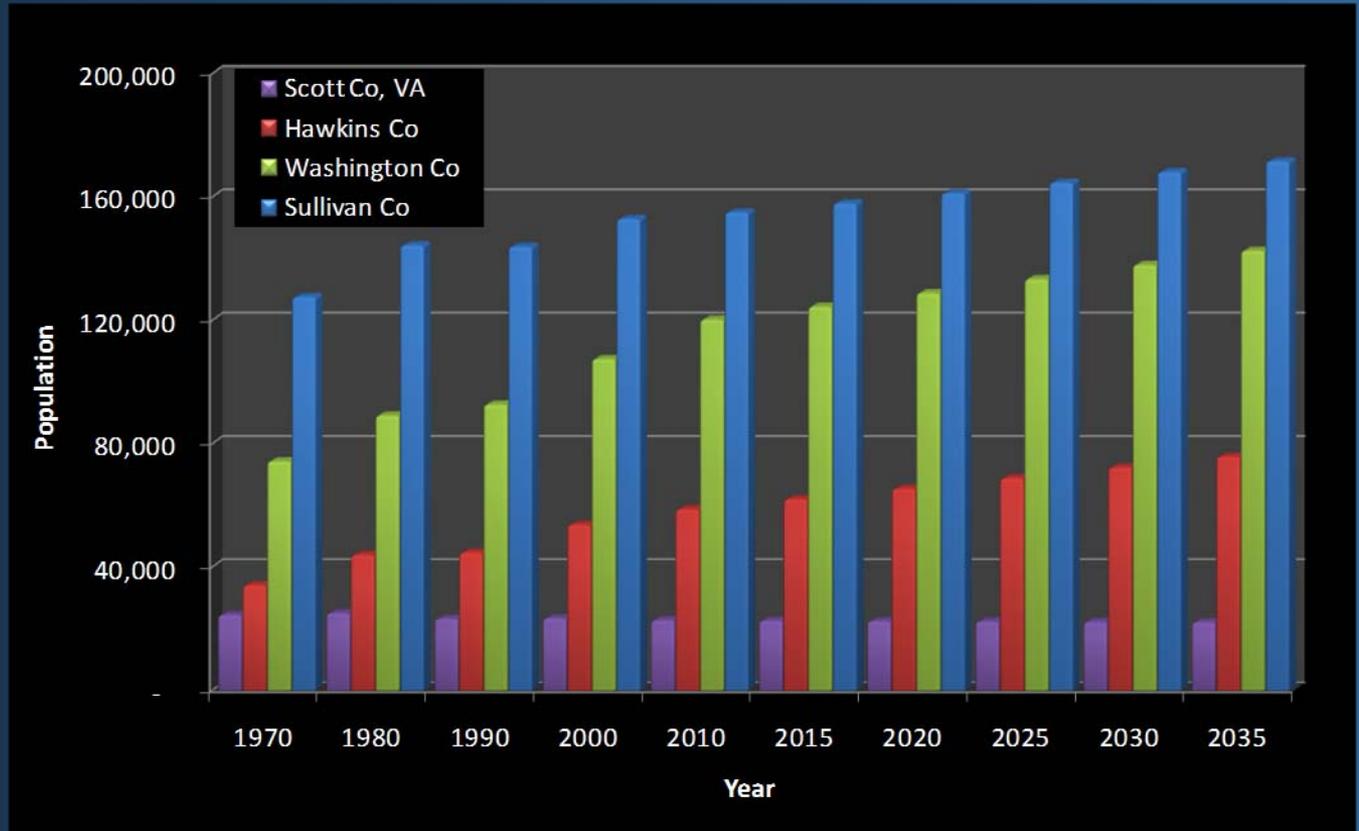
– Share Trends, Data, Gather Input

**Initiate Public Review of Draft** – November 2011

– Plan Recommendations, Gather Input

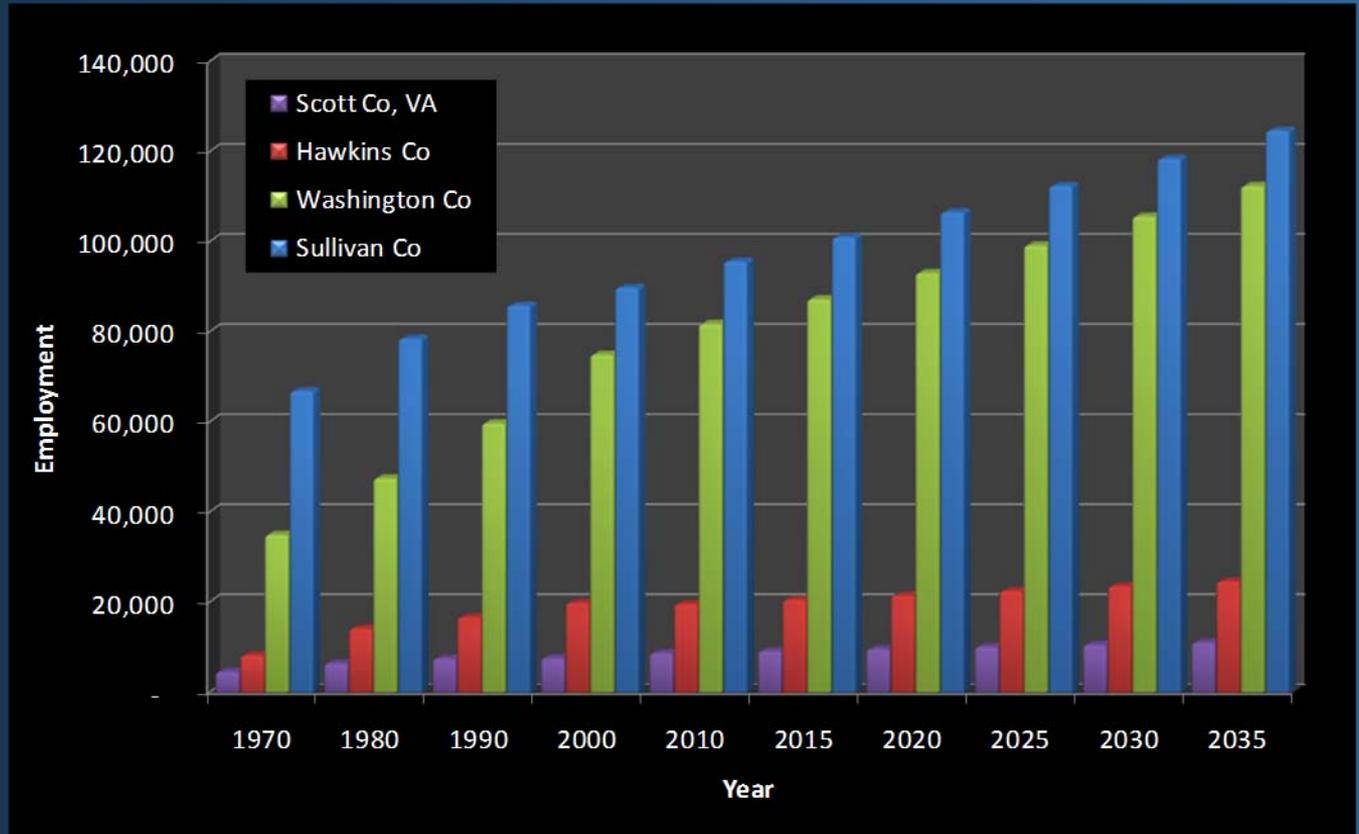
**Public Meeting & Plan Adoption** – Feb/Mar 2012

# Population Trends in the Region



- Between 2000 - 2010 the Region grew by 7% (adding 22,000 people)
- Hawkins Co. & Sullivan Co. added 7,000 & Washington Co. added 15,000
- By 2035 the four County Region's population is expected to increase to nearly 412,000 representing an increase of 55,000 people over today

# Employment Trends in the Region

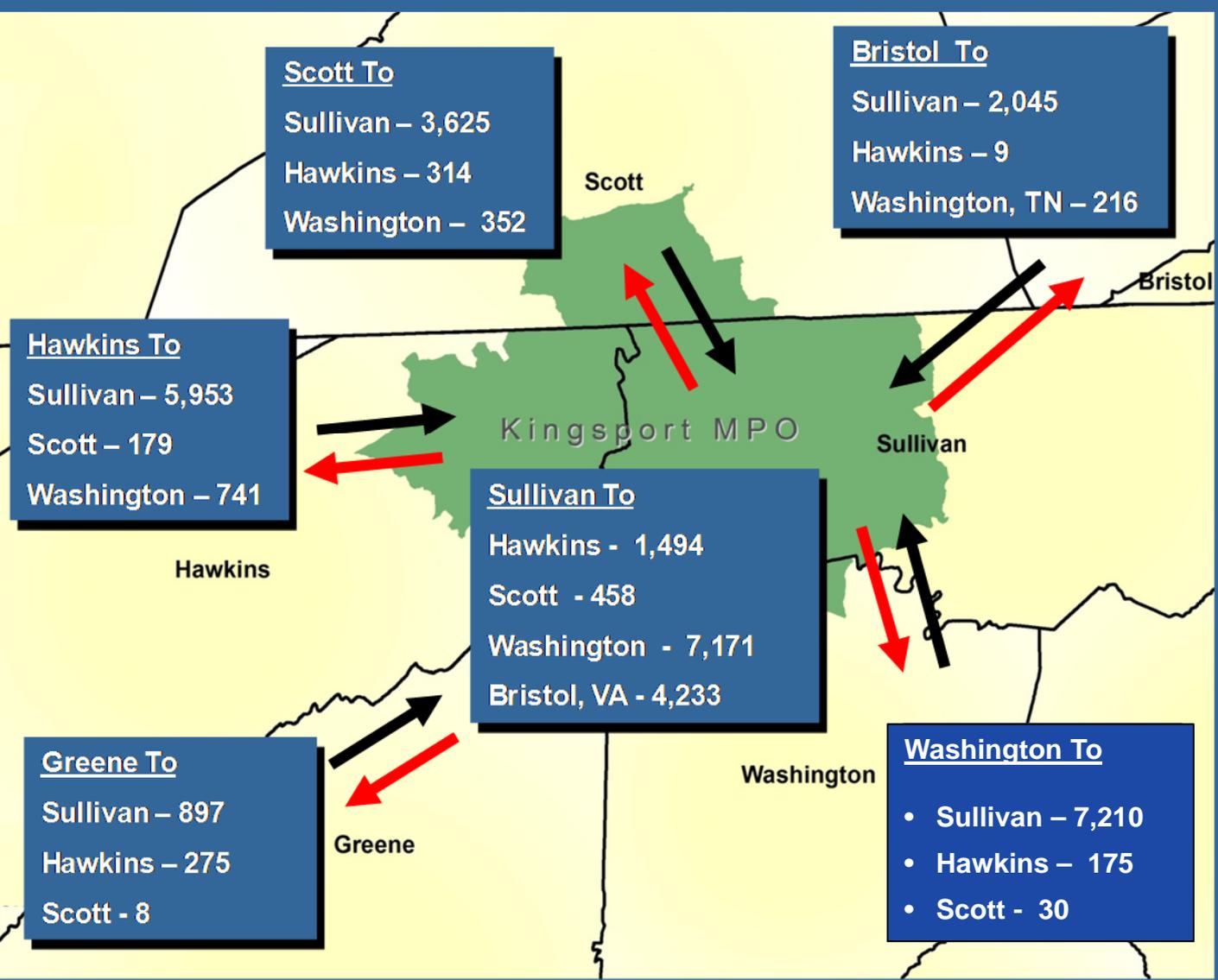


- Between 2000 - 2010 the Region added over 13,000 jobs (a 7% Increase)
- Sullivan Co. added 5,800 jobs and Washington Co. added 6,800 jobs
- By 2035 the four County Region's employment is expected to increase to nearly 272,000 jobs representing an increase of 67,000 jobs over today

# Kingsport Area Commuting Patterns

## Commuters Per Work Day

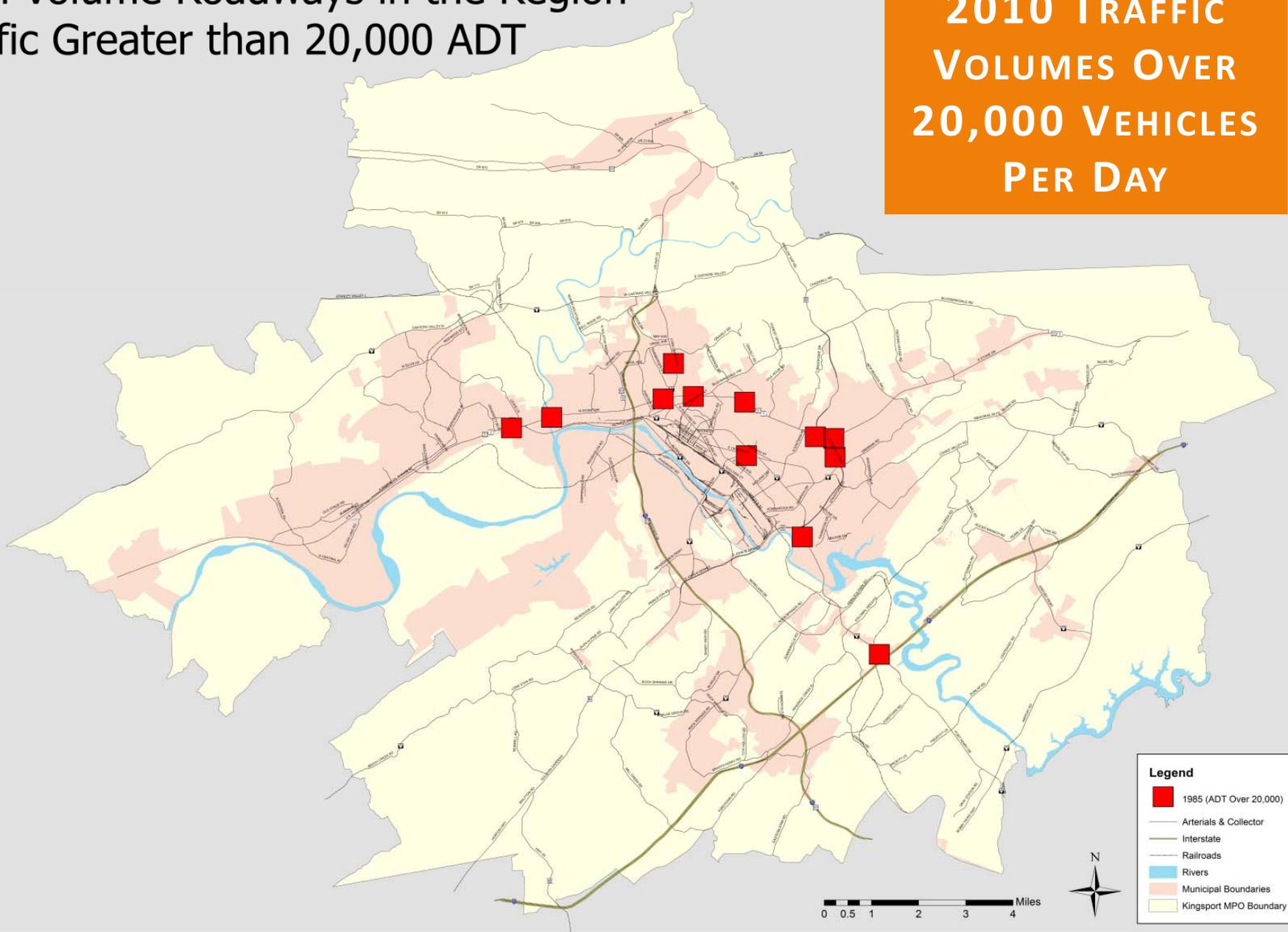
(Journey to Work Data – 2000)



- Each weekday:
- Over 7,000 Sullivan County residents commute to Washington County
  - Nearly 6,000 Hawkins County residents commute to Sullivan County
  - Over 7,000 Washington County residents commute to Sullivan County
  - Over 3,600 Scott County residents commute to Sullivan County

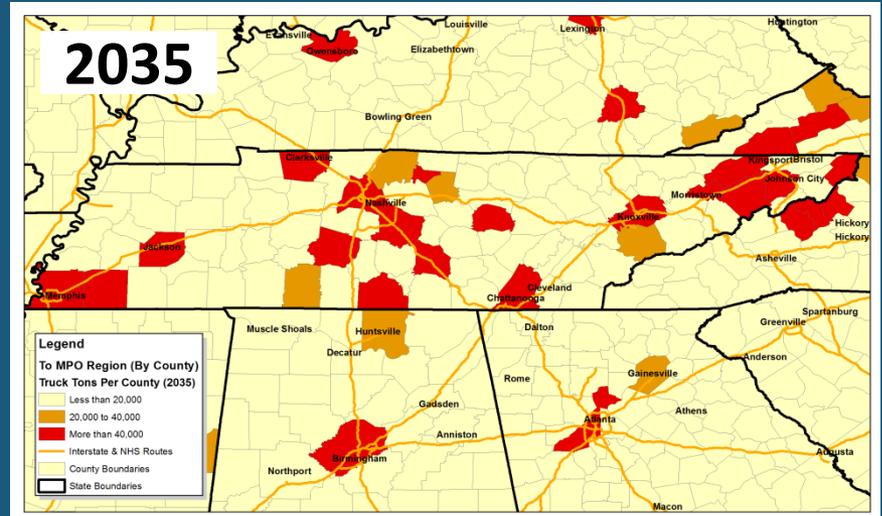
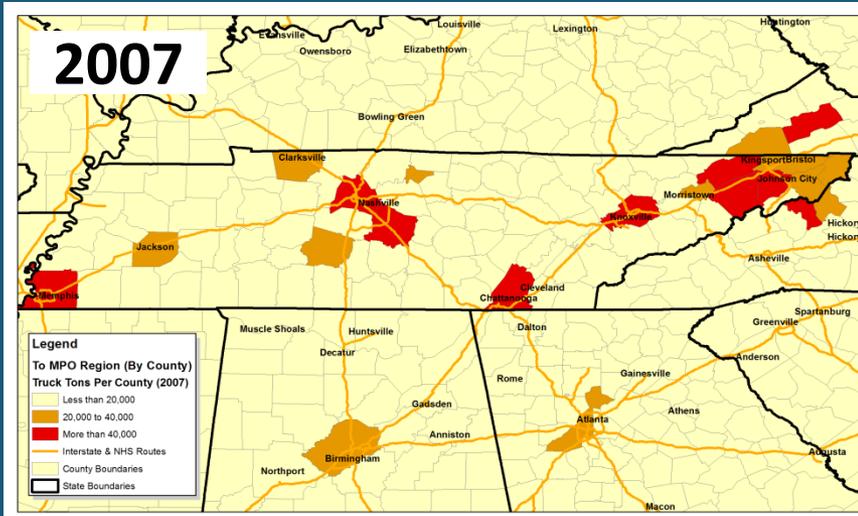
# High Volume Roadways in the Region Traffic Greater than 20,000 ADT

**2010 TRAFFIC  
VOLUMES OVER  
20,000 VEHICLES  
PER DAY**

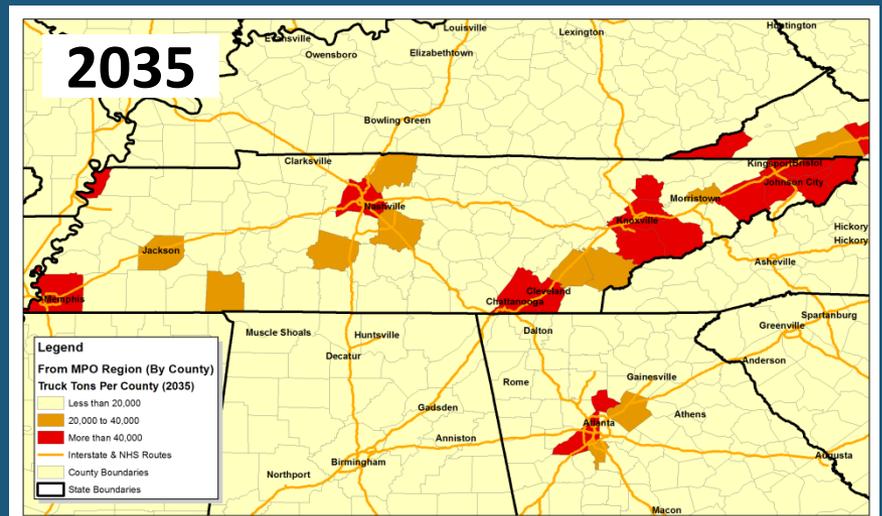
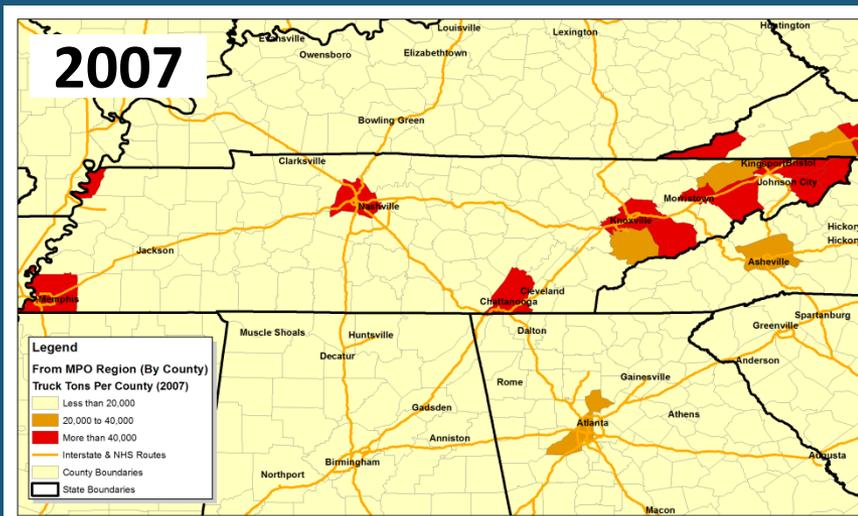


# Region Freight Trends

## Truck Freight to Kingsport Region to Other Areas



## Truck Freight from Kingsport Region to Other Areas



# Railroad & Air Freight

Norfolk Southern Crescent Corridor  
& Proposed Rail Improvements



# Transit Services in the Region

## Local Bus Service

- **KATS** - Kingsport Area Transit Service



## Specialized Services

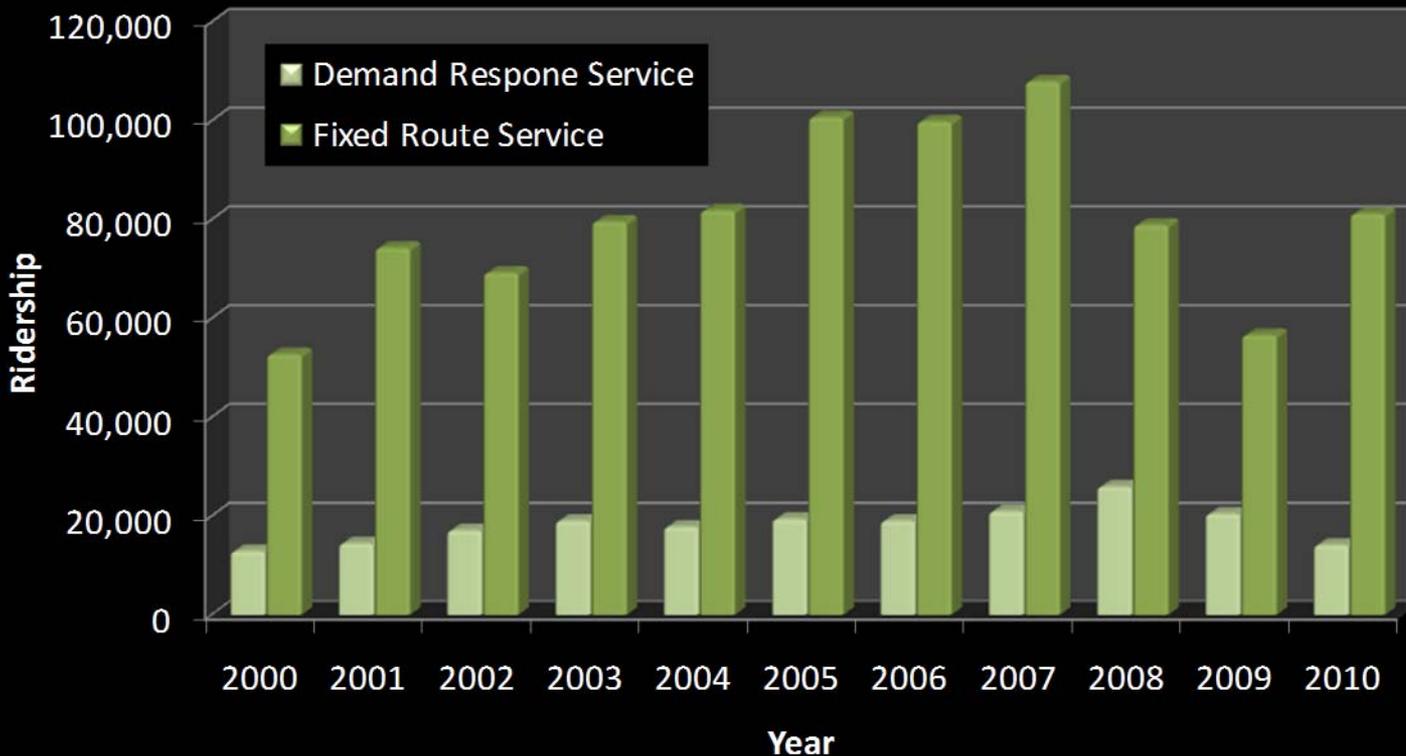
- **NET TRANS** - Northeast Tennessee Transit System provides service to the rural areas of Carter, Greene, Johnson, Hawkins, Sullivan, Washington and Unicoi Counties
- **MEOC** - Mountain Empire Older Citizens Agency is the rural service provider in the Virginia areas of Lee, Scott and Wise Counties



# Transit Service

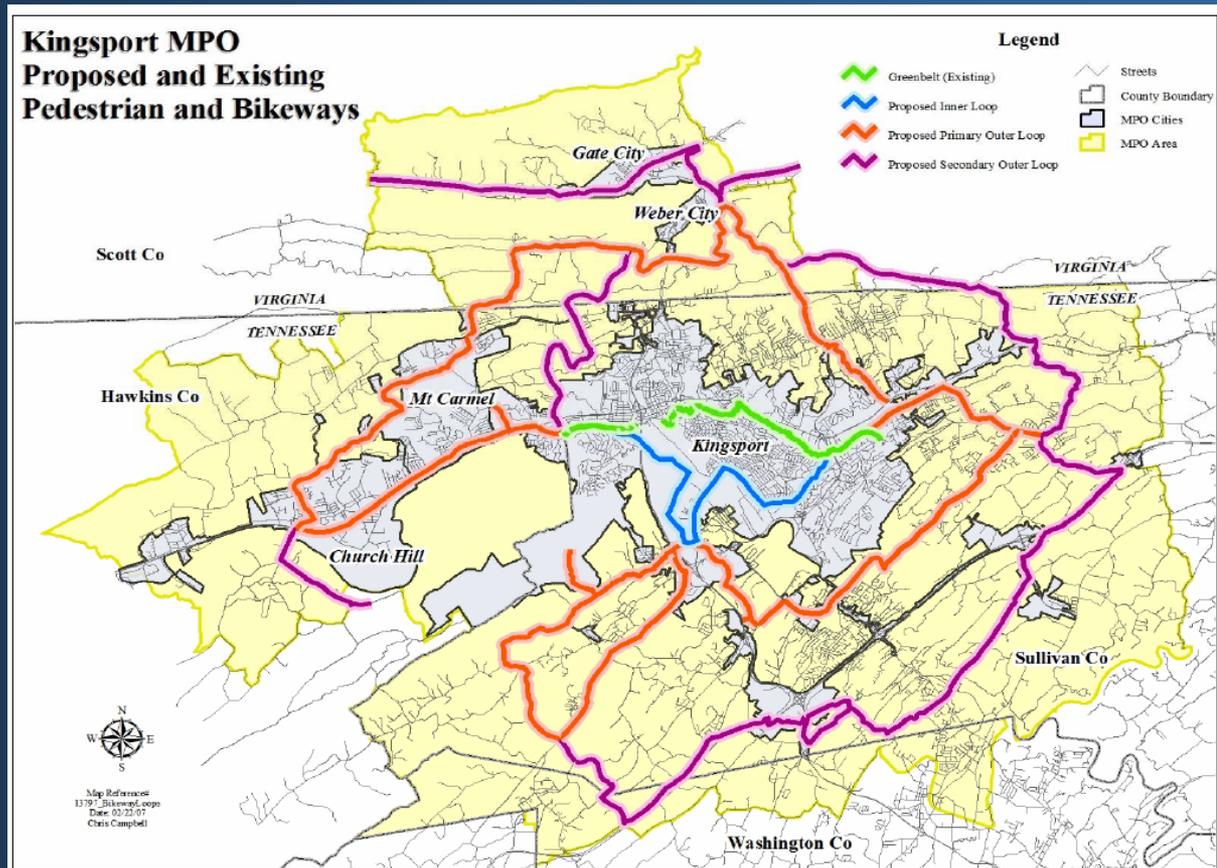
## Kingsport Area Transit Service (KATS)

- Began in 1995
- Currently operates 5-days a week
- Offers fixed route & demand response services
- Ridership peaked in 2007

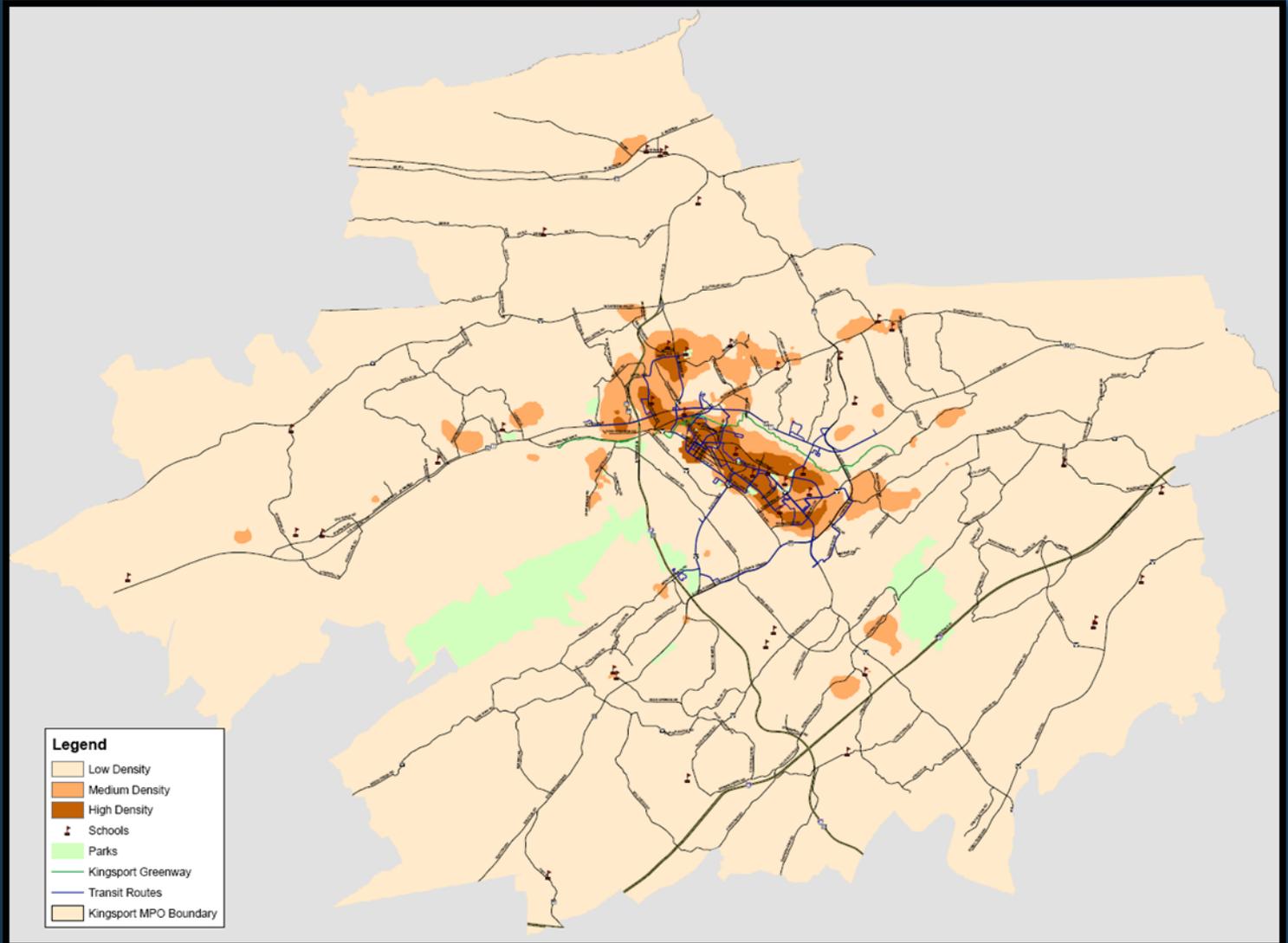


# Sidewalks, Bike Paths, Greenways.....

- Current Long Range Transportation Plan calls for the construction of over 78 miles of pedestrian & bikeways over the 25-years
- Nearly \$13.5 million (3%) from the Plan's Financial Plan

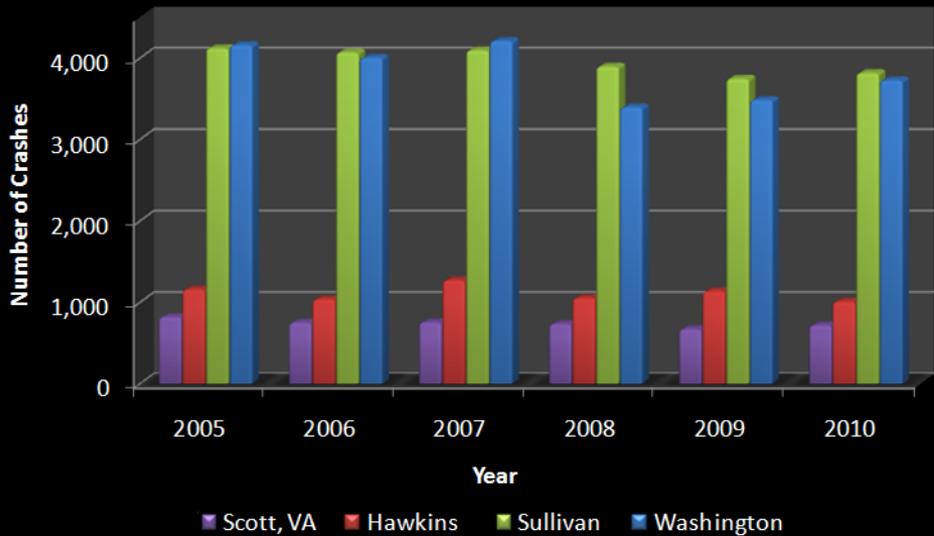


# Assessment of Non-Motorized Demand



# Safety

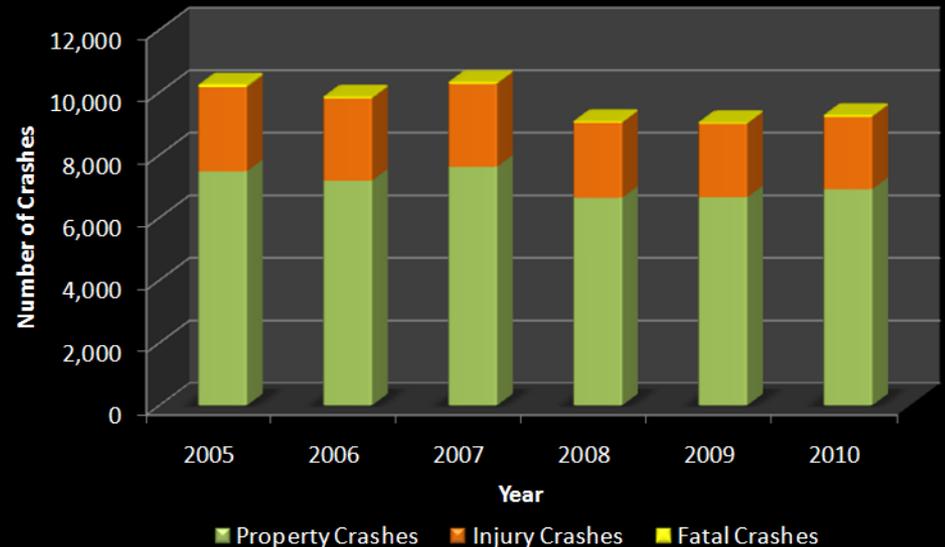
**Total Crashes in the Four County Region  
By County**



Annually on Roadways in the Region

- 9,600 Total Crashes Occur
- 55 are Fatal
- 25% are Injury Related

**Total Crashes in the Four County Region  
By Crash Type**

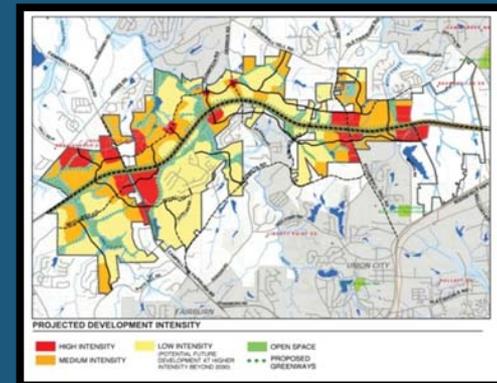
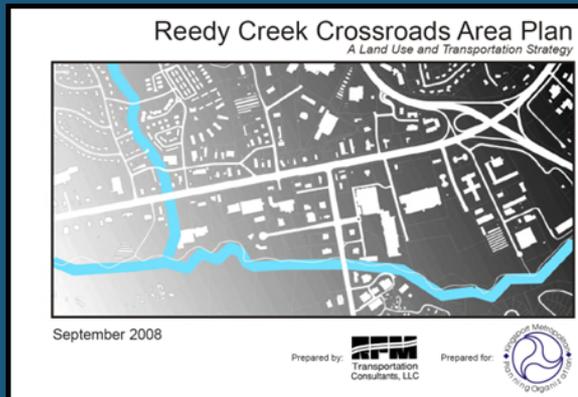
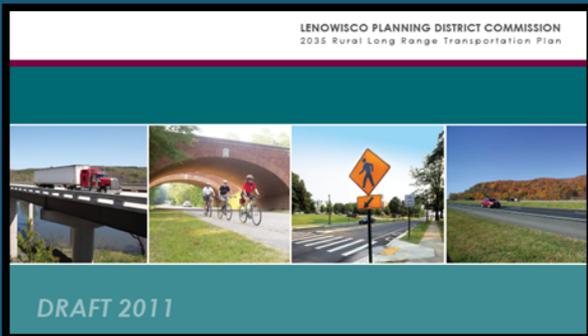
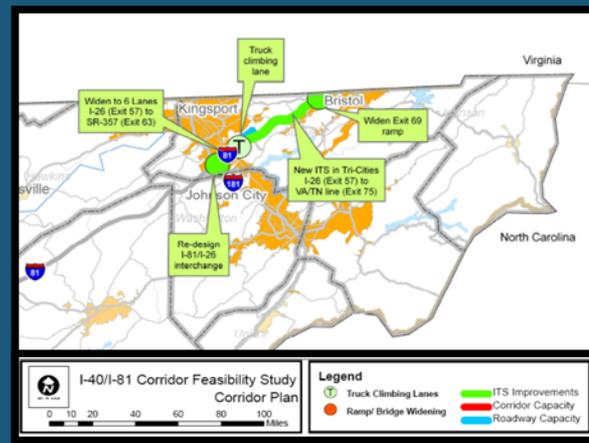
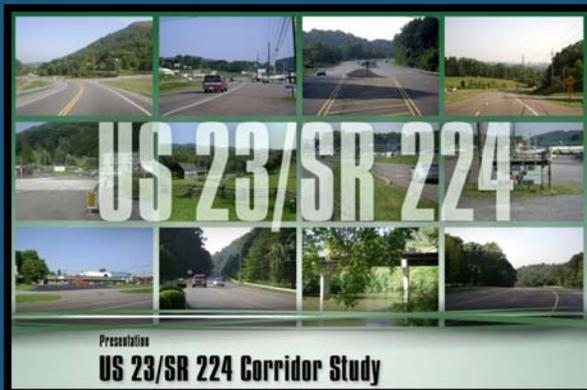


# Land Use & The Environment

## Scott County, Virginia Comprehensive Plan



2011



# Current Plan Revenues by Improvement Type



| 2030 Plan                                     | Planned Improvements (Total Budgeted) | Percent of Total Budgeted Planned Improvements |
|---|---------------------------------------|--|
| Street & Roadway Improvements                 | 420,910,435                           | 95%  |
| Transportation System Management Improvements | 3,373,000                             | 1%   |
| Public Transportation Improvements            | 6,042,500                             | 2%   |
| Pedestrian Improvements                       | 9,318,628                             | 2%   |
| Bikeway Improvements                          | 4,186,562                             | 1%   |
| <b>Total</b>                                  | <b>\$443,831,126</b>                  | <b>100%</b>                                    |

# Over the Next 25 Years



- 30,000 more population in the MPO Area
- 30,000 more jobs
- Traffic will steadily grow
- Roadway congestion will increase
- Transportation revenues may not cover demand needs

# Planning Factors



- Support **ECONOMIC VITALITY** of the metropolitan area
- Increase the **SAFETY** of the transportation system for all users
- Increase **SECURITY** of all motorized and non-motorized users
- Increase **ACCESSIBILITY & MOBILITY** of people and freight
- Protect and enhance the **ENVIRONMENT**, improve the **QUALITY OF LIFE**, & promote **CONSISTENCY** between improvements & plans
- Enhance the **INTEGRATION & CONNECTIVITY** of the transportation system, across and between modes, for people & freight
- Promote efficient **SYSTEM MANAGEMENT & OPERATION**
- Emphasize the **PRESERVATION** of the existing transportation system

# Long Range Plan Goals



- **Livability** - Provide safe, secure, convenient, and active transportation choices to all citizens which strengthens the livability and health of our communities and region.
- **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.
- **Prosperity** - Promote transportation policies and investments that advance quality economic development and redevelopment, economic competitiveness, and increased access to people, places, and goods and services within and throughout the region.



# Long Range Plan Objectives

## LIVABILITY

- Improve safety by reducing transportation-related fatalities and injuries
- Make streets a place for all users - “Complete Streets”
- Increase opportunities for short trips to be made by non-motorized modes to promote active transportation
- Increase transit and other transportation demand management opportunities
- Strive to balance capacity and mobility needs for all users whereby connections to and across modes and land uses function harmoniously

## SUSTAINABILITY

- 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, reducing transportation delay, and improving system operations
- Seek improvement options which minimize adverse impacts to historical, social, cultural, and natural environments
- Promote investment solutions that reduce carbon and other harmful emissions from transportation

## PROSPERITY

- Strategically target transportation investments to areas supportive and conducive to growth and redevelopment initiatives
- Support transportation investments and policies that work to create jobs and improve access to people, places, and goods while embracing access management and corridor management strategies that preserve the long-term functionality of a roadways capacity and safety
- Support land use and development patterns that reduce transportation costs and expenditures 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

# Long Range Plan Performance Measures

## LIVABILITY

### Safety

- Per Capita Transportation Related Fatalities and Crashes
- Per Capita Bicycle & Pedestrian Related Fatalities and Crashes

### Mobility

- Number of Regional Corridors Operating In Non-Congested Conditions
- Percent of Region with Access to Transit
- Percent of Region's Senior Population Served by Transit

### Active Transportation

- Percent of the Region Within 1-Mile of Sidewalk Facilities, Greenways, Bicycle Facilities, Transit Routes, and Parks

## SUSTAINABILITY

### Maintenance

- Percent of the Region's Transportation Dollars Expended on Maintenance, Rehabilitation, and Reconstruction

### Operations

- Percent of the Region's Transportation Dollars Expended on Transportation Management Solutions

### Environment

- Percent of the Region's Transportation Dollars Expended that Avoid Environmentally Sensitive Lands and Historic Properties, Adverse Environmental Impacts, and Negative Impacts to EJ Populations

## PROSPERITY

### Economic Development & Redevelopment

- Percent of the Region's Transportation Dollars Expended in Designated Target Growth Areas

### Economic Competitiveness

- Percent of the Region's Transportation Dollars Linked to Job Growth Investments





# Map Exercise

# **Kingsport MPO Stakeholder List**

(Based on MPO's Public Participation Plan)

## State and Federal Agencies

TDOT

VDOT

U.S. Army Corps of Engineers, Memphis District

U.S. Fish and Wildlife Service

U.S. EPA

USDA Forest Service

U.S. Coast Guard Tennessee Valley Authority

National Park Service

TN Department of Environment & Conservation

TN State Historic Preservation Office

TN Wildlife Resources Agency

VA Department of Environmental Quality

VA Department of Conservation & Recreation

VA Marine Resources Commission

VA Department of Game & Inland

VA Department of Forestry

## Regional Agencies

First Tennessee Development District

Kingsport Regional Planning Commission (Land-Use, Zoning, Historic, etc.)

LENOWISCO Planning District Commission

NETWORKS – Joint Economic Development Partnership

Sullivan County Regional Planning Commission (Land-Use, Zoning, Historic, etc.)

Tri-Cities Regional Airport

Bristol MPO

Johnson City MPO

First Tennessee Rural Planning Organization (RPO)

## Local Agencies

City of Kingsport (Planning, Public Works, Engineering, Parks & Rec., etc.)

City of Church Hill

City of Mount Carmel

Gate City, VA

Weber City, VA

Sullivan County Highway Department

Hawkins County Highway Department

Scott County, VA Highway Department

Kingsport Area Transit Service (KATS)

# Project Website

# Myregionmoves.com

## Kingsport Area Regional Transportation Planning Initiatives

[Home](#) [Regional Transportation Plan](#) [Regional Bicycle & Pedestrian Plan](#) [Contact Us](#)

The purpose of this site is to provide information on two important planning efforts being undertaken by the [Kingsport Area Metropolitan Planning Organization](#) (MPO) for the greater [Kingsport Region](#). These initiatives include the development of a:

- [Regional Transportation Plan](#) which includes all modes of transportation, and
- [Regional Bicycle and Pedestrian Plan](#) looking specifically at the travel needs of pedestrians and cyclists within the Greater Kingsport area.

Both initiatives are being conducted concurrently and are intended to create the next evolution of transportation infrastructure and services for a more livable, sustainable, and prosperous Kingsport Region.

### What's Happening

The MPO is in the process of collecting data and information on the Region's transportation system. Information such as current traffic volumes on our roadways along with other information such as future population and employment growth in the region is being analyzed.

On June 9, 2011 a public meeting was held at the Kingsport Public Library as part of an initial opportunity for public input into the development of the Region's long range transportation plan. Information shared at the meeting included an overview of the planning process along with information on current and projected trends in the region. Those in attendance shared their ideas on how to improve mobility, safety, and access in the Kingsport region. A copy of the [presentation from the public meeting](#) is available for those that were unable to attend.

Continue to check this website for future announcements and other project information.

### Take Our Online Survey

We want your input. Click [here](#) to provide us your thoughts on transportation needs in the Kingsport Region.



# Project Website

# Myregionmoves.com

## Kingsport Area Regional Transportation Planning Initiatives

[Home](#) [Regional Transportation Plan](#) [Regional Bicycle & Pedestrian Plan](#) [Contact Us](#)

### Sustainable Transportation Solution

The Long Range Transportation Plan covers all modes of transportation and is the overall planning document of the MPO which guides and directs future federal and state transportation funding within the Kingsport Region.

It is a federally mandated plan which the region must have in place in order for transportation dollars to be used on needed infrastructure improvements. The Kingsport MPO has established a detailed project work plan and schedule for developing the Kingsport 2035 Long Range Transportation Plan.

We welcome your input into the development of the 2035 Long Range Transportation Plan.

[Take Our Online Survey](#)



## Memorandum (via Email)

**To:** Chris Campbell, Kingsport MPO  
Deborah Fleming, TDOT  
Angie Midgett, TDOT  
Donnie Necessary, VDOT  
Jack Qualls, Kingsport Area Transit System

**From:** Preston Elliott, RPM Transportation Consultants

**Date:** December 21, 2011

**Re:** Kingsport MPO 2035 Long Range Transportation Plan - Financial Plan Revenue Assumptions

The purpose of this memorandum is document the methodology and assumptions used in developing revenue projections as part of the Kingsport MPO's Financial Plan for their 2035 Long Range Transportation Plan (LRTP). Concluding your review of the revenue forecast methodology and assumptions we are requesting your concurrence with the revenue forecast assumptions of the Financial Plan for use in the Kingsport MPO 2035 LRTP.

### Federal Regulations on Financial Plan of the MPO's LRTP

23 CFR Part 450 Subpart A - Transportation Planning and Programming Definitions and Subpart C - Metropolitan Transportation Planning and Programming speak to the level and intent of financial plan requirements as part of a MPO's LRTP. The following highlight several key provisions of these requirements:

#### § 450.104 Definitions.

Financially constrained or Fiscal constraint means that the metropolitan transportation plan, TIP, and STIP includes sufficient financial information for demonstrating that projects in the metropolitan transportation plan, TIP, and STIP can be implemented using committed, available, or reasonably available revenue sources, with reasonable assurance that the federally supported transportation system is being adequately operated and maintained.

#### § 450.322 Development and content of the metropolitan transportation plan.

(10) A financial plan that demonstrates how the adopted transportation plan can be implemented.

(i) For purposes of transportation system operations and maintenance, the financial plan shall contain system-level estimates of costs and revenue sources that are reasonably expected to be available to adequately operate and maintain Federal-aid highways (as defined by 23 U.S.C. 101(a)(5)) and public transportation (as defined by title 49 U.S.C. Chapter 53).

(ii) For the purpose of developing the metropolitan transportation plan, the MPO, public transportation operator(s), and State shall cooperatively develop estimates of funds that will be available to support metropolitan transportation plan implementation, as required under § 450.314(a). All necessary financial resources from public and private sources that are reasonably expected to be made available to carry out the transportation plan shall be identified.

(iv) In developing the financial plan, the MPO shall take into account all projects and strategies proposed for funding under title 23 U.S.C., title 49 U.S.C. Chapter 53 or with other Federal funds; State assistance; local sources; and private participation. Starting December 11, 2007, revenue and cost estimates that support the metropolitan transportation plan must use an inflation rate(s) to reflect "year of expenditure dollars," based on reasonable financial principles and information, developed cooperatively by the MPO, State(s), and public transportation operator(s).

## **Resources Reviewed**

In developing revenue forecasts for the Financial Plan of the MPO's 2035 LRTP the following most readily available documents and resources were reviewed.

### MPO Resources

- Kingsport MPO Transportation Improvement Program Fiscal Year 2008-2011, October 2007
- Kingsport MPO Transportation Improvement Program Fiscal Year 2011-2014, October 2010

### City and County Resources

- City of Church Hill, TN Annual Financial Statements Fiscal Year 2009, June 2009
- City of Church Hill, TN Annual Financial Statements Fiscal Year 2010, June 2010
- City of Kingsport, TN Fiscal Year 2007-2008 Budget Book, July 2007
- City of Kingsport, TN Fiscal Year 2008-2009 Budget Book, July 2008
- City of Kingsport, TN Fiscal Year 2009-2010 Budget Book, July 2009
- City of Kingsport, TN Fiscal Year 2010-2011 Budget Book, July 2010
- City of Kingsport, TN Fiscal Year 2011-2012 Budget Book, June 2011
- Hawkins County, TN Annual Financial Report Fiscal Year 2008
- Hawkins County, TN Annual Financial Report Fiscal Year 2009
- Hawkins County, TN Annual Financial Report Fiscal Year 2010
- Scott County, VA Budget Fiscal Year 2009-2010
- Scott County, VA Budget Fiscal Year 2010-2011
- Sullivan County, TN Annual Financial Report Fiscal Year 2008
- Sullivan County, TN Annual Financial Report Fiscal Year 2009
- Sullivan County, TN Annual Financial Report Fiscal Year 2010
- Town of Mount Carmel, TN Annual Financial Statements Fiscal Year 2009, June 2009
- Town of Mount Carmel, TN Annual Financial Statements Fiscal Year 2010, June 2010

### State Resources

- TDOT Fiscal Years 2011-2014 Tennessee Transportation Improvement Program – June 2010
- Tennessee Comptroller of the Treasury, Division of County Audit - Annual Financial Reports (website - <http://www.comptroller1.state.tn.us/ca/CountySelect.asp>)
- Tennessee Comptroller of the Treasury, Transparency and Accountability for Governments (TAG) in Tennessee (website - <http://www.comptroller1.state.tn.us/TAG/tag.aspx>)
- Tennessee General Assembly Budget Information County by County Budget Reporting (website - <http://www.capitol.tn.gov/joint/staff/budget-analysis/county-reports/>)
- VDOT Maintenance & Operations Program Fiscal Years 2012-2017, June 2011
- Virginia Statewide Transportation Improvement Program Fiscal Years 2012-2015, July 2011

Summary financial data were developed from these resources creating historic and annual averages for various federal, state, and local funding sources/programs. The attached PDF file titled "KAMPO 2035 LRTP Historic Revenues" contains summary funding level tables for federal, state, and local funds within the MPO area for both transportation capital and operating/maintenance activities.

## **Revenue Forecasts**

Based on a review of the resources previously mentioned and summary financial tables contained in the PDF file "KAMPO 2035 LRTP Historic Revenues", annual revenue estimates were established. The attached PDF file titled "KAMPO 2035 LRTP Financial Plan" provides revenue projections for the Kingsport Area MPO's 2035 LRTP. Revenues projections are categorized by Capital funding for the Tennessee portion of the MPO, Capital funding for the Virginia portion of the MPO, Operations and

Maintenance funding for the MPO by jurisdiction, Transit Capital funding for the MPO, and Transit Operating funding for the MPO.

To comply with the requirement of 23 CFR 450.322 (10), (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 percent per year (source: <http://inflationdata.com>). Based on the long term average 3 percent, revenues have been projected to increase at a 3 percent annual growth rate compounded annually over current funding levels. Consequently, project costs and program categories of the 2035 LRTP will be escalated at the same rate to reflect a likely project cost at "year of expenditure".

Revenue forecasts have been projected by horizon year (2015, 2025, and 2035) and reflect appropriate match requirements. Revenue forecasts have been shared with TDOT's Program Development Division and Multimodal Transportation Resources Division and have received preliminary confirmation to revenue assumptions. Additionally, these preliminary revenue forecasts were presented at the Kingsport MPO Executive Board Meeting November 29, 2011 and shared with Kingsport Area Transit System (KATS) staff.

### **Requested Action**

To fulfill federal planning requirements relative to the Financial Plan of the MPO's long range transportation plan, we are requesting your concurrence with the revenue forecast assumptions of the Financial Plan for use in the Kingsport MPO 2035 Long Range Transportation Plan. Once we receive concurrence on the revenue assumptions we will move to the next stage of the Financial Plan which is the balancing of project costs, reflecting year of expenditure cost estimates, to available revenues.

Should you have any questions regarding this memorandum or the attached items, please let me know.

Attachments:

- KAMPO 2035 LRTP Historic Revenues.PDF (electronic file)
- KAMPO 2035 LRTP Financial Plan.PDF (electronic file)

**Kingsport MPO**  
**2035 Long Range Transportation Plan**  
**Financial Plan - Historic Revenues**

## Summary of Historic Transportation Expenditures within the Kingsport MPO Area (1980-2010)

Project Costs are Estimated Costs based on Historic TIPs and Plans

| Kingsport MPO - TN Projects: 1980-1995        |   |                             |                      |
|---|---|-----------------------------|----------------------|
| Project Name                                  | Location / Type Improvement   | Source                      | Estimated Cost       |
| Airport Parkway / SR 357                      | I-81 to SR 75 / Tri-Cities Airport; construct new 4-lanes                           | State/State STP             | \$20,000,000         |
| Brookside Drive                               | Stone Dr. to Pavilion Dr; reconstruct and widen to 3-4 lanes                        | City of Kingsport           | \$2,000,000          |
| Stone Drive at Clinchfield Street             | Intersection; reconstruct to improve geometry and turning lanes                     | Local STP                   | \$900,000            |
| Eastman Road, North                           | Stone Drive to Ft. Henry Drive; reconstruct to 4-5 lanes                            | Local STP                   | \$3,600,000          |
| Fort Henry Drive Bridge                       | Over Holston River; construct new 2 lane bridge (southbound)                        | Federal Bridge              | \$5,000,000          |
| Fort Robinson Drive                           | Center St. to Union St.; reconstruct to 4 lanes (part of Center St. reconstruction) | State/State STP             | \$1,000,000          |
| Granby Road                                   | Stone Drive to ½ Mile North; reconstruct / widen                                    | City of Kingsport           | \$1,000,000          |
| Harbor Chapel Road at Memorial Boulevard      | Intersection; widen shoulders / travel lanes, add turning lane                      | City of Kingsport           | \$1,000,000          |
| Interstate 181 at Meadowview Parkway          | MM 52; construct new diamond interchange  | State/State STP             | \$2,500,000          |
| Interstate 81                                 | SR 126 to SR 93 (Fall Branch)   | Federal Interstate/NHS      | \$50,000,000         |
| Interstate 181 (now I-26)                     | Eastern Star Road to Virginia Line; construct new 4 lanes                           | Federal Interstate/NHS      | \$60,000,000         |
| John B. Dennis Highway / SR 93                | Stone Drive to Bloomingdale Pike; construct new 4 lanes with median                 | State/State STP             | \$8,000,000          |
| Lewis Lane                                    | Stone Drive to ¼ Mile North; reconstruct to 4 lanes                                 | City of Kingsport           | \$500,000            |
| Lincoln Street at John B. Dennis              | Intersection; reconstruct   | State/State STP             | \$300,000            |
| Lincoln Street at Wilcox Drive                | Railroad Overpasses; construct new overpasses (replace old at Wilcox)               | Federal Bridge              | \$7,000,000          |
| Main Street (Kingsport)                       | Clinchfield St. to Cherokee St.; reconstruct / remodel (aesthetic)                  | Federal / City of Kingsport | \$3,000,000          |
| Manor Drive                                   | Manor Court to Tilthammer; construct new 2 lanes                                    | City of Kingsport           | \$300,000            |
| Meadowview Parkway                            | Wilcox Dr. to Saratoga Road; reconstruct Reservoir Rd to 4 lanes                    | Local STP                   | \$2,300,000          |
| Ravine Road                                   | Near Holston Valley Hospital; re-align for hospital development                     | City of Kingsport           | \$150,000            |
| Carter's Valley Road, West                    | U.S. 23 to Holston River; reconstruct, widen shoulders (remains 2-lanes)            | State/State STP             | \$500,000            |
| Eastern Star Road                             | Intersection with Fordtown Road; reconstruct / widen                                | Sullivan County             | \$200,000            |
| Fall Creek Road Bridge                        | Ft. P. Henry Lake to Fall Creek Road; construct new bridge (replace old)            | Federal Bridge              | \$3,000,000          |
| Jared Drive                                   | Moreland Drive to Wilcox Drive; Reconstruct to 4-5 lanes                            | Sullivan County             | \$4,000,000          |
| Moreland Drive                                | Fort Henry Drive to Jared Drive; reconstruct to 4-5 lanes                           | Sullivan County             | \$4,000,000          |
| New Moore Road                                | Reservoir Road to Wilcox Drive; reconstruct / widen                                 | Sullivan County             | \$1,000,000          |
| Rock Springs Road                             | I-181 to Moreland Drive; reconstruct and widen (remains 2 lanes)                    | Local STP                   | \$1,000,000          |
| Greenbelt (BikePed Trail)                     | 1993 - Phase 1 - Bike/Ped Trail   | Federal Enhancement         | \$112,000            |
| Ridgefields Road Bridge                       | Holston River at Netherland Inn Rd.; reconstruct to 3 lanes                         | State/State STP             | \$3,000,000          |
| Stone Drive, East                             | Morrison Ave to past Beechnut Drive   | State/State STP             | \$3,600,000          |
| Stone Drive at Netherland Inn Road            | Intersection; reconstruct – widen, add turning lanes                                | State/State STP             | \$2,000,000          |
| Wilcox Drive                                  | Lincoln Street to JB Dennis; reconstruct bridges, widen lanes                       | State/State STP             | \$10,000,000         |
| <b>Total Projects: 1980-1995 -----</b>        |   |                             | <b>\$200,962,000</b> |
| (Includes Interstate Projects: \$110,000,000) |   |                             |                      |

| Kingsport MPO - TN Projects: 1995-2005              |  |                   |                |
|---|--|-------------------|----------------|
| Project Name  | Location / Type Improvement  | Source            | Estimated Cost |
| SR 126 / Wilcox Dr at SR 93/JB Dennis               | Old Wilcox Dr. to JB Denis; Relocate (Ph I) - construct new 4-5 lanes          | State/State STP   | \$3,300,000    |
| SR 93 / JB Dennis                                   | Moreland Drive; widen bridge over Moreland and reconstruct to 6 lanes          | State/State STP   | \$5,000,000    |
| Gateway Industrial Access Road                      | Kendricks Ck. Rd at I-26; construct new 2 lanes                                | SIA (State)       | \$1,700,000    |
| Eastman Rd Bridge at Lincoln St.                    | Over Lincoln Street; reconstruct / repair bridge                               | City of Kingsport | \$500,000      |
| Stone Drive Bridge at Lynn Garden Dr                | Over Lynn Garden Drive; reconstruct / repair bridge                            | Federal Bridge    | \$500,000      |
| Park Street at Center Street                        | Intersection; install new signal with intersection imp's                       | Local STP         | \$130,000      |
| Shipp's Springs Road                                | Bloomingdale Road to Gravelly Road; reconstruct / widen                        | Sullivan County   | \$4,000,000    |
| Wilcox Drive / SR 93                                | Sullivan Gardens (Gaylemont to Lonestar Road); reconstruct to 4-5 lanes        | State/State STP   | \$7,000,000    |
| Wadlow Gap Road / SR 93                             | Va. Line to Bloomingdale Pike; widen to 4 lanes                                | State/State STP   | \$3,500,000    |
| Interstate 81; MM 56 Interchange (Sullivan Co)      | Kendricks Creek Rd. (now Tri-Cities Crossing); construct new interchange       | State/State STP   | \$6,500,000    |
| Eastern Star Road at Interstate 26 (Sullivan Co)    | I-26 interchange; reconstruct / widen existing ramps and bridge                | State/State STP   | \$2,300,000    |
| Lebanon Rd. at Kendricks Ck. Rd. (Sullivan Co)      | Intersection; Install new signal with minor geometric improvements             | Sullivan County   | \$70,000       |
| Lakecrest Drive Railroad Crossing (Sullivan Co)     | At-Grade Railroad Crossing; Install new gates and warning signals              | Federal Safety    | \$150,000      |
| Midland Drive at Fort Henry Drive                   | Intersection; install new signal with intersection imp's                       | Local STP         | \$430,000      |
| John B. Dennis at New Wilcox Dr.                    | Terminus of New Wilcox Drive / SR 126; Install new signal                      | State             | \$250,000      |
| Thornton / Atoka at Ft. Henry Dr.                   | Intersections; install new signals with development                            | Private           | \$200,000      |
| Ridgefields Road at Netherland Inn Rd.              | Intersection; install new signal   | Local STP         | \$45,000       |
| North Central Ave. (Hawkins Co)                     | Main Street to Miller Woods Rd.; reconstruct and widen to 3 lanes              | State/State STP   | \$2,500,000    |
| N. Central Ave. at N Southern Railroad (Hawkins Co) | Railroad Overpass near Main St.; Construct new railroad overpass (replace old) | State/State STP   | \$3,100,000    |
| N. Central Ave Signal (Hawkins Co)                  | Intersection with U.S. 11-W; install new signal                                | Federal Safety    | \$65,000       |
| Goshen Valley Rd. (Hawkins Co)                      | Intersection with U.S. 11-W; install new signal                                | Federal Safety    | \$65,000       |
| Silver Lake Rd. (Hawkins Co)                        | Intersection with U.S 11-W; reconstruct and improve signal                     | Local STP         | \$330,000      |

## Summary of Historic Transportation Expenditures within the Kingsport MPO Area (1980-2010)

Project Costs are Estimated Costs based on Historic TIPs and Plans

| Kingsport MPO - TN Projects: 1995-2005    |  |                     |                     |
|---|--|---------------------|---------------------|
| Greenbelt (BikePed Trail)                 | 1996 - Bike/Ped Trail  | Federal Enhancement | \$120,000           |
| Greenbelt (BikePed Trail)                 | 1996 - Bike/Ped Trail  | Federal Enhancement | \$157,000           |
| Greenbelt (BikePed Trail)                 | 1997 - Bike/Ped Trail Sections #3, #4, and #6  | Federal Enhancement | \$250,000           |
| Hawkins County Bicycle Trail              | 1997 - Marking/signing existing roads to create a trail to link Sullivan Co and Hamblen Co | Federal Enhancement | \$8,000             |
| Greenbelt (BikePed Trail)                 | 1998 - Continuation of Bike/Ped Trail  | Federal Enhancement | \$250,000           |
| Greenbelt (BikePed Trail)                 | 2001 - Bike/Ped Trail  | Federal Enhancement | \$301,000           |
| SR 75 / Gray Station Road (Washington Co) | Within MPO Area (1 mile); reconstruct / widen to 5 lanes                                   | State/State STP     | \$3,000,000         |
| Harbor Chapel Road at SR 126              | Intersection; install new signal   | City of Kingsport   | \$20,000            |
| Stone Drive at Idlehour Road              | Intersection; install new signal and link to closed-loop system                            | Private             | \$60,000            |
| Stone Drive at Lawson Drive               | Intersection; install new signal   | Private             | \$150,000           |
| Stone Drive at Deneen Lane                | Intersection; install new signal   | Private             | \$250,000           |
| <b>Total Projects: 1995-2005 -----</b>    |  |                     | <b>\$46,201,000</b> |

| Kingsport MPO - TN Projects: 2005-2010                                     |  |                               |                      |
|--|--|-------------------------------|----------------------|
| Project Name   | Location / Type Improvement  | Source                        | Estimated Cost       |
| ARRA Paving  | Center St, Eastman Rd, Bloomingdale Pk, Clinchfield St, Orebank Rd Mill & install new pavement                       | ARRA                          | \$2,000,000          |
| State Route 126  | Centerline rumble-strips; safety improvements  | Federal Safety                | \$350,000            |
| Harbor Chapel Road   | (SR 126 to Cook's Valley Road) – reconstruct   | City of Kingsport             | \$1,500,000          |
| U.S. 11-W (Stone Drive)  | Intersection of U.S. 11-W (Stone Drive) and Cleek Road - reconstruct   | City of Kingsport             | \$500,000            |
| Gibson Mill Road / Watauga Street  | Roundabout – install new "roundabout"  | City of Kingsport             | \$800,000            |
| Gibson Mill Road   | Re-Alignment (Phase I) – new construction (relocation)   | City of Kingsport/<br>Private | \$3,000,000          |
| Rock Springs Road – Phase I  | Rock Springs Road – Phase I (not state route section) – widening   | City of Kingsport             | \$1,300,000          |
| Netherland Inn Rd / Center Street / Industry Drive                         | Netherland Inn Rd / Center Street / Industry Drive – install new "roundabout"  | City of Kingsport             | \$800,000            |
| Pavilion Drive at John B. Dennis Highway                                   | Pavilion Drive at John B. Dennis Highway – construct new signal  | Local STP                     | \$350,000            |
| Greenbelt (BikePed Trail)  | 2005 - Bike/Ped Trail (Sections 1 and 3)   | Federal Enhancement           | \$424,000            |
| Netherland Inn Road Bridge Replacement                                     | 2008 - Netherland Inn Road over North Fork Holston River in Sullivan / Hawkins County                                | Federal Bridge                | \$3,300,000          |
| Safe Routes to School  | 2008 - Sidewalk construction, crosswalk improvements, and signage Kennedy Elementary and Roosevelt Elementary (2008) | SRTS                          | \$216,000            |
| Safe Routes to School  | 2010 - Sidewalk construction, crosswalks, and signage Jackson Elementary School (2010)                               | SRTS                          | \$173,000            |
| Greenbelt (Cherokee to Center Street) – new section                        | Greenbelt (Cherokee to Center Street) – new section  | Federal Enhancement           | \$260,000            |
| Broad Street   | Install streetscaping items on Broad Street (includes 2 new roundabouts)   | Federal Enhancement           | \$700,000            |
| Reconstruct Historic "Bank Barn" (Transportation Museum) at Netherland Inn | Reconstruct Historic "Bank Barn" (Transportation Museum) at Netherland Inn   | Federal Enhancement           | \$600,000            |
| <b>Total Projects: 2005-2010 -----</b>                                     |  |                               | <b>\$16,273,000</b>  |
| <b>Total Projects Kingsport MPO TN – 1980-1995 + 1995-2005 + 2005-2010</b> |  |                               | <b>\$263,436,000</b> |

| Kingsport MPO - TN Projects<br>1980-2010<br>Total By Source (including Interstates) |  | City of Kingsport      | \$10,370,000  |
|---|--|------------------------|---------------|
|   |  | Sullivan County        | \$13,270,000  |
|   |  | Local STP              | \$12,085,000  |
|   |  | State/State STP        | \$89,050,000  |
|   |  | Federal Safety         | \$630,000     |
|   |  | Federal Enhancement    | \$3,182,000   |
|   |  | Federal SRTS           | \$389,000     |
|   |  | Federal Bridge         | \$18,800,000  |
|   |  | Federal Interstate/NHS | \$110,000,000 |
|   |  | Federal ARRA           | \$2,000,000   |
|   |  | Private                | \$3,660,000   |

|   |                    |
|---|--------------------|
| <b>Average Annual<br/>Federal Funds (All)</b> | <b>\$7,871,200</b> |
|---|--------------------|

**Kingsport Area MPO  
2035 Long Range Transportation Plan  
Virginia DOT Federal and State Highway Capital Funds - Historic**

| Virginia Revenue Sources  | Average Annual Allocation | FY2008               | FY2009            | FY2010              | FY2011            | FY2012              | FY2013            | FY2014           | FY2015            |
|---|---------------------------|----------------------|-------------------|---------------------|-------------------|---------------------|-------------------|------------------|-------------------|
| National Highway System (NHS) (80%/20%)   | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| Interstate Maintenance (I/M) Funds (90%/10%)  | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| Surface Transportation Program (S-STP) Funds<br>State Selected Projects (80%/20%)     | \$ 3,160,263              | \$ 16,833,000        | \$ 330,704        | \$ 7,252,000        | \$ -              | \$ -                | \$ 226,721        | \$ 22,640        | \$ 617,039        |
| Safety Funding (90%/10%)  | \$ 475,281                |                      |                   |                     |                   |                     | \$ 475,281        |                  |                   |
| Bridge Rehabilitation & Replacement (BRR or BR)<br>(80%/20%)                          | \$ 254,842                | \$ 52,000            | \$ 594,113        | \$ 130,506          | \$ 40,000         | \$ 457,592          |                   |                  |                   |
| Surface Transportation Program (L-STP) Funds<br>MPO Selected Projects (80%/20%)       | \$ 68,719                 | \$ 68,719            | \$ 68,719         | \$ 68,719           | \$ 68,719         | \$ 68,719           |                   |                  |                   |
| Enhancement Funds (80%/20%)   | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| Safe Routes to School (100% Federal)  | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| Other Federal-Aid Programs & Discretionary Funds<br>(e.g. APD, ARRA, TIGER) (80%/20%) | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| State Funds (STA or SP and SPPR) (100% State)   | \$ 976,929                | \$ -                 |                   |                     |                   | \$ 1,953,857        |                   |                  |                   |
| Gate City, VA (100% Local)  | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| Webber City, VA (100% Local)  | \$ -                      | \$ -                 |                   |                     |                   |                     |                   |                  |                   |
| <b>Sub-Total (VA)</b>   | <b>\$ 4,936,034</b>       | <b>\$ 16,953,719</b> | <b>\$ 993,536</b> | <b>\$ 7,451,225</b> | <b>\$ 108,719</b> | <b>\$ 2,480,168</b> | <b>\$ 702,002</b> | <b>\$ 22,640</b> | <b>\$ 617,039</b> |

| FY12-FY15<br>Total STIP | FY12-FY15<br>Average |
|-------------------------|----------------------|
| \$ -                    | \$ -                 |
| \$ -                    | \$ -                 |
| \$ 1,316,623            | \$ 329,156           |
| \$ -                    | \$ -                 |
| \$ 2,174,549            | \$ 543,637           |
| \$ 68,719               | \$ 17,180            |
| \$ -                    | \$ -                 |
| \$ -                    | \$ -                 |
| \$ -                    | \$ -                 |
| \$ 1,956,857            | \$ 489,214           |
| \$ -                    | \$ -                 |
| \$ -                    | \$ -                 |
| <b>\$ 5,516,748</b>     | <b>\$ 1,379,187</b>  |

Source:  
Kingsport Area MPO Fiscal Year 2008-2011 Transportation Improvement Program, October 2007 and Fiscal Year 2011-2014 Transportation Improvement Program, October 2010  
Virginia Statewide Transportation Improvement Program Fiscal Years 2012-2015, July 2011

**Kingsport Area MPO**  
**2035 Long Range Transportation Plan**  
**Local Capital Funding**  
**Revenues/Expenditures - Historic**

| Review of City of Church Hill Local Transportation Capital Outlay Expenditures |                 |                |                |              |                                    |                 |                |                |                |                              |
|--|-----------------|----------------|----------------|--------------|------------------------------------|-----------------|----------------|----------------|----------------|------------------------------|
| Church Hill - 2009<br>Public Works   |                 |                |                |              | Church Hill - 2010<br>Public Works |                 |                |                |                | Church Hill                  |
| Highways and Streets   | Original Budget | Final Budget   | Actual         | Difference   | Highways and Streets               | Original Budget | Final Budget   | Actual         | Difference     | Annual<br>Average<br>Capital |
| Street Lighting  | 90,000          | 96,150         | 99,701         | 3,551        | Street Lighting                    | 100,500         | 87,050         | 86,997         | 53             |                              |
| Sign Parts and Supplies  | 5,000           | 2,250          | 2,214          | 36           | Sign Parts and Supplies            | 2,500           | 3,600          | 3,557          | 43             |                              |
| Traffic Light Maintenance  | 4,000           | 600            | 578            | 22           | Traffic Light Maintenance          | 4,000           | 500            | -              | 500            |                              |
| Materials Supplies   | -               | -              | -              | -            | Materials Supplies                 | 4,500           | 46,000         | 27,483         | 18,517         |                              |
| Capital Outlay/Paving  | 210,000         | 161,196        | 157,703        | 3,493        | Capital Outlay/Paving              | 300,000         | 278,850        | 169,234        | 109,616        |                              |
| <b>Total</b>   | <b>309,000</b>  | <b>260,196</b> | <b>260,196</b> | <b>7,102</b> | <b>Total</b>                       | <b>411,500</b>  | <b>416,000</b> | <b>287,271</b> | <b>128,729</b> |                              |

Source: 2009 City of Church Hill Financial Statements and 2010 City of Church Hill Financial Statements

| Review of Mount Carmel Local Transportation Capital Outlay Expenditures |                 |               |               |              |   |                 |                |                |               |                              |
|---|-----------------|---------------|---------------|--------------|---|-----------------|----------------|----------------|---------------|------------------------------|
| Mount Carmel - 2009<br>Highways and Streets                             |                 |               |               |              | Mount Carmel - 2010<br>Highways and Streets |                 |                |                |               | Mount Carmel                 |
| Highways and Streets  | Original Budget | Final Budget  | Actual        | Difference   | Highways and Streets                        | Original Budget | Final Budget   | Actual         | Difference    | Annual<br>Average<br>Capital |
| Street Lighting   | 43,000          | 44,126        | 40,736        | 3,390        | Street Lighting                             | 63,000          | 58,600         | 49,610         | 8,990         |                              |
| Sign Parts and Supplies   | 1,650           | 846           | 845           | 1            | Sign Parts and Supplies                     | 2,000           | 2,350          | 2,302          | 48            |                              |
| Traffic Light Maintenance   | -               | -             | -             | -            | Traffic Light Maintenance                   | -               | 19,002         | 16,427         | 2,575         |                              |
| Materials Supplies  | 4,000           | 10,730        | 10,730        | -            | Materials Supplies                          | 21,352          | -              | -              | -             |                              |
| Capital Outlay/Paving   | 30,000          | 26,700        | 26,672        | 28           | Capital Outlay/Paving                       | -               | 33,750         | 33,750         | -             |                              |
| <b>Total</b>  | <b>78,650</b>   | <b>82,402</b> | <b>78,983</b> | <b>3,419</b> | <b>Total</b>                                | <b>86,352</b>   | <b>113,702</b> | <b>102,089</b> | <b>11,613</b> |                              |

Source: 2009 Town of Mount Carmel Financial Statements and 2010 Town of Mount Carmel Financial Statements

| Review of Sullivan County and Hawkins County Local Transportation Capital Outlay Expenditures |           |           |           |           |           |                  |                     |                  |
|---|-----------|-----------|-----------|-----------|-----------|------------------|---------------------|------------------|
| Capital Outlay  | FY 2006   | FY 2007   | FY 2008   | FY 2009   | FY 2010   | Average Annual   | Portion of MPO Area | Assumed Capital* |
| Sullivan County   | \$130,336 | \$477,250 | \$917,019 | \$351,422 | \$304,289 | <b>\$436,063</b> | 50%                 | <b>\$218,032</b> |
| Hawkins County  | \$372,564 | \$255,303 | \$267,470 | \$292,230 | \$300,725 | <b>\$297,658</b> | 10%                 | <b>\$29,766</b>  |

Source: <http://www.comptroller1.state.tn.us/TAG>

\* Assumed Capital Funds is based on a proportional share of the county within the MPO area

| Review of City of Kingsport Capital Improvement Programs - Locally Funded Transportation Projects |             |             |             |           |             |                    |
|---|-------------|-------------|-------------|-----------|-------------|--------------------|
| City of Kingsport   | FY 2008     | FY 2009     | FY 2010     | FY 2011   | FY 2012     | Average Annual     |
| Bonds & General Funds   | \$1,315,600 | \$1,490,000 | \$4,419,200 | \$600,000 | \$1,400,000 | <b>\$1,844,960</b> |

Source: City of Kingsport, TN Fiscal Year 2008-2009 Budget Book, Fiscal Year 2009-2010 Budget Book, Fiscal Year 2010-2011 Budget Book, Fiscal Year 2011-2012 Budget Book

**Kingsport Area MPO  
2035 Long Range Transportation Plan  
County and TDOT Operations and Maintenance Revenues/Expenditures - Historic**

| <b>Sullivan County</b>                 |                    |                    |                     |                    |                    |  | <b>Average Annual</b> |
|--|--------------------|--------------------|---------------------|--------------------|--------------------|--|-----------------------|
| <b>Detailed Expenditure Accounts</b>   | <b>FY 2006</b>     | <b>FY 2007</b>     | <b>FY 2008</b>      | <b>FY 2009</b>     | <b>FY 2010</b>     |  |                       |
| Administration                         | \$279,397          | \$301,107          | \$301,341           | \$313,119          | \$297,907          |  |                       |
| Asphalt Plant Operations               | \$501,762          | \$1,203,202        | \$1,111,000         | \$706,353          | \$683,043          |  |                       |
| Capital Outlay                         | \$130,336          | \$477,250          | \$917,019           | \$351,422          | \$304,289          |  | <b>\$436,063</b>      |
| Highway and Bridge Maintenance         | \$5,557,600        | \$6,125,766        | \$7,080,736         | \$6,915,775        | \$6,687,642        |  |                       |
| Operation and Maintenance of Equipment | \$446,483          | \$583,081          | \$589,476           | \$701,224          | \$644,049          |  |                       |
| Other Charges                          | \$116,551          | \$98,693           | \$113,660           | \$120,939          | \$87,376           |  |                       |
| Traffic Control                        | \$8,419            | \$8,746            | \$7,002             | \$11,580           | \$10,727           |  |                       |
| <b>Total</b>                           | <b>\$7,040,548</b> | <b>\$8,797,845</b> | <b>\$10,120,234</b> | <b>\$9,120,412</b> | <b>\$8,715,033</b> |  | <b>\$8,758,814</b>    |
| <b>Total (Without Capital Outlay)</b>  | <b>\$6,910,212</b> | <b>\$8,320,595</b> | <b>\$9,203,215</b>  | <b>\$8,768,990</b> | <b>\$8,410,744</b> |  | <b>\$8,322,751</b>    |

| <b>Hawkins County</b>                  |                    |                    |                    |                    |                    |  | <b>Average Annual</b> |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--|-----------------------|
| <b>Detailed Expenditure Accounts</b>   | <b>FY 2006</b>     | <b>FY 2007</b>     | <b>FY 2008</b>     | <b>FY 2009</b>     | <b>FY 2010</b>     |  |                       |
| Administration                         | \$150,424          | \$156,546          | \$166,217          | \$158,589          | \$153,754          |  |                       |
| Asphalt Plant Operations               | \$309,639          | \$215,617          | \$531,325          | \$493,306          | \$236,135          |  |                       |
| Capital Outlay                         | \$372,564          | \$255,303          | \$267,470          | \$292,230          | \$300,725          |  | <b>\$297,658</b>      |
| Highway and Bridge Maintenance         | \$1,901,768        | \$1,656,938        | \$1,511,211        | \$1,775,985        | \$2,140,427        |  |                       |
| Operation and Maintenance of Equipment | \$472,236          | \$38,147           | \$43,370           | \$52,474           | \$43,116           |  |                       |
| Other Charges                          | \$252,607          | \$383,525          | \$412,266          | \$363,815          | \$429,088          |  |                       |
| Traffic Control                        | \$148,114          | \$134,483          | \$127,091          | \$112,009          | \$123,078          |  |                       |
| <b>Total</b>                           | <b>\$3,607,352</b> | <b>\$2,840,559</b> | <b>\$3,058,950</b> | <b>\$3,248,408</b> | <b>\$3,426,323</b> |  | <b>\$3,236,318</b>    |
| <b>Total (Without Capital Outlay)</b>  | <b>\$3,234,788</b> | <b>\$2,585,256</b> | <b>\$2,791,480</b> | <b>\$2,956,178</b> | <b>\$3,125,598</b> |  | <b>\$2,938,660</b>    |

Source: <http://www.comptroller1.state.tn.us/TAG>

| <b>TDOT - Hawkins County</b>        | <b>FY 2006</b>     | <b>FY 2007</b>     | <b>FY 2008</b>     | <b>FY 2009</b>     | <b>FY 2010</b>     | <b>FY 2011</b>     | <b>Average Annual</b> |
|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Bridge Replacement                  | \$103,178          | \$76,600           | \$87,600           | \$115,700          | \$92,700           | \$89,900           |                       |
| Highway Betterments and Maintenance | \$1,051,228        | \$1,782,500        | \$2,124,000        | \$1,509,200        | \$1,417,600        | \$1,519,400        |                       |
| Safe Growth Grants - Litter         | \$39,115           | \$66,800           | \$66,100           | \$48,700           | \$39,800           | \$39,800           |                       |
| State Aid                           | \$192,734          | \$273,300          | \$311,100          | \$232,200          | \$221,700          | \$221,700          |                       |
| Highway Construction                | \$0                | \$457,100          | \$0                | \$0                | \$0                | \$0                |                       |
|                                     | <b>\$1,386,255</b> | <b>\$2,656,300</b> | <b>\$2,588,800</b> | <b>\$1,905,800</b> | <b>\$1,771,800</b> | <b>\$1,870,800</b> |                       |
| <b>TDOT O &amp; M</b>               | <b>\$1,386,255</b> | <b>\$2,199,200</b> | <b>\$2,588,800</b> | <b>\$1,905,800</b> | <b>\$1,771,800</b> | <b>\$1,870,800</b> | <b>\$1,953,776</b>    |

| <b>TDOT - Sullivan County</b>       | <b>FY 2006</b>     | <b>FY 2007</b>     | <b>FY 2008</b>     | <b>FY 2009</b>     | <b>FY 2010</b>     | <b>FY 2011</b>     | <b>Average Annual</b> |
|-------------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-----------------------|
| Bridge Replacement                  | \$65,088           | \$76,600           | \$87,600           | \$85,100           | \$74,500           | \$69,400           |                       |
| Highway Betterments and Maintenance | \$1,697,485        | \$1,782,500        | \$2,124,000        | \$2,430,400        | \$2,278,800        | \$2,454,300        |                       |
| Safe Growth Grants - Litter         | \$66,849           | \$66,800           | \$66,100           | \$86,300           | \$66,100           | \$66,100           |                       |
| State Aid                           | \$265,366          | \$273,300          | \$311,100          | \$319,600          | \$305,100          | \$305,100          |                       |
| Highway Construction                | \$1,320,000        | \$457,100          | \$0                | \$0                | \$1,096,000        | \$1,390,000        |                       |
|                                     | <b>\$3,414,788</b> | <b>\$2,656,300</b> | <b>\$2,588,800</b> | <b>\$2,921,400</b> | <b>\$3,820,500</b> | <b>\$4,284,900</b> |                       |
| <b>TDOT O &amp; M</b>               | <b>\$2,094,788</b> | <b>\$2,199,200</b> | <b>\$2,588,800</b> | <b>\$2,921,400</b> | <b>\$2,724,500</b> | <b>\$2,894,900</b> | <b>\$2,570,598</b>    |

|   |                    |                    |                    |                    |                    |                    |                    |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| <b>TDOT (Hawkins &amp; Sullivan Co)</b> | <b>\$3,481,043</b> | <b>\$4,398,400</b> | <b>\$5,177,600</b> | <b>\$4,827,200</b> | <b>\$4,496,300</b> | <b>\$4,765,700</b> | <b>\$4,524,374</b> |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|

Source: <http://www.capitol.tn.gov/joint/staff/budget-analysis/county-reports/>

**Kingsport Area MPO**  
**2035 Long Range Transportation Plan**  
**Municipal and VDOT**  
**Operations and Maintenance Revenues/Expenditures - Historic**

| City of Church Hill          | FY 2006          | FY 2007          | FY 2008          | FY 2009          | FY 2010          |
|------------------------------|------------------|------------------|------------------|------------------|------------------|
| Total Revenues               |                  |                  | \$3,782,096      | \$4,133,218      | \$3,737,126      |
| Total Expenses               |                  |                  | \$3,457,990      | \$4,178,863      | \$3,957,584      |
| Public Works                 |                  |                  | \$835,288        | \$1,316,030      | \$1,102,088      |
| % of Total Expenses          |                  |                  | 24%              | 31%              | 28%              |
| <b>State Street Aid Fund</b> | <b>\$180,088</b> | <b>\$179,316</b> | <b>\$180,600</b> | <b>\$168,200</b> | <b>\$169,100</b> |
| Gas & Motor Fuel Tax         | \$180,088        | \$179,316        | \$180,600        | \$168,200        | \$169,100        |
| <b>Church Hill</b>           |                  |                  |                  |                  |                  |
| Maintained Road Miles        | 47               | 47               | 47               | 47               | 47               |
| Average Cost Per Mile        | \$3,832          | \$3,815          | \$3,843          | \$3,579          | \$3,598          |

| Average Annual |                       |
|----------------|-----------------------|
| \$175,461      | State Street Aid Fund |
| \$175,461      | Gas & Motor Fuel Tax  |

| Average Annual |                       |
|----------------|-----------------------|
| \$3,733        | Average Cost Per Mile |

Source: City of Church Hill Annual Financial Statements Fiscal Years 2009 and 2010

| Town of Mount Carmel         | FY 2006          | FY 2007          | FY 2008          | FY 2009          | FY 2010          |
|------------------------------|------------------|------------------|------------------|------------------|------------------|
| Total Revenues               |                  |                  | \$3,070,353      | \$3,249,295      | \$2,938,358      |
| Total Expenses               |                  |                  | \$2,723,045      | \$2,702,180      | \$2,785,052      |
| Streets & Highways           |                  |                  | \$520,127        | \$507,143        | \$563,359        |
| % of Total Expenses          |                  |                  | 19%              | 19%              | 20%              |
| <b>State Street Aid Fund</b> | <b>\$145,954</b> | <b>\$145,340</b> | <b>\$146,400</b> | <b>\$136,300</b> | <b>\$137,100</b> |
| Gas & Motor Fuel Tax         | \$145,954        | \$145,340        | \$146,400        | \$136,300        | \$137,100        |
| <b>Mount Carmel</b>          |                  |                  |                  |                  |                  |
| Maintained Road Miles        | 45               | 45               | 45               | 45               | 45               |
| Average Cost Per Mile        | \$3,243          | \$3,230          | \$3,253          | \$3,029          | \$3,047          |

| Average Annual |                       |
|----------------|-----------------------|
| \$142,219      | State Street Aid Fund |
| \$142,219      | Gas & Motor Fuel Tax  |

| Average Annual |                       |
|----------------|-----------------------|
| \$3,160        | Average Cost Per Mile |

Source: Town of Church Hill Annual Financial Statements Fiscal Years 2009 and 2010

| City of Kingsport            | FY 2006            | FY 2007            | FY 2008            | FY 2009            | FY 2010            |
|------------------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| Total Revenues               | \$179,840,191      | \$193,551,866      | \$205,710,937      | \$199,035,603      | \$198,406,484      |
| Total Expenses               | \$171,270,949      | \$184,689,782      | \$199,455,599      | \$194,845,516      | \$198,406,484      |
| Public Works                 | \$11,638,000       | \$11,388,000       | \$7,878,342        | \$8,211,999        | \$8,749,825        |
| % of Total Expenses          | 7%                 | 6%                 | 4%                 | 4%                 | 4%                 |
| <b>State Street Aid Fund</b> | <b>\$2,088,549</b> | <b>\$1,774,006</b> | <b>\$2,172,728</b> | <b>\$2,079,429</b> | <b>\$2,488,545</b> |
| Gas & Motor Fuel Tax         | \$1,261,428        | \$1,267,240        | \$1,263,557        | \$1,184,789        | \$1,200,000        |
| Gen. Fund / Other Local      | \$827,121          | \$506,766          | \$909,171          | \$894,640          | \$1,288,545        |
| <b>Kingsport</b>             |                    |                    |                    |                    |                    |
| Maintained Road Miles        | 402                | 436                | 456                | 459                | 466                |
| Average Cost Per Mile        | \$5,195            | \$4,069            | \$4,765            | \$4,530            | \$5,340            |

| Average Annual |                         |
|----------------|-------------------------|
| \$2,120,651    | State Street Aid Fund   |
| \$1,235,403    | Gas & Motor Fuel Tax    |
| \$885,249      | Gen. Fund / Other Local |

| Average Annual |                       |
|----------------|-----------------------|
| \$4,780        | Average Cost Per Mile |

Source: City of Kingsport Annual Budget Book, Fiscal Years 2007, 2008, 2009, and 2010

| VDOT Maintained Lane Mileage By System, 2009 |             |            |               |            |             |            |                           |
|--|-------------|------------|---------------|------------|-------------|------------|---------------------------|
| Scott County                                 | Lane Miles  | Miles      | % of District | VA MPO     | % of County | Classified | Average Annual            |
| Interstate                                   | 0           | 0          | 0%            |            |             |            |                           |
| Primary                                      | 290         | 116        | 10%           |            |             |            |                           |
| Secondary                                    | 1395        | 697        | 11%           |            |             |            |                           |
| Urban  | 0           | 0          | 0%            |            |             |            |                           |
| Frontage Road                                | 7           | 3          | 6%            |            |             |            |                           |
| <b>Total</b>                                 | <b>1693</b> | <b>817</b> | <b>11%</b>    | <b>164</b> | <b>20%</b>  | <b>75</b>  |                           |
|  |             |            |               |            |             |            | Scott County \$15,475,915 |
|  |             |            |               |            |             |            | MPO-VA Area \$3,105,788   |
|  |             |            |               |            |             |            | MPO-VA Area \$3,105,788   |

Source: Mileage Tables The State Highway Systems, VDOT Maintenance Division, 2009

**Total VDOT Budget (without Urban dollars)**

| District                     | FY2012          | FY2013          | FY2014          | FY2015          | FY2016          | FY2017          | Average Annual  |
|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Bristol - District           | 135,400,000     | 138,400,000     | 141,000,000     | 143,800,000     | 146,700,000     | 149,700,000     | \$142,500,000   |
| <b>Average Cost Per Mile</b> | <b>\$17,994</b> | <b>\$18,393</b> | <b>\$18,738</b> | <b>\$19,110</b> | <b>\$19,496</b> | <b>\$19,895</b> | <b>\$18,938</b> |

Source: VDOT Maintenance and Operations, 2012-2017

| District Mileage   |            |             |                   |            |                     |             |
|--------------------|------------|-------------|-------------------|------------|---------------------|-------------|
| Bristol - District | Type       | Rural       | State Institution | State Park | Incorporated Places | Total       |
| Interstate         | 125        |             |                   |            |                     | 125         |
| Primary            |            | 1067        | 8                 | 10         | 108                 | 1193        |
| Secondary          |            | 5938        | 3                 | 190        | 20                  | 6150        |
| Urban              | 539        |             |                   |            |                     | 539         |
| Frontage           | 56         |             |                   |            |                     | 56          |
| <b>Total</b>       | <b>720</b> | <b>7004</b> | <b>12</b>         | <b>200</b> | <b>127</b>          | <b>8063</b> |

Source: Mileage Tables The State Highway Systems, VDOT Maintenance Division, 2009

| Total VDOT Budget (with Urban dollars) |                 |                 |                 |                 |                 |                 |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| District                               | FY2012          | FY2013          | FY2014          | FY2015          | FY2016          | FY2017          |
| Bristol - District                     | 148,900,000     | 152,500,000     | 155,700,000     | 159,000,000     | 162,500,000     | 166,100,000     |
| <b>Average Cost Per Mile</b>           | <b>\$18,466</b> | <b>\$18,913</b> | <b>\$19,310</b> | <b>\$19,719</b> | <b>\$20,153</b> | <b>\$20,599</b> |

Source: VDOT Maintenance and Operations, 2012-2017

**Kingsport Area MPO  
2035 Long Range Transportation Plan  
Transit Funding - Historic**

| <b>Funding Source/Amount Allocated</b>            | <b>FY2008</b>      | <b>FY2009</b>      | <b>FY2010</b>      | <b>FY2011</b>      | <b>FY2012</b>      | <b>FY2013</b>      | <b>FY2014</b>      | <b>Average</b>     |
|---|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
|   | <b>Available</b>   | <b>Annual</b>      |
| FTA - 5307 - Operating Funds (OP)                 | \$345,500          | \$587,000          | \$687,500          | \$667,500          | \$700,000          | \$750,000          | \$800,000          | \$648,214          |
| State Match Funds (OP)                            | \$172,750          | \$293,500          | \$343,750          | \$333,750          | \$350,000          | \$375,000          | \$400,000          | \$324,107          |
| Local Match Funds (OP)                            | \$172,750          | \$293,500          | \$343,750          | \$333,750          | \$350,000          | \$375,000          | \$400,000          | \$324,107          |
| <b>Total Allocated</b>                            | <b>\$691,000</b>   | <b>\$1,174,000</b> | <b>\$1,375,000</b> | <b>\$1,335,000</b> | <b>\$1,400,000</b> | <b>\$1,500,000</b> | <b>\$1,600,000</b> | <b>\$1,296,429</b> |
|   |                    |                    |                    |                    |                    |                    |                    |                    |
| FTA - 5307 - Capital and Planning Funds (CAP, PL) | \$692,000          | \$549,600          | \$448,000          | \$440,000          | \$440,000          | \$440,000          | \$400,000          | \$487,086          |
| State Match Funds (CAP, PL)                       | \$76,889           | \$61,067           | \$49,778           | \$48,889           | \$48,889           | \$48,889           | \$44,444           | \$60,886           |
| Local Match Funds (CAP, PL)                       | \$76,889           | \$61,067           | \$49,778           | \$48,889           | \$48,889           | \$48,889           | \$44,444           | \$60,886           |
| <b>Total Allocated</b>                            | <b>\$845,778</b>   | <b>\$671,733</b>   | <b>\$547,556</b>   | <b>\$537,778</b>   | <b>\$537,778</b>   | <b>\$537,778</b>   | <b>\$488,889</b>   | <b>\$608,858</b>   |
|   |                    |                    |                    |                    |                    |                    |                    |                    |
| <b>Amount Programmed to be Spent</b>              | <b>FY2008</b>      | <b>FY2009</b>      | <b>FY2010</b>      | <b>FY2011</b>      | <b>FY2012</b>      | <b>FY2013</b>      | <b>FY2014</b>      | <b>Average</b>     |
| FTA - 5307-Operating Funds (OP)                   | \$345,500          | \$587,000          | \$687,500          | \$667,500          | \$700,000          | \$750,000          | \$800,000          | \$648,214          |
| FTA - 5307 - Capital and Planning Funds (CAP, PL) | \$692,000          | \$549,600          | \$448,000          | \$240,000          | \$350,000          | \$250,000          | \$400,000          | \$418,514          |
| State Match Funds (CAP, PL)                       | \$86,500           | \$68,700           | \$56,000           | \$30,000           | \$175,000          | \$125,000          | \$200,000          | \$105,886          |
| State Match Funds (OP)                            | \$350,000          | \$293,750          | \$343,750          | \$333,750          | \$350,000          | \$375,000          | \$400,000          | \$349,464          |
| Local Match Funds (CAP, PL)                       | \$347,750          | \$362,450          | \$399,750          | \$30,000           | \$175,000          | \$125,000          | \$200,000          | \$234,279          |
| Local Match Funds (OP)                            | \$0                | \$125,000          | \$125,000          | \$333,750          | \$350,000          | \$375,000          | \$400,000          | \$244,107          |
| <b>Total Programmed</b>                           | <b>\$1,821,750</b> | <b>\$1,986,500</b> | <b>\$2,060,000</b> | <b>\$1,635,000</b> | <b>\$2,100,000</b> | <b>\$2,000,000</b> | <b>\$2,400,000</b> | <b>\$2,000,464</b> |

Source: Kingsport Area MPO Fiscal Year 2008-2011 Transportation Improvement Program, October 2007 and Fiscal Year 2011-2014 Transportation Improvement Program, October 2010

**Kingsport Area MPO  
2035 Long Range Transportation Plan  
Transit Funding (MEOC and NET Trans) - Historic**

| <b>MEOC (Operations)</b>       | <b>FY2006</b>     | <b>FY2007</b>     | <b>FY2008</b>       | <b>FY2009</b>       | <b>Annual Average</b> |
|--------------------------------|-------------------|-------------------|---------------------|---------------------|-----------------------|
| Operating Funds (Federal)      | \$ 447,503        | \$ 461,088        | \$ 488,858          | \$ 589,217          | \$ 496,667            |
| Operating Funds (State)        | \$ 172,022        | \$ 164,246        | \$ 174,244          | \$ 212,224          | \$ 180,684            |
| Operating Funds (Other)        | \$ 315,481        | \$ 328,342        | \$ 341,614          | \$ 416,993          | \$ 350,608            |
| <b>Operating Funds - Total</b> | <b>\$ 935,006</b> | <b>\$ 953,676</b> | <b>\$ 1,004,716</b> | <b>\$ 1,218,434</b> | <b>\$ 1,027,958</b>   |
| Operating Expenses             | \$ 935,006        | \$ 953,676        | \$ 1,004,716        | \$ 1,218,434        | \$ 1,027,958          |
| <b>MEOC (Capital)</b>          | <b>FY2006</b>     | <b>FY2007</b>     | <b>FY2008</b>       | <b>FY2009</b>       | <b>Annual Average</b> |
| Capital Funds (Federal)        | \$ 20,000         | \$ 48,000         | \$ 190,400          | \$ 216,000          | \$ 118,600            |
| Capital Funds (State)          | \$ 145,650        | \$ 219,240        | \$ 38,080           | \$ 36,000           | \$ 109,743            |
| Capital Funds (Other)          | \$ 9,350          | \$ 20,760         | \$ 9,520            | \$ 18,000           | \$ 14,408             |
| <b>Capital Funds - Total</b>   | <b>\$ 175,000</b> | <b>\$ 288,000</b> | <b>\$ 238,000</b>   | <b>\$ 270,000</b>   | <b>\$ 242,750</b>     |

| <b>NET Trans (Operations)</b>  | <b>FY2006</b>       | <b>FY2007</b>       | <b>FY2008</b>       | <b>FY2009</b>       | <b>Annual Average</b> |
|--------------------------------|---------------------|---------------------|---------------------|---------------------|-----------------------|
| Operating Funds (Federal)      | \$ 703,415          | \$ 785,622          | \$ 1,033,333        | \$ 1,173,789        | \$ 924,040            |
| Operating Funds (State)        | \$ 483,305          | \$ 516,914          | \$ 516,914          | \$ 598,056          | \$ 528,797            |
| Operating Funds (Other)        | \$ 692,219          | \$ 824,481          | \$ 799,585          | \$ 1,029,920        | \$ 836,551            |
| <b>Operating Funds - Total</b> | <b>\$ 1,878,939</b> | <b>\$ 2,127,017</b> | <b>\$ 2,349,832</b> | <b>\$ 2,801,765</b> | <b>\$ 2,289,388</b>   |
| Operating Expenses             | \$ 1,695,211        | \$ 2,127,017        | \$ 2,349,832        | \$ 2,801,765        | \$ 2,243,456          |
| <b>NET Trans (Capital)</b>     | <b>FY2006</b>       | <b>FY2007</b>       | <b>FY2008</b>       | <b>FY2009</b>       | <b>Annual Average</b> |
| Capital Funds (Federal)        | \$ 101,995          | \$ -                | \$ 196,170          | \$ 145,563          | \$ 110,932            |
| Capital Funds (State)          | \$ 13,000           | \$ -                | \$ 21,521           | \$ 18,195           | \$ 13,179             |
| Capital Funds (Other)          | \$ 24,005           | \$ -                | \$ 21,521           | \$ 18,195           | \$ 15,930             |
| <b>Capital Funds - Total</b>   | <b>\$ 139,000</b>   | <b>\$ -</b>         | <b>\$ 239,212</b>   | <b>\$ 181,953</b>   | <b>\$ 140,041</b>     |

Source:

VA Department of Rail & Public Transportation FY2006, FY2007, FY2008, FY2009 Rail & Public Transportation Improvement Program  
TDOT Multimodal Transportation Resource Division Annual Report (2006, 2007, 2008, and 2009)

**MEMORANDUM**

To: Chris Campbell, Kingsport Area MPO  
 From: Preston Elliott, RPM Transportation Consultants  
 Date: August 5, 2011  
 RE: TAZ Population and Employment Allocation Process & GIS Files  
 Base Year (2009) and Future Years (2015, 2025, & 2035)

The attached GIS shapefile contains the Traffic Analysis Zones (TAZs) and socioeconomic data for the Kingsport MPO 2009 calibrated Travel Demand Model (TDM). The TAZ socioeconomic data is for the Base Year (2009) and associated future horizon years (2015, 2025, and 2035).

Population and Employment Control Totals

The GIS shapefile includes allocations for population and employment to the TAZ for the years 2009 (previously provided as part of the calibration process), 2015, 2025, and 2035. Control totals for population and employment for the base year (2009) and future years (2015, 2025, and 2035) were established using *Woods & Poole* data for the MPO planning area. The following tables reflect the breakdown for both population and employment as established and endorsed by the MPO Board at their February 1, 2011 Meeting:

| <b>Kingsport MPO Planning Area<br/>Population Control Totals</b> |                |                |                |                |
|--|----------------|----------------|----------------|----------------|
| <b>MPO Counties</b>  | <b>2009</b>    | <b>2015</b>    | <b>2025</b>    | <b>2035</b>    |
| Sullivan County, TN  | 88,168         | 93,214         | 97,152         | 101,261        |
| Hawkins County, TN   | 22,794         | 28,535         | 31,672         | 34,869         |
| Washington County, TN  | 5,547          | 7,467          | 8,005          | 8,557          |
| Scott County, VA   | 7,685          | 8,356          | 8,262          | 8,180          |
| <b>Total</b>   | <b>124,194</b> | <b>137,573</b> | <b>145,091</b> | <b>152,868</b> |

| <b>Kingsport MPO Planning Area<br/>Employment Control Totals</b> |               |               |               |               |
|--|---------------|---------------|---------------|---------------|
| <b>MPO Counties</b>  | <b>2009</b>   | <b>2015</b>   | <b>2025</b>   | <b>2035</b>   |
| Sullivan County, TN  | 51,884        | 60,129        | 66,700        | 73,795        |
| Hawkins County, TN   | 4,406         | 6,156         | 6,746         | 7,383         |
| Washington County, TN  | 1,812         | 3,491         | 3,967         | 4,495         |
| Scott County, VA   | 3,550         | 4,110         | 4,547         | 4,991         |
| <b>Total</b>   | <b>61,652</b> | <b>73,886</b> | <b>81,960</b> | <b>90,664</b> |

In addition to total employment, jobs were sub-allocated into the following classifications:

| <b>Employment Classification</b> | <b>Includes</b>  | <b>NAICS Codes</b>                             |
|----------------------------------|--|--|
| Retail Employment                | Retail   | 44, 45   |
| Service Employment               | Services (professional, technical, health, educational, recreational, etc.), FIRE, Government, Federal                     | 52, 53, 54, 55, 61, 62, 71, 72, 81, 92, 99     |
| Basic Employment                 | Agricultural, forestry, fishing, mining, utilities, construction, manufacturing, wholesale, warehousing and transportation | 11, 21, 22, 23, 31, 32, 33, 42, 48, 49, 51, 56 |

The following table depicts the control totals for these employment classifications for the MPO planning area, (for the base year and horizon years) by employment classification and by MPO County.

| <b>Kingsport MPO Planning Area<br/>Employment By Job Classification</b> |               |               |               |               |
|---|---------------|---------------|---------------|---------------|
| <b>Retail Employment</b>  | <b>2009</b>   | <b>2015</b>   | <b>2025</b>   | <b>2035</b>   |
| Sullivan County, TN   | 6,311         | 6,692         | 6,833         | 6,905         |
| Hawkins County, TN  | 397           | 580           | 649           | 719           |
| Washington County, TN   | 135           | 413           | 460           | 507           |
| Scott County, VA  | 558           | 682           | 768           | 856           |
| <b>Total Retail Jobs</b>  | <b>7,401</b>  | <b>8,367</b>  | <b>8,710</b>  | <b>8,987</b>  |
|   |               |               |               |               |
| <b>Service Employment</b>   | <b>2009</b>   | <b>2015</b>   | <b>2025</b>   | <b>2035</b>   |
| Sullivan County, TN   | 22,465        | 28,502        | 33,046        | 38,056        |
| Hawkins County, TN  | 2,166         | 2,490         | 2,796         | 3,124         |
| Washington County, TN   | 1,337         | 2,068         | 2,327         | 2,605         |
| Scott County, VA  | 2,393         | 2,789         | 3,080         | 3,373         |
| <b>Total Service Jobs</b>   | <b>28,361</b> | <b>35,848</b> | <b>41,248</b> | <b>47,157</b> |
|   |               |               |               |               |
| <b>Basic Employment</b>   | <b>2009</b>   | <b>2015</b>   | <b>2025</b>   | <b>2035</b>   |
| Sullivan County, TN   | 23,108        | 24,935        | 26,821        | 28,835        |
| Hawkins County, TN  | 1,843         | 3,086         | 3,302         | 3,540         |
| Washington County, TN   | 340           | 1,009         | 1,180         | 1,383         |
| Scott County, VA  | 599           | 640           | 700           | 762           |
| <b>Total Basic Jobs</b>   | <b>25,890</b> | <b>29,671</b> | <b>32,002</b> | <b>34,520</b> |

Base Year (2009)

The sub-allocation of population for the Base Year was derived using 2000 US Census data at the block level and evaluating residential growth between 2000 and 2009 (from the County's CAAS data). New residential building growth was allocated to the block and the 2000 US Census block level average household size was used to derive total population. Values were smoothed to match the 2009 *Woods & Poole* control totals. Given the limited availability of 2010 US Census Block and Block Group data 2010 Census Tract level data was used for comparison and validation purposes.

For employment, *InfoGroup* data was used in tandem with the 2009 *Woods & Poole* data. Employment data from *InfoGroup* was geo-coded to each address and allocated to the TAZ. Employment totals were smoothed to match the *Woods & Poole* control totals and sub-allocated to the appropriate employment classification (retail, service, and basic employment).

Future Year (2015, 2025, and 2035)

Future horizon years (2015, 2025, and 2035) were sub-allocated based on stakeholder input received in December 2010 as well as looking at 2000 to 2010 growth (by Census Tract and Block Group for the complete MPO area). In addition to these variables, land availability was considered (looking at currently zoned residential, commercial, industrial and agricultural lands as well as lands classified as vacant - by TAZ) as well as the consideration of desirability factors (e.g. areas located inside an urban growth boundary as well as least topographic and floodplain constrained areas). Each of these factors were balanced to the control totals for population (for each county and each horizon year – 2015, 2025, & 2035) as well for employment (for each county as well as for each job classification – retail, service, and basic, by horizon year – 2015, 2025, & 2035).

Data Dictionary

The attached TAZ GIS file contains the following fields:

| Field Name | Description   |
|------------|---|
| NEW_ID     | TAZ Number  |
| AREA       | Geographic area of TAZ (Square Miles of TAZ)  |
| TAZ_TAZ    | Same as NEW_ID  |
| POP_09     | 2009 Total Population <i>(derived using number of new housing units times 2000 average household size at the Census Block level plus 2000 US Census data numbers)</i> |
| POP_15     | 2015 Total Population   |
| POP_25     | 2025 Total Population   |
| POP_35     | 2035 Total Population   |
| HH_09      | 2009 Total Number of Households <i>(derived from number of new residential housing units added from 2000 to 2009 from CAAS data plus 2000 Census data numbers)</i>    |
| HH_15      | 2015 Total Number of Households   |
| HH_25      | 2025 Total Number of Households   |
| HH_35      | 2035 Total Number of Households   |
| HHINC99    | 1999 Average Household Income   |
| HHINC09    | 2009 Average Household Income <i>(derived based on inflationary factor from 1999)</i>   |
| HHINC15    | 2015 Average Household Income <i>(derived based on inflationary factor from 1999)</i>   |
| HHINC25    | 2025 Average Household Income <i>(derived based on inflationary factor from 1999)</i>   |
| HHINC35    | 2035 Average Household Income <i>(derived based on inflationary factor from 1999)</i>   |
| RT_EMP09   | Retail Employment 2009  |
| SRV_EMP09  | Service Employment 2009   |
| BS_EMP09   | Basic Employment 2009   |
| TOT_EMP09  | Total Employment 2009   |
| RT_EMP15   | Retail Employment 2015  |
| SRV_EMP15  | Service Employment 2015   |
| BS_EMP15   | Basic Employment 2015   |
| TOT_EMP15  | Total Employment 2015   |
| RT_EMP25   | Retail Employment 2025  |
| SRV_EMP25  | Service Employment 2025   |
| BS_EMP25   | Basic Employment 2025   |
| TOT_EMP25  | Total Employment 2025   |
| RT_EMP35   | Retail Employment 2035  |
| SRV_EMP35  | Service Employment 2035   |
| BS_EMP35   | Basic Employment 2035   |
| TOT_EMP35  | Total Employment 2035   |

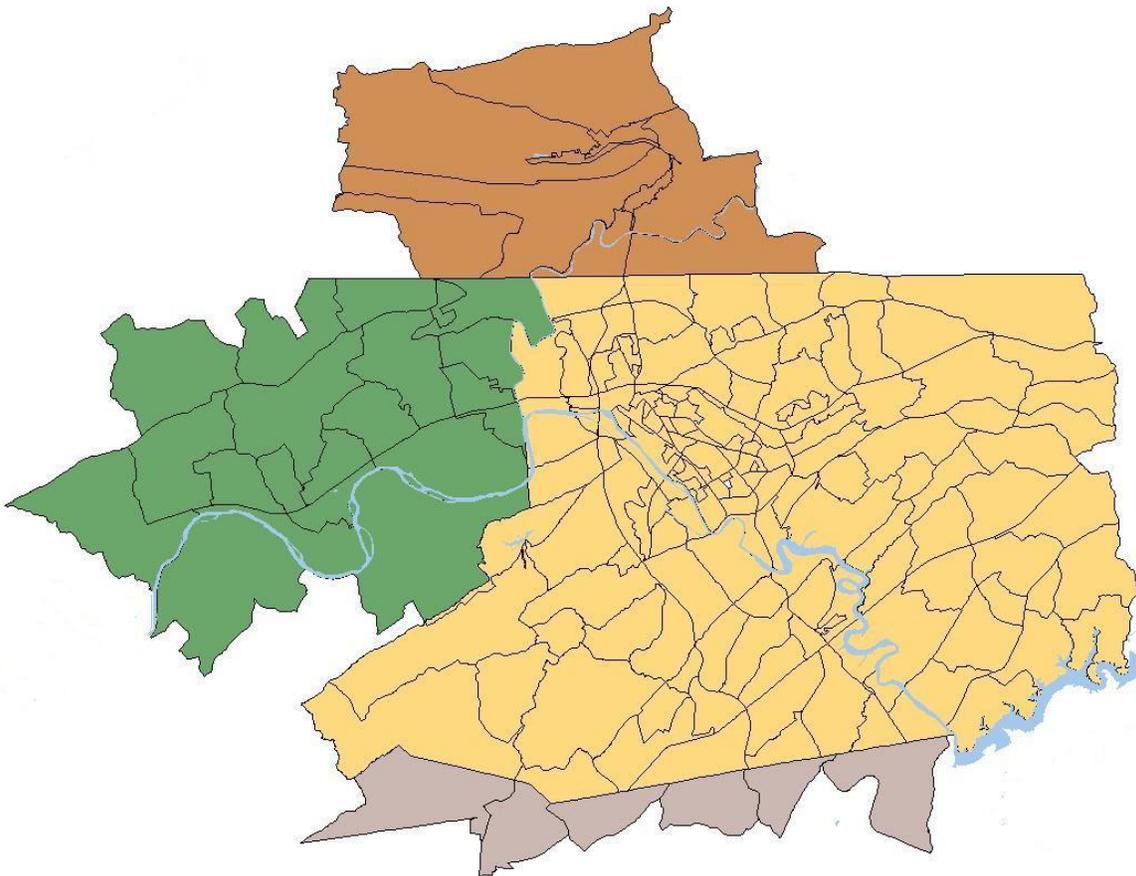
Should you have any questions with this data and/or process, do not hesitate to contact me.

cc: Robert Rock, TDOT  
 Donny Necessary, VDOT  
 Jack Jones, Alliance Transportation Group

**KINGSPORT**

**METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION**

**TRAVEL DEMAND MODEL**



**MODEL DEVELOPMENT & FORECAST REPORT**

FEBRUARY 2012

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**KINGSPORT**

**METROPOLITAN TRANSPORTATION PLANNING ORGANIZATION**

**TRAVEL DEMAND MODEL**

**MODEL DEVELOPMENT & FORECAST REPORT**

**February 2012**

**Prepared For**

**Kingsport Metropolitan Transportation Planning Organization**

**Prepared By**

**Alliance Transportation Group, Inc.**

**and**

**RPM Transportation Consultants, LLC**

This report documents the development and calibration of an urban travel demand model for the Kingsport MTPO which includes the cities of Kingsport, Church Hill, and Mt. Carmel Tennessee and the cities of Gate City and Weber City Virginia and portions of Sullivan, Hawkins, and Washington counties Tennessee and Scott county Virginia.

# TABLE OF CONTENTS

|  |    |
|--|----|
| Introduction .....                               | 1  |
| Highway Network And Traffic Analysis Zones ..... | 1  |
| Highway Network.....                             | 2  |
| Base Year Highway Network Creation .....         | 2  |
| Future Roadway Improvement.....                  | 2  |
| Functional Classification .....                  | 3  |
| Capacity.....                                    | 3  |
| Network Attributes .....                         | 4  |
| Traffic Analysis Zones.....                      | 5  |
| Attributes .....                                 | 6  |
| Area Types.....                                  | 7  |
| Demographics .....                               | 8  |
| Population and Household Demographics .....      | 8  |
| Employment.....                                  | 10 |
| Trip Generation .....                            | 11 |
| Household Stratification Model.....              | 11 |
| Vehicle Availability Model .....                 | 14 |
| Median Household Income.....                     | 16 |
| Person Trip Rates .....                          | 16 |
| Truck Trip Rates .....                           | 17 |
| Special Generators.....                          | 17 |
| Trip Distribution .....                          | 24 |
| Trip Length Frequency Distribution .....         | 24 |
| Auto Occupancy .....                             | 25 |
| Traffic Assignment .....                         | 25 |
| Model Calibration .....                          | 26 |
| Trip Distribution Calibration .....              | 26 |
| Volume Delay Function Calibration .....          | 28 |

|  |    |
|--|----|
| Model Validation.....  | 30 |
| Validation Criteria .....  | 30 |
| County-Wide .....  | 31 |
| Facility Type .....  | 34 |
| Area Type .....  | 35 |
| Screenlines .....  | 36 |
| Volume Range.....  | 37 |
| Conclusion.....  | 39 |
| Appendix A.....  | 40 |
| Capacity Calculation Methodology.....                                      | 40 |
| Uninterrupted Flow Facility .....  | 40 |
| Freeway Capacity .....   | 40 |
| Multilane Highway Capacity .....   | 41 |
| Rural Two-Lane Highway Capacity.....                                       | 41 |
| Interrupted Flow Facility.....   | 42 |
| Signalized Intersections .....   | 42 |
| Signalized Intersections – Left & Right Turn Lane Data Not Available ..... | 43 |
| Capacity Adjustment Assumptions .....                                      | 43 |
| Appendix B .....   | 46 |
| Appendix C .....   | 47 |
| Appendix D.....  | 49 |

## LIST OF TABLES

|   |    |
|---|----|
| Table 1: Functional Class.....  | 3  |
| Table 2: Required Network Attributes.....   | 4  |
| Table 3: Required Network Node Attributes .....   | 5  |
| Table 4: Area Types.....  | 7  |
| Table 5: Area Type Ranges.....  | 8  |
| Table 6: Population Data.....   | 9  |
| Table 7: Household Data.....  | 9  |
| Table 8: Employment Classifications .....   | 10 |
| Table 9: Employment By Classification .....   | 10 |
| Table 10: Household Stratification Model Estimation Results .....                       | 12 |
| Table 11: Household Stratification- CTPP Vs. Predicted (Based on Census 2000) .....     | 12 |
| Table 12: Vehicle Availability Model Estimation Results .....                           | 15 |
| Table 13: Observed Vehicle Availability Segmentation .....                              | 15 |
| Table 14: Daily Person Trips Per Household .....  | 16 |
| Table 15: Attraction Rates .....  | 17 |
| Table 16: Truck Trip Generation Rates .....   | 17 |
| Table 17: Special Generator Vehicle Trip Rates.....                                     | 19 |
| Table 18: Example Special Generator Vehicle Trips .....                                 | 19 |
| Table 19: External-Internal and Internal-External Vehicle Trips .....                   | 20 |
| Table 20: External-External Vehicle Trips .....   | 21 |
| Table 21: Gamma Function Parameters For Friction Factors .....                          | 25 |
| Table 22: Auto Occupancy Factors .....  | 25 |
| Table 23: Observed Vs. Modeled Trip Length (Minutes).....                               | 27 |
| Table 24: Volume Delay Function Parameters .....  | 29 |
| Table 25: Counted Vs. Modeled Volume .....  | 32 |
| Table 26: Total Flow By Functional Class .....  | 32 |
| Table 27: Truck/cmveh Flow By Functional Class.....                                     | 33 |
| Table 28: VMT Distribution Target By Facility Type.....                                 | 34 |
| Table 29: Modeled VMT Distribution By Facility Type .....                               | 34 |
| Table 30: FHWA Facility Type Validation Targets .....                                   | 34 |
| Table 31: Count Vs. Modeled By Facility Type.....                                       | 35 |
| Table 32: County Vs. Modeled By Area Type.....  | 35 |
| Table 33: Count Vs. Modeled Screenline Volume .....                                     | 36 |
| Table 34: Percent Difference Targets For Daily Volumes For Individual Links (FHWA)..... | 38 |
| Table 35: Percent RMSE Targets By Link Volume (TDOT).....                               | 38 |
| Table 36: Model Output Percent Deviation Vs. Table 34 .....                             | 38 |

|  |    |
|--|----|
| Table 37: Model Ouput %RMSE vs. Table 35.....                          | 39 |
| Table 38: Adjustment Factor For Lane Width.....                        | 43 |
| Table 39: Adjustment Factor For Right Shoulder Lateral Clearance ..... | 43 |
| Table 40: Adjustment Factor For Number of Lanes.....                   | 44 |
| Table 41: Adjustment Factor For Interchange Density.....               | 44 |
| Table 42: Adjustment Factor For Heavy Vehicles .....                   | 44 |
| Table 43: Adjustment Factor For Median Width .....                     | 45 |
| Table 44: Adjustment Factor For Access Density .....                   | 45 |
| Table 45: Adjustment Factor For Grades.....                            | 45 |
| Table 46: Volume Adjustment Factor For No Passing Zones* .....         | 45 |
| Table 47: Network Improvements.....                                    | 46 |
| Table 48: EI-IE.....   | 47 |
| Table 49: EE.....  | 48 |
| Table 50: 2015 Assign Statistics .....                                 | 49 |
| Table 51: 2025 Assign Statistics .....                                 | 50 |
| Table 52: 2035 Assign Statistics .....                                 | 51 |

## LIST OF FIGURES

|   |    |
|---|----|
| Figure 1: Kingsport MTPo Model TAZ Map .....                                | 6  |
| Figure 2: Household Stratification (HHSiZe=1) .....                         | 12 |
| Figure 3: Household Stratification (HHSiZe=2) .....                         | 13 |
| Figure 4: Household Stratification (HHSiZe=3) .....                         | 13 |
| Figure 5: Household Stratification (HHSiZe=4) .....                         | 14 |
| Figure 6: Kingsport External Stations.....                                  | 22 |
| Figure 7: Observed vs. Modeled HBW Trip Length Frequency Distribution.....  | 27 |
| Figure 8: Observed vs. Modeled HBO Trip Length Frequency Distribution ..... | 28 |
| Figure 9: Observed vs. Modeled NHB Trip Length Frequency Distribution.....  | 28 |
| Figure 10: Volume Delay Curves .....  | 29 |
| Figure 11: Scatter Plot of Modeled vs. Observed Link Traffic Volume .....   | 32 |
| Figure 12: Kingsport Screen Line .....                                      | 37 |

## INTRODUCTION

This report documents the methodology used and the steps taken in development of the Kingsport Metropolitan Transportation Planning Organization's (MTPO's) Travel Demand Model, which is referred to herein as the Kingsport MTPO Travel Demand Model or Kingsport MTPO model. The study area for this model includes Sullivan County, Tennessee including the City of Kingsport, Tennessee, and small portions of Hawkins and Washington Counties, Tennessee as well as a small portion of Scott County, Virginia. The model base year is 2009 and the model horizon years include 2015, 2025, and 2035.

The report describes the input data such as travel network geography and attributes, demographic estimates and forecasts, and characteristics of travel behavior for the study area that were obtained or developed and approved by the Kingsport Metropolitan Transportation Planning Organization (MTPO) for use in the model. This report also describes the statistical analysis of the input data used in model application as well as statistical analysis of the resulting output of each model component.

This statistical analysis includes a description of the methodology used at each step of model estimation, calibration, and validation. A complete set of calibration and validation data is provided for each model component. At each step in the process, care was taken to ensure that the Kingsport MTPO Travel Demand Model maintained a high level of predictive value. All changes and adjustments to model parameters were performed in a comprehensive and systemic manner and were applied uniformly and consistently across the entire model.

The resulting model provides a realistic and reliable predictor of magnitude and pattern of future travel in and around Kingsport area and should serve as a useful and informative tool for performing travel forecasts and analysis of proposed transportation projects.

## HIGHWAY NETWORK AND TRAFFIC ANALYSIS ZONES

The two basic building blocks of a travel demand model are the transportation system networks and the traffic analysis zones (TAZs). The networks represent the transportation system, including different categories of roads (such as freeways, arterials, collectors, ramps, etc.). The TAZs are geographical areas that link land uses with the transportation system. The data describing socioeconomic and demographic characteristics of the TAZs are tied to the

transportation system using zonal centroids and their associated centroid connectors. The network and zonal densities (granularity) of these two elements should be relatively consistent in order to produce realistic loading of traffic onto the transportation system.

## HIGHWAY NETWORK

The Kingsport MTPO Travel Demand Model Highway Network geographic layer contains roadway links and attributes for 2009. It is expected that the networks for the Kingsport MTPO Travel Demand Model will be continuously modified to add detail for specific projects and analysis needs. To make the editing of the networks as easy as possible, the model uses the state-of-the-practice technique of having a master line layer from which networks for various years and modes can be extracted. The companion document *Kingsport Area MTPO Travel Demand Model Users Manual* (Users Manual) provides detail on how to work with multi-year networks.

## BASE YEAR HIGHWAY NETWORK CREATION

The GIS map data provided by Kingsport Area MTPO, supplemented by Census 2000 TIGER line files were used to create a 2009 base year network of roadway links depicting the attributes of the transportation system. This road network was further refined with the TAZ structure development in an iterative process that also incorporated Census 2000 information and aerial photography.

The Consultant Team obtained information on roadway improvement projects from Kingsport MTPO. The projects that have been completed prior to year 2009 are incorporated in the base year network.

## FUTURE ROADWAY IMPROVEMENT

Because the travel demand model will serve as an aid to defining the long range transportation needs for the study area, the base year network was updated to the horizon years for different scenarios based on information about the future roadway improvements provided by Kingsport MTPO. Five future networks are created for the study area: the existing plus committed (E+C) network, the Vision Plan network, 2015 network, 2025 network and 2035 network. The E+C highway network was built from the base year network by adding future committed facilities to the base year network, and the three future-year networks and Vision network were built by adding future candidate projects to the base year network. Appendix B shows the future roadway improvement for each horizon year.

## FUNCTIONAL CLASSIFICATION

The functional class of roadways is an attribute that defines roadways in terms of their operational and performance characteristics. This attribute allows roadways to be combined into analysis groups or facility types based upon the similarities of their characteristics.

The model files provided by Kingsport MTPo contained functional classification information for the road network. As shown in Table 1, the Consultant Team coded FHWA functional classes onto the roadway network based on the functional and location information of links from the original GIS data. This process also included coding related attributes such as numbers of lanes; presence of left turn lanes at major intersections; and posted speed information as determined from aerial photography.

TABLE 1: FUNCTIONAL CLASS

| FHWA Functional Classification |    | Description              | Functional Class Number for Model |
|--------------------------------|----|--------------------------|-----------------------------------|
| Rural                          | 01 | Interstate               | 1                                 |
|                                | 02 | Other Principal Arterial | 2                                 |
|                                | 06 | Minor Arterial           | 6                                 |
|                                | 07 | Major Collector          | 7                                 |
|                                | 08 | Minor Collector          | 8                                 |
|                                | 09 | Local                    | 9                                 |
| Urban                          | 11 | Interstate               | 11                                |
|                                | 12 | Freeway/Expressway       | 12                                |
|                                | 14 | Other Principal Arterial | 14                                |
|                                | 16 | Minor Arterial           | 16                                |
|                                | 17 | Collector                | 17                                |
|                                | 19 | Local                    | 19                                |
|                                | NA | Ramp                     | 20                                |
|                                | NA | Centroid Connector       | 0                                 |

## CAPACITY

Link capacity was calculated based on the methodology provided by the Highway Performance Monitoring System Field Manual, which conforms to the Highway Capacity Manual 2000 (HCM

2000). The methodology was based on service flow rates for level of service E for the peak direction, see details in Appendix A to this report.

#### NETWORK ATTRIBUTES

Network attributes define how the transportation system interacts with its various components given a specific demand, and are used during the execution of the travel demand model. The required network attributes for each year are presented in Table 2.

TABLE 2: REQUIRED NETWORK ATTRIBUTES

| Field         | Layer   | Description  |
|---------------|---------|--|
| FUNCCCLASS_ID | Network | Functional class ID  |
| Rd_Name       | Network | Road name  |
| LaneConfig    | Network | Contains a code used to determine the lane group configuration (L1LS0T3RS1R1). Code is # dedicated left, # shared left, # through, # shared right, # dedicated right |
| LanesAB       | Network | Directional # of lanes   |
| LanesBA       | Network | Directional # of lanes   |
| PostedSpeed   | Network | Posted speed limit of road   |
| Div           | Network | Flag denoting divided or undivided road 1 = divided, 0 = undivided   |
| Shoulder      | Network | Flag denoting shoulders 1 = shoulder, 0 = no shoulder  |
| ShoulderWidth | Network | Width in feet of the shoulder  |
| Type          | Node    | Flag denoting signalized or stop sign intersection<br>1 = signalized, 2 = stop sign  |
| Area_Type     | Network | Flag denoting the intensity of land use  |
| Terrain       | Network | Flag denoting the topology of land   |
| Parking       | Network | Parking value to use for number of parking movements   |
| ADT           | Network | Annual Average Daily Traffic (AADT)  |
| Alpha         | Network | BPR function parameter   |
| Beta          | Network | BPR function parameter   |
| AvgADT*       | Network | AADT based on group summation of links with like names   |
| AB_Speed*     | Network | Directional speed  |
| BA_Speed*     | Network | Directional speed  |
| AB_Time*      | Network | Directional Time   |
| BA_Time*      | Network | Directional Time   |

|   |         |                                 |
|---|---------|---------------------------------|
| AB_CAPACITY*  | Network | Directional capacity            |
| BA_CAPACITY*  | Network | Directional capacity            |
| AB_CapacityPeak*  | Network | Directional peak capacity       |
| BA_CapacityPeak*  | Network | Directional peak capacity       |
| IntCap*   | Network | Intersection capacity           |
| IntCapPeak*   | Network | Intersection peak capacity      |
| IntTime*  | Network | Intersection time               |
| AB_ASSNCAP*   | Network | Capacity for traffic assignment |
| BA_ASSNCAP*   | Network | Capacity for traffic assignment |
| AB_EVALCAP*   | Network | Evaluation Capacity             |
| BA_EVALCAP*   | Network | Evaluation Capacity             |
| *These fields are populated by the network update macro |         |                                 |

The network node layer provides necessary zone and traffic control information. Table 3 lists the attributes required on the roadway network's node layer.

TABLE 3: REQUIRED NETWORK NODE ATTRIBUTES

| Field | Layer | Description  |
|-------|-------|--|
| Type  | Node  | Flag denoting signalized/stop sign intersection, or centroid: 1= signalized, 2= stop sign, 99= internal zone centroid, 100= external zone centroid |

## TRAFFIC ANALYSIS ZONES

The Kingsport MTPo model area includes Sullivan County and the contiguous urbanized portion of Hawkins and Washington County plus Scott County, VA. The MTPo planning area was subdivided into 190 TAZs, 20 of which are located in Hawkins County, 6 located in Washington County, and 10 located in Scott County, VA with the remainder located in Sullivan County. Figure 1 depicts the TAZ structure of the Kingsport MTPo model.

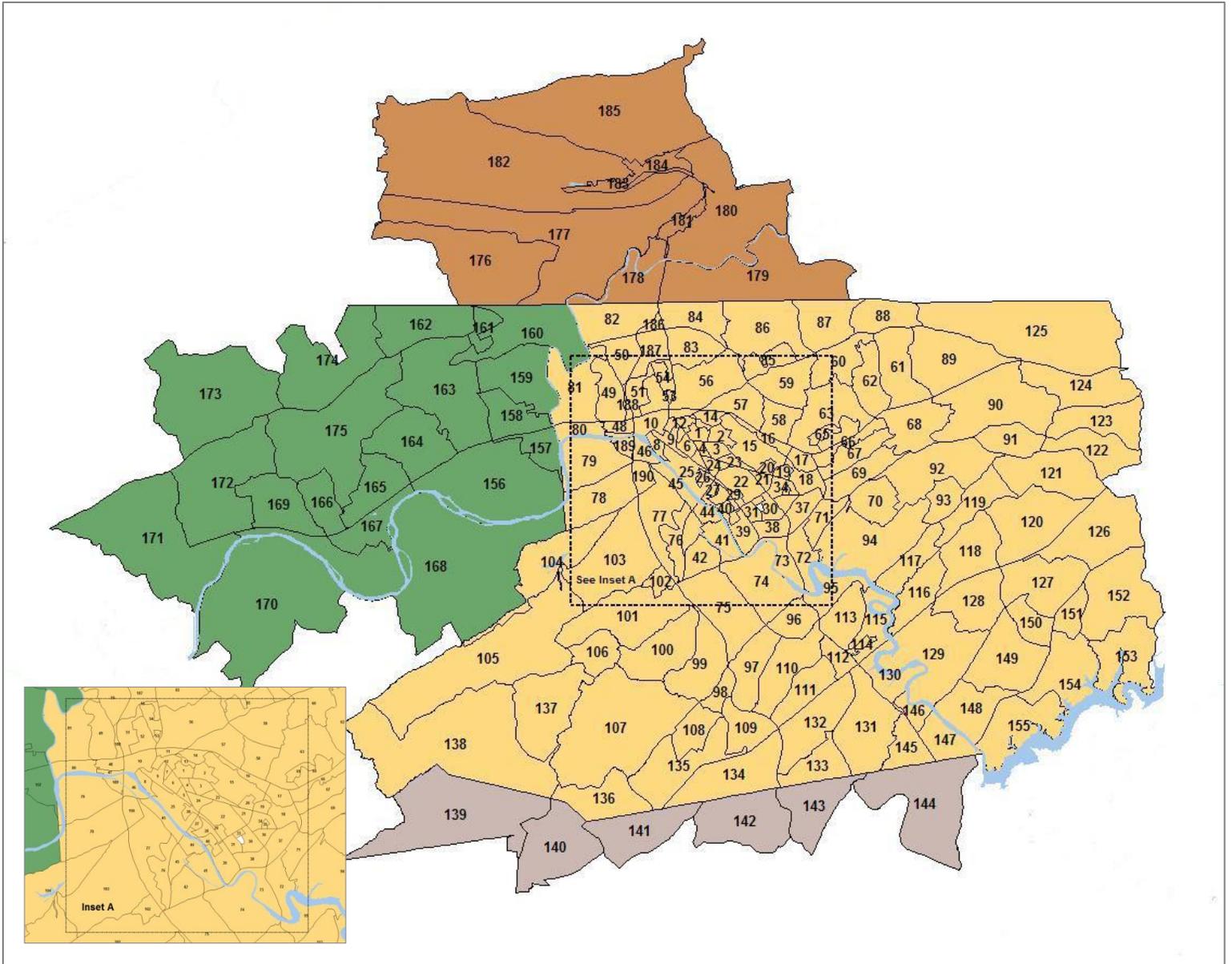


FIGURE 1: KINGSFORT MTPO MODEL TAZ MAP

#### ATTRIBUTES

The TAZ attributes include socioeconomic and demographic data such as population, households, household size and employment, most of which are derived from external sources such as the US Census. Additional discussion of these items is contained within this report. These data items must be forecast for each scenario and analysis year to which the travel model is applied. Other attributes, such as Area Type are calculated from these data. The Area

Types in the model were defined based on the density of population and employment by TAZ. The methodology is easily applied to any forecast year.

#### AREA TYPES

Area Types are used to provide an estimate of land use intensity, activity characteristics and other values that are not inherently provided in the definitions of the transportation system infrastructure. Area Types are used to help the model discriminate among facilities. The Area Type designation of a roadway can be combined with functional class to define capacity, speed and other operating characteristics of similarly defined roadways (e.g. a major arterial in a central business district vs. a major arterial in a suburban area.) Area Types are also sometimes used to help interpret other activities such as access to transit or the potential for a traveler to walk rather than drive to a destination. Once the boundaries of the Area Types have been defined the speed survey data along with other technical references can be used to help define capacity and speed lookup tables for the various roadways by functional class.

The process of defining Area Types for the model area was based on the activity densities of each zone. Activity density is a function of the amount of population and employment in the zone as well as the size of the zone. Table 4 presents the four Area Types used in the Kingsport MTPO Travel Demand Model.

TABLE 4: AREA TYPES

| Area Types | Area Type Number |
|------------|------------------|
| CBD        | 1                |
| Urban      | 2                |
| Suburban   | 3                |
| Rural      | 4                |

These Area Types can generally be defined as follows:

1. **Central Business District (CBD)** refers to the principal urban activity center of the core community. The CBD designation is somewhat subjective since these areas are usually defined by local custom rather than based on a consistent set of criteria. However, in most cases the local definition is adequate to discriminate trip generation and traffic operation characteristics.

2. **Urban** refers to areas that are urban in character, but are less dense and have more balance between commercial and residential uses.
3. **Suburban** refers to areas that are primarily residential in nature and there is typically clearly defined separation between residential and other uses.
4. **Rural** refers to areas that are characterized by agricultural uses or very large lot residential uses. Typically access to retail and service activities require trips to another Area Type.

The process of allocating these Area Types to the zones involves two steps:

- Step 1. Perform a preliminary estimation of the boundaries of each type based on a set of qualitative criteria.
- Step 2. Once this preliminary estimation has been completed, calculate activity densities for each TAZ. The following formula is used to calculate an activity density factor.

$$\text{Density Factor} = \text{Population Density} + \beta \cdot \text{Employment Density}$$

$$\beta = \frac{\text{Total Study Area Population}}{\text{Total Study Area Employment}}$$

$$\text{Population Density} = \frac{\text{Total Population}}{\text{Acres}}$$

$$\text{Employment Density} = \frac{\text{Total Employment}}{\text{Acres}}$$

Table 5 shows the density ranges used for the Kingsport MTPO model.

TABLE 5: AREA TYPE RANGES

| Area Types | Area Type Number | Density Ranges |
|------------|------------------|----------------|
| CBD        | 1                | 20.01-500      |
| Urban      | 2                | 3.51-20        |
| Suburban   | 3                | .501-3.50      |
| Rural      | 4                | 0-.50          |

## DEMOGRAPHICS

### POPULATION AND HOUSEHOLD DEMOGRAPHICS

Population and households at the Census block level were aggregated to the TAZ for population, households, and average household size based on 2000 US Census. 2009 parcel

level data for the MTPO area was obtained by the MTPO as well as current aerial photography. An evaluation of the data to determine if, and when, development occurred from 2000 to 2009 was conducted. Growth was assigned to the respective 2000 Census block and the average household size for that block was used to establish a 2009 base year population and household number which was then assigned to the TAZ. This process was control totaled to the 2009 population and household estimates from *Woods & Poole Economics, Inc.* Table 6 and Table 7 summarize some demographic statistics for Sullivan, Hawkins, Washington and Scott Counties within the Kingsport MTPO model.

TABLE 6: POPULATION DATA

| County                     | 2009 Base Population | 2015 Population | 2025 Population | 2035 Population |
|----------------------------|----------------------|-----------------|-----------------|-----------------|
| Sullivan County            | 88,168               | 98,050          | 102,489         | 107,118         |
| Hawkins County             | 22,794               | 26,782          | 29,596          | 32,465          |
| Washington County          | 5,547                | 5,608           | 5,896           | 6,186           |
| Scott County, VA           | 7,685                | 7,133           | 7,110           | 7,099           |
| Kingsport MTPO Model Total | 124,194              | 137,573         | 145,091         | 152,868         |

TABLE 7: HOUSEHOLD DATA

| County                     | 2009 Base Households | 2015 Households | 2025 Households | 2035 Households |
|----------------------------|----------------------|-----------------|-----------------|-----------------|
| Sullivan County            | 37,471               | 41,557          | 43,399          | 45,316          |
| Hawkins County             | 9,442                | 11,061          | 12,232          | 13,427          |
| Washington County          | 2,230                | 2,279           | 2,393           | 2,510           |
| Scott County, VA           | 3,412                | 3,248           | 3,235           | 3,227           |
| Kingsport MTPO Model Total | 52,555               | 58,145          | 61,259          | 64,480          |

## EMPLOYMENT

Employment data for 2009 was obtained from InfoGroup (formally InfoUSA) by North American Industry Classification System (NAICS) code and geo-coded based on address data. InfoGroup employment data were compared and balanced to *Woods & Poole Economics, Inc.* 2009 employment estimates for the Kingsport MTPo study area. Employment data was aggregated to the TAZ for three employment categories: retail, service, and basic. Table 8 and Table 9 summarize the employment data.

TABLE 8: EMPLOYMENT CLASSIFICATIONS

| Employment Classification | Includes   | NAICS Codes                                    |
|---------------------------|--|--|
| Retail Employment         | Retail   | 44, 45   |
| Service Employment        | Services (professional, technical, health, educational, recreational, etc.), FIRE, Government, Federal                     | 52, 53, 54, 55, 61, 62, 71, 72, 81, 92, 99     |
| Basic Employment          | Agricultural, forestry, fishing, mining, utilities, construction, manufacturing, wholesale, warehousing and transportation | 11, 21, 22, 23, 31, 32, 33, 42, 48, 49, 51, 56 |

TABLE 9: EMPLOYMENT BY CLASSIFICATION

| Employment Classification | 2009 Base | 2015 Employment | 2025 Employment | 2035 Employment |
|---------------------------|-----------|-----------------|-----------------|-----------------|
| Retail Employment         | 7,401     | 8,367           | 8,710           | 8,987           |
| Service Employment        | 27,361    | 35,848          | 41,248          | 47,157          |
| Basic Employment          | 25,890    | 29,671          | 32,002          | 34,520          |
| Total Employment          | 60,652    | 73,886          | 81,960          | 90,664          |

# Model Development

## TRIP GENERATION

Trip generation is the first step in the travel demand model process. The result of the trip generation model is a set of trip productions, and trip attractions for each TAZ. These productions and attractions are used to populate a seed matrix that is passed to the TransCAD trip distribution step to create trip tables for assignment.

The following trip purposes are included in trip generation:

- Home Based Work (HBW)
- Home Based Other (HBO)
- Non Home Based (NHB)
- Commercial Vehicle (CMVEH)
- Freight Vehicle (FRT)

## HOUSEHOLD STRATIFICATION MODEL

The trip production models apply a cross-classification method to generate trips, which classify households by household size and vehicle availability. Consequently, it is necessary to develop household sub-models, which estimate households by each independent social-economic variable for each transportation analysis zone. Household stratification curves were derived from Census Transportation Planning Product (CTPP) Part 1 data. The data used in developing the vehicle availability sub-model are from Public Use Microdata Survey (PUMS) household files. The models were estimated using STATA 10<sup>1</sup>.

Table 10 presents the household stratification model estimation results which are depicted in Figure 2 thru Figure 5.

Household Stratification Model Specification:

$$\text{Percent of HH (n)} = \beta_0 + \beta_1 \cdot \text{AverageHHSIZE} + \beta_2 \cdot \text{AverageHHSIZE}^2$$

---

<sup>1</sup> STATA 10 is a statistical package designed for data analysis, and data management. See website at <http://www.stata.com/whystata>

TABLE 10: HOUSEHOLD STRATIFICATION MODEL ESTIMATION RESULTS

| Proportions | Model     | $\beta_0$ | $t$    | $\beta_1$ | $t$   | $\beta_2$ | $t$   | $R^2$ |
|-------------|-----------|-----------|--------|-----------|-------|-----------|-------|-------|
| HHSIZE=1    | Quadratic | 1.4948    | 11.96  | -0.6997   | -7.64 | 0.0871    | 5.21  | 0.69  |
| HHSIZE=3    | Quadratic | -0.2992   | -2.96  | 0.3339    | 4.50  | -0.0556   | -4.11 | 0.22  |
| HHSIZE=4    | Linear    | -0.3572   | -14.82 | 0.2319    | 24.94 |           |       | 0.89  |

The proportion of 2-person household was calculated by one minus the sum of all the other proportions so as to ensure the whole proportions add up to 1. Table 11 shows a comparison of the predicted household stratification versus the CTPP.

TABLE 11: HOUSEHOLD STRATIFICATION- CTPP VS. PREDICTED (BASED ON CENSUS 2000)

|      | CTPP  | Predicted |
|------|-------|-----------|
| HH1  | 26.7% | 28.5%     |
| HH2  | 30.8% | 29.0%     |
| HH3  | 18.5% | 18.1%     |
| HH4+ | 24.0% | 24.4%     |

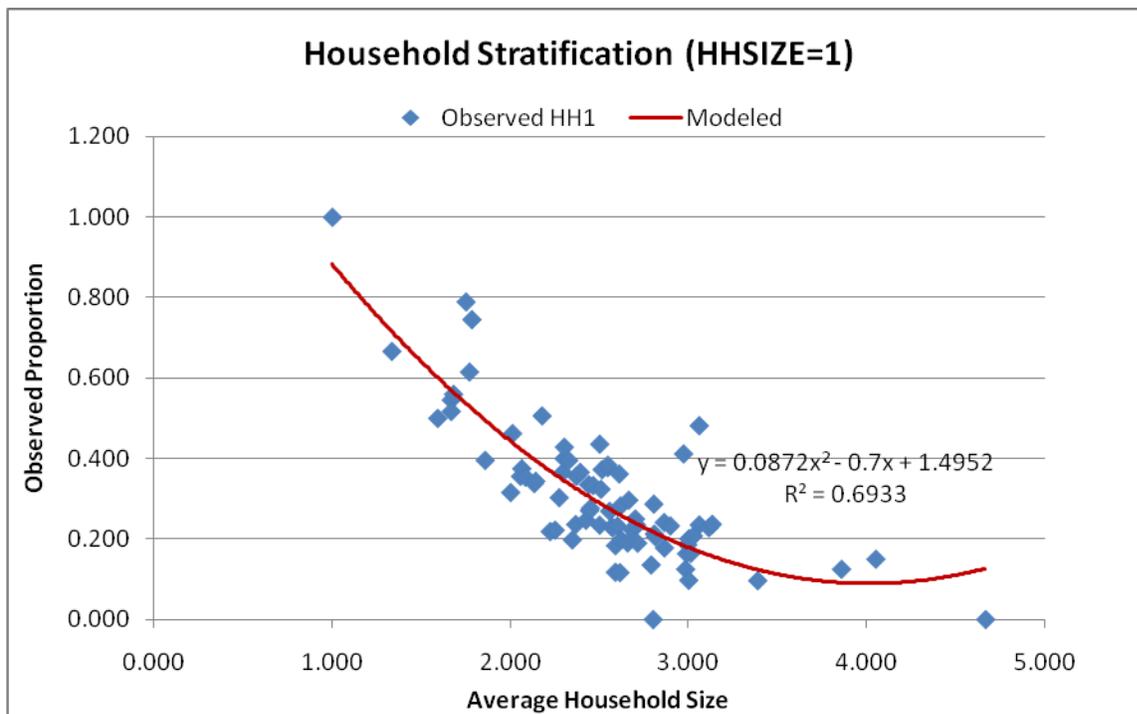


FIGURE 2: HOUSEHOLD STRATIFICATION (HHSIZE=1)

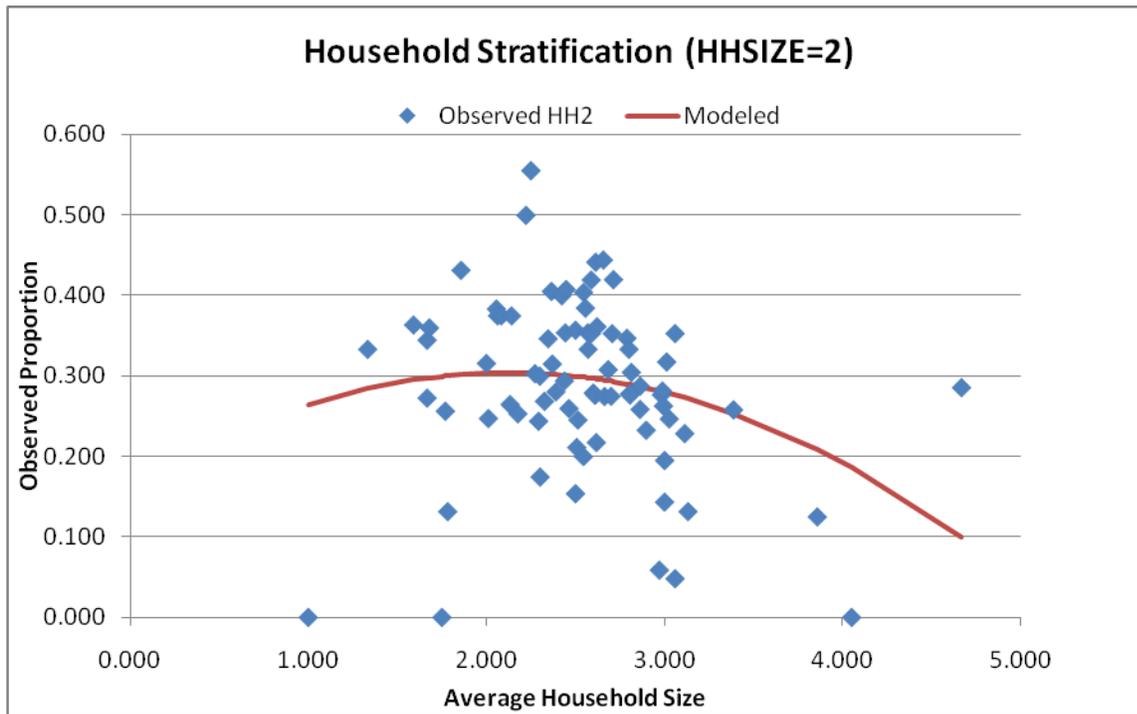


FIGURE 3: HOUSEHOLD STRATIFICATION (HHSIZE=2)

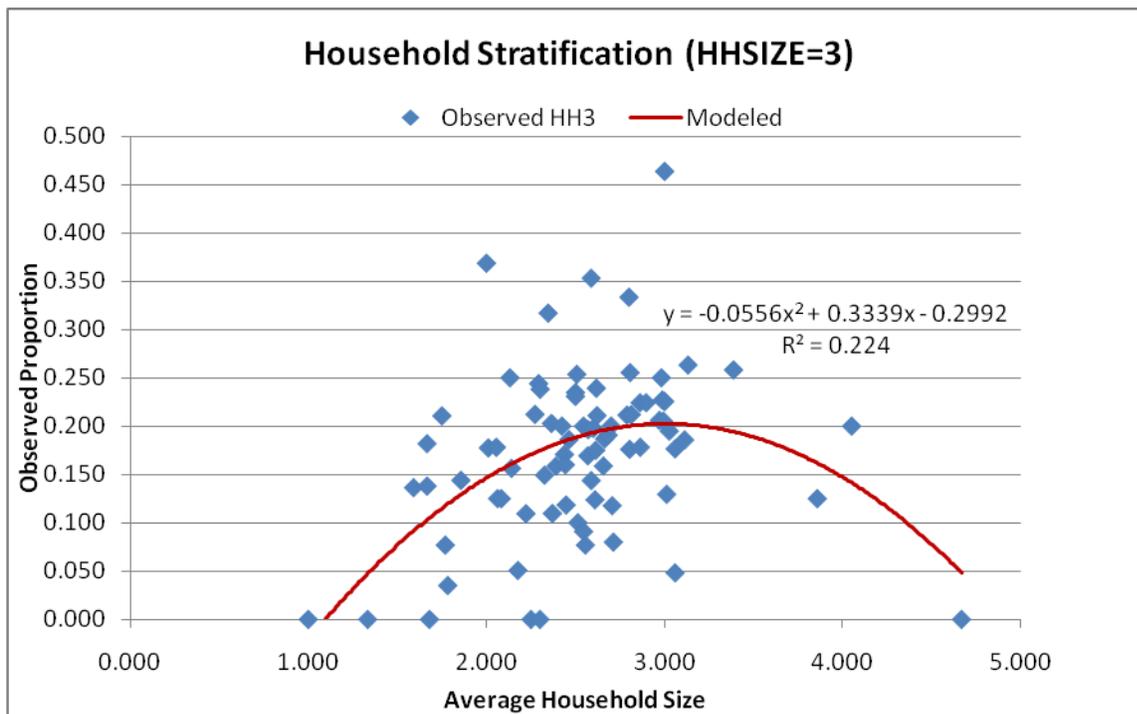


FIGURE 4: HOUSEHOLD STRATIFICATION (HHSIZE=3)

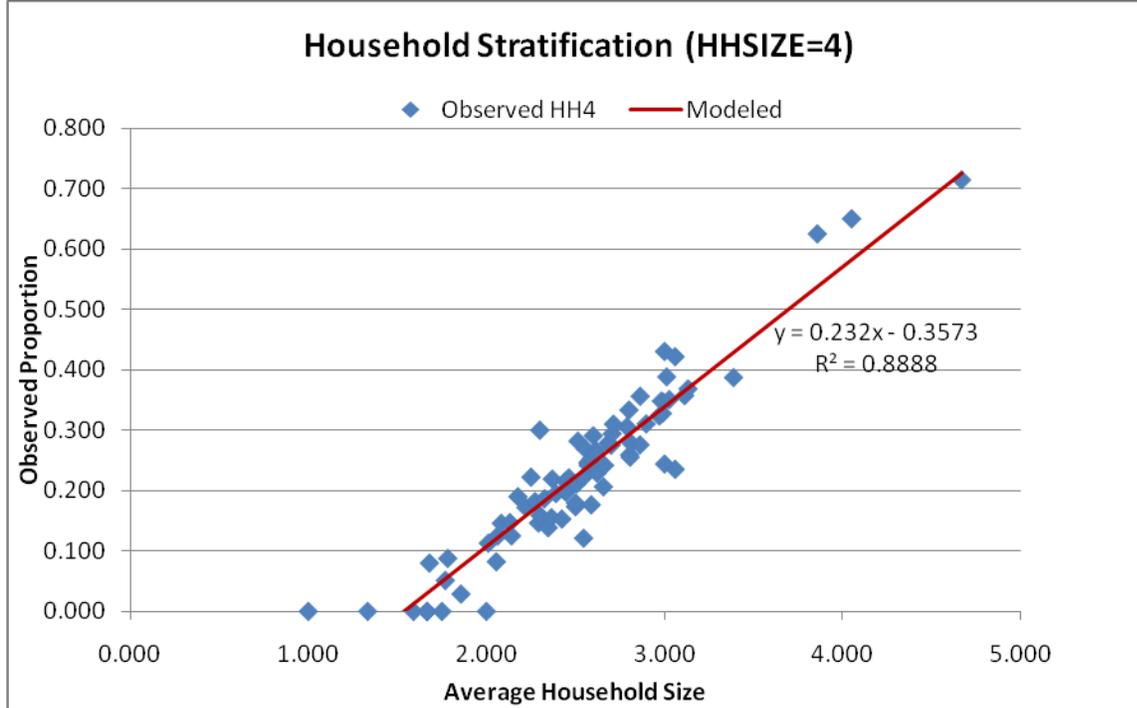


FIGURE 5: HOUSEHOLD STRATIFICATION (HHSIZE=4)

#### VEHICLE AVAILABILITY MODEL

Vehicle availability has a fundamental impact on household travel patterns. Therefore, this variable was chosen as the primary market segmentation parameter for the trip production model. The decision of having zero, one or more vehicles are often made in a sequential manner (0 or 1, 1 or 2, 2 or 3, etc.); therefore, there is an order inherent in those choices, which justify an ordered logit model against a multinomial logit (MNL) formulation. The model was estimated based on disaggregate data (individual household data) and was applied to the aggregate zonal level.

Vehicle Availability Model Specification:

$$z_i = \beta X_i + u$$

$$\Pr(veh_i = j) = \Pr(k_{j-1} < z_i < k_j)$$

$$= \frac{1}{1 + \exp(-k_j + \beta X_i)} - \frac{1}{1 + \exp(-k_{j-1} + \beta X_i)}$$

Where,

$i$  = Observation index, each observation is a TAZ

- $j$  Alternative index,  $j = 0, 1, 2, 3, 4$  if there are 0, 1, 2, 3 or 4 or more workers in household
- $k$  Thresholds to be estimated ( $k_1, \dots, k_4$ ),  $k_0 = -\infty$ ,  $k_5 = +\infty$
- $\beta$  Estimated parameters
- $X$  Household characteristics, including household size ( $hsize$ ) and annual income ( $loginc$ );  $hsize = 4$  if there are 4 or more persons in household;  $loginc_i$  is the natural log value of household  $i$ 's annual income in dollars

Table 12 and Table 13 reflect the results of the vehicle availability model estimations.

TABLE 12: VEHICLE AVAILABILITY MODEL ESTIMATION RESULTS

|                       | Coefficient | Robust    | z     | P> z | [95%    | Conf. Interval] |
|-----------------------|-------------|-----------|-------|------|---------|-----------------|
|                       |             | Std. Err. |       |      |         |                 |
| hsize                 | 0.458       | 0.0778    | 5.89  | 0    | 0.3056  | 0.6105          |
| loginc                | 1.1464      | 0.0901    | 12.72 | 0    | 0.9698  | 1.323           |
| $k_1$                 | 10.0823     | 0.8721    |       |      | 8.373   | 11.7917         |
| $k_2$                 | 12.6053     | 0.9195    |       |      | 10.8032 | 14.4074         |
| $k_3$                 | 14.7586     | 0.9595    |       |      | 12.8779 | 16.6392         |
| $k_4$                 | 16.5367     | 0.978     |       |      | 14.6199 | 18.4535         |
| Log pseudo-likelihood | -1287.7307  |           |       |      |         |                 |
| Pseudo R-square       | 0.1554      |           |       |      |         |                 |
| Prob > chi2           | 0           |           |       |      |         |                 |

TABLE 13: OBSERVED VEHICLE AVAILABILITY SEGMENTATION

| Segmentation          | Observed | Predicted |
|-----------------------|----------|-----------|
| 0-vehicle households  | 10.60%   | 11.80%    |
| 1-vehicle households  | 36.10%   | 35.90%    |
| 2-vehicle households  | 34.60%   | 34.40%    |
| 3-vehicle households  | 13.60%   | 13.40%    |
| 4+ vehicle households | 5.20%    | 4.50%     |

## MEDIAN HOUSEHOLD INCOME

The median household income served as one of the independent variables in the vehicle availability model.

## PERSON TRIP RATES

The cross-classification trip rates were derived using 2009 National Household Travel Survey (NHTS) Tennessee Add-On data for the entire state. This included approximately 19,000 records representing 2,500 households. The NHTS data were used to statistically compare a range of independent variables to determine the optimal predictive combination for use in the cross-classification tables. For use in the Kingsport MTPO Travel Demand Model the selected combination was household size vs. auto availability. The derived trip rates are shown in Table 14.

TABLE 14: DAILY PERSON TRIPS PER HOUSEHOLD

| Purpose | HH size | Vehicle Ownership (Number of Vehicles) |      |      |      |      |
|---------|---------|--|------|------|------|------|
|         |         | 0                                      | 1    | 2    | 3    | 4 +  |
| HBW     | 1       | 0.25                                   | 0.40 | 0.50 | 0.64 | 0.75 |
|         | 2       | 0.50                                   | 0.75 | 1.00 | 1.00 | 1.25 |
|         | 3       | 1.36                                   | 1.40 | 1.46 | 1.51 | 1.57 |
|         | 4 +     | 1.25                                   | 1.37 | 1.38 | 1.62 | 1.76 |
| HBO     | 1       | 0.88                                   | 1.58 | 1.95 | 2.02 | 2.46 |
|         | 2       | 2.98                                   | 3.00 | 3.14 | 3.17 | 3.35 |
|         | 3       | 5.36                                   | 5.58 | 5.69 | 5.86 | 5.87 |
|         | 4 +     | 5.37                                   | 7.23 | 7.62 | 8.14 | 9.54 |
| NHB     | 1       | 0.33                                   | 0.99 | 1.00 | 1.04 | 1.15 |
|         | 2       | 1.36                                   | 2.27 | 2.36 | 2.55 | 2.62 |
|         | 3       | 1.35                                   | 2.93 | 3.14 | 3.51 | 4.55 |
|         | 4 +     | 0.50                                   | 3.52 | 4.83 | 5.46 | 6.59 |

Trip attractions were calculated using National Cooperative Highway Research Program (NCHRP) 365 regression models. The standard attraction rates for urban areas of similar size and character were used to develop regression equation variables and coefficients for use in the Kingsport MTPO Travel Demand Model. The model parameters are listed in Table 15.

TABLE 15: ATTRACTION RATES<sup>2</sup>

| <b>Employment Type</b> | <b>HBW</b> | <b>HBO</b> | <b>NHB</b> |
|------------------------|------------|------------|------------|
| Retail                 | 1.45       | 9.00       | 4.10       |
| Service                | 1.45       | 1.70       | 1.20       |
| Basic                  | 1.45       | 0.50       | 0.50       |
| HH                     | 0.00       | 0.90       | 0.50       |

#### TRUCK TRIP RATES

Truck Trip rates were derived based on the Quick Response Freight Manual<sup>3</sup>, which are shown in Table 16. These rates are based upon the magnitude and distribution of standard TAZ attribute data such as population and employment densities. The rates were adjusted slightly downward for the Kingsport area.

TABLE 16: TRUCK TRIP GENERATION RATES

| <b>Employment Type</b> | <b>CMV Trip Generation Rate</b> | <b>FRT Trip Generation Rate</b> |
|------------------------|---------------------------------|---------------------------------|
| Retail                 | 0.0816                          | 0.0354                          |
| Service                | 0.0466                          | 0.0356                          |
| Basic                  | 0.2915                          | 0.3543                          |
| HH                     | 0.0035                          | 0.0010                          |

#### SPECIAL GENERATORS

Special generators are activity centers that exhibit travel characteristics that are out of scale with normal patterns in the study area. Typically this means that the special generator attracts more trips than can be predicted using the normalized trip attraction rates from the study area data.

<sup>2</sup> The rates used are on page 28 of NCHRP 365 and are described as being “derived from a variety of trip attractions models for urban area studies and represent a consensus of these models.

<sup>3</sup> FHWA, (1996). Quick Response Freight Manual, Washington, D.C.,  
URL: <http://tmip.fhwa.dot.gov/resources/clearinghouse/107/>

There are several reasons for this phenomenon. The special generator may be:

- A site for special events or periodic activity such as a stadium or convention facility;
- A site that operates 24/7 with multiple shifts of employees such as hospitals and military bases;
- A site of a unique character in comparison to other activity centers, such as a regional airport; or
- A site with a special population of trip makers such as the students at a university or college.

The use of special generators in the model set should be exercised judiciously and to the minimum degree possible. This conservative approach is used because special generators require additional data, additional steps, and call for a level of subjectivity that has the potential to bias model performance.

Just because a facility is large, or attracts a large number of trips, does not mean it is, by definition, a special generator. A regional retail mall for example, should typically be accounted for in the primary modeling. If such a facility's trip rates are inadequately replicated in the model, it is more likely a function of poorly documented employment levels (the primary attraction variable) than an indication of a need for special treatment.

Except under very unusual circumstances, special generators do not include areas that are primarily the home-based production end of the trip such as residential areas. These areas are normally embraced within the limits of the travel surveys and the variations among types are typically accounted for during calibration of the model. Home-based trip attractions and trip productions and attractions for non-home-based travel play a larger role in special generator markets. Based on these general guidelines special generators were not needed in the Base 2009 Kingsport MTPo model. However, this does not preclude the use of special generators in the forecast models if future activity centers are identified. If future special generators are identified those trips will be added within the model using the methodology outlined below.

For each location identified as a special generator, its name is included on the TAZ layer in the "SPECIAL\_GENERATOR" attribute.

For each special generator, an estimate of the person trips is necessary. The Institute of Transportation Engineers (ITE) Trip Generation Manual 8<sup>th</sup> edition and the information provided for the facilities will be used to calculate vehicle trips. Person trips will then be calculated by applying auto occupancy factors to the vehicle trips. Person trips will be added to the production and attraction trip table for each special generator TAZ. Table 17 presents some special generator trip rates from the ITE Manual. Table 18 presents example special generator

vehicle trips developed based on the rates listed in Table 17 and example information provided for those local facilities.

TABLE 17: SPECIAL GENERATOR VEHICLE TRIP RATES<sup>4</sup>

| Generator Type           | Variable | Vehicle Trip Rate |
|--------------------------|----------|-------------------|
| Junior/Community College | Student  | 1.2               |
| Junior/Community College | Employee | 15.55             |
| University/College       | Student  | 2.38              |
| University/College       | Employee | 9.13              |
| Hospital                 | Bed      | 11.81             |
| Hospital                 | Employee | 5.2               |
| Nursing home             | Bed      | 2.37              |
| Nursing home             | Employee | 6.55              |
| Military base            | Employee | 1.78              |

TABLE 18: EXAMPLE SPECIAL GENERATOR VEHICLE TRIPS

| Facility       | Trip rate | Variable Label | Variable | Vehicle Trips |
|----------------|-----------|----------------|----------|---------------|
| University     | 2.38      | Student        | 7964     | 18954         |
| Medical Center | 5.2       | Employment     | 1100     | 5720          |
| Junior College | 1.2       | Student        | 550      | 660           |

Special generator vehicle trips will first be converted to person trips using auto occupancy factors. Those person trips will then be split by trip purpose according to the proportions calculated based on the special generator's employment characteristics.

#### External-External (EE) and External-Internal (EI) Trips

External stations for the Kingsport MTPO Travel Demand Model, 34 in total as illustrated in Figure 6, were established at each point where a roadway identified in the network crossed the MTPO boundary.

<sup>4</sup> Source: ITE, Trip Generation, 8<sup>th</sup> Edition

Using the previous model as a guide EE and EI trips were established at each external location. The EE trip distribution (passenger vehicle and truck) proportions and EI trip purpose (EI\_HBW, EI\_HBO, & EI\_NHB) proportions were also developed using the previous model as a guide. The previous model used the EE/EI method detailed in technical report NCHRP 365 to develop the EE/EI trip data. The Base 2009 EI and IE vehicle trips by station location are shown in Table 19. The Base 2009 EE vehicle trips by station are shown in Table 20.

TABLE 19: EXTERNAL-INTERNAL AND INTERNAL-EXTERNAL VEHICLE TRIPS

| Station ID | Road Name                 | Passenger Car | Truck /CMVeh | Total  |
|------------|---------------------------|---------------|--------------|--------|
| 300        | SR 666 (VA)               | 230           | 24           | 254    |
| 301        | SR 667 (VA)               | 57            | 6            | 63     |
| 302        | SR 72 (VA)                | 1,824         | 76           | 1,900  |
| 303        | SR 71 (VA)                | 3,921         | 250          | 4,171  |
| 304        | US 58 (VA)                | 2,768         | 177          | 2,945  |
| 305        | SR 606 (VA)               | 67            | 6            | 73     |
| 306        | SR 702 (VA)               | 102           | 12           | 114    |
| 307        | SR 304 (VA)               | 352           | 54           | 405    |
| 308        | SR 699 (VA)               | 24            | 7            | 31     |
| 309        | US 11W, SR 1 (E Stone Dr) | 8,927         | 1,776        | 10,702 |
| 310        | IH 81 (East)              | 13,781        | 2,261        | 16,042 |
| 311        | SR 75 (Airport Rd)        | 5,803         | 0            | 5,803  |
| 312        | Muddy Creek Rd            | 1,014         | 39           | 1,053  |
| 313        | SR 36 (Fort Henry Dr)     | 8,358         | 1,303        | 9,661  |
| 314        | SR 75 (Bobby Hicks Hwy)   | 4,192         | 365          | 4,557  |
| 315        | IH 26                     | 24,119        | 3,266        | 27,385 |
| 316        | Ford Creek Rd             | 595           | 58           | 653    |
| 317        | Fordtown Rd               | 839           | 51           | 890    |
| 318        | SR 93                     | 3,039         | 253          | 3,292  |
| 319        | IH 81 (West)              | 6,394         | 7,809        | 14,203 |
| 320        | Horton Hwy                | 819           | 38           | 857    |
| 321        | SR 347 (Beech Creek Rd)   | 544           | 22           | 566    |
| 322        | Goshen Valley Rd          | 307           | 7            | 314    |
| 323        | Christians Bend Rd        | 999           | 0            | 999    |
| 324        | US 11W, SR 1 (Lee Hwy)    | 13,465        | 2,477        | 15,941 |
| 325        | Carters Valley Rd         | 993           | 66           | 1,059  |

|     |                        |        |       |        |
|-----|------------------------|--------|-------|--------|
| 326 | Stanley Valley Rd (VA) | 233    | 50    | 283    |
| 327 | SR 632 (VA)            | 220    | 23    | 243    |
| 328 | SR 635 (VA)            | 80     | 8     | 88     |
| 329 | SR 233 (VA)            | 630    | 70    | 700    |
| 330 | SR 870 (VA)            | 540    | 0     | 540    |
| 331 | US 23 (VA)             | 10,173 | 1,656 | 11,829 |
| 332 | SR 665 (VA)            | 750    | 0     | 750    |
| 333 | Gray Station Rd        | 1,060  | 0     | 1,060  |

TABLE 20: EXTERNAL-EXTERNAL VEHICLE TRIPS

| Station ID | Road Name                 | Passenger Car | Truck /CMVeh | Total  |
|------------|---------------------------|---------------|--------------|--------|
| 300        | SR 666 (VA)               | 0             | 0            | 0      |
| 301        | SR 667 (VA)               | 0             | 0            | 0      |
| 302        | SR 72 (VA)                | 0             | 0            | 0      |
| 303        | SR 71 (VA)                | 121           | 8            | 129    |
| 304        | US 58 (VA)                | 146           | 9            | 155    |
| 305        | SR 606 (VA)               | 0             | 0            | 0      |
| 306        | SR 702 (VA)               | 0             | 0            | 0      |
| 307        | SR 304 (VA)               | 0             | 0            | 0      |
| 308        | SR 699 (VA)               | 0             | 0            | 0      |
| 309        | US 11W, SR 1 (E Stone Dr) | 361           | 72           | 433    |
| 310        | IH 81 (East)              | 6,162         | 3684         | 9,846  |
| 311        | SR 75 (Airport Rd)        | 437           | 0            | 437    |
| 312        | Muddy Creek Rd            | 21            | 1            | 22     |
| 313        | SR 36 (Fort Henry Dr)     | 1,204         | 188          | 1,392  |
| 314        | SR 75 (Bobby Hicks Hwy)   | 408           | 98           | 506    |
| 315        | IH 26                     | 13,487        | 2,299        | 15,786 |
| 316        | Ford Creek Rd             | 0             | 0            | 0      |
| 317        | Fordtown Rd               | 0             | 0            | 0      |
| 318        | SR 93                     | 229           | 19           | 248    |
| 319        | IH 81 (West)              | 6,939         | 6,686        | 13,625 |
| 320        | Horton Hwy                | 0             | 0            | 0      |
| 321        | SR 347 (Beech Creek Rd)   | 0             | 0            | 0      |
| 322        | Goshen Valley Rd          | 0             | 0            | 0      |

|     |                        |       |     |       |
|-----|------------------------|-------|-----|-------|
| 323 | Christians Bend Rd     | 0     | 0   | 0     |
| 324 | US 11W, SR 1 (Lee Hwy) | 643   | 118 | 761   |
| 325 | Carters Valley Rd      | 20    | 1   | 21    |
| 326 | Stanley Valley Rd (VA) | 0     | 0   | 0     |
| 327 | SR 632 (VA)            | 0     | 0   | 0     |
| 328 | SR 635 (VA)            | 0     | 0   | 0     |
| 329 | SR 233 (VA)            | 0     | 0   | 0     |
| 330 | SR 870 (VA)            | 0     | 0   | 0     |
| 331 | US 23 (VA)             | 1,006 | 164 | 1,170 |
| 332 | SR 665 (VA)            | 0     | 0   | 0     |
| 333 | Gray Station Rd        | 0     | 0   | 0     |

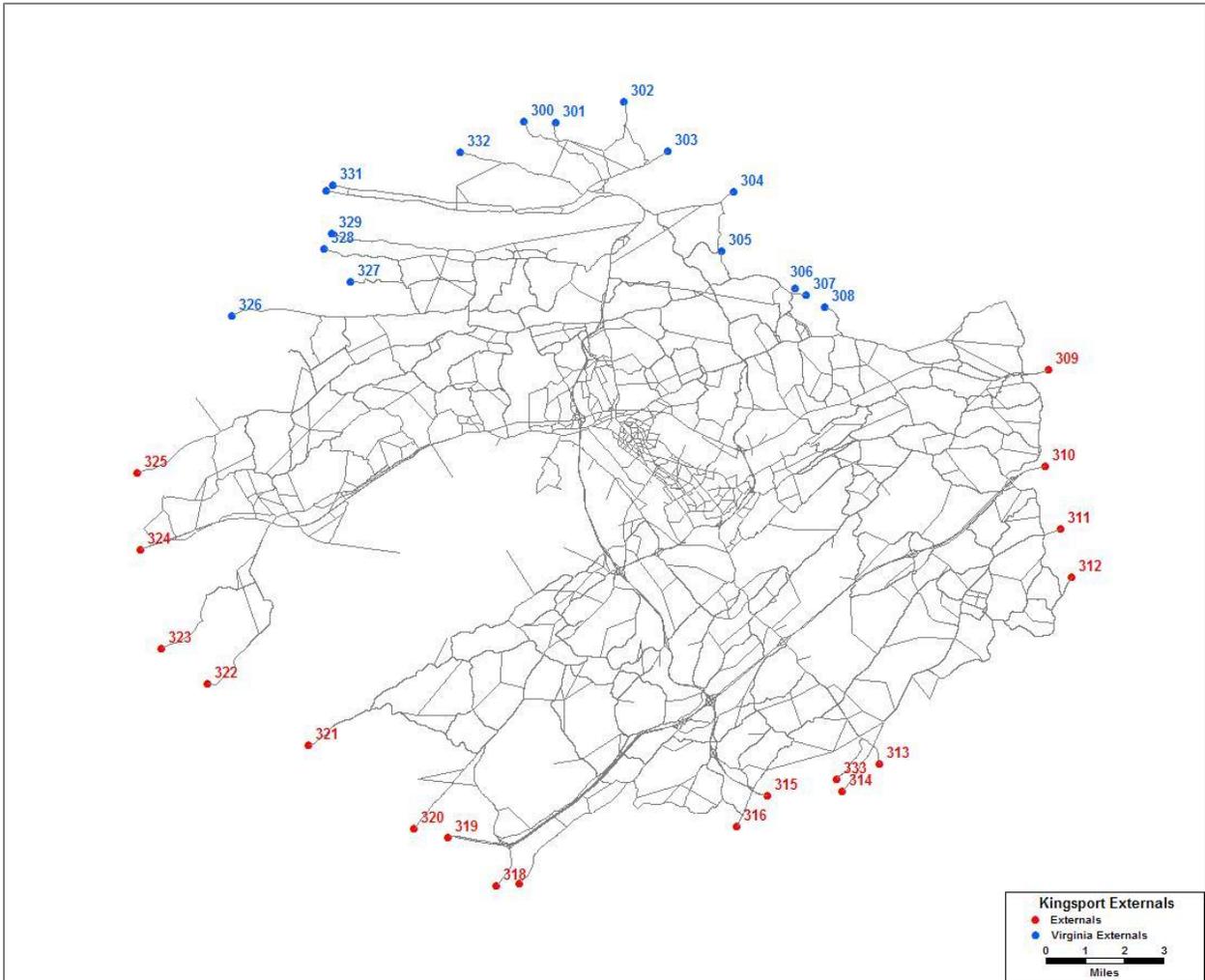


FIGURE 6: KINGSPORT EXTERNAL STATIONS

## Future External Trips

The future external trips have been calculated based on the 2009 counts and the 2004 counts (obtained from the previous travel demand model for the study area). For each external station the annual growth rate of the external trip has been estimated. The EE trip tables have then been forecasted using a Fratar, or iterative proportional fit (IPF) process, using a doubly constrained growth factor methodology. Appendix C at the end of this report details the forecast external trips.

## TRIP DISTRIBUTION

Trip Distribution is the second step in the traditional travel demand modeling process. The trip distribution process takes the production and attraction trip ends produced during trip generation, and connects them in origin-destination pairs based on the trip length frequency curves for each trip purpose. The trip length frequency curves are applied through the use of a gravity model. In essence, while the trip generation models estimate “how many trips,” the trip distribution models estimate “where do they go.”

The Kingsport MTPO Model uses a traditional gravity model. A traditional gravity model distributes trips according to characteristics of land use and the transportation system in the study area. This Newtonian analogy states that the number of trips traveling between any zone pair is a function of the magnitude of the total productions and attractions in the two zones and the travel impedance between the zones. The highway network attributes describe the transportation system characteristics used to measure travel impedance (e.g. distance, travel time, etc.). The model can be mathematically stated as:

$$T_{ij} = P_i \times \frac{A_j \times F_{ij}}{\sum_k A_k \times F_{ik}}$$

Where:

$T_{ij}$  = forecast flow produced by zone i and attracted to zone j

$P_i$  = the forecast number of trips produced by zone i

$A_j$  = the forecast number of trips attracted to zone j

$F_{ik}$  = Impedance between zone i and zone k (F-Factors)

Although this method is borrowed from Newton’s Law of Gravity, which states that force is inversely proportional to the distance between two bodies, the effect of distance is not as strong a determinant of travel between zones as travel time. Therefore, travel time is typically used as the measurement of separation between zones for the purposes of applying the gravity model, with trip lengths measured in minutes.

## TRIP LENGTH FREQUENCY DISTRIBUTION

The trip length frequency distribution was derived from NHTS 2009 Tennessee Add-On data. Gamma distributions were used to match the general shape of typical trip length frequency distributions derived from the available survey data. The Gamma trip length frequency distribution curves are used to develop travel impedances called friction factors (F-Factors) for each trip purpose. The Gamma function parameters derived from NHTS 2009 data are shown in Table 21.

$$F_{ik} = a \cdot t_{ik}^{-b} \cdot e^{-c \cdot (t_{ik})}$$

Where,  $F_{ik}$  is the Impedance between zone i and zone k,  $t_{ik}$  is the travel time from zone i to zone k; a, b and c are the Gamma function parameters.

TABLE 21: GAMMA FUNCTION PARAMETERS FOR FRICTION FACTORS

| <b>Purpose</b> | <b>a</b> | <b>b</b> | <b>c</b> |
|----------------|----------|----------|----------|
| HBW            | 0.000013 | -4.2210  | 0.2217   |
| HBO            | 0.00013  | -3.4948  | 0.2317   |
| NHB            | 0.00049  | -2.8150  | 0.2018   |

#### AUTO OCCUPANCY

The trip interchanges defined in trip distribution are still defined in terms of person trips between zones. To be assigned to the roadway network these trips must be converted to vehicle trips. Since no mode choice model was included in the model process the following process was used.

To convert the person trip tables output by trip distribution to vehicle trips, an auto occupancy factor was applied. The auto occupancy factors were derived from NHTS 2009 Tennessee Add-On data as presented in Table 22. It should be noted that the trips for the Commercial Vehicle and Freight Vehicle purposes were derived from traffic count data or other vehicle based sources and were, therefore, produced as vehicle trips that were not factored.

TABLE 22: AUTO OCCUPANCY FACTORS

| <b>Purpose</b> | <b>Auto Occupancy Factor</b> |
|----------------|------------------------------|
| HBW            | 1.19                         |
| HBO            | 1.95                         |
| NHB            | 2.02                         |
| CMVEH          | 1.00                         |
| FRT            | 1.00                         |

The use of auto occupancy factors instead of a full mode choice model is common practice where transit ridership represents a small portion of the overall number of trip in the region and major capital transit projects are not to be analyzed with the model.

#### TRAFFIC ASSIGNMENT

Traffic assignment is the final step in the traditional modeling process. It estimates the flow of traffic on a network. The assignment methodology selected for the Kingsport MTPO Model is a User Equilibrium model. The equilibrium assignment procedure is run using a maximum of 20

iterations and convergence criteria of 0.01. The model interface automatically runs the highway assignment after generation and distribution are complete. The interface can rerun this assignment step to test various alternative highway project combinations using the established future land use and demographic assumptions. Validation statistics based on the assigned volumes are presented in Model Validation section. Appendix D at the end of this report details the forecast years assignment results.

## MODEL CALIBRATION

The ability of travel demand models to forecast future year traffic and other travel behaviors is predicated based on their ability to estimate “known” traffic volumes and travel patterns under base year conditions for which extensive data is available. There are two components to the process of matching model results to the observed base year travel data. These components are calibration and validation.

Model calibration adjusts parameter values used for the model until the predicted travel matches the observed travel within the region for the base year. In the model development process, the Consultant Team has conducted calibration for each sub-model. In this section, trip distribution calibration and volume delay function calibration are specially addressed.

### TRIP DISTRIBUTION CALIBRATION

The gravity model of trip distribution was calibrated by adjusting F-Factors until a satisfactory agreement is achieved between the modeled and observed mean trip lengths and TLFs for each trip purposes.

The calibrated Gamma function parameters present a satisfactory result as shown in the following table and figures. The observed and modeled average trip lengths for the Kingsport MTPo Model are presented in the Table 23. The observed and modeled trip length frequency distribution curves, by purpose, are shown the Figure 7 thru Figure 9.

TABLE 23: OBSERVED VS. MODELED TRIP LENGTH (MINUTES)

| Purpose     | Observed <sup>5</sup> | Modeled | Calibration Criteria | Difference | Coincidence Ratio<br><i>Criteria &gt;.70</i> |
|-------------|-----------------------|---------|----------------------|------------|--|
| HBW         | 21.12                 | 20.38   | ± 5%                 | 3.5%       | .78  |
| HBO         | 18.08                 | 18.83   | ± 5%                 | 4.2%       | .84  |
| NHB         | 17.18                 | 17.98   | ± 5%                 | 4.7%       | .82  |
| <b>2015</b> |                       |         |                      |            |  |
| HBW         |                       | 21.29   |                      |            |  |
| HBO         |                       | 19.64   |                      |            |  |
| NHB         |                       | 18.81   |                      |            |  |
| <b>2025</b> |                       |         |                      |            |  |
| HBW         |                       | 22.12   |                      |            |  |
| HBO         |                       | 20.31   |                      |            |  |
| NHB         |                       | 19.43   |                      |            |  |
| <b>2035</b> |                       |         |                      |            |  |
| HBW         |                       | 23.00   |                      |            |  |
| HBO         |                       | 21.00   |                      |            |  |
| NHB         |                       | 20.07   |                      |            |  |

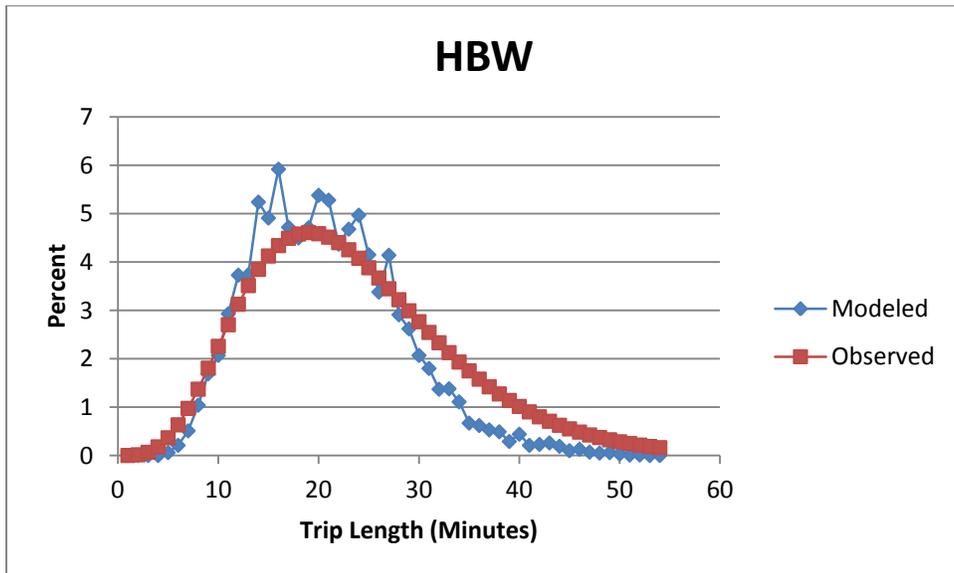


FIGURE 7: OBSERVED VS. MODELED HBW TRIP LENGTH FREQUENCY DISTRIBUTION

<sup>5</sup> Derived from 2009 NHTS Tennessee Add-On data

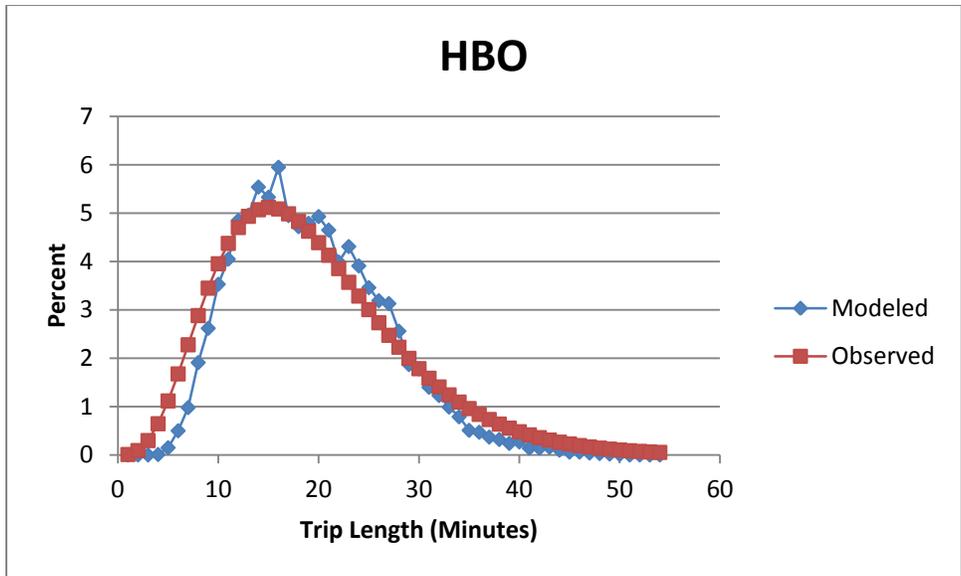


FIGURE 8: OBSERVED VS. MODELED HBO TRIP LENGTH FREQUENCY DISTRIBUTION

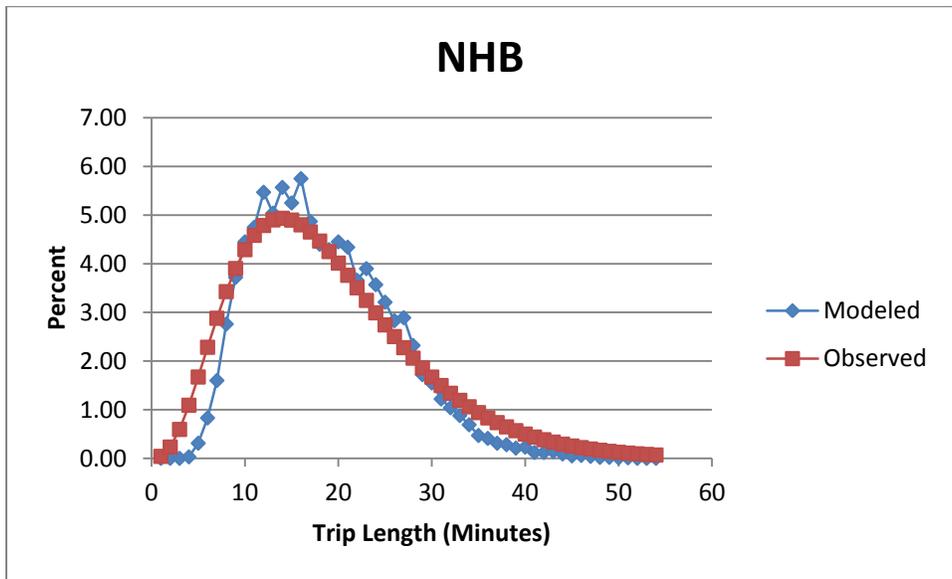


FIGURE 9: OBSERVED VS. MODELED NHB TRIP LENGTH FREQUENCY DISTRIBUTION

#### VOLUME DELAY FUNCTION CALIBRATION

The default Bureau of Public Roads (BPR) volume delay function does not distinguish volume delays for different road facility types. Based on the default BPR volume delay function parameters, the Consultant Team estimated a series of volume delay function for the Kingsport MTPO Model assignment process to account for both link delay and intersection delay by

facility type, and calibrated the parameters to best simulate traffic assignment on the network. The VDF parameters were developed taking into account the daily capacity used in the model as a true 24 hour capacity and the assignment needs to be capacity constrained. Table 24 shows VDF parameters used in the model and Figure 10 shows the corresponding curves. The VDF parameters were adjusted on some individual links in order to more accurately replicate actual traffic patterns.

TABLE 24: VOLUME DELAY FUNCTION PARAMETERS

|                                       | Alpha | Beta |
|---------------------------------------|-------|------|
| <b>Non-intersection Links</b>         |       |      |
| Minor Arterial/Collector              | 10.32 | 2    |
| Interstate/Principal Arterial         | 10.32 | 4    |
| <b>Intersection Links</b>             |       |      |
| Minor Arterial/Collector Intersection | 202.7 | 3    |
| Principal Arterial Intersection       | 202.7 | 4    |

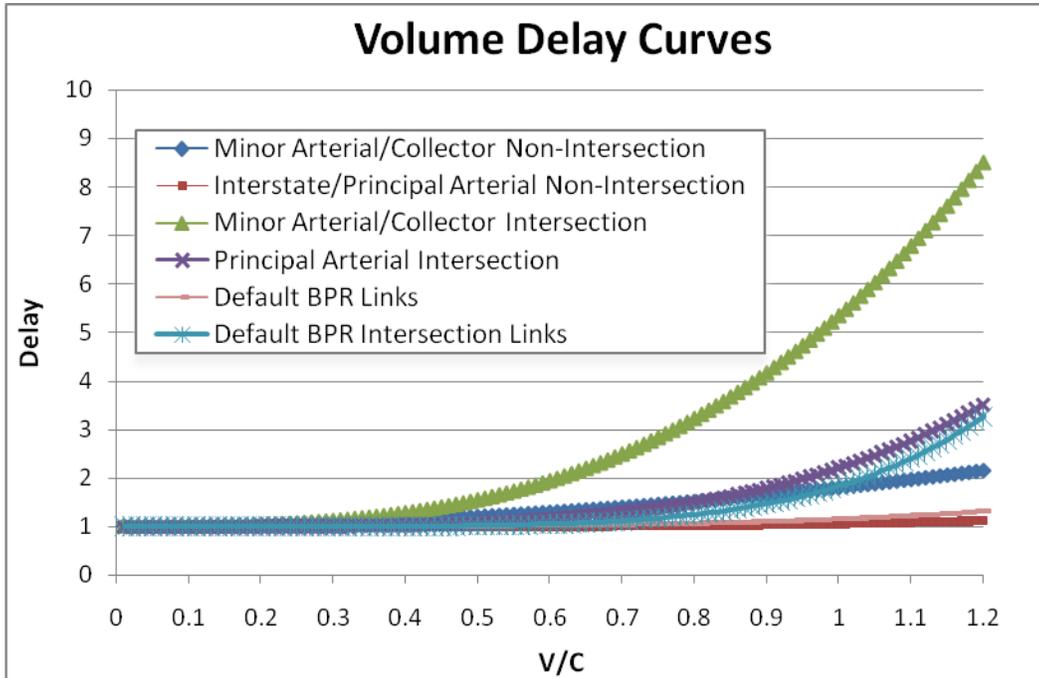


FIGURE 10: VOLUME DELAY CURVES

## MODEL VALIDATION

Another important component of ensuring the forecasting ability of a travel demand model is model validation. Validation refers to the process of using a calibrated model to estimate travel assignments for the base year and comparing these travel assignments to observed travel data. The typical comparison, when sufficient data is available, is between highway traffic assignments and actual traffic volumes derived from traffic count data. Extensive traffic counts must be available to validate a model. Validation of the model to counted traffic flows is important to the model effort in two areas. First, it shows whether the calibration tools used in the model process and assumptions were reasonable. Second, the validation shows what level of confidence the user can have in the forecast results.

### VALIDATION CRITERIA

Although the purpose of comparing traffic assignments to traffic count data is intuitively straightforward, subjective review of the travel demand model results and the observed traffic counts is not adequate. The comparative analysis must be carried out in a structured manner using clearly defined benchmarks or measures of success that allow the results of the validation analysis to be tabulated, and quantitatively analyzed in a way that provides the user with a degree of confidence in the statistical foundation and structure of the model.

The model validation procedure for the Kingsport MTPO Model is similar to the procedure used by state DOTs and MPOs throughout the country; specifically, Minimum Travel Demand Model Calibration and Validation Guidelines for the State of Tennessee, adopted by the Tennessee Model Users Group, is used as standard guideline for this validation. The locations of year 2009 traffic counts provided by Kingsport MTPO were coded to the roadway networks. Traffic assignment results for the validation year (2009) were compared to these traffic counts by three indices: **Percent of Count**, **Correlation Coefficient** and **Percent Root Mean Squared Error (RMSE)**, each of which was aggregated and tabulated across a variety of categories. Percent of Count is used to measure the overall difference between modeled and counted flows. Correlation Coefficient estimates the correlation between the actual ground counts and the estimated traffic volumes. Percent Root Mean Squared Error (RMSE) is used to measure the difference between modeled flows and counted volumes on a link-by-link basis, which gives a better picture of the “closeness” between model flows versus counts. The Percent of Count and Percent RMSE calculation are described by the following equations:

$$\text{Percent of Count} = \frac{\sum_{j=1}^n \text{Modeled}_j}{\sum_{j=1}^n \text{Counted}_j}$$

$$\%RMSE = \frac{\sqrt{\frac{\sum_{j=1}^n (Modeled_j - Counted_j)^2}{n-1}}}{\frac{\sum_{j=1}^n Counted_j}{n}} \times 100$$

*Where j represents the individual network link with count, n is the total number of links with counts in the network for the specific categories.*

When applied to model flows versus counts, RMSE values are usually between 10% and 100%. 10% usually describes flows that are very similar to the counts on a link-by-link basis, while 100% usually describes flows that are very different to the counts.

Additionally, number of count links, center line miles and average count values are also presented to provide a frame for interpreting the results.

The validation results are presented by different categories as listed below and discussed individually in the following sections:

- County-Wide
- Facility Type
- Area Type
- Screenlines
- Volume Range

The tests used to validate the Kingsport MTPO Model meet the TDOT suggestion: percent difference in value for screenlines and link volumes; percent difference in volume by classification; correlate coefficient by link volumes; and RMSE for link volumes.<sup>6</sup>

#### COUNTY-WIDE

The first step in the validation process is to analyze overall traffic flows and vehicle miles of travel (VMT) in the study area. A comparison of traffic counts and VMT vs. the travel demand model assignment results for the transportation system as a whole as well as subcategories is shown in Table 25 thru Table 37.

The proposal goal is to control county-wide percent RMSE within 40%, match modeled county-wide VMT and reach county-wide correlation coefficient of more than 0.88<sup>7</sup>. Although TDOT guidance does not specify an overall %RMSE target, an informal study area goal of 40% or less was chosen because it has been typically used by TMIP peer review panels for other areas. The

<sup>6</sup> Wegmann, F & Everett, J, Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee

<sup>7</sup> *ibid.*

actual RMSE validation targets for the Kingsport model are established in the TDOT Minimum Guidelines, which follows the TMIP concept of stratifying the %RMSE by volume range.

TABLE 25: COUNTED VS. MODELED VOLUME

| System Wide | Percent of Count $\Sigma$ | Count Links | Center Line Miles | Average Counted | %RMSE | R <sup>2</sup> |
|-------------|---------------------------|-------------|-------------------|-----------------|-------|----------------|
| All Links   | 101.39                    | 251         | 144.54            | 7,003           | 40.27 | 0.94           |

The county-wide correlation coefficient between modeled vs. observed link volume is 0.94. The scatter plot of modeled vs. observed link volume is shown in Figure 11.

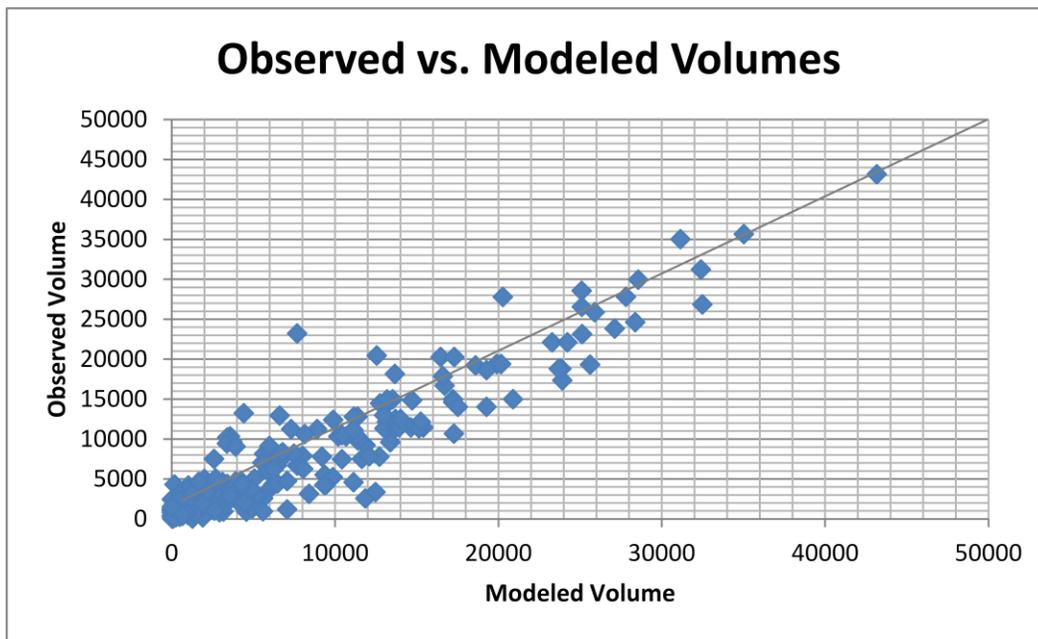


FIGURE 11: SCATTER PLOT OF MODELED VS. OBSERVED LINK TRAFFIC VOLUME

Table 26 and Table 27 compares modeled VMT of total flow and truck flow on different types of highway links.

TABLE 26: TOTAL FLOW BY FUNCTIONAL CLASS

| Total Flow by Functional Class     |            |          |                  |                  |               |                    |
|------------------------------------|------------|----------|------------------|------------------|---------------|--------------------|
| Functional Class                   | VMT        | VHT      | Average AB Speed | Average BA Speed | Average Speed | Energy Consumption |
| Centroid Connector (0)             | 191,855.98 | 7,603.26 | 24.97            | 24.97            | 24.97         | 9,592.80           |
| Rural Interstate (1)               | 612,805.21 | 9,523.77 | 65.24            | 66.80            | 66.02         | 30,640.26          |
| Rural Other Principal Arterial (2) | 374,774.39 | 7,922.73 | 46.09            | 46.22            | 46.16         | 18,738.72          |

|  |                     |                  |              |              |              |                   |
|--|---------------------|------------------|--------------|--------------|--------------|-------------------|
| <b>Rural Minor Arterial (6)</b>            | 120,135.70          | 3,210.69         | 42.33        | 42.26        | 42.30        | 6,006.78          |
| <b>Rural Major Collector (7)</b>           | 87,672.33           | 2,505.94         | 36.54        | 36.53        | 36.53        | 4,383.62          |
| <b>Rural Minor Collector (8)</b>           | 1,233.75            | 35.05            | 33.19        | 33.19        | 33.19        | 61.69             |
| <b>Rural Local (9)</b>                     | 207,310.47          | 5,796.83         | 37.74        | 37.78        | 37.76        | 10,365.52         |
| <b>Urban Interstate (11)</b>               | 292,355.30          | 7,598.12         | 49.33        | 48.92        | 49.12        | 14,617.77         |
| <b>Urban Freeway/Expressway (12)</b>       | 133,521.05          | 2,779.66         | 47.16        | 47.14        | 47.15        | 6,676.05          |
| <b>Urban Other Principal Arterial (14)</b> | 847,047.23          | 25,498.49        | 36.89        | 37.08        | 36.99        | 42,352.36         |
| <b>Urban Minor Arterial (16)</b>           | 561,899.97          | 16,534.16        | 34.72        | 35.17        | 34.94        | 28,095.00         |
| <b>Urban Collector (17)</b>                | 147,171.58          | 4,929.90         | 30.92        | 30.90        | 30.91        | 7,358.58          |
| <b>Urban Local (19)</b>                    | 82,099.29           | 2,441.27         | 34.54        | 34.61        | 34.57        | 4,104.96          |
| <b>Ramp (20)</b>                           | 54,567.57           | 1,810.78         | 32.64        | 32.06        | 32.35        | 2,728.38          |
| <b>Total</b>                               | <b>3,714,449.82</b> | <b>98,190.62</b> | <b>39.45</b> | <b>39.55</b> | <b>39.50</b> | <b>185,722.49</b> |

TABLE 27: TRUCK/CMVEH FLOW BY FUNCTIONAL CLASS

| Truck Flow by Functional Class             |                   |                   |                  |                  |               |                    |
|--|-------------------|-------------------|------------------|------------------|---------------|--------------------|
| Functional Class                           | VMT               | VHT               | Average AB Speed | Average BA Speed | Average Speed | Energy Consumption |
| <b>Centroid Connector (0)</b>              | 13,415.75         | 38,984.80         | 24.97            | 24.97            | 24.97         | 670.79             |
| <b>Rural Interstate (1)</b>                | 174,402.18        | 47,433.37         | 65.24            | 66.80            | 66.02         | 8,720.11           |
| <b>Rural Other Principal Arterial (2)</b>  | 53,906.70         | 80,462.15         | 46.09            | 46.22            | 46.16         | 2,695.34           |
| <b>Rural Minor Arterial (6)</b>            | 6,951.87          | 12,206.00         | 42.33            | 42.26            | 42.30         | 347.59             |
| <b>Rural Major Collector (7)</b>           | 5,541.94          | 9,967.21          | 36.54            | 36.53            | 36.53         | 277.10             |
| <b>Rural Minor Collector (8)</b>           | 48.31             | 91.31             | 33.19            | 33.19            | 33.19         | 2.42               |
| <b>Rural Local (9)</b>                     | 11,430.91         | 20,340.85         | 37.74            | 37.78            | 37.76         | 571.55             |
| <b>Urban Interstate (11)</b>               | 32,209.04         | 40,689.32         | 49.33            | 48.92            | 49.12         | 1,610.45           |
| <b>Urban Freeway/Expressway (12)</b>       | 13,028.46         | 6,546.54          | 47.16            | 47.14            | 47.15         | 651.42             |
| <b>Urban Other Principal Arterial (14)</b> | 72,703.97         | 135,275.60        | 36.89            | 37.08            | 36.99         | 3,635.20           |
| <b>Urban Minor Arterial (16)</b>           | 44,899.05         | 64,300.80         | 34.72            | 35.17            | 34.94         | 2,244.95           |
| <b>Urban Collector (17)</b>                | 9,067.16          | 15,713.53         | 30.92            | 30.90            | 30.91         | 453.36             |
| <b>Urban Local (19)</b>                    | 7,671.91          | 14,666.84         | 34.54            | 34.61            | 34.57         | 383.60             |
| <b>Ramp (20)</b>                           | 7,041.36          | 3,454.56          | 32.64            | 32.06            | 32.35         | 352.07             |
| <b>Total</b>                               | <b>452,318.62</b> | <b>490,132.87</b> | <b>39.45</b>     | <b>39.55</b>     | <b>39.50</b>  | <b>22,615.93</b>   |

Table 28 shows the criteria for modeled VMT distributions by road facility types for different urban areas.

**TABLE 28: VMT DISTRIBUTION TARGET BY FACILITY TYPE**

| Facility Type       | Urban Area Population |                  |             |
|---------------------|-----------------------|------------------|-------------|
|                     | Small (50-200K)       | Medium (200K-1M) | Large (>1M) |
| Freeways/Expressway | 18-23%                | 33-38%           | 40%         |
| Principal Arterials | 37-43%                | 27-33%           | 27%         |
| Minor Arterials     | 25-28%                | 18-22%           | 18-22%      |
| Collector           | 12-15%                | 8-12%            | 8-12%       |

Table 29 presents the modeled VMT distribution by facility type for the Kingsport MTPo model. Given the close proximity of Bristol, TN/VA, and Johnson City, TN to Kingsport and the number of trip interchanges between these cities as evident by the number of EI – IE trip interchanges at the Kingsport external locations it seems reasonable the VMT distribution would fall between the small and medium urban area distribution. This would certainly be expected for the Freeway and Principal Arterial facility types.

**TABLE 29: MODELED VMT DISTRIBUTION BY FACILITY TYPE**

| Facility Type       | HPMS Sullivan County | Model VMT Distribution |
|---------------------|----------------------|------------------------|
| Freeways/Expressway | 25%                  | 28%                    |
| Principal Arterials | 30%                  | 34%                    |
| Minor Arterials     | 22%                  | 22%                    |
| Collector           | 8%                   | 14%                    |

**FACILITY TYPE**

Another criterion used for model validation was to compare assigned traffic volume to traffic counts aggregated by facility type. The comparison of assigned volumes to counted volumes is considered successful if the value for percent error falls within the ranges suggested by the FHWA, shown in Table 30.

**TABLE 30: FHWA FACILITY TYPE VALIDATION TARGETS**

| Facility Type      | FHWA Targets |
|--------------------|--------------|
| Freeway            | +/- 7%       |
| Principal Arterial | +/-10%       |
| Minor Arterial     | +/- 15%      |
| Collector          | +/- 25%      |

Table 31 shows that the model is matching counts by facility type within the FHWA facility type validation targets.

TABLE 31: COUNT VS. MODELED BY FACILITY TYPE

| Functional Class                    |                           |             |                   |                 |        |                |
|-------------------------------------|---------------------------|-------------|-------------------|-----------------|--------|----------------|
| Functional Class                    | Percent of Count $\Sigma$ | Count Links | Center Line Miles | Average Counted | RMSE   | R <sup>2</sup> |
| Rural Interstate (1)                | 98.60                     | 13          | 27.64             | 19,287          | 7.36   | 0.99           |
| Rural Other Principal Arterial (2)  | 109.74                    | 15          | 7.22              | 11,666          | 20.12  | 0.97           |
| Rural Minor Arterial (6)            | 98.20                     | 15          | 8.90              | 3,332           | 36.51  | 0.90           |
| Rural Major Collector (7)           | 108.10                    | 21          | 13.91             | 1,179           | 87.39  | 0.40           |
| Rural Minor Collector (8)           | 100.04                    | 1           | 0.31              | 405             | --     | --             |
| Rural Local (9)                     | 106.89                    | 30          | 18.16             | 932             | 150.23 | 0.55           |
| Urban Interstate (11)               | 102.77                    | 10          | 13.24             | 13,870          | 18.53  | 0.88           |
| Urban Freeway/Expressway (12)       | 106.86                    | 8           | 4.62              | 11,961          | 26.65  | 0.88           |
| Urban Other Principal Arterial (14) | 104.84                    | 23          | 7.85              | 20,221          | 21.43  | 0.88           |
| Urban Minor Arterial (16)           | 92.25                     | 57          | 19.94             | 6,991           | 60.63  | 0.53           |
| Urban Collector (17)                | 100.67                    | 48          | 18.71             | 2,460           | 88.99  | 0.33           |
| Urban Local (19)                    | 139.41                    | 10          | 4.01              | 1,291           | 93.51  | 0.72           |

#### AREA TYPE

Table 32 lists the Area Types used for the Kingsport MTPO Model. The target for this criterion was for the aggregate modeled volume to be within 15% of the aggregate observed volume for each Area Type.

TABLE 32: COUNTY VS. MODELED BY AREA TYPE

| Area Type |                           |             |                   |                 |       |                |
|-----------|---------------------------|-------------|-------------------|-----------------|-------|----------------|
| Area Type | Percent of Count $\Sigma$ | Count Links | Center Line Miles | Average Counted | RMSE  | R <sup>2</sup> |
| 1         | 92.08                     | 17          | 3.14              | 7,043           | 45.71 | 0.84           |
| 2         | 92.13                     | 48          | 15.98             | 11,411          | 37.49 | 0.90           |
| 3         | 106.70                    | 158         | 95.92             | 6,172           | 39.38 | 0.95           |
| 4         | 110.23                    | 28          | 29.49             | 4,113           | 27.47 | 0.99           |

## SCREENLINES

A screenline is a linear boundary transecting a set of roadway facilities at points where traffic counts are available on the individual facilities. Screenlines allow the user to aggregate the total travel on all available facilities in a corridor or travel market so that the model performance for the entire travel market can be assessed and analyzed. By providing an overview of corridor activity, the screenline comparisons provide insight to the modeler on how to calibrate and validate model performance on individual facilities within the given travel market. The target for this criterion was for the aggregate modeled volume to be within 10% of the aggregate observed volume for each screenline<sup>8</sup>. Table 33 and Figure 12 provide the results of the screenline validation.

**TABLE 33: COUNT VS. MODELED SCREENLINE VOLUME**

| Screenline  |                           |             |                   |                 |       |                |
|-------------|---------------------------|-------------|-------------------|-----------------|-------|----------------|
| Screenline  | Percent of Count $\Sigma$ | Count Links | Center Line Miles | Average Counted | RMSE  | R <sup>2</sup> |
| Other Links | 101.05                    | 209         | 102.52            | 6,220           | 45.36 | 0.93           |
| 1           | 103.94                    | 2           | 1.20              | 18,189          | 33.12 | 1.00           |
| 2           | 91.42                     | 3           | 1.02              | 11,816          | 10.90 | 1.00           |
| 3           | 110.19                    | 6           | 5.45              | 6,495           | 44.64 | 0.99           |
| 4           | 89.07                     | 4           | 9.01              | 8,745           | 16.00 | 1.00           |
| 5           | 104.95                    | 4           | 1.20              | 12,356          | 14.35 | 0.95           |
| 6           | 101.71                    | 7           | 10.84             | 7,502           | 18.48 | 0.95           |
| 7           | 108.50                    | 6           | 4.49              | 6,971           | 29.85 | 0.96           |
| 8           | 103.32                    | 4           | 4.07              | 19,262          | 24.91 | 0.83           |
| 9           | 103.12                    | 6           | 4.71              | 15,193          | 34.00 | 0.90           |

<sup>8</sup> Wegmann, F & Everett, J, Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee

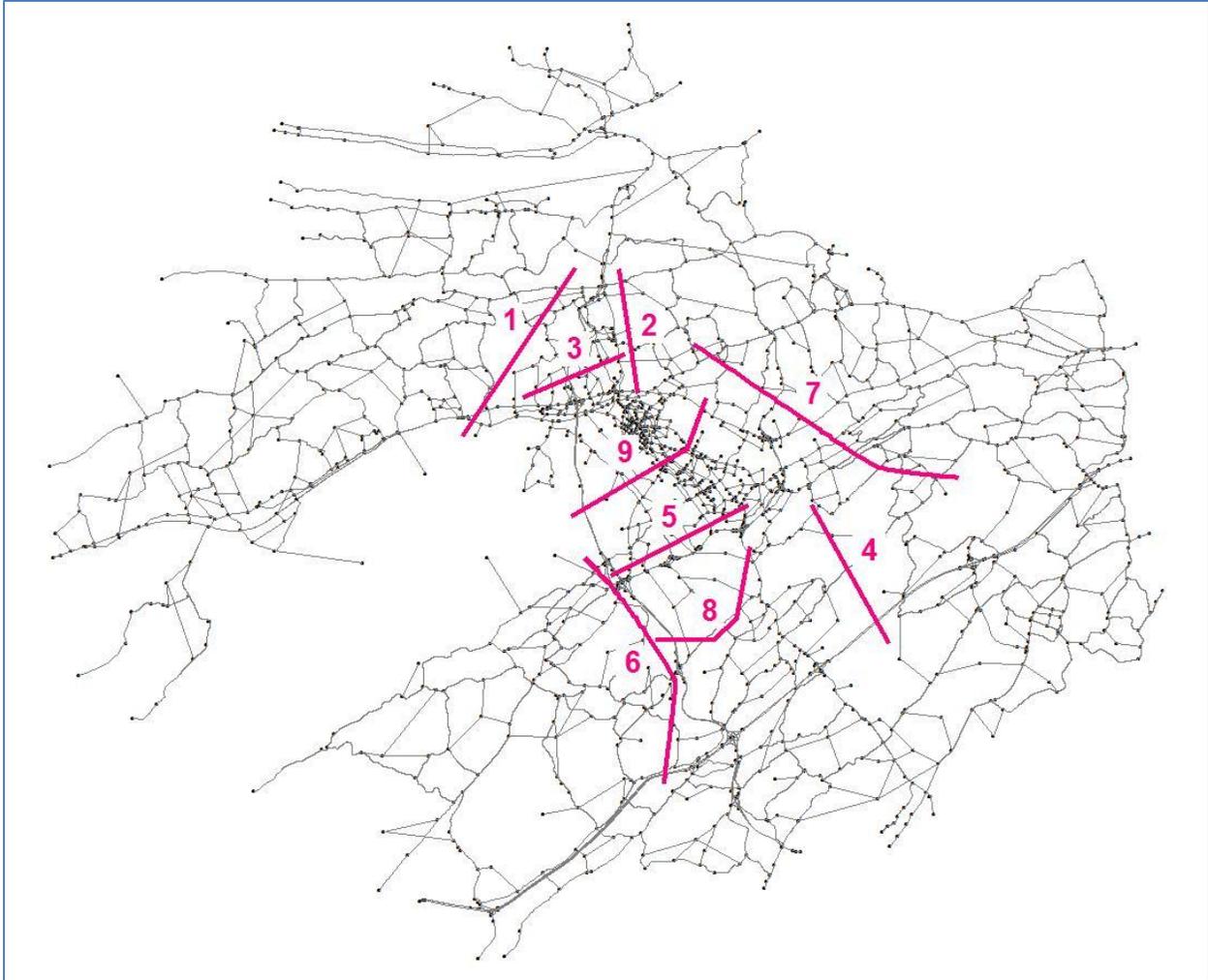


FIGURE 12: KINGSPORT SCREEN LINE

#### VOLUME RANGE

The final validation criterion is to compare observed versus modeled volumes within acceptable volume ranges. As shown in Table 34 and Table 35, the percent difference targets for this criterion is suggested by FHWA, and the percent RMSE targets for this criterion is suggested by TDOT<sup>9</sup>.

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<sup>9</sup> Wegmann, F & Everett, J, Minimum Travel Demand Model Calibration and Validation Guidelines for State of Tennessee

**TABLE 34: PERCENT DIFFERENCE TARGETS FOR DAILY VOLUMES FOR INDIVIDUAL LINKS (FHWA)**

| <b>Count Range A</b> | <b>Target Percent Deviation Less Than</b> |
|----------------------|---|
| <1000                | 200                                       |
| 1,000-2,500          | 100                                       |
| 2,500-5,000          | 50  |
| 5,000-10,000         | 25  |
| 10,000-25,000        | 20  |
| 25,000-50,000        | 15  |
| >50,000              | 10  |

**TABLE 35: PERCENT RMSE TARGETS BY LINK VOLUME (TDOT)**

| <b>Count Range B</b> | <b>Target % RMSE Less Than</b> |
|----------------------|--------------------------------|
| 0-4,999              | 115.757                        |
| 5,000-9,999          | 43.141                         |
| 10,000-19,999        | 28.272                         |
| 20,000-39,999        | 25.383                         |
| 40,000-59,999        | 30.252                         |
| 60,000-89,999        | 19.199                         |

Table 36 and Table 37 show that the Kingsport MTPO model validation meets the criteria for each volume range.

**TABLE 36: MODEL OUTPUT PERCENT DEVIATION VS. TABLE 34**

| <b>Count Range A</b> | <b>Percent Deviation</b> | <b>Count Links</b> | <b>Center Line Miles</b> | <b>Average Counted</b> |
|----------------------|--------------------------|--------------------|--------------------------|------------------------|
| <1000                | 65.55                    | 51                 | 29.87                    | 569                    |
| 1,000 - 2,500        | 2.57                     | 41                 | 22.43                    | 1,576                  |
| 2,500 - 5000         | 12.04                    | 56                 | 22.12                    | 3,538                  |
| 5,000 – 10,000       | 2.47                     | 34                 | 14.65                    | 7,460                  |
| 10,000 – 25,000      | 0.15                     | 58                 | 52.25                    | 15,065                 |
| 25,000 – 50,000      | 3.47                     | 11                 | 3.21                     | 30,785                 |

TABLE 37: MODEL OUPUT %RMSE VS. TABLE 35

| Count Range B   | %RMSE  | Count Links | Center Line Miles | Average Counted |
|-----------------|--------|-------------|-------------------|-----------------|
| 0 - 4,999       | 101.92 | 148         | 74.42             | 1,971           |
| 5,000 - 9,999   | 40.33  | 34          | 14.65             | 7,460           |
| 10,000 - 19,999 | 25.97  | 49          | 46.38             | 13,748          |
| 20,000 - 39,999 | 19.88  | 19          | 8.98              | 26,084          |
| 40,000 - 59,999 | --     | 1           | 0.09              | 43,172          |

CONCLUSION

This report provides a description of the Kingsport MTPO Travel Demand Model and the process used in model development. Throughout the development process, focus was maintained on providing a flexible tool that could be used for travel demand forecasting of various future year scenarios. At each stage of the model development process, priority was given to optimizing the predictive value of the model sets.

The model development process resulted in the construction of a functional, flexible travel demand model with components effectively scaled to current data availability and the analysis needs of the community. The model was calibrated and validated using a strategic approach based on consistent architecture, resulting in a planning tools with predictive value and credibility for use in future year analysis.

The criteria used for validation of the Kingsport MTPO Travel Demand Model are based on current FHWA, NCHRP and TDOT guidance and standards and represent reasonable measures for determining the accuracy and reliability of the model. The validation of the model described in the previous section accomplishes two goals. First, it demonstrates that the calibration tools used in the model process and assumptions are reasonable. Second, the validation provides Kingsport MTPO and transportation professionals in the Kingsport area with confidence in the accuracy and reliability of forecast results obtained from the Kingsport MTPO Travel Demand Model.

No travel demand model is ever complete. The model evolves as the region grows, as goals are met, and policy objectives change. For this reason, the Consultant Team designed the Kingsport MTPO Travel Demand Model to be a flexible dynamic tool that could evolve and grow along with the needs of the region. As implemented, the Kingsport MTPO Travel Demand Model is a complete set of planning tools capable of performing the required transportation systems planning analyses and providing inputs for air quality analysis. The model will assist the Kingsport MTPO in carrying out all required transportation system planning activities, as well as performing implementation scenario analysis for the Kingsport MTPO study area.

## APPENDIX A

### CAPACITY CALCULATION METHODOLOGY

This methodology conforms to the Highway Capacity Manual 2000 (HCM 2000). The capacity calculations are based on service flow rates for level of service E and for the peak direction and for system planning analysis purpose.

The methodology includes two sets of procedures for estimating capacity of facilities carrying traffic flows of “uninterrupted” and “interrupted” characteristics, respectively. Traffic control device (i.e. signals and stop signs) density is used to distinguish the two types of flows. If the traffic control density is below 0.5 signals or stop signs per mile, the facility is assumed to be an uninterrupted flow facility; otherwise, an interrupted flow facility.

#### UNINTERRUPTED FLOW FACILITY

The application of capacity procedures for uninterrupted flow facilities is based on facilities’ design characteristics, not by functional classification. Freeways are characterized by 4 or more through lanes, divided and full access control. Multilane highways have partial or no access control, which distinguish them from freeways. Rural two-lane highways are all rural sections that have two-lane two-way traffic with partial or no access control.

#### FREEWAY CAPACITY

STEP 1. CALCULATED FREE FLOW SPEED (HCM EQ. 23-1)

$$FFS = BFFS - f_{LW} - f_{LC} - f_N - f_{ID}$$

Where,

*BFFS* = base free flow speed; 70 mph for urban facilities, 75 mph for rural facilities

*f<sub>LW</sub>* = adjustment factor for lane width

*f<sub>LC</sub>* = adjustment factor for right shoulder lateral clearance

*f<sub>N</sub>* = adjustment factor for number of lanes

*f<sub>ID</sub>* = adjustment factor for interchange density

HCM Exhibit 23-4, 23-5, 23-6, 23-7 provide the recommended values for these adjustment factors.

STEP 2. CALCULATE HOURLY CAPACITY (BASED ON HCM EXHIBIT 23-3)

$$\text{HourlyCapacity} = 1,700 + 10 \cdot FFS; \text{for } FFS \leq 70$$

$$\text{HourlyCapacity} = 2,400; \text{for } FFS > 70$$

Where, *HourlyCapacity* is in passenger cars per hour per lane (pcphpl).

STEP 3. CALCULATE DAILY CAPACITY

$$DailyCapacity = HourlyCapacity \cdot 24 \cdot N$$

Where,

*DailyCapacity* = 24 hour capacity in vehicles per hour in one direction

*N* = Number of lanes in one direction

#### MULTILANE HIGHWAY CAPACITY

STEP 1. CALCULATED FREE FLOW SPEED (HCM EQ. 21-1)

$$FFS = BFFS - f_{LW} - f_{LC} - f_M - f_A$$

Where,

*BFFS* = base free flow speed; based on posted speed limits

*f<sub>LC</sub>* = adjustment factor for lateral clearance

*f<sub>M</sub>* = adjustment factor for median type

*f<sub>A</sub>* = adjustment factor for access density

HCM Exhibit 21-4, 21-5, 21-6, 21-7 provide the recommended values for the adjustment factors above.

STEP 2. CALCULATE HOURLY CAPACITY (BASED ON HCM EXHIBIT 21-3)

$$HourlyCapacity = 1,000 + 20 \cdot FFS; \text{ for } FFS \leq 60$$

$$HourlyCapacity = 2,200; \text{ for } FFS > 60$$

Where, *HourlyCapacity* is in passenger cars per hour per lane.

STEP 3. CALCULATE DAILY CAPACITY

$$DailyCapacity = HourlyCapacity \cdot 24 \cdot N$$

Where, all the adjustment factors have the same definition and calculation procedures as the freeway application.

#### RURAL TWO-LANE HIGHWAY CAPACITY

STEP 1. CALCULATED HOURLY TWO-WAY CAPACITY (HCM EQ. 21-1)

$$HourlyTwoWayCapacity = 3,200 \cdot PHF \cdot f_{HV} \cdot f_G - V_{NP}$$

Where,

*f<sub>G</sub>* = adjustment factor for grades; calculated based on HCM Exhibit 20-7 and 20-13

*V<sub>NP</sub>* = volume adjustment factor for no passing zones; calculated based on HCM Exhibit 20-11

All other adjustment factors are calculated using the same methods as aforementioned.

## STEP 2. CALCULATED DAILY CAPACITY

$$DailyCapacity = \frac{HourlyTwoWayCapacity}{2} \cdot 24$$

## INTERRUPTED FLOW FACILITY

When traffic control device density is above the threshold of 0.5 signals per mile, the capacity needs to be analyzed using the procedure for signalized intersections (stop sign controlled intersection is not provided due to the fact that state highway system is lack of that level of detail).

## SIGNALIZED INTERSECTIONS

### STEP 1. CALCULATE SATURATION FLOW RATE FOR LANE GROUP (BASED ON HCM EQ. 16-4)

$$S = S_0 N f_W f_{HV} f_g f_p f_{bb} f_a f_{LU} f_{LT} f_{RT} f_{Lpb} f_{Rpb} PHF$$

Where,

$S$  = saturation flow rate for subject lane group, in vehicles per hour

$S_0$  = base saturation flow rate per lane, the default is 1,900 pcphpl

$N$  = number of lanes in lane group

$f_W$  = adjustment factor for lane width

$f_{HV}$  = adjustment factor for heavy vehicles in traffic stream

$f_g$  = adjustment factor for approach grade

$f_p$  = adjustment factor for existence of a parking lane and parking activity adjacent to lane group

$f_{bb}$  = adjustment factor for blocking effect of local buses that stop within intersection area

$f_a$  = adjustment factor for area type

$f_{LU}$  = adjustment factor for lane utilization

$f_{LT}$  = adjustment factor for left turns in lane group

$f_{RT}$  = adjustment factor for right turns in lane group

$f_{Lpb}$  = pedestrian-bicycle adjustment factor for left-turn movements

$f_{Rpb}$  = pedestrian-bicycle adjustment factor for right-turn movements

The adjustment factors can be calculated based on HCM procedures. If no data available, factor  $f_{bb} \cdot f_{LU} \cdot f_{Lpb} \cdot f_{Rpb} \cdot f_g$  can be set at 1.0,  $f_a$  can be set at 0.9 in CBDs and 1.0 in rural areas.

### STEP 2. CALCULATE INTERSECTION APPROACH CAPACITY (BASED ON HCM EQ. 16-6)

$$C_A = \sum_i S_i \frac{g_i}{C}$$

Where,

$C_A$  = intersection approach capacity, based on HCM Equation 16-6

$S_i$  = saturation flow rate for lane group  $i$

$\frac{g_i}{C}$  = effective green ratio for lane group  $i$

STEP 3. CALCULATE DAILY CAPACITY

$$DailyCapacity = C_A \cdot 24$$

SIGNALIZED INTERSECTIONS – LEFT & RIGHT TURN LANE DATA NOT AVAILABLE

STEP 1. CALCULATE INTERSECTION APPROACH CAPACITY (BASED ON HPMS FIELD MANUAL APP. N EQ. 29)

$$C_A = 1900 \cdot N \cdot f_{LW} \cdot f_{HV} \cdot PHF \cdot \frac{g}{C}$$

Where,

$C_A$  = Hourly intersection approach capacity

$N$  = number of lanes in one approach

$f_{LW}$  = adjustment factor for lane width

$f_{HV}$  = adjustment factor for heavy vehicles in traffic stream

$PHF$  = peak hour factor; HCM recommends 0.92 for urban facilities and 0.88 for rural facilities

$\frac{g}{C}$  = effective green ratio; HCM recommends 0.55 principal arterial, 0.45 minor arterial, 0.40 collector

STEP 2. CALCULATE DAILY CAPACITY

$$DailyCapacity = C_A \cdot 24$$

CAPACITY ADJUSTMENT ASSUMPTIONS

TABLE 38: ADJUSTMENT FACTOR FOR LANE WIDTH

| Lane Width | F_LW |
|------------|------|
| 12         | 0    |
| 11         | 1.9  |
| 10         | 6.6  |

TABLE 39: ADJUSTMENT FACTOR FOR RIGHT SHOULDER LATERAL CLEARANCE

| Right Shoulder Width Freeway | Lanes2 F_LC | Lanes3 F_LC | Lanes4 F_LC | Lanes5 F_LC |
|------------------------------|-------------|-------------|-------------|-------------|
| 6                            | 0           | 0           | 0           | 0           |
| 5                            | 0.6         | 0.4         | 0.2         | 0.1         |
| 4                            | 1.2         | 0.8         | 0.4         | 0.2         |
| 3                            | 1.8         | 1.2         | 0.6         | 0.3         |
| 2                            | 2.4         | 1.6         | 0.8         | 0.4         |
| 1                            | 3           | 2           | 1           | 0.5         |
| 0                            | 3.6         | 2.4         | 1.2         | 0.6         |

| Right Shoulder Width<br>Multilane Hwy | Lanes2<br>F_LC | Lanes3<br>F_LC |
|---------------------------------------|----------------|----------------|
| 6                                     | 0              | 0              |
| 5                                     | 0.4            | 0.4            |
| 4                                     | 0.9            | 0.9            |
| 3                                     | 1.3            | 1.3            |
| 2                                     | 1.8            | 1.7            |
| 1                                     | 3.6            | 2.8            |
| 0                                     | 5.4            | 3.9            |

TABLE 40: ADJUSTMENT FACTOR FOR NUMBER OF LANES

| Number of Lanes | F_LN | Area Code |
|-----------------|------|-----------|
| 2               | 4.5  | Urban     |
| 2               | 0    | Rural     |
| 3               | 3    | Urban     |
| 3               | 0    | Rural     |
| 4               | 1.5  | Urban     |
| 4               | 0    | Rural     |
| 5               | 0    | Urban     |
| 5               | 0    | Rural     |

TABLE 41: ADJUSTMENT FACTOR FOR INTERCHANGE DENSITY

| Area size | F_ID | Area_code | Model Code |
|-----------|------|-----------|------------|
| 0         | 0    | Rural     | 1          |
| 1         | 1    | Urban     | 11         |
| 2         | 1.3  | Urban     | 11         |
| 3         | 1.7  | Urban     | 11         |
| 1         | 1.7  | Urban     | 12         |
| 2         | 1.9  | Urban     | 12         |
| 3         | 2.1  | Urban     | 12         |

TABLE 42: ADJUSTMENT FACTOR FOR HEAVY VEHICLES

| Type                 | Range      | Low  | High    | Level | Rolling | Mountainous |
|----------------------|------------|------|---------|-------|---------|-------------|
| PassengerCarEQTrucks | 0-600      | 0    | 600     | 1.7   | 2.5     | 7.2         |
| PassengerCarEQTrucks | >600-1,200 | 601  | 1200    | 1.2   | 1.9     | 7.2         |
| PassengerCarEQTrucks | >1,200     | 1201 | 1000000 | 1.1   | 1.5     | 7.2         |
| GradeAdjustment      | 0-600      | 0    | 600     | 1     | 0.71    | 0.57        |
| GradeAdjustment      | >600-1,200 | 601  | 1200    | 1     | 0.93    | 0.85        |
| GradeAdjustment      | >1,200     | 1201 | 1000000 | 1     | 0.99    | 0.99        |

TABLE 43: ADJUSTMENT FACTOR FOR MEDIAN WIDTH

| Median description        | F_M |
|---------------------------|-----|
| undivided                 | 1.6 |
| divided (including TWLTL) | 0   |

TABLE 44: ADJUSTMENT FACTOR FOR ACCESS DENSITY

| Access Point Density | F_A |
|----------------------|-----|
| 0                    | 0   |
| 10                   | 2.5 |
| 20                   | 5   |
| 30                   | 7.5 |
| 40                   | 10  |

TABLE 45: ADJUSTMENT FACTOR FOR GRADES

| Range      | Low  | High | Level | Rolling | Mountainous |
|------------|------|------|-------|---------|-------------|
| 0-600      | 0    | 600  | 1     | 0.71    | 0.57        |
| >600-1,200 | 601  | 1200 | 1     | 0.93    | 0.85        |
| >1,200     | 1201 | 0    | 1     | 0.99    | 0.99        |

TABLE 46: VOLUME ADJUSTMENT FACTOR FOR NO PASSING ZONES\*

| Range       | Low  | High | NP20 | NP210 | NP220 | NP230 | NP240 | NP250 | NP260 | NP270 | NP280 | NP290 | NP2100 |
|-------------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| 0-100       | 0    | 100  | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0      |
| 101-300     | 101  | 300  | 0    | 0.3   | 0.6   | 1     | 1.4   | 1.9   | 2.4   | 2.5   | 2.6   | 3.1   | 3.5    |
| 301-500     | 301  | 500  | 0    | 0.9   | 1.7   | 2.2   | 2.7   | 3.1   | 3.5   | 3.7   | 3.9   | 4.2   | 4.5    |
| 501-700     | 501  | 700  | 0    | 0.8   | 1.6   | 2     | 2.4   | 2.7   | 3     | 3.2   | 3.4   | 3.7   | 3.9    |
| 701-900     | 701  | 900  | 0    | 0.7   | 1.4   | 1.7   | 1.9   | 2.2   | 2.4   | 2.6   | 2.7   | 2.9   | 3      |
| 901-1,100   | 901  | 1100 | 0    | 0.6   | 1.1   | 1.4   | 1.6   | 1.8   | 2     | 2.1   | 2.2   | 2.4   | 2.6    |
| 1,101-1,300 | 1101 | 1300 | 0    | 0.4   | 0.8   | 1     | 1.2   | 1.4   | 1.6   | 1.8   | 1.9   | 2     | 2.1    |
| 1,301-1,500 | 1301 | 1500 | 0    | 0.3   | 0.6   | 0.8   | 0.9   | 1.1   | 1.2   | 1.3   | 1.4   | 1.6   | 1.7    |
| 1,501-1,700 | 1501 | 1700 | 0    | 0.3   | 0.6   | 0.7   | 0.8   | 1     | 1.1   | 1.2   | 1.3   | 1.4   | 1.5    |
| 1,701-1,900 | 1701 | 1900 | 0    | 0.3   | 0.5   | 0.6   | 0.7   | 0.9   | 1     | 1.1   | 1.1   | 1.2   | 1.3    |
| 1,901-2,100 | 1901 | 2100 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.8   | 0.9   | 1     | 1     | 1.1   | 1.1    |
| 2,101-2,300 | 2101 | 2300 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.8   | 0.9   | 0.9   | 0.9   | 1     | 1.1    |
| 2,301-2,500 | 2301 | 2500 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.7   | 0.8   | 0.9   | 0.9   | 1     | 1.1    |
| 2,501-2,700 | 2501 | 2700 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.7   | 0.8   | 0.9   | 0.9   | 1     | 1      |
| 2,701-2,900 | 2701 | 2900 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.7   | 0.7   | 0.8   | 0.8   | 0.9   | 0.9    |
| 2,901-3,100 | 2901 | 3100 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.7   | 0.7   | 0.7   | 0.7   | 0.8   | 0.8    |
| 3,101-3,300 | 3101 | 3300 | 0    | 0.3   | 0.5   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.6   | 0.7   | 0.7    |
| >3,300      | 3300 | 0    | 0    | 0.3   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5   | 0.5    |

\*If data not available  $V_{NP} = 0$

## APPENDIX B

TABLE 47: NETWORK IMPROVEMENTS

| Project ID | Roadway                        | Improvement   | Year |
|------------|--------------------------------|---|------|
| 11-TC      | Rock Springs Rd                | Reconstruct to 3 lanes and widen shoulders with safety and geometric improvements at select locations/intersections | 2015 |
| 13-TC      | Sullivan St West               | Reconstruct to 3 lanes and widen shoulders with safety and geometric improvements at select locations/intersections | 2015 |
| 14-TC      | Eastern Star Rd                | Reconstruct to 3 lanes with safety and geometric improvements at select locations/intersections                     | 2015 |
| 15-TC      | Tri-Cities Crossing            | Reconstruct to 3 lanes with safety and geometric improvements at select locations/intersections                     | 2015 |
| 17-TC      | Lincoln St/MLK Jr Dr Connector | Extend Lincoln St/MLK JR Dr to Industry Dr  | 2015 |
| 19-TC      | Mitchell Rd Connector          | Construct new 3 lane roadway to link Fordtown Rd to Eastern Star at I-26 Interchange                                | 2015 |
| 36-TSTI    | Memorial Blvd (SR 126)         | Reconstruct to 2 lanes and widen shoulders with safety and geometric improvements at select locations/intersections | 2015 |
| 3-VC       | Wadlow Gap Rd (SR 224)         | Pave gravel shoulders; provide safety and geometric improvements at select locations/intersections                  | 2015 |
| 9-TC       | Netherland Inn Rd              | Reconstruct to 3 lanes (center turn lane) in coordination with roundabout   | 2015 |
| 1-VC       | US 58/US 421                   | Reconstruct to 3 lanes (center turn lane) as part of Moccasin Gap project   | 2025 |
| 38-TSTI    | Fort Henry Dr (SR 36)          | Widen shoulders and improve turning movements/extend center turn lane   | 2025 |
| 40-TSTI    | Bloomingtondale Pk             | Reconstruct to 3 lanes with safety and geometric improvements at select locations/intersections                     | 2025 |
| 8-TC       | Memorial Blvd (SR 126)         | Reconstruct to 3 lanes and widen shoulders with safety and geometric improvements at select locations/intersections | 2025 |
| 10-TC      | Reservoir Rd                   | Reconstruct to 3 lanes (center turn lane) and widen shoulders   | 2035 |
| 22-TC      | Fort Henry Drive (SR 36)       | Widen existing 2 lane road to 4/5 lanes   | 2035 |
| 26-TC      | Granby Rd Extension            | Extend Granby Dr from Stone Dr to Fort Robinson Dr as part of improved access to Netherland Inn Rd                  | 2035 |
| 2-VC       | Jackson St East (SR 71)        | Reconstruct to 3 lanes as part of proposed Clinch Mountain/SR 72 bypass project                                     | 2035 |
| 34-TSTI    | Riverport Rd                   | Reconstruct to 2 lanes and widen shoulders with safety and geometric improvements at select locations/intersections | 2035 |
| 4-TC       | Stone Dr West (US 11W/SR 1)    | Widen to 6 lanes  | 2035 |

## APPENDIX C

TABLE 48: EI-IE

| External | Passenger Car<br>15 | Truck/CMVeh<br>15 | Passenger Car<br>25 | Truck/CMVeh<br>25 | Passenger Car<br>35 | Truck/CMVeh<br>35 |
|----------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|
| 300      | 258                 | 27                | 304                 | 32                | 349                 | 37                |
| 301      | 64                  | 7                 | 75                  | 8                 | 86                  | 8                 |
| 302      | 2043                | 85                | 2408                | 100               | 2772                | 116               |
| 303      | 4392                | 280               | 5176                | 330               | 5960                | 380               |
| 304      | 3100                | 198               | 3654                | 234               | 4208                | 269               |
| 305      | 75                  | 7                 | 88                  | 8                 | 102                 | 9                 |
| 306      | 114                 | 13                | 135                 | 16                | 155                 | 19                |
| 307      | 394                 | 60                | 465                 | 71                | 535                 | 81                |
| 308      | 27                  | 8                 | 32                  | 9                 | 36                  | 11                |
| 309      | 9998                | 1989              | 11784               | 2344              | 13570               | 2699              |
| 310      | 15600               | 2559              | 18632               | 3057              | 21665               | 3554              |
| 311      | 6499                | 0                 | 7660                | 0                 | 8821                | 0                 |
| 312      | 1136                | 44                | 1338                | 51                | 1542                | 59                |
| 313      | 9361                | 1459              | 11033               | 1720              | 12705               | 1980              |
| 314      | 4745                | 413               | 5668                | 493               | 6591                | 574               |
| 315      | 27737               | 3756              | 33767               | 4572              | 39797               | 5389              |
| 316      | 684                 | 67                | 833                 | 81                | 982                 | 96                |
| 317      | 940                 | 57                | 1107                | 67                | 1276                | 77                |
| 318      | 3404                | 283               | 4011                | 334               | 4620                | 384               |
| 319      | 7315                | 8933              | 8849                | 10808             | 10384               | 12682             |
| 320      | 917                 | 43                | 1081                | 50                | 1245                | 58                |
| 321      | 609                 | 25                | 718                 | 29                | 827                 | 33                |
| 322      | 344                 | 8                 | 405                 | 9                 | 467                 | 10                |
| 323      | 1119                | 0                 | 1319                | 0                 | 1518                | 0                 |
| 324      | 15081               | 2774              | 17774               | 3270              | 20467               | 3765              |
| 325      | 1112                | 74                | 1311                | 87                | 1510                | 101               |
| 326      | 261                 | 56                | 308                 | 66                | 354                 | 76                |
| 327      | 246                 | 26                | 290                 | 30                | 334                 | 35                |
| 328      | 90                  | 9                 | 106                 | 11                | 121                 | 13                |
| 329      | 706                 | 78                | 832                 | 92                | 958                 | 106               |
| 330      | 605                 | 0                 | 713                 | 0                 | 821                 | 0                 |
| 331      | 11394               | 1855              | 13428               | 2186              | 15464               | 2517              |
| 332      | 840                 | 0                 | 990                 | 0                 | 1396                | 0                 |
| 333      | 1187                | 0                 | 1399                | 0                 | 1611                | 0                 |

TABLE 49: EE

| External | Passenger Car<br>15 | Truck/CMVeh<br>15 | Passenger Car<br>25 | Truck/CMVeh<br>25 | Passenger Car<br>35 | Truck/CMVeh<br>35 |
|----------|---------------------|-------------------|---------------------|-------------------|---------------------|-------------------|
| 300      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 301      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 302      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 303      | 136                 | 9                 | 160                 | 11                | 184                 | 12                |
| 304      | 164                 | 10                | 193                 | 12                | 222                 | 14                |
| 305      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 306      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 307      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 308      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 309      | 404                 | 81                | 477                 | 95                | 549                 | 109               |
| 310      | 6975                | 4170              | 8331                | 4981              | 9689                | 5803              |
| 311      | 489                 | 0                 | 577                 | 0                 | 664                 | 0                 |
| 312      | 24                  | 1                 | 28                  | 1                 | 31                  | 3                 |
| 313      | 1348                | 211               | 1589                | 248               | 1831                | 286               |
| 314      | 462                 | 111               | 552                 | 132               | 641                 | 156               |
| 315      | 15510               | 2644              | 18882               | 3219              | 22248               | 3801              |
| 316      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 317      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 318      | 256                 | 21                | 302                 | 25                | 348                 | 29                |
| 319      | 7938                | 7649              | 9604                | 9253              | 11271               | 10834             |
| 320      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 321      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 322      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 323      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 324      | 720                 | 132               | 849                 | 156               | 978                 | 180               |
| 325      | 22                  | 1                 | 26                  | 1                 | 31                  | 3                 |
| 326      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 327      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 328      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 329      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 330      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 331      | 1127                | 184               | 1328                | 216               | 1530                | 250               |
| 332      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |
| 333      | 0                   | 0                 | 0                   | 0                 | 0                   | 0                 |

## APPENDIX D

TABLE 50: 2015 ASSIGN STATISTICS

| Total Flow by Functional Class 2015 |                     |                   |                  |                  |               |                    |
|-------------------------------------|---------------------|-------------------|------------------|------------------|---------------|--------------------|
| Functional Class                    | VMT                 | VHT               | Average AB Speed | Average BA Speed | Average Speed | Energy Consumption |
| Centroid Connector (0)              | 210,004.82          | 8,602.52          | 24.83            | 24.83            | 24.83         | 10,500.24          |
| Rural Interstate (1)                | 826,331.86          | 13,864.73         | 61.24            | 62.67            | 61.95         | 41,316.59          |
| Rural Other Principal Arterial (2)  | 438,220.27          | 9,815.87          | 44.62            | 44.67            | 44.64         | 21,911.01          |
| Rural Minor Arterial (6)            | 137,158.17          | 3,449.47          | 45.23            | 43.15            | 44.19         | 6,857.91           |
| Rural Major Collector (7)           | 139,292.06          | 4,151.90          | 35.97            | 35.99            | 35.98         | 6,964.60           |
| Rural Minor Collector (8)           | 1,353.54            | 38.12             | 33.59            | 33.59            | 33.59         | 67.68              |
| Rural Local Collector (9)           | 226,081.61          | 6,033.81          | 37.68            | 37.72            | 37.70         | 11,304.08          |
| Urban Interstate (11)               | 306,917.70          | 8,318.30          | 46.68            | 46.14            | 46.41         | 15,345.88          |
| Urban Freeway/Expressway (12)       | 139,760.48          | 2,920.14          | 46.85            | 47.25            | 47.05         | 6,988.02           |
| Urban Other Principal Arterial (14) | 895,339.21          | 27,333.06         | 36.43            | 36.93            | 36.68         | 44,766.96          |
| Urban Minor Arterial (16)           | 627,331.32          | 18,896.24         | 34.22            | 34.70            | 34.46         | 31,366.57          |
| Urban Collector (17)                | 185,033.91          | 6,295.18          | 30.76            | 30.67            | 30.72         | 9,251.70           |
| Urban Local (19)                    | 91,737.96           | 2,823.51          | 34.23            | 34.32            | 34.28         | 4,586.90           |
| Ramp (20)                           | 66,929.80           | 2,280.61          | 32.84            | 32.20            | 32.52         | 3,346.49           |
| <b>Total</b>                        | <b>4,291,492.71</b> | <b>114,823.46</b> | <b>38.94</b>     | <b>38.92</b>     | <b>38.93</b>  | <b>214,574.63</b>  |

TABLE 51: 2025 ASSIGN STATISTICS

| Total Flow by Functional Class 2025        |              |            |                  |                  |               |                    |
|--|--------------|------------|------------------|------------------|---------------|--------------------|
| Functional Class                           | VMT          | VHT        | Average AB Speed | Average BA Speed | Average Speed | Energy Consumption |
| <b>Centroid Connector (0)</b>              | 227,656.58   | 9,323.63   | 24.82            | 24.82            | 24.82         | 11,382.83          |
| <b>Rural Interstate (1)</b>                | 935,036.25   | 16,806.46  | 58.69            | 60.16            | 59.42         | 46,751.81          |
| <b>Rural Other Principal Arterial (2)</b>  | 491,400.95   | 10,968.89  | 44.42            | 44.51            | 44.46         | 24,570.05          |
| <b>Rural Minor Arterial (6)</b>            | 163,968.34   | 4,470.12   | 44.34            | 41.97            | 43.15         | 8,198.42           |
| <b>Rural Major Collector (7)</b>           | 178,971.51   | 5,464.81   | 35.96            | 35.96            | 35.96         | 8,948.58           |
| <b>Rural Minor Collector (8)</b>           | 1,473.18     | 41.93      | 33.18            | 33.18            | 33.18         | 73.66              |
| <b>Rural Local Collector (9)</b>           | 274,607.93   | 7,476.12   | 37.64            | 37.74            | 37.69         | 13,730.40          |
| <b>Urban Interstate (11)</b>               | 330,535.52   | 9,743.68   | 45.58            | 44.88            | 45.23         | 16,526.78          |
| <b>Urban Freeway/Expressway (12)</b>       | 149,609.82   | 3,138.74   | 46.89            | 46.82            | 46.86         | 7,480.49           |
| <b>Urban Other Principal Arterial (14)</b> | 962,024.68   | 30,118.13  | 35.94            | 35.91            | 35.92         | 48,101.23          |
| <b>Urban Minor Arterial (16)</b>           | 716,875.36   | 22,395.30  | 33.57            | 33.98            | 33.78         | 35,843.77          |
| <b>Urban Collector (17)</b>                | 218,239.97   | 7,570.88   | 30.47            | 30.39            | 30.43         | 10,912.00          |
| <b>Urban Local (19)</b>                    | 110,365.57   | 3,551.36   | 34.20            | 34.27            | 34.23         | 5,518.28           |
| <b>Ramp (20)</b>                           | 72,730.47    | 2,483.10   | 32.24            | 31.78            | 32.01         | 3,636.52           |
| <b>Total</b>                               | 4,833,496.13 | 133,553.16 | 38.42            | 38.31            | 38.37         | 241,674.82         |

TABLE 52: 2035 ASSIGN STATISTICS

| <b>Total Flow by Functional Class 2035</b> |                     |                   |                                 |                                 |                          |                               |
|--|---------------------|-------------------|---------------------------------|---------------------------------|--------------------------|-------------------------------|
| <b>Functional Class</b>                    | <b>VMT</b>          | <b>VHT</b>        | <b>Average<br/>AB<br/>Speed</b> | <b>Average<br/>BA<br/>Speed</b> | <b>Average<br/>Speed</b> | <b>Energy<br/>Consumption</b> |
| <b>Centroid Connector (0)</b>              | 245,266.37          | 10,070.93         | 24.80                           | 24.81                           | 24.80                    | 12,263.32                     |
| <b>Rural Interstate (1)</b>                | 1,056,812.54        | 20,348.15         | 53.67                           | 54.98                           | 54.33                    | 52,840.63                     |
| <b>Rural Other Principal Arterial (2)</b>  | 547,919.29          | 12,278.49         | 44.15                           | 44.20                           | 44.18                    | 27,395.96                     |
| <b>Rural Minor Arterial (6)</b>            | 179,754.46          | 4,780.65          | 44.77                           | 42.52                           | 43.65                    | 8,987.72                      |
| <b>Rural Major Collector (7)</b>           | 214,242.69          | 6,720.95          | 35.63                           | 35.62                           | 35.62                    | 10,712.13                     |
| <b>Rural Minor Collector (8)</b>           | 1,659.19            | 47.25             | 33.18                           | 33.18                           | 33.18                    | 82.96                         |
| <b>Rural Local Collector (9)</b>           | 319,335.59          | 8,964.73          | 37.39                           | 37.50                           | 37.44                    | 15,966.78                     |
| <b>Urban Interstate (11)</b>               | 349,631.39          | 11,053.00         | 44.52                           | 43.92                           | 44.22                    | 17,481.57                     |
| <b>Urbay Freeway/Expressway (12)</b>       | 161,575.89          | 3,426.00          | 46.83                           | 46.51                           | 46.67                    | 8,078.79                      |
| <b>Urban Other Principal Arterial (14)</b> | 1,050,678.18        | 34,182.72         | 35.55                           | 35.85                           | 35.70                    | 52,533.91                     |
| <b>Urban Minor Arterial (16)</b>           | 793,088.28          | 25,905.63         | 32.98                           | 33.48                           | 33.23                    | 39,654.41                     |
| <b>Urban Collector (17)</b>                | 246,668.72          | 8,693.11          | 30.30                           | 30.20                           | 30.25                    | 12,333.44                     |
| <b>Urban Local (19)</b>                    | 129,478.69          | 4,218.77          | 33.90                           | 34.03                           | 33.96                    | 6,473.93                      |
| <b>Ramp (20)</b>                           | 78,226.19           | 2,636.45          | 32.76                           | 31.70                           | 32.23                    | 3,911.31                      |
| <b>Total</b>                               | <b>5,374,337.47</b> | <b>153,326.83</b> | <b>37.89</b>                    | <b>37.75</b>                    | <b>37.82</b>             | <b>268,716.87</b>             |



**Appendix II: Project Assessment**

**Kingsport MTPO  
2035 Long Range Transportation Plan  
Project Prioritization**

| 2035LRTP NO | Grouping          | Roadway                                 | From  | To   | Safety  |          | Capacity |              | Access | Active Transportation |         | Environmental |            | Economic |                               |            | Project Score |
|-------------|-------------------|---|---|--|---------|----------|----------|--------------|--------|-----------------------|---------|---------------|------------|----------|-------------------------------|------------|---------------|
|             |                   |   |   |  | Crashes | Geometry | 2035 VOC | Existing LOS |        | Bike/Ped              | Transit | Historic      | Flood zone | Freight  | Development/<br>Redevelopment | Within UGB |               |
| 1-TC        | NRRW-TN           | Interstate 26 (I-26)                    | Rock Springs Rd (Exit 6)  | Mile Marker 2  |         |          | 5        |              | 5      |                       |         | 5             | 5          | 5        | 5                             | 5          | 35            |
| 2-TC        | NRRW-TN           | Interstate 81 (I-81)                    | Fort Henry Dr (SR 36)   | Tri-Cities Crossing (Exit 56)  |         |          |          |              | 5      |                       |         | 5             |            | 5        | 5                             | 5          | 25            |
| 3-TC        | NRRW-TN           | US 11W/SR 1                             | Hammond Ave   | East Ave   | 5       |          | 5        | 10           |        | 5                     |         | 5             |            | 5        | 5                             | 5          | 45            |
| 4-TC        | NRRW-TN           | Stone Dr West (US 11W/SR 1)             | East Ave  | Fairview Ave   | 20      |          | 5        | 10           | 5      | 20                    | 5       |               |            |          | 5                             | 5          | 75            |
| 5-TC        | NRRW-TN           | Sullivan Garden Pkwy (SR 93) - Ultimate | Lone Star Rd (SR 347)   | Interstate 81 (I-81)   |         |          |          |              | 5      |                       |         | 5             | 5          |          | 5                             |            | 20            |
| 6-TC        | NRRW-TN           | Wilcox Dr (SR 126)                      | John B Dennis (SR 93)   | Interstate 26 (I-26)   |         |          |          |              |        |                       |         | 5             | 5          | 5        | 5                             | 5          | 25            |
| 7-TC        | NRRW-TN           | Carters Valley Rd (SR 346)              | Central Ave North (SR 346)  | Lynn Garden Dr (SR 36)   |         |          | 10       | 10           |        | 10                    |         |               |            |          | 5                             | 5          | 40            |
| 8-TC        | NRRW-TN           | Memorial Blvd (SR 126)                  | Cooks Valley Rd   | Harr Town Rd   | 5       |          |          | 10           |        | 5                     |         |               | 5          |          | 5                             | 5          | 35            |
| 9-TC        | NRRW-TN           | Netherland Inn Rd                       | Center St (SR 36)   | Ridgefields Rd   |         |          |          | 10           |        | 10                    |         |               |            | 5        |                               | 5          | 30            |
| 10-TC       | NRRW-TN           | Reservoir Rd                            | Interstate 26 (I-26)  | Saratoga Rd  |         |          |          |              |        |                       |         | 5             | 5          |          |                               | 5          | 15            |
| 11-TC       | NRRW-TN           | Rock Springs Rd                         | Interstate 26 (I-26)  | Cox Hollow Rd  |         |          |          |              | 5      | 5                     |         | 5             | 5          |          | 5                             | 5          | 30            |
| 12-TC       | NRRW-TN           | Rock Springs Rd                         | Fort Henry Dr (SR 36)   | Moreland Dr  |         |          |          |              |        | 5                     |         | 5             |            |          |                               | 5          | 15            |
| 13-TC       | NRRW-TN           | Sullivan St West                        | Church Circle Dr  | Lynn Garden Dr (SR 36)   |         |          |          | 10           |        | 20                    | 5       |               | 5          | 5        |                               | 5          | 50            |
| 14-TC       | NRRW-TN           | Eastern Star Rd                         | Mitchell Rd   | Fordtown Rd  |         |          |          |              | 5      |                       |         | 5             | 5          | 5        |                               | 5          | 25            |
| 15-TC       | NRRW-TN           | Tri-Cities Crossing                     | Kendricks Creek Rd  | Interstate 81 (I-81) Exit 58   |         |          | 5        |              | 5      |                       |         | 5             | 5          |          | 5                             | 5          | 30            |
| 16-TC       | NRRW-TN           | Airport Pkwy (SR 357) Extension South   | SR 75 (near SR 357 and the Tri-Cities Airport)                        | Kingsport/Bristol MPO Planning Area Boundary (terminating at Bristol Hwy (SR 34/US 11 E/US 19 W) - located in the Bristol MPO Planning Area) |         |          |          |              |        |                       |         | 5             | 5          | 5        | 5                             | 5          | 25            |
| 17-TC       | NRRW-TN           | Lincoln St/MLK Jr Dr Connector          | Lincoln St/MLK Jr Dr  | Industry Dr (SR 355)   |         |          |          |              |        |                       |         |               |            | 5        | 5                             | 5          | 15            |
| 18-TC       | NRRW-TN           | Moreland Dr-Lebanon Rd Connector        | Near Shady Side Dr  | Kendricks Rd   |         |          |          |              |        |                       |         | 5             | 5          |          |                               |            | 10            |
| 19-TC       | NRRW-TN           | Mitchell Rd Connector                   | Fordtown Rd   | Eastern Star Rd  |         |          |          |              |        |                       |         | 5             | 5          | 5        |                               | 5          | 20            |
| 20-TC       | NRRW-TN           | Interstate 26 (I-26)                    | Rock Springs Rd   | Ford Creek Rd  | 10      |          | 5        | 10           | 5      |                       |         | 5             | 5          | 5        | 5                             | 5          | 55            |
| 21-TC       | NRRW-TN           | Moreland Drive Back Access              | Wilcox Dr Extension (PA-12)   | Mooreland Dr   |         |          |          |              |        | 5                     |         | 5             | 5          |          | 5                             | 5          | 25            |
| 22-TC       | NRRW-TN           | Fort Henry Drive (SR 36)                | Interstate 81 (I-81)  | Airport Road (SR 75)   |         |          |          | 10           | 5      | 5                     |         | 5             |            | 5        |                               | 5          | 35            |
| 23-TC       | NRRW-TN           | Airport Pkwy (SR 357) Extension North   | Fall Creek Rd   | Interstate 81 (I-81)   |         |          |          |              | 5      | 5                     |         |               | 5          |          | 5                             | 5          | 25            |
| 24-TC       | NRRW-TN           | Airport Pkwy (SR 357) Extension North   | Stone Drive East (US 11 W/SR 1)                                       | Fall Creek Rd  |         |          |          |              |        | 5                     |         |               | 5          |          |                               | 5          | 15            |
| 25-TC       | NRRW-TN           | SR-394                                  | Interstate 81 (I-81)  | US 11 W (SR 1)   |         |          |          |              | 5      |                       |         | 5             | 5          |          |                               |            | 15            |
| 26-TC       | NRRW-TN           | Granby Rd Extension                     | Stone Dr West (US 11 W/ SR 1)   | Fort Robinson Dr   |         |          |          |              |        | 10                    | 5       |               |            |          |                               | 5          | 20            |
| 27-TC       | NRRW-TN           | Airport Rd (SR 75)                      | Airport Parkway (SR 357)  | Kingsport/Bristol MPO Planning Area Boundary (terminating at SR 126 - located in the Bristol MPO Planning Area)                              |         |          |          |              | 5      |                       |         | 5             | 5          |          | 5                             |            | 20            |
| 1-VC        | NRRW-VA           | US 58/US 421                            | Hilton Road (SR 224)  | SR 614 (East of Gate City)   |         |          |          |              |        |                       |         | 5             | 5          |          | 5                             |            | 15            |
| 2-VC        | NRRW-VA           | Jackson St East (SR 71)                 | SR 72 Bypass (east of Gate City)                                      | Veterans Memorial Hwy (SR 72)  |         |          |          |              |        | 5                     |         | 5             | 5          |          | 5                             |            | 20            |
| 3-VC        | NRRW-VA           | Wadlow Gap Rd (SR 224)                  | US 58/ US 421   | VA/TN State Line (near East Carters Valley Rd (SR 704))  |         |          |          |              |        |                       |         | 5             |            |          | 5                             |            | 10            |
| 1-TSTI      | Safety/TSM/ITS-TN | Airport Pkwy (SR 357)                   | Bristol Hwy (SR 75)   | Jericho Dr   |         |          |          |              | 5      |                       |         | 5             | 5          |          | 5                             | 5          | 25            |
| 2-TSTI      | Safety/TSM/ITS-TN | John B Dennis Hwy (SR 93)               | Interstate 26 (I-26)  | Stone Dr West (US 11W/ SR 1)   | 20      |          | 5        | 10           | 5      | 5                     | 5       | 5             |            | 5        | 5                             | 5          | 70            |
| 3-TSTI      | Safety/TSM/ITS-TN | US 11W/SR 1                             | Intersection in Mt Carmel & Church Hill                               |  | 5       |          | 5        | 10           |        |                       |         | 5             | 5          |          | 5                             | 5          | 40            |
| 4-TSTI      | Safety/TSM/ITS-TN | Stone Dr West (US 11W/SR 1)             | Kaywood Ave (City of Mt Carmel)                                       | Granby Rd  | 5       |          | 5        | 10           |        | 5                     | 5       | 5             |            | 5        | 5                             | 5          | 50            |
| 5-TSTI      | Safety/TSM/ITS-TN | Stone Dr East (US 11W/SR 1)             | John B Dennis (SR 93)   |  | 5       |          | 5        |              |        | 5                     | 5       | 5             | 5          | 5        | 5                             | 5          | 45            |
| 6-TSTI      | Safety/TSM/ITS-TN | Center St (SR 355)                      | Intersection of Sullivan St West & Fairview Ave                       |  |         |          | 5        | 10           |        | 10                    |         | 5             |            |          |                               | 5          | 35            |
| 7-TSTI      | Safety/TSM/ITS-TN | Lynn Garden Dr (SR 36)                  | West Center Street  | West Carters Valley Rd (SR 346)  |         |          | 5        |              |        | 20                    | 5       |               | 5          |          |                               | 5          | 40            |
| 8-TSTI      | Safety/TSM/ITS-TN | Fall Creek Rd                           | Memorial Blvd (SR 126)  | Hemlock Rd/ Fall Creek Rd  |         |          |          |              |        | 5                     |         |               |            |          | 5                             | 5          | 15            |
| 9-TSTI      | Safety/TSM/ITS-TN | Independence Ave                        | Intersections of Walnut St, Tranbarger Rd/Campground Rd, & Redwood St |  |         |          | 5        | 5            |        | 5                     |         | 5             | 5          |          | 5                             |            | 30            |
| 10-TSTI     | Safety/TSM/ITS-TN | Lebanon Rd                              | Intersection at Fort Henry Rd (SR 36)                                 |  |         |          |          |              |        | 5                     |         | 5             | 5          |          |                               | 5          | 20            |

**Kingsport MTPO  
2035 Long Range Transportation Plan  
Project Prioritization**

| 2035LRTP NO | Grouping          | Roadway  | From   | To  | Safety  |          | Capacity |              | Access | Active Transportation |         | Environmental |            | Economic |                               |            | Project Score |
|-------------|-------------------|--|--|---|---------|----------|----------|--------------|--------|-----------------------|---------|---------------|------------|----------|-------------------------------|------------|---------------|
|             |                   |  |  |   | Crashes | Geometry | 2035 VOC | Existing LOS |        | Bike/Ped              | Transit | Historic      | Flood zone | Freight  | Development/<br>Redevelopment | Within UGB |               |
| 11-TSTI     | Safety/TSM/ITS-TN | Main St  | Intersections of Kaywood Ave, Independence Ave, Hammond Ave, Englewood Ave, Dover Ave, & Belmont Ave |   | 5       |          | 5        | 10           |        | 5                     |         | 5             | 5          |          | 5                             |            | 40            |
| 12-TSTI     | Safety/TSM/ITS-TN | Orebank Rd   | Intersections of Woodbridge Ave & Chestnut Ridge Rd  |   |         |          |          |              |        | 10                    |         |               | 5          |          |                               | 5          | 20            |
| 13-TSTI     | Safety/TSM/ITS-TN | Sevier Ave   | Wilcox Dr North (SR 126)   | Holston St  |         |          |          |              |        | 20                    |         | 5             | 5          | 5        |                               | 5          | 40            |
| 14-TSTI     | Safety/TSM/ITS-TN | Stone Dr East (US 11W/SR 1)  | Orebank Rd/ Bancroft Chapel Rd   | John B Dennis (SR 93)                               | 5       |          | 5        | 10           |        | 5                     | 5       | 5             | 5          | 5        | 5                             | 5          | 55            |
| 15-TSTI     | Safety/TSM/ITS-TN | Stone Dr East (US 11W/SR 1)  | John B Dennis (SR 93)  | Lynn Garden Dr (SR 36)                              | 20      |          | 5        | 10           |        | 10                    | 5       |               | 5          | 5        | 5                             | 5          | 70            |
| 16-TSTI     | Safety/TSM/ITS-TN | Fort Henry (SR 36)   | John B Dennis (SR 93)  | Moreland Dr/ Hemlock Rd                             | 5       |          | 10       | 10           |        | 5                     | 5       | 5             |            |          |                               | 5          | 45            |
| 17-TSTI     | Safety/TSM/ITS-TN | Fort Henry (SR 36)   | Moreland Dr/ Hemlock Rd  | Interstate 81 (I-81)                                | 10      |          | 5        | 10           | 5      | 5                     |         | 5             | 5          | 5        |                               | 5          | 55            |
| 18-TSTI     | Safety/TSM/ITS-TN | Interstate 81 (I-81) & Interstate 26 (I-26) Interchange Improvements | Various interchanges along corridors within the MTPO Planning area                                   |   | 20      |          | 5        |              | 5      |                       |         | 5             | 5          | 5        | 5                             | 5          | 55            |
| 19-TSTI     | Safety/TSM/ITS-TN | Volunteer High School Traffic Signal                                 | US 11 W/SR 1   | Tipton St   |         |          | 5        |              |        |                       |         | 5             | 5          |          |                               |            | 15            |
| 20-TSTI     | Safety/TSM/ITS-TN | TSM/ITS/Safety Regional Various                                      |  |   | 20      | 5        | 10       | 10           | 5      | 5                     |         |               |            | 5        | 5                             | 5          | 70            |
| 1-VSTI      | Safety/TSM/ITS-VA | Gate City Hwy (US 23)  | Kane Street (US 23 Business)   | VA/TN State Line                                    | 5       |          | 5        | 10           |        |                       |         |               |            |          | 5                             |            | 25            |
| 2-VSTI      | Safety/TSM/ITS-VA | Wadlow Gap Rd (SR 224)   | Approx 1/4 mile north of Carters Valley Rd (SR 704)  | Approx 1/4 mile south of Carters Valley Rd (SR 704) |         |          | 5        |              |        |                       |         | 5             | 5          |          | 5                             |            | 20            |
| 3-VSTI      | Safety/TSM/ITS-VA | Wadlow Gap Rd (SR 224)   | Intersection of US 58/ US 421  |   |         |          | 5        | 10           |        |                       |         | 5             | 5          |          | 5                             |            | 30            |
| 21-TSTI     | Safety/TSM/ITS-TN | Colonial Heights Rd  | Near Hemlock Rd/Fall Creek Rd  |   |         |          |          |              |        | 10                    |         | 5             |            |          |                               | 5          | 20            |
| 22-TSTI     | Safety/TSM/ITS-TN | Fairview Ave   | Stone Dr West (US 1/11W)   | Virgil Ave  |         |          |          |              |        | 20                    | 5       | 5             | 5          |          |                               | 5          | 40            |
| 23-TSTI     | Safety/TSM/ITS-TN | Fall Creek Rd  | Colonial Heights Rd  | Memorial Blvd (SR 126)                              |         |          |          |              |        | 5                     |         |               |            |          | 5                             | 5          | 15            |
| 24-TSTI     | Safety/TSM/ITS-TN | Gravelly Rd  | Lynn Garden Dr (SR 36)   | Shipps Spring Rd                                    |         |          |          |              |        | 20                    | 5       | 5             | 5          |          |                               | 5          | 40            |
| 25-TSTI     | Safety/TSM/ITS-TN | Hemlock Rd   | Fort Henry Dr (SR 36)  | Fall Creek Rd                                       | 5       |          |          |              |        |                       |         | 5             |            |          |                               | 5          | 15            |
| 26-TSTI     | Safety/TSM/ITS-TN | Bell Ridge Dr  | May Ave  | Harrison Ave  |         | 5        |          |              |        | 20                    |         | 5             | 5          |          |                               | 5          | 40            |
| 27-TSTI     | Safety/TSM/ITS-TN | Cooks Valley Rd  | Harbor Chapel Rd   | Emory Church Rd                                     |         |          |          |              |        | 5                     |         | 5             | 5          |          |                               | 5          | 20            |
| 28-TSTI     | Safety/TSM/ITS-TN | Kendricks Creek Rd   | Lebanon Rd   | Tri-Cities Crossing                                 |         |          | 5        |              | 5      | 10                    |         | 5             | 5          |          |                               | 5          | 35            |
| 29-TSTI     | Safety/TSM/ITS-TN | Rock Springs Dr (SR 347)   | Rock Springs Rd (SR 347)   | Poplar Grove Rd (SR 347)                            |         |          |          |              |        |                       |         | 5             | 5          |          | 5                             | 5          | 20            |
| 30-TSTI     | Safety/TSM/ITS-TN | Rock Springs Dr (SR 347)   | Poplar Grove Rd (SR 347)   | Sullivan Garden Pkwy (SR 93)                        |         |          | 5        |              |        | 5                     |         | 5             | 5          |          | 5                             | 5          | 30            |
| 31-TSTI     | Safety/TSM/ITS-TN | Summerville Rd   | Fort Henry Dr (SR 36)  | New Summerville Rd                                  |         |          | 5        |              |        | 10                    |         | 5             |            |          |                               | 5          | 25            |
| 32-TSTI     | Safety/TSM/ITS-TN | Tranbarger Dr  | Lynn Garden Dr (SR 36)   | Virgil Ave  |         |          |          |              |        | 10                    |         | 5             | 5          |          |                               | 5          | 25            |
| 33-TSTI     | Safety/TSM/ITS-TN | May Ave  | Bell Ridge Dr  | Lynn Garden Dr (SR 36)                              |         | 5        | 5        | 10           |        | 20                    |         | 5             | 5          |          |                               | 5          | 55            |
| 34-TSTI     | Safety/TSM/ITS-TN | Riverport Rd   | Holston River Sluice Bridge  | Wilcox Dr (SR 126)                                  |         |          | 5        | 10           |        | 5                     |         |               |            | 5        |                               |            | 25            |
| 35-TSTI     | Safety/TSM/ITS-TN | Riverport Rd   | Ridgefields Rd   | Holston River Sluice Bridge                         |         |          | 5        | 10           |        | 5                     |         |               |            | 5        |                               |            | 25            |
| 36-TSTI     | Safety/TSM/ITS-TN | Memorial Blvd (SR 126)   | Harr Town Rd   | Interstate 81 (I-81)                                |         |          |          |              | 5      |                       |         | 5             | 5          |          | 5                             | 5          | 25            |
| 37-TSTI     | Safety/TSM/ITS-TN | Bloomingtondale Pike   | Orbin Dr   | John B Dennis (SR 93)                               |         |          |          |              |        | 10                    |         |               | 5          |          | 5                             | 5          | 25            |
| 38-TSTI     | Safety/TSM/ITS-TN | Fort Henry Dr (SR 36)  | Holston River Bridge   | Hemlock Rd  | 5       |          | 10       | 10           |        | 5                     |         | 5             |            |          |                               | 5          | 40            |
| 39-TSTI     | Safety/TSM/ITS-TN | Bridges  |  |   | 5       | 5        | 5        | 10           | 5      |                       |         |               |            | 5        | 5                             | 5          | 45            |
| 40-TSTI     | Safety/TSM/ITS-TN | Bloomingtondale Pk   | Stone Dr West (US 1/11W)   | Orbin Dr  | 10      |          |          |              |        | 10                    | 5       |               | 5          |          |                               | 5          | 35            |
| 41-TSTI     | Safety/TSM/ITS-TN | Hammond Ave  | Main St  | Cherry St   |         |          |          |              |        | 5                     |         | 5             | 5          |          | 5                             | 5          | 25            |
| 4-VSTI      | Safety/TSM/ITS-VA | Carters Valley Rd East (SR 704)                                      | Lynn Garden Dr (SR 36)   | Wadlow Gap Rd (SR 224)                              |         | 5        |          |              |        |                       |         |               | 5          |          | 5                             | 5          | 20            |
| 5-VSTI      | Safety/TSM/ITS-VA | TSM/ITS/Safety Regional Various                                      |  |   | 20      | 5        | 10       | 10           | 5      | 5                     |         |               |            | 5        | 5                             | 5          | 70            |
| 6-VSTI      | Safety/TSM/ITS-VA | Bridges  |  |   | 5       | 5        | 5        | 10           | 5      |                       |         |               |            | 5        | 5                             | 5          | 45            |



**Appendix III: Title VI and Environmental Justice Assessment**

## **APPENDIX III**

### **TITLE VI AND ENVIRONMENTAL JUSTICE ASSESSMENT**

The specific civil rights concerns with transportation projects revolve around Title VI of the Civil Rights Act and Environmental Justice requirements (E.O.12898 *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*). US DOT's policy is to ensure compliance with 42 U.S.C. 2000 "No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under a program or activity receiving federal financial assistance from the Department of Transportation." E.O. 12898 requires each agency (including the US DOT) to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations". US DOT issued its Order on Environmental Justice (DOT Order 5610.2) in response to clarify Title VI responsibilities. Adverse impacts related to transportation projects include:

- Air, noise, and water pollution, and soil contamination;
- Destruction or disruption of man-made or natural resources;
- Destruction or diminution of aesthetic values;
- Destruction or disruption of community cohesion or a community's economic vitality;
- Destruction or disruption of the availability of public and private facilities and services;
- Vibration;
- Adverse employment effects;
- Displacement of people, businesses, farms, or non-profit organizations;
- Increased traffic congestion, isolation, exclusion, or separation of minority or low-income individuals within a given community from the broader community; and
- The denial of, reduction in, or significant delay in the receipt of, benefits of DOT programs, policies, or activities.

The DOT Order ensures that there will be greater public involvement opportunities and access to information on transportation activities affecting the human health and the environment. A requirement of the E.O. 12898 and the DOT Order concerns Limited English Proficiency (LEP) people. Discrimination against people who are Limited English Proficient was determined to be a form of national origin discrimination forbidden by Title VI of the Civil Rights Act.

Metropolitan planning organizations are required to consider three fundamental environmental justice principles:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health or environmental effects, including social and economic effects, on minority populations and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority populations and low-income people.

Metropolitan planning organizations are required to consider environmental justice early in the planning process and (1) determine benefits to and potential negative impacts on minority populations and low-income populations from proposed investments or actions; (2) quantify

expected effects (total, positive and negative) and disproportionately high and adverse effects on minority populations and low-income populations; and (3) determine the appropriate course of action, whether avoidance, minimization, or mitigation. (This is a discussion of environmental justice and planning, but the requirements apply across the whole range of transportation activities including contracting for services, and require the recipients, i.e. the MTPO, the Cities of Kingsport, Mount Carmel, Church Hill, Weber City, and Gate City, and Sullivan, Hawkins, Washington, and Scott Counties to do things such as monitor minority participation in contracts and maintain a complaint system for addressing Title VI complaints, etc.).

The following sections provide an assessment of potential impacts to the low-income and minority population groups within the Kingsport Metropolitan Transportation Planning Organization (MTPO) area based on implementation of the transportation projects within the 2035 Long Range Transportation Plan (LRTP). The analysis was done using the MTPO's geographic information system (GIS) and US Census Block Group data. The Five Year Estimate (2005-2009) US Census American Community Survey (ACS) Population and Housing Characteristics data were used for this assessment with data being used at the US Census Block Group level. A senior population analysis (persons over the age of 65) was also undertaken given the size of this population group in the MTPO area and their vulnerability over time to transportation decisions (i.e. availability of income to transportation costs, mobility limitations).

## Minority Population

According to the 2005-2009 US Census American Community Survey (ACS), 5 percent of the Kingsport MTPO region's residents are considered to be minorities (non-white). As shown in Table 1, the region's minority population is comparable to those of Sullivan, Hawkins, Washington, and Scott counties in the MTPO area. When compared with the share of minority population for Virginia and Tennessee, the MTPO's share of minority population is considerably smaller. Table 2 illustrates the minority population breakdown of the MTPO area and the concentrations of minority populations within the counties of the MTPO.

**Table 1: Kingsport MTPO Area Minority Population**

|                       | <b>Total Population</b> | <b>Minority (Non-White)</b> | <b>Percent Minority</b> |
|-----------------------|-------------------------|-----------------------------|-------------------------|
| <b>Kingsport MTPO</b> | <b>130,826</b>          | <b>6,301</b>                | <b>5%</b>               |
| Sullivan County       | 88,646                  | 4,769                       | 5%                      |
| Hawkins County        | 24,771                  | 910                         | 4%                      |
| Washington County     | 9,167                   | 247                         | 3%                      |
| Scott County          | 8,242                   | 375                         | 5%                      |
| State of Virginia     | 8,001,024               | 2,816,360                   | 35%                     |
| State of Tennessee    | 6,346,105               | 1,548,450                   | 24%                     |

**Table 2: Kingsport MTPO Area Ethnicity Population**

|                       | <b>White</b> | <b>Black</b> | <b>Asian</b> | <b>Other</b> | <b>Hispanic</b> |
|-----------------------|--------------|--------------|--------------|--------------|-----------------|
| <b>Kingsport MTPO</b> | <b>95.0%</b> | <b>1.9%</b>  | <b>0.5%</b>  | <b>1.5%</b>  | <b>1.1%</b>     |
| Sullivan County*      | 95.1%        | 2.0%         | 0.6%         | 1.2%         | 1.1%            |
| Hawkins County*       | 96.1%        | 1.4%         | 0.4%         | 1.0%         | 1.1%            |
| Washington County*    | 91.7%        | 3.9%         | 0.8%         | 1.4%         | 2.2%            |
| Scott County*         | 96.5%        | 1.1%         | 0.2%         | 1.6%         | 0.6%            |

\*Total county populations were used for these percentages.

In the following subsections, the positive and negative effects of the 2035 LRTP’s highway, transit, and bicycle/pedestrian improvements on concentrations of minority populations are discussed by type of improvement. The highway projects (both funded and unfunded) in the 2035 LRTP include roadway widening projects, new roadways, reconstruction of roadways, signal improvements and intersection improvements. In some cases sidewalks are included and in some cases bicycle facilities are included as part of a highway project and are noted in the analysis. For transit services, a number of routes and services are proposed in areas that have a higher minority population. In these cases, the positive impacts on minority populations are seen by transit projects.

## HIGHWAY IMPROVEMENTS

There are a total of 57 Census Block Groups within the Kingsport MTPO area that will be directly affected by the 2035 LRTP cost feasible transportation improvement projects. Of the total MTPO Population (130,826 people) the share within the affected Census Block Groups is 71 percent and the share of the total MTPO minority population (6,301 people) is 84 percent. Within the 57 Census Block Groups, a total of 98,502 people reside, of which 5 percent are minority, as seen in Table 3. The 5 percent minority population in the 57 Census Block Group is equal to the 5 percent minority seen in the Kingsport MTPO area.

**Table 3: Characteristics of All Census Block Groups with Highway Improvements**

| Within              | Number of Block Groups | Number of People | Total Block Group Population (%) | Total MTPO Population | Total MTPO Population (%) |
|---------------------|------------------------|------------------|----------------------------------|-----------------------|---------------------------|
| <b>Non-Minority</b> | 57                     | 93,231           | 95%                              | 124,525               | 71%                       |
| <b>Minority</b>     | 57                     | 5,271            | 5%                               | 6,301                 | 84%                       |
| <b>All</b>          | 57                     | 98,502           | 100%                             | 130,826               | 75%                       |

The next step was to look at the Census Block Groups within the affected area (the 57 Block Group area) in which the share of minority population is higher than the MTPO region’s percentage of minority population (5 percent). Of the 57 Block Group affected area, 22 Block Groups have over 5 percent minority population (See Table 4 and Figure 1).

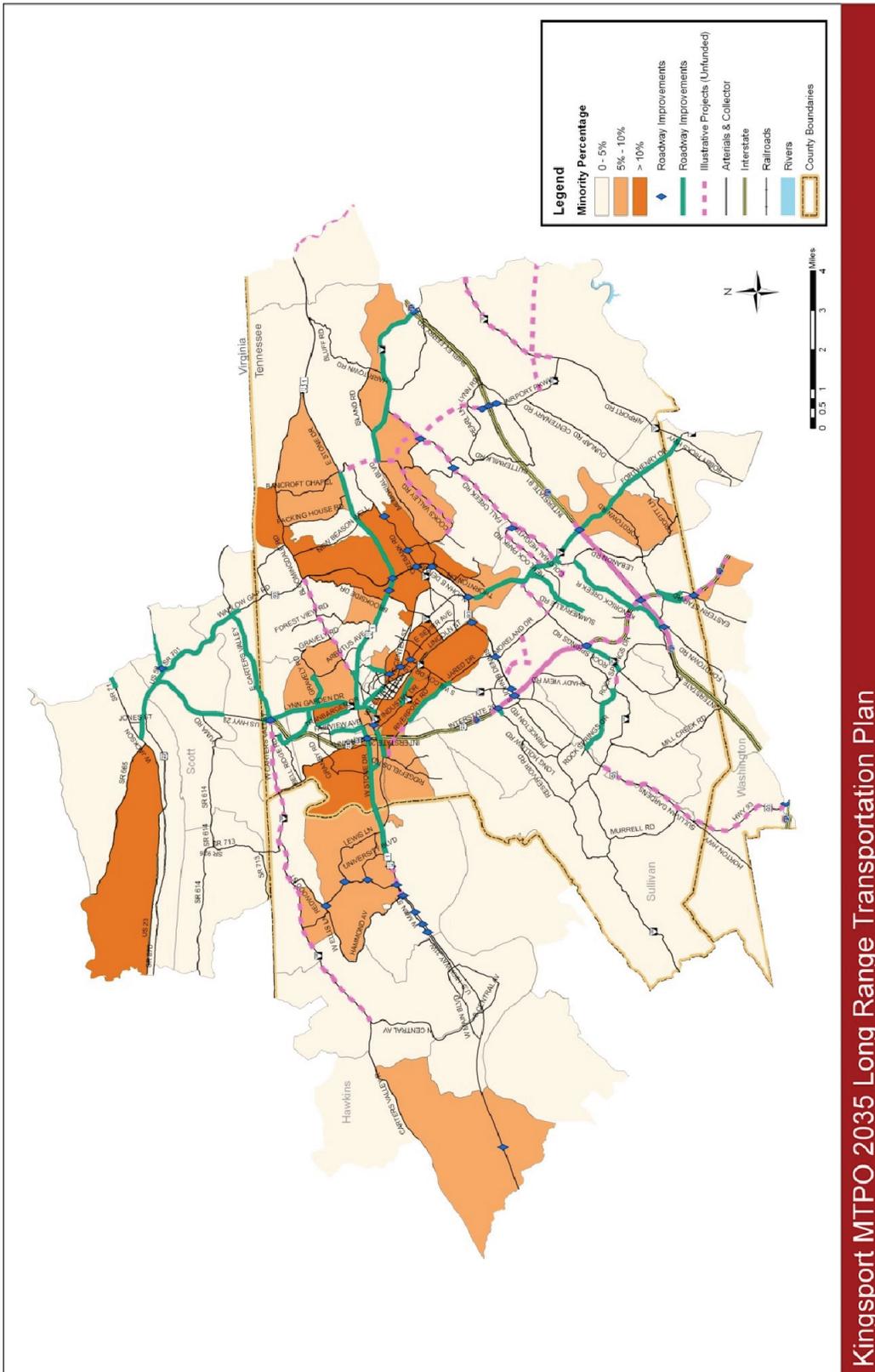
For the purposes of this EJ analysis, those individual Block Groups where the share of minority population is double that of the MTPO area (or 10 percent minority or higher) are considered to potentially contain an environmental justice population and are referred to as “communities of concern”. Ten Census Block Groups are part of the “communities of concern”. A total of 2,315 minority people reside in those ten Block Groups, representing about 37 percent of the total number of minority people in the MTPO area (6,301 people). These ten Block Groups represent 12 percent of the MTPO region’s total population (130,826 people). (All ten Block Groups are located in Sullivan County.)

**Table 4: Minority Census Block Groups with Highway Improvements**

| Within   | Number of Block Groups | Number Minority Population | Total MTPO Minority Population |
|--|------------------------|----------------------------|--------------------------------|
| <b>Minority – At Least Regional Average (5% to 10%)</b>                      | 12                     | 1,667                      | 26%                            |
| <b>Minority – Double Average (10% or Greater) – “Communities of Concern”</b> | 10                     | 2,315                      | 37%                            |

A more detailed review, including positive and negative impacts of the projects in the communities of concern was conducted. The projects affects include improving traffic congestion, adding transportation options by including bicycle and pedestrian modes, improving access to transit, and possibly affecting right-of-way due to new roadways, roadway widening, or reconstruction.

**Figure 1  
Highway Improvements in Minority Population Areas**



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The cost feasible highway projects in the 2035 LRTP that would fall within the minority population of at least 5 percent were identified. Thirty-eight improvements fall into this category consisting of two new roadways and two roadway widenings; three roadway reconstructions; 23 signal and intersection improvements; and eight safety related projects. The signal and intersection improvements should improve the traffic flow in the areas. Also, the safety improvements should improve the transportation network so these projects would have a positive impact on the population. That leaves the road widening and new construction projects which may adversely affect the population and require mitigation steps be taken. These projects are listed in Table 5. The two new roadways listed are small connector roads that are in an industrial area and are expected to improve the connection for the businesses.

**Table 5: Cost Feasible Highway Improvements within Block Groups containing Greater than 5% Minority**

| 2035 LRTP Id#. | Roadway                        | From                        | To                   | Length (Miles) | Type of Improvement | Current Number of Lanes | Future Number of Lanes |
|----------------|--------------------------------|-----------------------------|----------------------|----------------|---------------------|-------------------------|------------------------|
| 4-TC           | Stone Dr West (US 11W/SR 1)    | East Ave                    | Fairview Ave         | 2.30           | Widening            | 4                       | 6                      |
| 17-TC          | Lincoln St/MLK Jr Dr Connector | Lincoln St/MLK Jr Dr        | Industry Dr (SR 355) | 0.76           | New Roadway         | 0                       | 2                      |
| 22-TC          | Fort Henry Drive (SR 36)       | Interstate 81 (I-81)        | Airport Road (SR 75) | 3.54           | Widening            | 2                       | 4/5                    |
| 26-TC          | Granby Rd Extension            | Stone Dr West (US 11 W/SR1) | Fort Robinson Dr     | 0.25           | New Roadway         | 0                       | 2                      |

To further analyze the impacts on the minority population, the illustrative (unfunded), highway projects in the 2035 LRTP that would fall within the minority population of at least 5 percent were identified. Ten improvements fall into this category consisting of one new roadway and three roadway widenings; one roadway reconstruction; and five safety related projects. The roadway widening and new roadway projects are listed in Table 6.

**Table 6: Illustrative (Unfunded) Highway Improvements within Block Groups containing Greater than 5% Minority**

| 2035 LRTP Id#. | Roadway                               | From                            | To                            | Length (Miles) | Type of Improvement | Current Number of Lanes | Future Number of Lanes |
|----------------|---------------------------------------|---------------------------------|-------------------------------|----------------|---------------------|-------------------------|------------------------|
| 2-TC           | Interstate 81 (I-81)                  | Fort Henry Dr (SR 36)           | Tri-Cities Crossing (Exit 56) | 8.06           | Widening            | 4                       | 6                      |
| 3-TC           | US 11W/SR 1                           | Hammond Ave                     | East Ave                      | 4.67           | Widening            | 4                       | 6                      |
| 20-TC          | Interstate 26 (I-26)                  | Rock Springs Rd                 | Ford Creek Rd                 | 4.91           | Widening            | 4                       | 6                      |
| 24-TC          | Airport Pkwy (SR 357) Extension North | Stone Drive East (US 11 W/SR 1) | Fall Creek Rd                 | 2.48           | New Roadway         | 0                       | 2                      |

As part of the 2035 LRTP, the candidate projects, both cost feasible and illustrative, were evaluated to determine where bicycle and pedestrian accommodations may be appropriate. In reviewing the affected projects as part of this analysis, it was determined pedestrian accommodations may be provided on 23 projects and bicycle accommodations on 21 projects. All transportation projects should consider bicycle and pedestrian accommodations in the design phase as part of the US DOT Policy on Accommodations, the City of Kingsport's Complete Streets Policy, and the Region's desire to increase active transportation solutions.

## TRANSIT IMPROVEMENTS

For the purposes of the EJ analysis minority population assessment, the MTPO reviewed areas that are currently served by the Kingsport Area Transit Service's (KATS) fixed-route bus service. The routes are shown in Figure 2. KATS provides service in an area comprised of 30 Census Block Groups. Approximately 42,100 people reside in the service area; representing 32 percent of the total MTPO population (130,826 people) (see Table 7). In that service area, 8 percent of the residents are minority people; the minority residents in this area represent 53 percent of the region's total minority population (6,301 people). By comparison, the percentage of non-minority people in the 30 Block Group service area represents 31 percent of the region's total non-minority population (124,525 people). The existing transit service is focused in the urbanized area of Kingsport serving 53 percent of the region's minority population.

**Table 7: Characteristics of Census Block Groups with Existing Transit Service**

| Within              | Number of Block Groups | Number People | Percent of Total Census Block Group Population | Total MPTO population | Percent of MTPO Population |
|---------------------|------------------------|---------------|--|-----------------------|----------------------------|
| <b>Non-Minority</b> | 30                     | 38,739        | 92%  | 124,525               | 31%                        |
| <b>Minority</b>     | 30                     | 3,361         | 8%   | 6,301                 | 53%                        |
| <b>All</b>          | 30                     | 42,100        | 100%   | 130,826               | 32%                        |

The next step was to look specifically at those Census Block Groups in which the share of minority population was equal to or greater than the MTPO region's percentage of minority population (5 percent). A total of 17 Block Groups have minority populations of at least 5 percent (See Table 8 and Figure 2). About 46 percent of the region's total minority population resides in those 17 Block Groups.

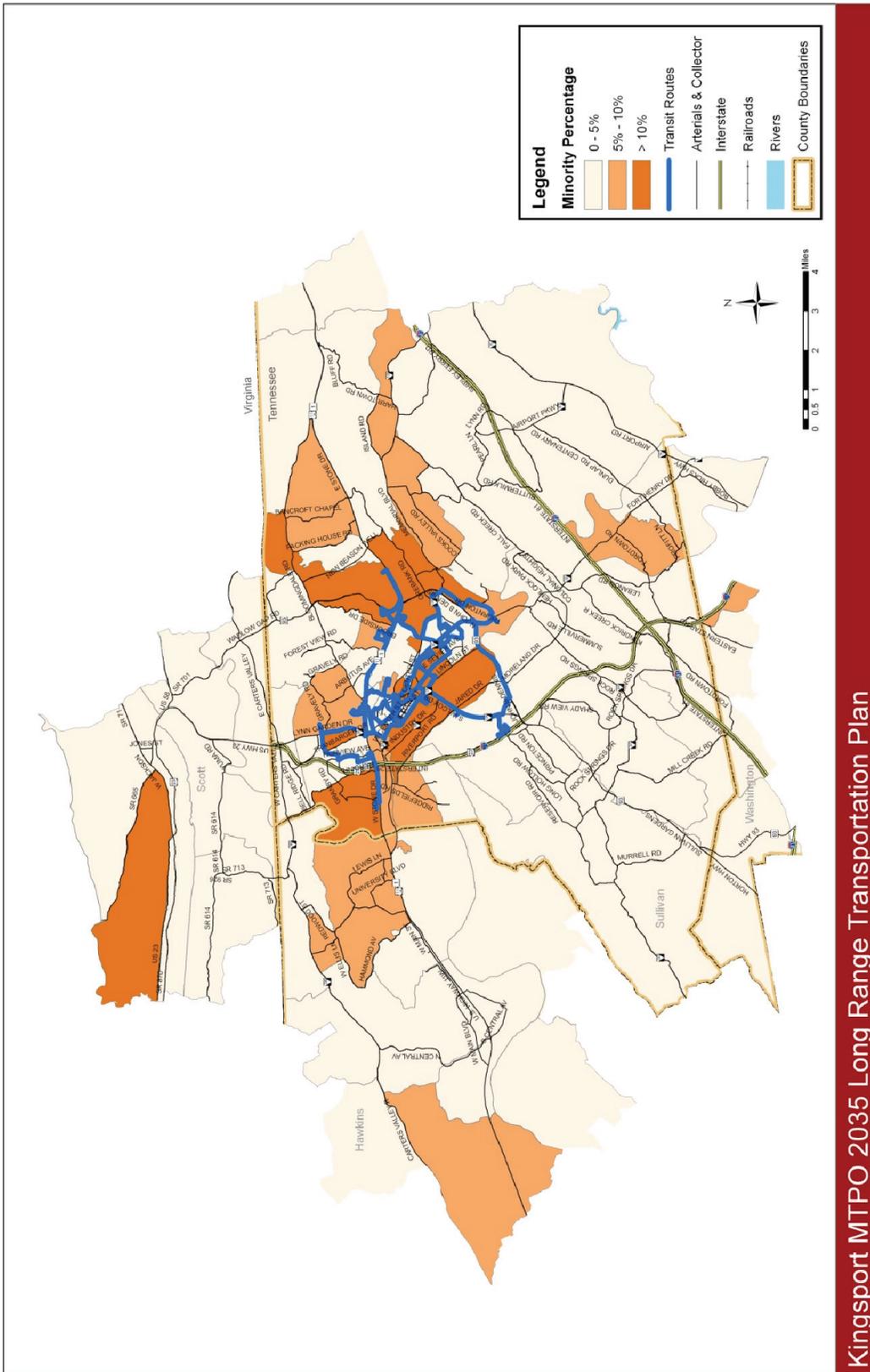
**Table 8: Minority Census Block Groups with Existing Transit Service**

| Within   | Number of Block Groups | Number Minority People | Total MTPO Minority Population |
|--|------------------------|------------------------|--------------------------------|
| <b>Minority – At Least Regional Average (5% to 10%)</b>                      | 7                      | 597                    | 9%                             |
| <b>Minority – Double Average (10% or Greater) – “Communities of Concern”</b> | 10                     | 2,315                  | 37%                            |

As discussed in the previous section “communities of concern” consist of those Block Groups where the minority population is double that of the MTPO area (at least 10 percent minority). For the existing transit service affected area, 10 Census Block Groups have double the MTPO average share of minority people; these 10 Block Groups represent about 37 percent of the MTPO region's total minority population. These Block Groups are located near downtown Kingsport.

The 2035 LRTP contains a list of projects to enhance the existing transit services. Planned public transportation improvements over the 25-year plan horizon are geared toward system expansion including more routes, extended service hours, more bus shelters, and following a normal vehicle replacement schedule. The transit projects are expected to enhance the service for the 17 Census Block Group area.

**Figure 2**  
**Existing System Transit Improvements in Minority Population Areas**



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## Low-Income Population

According to the 2005-2009 US Census American Community Survey data, nearly 15 percent of the population of the MTPO region reported incomes below the federal poverty level (referred to as “low-income” in this analysis). As shown in Table 9, the region’s low-income population is about two percent lower than that of Scott County, about one percent higher than Hawkins, seven percent higher than Washington, and equal to Sullivan County.

**Table 9: Kingsport MTPO Area Low-Income Population**

|                       | Total Population | Low-Income Population | Percent Low-Income |
|-----------------------|------------------|-----------------------|--------------------|
| <b>Kingsport MTPO</b> | 130,826          | 19,336                | 15%                |
| Sullivan County       | 91,532           | 13,785                | 15%                |
| Hawkins County        | 24,771           | 3,558                 | 14%                |
| Washington County     | 9,167            | 631                   | 7%                 |
| Scott County          | 8,242            | 1,362                 | 17%                |

In the following sections, the effects of the 2035 LRTP’s highway improvements and the transit system on low-income populations are discussed by type of improvement.

## HIGHWAY IMPROVEMENTS

As mentioned previously, 57 Census Block Groups would be directly affected by the 2035 LRTP cost feasible transportation improvement projects, shown on Figure 3. Within those Census Block Groups, a total of 98,502 people reside, of which 16 percent (15,317 people) are reported to be low-income (see Table 10).

**Table 10: Census Block Groups with Highway Improvements**

| Within                | Number of Block Groups | Number People | Percent of Total Census Block Group Population | Total MTPO Population | Total MTPO Population (%) |
|-----------------------|------------------------|---------------|--|-----------------------|---------------------------|
| <b>Non-Low Income</b> | 57                     | 83,185        | 84%  | 111,490               | 75%                       |
| <b>Low-Income</b>     | 57                     | 15,317        | 16%  | 19,336                | 79%                       |
| <b>All</b>            | 57                     | 98,502        | 100%   | 130,826               | 75%                       |

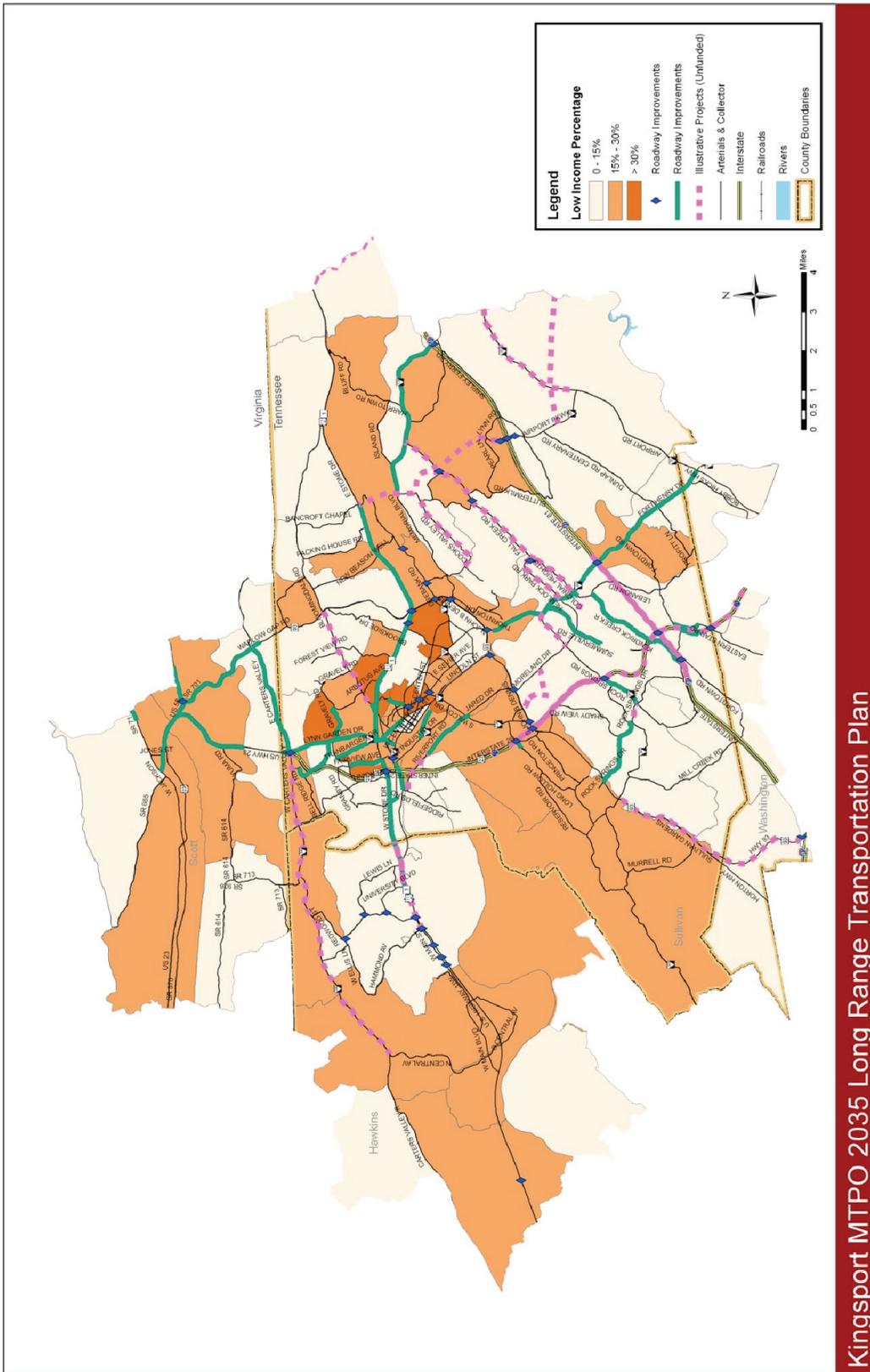
The next step was to look at the Census Block Groups within the affected area (the 57 Block Group area) in which the share of low-income population higher than the MTPO region’s percentage of low-income population (15 percent). Of the 57 Block Group affected area, 29 Block Groups have a 15 percent or higher low-income population (See Table 11 and Figure 3).

Seven Census Block Groups contain concentrations of low-income populations that are at least double the regional average, or at least 30 percent. These Census Block Groups, identified as “communities of concern” are dispersed throughout the MTPO area and contain 24 percent of the total low-income population (15,317 people) in the entire MTPO area.

**Table 11: Low-Income Census Block Groups with Highway Improvements**

| Within  | Number of Block Groups | Number Low-Income People | Total MTPO Low-Income Population % |
|---|------------------------|--------------------------|------------------------------------|
| <b>Low-Income – (15% - 30%)</b>   | 22                     | 7,189                    | 47%                                |
| <b>Low-Income – Double (30% and Greater) – “Communities of Concern”</b> | 7                      | 3,625                    | 24%                                |

**Figure 3**  
**Highway Improvements in Low-Income Population Areas (Below Poverty)**



To determine both the positive and negative impacts on the low-income population in the affected area the cost feasible highway projects were evaluated. Thirty-five planned highway projects fall in Census Block Group areas with over 15 percent low-income populations. Of the 35 improvements, three involve roadway widening or new construct; seven are reconstruction projects; six are signal projects; nine are intersection improvements; and ten are safety related projects. Positive effects by the signal and intersection improvement projects expected to be seen include improved traffic flow in the area. In addition, the safety improvements should have positive effects on the population. The three roadway widening and new roadway projects which may have a negative impact on the population are listed in Table 12.

**Table 12: Cost Feasible Highway Improvements within Block Groups containing Greater than 15% Low-Income**

| 2035 LRTP Id#. | Roadway                        | From                 | To                   | Length (Miles) | Type of Improvement | Current Number of Lanes | Future Number of Lanes |
|----------------|--------------------------------|----------------------|----------------------|----------------|---------------------|-------------------------|------------------------|
| 4-TC           | Stone Dr West (US 11W/SR 1)    | East Ave             | Fairview Ave         | 2.30           | Widening            | 4                       | 6                      |
| 17-TC          | Lincoln St/MLK Jr Dr Connector | Lincoln St/MLK Jr Dr | Industry Dr (SR 355) | 0.76           | New Roadway         | 0                       | 2                      |
| 22-TC          | Fort Henry Dr (SR 36)          | Interstate 81 (I-81) | Airport Rd (SR 75)   | 3.54           | Widening            | 2                       | 4/5                    |

To further analyze the impacts on the low-income population, the illustrative (unfunded), highway projects in the 2035 LRTP that would fall within the low-income population of at least 15 percent, were identified. Ten improvements fall into this category consisting of three new roadway and two roadway widenings; two roadway reconstruction; and three safety related projects. The roadway widening and new roadway projects are listed in Table 13.

**Table 13: Illustrative (Unfunded) Highway Improvements within Block Groups containing Greater than 15% Low-Income**

| 2035 LRTP Id#. | Roadway                               | From                            | To                            | Length (Miles) | Type of Improvement | Current Number of Lanes | Future Number of Lanes |
|----------------|---------------------------------------|---------------------------------|-------------------------------|----------------|---------------------|-------------------------|------------------------|
| 1-TC           | Interstate 26 (I-26)                  | Rock Springs Rd (Exit 6)        | Mile Marker 2                 | 6.57           | Widening            | 4                       | 6                      |
| 2-TC           | Interstate 81 (I-81)                  | Fort Henry Dr (SR 36)           | Tri-Cities Crossing (Exit 56) | 8.06           | Widening            | 4                       | 6                      |
| 6-TC           | Wilcox Dr (SR 126)                    | John B Dennis (SR 93)           | Interstate 26 (I-26)          | 1.05           | New Roadway         | 2                       | 4                      |
| 23-TC          | Airport Pkwy (SR 357) Extension North | Fall Creek Rd                   | Interstate 81 (I-81)          | 2.14           | New Roadway         | 0                       | 2                      |
| 24-TC          | Airport Pkwy (SR 357) Extension North | Stone Drive East (US 11 W/SR 1) | Fall Creek Rd                 | 2.48           | New Roadway         | 0                       | 2                      |

As part of the 2035 LRTP, the proposed projects, both cost feasible and illustrative, were evaluated to determine where bicycle and pedestrian accommodations may be appropriate. In reviewing the affected projects as part of this analysis, it was determined pedestrian accommodations may be provided on 24 projects and bicycle accommodations provided on 28 projects. All of the projects should consider bicycle and pedestrian accommodations in the design phase as part of the US DOT Policy on Accommodations, the City of Kingsport's Complete Streets Policy, and the Region's desire to increase active transportation solutions.

## TRANSIT IMPROVEMENTS

As mentioned previously, the KAT's current fixed-route bus service is provided to 30 Census Block Groups. In that service area, approximately 42,100 people reside (see Table 14). Also in that service area, 21 percent of the residents are considered low-income. For comparison, the percentage of low-income people in the transit service area represents about 45 percent of the region's total low-income population (19,366) and about 30 percent of the regions non-low income population (111,490). The existing fixed-route transit service is focused in the Downtown Kingsport area serving about 45 percent of the low-income population.

**Table 14**  
**Characteristics of Census Block Groups with Existing Transit Service**

| Within                | Number of Census Blocks | Number of People | Percent of Total Census Block Group Population | Percent of MTPO Population |
|-----------------------|-------------------------|------------------|--|----------------------------|
| <b>Non-Low Income</b> | 30                      | 33,424           | 79%  | 30%                        |
| <b>Low-Income</b>     | 30                      | 8,676            | 21%  | 45%                        |
| <b>All</b>            | 30                      | 42,100           | 100%   | 32%                        |

The next step was to look specifically at those Census Block Groups in the existing transit service area in which the share of low-income population is equal to or greater than the region's percentage of low-income population (15 percent). Twenty-one of the Census Block Groups served by transit have low-income populations of at least 15 percent (See Table 15 and Figure 4). These twenty-one Census Block Groups serve about 38 percent of the total MTPO low-income population (19,336 people).

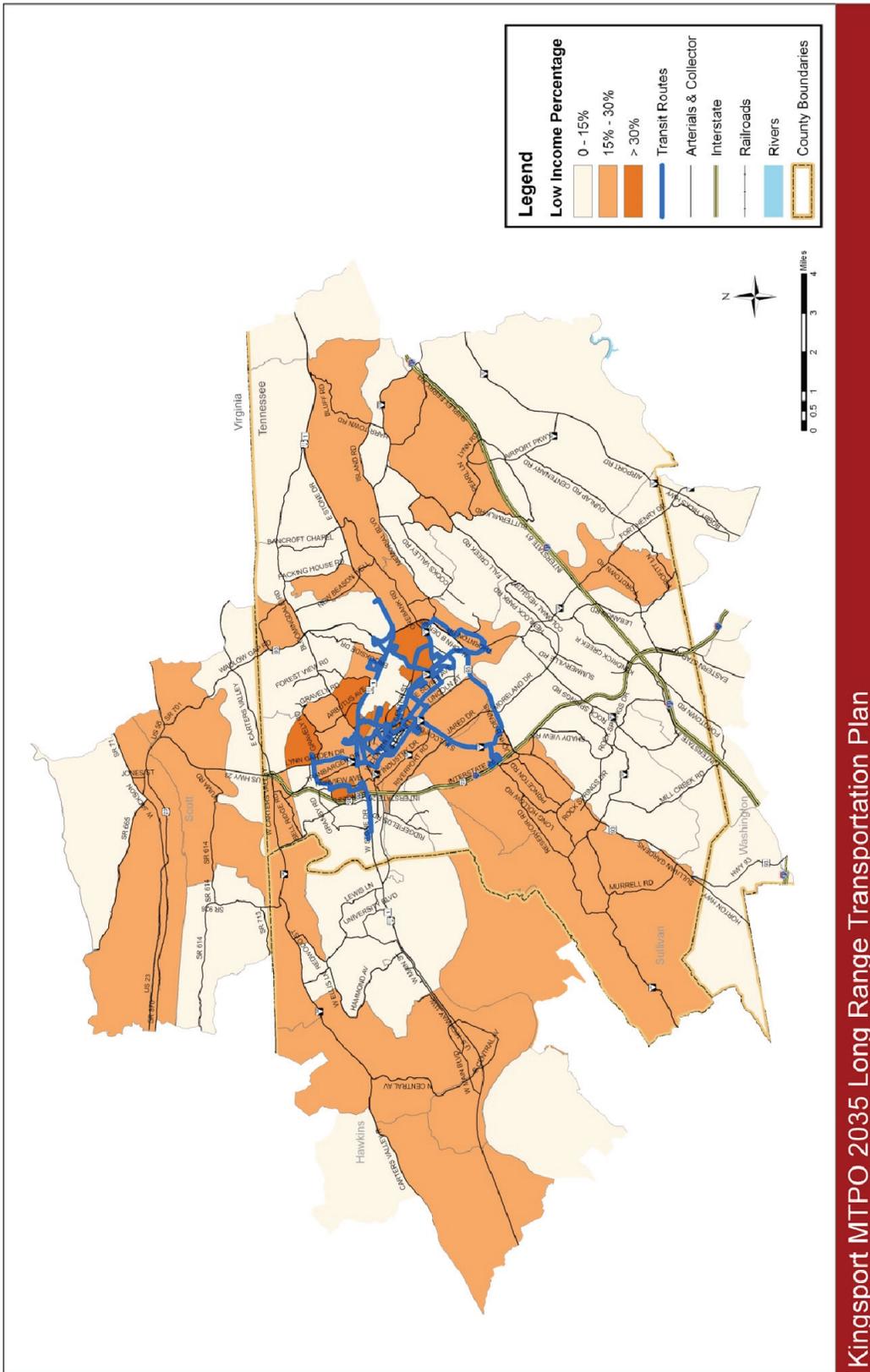
**Table 15**  
**Low-Income Census Block Groups with Existing Transit Service**

| Within   | Number of Census Block Groups | Number Low-Income People | Total MTPO Low-Income Population % |
|--|-------------------------------|--------------------------|------------------------------------|
| <b>Low-Income – (15% - 30%)</b>                                      | 13                            | 3,810                    | 18%                                |
| <b>Low-Income – Double (Greater than 30%) Communities of Concern</b> | 8                             | 3,476                    | 20%                                |

There are eight Census Block Groups that have low-income populations that meet or exceed 30 percent; thus these Census Block Groups which are provided transit service are considered to be "communities of concern" for low-income populations. These Census Block Groups are mostly located in the Kingsport city limits.

The 2035 LRTP contains a list of projects to enhance the existing transit services. Planned public transportation improvements over the 25-year plan horizon are geared toward system expansion including more routes, extended service hours, more bus shelters, and following a normal vehicle replacement schedule. The transit projects are expected to enhance the service for the 21 Census Block Group area.

**Figure 4**  
**Existing Transit System Improvements in Low-Income Areas of Concern**



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## Senior Population (Over 65)

According to the 2005-2009 US Census American Community Survey data, nearly 17 percent of the population of the MTPO region is 65 years of age or older (referred to as “senior” in this analysis). As shown in Table 16, the region’s senior population is lower than that of Sullivan and Scott County and slightly higher than that of Hawkins and Washington Counties.

**Table 16: Kingsport MTPO Area Senior Population**

|                       | <b>Total Population</b> | <b>Senior Population</b> | <b>Percent Senior Population</b> |
|-----------------------|-------------------------|--------------------------|----------------------------------|
| <b>Kingsport MTPO</b> | 130,526                 | 22,524                   | 17%                              |
| Sullivan County       | 88,646                  | 15,930                   | 18%                              |
| Hawkins County        | 24,771                  | 3,751                    | 15%                              |
| Washington County     | 9,167                   | 1,232                    | 13%                              |
| Scott County          | 8,242                   | 1,611                    | 20%                              |

In the following sections, the effects of the 2035 LRTP’s highway and transit improvements on senior populations are discussed by type of improvement.

### HIGHWAY IMPROVEMENTS

As mentioned previously 57 Census Block Groups will be directly affected by the LRTP’s proposed highway improvement projects, shown on Figure 5. Within those Census Block Groups, a total of 98,502 people reside, of which 18 percent (17,499 people) are reported to be in the senior population (see Table 17).

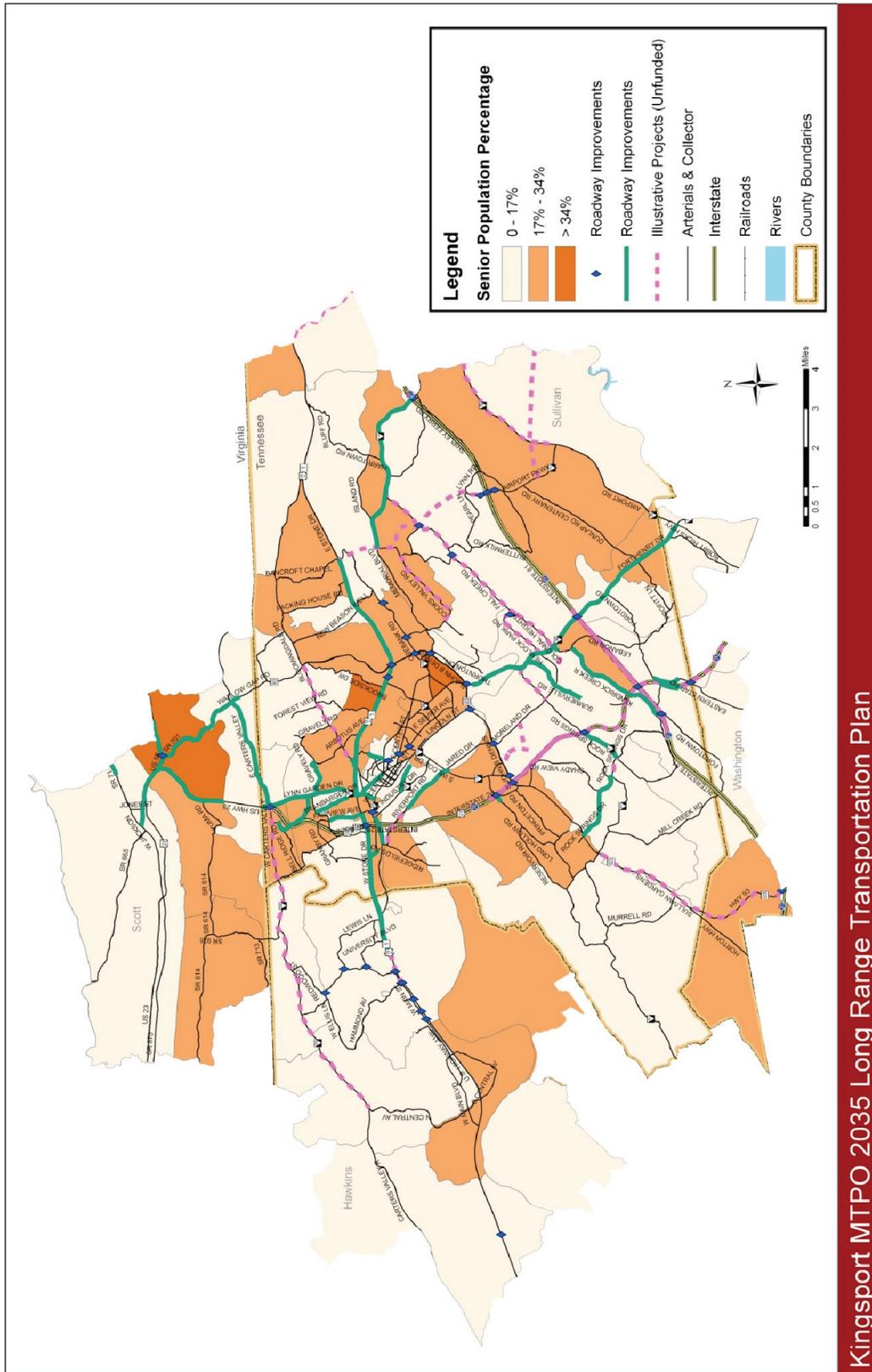
The share of the senior population within the affected Census Block Groups is similar to the overall share of senior population within the MTPO area (17 percent). The affected Census Block Group area contains almost the entire senior population in the MTPO area at 90 percent.

**Table 17: Census Block Groups with Highway Improvements**

| <b>Within</b>                | <b>Number of Block Groups</b> | <b>Number People</b> | <b>Percent of Total Census Block Group Population</b> | <b>Total MTPO Population</b> | <b>Percent of Total MTPO Population</b> |
|------------------------------|-------------------------------|----------------------|---|------------------------------|---|
| <b>Non-Senior Population</b> | 57                            | 81,003               | 82%   | 111,490                      | 73%                                     |
| <b>Senior Population</b>     | 57                            | 17,499               | 18%   | 19,336                       | 90%                                     |
| <b>All</b>                   | 57                            | 98,502               | 100%  | 130,826                      | 75%                                     |

Evaluation of the Census Block Groups within the affected area (the 57 Block Group area) in which the share of senior population is compared to the MTPO region’s percentage of senior population was conducted. Of the 57 Block Group affected area, 25 block groups have at least 17 percent senior population (See Table 18 and Figure 5).

**Figure 5  
Highway Improvements in Senior Population Areas (Over 65)**



Kingsport MTP0 2035 Long Range Transportation Plan

Three Census Block Groups contain concentrations of senior populations that are at least double the regional average, (or at least 34 percent) and therefore are communities of concern. One Census Block Group is located within the Kingsport City boundary and the other one is located in Scott County. The three Census Block Groups contain seven percent of the total senior population (22,524 people) in the entire MTPO area.

**Table 18: Senior Census Block Groups with Highway Improvements**

| Within                                  | Number of Block Groups | Number Senior People | Total MTPO Senior Population (%) |
|---|------------------------|----------------------|----------------------------------|
| Senior Population – (17% - 34%)         | 22                     | 9,001                | 40%                              |
| Senior Population – Double (34% and up) | 3                      | 1,555                | 7%                               |

Thirty-two cost feasible highway projects are within Census Block Group areas that have a senior population over 17 percent. Of the 32 improvements, three are roadway widenings or new roadways; five are roadway reconstruction; 15 are intersection and signal improvements; and nine are safety and roadway geometry improvements. Most of the new roadway and widening projects are located such that limited to no affect on the senior population is expected. These projects are listed in Table 19.

**Table 19: Cost Feasible Highway Improvements within Block Groups containing Greater than 17% Senior Population**

| 2035 LRTP Id#. | Roadway                     | From                          | To                 | Length (Miles) | Type of Improvement | Current Number of Lanes | Future Number of Lanes |
|----------------|-----------------------------|-------------------------------|--------------------|----------------|---------------------|-------------------------|------------------------|
| 4-TC           | Stone Dr West (US 11W/SR 1) | East Ave                      | Fairview Ave       | 2.30           | Widening            | 4                       | 6                      |
| 22-TC          | Fort Henry Dr (SR 36)       | Interstate 81 (I-81)          | Airport Rd (SR 75) | 3.54           | Widening            | 2                       | 4/5                    |
| 26-TC          | Granby Rd Extension         | Stone Dr West (US 11 W/ SR 1) | Fort Robinson Dr   | 0.25           | New Roadway         | 2                       | 2                      |

To further analyze the impacts on the senior population, the illustrative (unfunded), highway projects in the 2035 LRTP that would fall within the senior population of at least 17 percent were identified. Fifteen improvements fall into this category consisting of four new roadways and four roadway widenings; two roadway reconstruction; and five safety related projects. The roadway widening and new roadway projects are listed in Table 20.

**Table 20: Illustrative (Unfunded) Highway Improvements within Block Groups containing Greater than 17% Senior Population**

| <b>2035 LRTP Id#.</b> | <b>Roadway</b>                        | <b>From</b>                                    | <b>To</b>  | <b>Length (Miles)</b> | <b>Type of Improvement</b> | <b>Current Number of Lanes</b> | <b>Future Number of Lanes</b> |
|-----------------------|---------------------------------------|--|--|-----------------------|----------------------------|--------------------------------|-------------------------------|
| 1-TC                  | Interstate 26 (I-26)                  | Rock Springs Rd (Exit 6)                       | Mile Marker 2  | 6.57                  | Widening                   | 4                              | 6                             |
| 2-TC                  | Interstate 81 (I-81)                  | Fort Henry Dr (SR 36)                          | Tri-Cities Crossing (Exit 56)  | 8.06                  | Widening                   | 4                              | 6                             |
| 3-TC                  | US 11W/SR 1                           | Hammond Ave                                    | East Ave   | 4.67                  | Widening                   | 4                              | 6                             |
| 6-TC                  | Wilcox Dr (SR 126)                    | John B Dennis (SR 93)                          | Interstate 26 (I-26)   | 1.05                  | New Roadway                | 2                              | 4                             |
| 16-TC                 | Airport Pkwy (SR 357) Extension South | SR 75 (near SR 357 and the Tri-Cities Airport) | Kingsport/Bristol MPO Planning Area Boundary (terminating at Bristol Hwy (SR 34/US 11 E/US 19 W) - located in the Bristol MPO Planning Area) | 8.64                  | New Roadway                | 0                              | 4                             |
| 23-TC                 | Airport Pkwy (SR 357) Extension North | Fall Creek Rd                                  | Interstate 81 (I-81)   | 2.14                  | New Roadway                | 0                              | 2                             |
| 24-TC                 | Airport Pkwy (SR 357) Extension North | Stone Drive East (US 11 W/SR 1)                | Fall Creek Rd  | 2.48                  | New Roadway                | 0                              | 2                             |
| 27-TC                 | Airport Rd (SR 75)                    | Airport Parkway (SR 357)                       | Kingsport/Bristol MPO Planning Area Boundary (terminating at SR 126 - located in the Bristol MPO Planning Area)                              | 3.4                   | Widening                   | 2                              | 4                             |

As part of the 2035 LRTP, candidate projects, both cost feasible and illustrative, were evaluated to determine where bicycle and pedestrian accommodations may be appropriate. It was found that 30 projects may provide bicycle accommodations and 24 projects may provide pedestrian accommodations. All of the projects should consider bicycle and pedestrian accommodations in the design phase as part of the US DOT Policy on Accommodations, the City of Kingsport's Complete Streets Policy, and the Region's desire to increase active transportation solutions.

## TRANSIT IMPROVEMENTS

As mentioned previously, the KAT's current fixed-route bus service provides service in an area that comprises 30 Census Block Groups. In that service area, approximately 42,100 people reside (see Table 21) of which 16 percent of the residents fall into the senior population. The existing fixed-route transit service is focused in the Downtown Kingsport area.

**Table 21  
Characteristics of Census Block Groups with Existing Transit Service**

| <b>Within</b>                | <b>Number of Census Block Groups</b> | <b>Number of People</b> | <b>Percent of Total Census Block Group Population</b> | <b>Total MTPO Population</b> | <b>Percent of Region Total</b> |
|------------------------------|--------------------------------------|-------------------------|---|------------------------------|--------------------------------|
| <b>Non-Senior Population</b> | 30                                   | 33,127                  | 79%   | 111,490                      | 31%                            |
| <b>Senior Population</b>     | 30                                   | 8,973                   | 21%   | 19,336                       | 40%                            |
| <b>All</b>                   | 30                                   | 42,100                  | 100%  | 130,826                      | 32%                            |

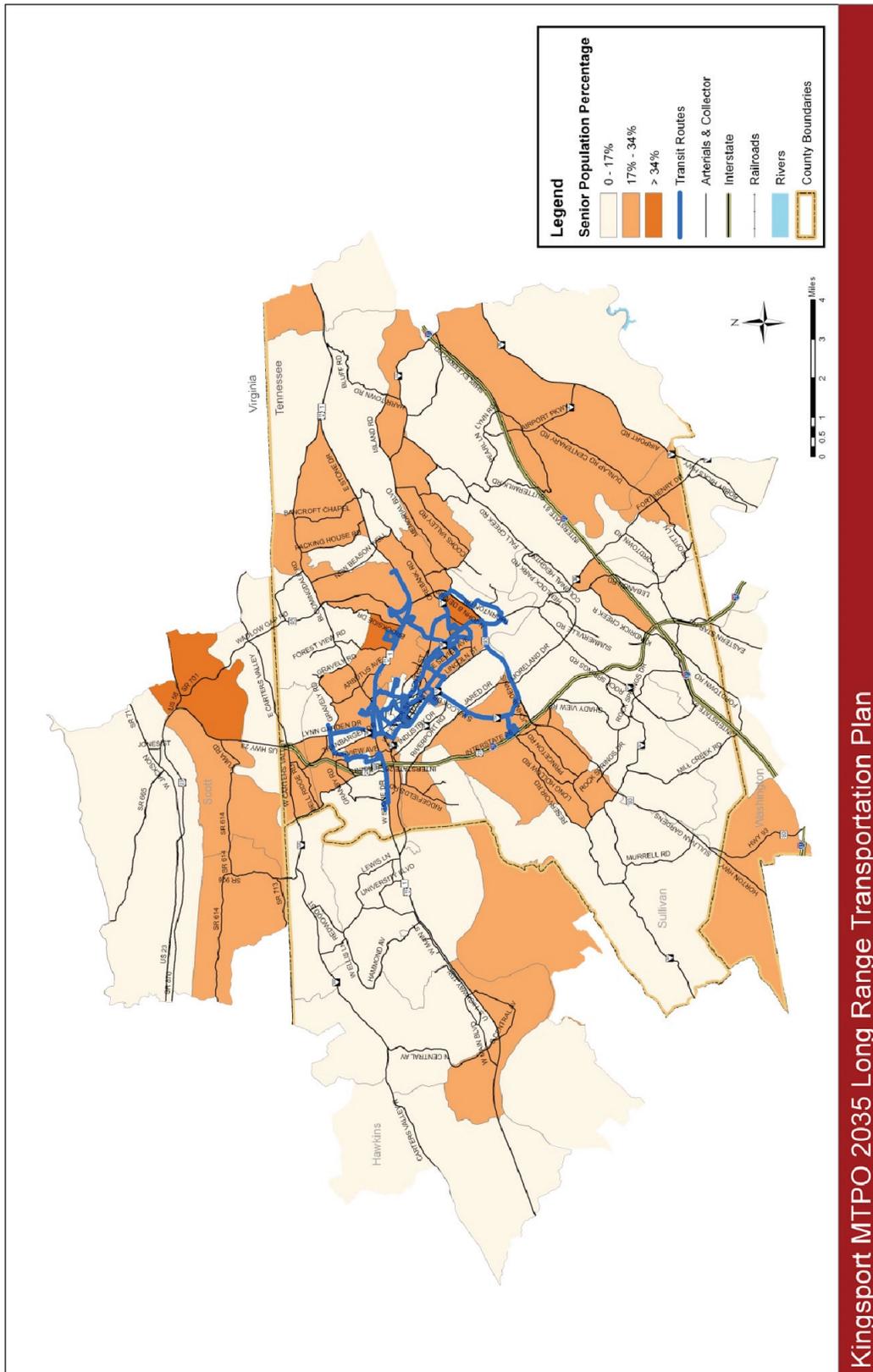
The next step was to look specifically at those Census Block Groups in the existing transit service area in which the share of senior population is equal to or greater than the region's percentage of senior population (17 percent). Seventeen Census Block Groups have senior populations of at least 17 percent (See Table 22 and Figure 6). Of the 17 Census Block Groups identified, 15 have a senior population ranging between 17 and 34 percent. The remaining two Census Block Groups have a senior population of 34 percent or more.

**Table 22  
Senior Population Census Block Groups with Existing Transit Service**

| <b>Within</b>  | <b>Number of Census Block Groups</b> | <b>Number Senior People</b> | <b>Percent of Total MTPO Senior People</b> |
|--|--------------------------------------|-----------------------------|--|
| <b>Senior population – (17% - 34%)</b>                         | 15                                   | 6,052                       | 27%  |
| <b>Senior population – Double (34%) Communities of Concern</b> | 2                                    | 998                         | 4%   |

There are only two Census Block Groups that have senior populations that meet or exceed 34 percent and are thus considered as communities of concern for the senior population. These Census Block Groups are located within the Kingsport city limits.

**Figure 6**  
**Existing Transit System Improvements in Senior Areas of Concern**



Kingsport MTP0 2035 Long Range Transportation Plan

## **Summary of Burdens**

Segments of the population that live adjacent to roadway construction projects may endure short-term construction related impacts related to visual changes, noise, and traffic patterns. Although some of the roadway widening and new construction projects proposed in the 2035 Kingsport LRTP will be adjacent to or through areas with minority, low-income, or senior populations the projects will not disproportionately affect them. Also, some of the projects will include pedestrian and bicycle facilities which will benefit minority, low-income, and senior populations. The safety and traffic management projects in the area should improve the flow of traffic through the communities of concern.

Lastly, to ensure that all people are considered and involved in the ultimate outcomes of the 2035 LRTP (and corresponding transportation improvements), efforts by the MTPO, its member jurisdictions, and VDOT and TDOT, during the project development process should consider special outreach efforts for areas identified as communities of concern to help mitigate any adverse impacts and/or burdens from transportation improvements.



## Appendix IV: Environmental Review

# APPENDIX IV

## Environmental Review

### INTRODUCTION

This environmental assessment section was developed to address the Safe Accountable Flexible Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) Section 6001 provisions. The intent of SAFETEA-LU 6001 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.

SAFETEA-LU calls for greater environmental consideration in the development of metropolitan transportation plans. The Kingsport MTPO, as part of the 2035 Long Range Transportation Plan (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.

Equally as important to this process is SAFETEA-LU Section 6002 - 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 interested parties and stakeholders is documented in Appendix I and serves as a foundational point of the MTPO's commitment to Section 6002.

The environmental assessment section includes a discussion of potential environmental impacts and avoidance and mitigation activities at the policy/strategy level based on environmental regulatory framework. The Kingsport MTPO compared projects in the 2035 Long Range Transportation Plan with available local, state and federal, maps and inventories of historic and natural resources. This discussion assesses the identified environmentally sensitive areas and provides mitigation strategies that could be considered to reduce potential impacts related to transportation improvement projects.

The MTPO will implement the following policies to reflect the region's consideration of environmental factors included in the 2035 Long Range Transportation Plan:

- An appropriate level of review will occur to assess potential environmental, historic and cultural resource impacts in likely areas for mitigation activities in transportation planning;
- Potential impacts to environmentally sensitive areas will be considered before transportation projects are planned, funded and designed; and
- Consultation will occur with federal, state, tribal and local land use management, natural resources, wildlife, environmental protection, conservation and historic preservation agencies in developing the LRTP.

## **PROJECT REVIEW**

Based on available information, the MTPO utilized its Geographic Information System (GIS) to map locations of known wetlands, flood zones, historic sites, and historic districts within the MTPO planning boundary. By identifying sensitive areas in advance, this effort will help to improve avoidance measures and natural resource mitigation activities to provide greater benefits to the environment regionally.

The LRTP project list includes a series of transportation improvements projects that have been identified as potentially impacting sensitive areas. These projects scopes vary and include signalization, major reconstruction, minor reconstruction, new corridors and intersection improvements. The maps on the following pages show where improvement projects may impact the environmentally sensitive areas.

It is important to note, that while the physical footprint of a transportation improvement may not intersect with a known resource, it is possible that unrelated activities of that improvement may have an indirect effect on these sensitive areas. It is also important to note that until a project has gone through a full environmental study, the exact location of the transportation project is not known. The LRTP identifies transportation improvement locations for general planning purposes only.

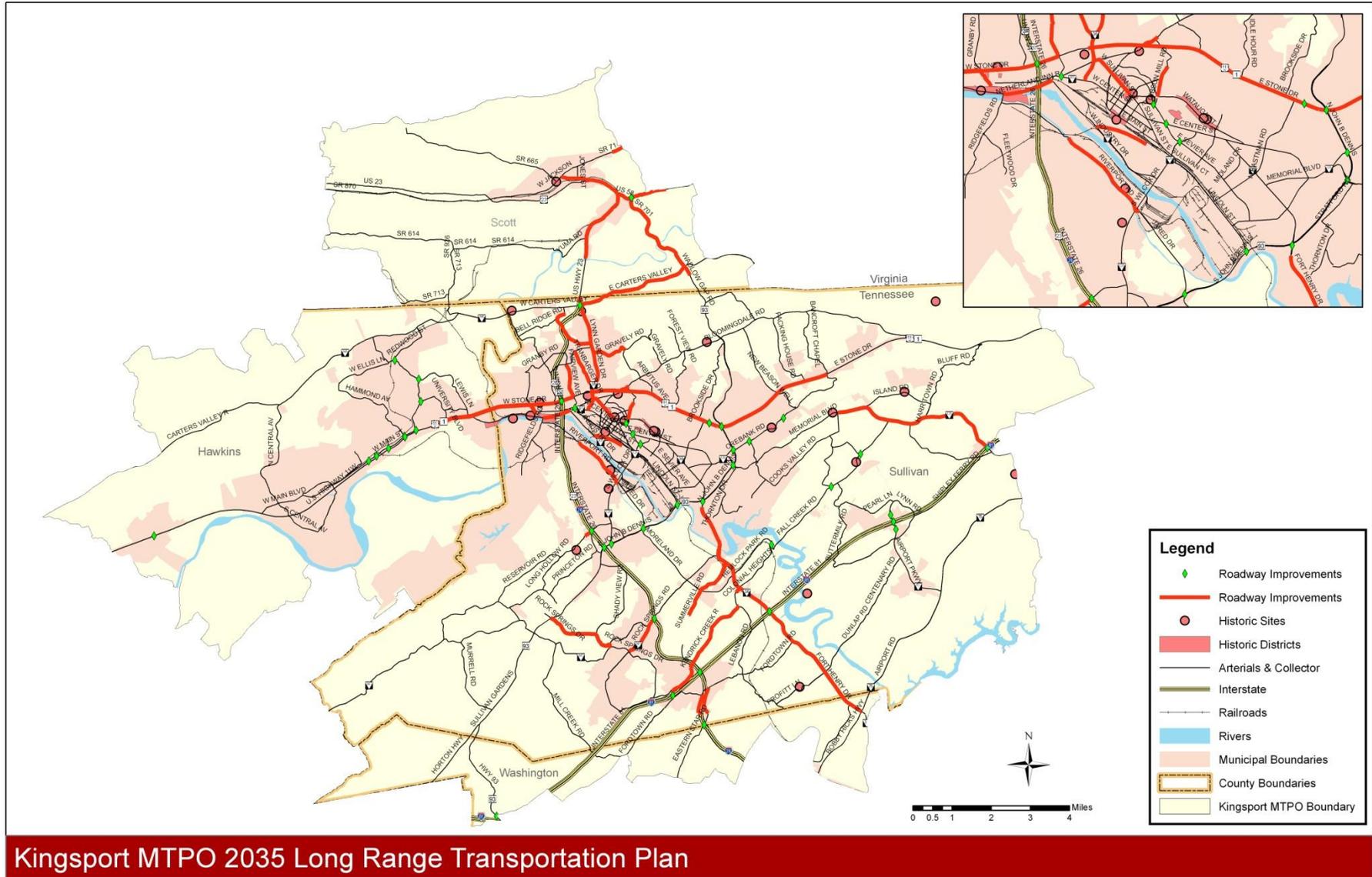
### **(a) Historic Lands Analysis**

Historic site/district avoidance, minimization and mitigation are considered as part of the decision making process for transportation projects. Historic sites and districts have been identified and inventoried within the Kingsport MTPO boundary and are illustrated in the map below. Numerous laws and regulations call for preservation and / or enhancement of cultural resources through various local, state and federal agencies. Under Section 106 review, Federal agencies are responsible for historical review process coordination between state and tribal agencies and officials on various transportation projects. The MTPO coordinates with these various agencies as part of its Long Range Planning process. In order to identify areas where the MTPO's planned projects may impact Kingsport's historic districts, a spatial analysis was undertaken, using the MTPO's geographic information system (GIS).

Figure A-1 illustrates the location of historic properties in relation to the planned improvements in the Long Range Transportation Plan.

From this review 24 projects from the 2035 LRTP were identified for which further study should be done in consultation with the appropriate local, state and federal agencies in the future (i.e. as the project proceeds into the project development process).

**Figure A-1  
Historic Properties & 2035 L RTP Improvements**



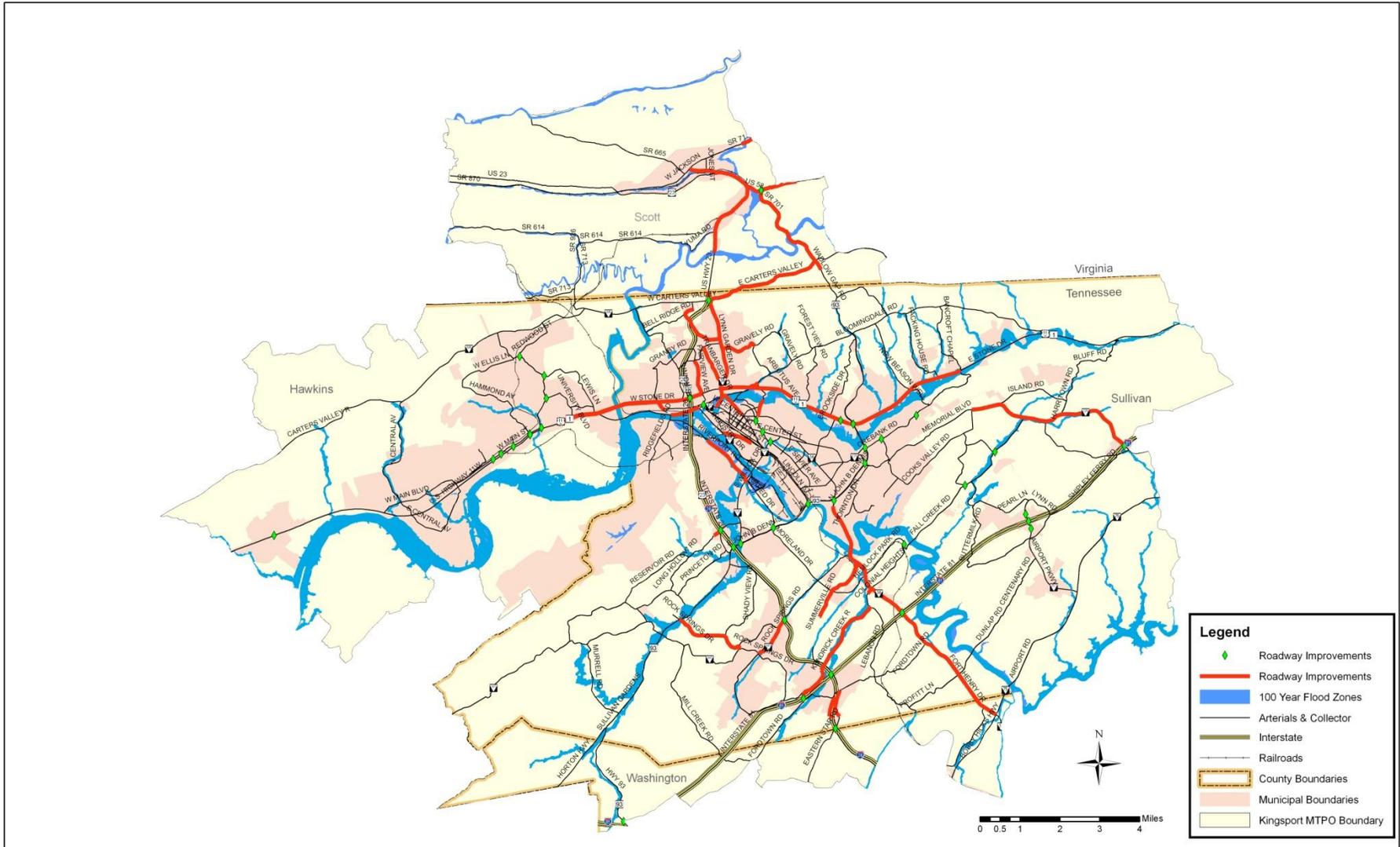
**(b) Wetlands and Floodplains Analysis**

As transportation projects are developed, it is important to be aware of their potential impacts on the physical environment. Two areas of environmental concern are wetlands and floodplains. Wetlands can be described as lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on the surface. A floodplain is a low plain adjacent to a river that is formed mainly of river sediment and is subject to flooding.

Figure A-2 illustrates the location of wetland and floodplain areas in relation to the planned improvements in the Long Range Transportation Plan.

From this review 27 projects were identified from the 2035 LRTP for which further study should be done in consultation with the appropriate local, state and federal agencies in the future (i.e. as the project proceeds into the project development process).

**Figure A-2  
Wetlands and Floodplains & 2035 L RTP Improvements**



**Kingsport MTPO 2035 Long Range Transportation Plan**

### **(c) Topography and Karst Analysis**

The East Tennessee landscape consists of varied topography that reflects the lithology and geologic structure of the area. Karst makes up a large part of the East Tennessee 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. The karst system identified in the map below represents possible areas where fissures, tubes, and caves over 1,000 ft (300 m) long; 50 ft (15 m) to over 250 ft (75 m) vertical extent; in moderately to steeply dipping beds of carbonate rock may exist. Potential karst system problems include sinkholes, caves and caverns, collapse incidents, and groundwater contamination. Innovative and cost-effective remedial concepts for solving karst related geotechnical problems include avoidance, using lined ditches and graded rock pads, and other bridging- and drainage-related concepts. Stringent land use and building codes for karst areas are required to ensure the success of karst-related remedial design concepts proposed for highways.

Figure A-3 illustrates the location of karst topography areas in relation to the planned improvements in the Long Range Transportation Plan.

From this review nearly all projects from the 2035 LRTP (66 out of 77) were identified for which further study should be done in consultation with the appropriate local, state and federal agencies in the future (i.e. as the project proceeds into the project development process).



## ENVIRONMENTAL MITIGATION STRATEGIES

As previously discussed, the current federal transportation planning regulations, SAFETEA-LU, includes several provisions intended to enhance the consideration of environmental issues and impacts within the transportation planning process. Under SAFETEA-LU 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 environment impacts:

- Avoid Impacts - The first strategy in the environmental process is to avoid adverse impacts altogether.
- Minimize Impacts - Minimizing a proposed activity / project size or its involvement may be an option.
- Mitigate Impacts (preserve, repair and restore) - Precautionary, special operational management features and / or abatement measures may be used to reduce construction impacts and repair or restore existing resource.
- Compensate for Impacts - Compensation for environmental impacts by providing suitable replacement or substitute environmental resources of equivalent or greater value on or off-site could be utilized.

The MTPO will continue to work with the agencies in the LRTP process and as appropriate, as projects proceed in the project development process. 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. The table below details mitigation activities that could be considered to deal with the primary areas of concern.

**Table A-1  
Potential Mitigation Activities**

| <b>Environmental Concern</b>                              | <b>Potential Mitigation Activities</b>  |
|---|---|
| <b>Wetlands of Water Resources</b>                        | Mitigation sequencing requirements involving avoidance, minimization, compensation (could include preservation, creation, restoration, in lieu fees, riparian buffers); design exceptions and variances; environmental compliance monitoring.                       |
| <b>Forested and other Natural Areas</b>                   | Avoidance, minimization; Replacement property for open space easements to be of equal fair market value and of equivalent usefulness; design exceptions and variances; environmental compliance monitoring.   |
| <b>Agricultural Areas</b>                                 | Avoidance, minimization; design exceptions and variances; environmental compliance monitoring.  |
| <b>Threatened and Endangered Species</b>                  | Avoidance, minimization; time of year restrictions; construction sequencing; design exceptions and sequencing; species research; species fact sheets; Memoranda of Agreements for species management; environmental compliance monitoring.                          |
| <b>Noise</b>  | Alternate roadway design, noise barriers, speed control, surface pavement selection, and truck restrictions.  |
| <b>Ambient Air Quality</b>                                | Transportation control measures, transportation emission reduction measures.  |
| <b>Mobile Source Air Toxics</b>                           | Reduce engine activity or reduce emissions per unit of operating time; operational agreements that reduce or redirect work or shift times to avoid community exposures; technological adjustments to equipment (diesel retrofit technologies)                       |
| <b>Neighborhoods, Communities, Homes &amp; Businesses</b> | Impact avoidance or minimization; context sensitive solutions for communities (appropriate functional and/or aesthetic design features).  |
| <b>Cultural Resources</b>                                 | Avoidance, minimization; landscaping for historic properties; preservation in place or excavation for archaeological sites; Memoranda of Agreement with the Department of Historic Resources; design exceptions and variances; environmental compliance monitoring. |
| <b>Parks and Recreation Areas</b>                         | Avoidance, minimization, mitigation; design exceptions and variances; environmental compliance monitoring.  |

## PROCESS

The list below includes agencies to be consulted with during the development of the Long Range Transportation Plan.

### Federal Agencies:

- Environmental Protection Agency (EPA)
- National Park Service (NPS)
- U.S. Army Corps of Engineers
- U.S. Coast Guard
- U.S. Fish and Wildlife Service
- U.S. Forest Service

### State Agencies & Local Agencies:

- Tennessee Department of Economic and Community Development
- Tennessee Department of Environmental and Conservation
- Tennessee State Historic Preservation Officer
- Tennessee Valley Authority
- Tennessee Wildlife Resource Agency
- VA Department of Conservation & Recreation
- VA Department of Environmental Quality
- VA Department of Forestry
- VA Department of Game & Inland
- VA Marine Resources Commission