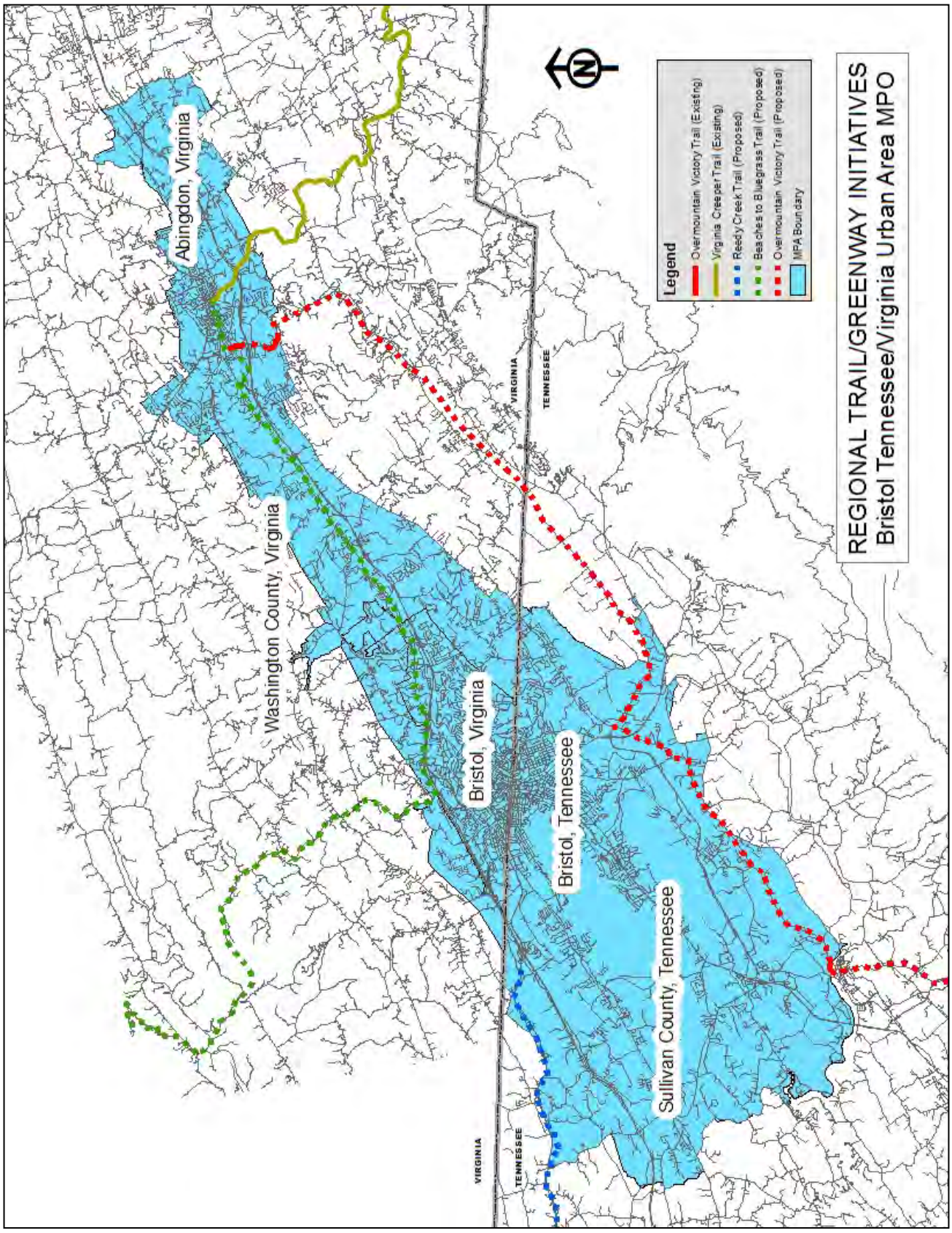
- The statewide Beaches to Bluegrass Trail in Virginia traverses the MPO's Metropolitan Planning Area. The Master Plan for the trail recommends an ideal off-road alignment as a long-term goal to develop multi-use trail along the entire corridor. The trail utilizes the existing Virginia Creeper Trail; however, from Abingdon to Bristol is an identified gap in the trail as well as the section from Bristol to Mendota. For the interim an on-road route has been recommended. Subsequent planning will address the gaps in the trail and potential trail extensions.

Map 7-8 illustrates the general location of existing and proposed regional pedestrian and bicycle routes for the Metropolitan Planning Area.



Regional Trails
Map 7-8

PART D: GOODS MOVEMENT AND FREIGHT ELEMENT

The economy has always played a key role in determining the growth of the freight industry. As the demand for goods and services increases, the need for transporting these goods to customers increases. Today the continuing trend of companies minimizing inventories and providing just-in-time shipping has changed the dynamics of freight transportation. Freight can be move from origin to destination by various modes; however, trucking has the greatest range of accessibility since they can operate on most roads (Table 7-5). Even when freight arrives by other modes, distribution to its final destination is usually by truck over the surface transportation system. Shipping freight by rail becomes feasible if there is a large quantity of the same commodity destined from a common location, the commodity is being shipped over a distance greater that 500 miles, or if the size or weight of the commodity exceeds the limitations of trucking. Shipping freight by air is expensive and is typically only done when the commodity has a high value or requires next-day delivery over a long distance.

The 2013 Freight Fact and Figures indicate the U.S. transportation system moved 53,846 thousand tons of freight each day in 2012. The Freight Analysis Framework estimates the tonnage will increase to 78,137 thousand tons per day by 2040.

Table 7-5
National Transportation System
Weight of Shipments by Transportation Mode
(Thousands of tons)

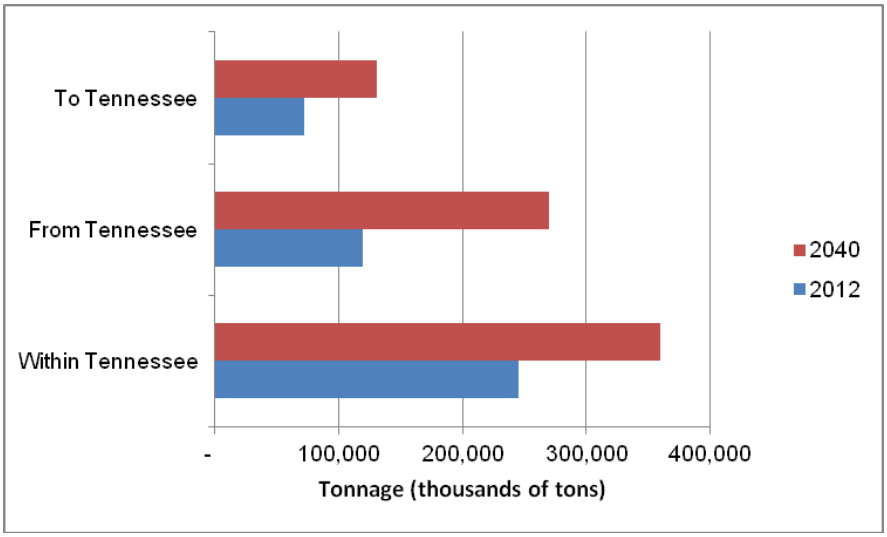
Transportation Mode	2012		2040	
	Tons	Percent	Tons	Percent
Truck	13,182,000	67.04%	18,786,000	65.87%
Rail	2,018,000	10.26%	2,770,000	9.71%
Water	975,000	4.96%	1,070,000	3.75%
Air (Air & Truck)	15,000	0.08%	53,000	0.19%
Multiple Modes & Mail	1,588,000	8.08%	3,575,000	12.54%
Pipeline	1,546,000	7.86%	1,740,000	6.10%
Other & Unknown	338,000	1.72%	526,000	1.84%
Total	19,662,000	100.00%	28,520,000	100.00%

Source: Freight Facts and Figures 2013, FHWA

EXISTING CONDITIONS

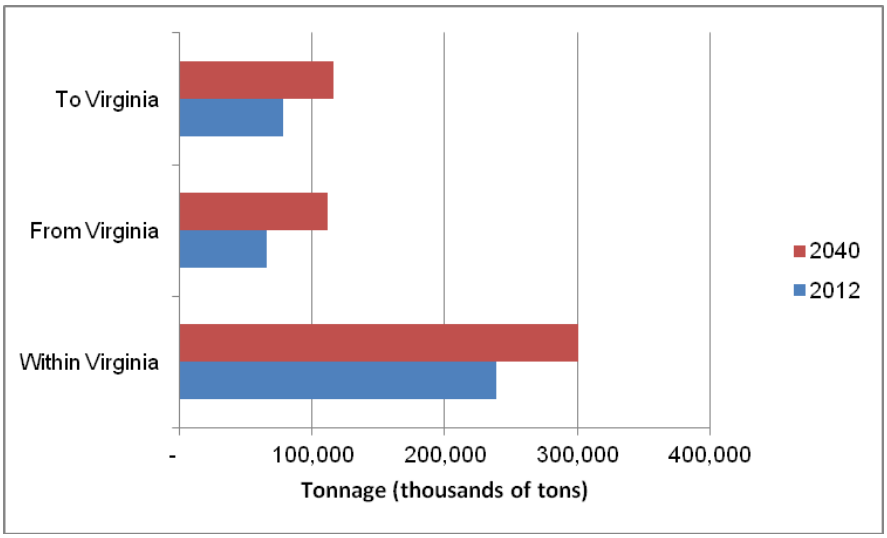
Trucking. On the National and State level, trucking represents the highest percentage of freight shipments by transportation mode. The Freight Analysis Framework (FAF) estimates that trucks carried about 79 percent of the total tonnage for commodity shipments into, out of, and thru Tennessee in 2012. In Virginia, trucking represented 70% of the total freight tonnage. The following graphics illustrate the 2012 and projected 2040 truck shipments to, from, and within Tennessee and Virginia.

Chart 7-H
2012-2040 Freight Shipments in Tennessee by Truck
(Thousands of tons)



Source: Freight Analysis Framework, Version 3.5 (2014)

Chart 7-O
2012-2040 Freight Shipments in Virginia by Truck
(Thousands of tons)

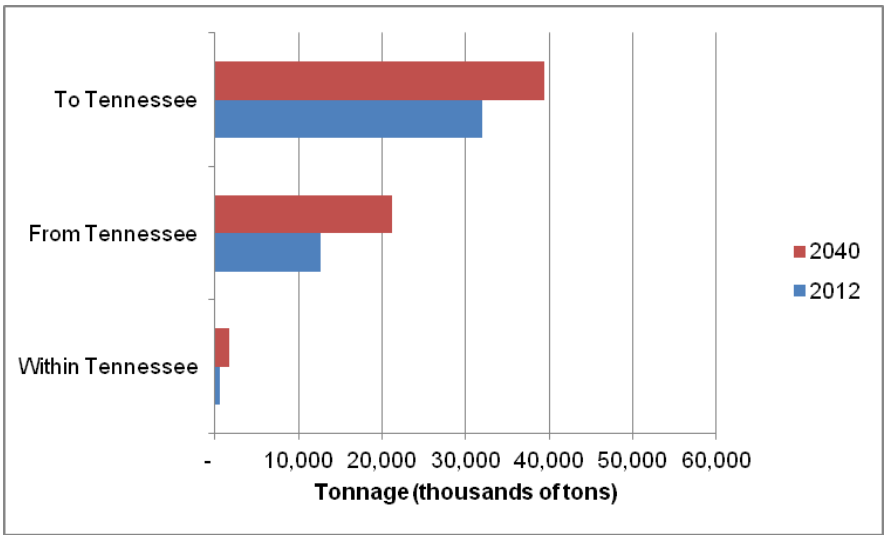


Source: Freight Analysis Framework, Version 3.5 (2014)

Much of the freight moving by truck uses the Interstate System. For the Bristol Study Area, Interstate 81 is a major corridor for the movement of goods within the region and passing through to other markets. The high degree of dependence on truck freight has given rise to several concerns, including road capacity, safety, accelerated damage to the highway infrastructure as well as air quality and noise.

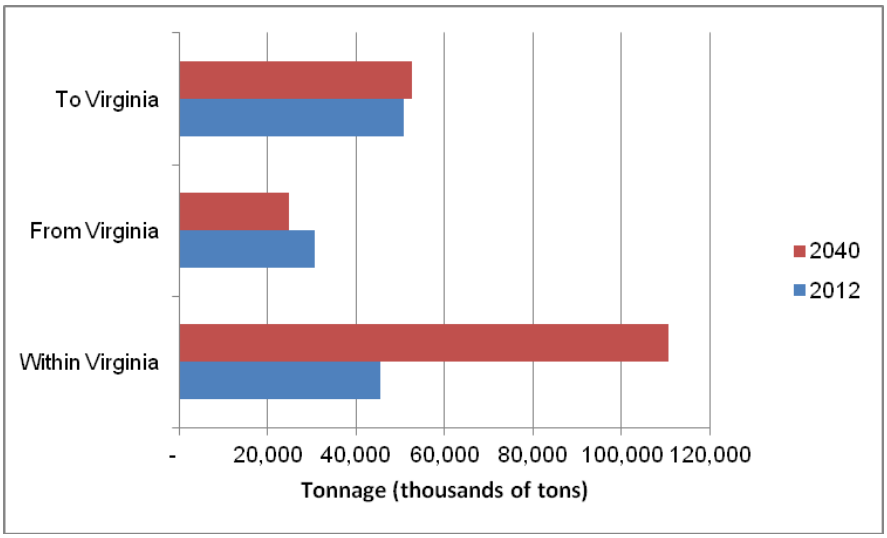
***Rail*.** In 2012, the FAF report estimated 45,287 thousand tons of freight was moved by rail in Tennessee, which represents 8% of the total freight tonnage. In Virginia, rail shipments represented 23% of the total freight tonnage at 126,785 thousand tons in 2012. A significant portion of the freight tonnage affecting the Virginia rail system is coal from the Appalachian Coalfields in Southwest Virginia to marine terminals at the Port of Virginia. The following graphics illustrate the 2012 and projected 2040 truck shipments to, from, and within Tennessee and Virginia.

Chart 7-n
2012-2040 Freight Shipments in Tennessee by Rail
(Thousands of tons)



Source: Freight Analysis Framework, Version 3.5 (2014)

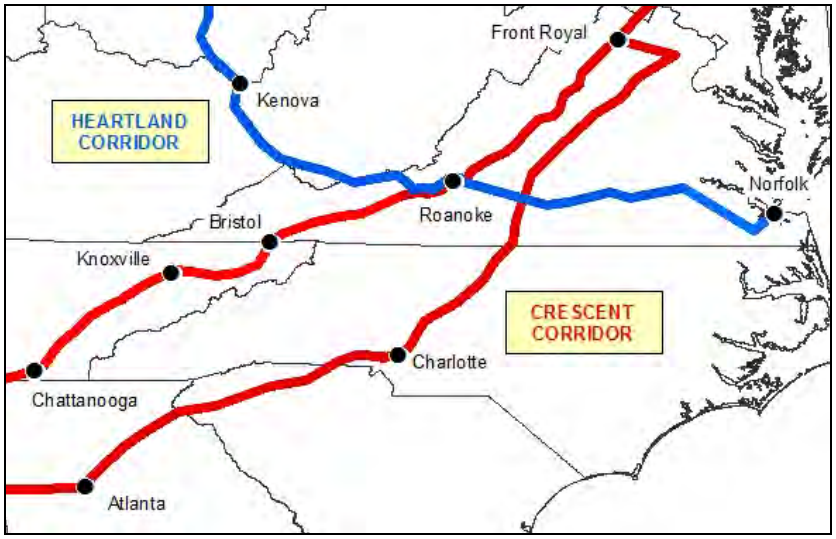
Chart 7-p
2012-2040 Freight Shipments in Virginia by Rail
(Thousands of tons)



Source: Freight Analysis Framework, Version 3.5 (2014)

The Bristol study area is crossed from southwest to northeast by one Class I railroad, the Norfolk Southern Railway (Map 7-9). Historically, the predecessor railroads of Norfolk Southern Railway served to help spur development in the area; the railroad first reached Bristol in 1856. The mainline of the railroad was in place before the Civil War, serving as part of the few east/west railroad links of the Confederacy, and was in and of itself a wartime target for military raids. In more recent history, this mainline served as one of the few railroads running inland from the Port of Norfolk with sufficient clearance height to allow for double-stack container trains; such trains ran from Norfolk to Knoxville, where they split into Atlanta-bound and Chicago-bound trains and vice versa. 2010 saw the completion of the Heartland Corridor by Norfolk Southern, which included modifications to bridges, tunnels, and structures to allow double-stack and oversize railroad rolling stock to pass between Norfolk and the Ohio-Chicago areas without passing through Knoxville. The completion of this corridor, as well as the Crescent Corridor improvements from New Orleans to New Jersey through Charlotte, North Carolina, has significantly reduced the amount of rail traffic through the Bristol Study Area.

Map 7-9
Norfolk Southern Railway Corridors



As for railroad industrial spurs, there are several located in the Bristol Study Area, some of which cross roadways on surface crossings (Industrial Park Road, Moore Street, Martin Luther King Jr. Boulevard, Commonwealth Avenue, Spurgeon Lane, Euclid Avenue, Keys Street) and on a bridge (Piedmont Avenue). Railroad spur train traffic is infrequent enough that capacity on the modeled roadways in the network is not an issue. Industries served by railroad spur service include a snack foods plant, an asphalt plant, and an agricultural products outlet in Bristol, Virginia; a natural gas tank farm and several plastics facilities in Bristol, Tennessee; and several industries in the Washington County Industrial Park in Virginia (Map 7-10).

Mainline railroad operations have a considerable impact on road travel in the Bristol Study Area. In both Virginia and Tennessee, the main line crosses roadways on surface crossings and on or under bridges, as listed below and shown on Map 7-10. Those bridge locations marked with an asterisk (*) represent modeled locations in which the roadway bridge over the railroad inhibits the flow of freight for various impediments including the bridge is weight-posted (West Mary Street); the passage underneath the railroad is either too narrow (Providence Road, Old Abingdon Highway) or too low (East Valley Drive, Columbia Avenue, Piedmont Avenue) to allow for the passage of trucks; or are too narrow to accommodate turn lanes at immediately adjacent intersections (Weaver Pike). Several of the projects proposed in this document address these bridge issues.

Virginia Bridged Crossings, Mainline (listed north to south):

- East Main Street, Abingdon
- Cummings Street, Abingdon
- West Main Street, Abingdon
- Providence Road, Washington County *
- Lee Highway, Bristol
- Interstate 81, Bristol
- Old Abingdon Highway, Bristol *
- East Valley Drive, Bristol *
- Columbia Avenue, Bristol *
- West Mary Street, Bristol *

Virginia Bridged Crossings, Spur (listed west to east):

- Piedmont Avenue, Bristol *

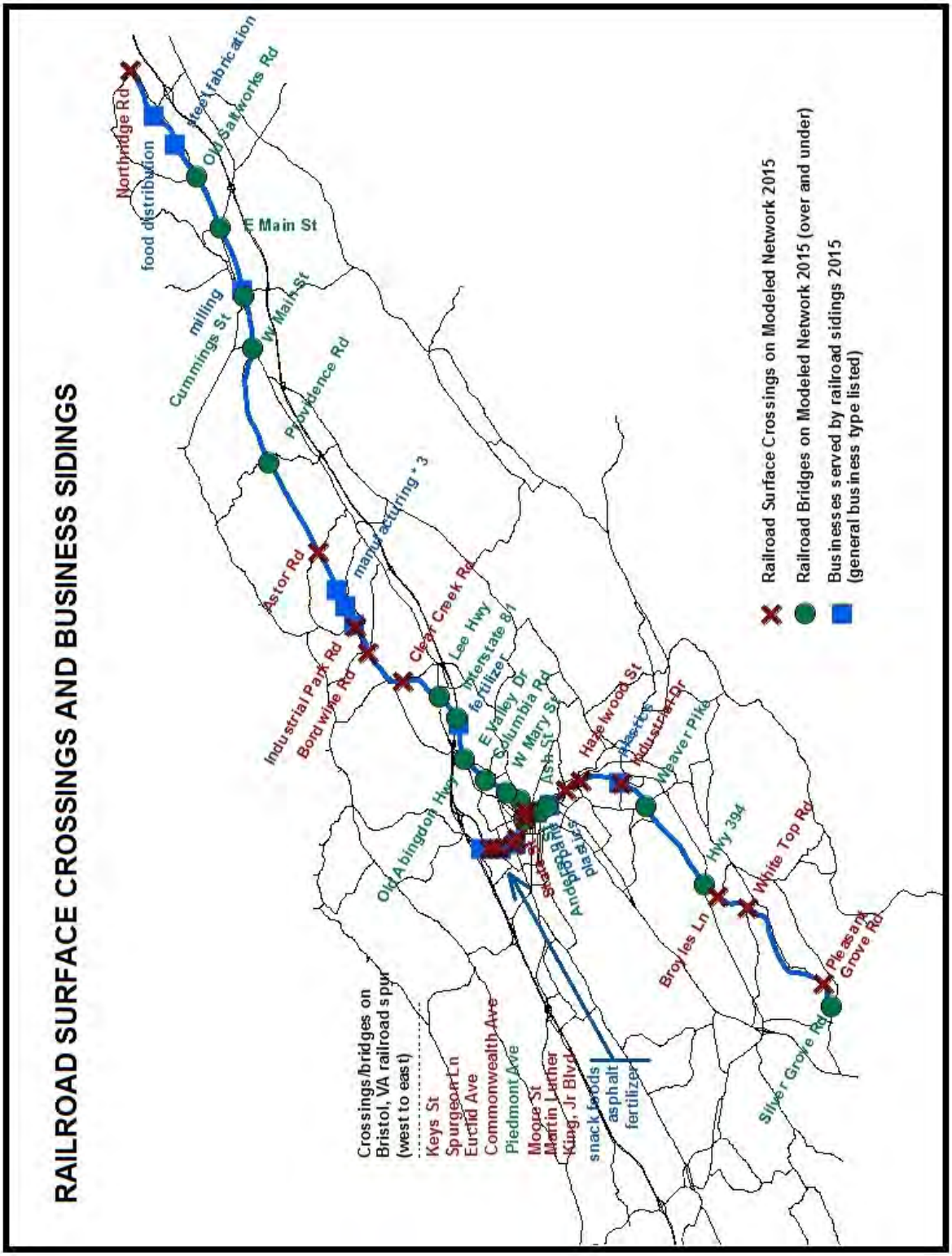
Tennessee Bridged Crossings, Mainline (listed north to south):

- Ash Street, Bristol
- Anderson Street, Bristol
- Weaver Pike, Bristol *
- Highway 394, Bristol
- Silver Grove Road, Sullivan County

Air. Tri-Cities Regional Airport is located just outside the Bristol study area and provides commercial passenger services as well as administration of the Tri-Cities Air Cargo Center and Foreign Trade Zone. Freight facilities at Tri-Cities Regional Airport include a 13,000 square foot air cargo center with an dedicated taxiway system and cargo ramp.

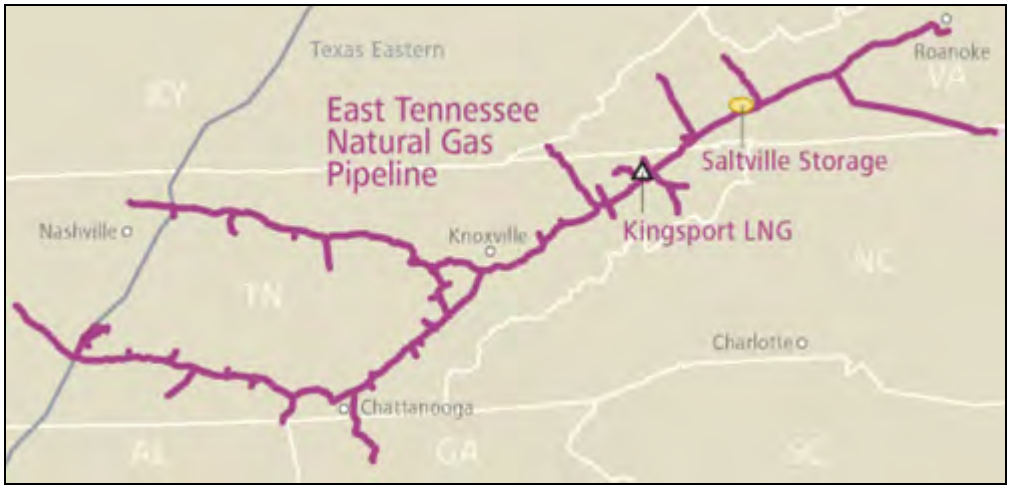
The Virginia Highlands Airport is a general aviation airport located west of Abingdon on U.S. Route 11. The airport is operated by an airport authority consisting of appointed members representing each election district in Washington County. In addition to private and corporate aviation facilities, the airport provides facilities for the U.S. Forest Service and the Virginia State Police. Although the airport provides aviation services for a substantial amount of business aircraft, Virginia Highlands Airport does not provide cargo services as a function of the airport's general aviation operations. A 2004 Air Freight Feasibility Study indicated Virginia Highlands Airport could potentially support an air freight center; however, the availability of competing services at Tri-Cities Regional Airport limits the practicability of such.

Map 7-10
Railroad Surface Crossings and Business Sidings



Waterways. The Bristol study area lies above the head of navigation of the Holston River system, which is a tributary of the Tennessee River. Prior to the conversion of the Holston River system to a series of reservoirs by the Tennessee Valley Authority, the head of navigation on the South Holston River was at Kingsport; commercial navigation above that point was not possible because of rapids in the river.

Pipeline. Outside of short industrial on-site usage, the only major pipeline in the Bristol Study Area is a natural gas pipeline running approximately parallel to Interstate 81. Pipelines in the region are operated by East Tennessee Natural Gas, a division of Spectra Energy (Map 7-11). East Tennessee Natural Gas has a capacity of 1.86 billion cubic feet per day and has interconnections with several major interstate pipelines, including the Texas Eastern Transmission.



Map 7-11
Natural Gas Pipelines in the MPO Region

PROGRAMMED AND PLANNED PROJECTS

Goods movement is recognized as a critical element in the transportation planning process, yet few localities have attempted to associate goods movement with economic development. Most improvements to correct existing network deficiencies are related to a desire to reduce impediments to passenger travel and any reciprocal benefits to local industries was secondary. Recently, governments are realizing that location decisions are increasingly based on the availability of an efficient and dependable transportation network.

Operational improvement projects as well as new construction projects are identified in the *Bristol Tennessee/Virginia Urban Area Long Range Transportation Plan Year 2040* that will address freight movements primarily by improving turning movements and access improvements for trucking, but also the problems associated with several capacity issues on local roadways. With only a few exceptions on roadways with no-truck routes, freight movements will benefit from most projects proposed in this document.

I-81 Corridor Studies. Motivated by rising projections of highway congestion and truck traffic exceeding what the highways were designed to handle, both Tennessee and Virginia have developed freight diversion studies to evaluate strategies that could be used to assess the potential for diversion of truck trips to rail along the Interstate 81 corridor. The premise underscoring rail system improvements was that they would lead to cargo movement diversions from truck to rail and consequently reduce congestion on the interstate system. The overall conclusion of both studies was that because most freight currently shipped by truck either begins or has a destination outside the state, the potential to diverting goods from truck to rail is limited unless corridor-wide multi-state coalitions are developed to partnership with the railroads, which produces a higher volume of traffic diversions.

CHAPTER 8: SAFETY AND SECURITY PLANNING

Safety must be considered as a key goal in the development of metropolitan and statewide transportation plans and is explicitly included as a transportation planning factor. In addition, security of the transportation system is also an important goal which must be addressed. Although the MPO is not directly involved in security or emergency planning, communication has been established with emergency management agencies, local law enforcement agencies, engineering officials, and emergency personnel on major transportation plans and projects with the intent of developing a transportation system that is safe and secure as possible.

PART A: SAFETY PLANNING

Both Tennessee and Virginia have undertaken efforts to increase statewide safety. Behavioral strategies such as seat belt laws, child restraint laws, laws governing the use of electronic devices by drivers, and DUI laws have been strengthened to improve safety on roadways. Safety planning, cooperation, education, and research are essential on the federal, state, and local level to meet the ultimate objective of reducing fatalities, injuries, and property damage.

Strategic Highway Safety Plan. Providing the most efficient and safest transportation facilities is of critical importance. The primary performance measures for transportation safety are reductions in the number of crashes that result in fatalities, injuries, property damage, and related economic losses. The State of Tennessee and Commonwealth of Virginia have both developed a statewide Strategic Highway Safety Plan (SHSP) to define a system, organization, and process for achieving the highest level of highway safety. Although the emphasis areas of each state's SHSP varies, both integrate the four-E approach of transportation safety; ***E***ngineering, ***E***ducation, ***E***nforcement, and ***E***mergency response services.

Tennessee's SHSP addresses the following safety emphasis areas to achieve the goal of reducing fatality rates statewide in reference to Tennessee's "Driving Down Fatalities" initiative.

- Data Collection and Analysis;
- Driver Behavior;
- Infrastructure Improvement;
- Vulnerable Road Users;
- Operational Improvement;
- Motor Carrier Safety.

Similar in scope, "Arrive Alive Virginia", Virginia's SHSP includes the following emphasis areas to reduce the annual number of injuries and deaths due to motor vehicle crashes:

- Speeding;
- Young Drivers;
- Occupant Protection;
- Impaired Driving;
- Roadway Departures;
- Intersections;
- Data Collection, Management, and Analysis.

Implementation of these strategies for Tennessee and Virginia are under the auspices of each state's Transportation Safety Committee and comprised of representatives from multiple disciplines, agencies, and organizations involved in highway safety.

Highway Safety Improvement Program. In March 2016, the Federal Highway Administration issued new guidance on the Highway Safety Improvement Program (HSIP) which is based on a performance-based planning process that was initiated in the Moving Ahead for Progress in the 21st Century (MAP-21) and continued under the Fixing America's Surface Transportation Act (FAST-Act). Each State must develop a Highway System Improvement Program that includes:

- A State Highway Safety Program (SHSP);
- A Railway-Highway Crossing Program; and
- A program of highway safety improvement projects.

Specifically, the guidance addresses the SHSP in reference to; 1) features (including adoption of performance-based goals); 2) SHSP update cycle; 3) approval of the update process; and 4) penalty for failure to have an updated, approved plan. Tennessee and Virginia must have an updated SHSP by August 1, 2017, approved by FHWA, or they will not be eligible to receive the annual redistribution of certain Federal-Aid Highway Program funds.

Roadway Intersections. As with all transportation plans and operations, safety is a key component. However, oftentimes, it is found that modifications to traffic control devices or roadway operations end up being a dilemma of safety *vs*. efficiency. For instance, one potential solution for a traffic signal with significant left-turn collisions is to install a restrictive left-turn (left-turn-on-green-arrow-only) phase. While this may help alleviate left-turn collisions, the increase in cycle time and delay imposed by such an addition may be enough to drop the level of service for the intersection to an unacceptable level, which in turn would require additional remediation.

Historically, there have typically been five or less fatal collisions in the Bristol Study Area per year. Some of these fatal incidents have also involved pedestrians and bicyclists struck by vehicles. The role of the MPO in safety planning lies primarily with data collection and statistical analysis. Such data and analysis is made available to the various jurisdictions, which can themselves develop the appropriate countermeasures. In some instances, the desire to implement various countermeasures by the jurisdictions results in those jurisdictions working through the MPO process to program funding for safety improvements.

Currently, the Bristol MPO compiles crash statistics for a total of 644 intersections within the Bristol Study Area, broken down as follows:

- City of Bristol Virginia: 146 intersections
- City of Bristol Tennessee: 326 intersections
- Shared by both Bristols on the State Line: 27 intersections
- Unincorporated eastern Sullivan County: 105 intersections
- Unincorporated western Washington County[1]: 60 intersections

This compilation effort includes an annual review of crash reports, development of collision diagrams of each location, updates of traffic volume data, and an analysis of rates and trends, as well as before-and-after statistical comparisons for changed conditions. Analysis of crashes goes back a maximum of ten years' worth of data (or less if it is a newly added intersection or one in which the conditions have changed in that time period); however, in many locations, crash data has been compiled back to 1982 (in Tennessee) and 1988 (in Virginia). To qualify for MPO crash monitoring, an intersection has to meet one or more of the following criteria:

- Equipped with traffic signals;
- Equipped with flashing beacons;
- Equipped with multi-way STOP control;
- Intersection of modeled roadways in the travel demand model network;
- Locations of intersection modifications;
- Locations impacted by major land use changes (i.e., opening or closing of nearby shopping centers or manufacturing facilities);
- Intersections that are the subject of study by the local jurisdiction.

While knowing the total number of crashes at any given location is a useful tool for safety planning, it does not provide the entire story. Three crashes per year at the intersection of two 20,000 vehicles-per-day arterials does not represent the same safety impacts as three crashes per year at the intersection of two 300 vehicles-per-day residential subdivision streets. To account for different types of roads and different traffic volumes, *C*ritical *R*ate *F*actors (CRFs) are used. The CRF is a statistical measure of how many crashes are occurring at a given location at a given volume of traffic, compared to similar intersections across the State of Tennessee. For a given confidence level (the Bristol MPO uses a 95 percent confidence level), a CRF is calculated. Should the CRF value be less than one, it indicates that the number of crashes (but not necessarily the types of crashes) can be attributed to random chance at that confidence level. If the CRF is greater than one, it indicates that there is some factor, correctable or not, that is influencing the number of crashes at this location.

[1] The Town of Abingdon formally became a Bristol MPO member jurisdiction in September 2015 as this document was being developed. A protocol for crash monitoring in Abingdon, and for the MPO Study Area of Washington County east of Exit 13, has yet to be established.

The Commonwealth of Virginia does not compile the appropriate statewide statistics to develop CRFs. Some crash data is available for the Bristol District (twelve counties of southwestern Virginia), but it was felt that this was not a suitable control population of data, given that Bristol and Abingdon are among the largest cities in the largely rural Bristol District. For the Virginia jurisdictions, the crash rates are compiled as crashes per million entering vehicles. This gives an indication of high-crash locations when comparing one intersection against another, but does not indicate which of those locations are, by the number of crashes and traffic volumes present, being influenced by factors other than random chance.

The individual jurisdictions can then use this data to determine for themselves what resources, whether through state, federal, or local funding, require remedial action and in what priority. It also provides data for project development that can be used in the preliminary engineering and design phase.

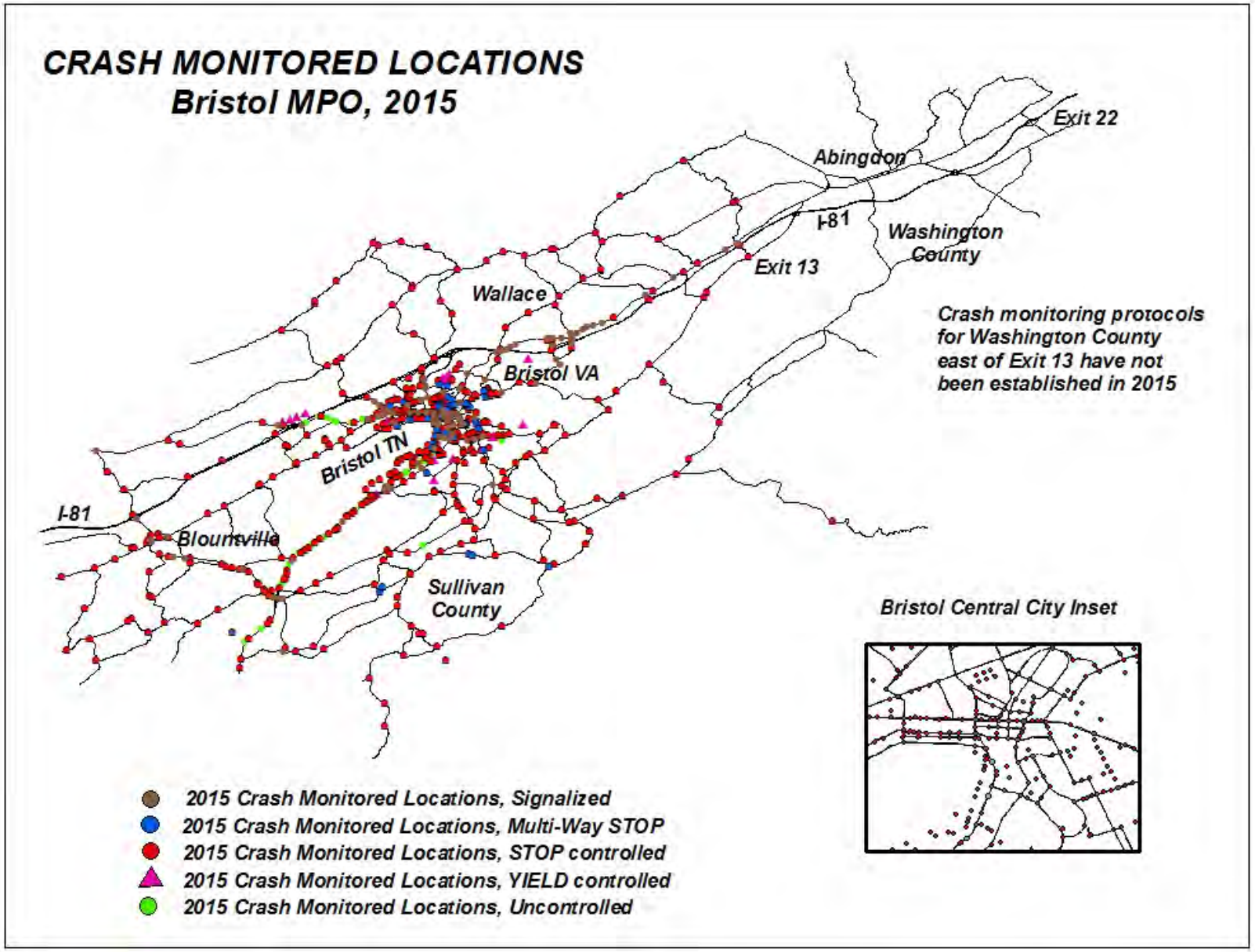
Map 8-1 illustrates those locations for which crash data was collected for the calendar year 2015.

Roadway and Lane Departure Crashes. Both TDOT and VDOT have identified roadway and lane departure crashes as a major concern in the State Highway Safety Plan. This is due to the severity of this type of crash and the high rate of fatalities and injuries when vehicles leave the appropriate travel lanes or the roadway. The MPO will continue to coordinate with TDOT and VDOT, as well as local jurisdictions, to monitor locations with significant crash histories or potential roadway departures and identify effective strategies to reduce roadway and lane departure crashes through safety audits and roadway assessments.

Starting in 2008, the MPO has collected statistics on roadway and lane departure crashes as part of its annual data collection and analysis efforts. These include head-on collisions, sideswipes [both same-direction and opposite-direction], run-off-the-road incidents, and hitting parked vehicles. While they may not technically involve a lane departure maneuver, crashes in which a motorcyclist has “laid a motorcycle down” in the event of a crash or swerving to miss an obstruction are also included with the lane departure crashes in this analysis.

Public Transportation. Local transit agencies have always placed an emphasis in providing a safe, secure, and reliable service for its passengers and employees. These continuing efforts are an integral part of providing public transit services.

With the on-going prevalence of terrorist activity in the United States, the Federal Transit Administration has placed greater emphasis on safety and security for public transportation providers. As a department of local government, both Bristol Tennessee Transit and Bristol Virginia Transit are integrated into each city’s Disaster Preparedness Plan and Hazard Mitigation Plan. District Three Cooperative and Abingdon Transit has a Cooperative Continuation of Operations Plan in place that provides procedures should a disruptive event occur. While transit must be concerned about safety and security as it relates to the provision of providing service, transit also functions locally as a valuable resource to the community in providing rescue or evacuation services.


CRASH MONITORED LOCATIONS
Bristol MPO, 2015
Exit 22
Abingdon
I-81
Washington County
Exit 13
Wallace
Bristol VA
Bristol TN
I-81
Bloumville
Sullivan County
Crash monitoring protocols for Washington County east of Exit 13 have not been established in 2015
Bristol Central City Inset
2015 Crash Monitored Locations, Signalized
2015 Crash Monitored Locations, Multi-Way STOP
2015 Crash Monitored Locations, STOP controlled
2015 Crash Monitored Locations, YIELD controlled
2015 Crash Monitored Locations, Uncontrolled

Map 8-1

At the basic level, local transit agencies train drivers and supervisors on safety and security issues, conduct background checks for new employees, update security features on new vehicle procurements, screen employees for alcohol and drug use, and coordinate with local emergency management services. Public transit is responsible for being able to respond rapidly and effectively to natural and human-caused threats and disasters and to support the needs of emergency and public safety agencies.

Railroad Grade Crossings. One of the critical safety issues associated with rail service are at-grade crossings. At-grade crossings are a source of concern for both railroad companies and local jurisdictions in that safety and maintenance issues continually need addressing. Maintaining adequate sight distance and safety devices such as signs, pavement markings, gates, bells, and warning lights at existing at-grade crossings are very important and costly. Grade separation is one potential solution for safety issues involving automobiles at rail crossings; however, it is often unclear as to whose responsibility it is (railroad or local jurisdiction) to finance such capital-intensive improvements.

In both Virginia and Tennessee, the following modeled roadway locations in the MPO Study Area have at-grade crossings.

Table 8-1
At-Grade Rail Crossings

Virginia Railroad At-Grade Crossings, Mainline (listed north to south)

ROADWAY	JURISDICTION	ACTIVE SAFETY DEVICES
Northridge Road (Rte 694)	Washington County	Flashing Lights, Bells, Crossing Gates
Astor Road (Rte 869)	Washington County	Flashing Lights, Bells, Crossing Gates
Industrial Park Road (Rte 1717)	Washington County	Flashing Lights, Bells, Crossing Gates
Bordwine Road (Rte 625)	Washington County	Flashing Lights, Bells, Crossing Gates
Clear Creek Road (Rte 659)	Washington County	Flashing Lights, Bells, Crossing Gates
State Street[2]	Bristol	Flashing Lights, Bells, Crossing Gates

Virginia Railroad At-Grade Crossings, Spur (listed north to south)

ROADWAY	*JURISDICTION*	*CROSSING TYPE*
Industrial Park Road	Washington County	Passive (pavement markings/signage)
Keys Street	Bristol	Passive (pavement markings/signage)
Spurgeon Lane	Bristol	Passive (pavement markings/signage)
Euclid Avenue (US 11W/421) [3]	Bristol	Flashing Lights, Bells, Crossing Gates
Commonwealth Avenue (US 11E/19/421) [3]	Bristol	Flashing Lights, Bells
Moore Street	Bristol	Passive (pavement markings/signage)
Martin Luther King, Jr. Boulevard (Truck US 11/19)	Bristol	Passive (pavement markings/signage)

[2] There are multiple rail lines at this crossing that function as part of the Bristol railroad yard.
[3] This railroad spur is a two-track crossing.

Tennessee Railroad At-Grade Crossings, Mainline (listed north to south)

ROADWAY	JURISDICTION	CROSSING TYPE
State Street [1]	Bristol	Flashing Lights, Bells, Crossing Gates
East Cedar Street	Bristol	Flashing Lights, Bells, Crossing Gates
Hazelwood Street	Bristol	Flashing Lights, Bells
Industrial Drive	Bristol	Flashing Lights, Bells, Crossing Gates
Broyles Lane	Sullivan County	Flashing Lights
White Top Road	Sullivan County	Flashing Lights, Bells
Pleasant Grove Road	Sullivan County	Passive (pavement markings/signage)

There are no modeled roadways in Tennessee that cross a spur line without the mainline being adjacent to it.

The MPO provides administrative assistance to the local jurisdictions for the funding of railroad surface crossing projects. This includes "spot safety" projects for installation of flashing lights, gates, and bells for at-grade crossings, as well as major infrastructure projects such as construction of the Anderson Street bridge to remove US 421 from the State Street surface crossing.

***Pedestrian/Bicycle Projects*.** The automobile dominates transportation in the Bristol Region, as in most American communities. Often, the accommodation of cars in public spaces creates obstacles to safe, efficient, and pleasurable walking and biking. Safety is often a primary purpose for the development of bicycle and pedestrian enhancement projects.

Locally, pedestrian enhancement projects have included installation of pedestrian displays (including devices for visually impaired pedestrians) and handicapped ramps equipped with detectable surfaces for visually impaired pedestrians. There are very limited dedicated bike lanes in the MPO and many roads have narrow lanes and shoulders, with narrow bridges, which create barriers for safe bicycling. However, both TDOT and VDOT have adopted policies for integrating bicycle and pedestrian accommodations with construction and maintenance projects.

Greater awareness of the pedestrian and bicycle facilities has been incorporated into local jurisdictions planning processes and comprehensive plans. For pedestrian/bicycle routes recently developed, design has included traffic calming techniques, especially at street intersections for motor vehicle awareness and ADA (Americans with Disabilities Act) facilities.

The City of Bristol, Tennessee, has adopted a bicycle route network and plan for the development of a citywide system connecting points of interest and connecting to TDOT's statewide bicycle network. This has included completion of the Wes Davis and Mark Vance Greenways as well as several phases of sidewalk improvements or extensions near Fairmount Elementary School as part of Tennessee's Safe Routes to School program. The Town of Abingdon, Virginia has developed a pedestrian safety and movement study to improve pedestrian continuity, control vehicle patterns, and decrease conflicts between pedestrians and motorist. This has resulted in pedestrian improvements in the vicinity of the Barter Theatre, and continued maintenance and proposed improvements for the Virginia Creeper Trail in Abingdon and Washington County, Virginia.

In addition to pedestrian and bicycle infrastructure improvements, local jurisdictions promote educational activities for teaching pedestrians, bicyclists, and motorists to practice safe behavior while on the local streets, sidewalks and paths. For example, educating pedestrians to stop, and look before crossing the street or teaching bicyclists the proper hand signals when making maneuvers on the road may help increase and improve communication with motorists and reduce the chance of crashes.

LED Use in Traffic Signals. Several jurisdictions in the Bristol study area, including TDOT; Bristol, Tennessee; Bristol, Virginia; VDOT; Abingdon; and Sullivan County are in various stages in the process of converting incandescent traffic signals to LED displays. In all of these jurisdictions, new traffic signals are being installed with LED fixtures as well as efforts to upgrade older pedestrian signal displays to LEDs, including the installation of countdown displays. LED fixtures can provide greater visibility of displays than incandescent fixtures, in addition to a reduction in energy consumption and costs. The MPO has been tracking the LED conversion of traffic signals to determine before-and-after impacts on the crash history of these locations.

OBJECTIVES AND PROPOSED ACTIONS

To reduce transportation related crashes, injuries, and fatalities across all modes and to promote safety in the design and construction of transportation facilities, user safety is one of the primary goals of the *Bristol Tennessee/Virginia Urban Area Long Range Transportation Plan 2040.* Based on importance and public concern for a safe transportation system, safety has long been an evaluation criterion for the long range transportation plan and project selection process.

Since the MPO is involved in a regional planning analysis, it is not practical to address all local safety issues; however, one of the most appropriate safety activities of the MPO is to advocate safety conscious design principles into roadway improvements. As such, one of the single most important elements that can be addressed is access control. Access control consists primarily of limiting the number of driveways and conflict points on the roadway system and serves to both reduce the number of crashes as well as reduce congestion.

To be effective, safety-conscious planning must extend across all planning activities. For example, land use planning and decisions influence access management through the subdivision and site plan process. Safety planning requires multi-agency coordination and communication to develop policies and design practices to promote safety and security for all transportation modes. The safety and security objectives of the MPO include the following activities:

- Implementing design factors in new infrastructure that enhances the safety and extends the life of structures.
- Improving the safety of the transportation system at modal transfer points, such as bikeways that share or cross roadways, intersections with crosswalks, and railroad crossings.
- Improving the accessibility and safety of transit stops and transfer points.

PART B: SECURITY PLANNING

With the current enabling federal legislation, security is a separate goal which must be considered and addressed in the *Bristol Tennessee/Virginia Long Range Transportation Plan Year 2040*. Although the MPO is not directly involved in security or emergency planning, communication has been on-going with emergency management agencies, local law enforcement agencies, engineering officials, and emergency personnel on major transportation plans and projects.

The MPO's security role for the region is primarily to support existing federal, state, and local agencies in their efforts to enhance the transportation system for the region. Given the strong influence of public safety and emergency management agencies in dealing with security/disaster incidents, it is likely the most appropriate MPO activity would be promoting a coordinated planning process with the intent of developing a regional transportation system that is secure as possible. As a forum for cooperative decision making in the metropolitan area, and the responsibility for allocating financial resources for improving the performance of the transportation system, the MPO does function as a stakeholder in security planning.

MPO Roles Relating to Security. Security/disaster planning is divided into several components that reflect the different elements in dealing with such events, e.g., prevention, incident response, monitoring, system recovery, investigation, and institutional learning. In each case, the MPO would likely focus on some aspect of the transportation system that is part of the larger regional response to security/disaster incidents.

Given the MPO's responsibilities as a forum for cooperative decision-making, transportation funding, technical analysis and transportation planning, the actions that seem most appropriate for the MPO in the context of security planning are:[4]

- Providing a forum for security/safety agencies to coordinate surveillance and prevention strategies;
- Management of data related to transportation facilities;
- Funding regional surveillance and detection systems;
- Funding recovery strategies;
- Funding new strategies, technologies, and projects that can help prevent incidents;
- Conducting vulnerability analyses on regional transportation facilities and services;
- Analyzing the transportation network for redundancies in moving large number of people and materials, and strategies for dealing with "choke" points;
- Analyzing the transportation network for emergency route planning and strategic gaps in the network.

EXISTING CONDITIONS

Intelligent Transportation Systems. In many metropolitan areas, much of the Homeland Security and Emergency Preparedness activities revolve around the implementation of Intelligent Transportation Systems (ITS). This is in part a result of the similarities between the

[4] Source: Georgia Institute of Technology

need for functions such as surveillance, intrusion detection, and communications required for security, and the applications required for operation and management of the transportation system. In addition, deployment of ITS technologies has an impact on the institutional relationships, both formal and informal, that are established within the region between agencies.

ITS deployment refers to the use of advanced technologies to enhance management and operation of transportation facilities. ITS program areas include many elements, some of which include surveillance equipment to monitor roadways for congestion and incidents; variable message signs that display traffic information to motorists; vehicle detection devices that report speed and travel time; and motorist service patrols that respond to incidents in a timely manner.

A multi-jurisdictional task force developed and approved the *Bristol Regional ITS Architecture and Deployment Plan* in June 2008. This ITS plan covered all of Washington County, Virginia; Bristol, Virginia; and that portion of Sullivan County within the Bristol MPO Study Area (but not the area east of South Holston Lake)[5]. The current ITS plan was designed to complement the operational ITS characteristics of both TDOT and VDOT's pre-existing ITS operations. The plan provides the guidelines and structure for the implementation and operation of ITS technology within the metropolitan area, and defines the transportation needs, ITS solutions, agencies to be involved, and projects to be deployed. The 2008 *Bristol Regional ITS Architecture and Deployment Plan* is scheduled for a major update to determine changes in project status, prioritization, or the addition of new projects. In addition, any new stakeholders will be included and any changes to the National ITS Architecture will be evaluated.

ITS operations in the Bristol Study Area are currently confined to camera detection systems and variable message boards along Interstates 81 and 381, operated by both the Tennessee and Virginia Departments of Transportation. For large events at Bristol Motor Speedway, additional temporary ITS cameras and variable message boards are deployed by both Departments of Transportation; Bristol, Tennessee; and Sullivan County.

Various communities in the region have requested expansion of Interstate motorist service patrols into the Tri-Cities, including the Bristol area. As of December 2015, such services are provided only during Race Weekend operations by drawing equipment and personnel from the Knoxville (TDOT), Roanoke (VDOT), and the southwestern Virginia tunnels at East River and Big Walker Mountains (VDOT).

Evacuation Routes. No designated evacuation routes throughout the Bristol Study Area are identified, such as those found in other locations for hurricanes, tsunamis, industrial or nuclear incidents, or other similar events. In the event of emergency evacuations, such as for hazardous spills or natural disasters, local law enforcement will determine the best routes based on the characteristics and extent of the incident.

[5] When that 2008 document was developed, Bluff City was included as a stakeholder jurisdiction. In the next update of the ITS plan, Bluff City and surrounding portions of Sullivan County will be removed in recognition of the recent changes in the Bristol MPO study boundary.

Public Transportation. The Federal Transit Administration has undertaken a series of programs to help local transit providers prepare against a variety of threats. Although the transit providers within the Bristol Metropolitan Planning Area represent small urban and rural systems, it is important for local agencies to integrate security in transit programs.

To date, transit agencies within the region have not invested in significant capital improvements based on the level of security-related incidents, and potential threats do not appear to warrant further expense in this area. This does not imply that security has not been addressed as local agencies continue to train drivers and supervisors on security issues, conduct background checks for new employees, update security features on new vehicle procurements, and coordinate with local emergency management services. Transit security functions must be supported by an effective capability for emergency response, both to support resolution of those incidents that occur on transit property and those events that affect the surrounding community served by the transit agency. As such, local transit agencies are integrated into disaster preparedness and hazard mitigation plans.

Basic goals of transit agencies in regards to security include:

- Being prepared for security incidents;
- Being able to respond rapidly and effectively to natural and human-caused threats and disasters;
- Being able to appropriately support the needs of emergency management and public safety agencies; and,
- Being able to quickly and efficiently be restored to full capability.

Trucking. The Transportation Security Administration (TSA) administers the Hazmat Threat Assessment Program which obtains background and security checks on drivers of commercial vehicles transporting hazardous materials. The Federal Motor Carrier Safety Administration (FMCSA) is responsible for developing, maintaining, and enforcing Federal regulations that establish safe operating requirements for commercial vehicle drivers, carriers, vehicles and equipment. In addition, FMCSA enforces the Hazardous Materials Regulations to reduce security risks that could potentially harm the public and environment. FMCSA has initiated several programs aimed at protecting against terrorists utilizing commercial trucks as targets or weapons.

Currently, no routes within the MPO Study Area are restricted for hazardous material transportation with the exception of routes which are restricted to all commercial vehicles.

Rail. The Bristol Study Area is crossed by one Class I railroad, the Norfolk Southern Railway. Bristol Yard, located mostly on the Virginia side of the state line, serves as a crew change point for trains operating between Knoxville and Roanoke. Norfolk Southern Railway routinely monitors railroads for both safety and security purposes and maintains customized facility security systems, electronic surveillance, perimeter intrusion detection, and access control systems. These technology enhancements are centrally monitored at the railroad's Police Communication Center in Roanoke, Virginia.

The TSA plays an important role in securing railroads and conducts inspections and investigations to prevent attacks. TSA deploys inspectors, Visual Intermodal Protection and Response teams, canine teams and provides grants for activities to protect and support rail systems.

Pipelines. Outside of short industrial or medical on-site usage, the only major pipeline in the Bristol Study Area is a natural gas pipeline running approximately parallel to Interstate 81, with a pumping station off of Meadow View Road just east of Exit 74. East Tennessee Natural Gas, a division of Spectra Energy, employs a number of techniques to ensure pipelines are safe. This includes technical equipment to monitor and control the flow through the use of sensors that can identify an incident in the event of an emergency as well as routine foot patrols and aerial patrols of pipeline rights-of-way are conducted. To address terrorism concerns, they conduct regular drills and have a security response plan in place. Pipeline-specific safety training is also provided.

The federal Department of Transportation's Office of Pipeline Safety (OPS) administers the national regulatory program to assure the safe transportation of natural gas, petroleum, and other hazardous materials by pipeline. The OPS develops regulations and other approaches to risk management to assure safety in design, construction, testing, operation, maintenance, and emergency response of pipeline facilities.

Emergency Management Plans. Although the MPO Study Area encompasses two states, all of the MPO county-level jurisdictions have Emergency Operation Plans and/or equivalent mitigation plans that include measures for homeland security factors for this region. These documents identify various potential man-made and natural hazards that could occur in this region and identify agency responsibilities in the event of an incident. Typically, the content of a Hazard Mitigation Plan provides a risk and vulnerability assessment and establishes mitigation strategies. In addition, both the Tennessee and Virginia Departments of Transportation have developed Interstate 81 incident response plans, which define alternate routes if sections of the interstate are closed.

The Tennessee Department of Transportation was one of seven pilot projects funded by FHWA to assess the vulnerability of the state's transportation infrastructure to extreme weather. The statewide vulnerability assessment included all transportation infrastructures (roads, rivers, rail, transit, and aviation) and identified the associated impacts of extreme weather (i.e. flooding, drought, tornadoes, fog) on those transportation assets. As needed, the MPO will coordinate with TDOT to incorporate the findings of the Extreme Weather Vulnerability Assessment into its transportation planning process.

Because the geographic area that the Bristol MPO encompasses is relatively small, probable hazard risks are consistent throughout the planning region (Table 8-1). *Risks* define a known, identified hazard area within the region. *Vulnerability* establishes the impact of that hazard to the region and can be on quantified based on collected data such as the number of buildings that would be affected or location of critical community facilities (i.e., fire stations).

Table 8-2
Summary of Probable Hazard Risk and Vulnerability

Hazard	Risk	Vulnerability
Dam Failure	High	Moderate
Flooding Hazards	High	Low
Geological Hazards	Low	Low
Infestations	Low	Low
Severe Weather-Drought	Low	Low
Severe Weather Hazards	Moderate	Moderate
Manmade Hazards	Moderate	Moderate

ISSUES

With the exception of severe storms, flooding, and forest fires, hazardous materials incidents are perhaps the most likely to affect the Bristol Study Area. Several industries within the Bristol MPO use, produce, store, or distribute hazardous materials. According to the EPA's Toxic Release Inventory, Bristol Metals, Strongwell Corporation, HAPCO, and Bristol Compressors are some of the larger facilities within the study area that handle hazardous materials. Formerly active facilities that also involved hazardous materials include the closed Raytheon and Exide industrial plans.

On a daily basis, hazardous materials are transported on many highways and on the railroad within the region. Hazardous materials incidents typically take two forms: fixed facility incidents and transportation incidents. Transportation incidents are substantially harder to prepare for because they can occur at any location, although the vast majority occurs on interstate highways or on major rail lines. Primary response to these events will be local police, fire, and emergency management personnel. In both Tennessee and Virginia, local jurisdictions have Emergency Disaster Preparedness Plans establishing agency responsibilities and response for various types of incidents.

Bristol Motor Speedway. Given the location of Bristol Motor Speedway and the large numbers of people in the area during race events, both Bristol, Tennessee, and Sullivan County have included the facility in their local Hazard Mitigation Plans. The vulnerability is directly related to the ability to evacuate people in the event of a disaster, whether weather-related or terrorism-related. BMS has an Emergency Operations Plan in accordance with guidance from NASCAR, and the multiple law enforcement, fire, medical, and emergency management agencies on local, state, and federal levels coordinate closely during events. A Multi-Agency Command Center (MACC) is established for major events for coordination of those activities.

OBJECTIVES AND PROPOSED ACTIONS

Although the MPO will play a supporting role in the efforts to mitigate security risks, it will continue to communicate with appropriate agencies to assist in their transportation system needs and to engage emergency and law enforcement personnel in transportation planning activities. An objective of the MPO is to ensure that the transportation system is capable of handling a response to an emergency. This can be achieved by providing multiple alternative

routes through road network connectivity in the case of highway closures, ensuring sufficient emergency personnel and equipment access along the transportation system, and utilizing ITS and other measures to effectively handle an evacuation.

In the development of the *Bristol Tennessee/Virginia Urban Area Long Range Transportation Plan 2040,* security projects are undifferentiated from other more traditional projects. For example, a highway improvement project may be classified primarily as reconstruction to a four-lane facility, but will also result in additional capacity for emergency evacuation. A case in point is the capability for manual phase advancement in all new traffic signals in the area for enhanced traffic movement during Race Weekends, which can also be utilized during evacuation activities.

The security objectives of the MPO include the following activities:

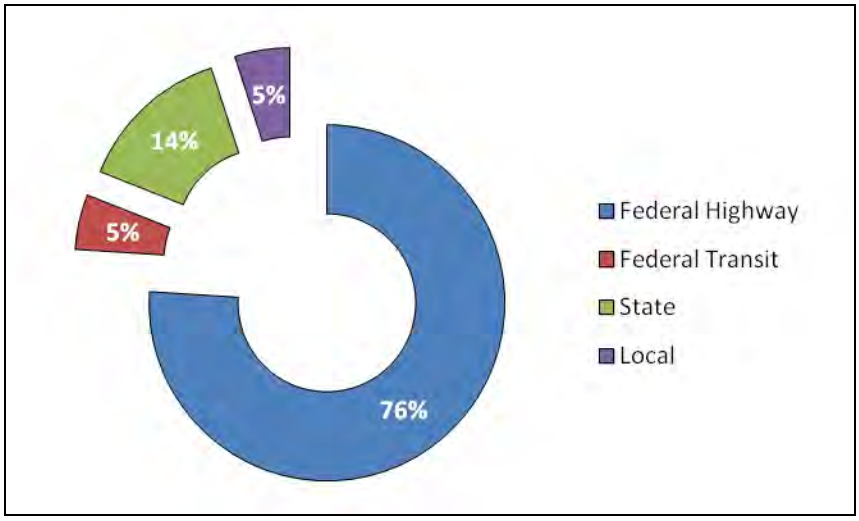
- Maintenance of an Intelligent Transportation System Plan for implementing and operating ITS technologies.
- Support programs for agencies involved in incident management and emergency situations to ensure safe, secure operations of the transportation system for motorized and non-motorized users.
- Encourage and support disaster, emergency and incident response preparedness and recovery.

CHAPTER 9: FINANCIAL ANALYSIS

The *Fixing Americas Surface Transportation Act*(FAST Act) legislation requires the preparation of a long-range transportation plan that is realistic, both from an implementation and a financial standpoint. The needs of highway users, transit users, pedestrians, and bicyclists, as well as all other modes of transportation will all need to be weighed against the other needs of the community. An adequate transportation infrastructure will allow the Metropolitan Planning Area to continue to grow as an economic center and enhance the quality of life for the community. The transportation plan is considered financially constrained when all the proposed project costs do not exceed projected revenues. Financially constraining the transportation plan provides a realistic account of what projects and programs can be accomplished.

Transportation projects are funded through many different sources. Most projects are funded with some combination of federal, state, and local funds. The greatest funding source for highway and road projects, as well as public transportation, is from the federal government (Chart 9-1).

Chart 9-1
Percent of Annual Funding by Source for the Metropolitan Planning Area



PART A: FINANCIAL RESOURCES

STREETS AND HIGHWAYS

Federal Funding. The Highway Trust Fund was established in 1956 by the Federal-Aid Highway Act and the Highway Revenue Act in order to create a financing mechanism for the interstate highway system. The largest funding source for street and highway projects is from the federal government. The funds come from motor fuel taxes and are administered by the Federal Highway Administration.

The Highway Trust Fund is not a permanent fund and must be extended by legislation. A description of the major federal funding programs applicable to the Bristol Tennessee/Virginia Urban Area MPO is outlined below.

National Highway Performance Program (NHPP) projects can be funded only if they are on the National Highway System (NHS). Roadways eligible for this funding include rural and urban roads serving major population centers, international border crossings, intermodal transportation centers, and major travel destinations. It includes the Interstate System, other urban and rural principal arterials, highways that provide motor vehicle access between the NHS and major intermodal transportation facilities, the defense strategic highway network, and strategic highway network connectors. The NHPP provides support for the condition and performance of the NHS and for construction of new facilities. NHPP projects must support progress toward the achievement of performance targets established by each states asset management plan. Funding distributed to each state is based on lane-miles of principal arterials (excluding Interstate), vehicle-miles traveled on those arterials, diesel fuel used on the state's highways, and per capita principal arterial lane-miles.

The Surface Transportation Block Grant Program (STBG) provides a flexible funding program for planning, construction, reconstruction, and rehabilitation that may be used by states and localities for projects on any Federal-Aid Highway, and bridge projects on any public road. These funds can also be used for non-highway projects such as transit capital projects and pedestrian/bicycle facilities. Eligible activities also include advanced truck stop electrification systems, improvements to high crash or high congestion intersections, and environmental restoration and pollution abatement. Generally, STBG funds cannot be utilized on local roads or rural minor collectors; however, a number of exceptions to this requirement are identified in the FAST Act. STBG funds are distributed to the states based on lane-miles of Federal-Aid highways, total vehicle-miles traveled on those highways, and contributions to the Highway Trust Fund. A proportionate share of each states STBG funds are set-aside for the Transportation Alternatives Program (TAP), which provides funding for alternative transportation projects such as facilities for pedestrians, bicyclists, and other non-motorized forms of transportation.

The Highway Safety Improvement Program (HSIP) provides funding to achieve a significant reduction in traffic fatalities and serious injuries on all public roads including non-state owned public roads. The program provides flexibility for states to target funds to their most critical safety needs. HSIP requires a data-driven, strategic approach to improving highway safety and projects must be consistent with the State Strategic Highway Safety Plan (SHSP).

The Nationally Significant Freight and Highway Projects Program is a new program established by the FAST Act that provided funding for highway, bridge, rail-grade crossing, intermodal and freight rail projects costing more than will improve movement of both freight and people, increase competiveness, reduce bottlenecks, and improve intermodal connectivity. Projects are awarded competitively and at least 25% of the funds are reserved for rural areas.

The National Freight Program is a new funding category established by the FAST Act and expands the National Freight Policy provisions initiated by MAP-21. Funds are apportioned among states by formula for freight related highway improvements. Under the program, states will designate a national freight network comprised of the interstate system, and other roads, both urban and rural,

that are critical to the safe and efficient shipment of freight. States are required to establish a freight advisory committee and develop a state freight investment plan to be eligible for funding.

State Funding. In addition to the Federal Highway Trust Fund, the State of Tennessee and Commonwealth of Virginia provide funding to finance street and highway improvements.

The State of Tennessee has legislation that establishes funding for highways and public transportation through motor fuel taxes and vehicle registrations. A variety of programs exist for on-going maintenance and operations, resurfacing, bridges, major reconstruction, new construction, right-of-way purchases, and to match federal funds. Many major highways are on both the state and federal highway system and may qualify for improvements under either funding source depending upon resource availability. In 1986, the Tennessee General Assembly developed and authorized the 1986 Roads Program, which identified specific projects in the legislation for improvement. These projects were funded via a special tax per gallon of gasoline and motor fuel.

In 2013, the Commonwealth of Virginia passed legislation that established significant changes for revenue funding for highways and public transit programs. The legislation eliminated the per-gallon tax on motor fuels and replaced it with a percentage based tax for gasoline and diesel fuel. In addition, the state sales tax was increased with the additional revenue designated to the Commonwealth Transportation Fund. Additional funding is provided by revenue bonds for transportation projects as well as the revenue sharing program, which will match local transportation funding on a dollar for dollar basis.

Local Funding. At the local level, the two major sources of transportation revenues include general fund revenues and the issuance of bonds for major transportation improvements. The primary source of annual operation and maintenance funds for highways is the general fund of the local city or county. For utilization of general funds, transportation projects compete with all municipal or county services for limited funding availability. Bonds provide a longer-term payment period and a dedicated funding source for larger capital projects. Local jurisdictions also provide funding to match federal or state funds for local transportation projects.

PUBLIC TRANSPORTATION

Federal Funding. The Federal Transit Administration (FTA) administers several programs funding public transportation services within the MPO's Metropolitan Planning Area.

Section 5307 Formula Grants provide funding to urbanized areas for public transportation capital, planning, job access and reverse commute projects, as well as transit operating assistance. For urbanized areas (greater than 50,000 in population) the funding formula is based on population and population density, and the number of low-income individuals.

Section 5339 Bus and Bus Facilities allocates funding to states and subrecipients for capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities.

Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities provides funding for programs to service the special needs of transit-dependent populations beyond the traditional public transportation services or the complementary paratransit services of the Americans with Disabilities Act (ADA). Eligible activities include capital and operating projects that assist seniors and individuals with disabilities. Funds are apportioned for urbanized and rural areas based on the number of seniors and individuals with disabilities.

Section 5311 Formula Grants are available rural areas (less than 50,000 in population) for public transportation capital, planning, and operating assistance. A majority of the funding formula is based on land area and population in rural areas with a small percentage apportioned based on revenue vehicle miles and number of low-income individuals.

State Funding. The State of Tennessee and the Commonwealth of Virginia provide additional funds for capital and operating assistance programs that are partially funded by the Federal Transit Administration. For Tennessee, most funding levels are based on formulas that consider local population and numbers of transit trips provided. Virginia distributes funds from the Commonwealth Mass Transit Fund based on the proportion that local transit expenses bear on the total statewide transit expenditures.

Local Funding. Local jurisdictions provide matching funds for capital and operating programs that are partially funded by federal and state transit monies. This local funding comes from the General Fund. Fare-box revenue and advertising displays on vehicles also provide additional financial support for transit revenue. The rural transportation agencies receive local funding support from the participating counties they serve.

OTHER MODES

Rail. The Federal Railroad Administration (FRA) administers the Railroad Rehabilitation and Investment Financing Program (RRIF) that offers various loan enhancements to public or private sponsors of intermodal and rail capital projects, including acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities. Because rail infrastructure is almost exclusively privately owned, railroads have traditionally been privately funded. Government programs do support some rail-related works such as at-grade crossings and railroad grade separations.

Bicycle and Pedestrian. The Transportation Alternatives Program (STBG Set-Aside) under the FAST Act, as well as the other previous federal highway acts, are major sources of funding for bicycle and pedestrian projects. Two percent of the amount authorized from the Highway Trust Fund for Federal-aid Highways is annually set aside for alternative transportation projects including bicycle and pedestrian projects, greenways, and pedestrian paths. The Transportation Alternatives Program also includes eligible activities previously funded by the recreational trails program and safe routes to school program. Most of the greenways and pedestrian/bicycle facilities within the MPO Study Area have been funded with the Transportation Alternatives Program.

The Virginia and Tennessee Departments of Transportation can expand construction projects to include sidewalks and increased shoulder widths for bicyclists. Incorporation of pedestrian and bicycle design into new roadways and roadway enhancements minimize the cost of having to incorporate these into existing roads. In addition, local governments provide funding for sidewalk construction and maintenance on an annual basis utilizing general funds and other grant funds such as the Housing and Urban Development (HUD) program.

Aviation. The Virginia Highlands Airport is provided financial support from Federal Aviation Administration's Airport Improvement Program and Commonwealth Airport Fund programs administrated by the state. The airport also receives funding from Washington County, Virginia as well as revenues from fuel sales and rental space.

POTENTIAL REVENUE SOURCES

Identification and utilization of user fees to support the transportation system can help guarantee a steady flow of funding for transportation improvements. Many revenue sources are utilized throughout the country and can include toll facilities, local fuel taxes, local motor vehicle taxes, and road improvement districts. Although a number of options are available, it is extremely difficult from a political standpoint to implement new revenue sources; any revenue source is perceived as an increase in taxes. Public acceptance is important when instituting taxes and user charges and can influence the feasibility of potential revenue sources or strategies. Additionally, some revenue sources require authorizing legislation and may require extensive legal research and analysis.

This information provides a basis for future dialogue on financing transportation improvement projects and none of these options are recommended at this time nor included in the financial forecast for the *Bristol Tennessee/Virginia Urban Area Long-Range Transportation Plan Year 2040*.

PART B: PROJECTED REVENUE

STREETS AND HIGHWAYS

In spite of the importance of better highway system management, new construction is inevitable in order to accommodate the economic growth for the metropolitan area over the next twenty-five years. Highway needs ranging from new regional alternative routes to Interstate improvements to widening of existing arterial and collector systems are all transportation improvements which have been identified by area planners, engineers, and residents.

The Tennessee and Virginia Departments of Transportation serve as the pass-through agencies for the federal dollars that come to the Metropolitan Planning Organization for roadway improvements. The major identified sources of federal funding include the FAST-Act programs for the National Highway Performance Program and the Surface Transportation Block Grant Program. The motor fuel tax is the single largest source of revenue for transportation spending; however, federal fuel-efficiency standards and tax rates based on a per-gallon charge rather than a price percentage charge has a negative impact on the gas tax as a revenue stream. As such, greater fuel efficiency means that states will receive less revenue per vehicle-mile traveled.

Projected Revenue. To project future revenue for the *Bristol Tennessee/Virginia Urban Area Long-Range Transportation Plan Year 2040*, an average funding per year was established based on historic funding levels for Tennessee and Virginia sources. In addition, the current balance of [Tennessee] local STBG funds was included in the first horizon tier. Based on the requirements of the FAST Act, metropolitan transportation plans must use an inflation rate to reflect "year of expenditure dollars." For the *Bristol Tennessee/Virginia Urban Area Long-Range Transportation Plan Year 2040,* a three percent (3%) annual growth rate was utilized to project future revenues.

Given the long-term nature of the long-range transportation plan, and the degree of uncertainty in estimating both costs and revenues, projected funding may not be available in exactly the same amounts or mix of sources indicated in the Plan. Actual funding amounts depend on the federal, state, and local budget processes for any given year as well as federal and state legislation which may impact funding.

Utilizing this methodology, the Metropolitan Planning Area is estimated to receive approximately $282 million through the planning horizon year 2040. This is comprised of $124 million from Tennessee sources and $158 million from Virginia (Table 9-1). This estimate is based on a trend analysis of funding sources that are reasonably expected to be available and does not account for any new funding sources.

Table 9-1
Streets and Highways Projected Revenue

Tennessee Projected Revenue Sources

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
NHPP		$ 2,199,044	$ 5,504,626	$ 7,397,757	$ 15,101,427
STBG (State)		$ 2,183,117	$ 5,464,757	$ 7,344,176	$ 14,992,050
HSIP		$ 6,689,511	$ 16,745,120	$ 22,504,042	$ 45,938,673
STATE		$ 1,616,101	$ 4,045,408	$ 5,436,691	$ 11,098,200
STBG-L (Local)	$ 4,309,001	$ 2,867,995	$ 7,179,138	$ 9,648,161	$ 24,004,295
LOCAL		$ 1,937,091	$ 4,848,908	$ 6,516,527	$ 13,302,526
Total	$ 4,309,001	$ 17,492,859	$ 43,787,957	$ 58,847,354	$ 124,437,171

Virginia Projected Revenue Sources

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
NHPP		$ 2,027,055	$ 9,672,945	$ 2,220,330	$ 13,920,330
STBG (State)		$ 15,489,069	$ 38,772,090	$ 52,106,447	$ 106,367,606
HSIP		$ 1,834,349	$ 4,591,725	$ 6,170,894	$ 12,596,968
STATE		$ 3,064,752	$ 7,671,657	$ 10,310,066	$ 21,046,475
LOCAL		$ 571,613	$ 1,430,857	$ 1,922,952	$ 3,925,422
Total	$ -	$ 22,986,838	$ 62,139,274	$ 72,730,689	$ 157,856,801

OPERATIONS AND MAINTENANCE – STREETS AND HIGHWAYS

In order to maximize the efficiency of the street and highway system, local governments must maintain and make modifications to the existing system. If new improvements or existing roadways are not maintained properly, then the transportation system is not functioning at its capacity and new investments are not fully realized.

Both the Tennessee and Virginia Departments of Transportation anticipate maintenance costs to increase annually over the life of this plan. In Washington County, Virginia, all public roads are maintained by the Virginia Department of Transportation; however, the City of Bristol, Virginia and the Town of Abingdon, Virginia receive an annual allocation of maintenance funds from VDOT. In Tennessee, counties and municipalities receive an annual allocation of maintenance funds from the Tennessee Department of Transportation. For Tennessee counties to be eligible for state maintenance funds, they are required to annually allocate funds for road maintenance from local revenue sources in an amount not less that the average of the five preceding fiscal years.

Projected Revenue. To project future maintenance and operations revenue for the *Bristol Tennessee/Virginia Urban Area Long-Range Transportation Plan Year 2040*, an average funding per year was established based on historic funding levels. This included review of local jurisdictions operating budgets as well as TDOT and VDOT budget information for operations and maintenance. Although maintenance and operations costs are projected to increase annually, the assumption is operations and maintenance revenues will continue to be available for the life of this plan as funding will be prioritized to maintain the existing infrastructure. Projected operations and maintenance revenues for the life of this plan is based on a three percent (3%) annual growth rate (Table 9-2)

Table 9-2
Projected Operating and Maintenance Revenue

Tennessee Projected O&M Revenue

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
STATE O&M		$ 28,550,042	$ 74,736,077	$ 106,445,633	$ 209,731,752
LOCAL O&M		$ 21,829,163	$ 57,142,685	$ 81,387,591	$ 160,359,439
Total	$ -	$ 50,379,205	$ 131,878,762	$ 187,833,224	$ 370,091,191

Virginia Projected O&M Revenue

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
STATE O&M		$ 61,893,349	$ 162,019,592	$ 230,762,422	$ 454,675,363
LOCAL O&M		$ 37,455,285	$ 98,047,529	$ 139,647,835	$ 275,150,649
Total	$ -	$ 99,348,634	$ 260,067,121	$ 370,410,257	$ 729,826,012

PUBLIC TRANSPORTATION

The cost of providing the current level of public transportation services is expected to rise at a moderate level over the period of this plan, based on inflation. Bristol Tennessee Transit and Bristol Virginia Transit have utilized federal and state operating assistance to support public transportation for the Bristol area, which have primarily been funds from the Federal Transit Administration 5307 Formula Program and state operating assistance program. Public transportation services for the rural areas of the Metropolitan Planning Area are provided by the NET Trans (operated by the First Tennessee Human Resource Agency) in Tennessee and the District III Government Cooperative in Virginia. The agencies are primarily supported by Federal Transit Administration Section 5311 funds. District III Government Cooperative also operates Abingdon Transit on a contractual basis.

At the federal level, the Federal Transit Administration is the primary source for transit funding available to transit operations in the Bristol Study Area. Section 5307 Formula Capital and Operating Grant programs make funds available to all urbanized areas to finance transit capital and operating expenses. Section 5339 Bus and Bus Facilities provides capital assistance to transit projects for bus-related construction projects, rolling stock, and equipment acquisition. The Section 5310 program allows the purchase of transit capital equipment and contracted services for private and non-private corporations and associations providing mass transportation services for the elderly and disabled, and the Section 5311 Program provides funding for the purchase of capital and operating expenses for transit services in rural areas. In addition, highway revenue (Surface Transportation Block Grant Program) is not specific only to highway related projects and can also be utilized for many types of public transportation projects. As long as these funding sources are available for operating and capital projects, the current level of service can be maintained for local communities within the Metropolitan Planning Area.

It should be noted, the newly designated urbanized area of Abingdon, Virginia is now eligible for FTA Section 5307 funding allocated for small urban transportation providers. As of this date, it is uncertain how this funding will be utilized for Abingdon Transit. As such, it is assumed the current level of service will be maintained regardless of the funding source.

Projected Revenue. Projections in transit operating and maintenance funds for public transportation represent maintenance of the existing system with no service additions. Salaries and fringe benefits are, and will continue, to be the greatest burden on transit agencies operating budgets. There are no problem areas anticipated locally with regard to changes in labor cost or maintenance expenses. The only major cost increases would be those associated with national economic trends, such as increases in fuel and insurance costs. Based on modest population and employment projects for the *Bristol Tennessee/Virginia Urban Area Long-Range Transportation Plan Year 2040*, ridership and farebox revenues will continue to remain consistent with current trends. The demand for paratransit services will provide the most pressure on operating budgets in outlying years due to an increasing elderly population within the region.

For the existing level of service to remain consistent, it is anticipated that capital funds will primarily be required for replacement vehicles, which are budgeted using a normal vehicle replacement cycle of four to five years for vans and support vehicles, and seven to ten years for buses. Vehicle replacement will continue be funded with federal and state capital funds including local dollars. No major facilities are currently programmed; however, it can be expected that some rehabilitation and maintenance of facilities would be required in the outlying years.

Utilizing a five-year historical review of local transit budgets, an average per year was established for federal, state, and local transit funding for Bristol Tennessee Transit and Bristol Virginia Transit. Funding for the rural providers, including Abingdon Transit, is based on the current year budget and represents district-wide funding, with the understanding that an undetermined amount of the total funding would specifically be associated with the Bristol Metropolitan Planning Area. In each funding category, the base year funding was projected through the life of the plan utilizing a three percent annual growth rate for transit revenue. Table 9-3 provides estimated transit revenues for public transportation in the Metropolitan Planning Area for years 2016 through 2040.

Table 9-3
Projected Transit Revenue

Bristol Tennessee Transit Projected Revenue Sources

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
FTA 5307		$ 2,051,788	$ 4,657,267	$ 6,258,978	$ 12,968,033
FTA 5339		$ 358,898	$ 898,389	$ 1,207,360	$ 2,464,647
STATE		$ 1,559,251	$ 3,903,102	$ 5,245,442	$ 10,707,795
LOCAL		$ 946,704	$ 2,369,780	$ 3,184,786	$ 6,501,270
FARES		$ 153,710	$ 384,766	$ 517,093	$ 1,055,569
Total	$ -	$ 5,070,351	$ 12,213,304	$ 16,413,659	$ 33,697,314

Bristol Virginia Transit Projected Revenue Sources

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
FTA 5307		$ 1,193,494	$ 2,987,542	$ 4,015,007	$ 8,196,043
STP FLEX		$ 280,322	$ 701,700	$ 943,027	$ 1,925,049
STATE		$ 541,532	$ 1,355,557	$ 1,821,756	$ 3,718,845
LOCAL		$ 1,094,743	$ 2,740,352	$ 3,729,833	$ 7,564,928
FARES		$ 202,942	$ 508,002	$ 682,712	$ 1,393,656
Total	$ -	$ 3,313,033	$ 8,293,153	$ 11,192,335	$ 22,798,521

NET Trans Projected Revenue Sources (District-wide)

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
FTA 5311		$ 10,256,511	$ 25,674,001	$ 34,503,711	$ 70,434,223
FTA 5310		$ 430,769	$ 1,078,296	$ 1,449,139	$ 2,958,204
FTA 5339		$ 4,127,605	$ 10,332,181	$ 13,885,588	$ 28,345,374
STATE		$ 5,980,220	$ 14,969,630	$ 20,117,932	$ 41,067,782
LOCAL		$ 5,980,220	$ 14,969,630	$ 20,117,932	$ 41,067,782
FARES		$ 1,306,573	$ 3,270,600	$ 4,395,413	$ 8,972,586
Total	$ -	$ 28,081,898	$ 70,294,338	$ 94,469,715	$ 192,845,951

District Three Projected Revenue Sources (District-wide)

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
FTA 5311		$ 7,805,620	$ 19,538,953	$ 26,258,720	$ 53,603,293
STBG FLEX		$ 58,184	$ 145,645	$ 195,735	$ 399,564
STATE		$ 2,437,191	$ 6,100,756	$ 8,198,904	$ 16,736,851
LOCAL		$ 3,589,873	$ 8,986,137	$ 12,076,615	$ 24,652,625
FARES		$ 716,362	$ 1,793,190	$ 2,409,897	$ 4,919,449
Total	$ -	$ 14,607,230	$ 36,564,681	$ 49,139,871	$ 100,311,782

TRANSPORTATION ALTERNATIVES

Bicycle and pedestrian facilities have been primarily funded through the Transportation Enhancement Program, Safe Routes to School Program, and Recreational Trails Program. With the MAP-21 legislation, these programs were consolidated into the Transportation Alternatives Program (TAP), which is continued under the current legislation, the FAST Act. Transportation Alternatives projects provide 80 percent federal funding and require a 20 percent local match. Although these funding options are competitive and not guaranteed annually, MPO jurisdictions have consistently received funds through these programs and expect to continue to receive Transportation Alternatives Program funds. The base year for this funding source was assumed to be the average of the last five years of grant awards and then projected at a three percent inflation rate (Table 9-4).

It is important to note that highway revenue (Surface Transportation Block Grant Program) is not specific only to highway related projects and can also be utilized for many types of projects including bicycle facilities, sidewalks, and greenways. Both TDOT and VDOT have incorporated bicycle and pedestrian facilities in highway construction improvements; however, calculating the portion of project funding devoted to alternative transportation is difficult.

Local jurisdictions provide funding for sidewalk maintenance and reconstruction within the urban areas; however, this funding has been limited due to competing street and highway maintenance activities.

Table 9-4
Projected Revenue for Other Modes

Tennessee Projected Revenue

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
TAP		$ 1,216,854	$ 3,046,017	$ 4,093,592	$ 8,356,463
LOCAL		$ 304,214	$ 761,504	$ 1,023,398	$ 2,089,116
Total	$ -	$ 1,521,068	$ 3,807,521	$ 5,116,990	$ 10,445,579

Virginia Projected Revenue

Funding Source	Carryover	2016-2020	2021-2030	2031-2040	TOTAL
TAP		$ 1,373,049	$ 3,437,002	$ 4,619,044	$ 9,429,095
LOCAL		$ 343,262	$ 859,250	$ 1,154,761	$ 2,357,273
Total	$ -	$ 1,716,311	$ 4,296,252	$ 5,773,805	$ 11,786,368

Part C: Project Cost

As with revenue projections, the FAST Act requires the metropolitan long-range transportation plan to utilize an inflation rate to project future cost for the "year of expenditure." Based on joint FTA/FHWA guidance on fiscal constraint, as well as input from TDOT and VDOT, the *Bristol Urban Area Tennessee/Virginia Long-Range Transportation Plan Year 2040* utilized a 3.6 percent annual inflation rate for construction costs for 2016 and beyond. This inflation rate was applied to highway as well as transit capital improvements. Transit operating expenditures were assumed to parallel available revenue as local agencies have more control to maintain costs. However, unanticipated program cost increases in the outlying years of this plan may require the redistribution of transit capital funds to operating assistance.

STREETS AND HIGHWAYS

In order to establish a financially constrained plan, highway projects and estimated costs were identified in Chapter 7 (Table 7-2). Existing planning studies, Transportation Planning Reports, and local jurisdiction engineering estimates were utilized to determine project costs. Each project cost was projected using to a future value with an inflation rate of 3.6 percent. The amount of years the future value was inflated to was the middle point of the horizon year. It is assumed that half of the projects will be funded before the middle of the network year and half will be funded after the middle of the network year. For example, it is assumed that for the horizon years 2021-2030, half of the projects will be funded before year 2025 and half after year 2025. Therefore, all project costs programmed for 2021-2030 were inflated to the year 2025.

Operations and Maintenance. Costs associated with operations and maintenance were derived from annual costs provided by the Tennessee and Virginia Departments of Transportation and local jurisdictions' annual budgets. For both Tennessee and Virginia, costs were inflated 3.6 percent annually to determine an annual operation and maintenance cost for outlying years in the plan. It is assumed that the same level of service will be maintained per year by each jurisdiction/agency in the future years. For the life of this plan, it is anticipated funds will be allocated to maintain the existing infrastructure prior to new capital investments. As a result, the assumption regarding operations and maintenance revenues is that sufficient funds will continue to be available.

PUBLIC TRANSPORTATION

Costs for public transportation were based on the current level of service being maintained with a 3.6 percent annual inflation rate to represent future year expenditures. This included operating as well as capital costs, as identified in Chapter 7 (Table 7-4). Capital needs were identified for the replacement of rolling stock on a typical vehicle replacement cycle as well as other associated capital maintenance items. Although no major new facilities are identified for the life of this plan, it can be expected that some maintenance of existing facilities would be required in the outlying years.

OTHER MODES

Bicycle and pedestrian facilities have traditionally been funded locally with Transportation Enhancement-type grant funds. Projects funded through these programs are awarded on an annual basis and are not programmed in the MPO Transportation Improvement Program unless funded. Because this funding is discretionary, costs for specific projects are not identified for this plan; however, Transportation Alternative Program grants and related enhancement funding programs should continue to be available to MPO jurisdictions.

PART D: FINANCIALLY CONSTRAINED PLAN

Federal legislation requires that long-range transportation plans include a financial analysis that demonstrates how the plan can be implemented and identifies funding reasonably expected to be available. As previously discussed in this document, there are a variety of funding sources available for transportation improvements in the Bristol Metropolitan Planning Area. The largest source of funding comes from federal and state resources over which the MPO does not have direct control. Typically, local funds are used to meet match requirements for federal and state funding sources. Many regional projects identified in this plan represent projects beyond the scope of funding available to the MPO or local jurisdictions and would require a specific appropriation of federal/state revenue for implementation. For this reason, illustrative projects are not incorporated in the financially constrained plan.

Utilizing past funding trends, as well as current programmed allocations and Departments of Transportation forecasts, funding projections have been estimated for the lifetime of this planning document. Revenues are then compared to the costs to demonstrate the plan is financially constrained.

While this financial analysis uses specific cost and revenue information, it provides only a planning level analysis. That analysis is subject to the following limitations:

- The financial projections are for a period of more that twenty years, during which time significant changes in travel behavior, local economies, and federal funding priorities are possible.
- Projections of federal funding involve uncertainty due to shifts in federal transportation policy, budget and deficit reduction plans, and because many funds are administered on a statewide basis.
- Cost estimates are general and based on a simplified methodology and may change upon the completion of specific design plans for construction.

The following tables display all projected revenues and expenditures for the *Bristol Tennessee/Virginia Urban Area Long-Range Transportation Plan Year 2040* and demonstrate that the long-range transportation plan is financially constrained for highway construction, operations and maintenance, public transportation, and other alternative modes of transportation. For project level funding sources see Appendix A.

Table 9-5
Tennessee Highway Program Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
NHPP	$ -	$ 2,199,044	$ 2,199,044	$ -	$ 2,199,044
STBG (State)	$ -	$ 2,183,117	$ 2,183,117	$ -	$ 2,183,117
HSIP	$ -	$ 6,689,511	$ 6,689,511	$ -	$ 6,689,511
STATE	$ -	$ 1,616,101	$ 1,616,101	$ -	$ 1,616,101
STBG (Local)	$ 4,309,001	$ 2,867,995	$ 7,176,996	$ 5,320,000	$ 1,856,996
LOCAL	$ -	$ 1,937,091	$ 1,937,091	$ 1,330,000	$ 607,091
Total	$ 4,309,001	$ 17,492,859	$ 21,801,860	$ 6,650,000	$15,151,860

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
NHPP	$ 2,199,044	$ 5,504,626	$ 7,703,670	$ 5,000,000	$ 2,703,670
STBG (State)	$ 2,183,117	$ 5,464,757	$ 7,647,874	$ 6,907,000	$ 740,874
HSIP	$ 6,689,511	$ 16,745,120	$ 23,434,631	$ 15,000,000	$ 8,434,631
STATE	$ 1,616,101	$ 4,045,408	$ 5,661,509	$ 5,602,000	$ 59,509
STBG (Local)	$ 1,856,996	$ 7,179,138	$ 9,036,134	$ 8,584,000	$ 452,134
LOCAL	$ 607,091	$ 4,848,908	$ 5,455,999	$ 5,404,000	$ 51,999
Total	$ 15,151,860	$ 43,787,957	$ 58,939,817	$ 46,497,000	$ 12,442,817

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
NHPP	$ 2,703,670	$ 7,397,757	$ 10,101,427	$ 9,559,950	$ 541,477
STBG (State)	$ 740,874	$ 7,344,176	$ 8,085,050	$ 8,085,050	$ -
HSIP	$ 8,434,631	$ 22,504,042	$ 30,938,673	$ 27,672,000	$ 3,266,673
STATE	$ 59,509	$ 5,436,691	$ 5,496,200	$ 5,000,000	$ 496,200
STBG (Local)	$ 452,134	$ 9,648,161	$ 10,100,295	$ 10,000,000	$ 100,295
LOCAL	$ 51,999	$ 6,516,527	$ 6,568,526	$ 4,200,000	$ 2,368,526
Total	$12,442,817	$ 58,847,354	$ 71,290,171	$ 64,517,000	$ 6,773,171

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
NHPP	$ -	$ 15,101,427	$ 15,101,427	$ 14,559,950	$ 541,477
STBG (State)	$ -	$ 14,992,050	$ 14,992,050	$ 14,992,050	$ -
HSIP	$ -	$ 45,938,673	$ 45,938,673	$ 42,672,000	$ 3,266,673
STATE	$ -	$ 11,098,200	$ 11,098,200	$ 10,602,000	$ 496,200
STBG (Local)	$ 4,309,001	$ 19,695,294	$ 24,004,295	$ 23,904,000	$ 100,295
LOCAL	$ -	$ 13,302,526	$ 13,302,526	$ 10,934,000	$ 2,368,526
Total	$ 4,309,001	$120,128,170	$124,437,171	$117,664,000	$ 6,773,171

Table 9-6
Virginia Highway Program Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
NHPP	$ -	$ 2,027,055	$ 2,027,055	$ 2,000,000	$ 27,055
STBG (State)	$ -	$ 15,489,069	$ 15,489,069	$ 9,712,500	$ 5,776,569
HSIP	$ -	$ 1,834,349	$ 1,834,349	$ 1,500,000	$ 334,349
STATE	$ -	$ 3,064,752	$ 3,064,752	$ 850,000	$ 2,214,752
LOCAL	$ -	$ 571,613	$ 571,613	$ 164,500	$ 407,113
Total	$ -	$ 22,986,838	$ 22,986,838	$ 14,227,000	$ 8,759,838

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
NHPP	$ 27,055	$ 9,672,945	$ 9,700,000	$ 9,700,000	$ -
STBG (State)	$ 5,776,569	$ 38,772,090	$ 44,548,659	$ 44,276,000	$ 272,659
HSIP	$ 334,349	$ 4,591,725	$ 4,926,074	$ 4,700,000	$ 226,074
STATE	$ 2,214,752	$ 7,671,657	$ 9,886,409	$ 9,646,955	$ 239,454
LOCAL	$ 407,113	$ 1,430,857	$ 1,837,970	$ 500,000	$ 1,337,970
Total	$ 8,759,838	$ 62,139,274	$ 70,899,112	$ 68,822,955	$ 2,076,157

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
NHPP	$ -	$ 2,220,330	$ 2,220,330	$ -	$ 2,220,330
STBG (State)	$ 272,659	$ 52,106,447	$ 52,379,106	$ 49,539,000	$ 2,840,106
HSIP	$ 226,074	$ 6,170,894	$ 6,396,968	$ 6,110,000	$ 286,968
STATE	$ 239,454	$ 10,310,066	$ 10,549,520	$ 10,331,000	$ 218,520
LOCAL	$ 1,337,970	$ 1,922,952	$ 3,260,922	$ 2,350,000	$ 910,922
Total	$ 2,076,157	$ 72,730,689	$ 74,806,846	$ 68,330,000	$ 6,476,846

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
NHPP	$ -	$ 13,920,330	$ 13,920,330	$ 11,700,000	$ 2,220,330
STBG (State)	$ -	$ 106,367,606	$ 106,367,606	$ 103,527,500	$ 2,840,106
HSIP	$ -	$ 12,596,968	$ 12,596,968	$ 12,310,000	$ 286,968
STATE	$ -	$ 21,046,475	$ 21,046,475	$ 20,827,955	$ 218,520
LOCAL	$ -	$ 3,925,422	$ 3,925,422	$ 3,014,500	$ 910,922
Total	$ -	$ 157,856,801	$ 157,856,801	$ 151,379,955	$ 6,476,846

Table 9-7
Tennessee Operations and Maintenance (Highway)
Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
STATE O&M	$ -	$ 28,550,042	$ 28,550,042	$ 28,550,042	$ -
LOCAL O&M	$ -	$ 21,829,163	$ 21,829,163	$ 21,829,163	$ -
Total	$ -	$ 50,379,205	$ 50,379,205	$ 50,379,205	$ -

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
STATE O&M	$ -	$ 74,736,077	$ 74,736,077	$ 74,736,077	$ -
LOCAL O&M	$ -	$ 57,142,685	$ 57,142,685	$ 57,142,685	$ -
Total	$ -	$ 131,878,762	$ 131,878,762	$ 131,878,762	$ -

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
STATE O&M	$ -	$ 106,445,633	$ 106,445,633	$ 106,445,633	$ -
LOCAL O&M	$ -	$ 81,387,591	$ 81,387,591	$ 81,387,591	$ -
Total	$ -	$ 187,833,224	$ 187,833,224	$ 187,833,224	$ -

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
STATE O&M	$ -	$ 209,731,752	$ 209,731,752	$ 209,731,752	$ -
LOCAL O&M	$ -	$ 160,359,439	$ 160,359,439	$ 160,359,439	$ -
Total	$ -	$ 370,091,191	$ 370,091,191	$ 370,091,191	$ -

Table 9-8
Virginia Operations and Maintenance (Highways)
Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
STATE O&M	$ -	$ 61,893,349	$ 61,893,349	$ 61,893,349	$ -
LOCAL O&M	$ -	$ 37,455,285	$ 37,455,285	$ 37,455,285	$ -
Total	$ -	$ 99,348,634	$ 99,348,634	$ 99,348,634	$ -

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
STATE O&M	$ -	$ 162,019,592	$ 162,019,592	$ 162,019,592	$ -
LOCAL O&M	$ -	$ 98,047,529	$ 98,047,529	$ 98,047,529	$ -
Total	$ -	$ 260,067,121	$ 260,067,121	$ 260,067,121	$ -

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
STATE O&M	$ -	$ 230,762,422	$ 230,762,422	$ 230,762,422	$ -
LOCAL O&M	$ -	$ 139,647,835	$ 139,647,835	$ 139,647,835	$ -
Total	$ -	$ 370,410,257	$ 370,410,257	$ 370,410,257	$ -

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
STATE O&M	$ -	$ 454,675,363	$ 454,675,363	$ 454,675,363	$ -
LOCAL O&M	$ -	$ 275,150,649	$ 275,150,649	$ 275,150,649	$ -
Total	$ -	$ 729,826,012	$ 729,826,012	$ 729,826,012	$ -

Table 9-9
Bristol Tennessee Transit
Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5307	$ -	$ 2,051,788	$ 2,051,788	$ 2,051,788	$ -
FTA 5339	$ -	$ 358,898	$ 358,898	$ 188,785	$ 170,113
STATE	$ -	$ 1,559,251	$ 1,559,251	$ 881,676	$ 677,575
LOCAL	$ -	$ 946,704	$ 946,704	$ 881,675	$ 65,029
FARES	$ -	$ 153,710	$ 153,710	$ 153,710	$ -
Total	$ -	$ 5,070,351	$ 5,070,351	$ 4,157,634	$ 912,717

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5307	$ -	$ 4,657,267	$ 4,657,267	$ 4,657,267	$ -
FTA 5339	$ 170,113	$ 898,389	$ 1,068,502	$ 422,155	$ 646,347
STATE	$ 677,575	$ 3,903,102	$ 4,580,677	$ 2,140,858	$ 2,439,819
LOCAL	$ 65,029	$ 2,369,780	$ 2,434,809	$ 2,140,857	$ 293,952
FARES	$ -	$ 384,766	$ 384,766	$ 384,766	$ -
Total	$ 912,717	$ 12,213,304	$ 13,126,021	$ 9,745,903	$ 3,380,118

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5307	$ -	$ 6,258,978	$ 6,258,978	$ 5,672,010	$ 586,968
FTA 5339	$ 646,347	$ 1,207,360	$ 1,853,707	$ 1,207,360	$ 646,347
STATE	$ 2,439,819	$ 5,245,442	$ 7,685,261	$ 2,883,765	$ 4,801,496
LOCAL	$ 293,952	$ 3,184,786	$ 3,478,738	$ 2,883,764	$ 594,974
FARES	$ -	$ 517,093	$ 517,093	$ 517,093	$ -
Total	$ 3,380,118	$ 16,413,659	$ 19,793,777	$ 13,163,992	$ 6,629,785

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
FTA 5307	$ -	$ 12,968,033	$ 12,968,033	$ 12,381,065	$ 586,968
FTA 5339	$ -	$ 2,464,647	$ 2,464,647	$ 1,818,300	$ 646,347
STATE	$ -	$ 10,707,795	$ 10,707,795	$ 5,906,299	$ 4,801,496
LOCAL	$ -	$ 6,501,270	$ 6,501,270	$ 5,906,296	$ 594,974
FARES	$ -	$ 1,055,569	$ 1,055,569	$ 1,055,569	$ -
Total	$ -	$ 33,697,314	$ 33,697,314	$ 27,067,529	$ 6,629,785

Table 9-10
Bristol Virginia Transit
Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5307	$ -	$ 1,193,494	$ 1,193,494	$ 1,193,494	$ -
STP FLEX	$ -	$ 280,322	$ 280,322	$ 238,496	$ 41,826
STATE	$ -	$ 541,532	$ 541,532	$ 538,468	$ 3,064
LOCAL	$ -	$ 1,094,743	$ 1,094,743	$ 1,087,352	$ 7,391
FARES	$ -	$ 202,942	$ 202,942	$ 202,942	$ -
Total	$ -	$ 3,313,033	$ 3,313,033	$ 3,260,752	$ 52,281

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5307	$ -	$ 2,987,542	$ 2,987,542	$ 2,987,542	$ -
STP FLEX	$ 41,826	$ 701,700	$ 743,526	$ 690,275	$ 53,251
STATE	$ 3,064	$ 1,355,557	$ 1,358,621	$ 1,355,557	$ 3,064
LOCAL	$ 7,391	$ 2,740,352	$ 2,747,743	$ 2,737,496	$ 10,247
FARES	$ -	$ 508,002	$ 508,002	$ 508,002	$ -
Total	$ 52,281	$ 8,293,153	$ 8,345,434	$ 8,278,872	$ 66,562

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5307	$ -	$ 4,015,007	$ 4,015,007	$ 4,015,007	$ -
STP FLEX	$ 53,251	$ 943,027	$ 996,278	$ 943,027	$ 53,251
STATE	$ 3,064	$ 1,821,756	$ 1,824,820	$ 1,821,756	$ 3,064
LOCAL	$ 10,247	$ 3,729,833	$ 3,740,080	$ 3,740,080	$ -
FARES	$ -	$ 682,712	$ 682,712	$ 682,712	$ -
Total	$ 66,562	$ 11,192,335	$ 11,258,897	$ 11,202,582	$ 56,315

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
FTA 5307	$ -	$ 8,196,043	$ 8,196,043	$ 8,196,043	$ -
STP FLEX	$ -	$ 1,925,049	$ 1,925,049	$ 1,871,798	$ 53,251
STATE	$ -	$ 3,718,845	$ 3,718,845	$ 3,715,781	$ 3,064
LOCAL	$ -	$ 7,564,928	$ 7,564,928	$ 7,564,928	$ -
FARES	$ -	$ 1,393,656	$ 1,393,656	$ 1,393,656	$ -
Total	$ -	$ 22,798,521	$ 22,798,521	$ 22,742,206	$ 56,315

Table 9-11
NET Trans Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5311	$ -	$ 10,256,511	$ 10,256,511	$ 10,256,511	$ -
FTA 5310	$ -	$ 430,769	$ 430,769	$ 430,769	$ -
FTA 5339	$ -	$ 4,127,605	$ 4,127,605	$ 2,964,018	$ 1,163,587
STATE	$ -	$ 5,980,220	$ 5,980,220	$ 5,552,606	$ 427,614
LOCAL	$ -	$ 5,980,220	$ 5,980,220	$ 5,552,606	$ 427,614
FARES	$ -	$ 1,306,573	$ 1,306,573	$ 1,306,573	$ -
Total	$ -	$ 28,081,898	$ 28,081,898	$ 21,073,083	$ 7,008,815

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5311	$ -	$ 25,674,001	$ 25,674,001	$ 25,674,001	$ -
FTA 5310	$ -	$ 1,078,296	$ 1,078,296	$ 1,078,296	$ -
FTA 5339	$ 1,163,587	$ 10,332,181	$ 11,495,768	$ 7,808,318	$ 3,687,450
STATE	$ 427,614	$ 14,969,630	$ 15,397,244	$ 13,947,833	$ 6,449,411
LOCAL	$ 427,614	$ 14,969,630	$ 15,397,244	$ 13,947,832	$ 1,449,412
FARES	$ -	$ 3,270,600	$ 3,270,600	$ 3,270,600	$ -
Total	$ 7,008,815	$ 70,294,338	$ 77,303,153	$ 65,726,880	$ 11,576,273

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5311	$ -	$ 34,503,711	$ 34,503,711	$ 34,503,711	$ -
FTA 5310	$ -	$ 1,449,139	$ 1,449,139	$ 1,449,139	$ -
FTA 5339	$ 3,687,450	$ 13,885,588	$ 17,573,038	$ 11,207,949	$ 6,365,089
STATE	$ 6,449,411	$ 20,117,932	$ 26,567,343	$ 18,834,001	$ 7,733,342
LOCAL	$ 1,449,412	$ 20,117,932	$ 21,567,344	$ 18,834,001	$ 2,733,343
FARES	$ -	$ 4,395,413	$ 4,395,413	$ 4,395,413	$ -
Total	$ 11,576,273	$ 94,469,715	$ 106,045,988	$ 89,224,214	$ 16,821,774

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
FTA 5311	$ -	$ 70,434,223	$ 70,434,223	$ 70,434,223	$ -
FTA 5310	$ -	$ 2,958,204	$ 2,958,204	$ 2,958,204	$ -
FTA 5339	$ -	$ 28,345,374	$ 28,345,374	$ 21,980,285	$ 6,365,089
STATE	$ -	$ 41,067,782	$ 41,067,782	$ 33,334,440	$ 7,733,342
LOCAL	$ -	$ 41,067,782	$ 41,067,782	$ 38,344,439	$ 2,723,343
FARES	$ -	$ 8,972,586	$ 8,972,586	$ 8,972,586	$ -
Total	$ -	$ 192,845,951	$ 192,845,951	$ 176,024,177	$ 16,821,774

Table 9-12
District Three Transit Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5311	$ -	$ 7,805,620	$ 7,805,620	$ 7,117,209	$ 688,411
STP FLEX	$ -	$ 58,184	$ 58,184	$ 58,184	$ -
STATE	$ -	$ 2,437,191	$ 2,437,191	$ 2,271,567	$ 165,624
LOCAL	$ -	$ 3,589,873	$ 3,589,873	$ 3,439,071	$ 150,802
FARES	$ -	$ 716,362	$ 716,362	$ 716,362	$ -
Total	$ -	$ 14,607,230	$ 14,607,230	$ 13,602,393	$ 1,004,837

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5311	$ 688,411	$ 19,538,953	$ 20,227,364	$ 17,916,175	$ 2,311,189
STP FLEX	$ -	$ 145,645	$ 145,645	$ 145,645	$ -
STATE	$ 165,624	$ 6,100,756	$ 6,266,380	$ 5,732,307	$ 534,073
LOCAL	$ 150,802	$ 8,986,137	$ 9,136,939	$ 8,769,678	$ 367,261
FARES	$ -	$ 1,793,190	$ 1,793,190	$ 1,793,190	$ -
Total	$ 1,004,837	$ 36,564,681	$ 37,569,518	$ 34,356,995	$ 3,212,523

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
FTA 5311	$ 2,311,189	$ 26,258,720	$ 28,569,909	$ 23,072,544	$ 5,497,365
STP FLEX	$ -	$ 195,735	$ 195,735	$ 195,735	$ -
STATE	$ 534,073	$ 8,198,904	$ 8,732,977	$ 7,515,249	$ 1,217,728
LOCAL	$ 367,261	$ 12,076,615	$ 12,443,876	$ 11,722,880	$ 720,996
FARES	$ -	$ 2,409,897	$ 2,409,897	$ 2,409,897	$ -
Total	$ 3,212,523	$ 49,139,871	$ 52,352,394	$ 44,916,305	$ 7,436,089

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
FTA 5311	$ -	$ 53,603,293	$ 53,603,293	$ 48,105,928	$ 5,497,365
STP FLEX	$ -	$ 399,564	$ 399,564	$ 399,564	$ -
STATE	$ -	$ 16,736,851	$ 16,736,851	$ 15,519,123	$ 1,217,728
LOCAL	$ -	$ 24,652,625	$ 24,652,625	$ 23,931,629	$ 720,996
FARES	$ -	$ 4,919,449	$ 4,919,449	$ 4,919,449	$ -
Total	$ -	$ 100,311,782	$ 100,311,782	$ 92,875,693	$ 7,436,089

Table 9-13
Tennessee Transportation Alternatives Program
Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
TAP	$ -	$ 1,216,854	$ 1,216,854	$ 1,216,854	$ -
LOCAL	$ -	$ 304,214	$ 304,214	$ 304,214	$ -
Total	$ -	$ 1,521,068	$ 1,521,068	$ 1,521,068	$ -

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
TAP	$ -	$ 3,046,017	$ 3,046,017	$ 3,046,017	$ -
LOCAL	$ -	$ 761,504	$ 761,504	$ 761,504	$ -
Total	$ -	$ 3,807,521	$ 3,807,521	$ 3,807,521	$ -

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
TAP	$ -	$ 4,093,592	$ 4,093,592	$ 4,093,592	$ -
LOCAL	$ -	$ 1,023,398	$ 1,023,398	$ 1,023,398	$ -
Total	$ -	$ 5,116,990	$ 5,116,990	$ 5,116,990	$ -

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
TAP	$ -	$ 8,356,463	$ 8,356,463	$ 8,356,463	$ -
LOCAL	$ -	$ 2,089,116	$ 2,089,116	$ 2,089,116	$ -
Total	$ -	$ 10,445,579	$ 10,445,579	$ 10,445,579	$ -

Table 9-14
Virginia Transportation Alternatives Program
Cost vs. Revenue

Funding Source	2016-2020				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
TAP	$ -	$ 1,373,049	$ 1,373,049	$ 1,373,049	$ -
LOCAL	$ -	$ 343,262	$ 343,262	$ 343,262	$ -
Total	$ -	$ 1,716,311	$ 1,716,311	$ 1,716,311	$ -

Funding Source	2021-2030				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
TAP	$ -	$ 3,437,002	$ 3,437,002	$ 3,437,002	$ -
LOCAL	$ -	$ 859,250	$ 859,250	$ 859,250	$ -
Total	$ -	$ 4,296,252	$ 4,296,252	$ 4,296,252	$ -

Funding Source	2031-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance (Carry Over)
TAP	$ -	$ 4,619,044	$ 4,619,044	$ 4,619,044	$ -
LOCAL	$ -	$ 1,154,761	$ 1,154,761	$ 1,154,761	$ -
Total	$ -	$ 5,773,805	$ 5,773,805	$ 5,773,805	$ -

Funding Source	Total 2016-2040				
	Carry Over	New Revenue	Total Revenue	Project Costs	Balance
TAP	$ -	$ 9,429,095	$ 9,429,095	$ 9,429,095	$ -
LOCAL	$ -	$ 2,357,273	$ 2,357,273	$ 2,357,273	$ -
Total	$ -	$ 11,786,368	$ 11,786,368	$ 11,786,368	$ -

CHAPTER 10: TITLE VI AND ENVIRONMENTAL JUSTICE ASSESSMENT

Title VI of the Civil Rights Act of 1964 states that "No person in the United State shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance." In 1994, President Clinton Issued Executive Order 12898 which states that "Each federal agency shall 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 populations and low-income populations." As part of the transportation planning process, the Bristol MPO must address Title VI and environmental justice to minimize disproportionately adverse effects on minority populations and low-income groups in the development and implementation of transportation projects.

BACKGROUND

The first step in analyzing Title VI and environmental justice issues is to identify the population areas of traditionally under-represented groups, specifically low-income and minority populations. To make this determination, calculations of minority and low-income population proportions at a Census Tract level were made, based on 2010 Census and the American Community Survey data. For the purposes of this Title VI Assessment, the geographic boundary for the analysis was defined as all census tracts that are either entirely or partially within the MPO study area; thus, it is larger than the Metropolitan Planning Area to account for census tracts that are only partially in the MPO.

Minorities consist of 5.1 percent of the total population of the MPO region (Table 10-1). Utilizing a threshold-type of analysis, any census tract whose percentage is greater than the regional average is designated a minority census tract for Title VI purposes. Since the MPO regional long-range plan includes partial counties and is bi-state, utilizing state or county level averages to determine threshold levels would not accurately reflect the protected population groups within the study area.

The MPO recognizes that Title VI opportunities and concerns can exist outside of these defined areas and the definition of a Title VI minority census tract is for MPO analysis only. Assessing data for project level purposes requires using smaller scale spatial data where a high degree of demographic resolution is needed.

Although the Hispanic population in the MPO area is not significantly high, representing 1.5 percent of the population, monitoring the growth of the Hispanic population will be necessary based on national and state growth trends, which indicate a rising Hispanic population. In the event that the Hispanic population, as well as other ethnic groups, reaches five percent of the total population, the MPO will need to comply with Executive Order 13166, which requires "improved access to services for persons with Limited English Proficiency" (LEP).

Persons below poverty level represent 17.0 percent of the population for the MPO region. This is consistent with poverty levels for the State of Tennessee, but slightly higher than the state-wide average for Virginia.

Table 10-1
Regional Demographics

Jurisdiction	Percent Minority	Percent Hispanic	Percent Below Poverty Level
Abingdon, Virginia	6.2%	2.6%	17.9%
Bristol, Tennessee	6.7%	1.9%	18.5%
Bristol, Virginia	9.1%	1.2%	21.0%
Sullivan County, Tennessee (part)	2.3%	1.0%	19.5%
Washington County, Virginia (part)	2.2%	1.2%	8.3%
Regional Total	*5.1%*	*1.5%*	*17.0%*
Tennessee (state-wide)	22.4%	4.6%	17.6%
Virginia (state-wide)	29.0%	7.9%	11.3%

Source: U.S. Census Bureau, Census 2010
2009-2013 American Community Survey

ANALYSIS

Concentrations of minority and low-income populations are defined by this analysis to be census tracts with percentages greater than the regional average. Using the threshold level of 5.1 percent minority population for the total region, if a census tract has greater than the established threshold value, then the level of concern can be assumed to be higher than in areas where the value is lower than the threshold. It is important to understand that all census tracts include members of protected populations and this technique is being utilized for categorizing census tracts based on the proportion of protected populations they contain. Of the twenty-three census tracts that are partially or entirely within the MPO area, eight are designated as minority tracts (Table 10-2 and Map 10-1). Three of these census tracts are in the urban area of Bristol, Virginia; four are located in the urban area of Bristol, Tennessee; and one in Abingdon, Virginia.

Utilizing the same methodology, 17.0 percent of the population in the region had income below poverty level based on the U.S. Census 2009-2013 American Community Survey data. Of the twenty-three census tracts that are partially or entirely within the planning area, nine census tracts have a higher level of environmental justice concerns (Table 10-3 and Map 10-2). These tracts generally correspond with the minority census tracts with one tract in Abingdon, Virginia; two tracts in Bristol, Virginia; three tracts in Bristol, Tennessee; and three tracts in Sullivan County, Tennessee.

ALLOCATION OF FUNDS TO GEOGRAPHIC AREAS

An analysis was performed in conjunction with the spatial analysis identifying traditionally disadvantaged groups to determine what level of investment these areas would receive in terms of transportation spending as part of the *Bristol Urban Area Long-Range Transportation Plan 2040*. Approximately $270 million in highway projects are programmed throughout the study area in the plan. Of these, approximately $108 million are totally or partially in Title VI areas. This represents 40 percent of the total dollars to be invested in highway projects. The projects proposed in this plan (not including illustrative and regional projects for which funding has not been identified for implementation) within minority and/or low-income areas include:

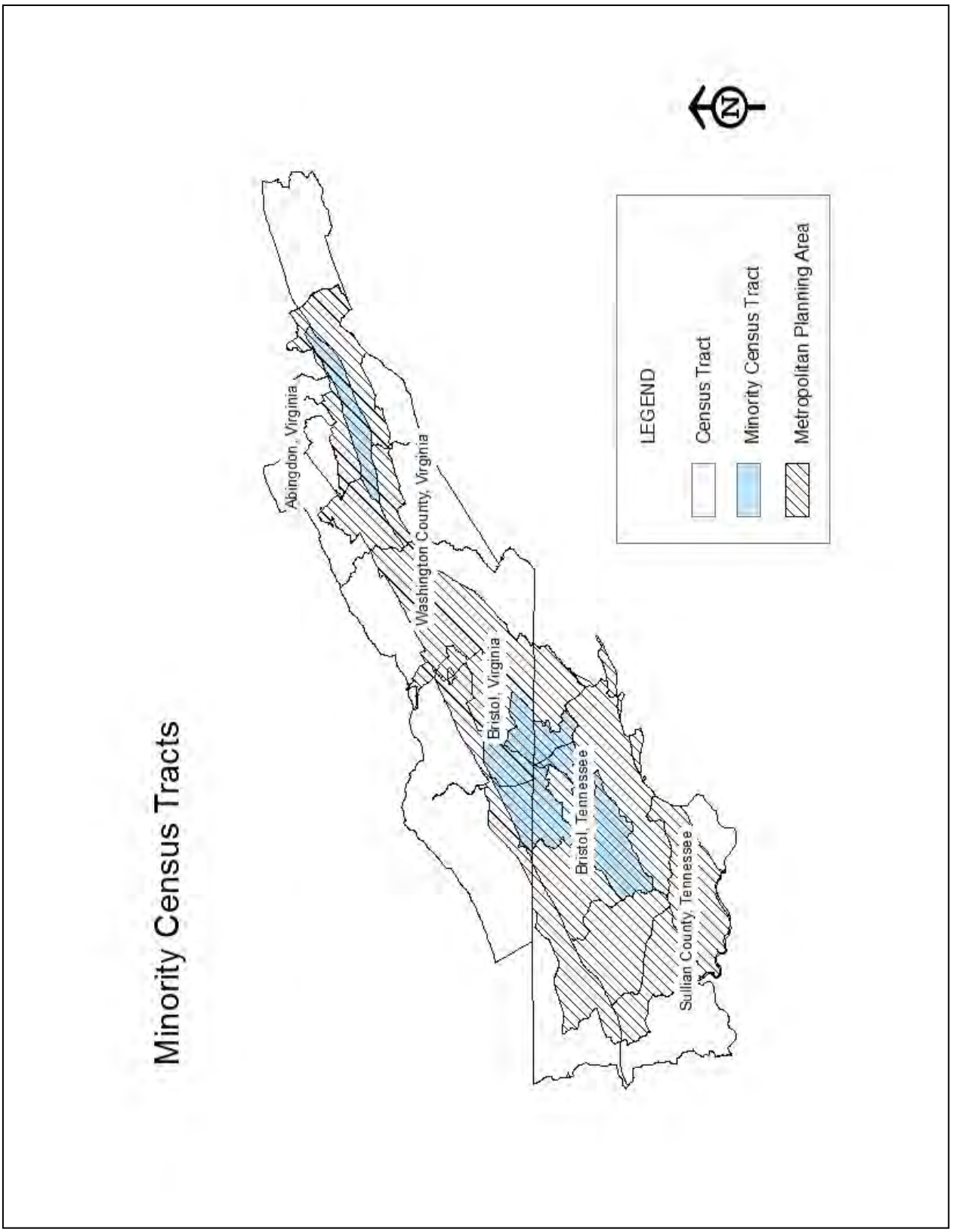
- East Cedar Street (Bristol, Tennessee)
- Volunteer Parkway Medians (Bristol, Tennessee)
- Carden Hollow Road (Sullivan County, Tennessee)
- Exide Drive (Bristol, Tennessee)
- Exit 19 (Washington County, Virginia
- Exit 17 (Abingdon, Virginia)
- East Main Street (Abingdon, Virginia)
- Cook Street/Lowry Drive (Abingdon, Virginia)
- Dr. French Moore Jr. Boulevard (Abingdon, Virginia)

Additionally, both Bristol Tennessee Transit and Bristol Virginia Transit serve in minority and low income defined areas within the urban area. This plan identifies $50 million programmed for transit operating and capital expenditures which benefits traditionally disadvantaged groups.

Table 10-2
Minority Population

Census Tract	Total	Minority		Relative Level of Concern
Tract 101	6,906	148	2.1%	Lower
Tract 102	5,180	64	1.2%	Lower
Tract 104.01	2,381	37	1.6%	Lower
Tract 104.02	3,238	118	3.6%	Lower
Tract 105.01	3,812	144	3.8%	Lower
Tract 105.02	4,120	328	8.0%	Higher
Tract 106.01	4,280	150	3.5%	Lower
Tract 201	3,853	301	7.8%	Higher
Tract 202	5,331	628	11.8%	Higher
Tract 203	2,864	400	14.0%	Higher
Tract 204	5,787	292	5.0%	Lower
Tract 424	3,415	90	2.6%	Lower
Tract 425	3,529	127	3.6%	Lower
Tract 426	4,112	248	6.0%	Higher
Tract 427.01	4,948	386	7.8%	Higher
Tract 427.02	2,103	64	3.0%	Lower
Tract 428.01	2,657	217	8.2%	Higher
Tract 428.02	4,813	462	9.6%	Higher
Tract 429	4,069	197	4.8%	Lower
Tract 430	4,692	153	3.3%	Lower
Tract 432.01	4,102	77	1.9%	Lower
Tract 434.01	5,142	113	2.2%	Lower
Tract 434.02	4,668	157	3.4%	Lower
Total	96,002	4,901	5.1%	n/a

Source: U.S. Census Bureau, Census 2010

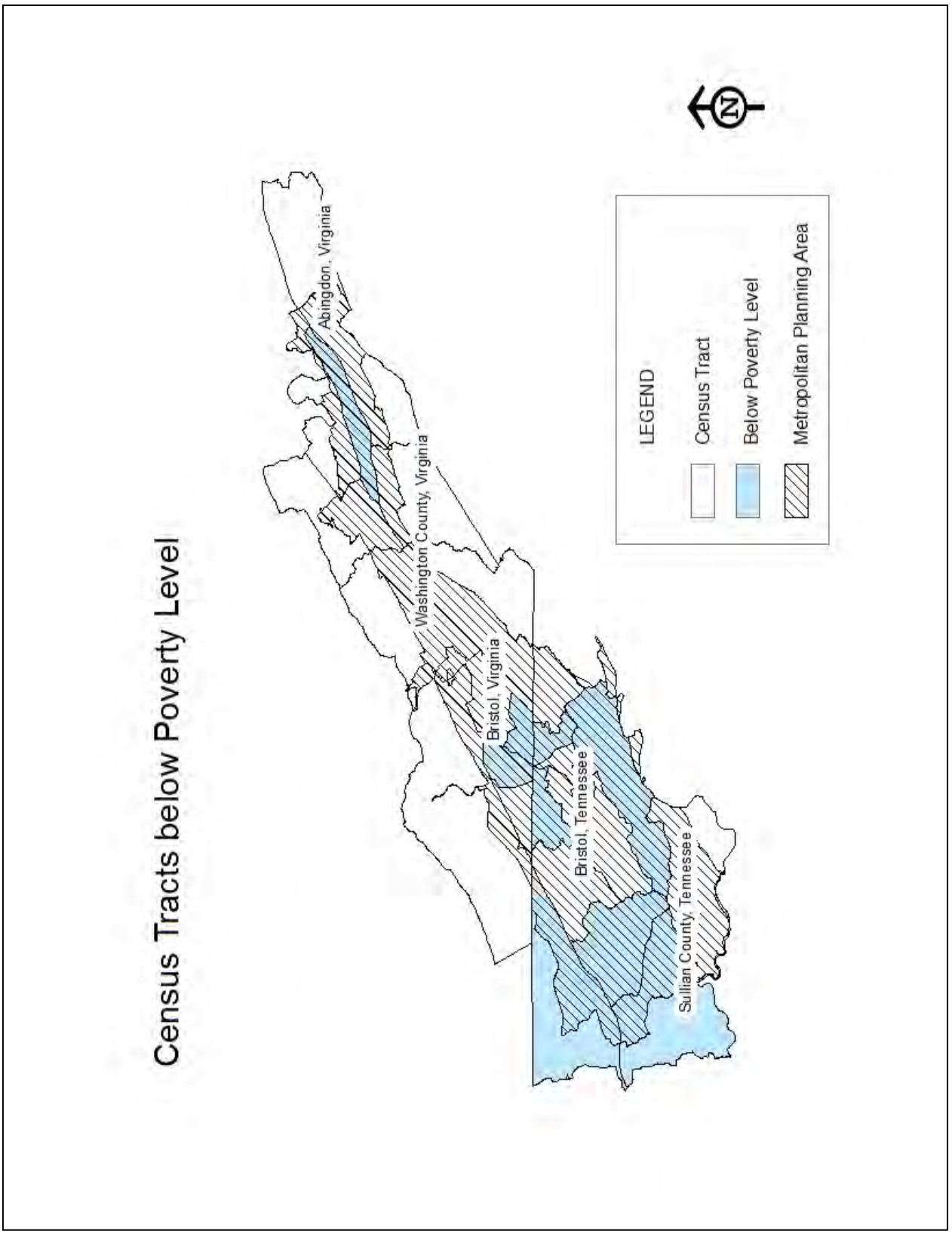

Minority Census Tracts
LEGEND
Census Tract
Minority Census Tract
Metropolitan Planning Area
N
Abingdon, Virginia
Washington County, Virginia
Bristol, Virginia
Bristol, Tennessee
Sullian County, Tennessee

Map 10-1

Table 10-3
Population Below Poverty Level

Census Tract	Population for whom poverty status is determined	Below Poverty Level		Relative Level of Concern
Tract 101	6,711	740	11.0%	Lower
Tract 102	5,667	163	2.9%	Lower
Tract 104.01	2,075	93	4.5%	Lower
Tract 104.02	2,935	327	11.1%	Lower
Tract 105.01	3,981	558	14.0%	Lower
Tract 105.02	3,094	987	31.9%	Higher
Tract 106.01	4,413	459	10.4%	Lower
Tract 201	3,897	662	17.0%	Lower
Tract 202	4,769	1,343	28.2%	Higher
Tract 203	2,896	1,140	39.4%	Higher
Tract 204	5,720	480	8.4%	Lower
Tract 424	3,206	823	25.7%	Higher
Tract 425	3,477	393	11.3%	Lower
Tract 426	4,235	584	13.8%	Lower
Tract 427.01	5,178	1,512	29.2%	Higher
Tract 427.02	2,160	345	16.0%	Lower
Tract 428.01	2,385	355	14.9%	Lower
Tract 428.02	3,734	997	26.7%	Higher
Tract 429	4,026	187	4.6%	Lower
Tract 430	4,305	787	18.3%	Higher
Tract 432.01	4,560	224	4.9%	Lower
Tract 434.01	5,405	1,611	29.8%	Higher
Tract 434.02	4,084	991	24.3%	Higher
Total	92,913	15,761	17.0%	n/a

Source: U.S. Census Bureau, 2009-2013 American Community Survey


Census Tracts below Poverty Level
LEGEND
Census Tract
Below Poverty Level
Metropolitan Planning Area
Abingdon, Virginia
Washington County, Virginia
Bristol, Virginia
Bristol, Tennessee
Sullian County, Tennessee
N

Map 10-2

CHAPTER 11: ENVIRONMENTAL MITIGATION

The *Bristol Tennessee/Virginia Urban Area Long Range Transportation Plan 2040* identifies and recommends a capital investment strategy to meet the existing and future transportation needs for the region. These considerations and recommendations made during the planning process are preliminary in nature and detailed environmental analysis conducted through the National Environmental Policy Act (NEPA) is not required for the long range transportation plan. While detailed environmental analysis is not required, the MAP-21 and FAST Act legislation does require the MPO to consult with Federal and State environmental and natural resource agencies to develop a general discussion on possible environmental mitigation activities that should be incorporated and considered in the development of the transportation plan.

Transportation planning activities of the MPO are regional in scope. As a result, environmental mitigation activities identified in the long range transportation plan do not focus on each individual project but offers a summary of the environmentally sensitive areas to be aware of region-wide and potential mitigation strategies that should be considered to reduce the impact of projects. Detailed environmental analysis of individual transportation projects occurs later in the project development process as the improvement approaches the preliminary engineering phase. At this phase, project features may be narrowed and refined, and the environmental impacts and mitigation strategies can be appropriately ascertained.

Climate change is rising in importance as a multi-faceted concern all over the world; however, much controversy and debate has occurred over the actual causes of global climate change. Many scientists and environmental advocates contend that climate change is the result of human factors, such as greenhouse gas emissions from automobiles and factors, while others suggests the climate change is part of a natural cycle. Although there is no clear federal policy on climate change, the MPO promotes a multimodal transportation system that reduces the kinds of greenhouse gases that may be the underlying cause of climate change. Expanding multimodal choices, from increased transit availability to more greenways, bicycle, and sidewalk facilities provide alternatives to the possible causes of climate change as well as supporting a healthier lifestyle.

The MPO is in attainment with the requirements of the Clean Air Act in reference to the National Ambient Air Quality Standards for ozone and particulate matter. In 2015, the Environmental Protection Agency revised the ozone standard from 0.075 parts per million to 0.070. The two ozone monitors in Sullivan County, Tennessee currently have a 3-year average of 0.64 and 0.63 (no monitors are located in Bristol or Washington County, Virginia). To insure continuing compliance with air quality standards, the Tri-Cities Ozone Action Partnership coordinates activities with regard to ozone public education and maintains the Ozone Action Day program to encourage local business and residents to delay open burning, lawn mowing and paving, and to reduce driving on days forecasted for elevated ozone levels.

ENVIRONMENTAL CONSULTATION PROCESS

The Bristol MPO utilized an environmental consultation process recommended by the Tennessee Department of Transportation and Virginia Department of Transportation and identified in the MPO's Public Participation Plan to coordinate with agencies regarding land use management, natural resources, environmental protection, conservation, and historic preservation. To access potential environmental impacts and develop possible environmental mitigation activities, the following processes were incorporated in the development of the *Bristol Tennessee/Virginia Urban Area Long Range Transportation Plan 2040.*

- Proposed transportation improvements were compared to available natural and historic references to assess potential environmental impacts and identify potential mitigation areas or activities.
- The MPO provided affected agencies opportunities to review and comment on identification of sensitive areas and draft potential mitigation activities.
- As part of the final document, the MPO will incorporate a summary analysis and report on the disposition of comments, enhancements, or modifications identified by affected agencies.

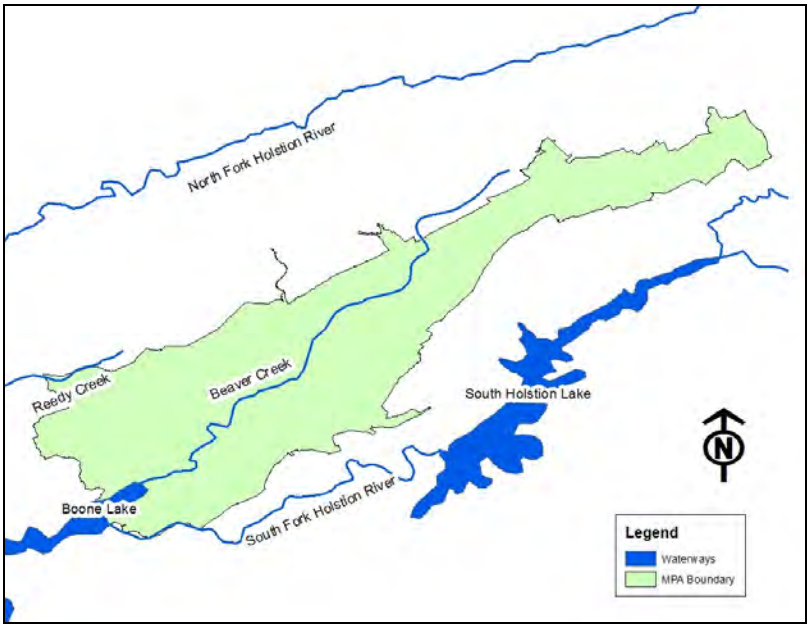
ENVIRONMENTALLY SENSITIVE AREAS

The Bristol Region consists of numerous environmentally sensitive areas, many too small or too numerous to map at a regional level and can only be accurately identified through a project-level analysis. When a project is ready to move from the long-range transportation plan into the engineering and design phases, a comprehensive analysis will be needed to determine the type and location of environmentally sensitive areas. The following discussion provides a general overview of the key areas in which environmental mitigation activities are focused.

Wetlands and Floodplains. In the development of a federally funded project, special requirements are imposed by Executive Order 11988 when the project will entail a significant floodplain encroachment. Floodplain management establishes corrective and preventative measures to avoid the adverse impacts associated with the occupancy and modification of floodplains. To the extent practicable, transportation agencies are required by Executive Order 11990, Protection of Wetlands, to first avoid and then minimize impacts to wetlands in the development of projects. Unavoidable impacts are mitigated by way of wetland compensation through either restoration or creation of wetlands.

The 2004 flood study conducted by the Federal Emergency Management Agency and the Army Corps of Engineers re-defined the floodplain and floodways of the largest waterway in the MPO Region, Beaver Creek, and several of its tributaries. This waterway flows from Washington County, Virginia through downtown Bristol and empties into the South Holston River northwest of Bluff City (Map 11-1). Beaver Creek is surrounded by developed properties for most of its length, and defines the valley between the Beaver Creek Knobs and White Top Knobs in Tennessee; thus, many of the transportation elements within the metropolitan area are historically influenced by its course.

Map 11-1
Major Stream Network



Cultural and Historic Sites. Historic and natural resources are important to identify as part of the decision-making process for transportation projects due to their unique and irreplaceable nature. Section 106 of the National Historic Preservation Act requires a historical review process to determine the effects of a project on all properties on or eligible for inclusion on the national Register of Historic Places. Where such properties will be affected, coordination with the State Historic Preservation Officer and Advisory Council are required prior to project approval. It should be noted the following table of historic places represents the listing on the National Register and many other historic sites have been designated by the State of Tennessee and/or the Commonwealth of Virginia.

Table 11-1
National Register of Historic Places

Historic Place	Location
Abingdon Bank	225 E. Main St., Abingdon, VA
Abingdon Historic District	Main St., Abingdon, VA
Baker-St. John House	Providence Rd., Washington Co., VA
Blountville Historic District	Center of Blountville TN
Bristol Commercial Historic District	Center of Downtown Bristol TN/VA
Bristol Municipal Stadium	Edgemont Ave., Bristol TN
Bristol Railroad Station	Martin Luther King Jr. Blvd., Bristol VA
Bristol Tennessee-Virginia Sign	State St., Bristol TN/VA

Historic Place	Location
Bristol Warehouse Historic District	Scott/Lee St., Bristol, VA
Brook Hall	Byars Ln., Washington Co, VA
Douglass School	Oakview Ave., Bristol VA
East Hill Cemetery	East State St., Bristol,TN
Euclid Avenue Historic District	Euclid Ave., Bristol VA
Fairmount Historic District	Fairmount area, Bristol TN
First National Bank of Bristol	State St., Bristol TN
Gammon House	324 6th St., Bristol, TN
Holston Ave. Historic District	Bristol, TN
King, Edward Washington, House	7th St., Bristol TN
King/Lancaster/McCoy Mitchell House	54 King St., Bristol, VA
Mont Calm	Cummings St., Abingdon, VA
Moonlite Theatre	Lee Hwy., Washington Co., VA
Old Deery Inn	SR 126, Blountville TN
Paramount Theatre	State St., Bristol TN
Parlett House	Georgia Ave., Bristol TN
Pemberton Mansion and Oak	Pemberton Rd, Sullivan Co. TN
Pitts House	Main St., Abingdon, VA
Steel-Seneker Houses	SR 126, Sullivan Co. TN
Shelby Street Station Post Office	Shelby St., Bristol TN
The Grove	Lee Hwy., Washington Co. VA
Solar Hill Historic District	Solar St., Bristol VA
Virginia Hill Historic District	Moore St., Bristol VA
Virginia Intermont College	Moore St., Bristol VA
Virginia Middle School	Piedmont Ave., Bristol, VA
Walnut Grove	Lee Hwy., Washington Co. VA
Whites Mill	Washington Co., VA

Endangered Species and Natural Areas. In the development of a project, special studies and coordination are required when the action may affect Federal- or State-listed threatened or endangered species. This includes fish, wildlife, and plants facing extinction as well as actions that result in destruction or modification of critical habitat. The Endangered Species Act of 1973 establishes processes for avoiding and/or mitigating impacts on endangered or threatened species and Natural Areas including consultation with Fish and Wildlife agencies and Natural Resource agencies. Table 11-2 includes the federal status of endangered species within the MPO region; however, other species have received endangered or threatened designation at the state level.

Table 11-2
Federally Endangered Species

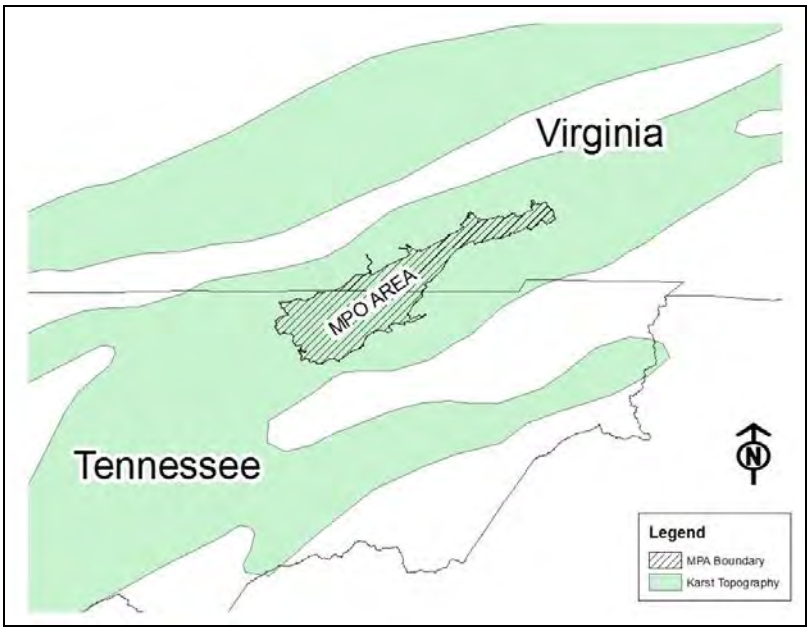
Species	Federal Status
Molluscs	
Bridwing Pearly Mussel	Listed Endangered
Tan Riffleshell	Listed Endangered
Fine-Rayed Pigtoe	Listed Endangered
Shiny Pigtoe	Listed Endangered
Little-Wing Pearly Mussel	Listed Endangered
Cumberland Monkeyface	Listed Endangered
Birds	
Bald Eagle	Listed Threatened
Fishes	
Spotfin Chub	Listed Threatened
Duskytail Darter	Listed Endangered
Mammals	
Gray Bat	Listed Endangered

Parks and Recreational Areas. Section 4(f) of the USDOT Act of 1966 applies to any federally funded project which involves the use of any significant publicly owned park, recreation area, wildlife and waterfowl refuge, and land from an historic site of national, state or local significance. Special environmental analyses are required to determine if there is a feasible or prudent alternative to taking the proposed action involving the use of such property.

Other Considerations. Other legal and regulatory requirements relating to the human and natural environment need to be considered in the development of transportation projects that pertain to neighborhoods and communities, homes and businesses, noise abatement, air quality, farmland and agricultural areas, and forested areas. Topography should also be a consideration in environmental analysis due to the karst regions of Northeast Tennessee and Southwest Virginia, which are characterized by caves, sinkholes and depressions. The entire Metropolitan Planning Area for the MPO is subject to karst activity (Map 11-2)

Streets, roads, and highways are the primary source of stormwater runoff, carrying pollutants from the adjacent land and from vehicles including heavy metals from tires, brakes, and engine wear, and hydrocarbons from lubricating fluids. If the pollutants are not properly controlled, they can impair local waterways causing them to no longer support the water's designated uses and biotic communities. Mitigation of stormwater runoff is a required element of highway design, construction, and post construction in order to minimize and manage the effects of stormwater runoff.

Map 10-2
Karst Topography



ENVIRONMENTAL MITIGATION

Due to the hilly terrain, presence of karst topography, floodplains, neighborhoods, businesses, and government-preserved lands in the Bristol Region, the majority of projects in this plan may require some type of mitigation efforts. With the numerous environmentally sensitive areas in the region, the MPO consulted with natural resource and environmental agencies when developing the *Long-Range Transportation Plan Year 2040.* Detailed environmental analyses of the recommended projects should occur as projects enter the preliminary development phase, when more specific environmental impacts and mitigation strategies can be better determined on a project-by-project basis.

While mitigation efforts need to be included in any project that has an impact on an environmentally sensitive area, it should be recognized that not every project will have the same level of impact. Some projects involve major construction with considerable earth disturbance, such as new roadways and roadway widening projects. Other projects involve minor construction and minimal earth disturbance, such as signalization, installation of streetlights, and resurfacing projects. The mitigation efforts used for a project should be dependent upon how severe the impact on environmentally sensitive areas will be.

Mitigation is the attempt to offset potential adverse effects of human activity on the environment. Potential environmental mitigation activities may include, but are not limited to: avoiding impacts altogether, minimizing a proposed project's size, abatement measures to reduce construction impacts, and compensating for environmental impacts by providing suitable, replacement or substitute environmental resources on- or off-site (Table 11-3). In

determining which mitigation strategies to utilize, each project identified as having an impact on an environmentally sensitive area should follow a mitigation planning process prior to construction, consisting of:

1. Identification of all environmentally sensitive areas throughout the project study area;
2. Determination of how and to what extent the project will impact these areas; and
3. Development of appropriate mitigation strategies to lessen the impact of projects on the environmentally sensitive areas.

Context Sensitive Solutions. Many transportation agencies, including the Tennessee Department of Transportation have utilized a Context Sensitive Solutions (CSS) process for major construction projects. Context Sensitive Solutions balance safety and mobility and the preservation of scenic, aesthetic, historic, environmental and other community values. The CSS process strives to provide transportation projects designed to improve the quality of life for the community by developing a consensus with a full range of stakeholders for solutions to transportation needs. The process involves considerable public participation and the flexibility to consider alternative designs to lessen the impact of the project on the community. Context Sensitive Solutions can be a valuable tool to ensure that appropriate environmental mitigation activities are considered.

Table 11-3
Potential Environmental Mitigation Activities

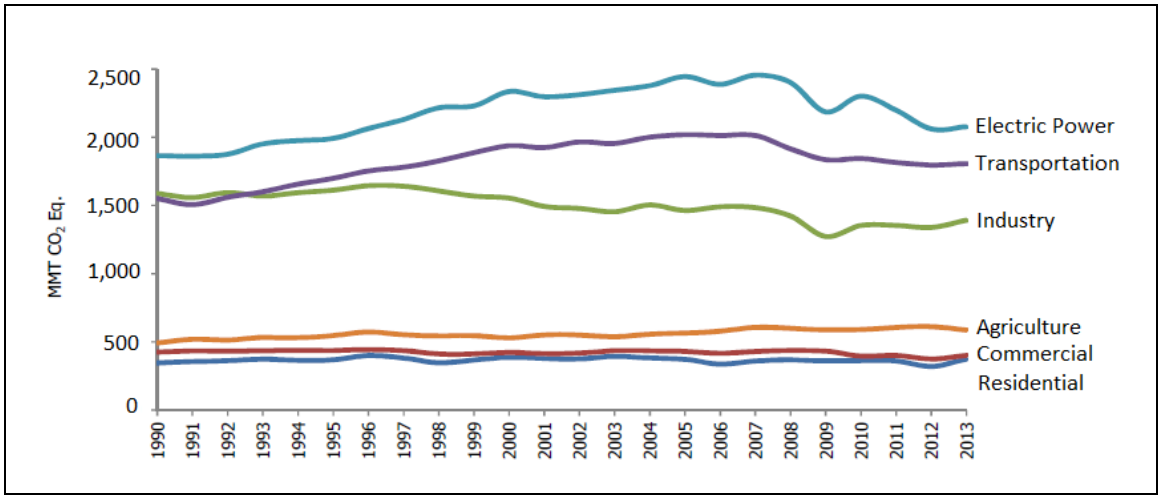
Resource	Potential Mitigation Activities
Wetlands or Water Resources	Mitigation sequencing requirements involving avoidance, minimization, compensation (preservation, creation, restoration); design exceptions; and environmental compliance monitoring
Stormwater Runoff	Physical, structural, and managerial practices to prevent or reduce runoff damage including green infrastructure.
Forested and Natural Areas	Avoidance, minimization; replacement property for open space easements; design exceptions and variance; environmental compliance monitoring
Agricultural Areas	Avoidance, minimization; design exceptions and variance; environmental compliance monitoring
Endangered and Threatened Species	Avoidance, minimization; time of year restriction; construction sequencing; design exceptions; species research; Memoranda of Agreements for species management; environmental compliance monitoring.
Air Quality	Transportation control measures, transportation emission reduction measures
Neighborhoods, Communities and Businesses	Impact avoidance or minimization; context sensitive solutions
Cultural Resources	Avoidance, minimization; preservation in place or excavation for archeological sites; Memoranda of Agreement with Department of Historic Resources; design exceptions and variances; environmental compliance monitoring
Parks and Recreation Areas	Avoidance, minimization, mitigation; design exceptions and variance; environmental compliance monitoring

CLIMATE CHANGE

Climate change refers to any significant change in measures of climate (such as temperature, precipitation or wind) lasting for an extended period (decades or longer). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Naturally occurring greenhouse gases include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). Greenhouse gases prevent heat from escaping to the atmosphere and contribute to an increase in global average temperature and related climate changes. During the past century, energy-related activities have substantially added to the amount of greenhouse gases in the atmosphere in the form of carbon dioxide emissions from burning fossil fuels.

Existing Conditions. Based on the Inventory of U.S. Greenhouse Gas Emission and Sinks (EPA) the primary greenhouse gas emitted by human activities in the U.S. is CO_2, representing approximately 77 percent of total greenhouse gases in 2013. The largest source of CO_2 is fossil fuel combustion, with the electric power industry, accounting for 31 percent of GHG emissions. In 2013, transportation activities accounted for 27 percent of the CO_2 emissions from fossil fuel combustion (Chart 11-1).

Chart 11-1
U.S. Greenhouse Gas Emissions Allocated to Economic Sectors
Metric tons of CO_2 Equivalent (millions)



Source: *Inventory of U.S. Greenhouse Gas Emissions and Sinks*, EPA

In terms of overall trends, from 1990 to 2013, total transportation emissions rose by 16.5 percent. Almost all of the energy consumed for transportation is supplied by petroleum-based products, with more than half being related to gasoline consumption in highway vehicles. Other fuel uses, especially diesel fuel for locomotives and trucks, and jet fuel for aircraft, account for the remainder. In 2013, the largest sources of transportation greenhouse gases were passenger cars (42.2 percent), freight trucks (22.5 percent), light duty trucks (17.9 percent), commercial aircraft (6.4 percent), rail (2.6 percent), pipelines (2.6 percent), and ships/boats (2.2 percent).

POTENTIAL GHG MITIGATION ACTIONS

The goal of minimizing fuel consumption and air pollution can be interpreted as a direct link to climate change and justification for metropolitan transportation planning to consider climate change mitigation strategies. Transportation GHG emissions are related to numerous decisions by government, businesses, and individuals. These decisions can range from the choice of vehicle type to land use activities. Mitigation of climate change means the reduction of GHG emissions released by human activities. For the transportation sector, provisions that relate to efficient management and operation of the transportation system, coordination with land use plans, and congestion mitigation can all relate to reducing GHG emissions.

The Commonwealth of Virginia has a *Climate Change Action Plan* in place, which outlines recommendations for Virginia to reduce GHG emissions and includes transportation and land use strategies. In 2014, the Governor created, via Executive Order, the Governor's Climate Change and Resiliency Update Commission to update and prioritize the recommendations in the *Climate Change Action Plan.* The State of Tennessee doesn't have a formal climate mitigation plan, but has enacted a variety of Energy Efficiency Policies including incentives for high-efficiency vehicles and the Clean Tennessee Energy Grant Program.

The potential mitigation actions to reduce GHG for the Bristol Tenness/Virginia Urban Area MPO (Table 11-4) are drawn from a larger group of stakeholder-recommended options in states with climate action plans as well as the Southern Governors' Association policy strategies.

Table 11-4
Potential Climate Mitigation Strategies

Climate Mitigation Strategies	Potential Actions
New Vehicle Standards	Improve fuel economy Vehicle technology improvements
Anti-Idling Practices	Truck stop electrification Vehicle idling restrictions Traffic signal optimization
Mode Shift from Truck to Rail	Improve railroad infrastructure Increase rail capacity Intermodal terminal development
Renewable Fuels	Biodiesel expansion Low-carbon fuel standards
Transportation System Management	Traffic signal synchronization Intelligent transportation systems
Smart Growth/Land Use	Establish energy efficient land-use patterns Promote redevelopment projects
Other Modes	Expand public transit infrastructure Develop pedestrian/bicycle facilities Promote carpools, vanpools, telecommuting

CHAPTER 12: PUBLIC INVOLVEMENT

Public participation in the Metropolitan Planning Organization's planning process is an integral part of regional transportation activities as well as a requirement of the FAST Act. The Bristol MPO encourages the distribution of information related to transportation decisions throughout the region. It is the policy of the MPO to take all public comments into account in the development and adoption of plans and programs, specifically the Transportation Improvement Program and long-range transportation plan.

PUBLIC PARTICIPATION PLAN

The Bristol MPO's *Public Participation Plan* reflects the current policies for developing transportation planning programs in accordance with the provisions of the FAST Act. The following excerpt from the *Public Participation Plan* is specifically related to the MPO's policy for development of the long-range transportation plan.

(1) Reasonable opportunities for public participation and comment during the development of the LRTP will be provided to interested parties by utilizing public notification and outreach tools to gain early and continuing input and interaction with the public on transportation issues.
(2) To provide opportunity for public comment from traditionally underserved groups, special effort will be made to provide MPO announcements and information to local social service agencies, neighborhood groups and minority organizations.
(3) Development of the LRTP shall include consultation with interested parties, other related Federal, State, and local planning agencies affected by transportation, including resource agencies responsible for natural resource management and historic preservation.
(4) Public review and comment opportunities shall be provided when the plan is originally adopted, for amendments to the plan, and during the plan update cycle.
(5) There shall be at least a 30-day comment period on the draft LRTP prior to adoption. The public comment period begins with public notice.
(6) A summary of all comments received, either verbally or in writing, will be made available to the Executive Board prior to adoption, and incorporated into the final LRTP. Before approval by the Executive Board, the public shall be afforded the opportunity to comment on the draft LRTP.
(7) After evaluation of comments received on the draft LRTP, the Executive Board may defer the adoption of the plan if there are significant unresolved comments. The MPO staff will prepare written response to the comments to be incorporated into the document, or suggest amendments to the draft document. Should the amendments be significant, another 30-day review period shall be provided.
(8) Amendments to the long-range transportation plan must follow the same process with the exception of projects deemed to be generally local in nature and scale.

Consultation with Interested Parties and Other Public Agencies. As with previous federal transportation legislation, the FAST-Act requires the MPO's public participation process to provide citizens, affected public agencies, representatives of public transportation employees, freight shippers, providers of freight transportation services, private providers of transportation, representatives of users of public transportation, representatives of users of pedestrian walkways and bicycle transportation facilities, representatives of the disabled, and other interested parties with reasonable opportunities to be involved in the metropolitan planning process. This process also includes consultation and coordination, as appropriate, with agencies and official responsible for other planning activities with the metropolitan planning area. In order to facilitate this process, the MPO developed a contact list of interested parties, which were provided notice of the *Bristol Urban Area Long-Range Transportation Plan Year 2040* review process. The contact list of stakeholders is included as an appendix to the MPO's *Public Participation Plan* documentation.

Meeting Announcements. Meeting announcements related to the long-range plan are distributed throughout the community, including press releases. In addition to the press notices, flyers are sent to various locations and organizations including those representing underserved populations as listed below.

- Bristol Virginia Senior Center
- Bristol Tennessee Community Center
- Bristol Tennessee/Virginia Public Library
- Bristol, Tennessee Community Development
- Bristol, Virginia Community Development
- Appalachian Independence Center
- Bristol, Tennessee Housing and Redevelopment Authority
- Bristol, Virginia Housing and Redevelopment Authority
- Local public transportation agencies (Bristol Transit, Abingdon Transit, NET Trans, District Three Transit)

Public Comment Period. A 30-day public review period for the *Bristol Urban Area Long-Range Transportation Plan Year 2040* was published in the *Bristol Herald Courier* on _____. In addition to the above referenced agencies, the public comment notice was distributed to an expanded list of interested parties and organizations, public agencies, and environmental agencies.

The *Bristol Urban Area Long-Range Transportation Plan Year 2040* was made available on the MPO website and at the office of MPO staff (City of Bristol, Tennessee) located at 104 8th Street, Bristol, Tennessee, during normal working hours. Copies of draft plan update were also placed at the following locations for public access, in addition to appearing electronically on the MPO's website:

- Bristol, Virginia Department of Community Development.
- Sullivan County Tennessee Department of Planning and Zoning.
- Town of Abingdon Virginia, Department of Planning
- Washington County Virginia Department of Planning and Zoning.
- Bristol Tennessee/Virginia Public Library.

- Community centers and agencies serving low income and minority areas.

PUBLIC COMMENTS

Transportation Survey: A survey (via surveymonkey) was on-going during the development of the long-range plan update. The survey link was provided to local jurisdictions for webpage postings and media notices published. To date, the following survey results and written comments have been received.

city of bristol News Release

FOR IMMEDIATE RELEASE
Monday, April 4, 2016

CONTACT: Rex Montgomery
Department of Transportation
Phone: 423-989-5591
E-Mail: rmontgomery@bristoltn.org

Urban Area MPO seeking citizen input for new transportation plan

The Bristol Tennessee/Virginia Urban Area Metropolitan Planning Organization (MPO) is asking for citizen input to help set future transportation needs of the community and establish priorities for funding those improvements. "The survey should take no more than three minutes to complete," said Rex Montgomery, Transportation Planning Manager. "This input is vital in recognizing what is important to our community in the area of transportation." To participate in the survey go to www.bristoltn.org click on "Surveys" or go to https://www.surveymonkey.com/r/BRISTOLMPO.

"A major role of our MPO's work is to produce the regional long-range transportation plan which summarizes the multimodal transportation plan that includes highways, transit, bicycle and pedestrian. This plan will reflect needs for the next 25 years," continued Montgomery. The MPO is working on an update that will extend the current plan through 2040.

The MPO is a federally mandated agency responsible for the transportation processes that allows the MPO region to receive federal and state transportation funding. The Bristol Tennessee/Virginia Urban Area MPO is comprised of representatives from local governments and includes the City of Bristol, Tennessee, City of Bristol, Virginia, the Town of Abingdon, Virginia, and Sullivan County, Tennessee and Washington County, Virginia.

For more information on the MPO's work or the survey, please contact Rex Montgomery at 423-989-5591 or email rmontgomery@bristoltn.org.

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Briefly

Bristol Urban Planning seeks public input

Have an idea for improving transportation routes in Bristol? The Bristol Tennessee/Virginia Urban Area Metropolitan Planning Organization wants to know about it.

The organization is seeking public input before establishing future transportation project priorities, and assigning possible funding. So planners have created a survey of questions for residents to answer.

A federally mandated agency, the planning organization is responsible for managing processes that allow the region to receive federal and state funding for transportation projects. The local organization is comprised of representatives from the cities of Bristol, Tennessee, and Bristol, Virginia, the town of Abingdon, Virginia, and the counties of Sullivan County in Tennessee and Washington County in Virginia.

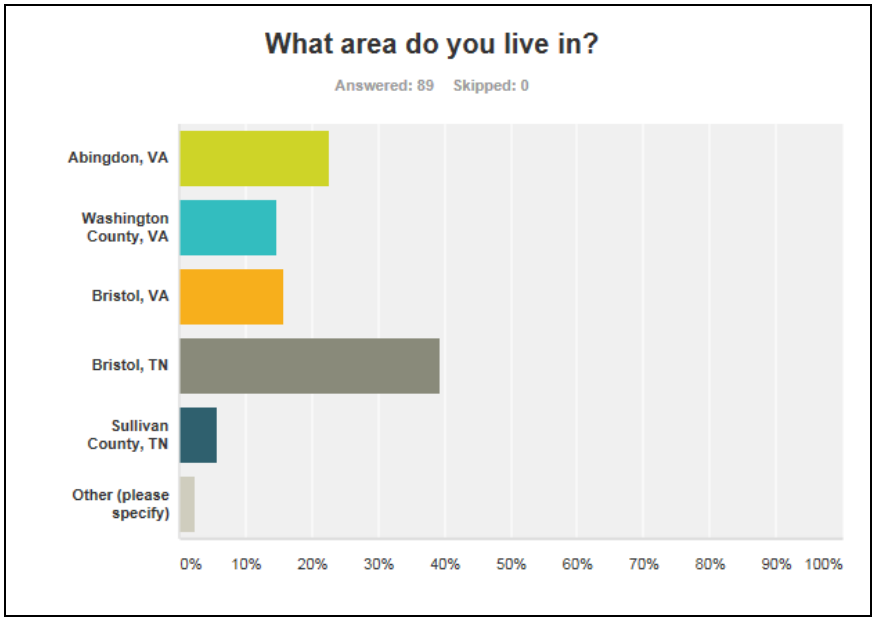
"The survey should take no more than three minutes to complete," Rex Montgomery, transportation planning manager said. "This input is vital in recognizing what is important to our community in the area of transportation."

To participate in the survey go to www.bristoltn.org, click on surveys or go to https://www.surveymonkey.com/r/BRISTOLMPO.

For more information on the organization's work or the survey, contact Rex Montgomery at 423-989-5591 or email rmontgomery@bristoltn.org.

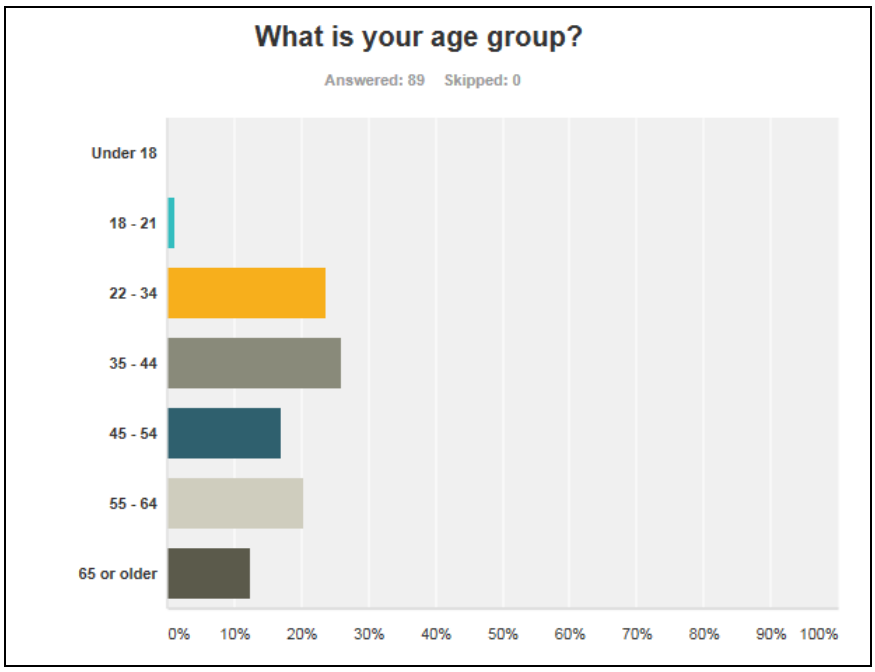
From staff reports

Question 1



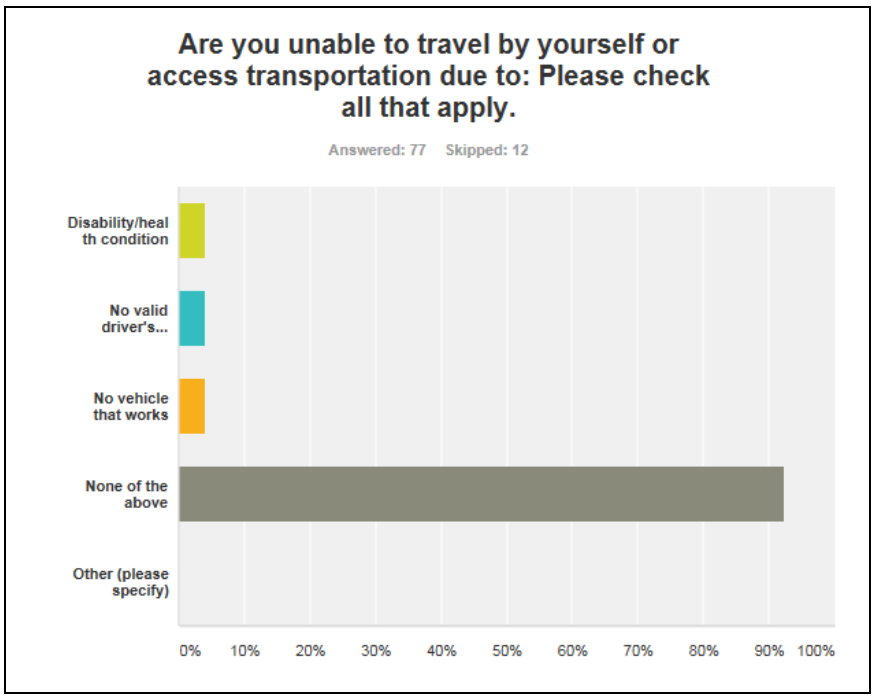
Answer Choices	Responses	
Abingdon, VA	22.47%	20
Washington County, VA	14.61%	13
Bristol, VA	15.73%	14
Bristol, TN	39.33%	35
Sullivan County, TN	5.62%	5
Other (please specify)	2.25%	2
Total		89

Question 2



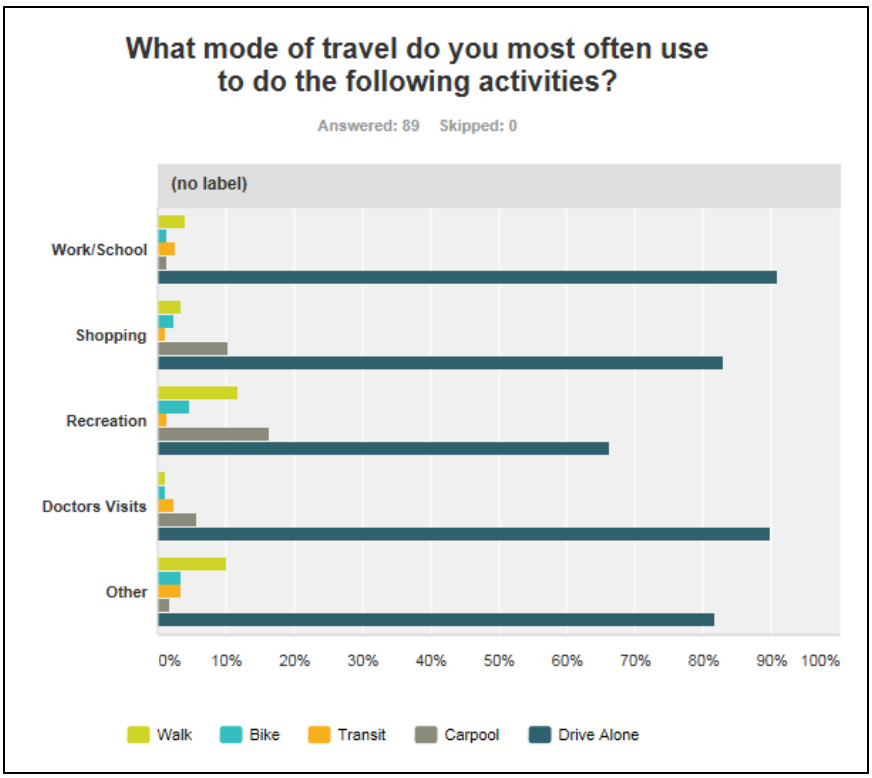
Answer Choices	Responses	
Under 18	**0.00%**	0
18 - 21	**1.12%**	1
22 - 34	**23.60%**	21
35 - 44	**25.84%**	23
45 - 54	**16.85%**	15
55 - 64	**20.22%**	18
65 or older	**12.36%**	11
Total		89

Question 3



Answer Choices	Responses	
Disability/health condition	3.90%	3
No valid driver's license	3.90%	3
No vehicle that works	3.90%	3
None of the above	92.21%	71
Other (please specify)	0.00%	0
Total Respondents: 77		

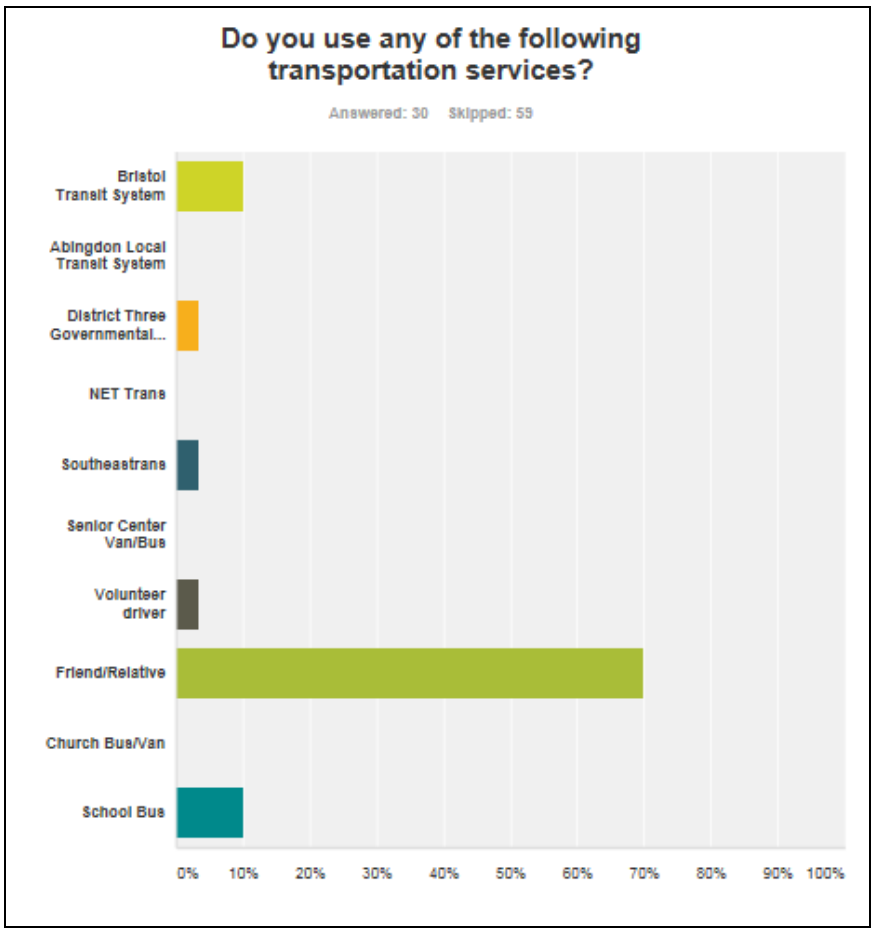
Question 4



(no label)

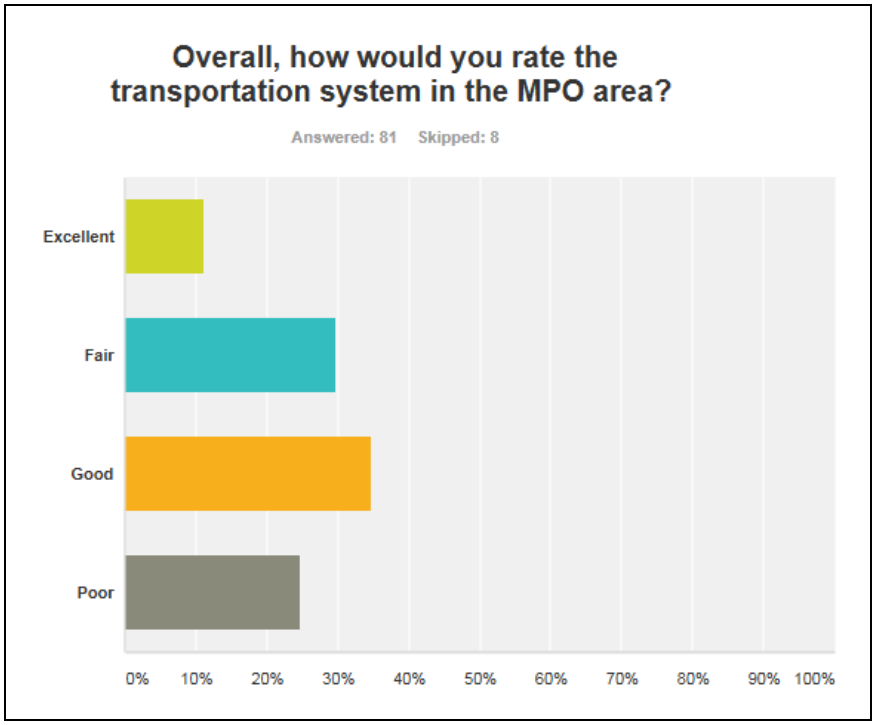
	Walk	Bike	Transit	Carpool	Drive Alone	Total
Work/School	3.90% 3	1.30% 1	2.60% 2	1.30% 1	90.91% 70	77
Shopping	3.41% 3	2.27% 2	1.14% 1	10.23% 9	82.95% 73	88
Recreation	11.63% 10	4.65% 4	1.16% 1	16.28% 14	66.28% 57	86
Doctors Visits	1.14% 1	1.14% 1	2.27% 2	5.68% 5	89.77% 79	88
Other	10.00% 6	3.33% 2	3.33% 2	1.67% 1	81.67% 49	60

Question 5



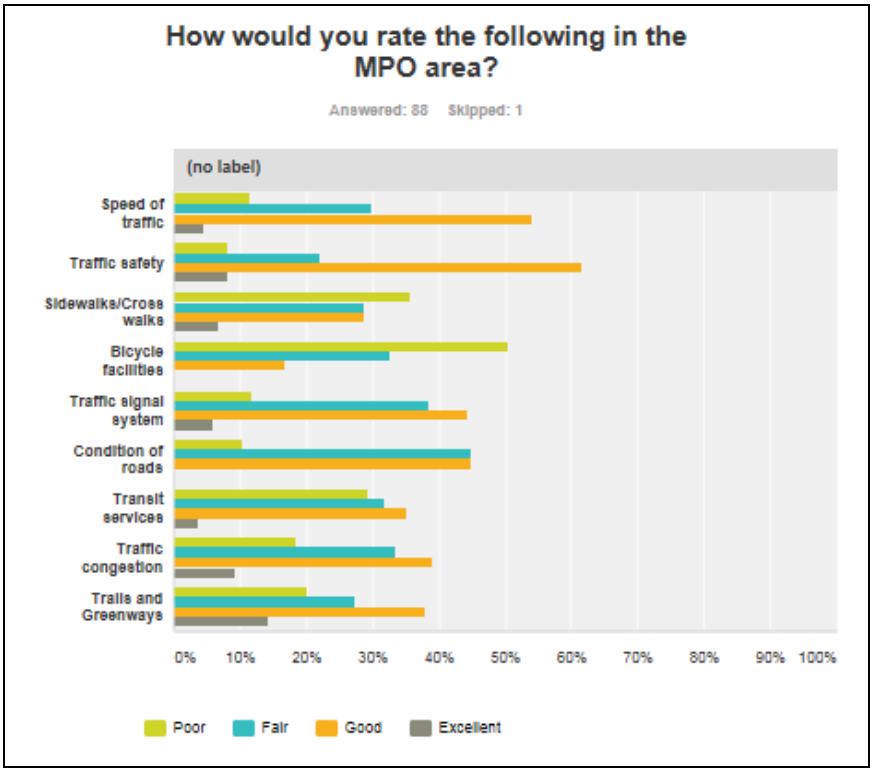
Answer Choices	Responses	
Bristol Transit System	10.00%	3
Abingdon Local Transit System	0.00%	0
District Three Governmental Cooperative Transit	3.33%	1
NET Trans	0.00%	0
Southeastrans	3.33%	1
Senior Center Van/Bus	0.00%	0
Volunteer driver	3.33%	1
Friend/Relative	70.00%	21
Church Bus/Van	0.00%	0
School Bus	10.00%	3
Total		30

Question 6



Answer Choices	Responses	
Excellent	**11.11%**	9
Fair	**29.63%**	24
Good	**34.57%**	28
Poor	**24.69%**	20
Total		81

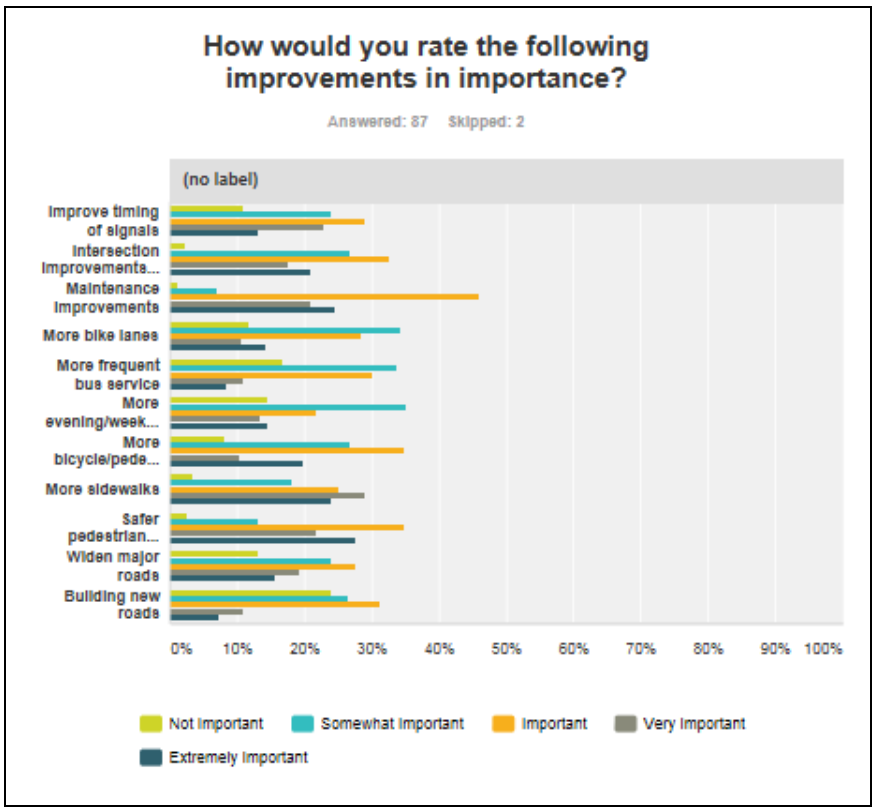
Question 7



(no label)

	Poor	Fair	Good	Excellent	Total
Speed of traffic	11.49% 10	29.89% 26	54.02% 47	4.60% 4	87
Traffic safety	8.14% 7	22.09% 19	61.63% 53	8.14% 7	86
Sidewalks/Crosswalks	35.63% 31	28.74% 25	28.74% 25	6.90% 6	87
Bicycle facilities	50.60% 42	32.53% 27	16.87% 14	0.00% 0	83
Traffic signal system	11.63% 10	38.37% 33	44.19% 38	5.81% 5	86
Condition of roads	10.34% 9	44.83% 39	44.83% 39	0.00% 0	87
Transit services	29.27% 24	31.71% 26	35.37% 29	3.66% 3	82
Traffic congestion	18.39% 16	33.33% 29	39.08% 34	9.20% 8	87
Trails and Greenways	20.24% 17	27.38% 23	38.10% 32	14.29% 12	84

Question 8



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	Not Important	Somewhat Important	Important	Very Important	Extremely Important	Total
Improve timing of signals	10.84% 9	24.10% 20	28.92% 24	22.89% 19	13.25% 11	83
Intersection improvements with pedestrian accommodations	2.33% 2	26.74% 23	32.56% 28	17.44% 15	20.93% 18	86
Maintenance improvements	1.18% 1	7.06% 6	45.88% 39	21.18% 18	24.71% 21	85
More bike lanes	11.90% 10	34.52% 29	28.57% 24	10.71% 9	14.29% 12	84
More frequent bus service	16.87% 14	33.73% 28	30.12% 25	10.84% 9	8.43% 7	83
More evening/weekend bus service	14.63% 12	35.37% 29	21.95% 18	13.41% 11	14.63% 12	82
More bicycle/pedestrian trails	8.14% 7	26.74% 23	34.88% 30	10.47% 9	19.77% 17	86
More sidewalks	3.61% 3	18.07% 15	25.30% 21	28.92% 24	24.10% 20	83
Safer pedestrian crosswalks	2.41% 2	13.25% 11	34.94% 29	21.69% 18	27.71% 23	83
Widen major roads	13.25% 11	24.10% 20	27.71% 23	19.28% 16	15.66% 13	83
Building new roads	24.10% 20	26.51% 22	31.33% 26	10.84% 9	7.23% 6	83

Q9 What are some specific locations with traffic problems that you encounter throughout your day?

#	Responses
1	Exit 14, Exit 17 & Exit 19
2	Speeding and unsafe driving in residential area's including police cruisers making the area unsafe for our children and animals. Specifically the Hunter Hills / Tulip Grove area. Speed limit signs, children at play signs, and most importantly speed humps would greatly improve the safety of the area.
3	Exit 14 area is very congested during rush hours.
4	E. Cedar, Bristol Tn
5	Speeders on Georgia Ave.
6	Traffic on Taylor Street is terrible. People constantly speed at high rates. We have children and pets on the street and it is very dangerous. Police park for maybe 10 minutes at a stretch in the wide open where they can be seen, which does nothing to deter the speeding.
7	Corner 5th and Ash Sts - should be 4 way stop. Not enough traffic for a stop light since Anderson St bridge was built. The only use for the red light might be when the drug manufacturer starts and ends work. (Bristol, TN)
8	Intersection of Old Jonesboro Road and VHCC Drive. Intersection of Main Street and Porterfield Highway.
9	Congestion at Exit 17! It's a bottleneck under the interstate.
10	Interstate and exit ramps
11	Exit 17 and Cummings Street.
12	E-cedar street Virginia ave. intersection
13	State St @ Commonwealth Ave/Volunteer Pky (2) VolunteerPky @ Godsey Rd (3) W. State St @ Euclid Ave/GateCity Hwy (4) Weaver Pike @ Volunterr Pky
14	Elementary School areas should have more side walks
15	Exit 7 is almost always an issue, but I would think that would decrease once all the roadway improvements are completed. There might need to be a traffic light regulated crosswalk at the intersection MLK and Shelby St, where the Salvation Army is located (Bristol TN). The pedestrians who go there don't have a safe way of crossing over in that area and I have witnessed several people in motorized wheelchairs ride on the road as they are heading to the Salvation Army or toward the Dollar General, and other people with baby carriages trying to negotiating the curb median as they try to cross near that location.
16	Exit 19 there is an accident each week and its hard for people that live off empire road to get out and in each day
17	None
18	Speed for these children walking through the Fairmount area and Taylor street. I live on the corner of Spruce and Maryland. They run the stop signs. People walk their dogs all hours of the night. Rightfully so! Maybe when a child is killed they will listen. I don't even allow my children to play in my yard. Because of the drugs on Taylor street. They are high driving throw this part of the neighborhood. My son is deaf. The city officials and the police chief doesn't care. We will move out of this city as soon as we can. We wish we never moved here. We were told what a great place it was to live. Their sign is a lie! We have kids that saturate this sidewalk. They do not care how fast they speed through here. The kids get out of school and run the stop signs. The stop signs are useless. I personally stop them and tell them to slow down when I am outside working. I wanted to purchase our old historic house and fix it up. No longer!!! My children won't grow up in this Motor Speedway neighborhood. I was raised in Bluff City. I'm making a copy of this survey to have when one of our pedestrians or children are ran over by a druggie from Taylor street. Or hit by one of the speeders down Maryland. I hope they sue the hell out of the city because we have all kept record of how we have complained and complained and NO ONE CARES!!!!!
19	Exit 17 at Cummings Street is really rough at 5:00pm. Pedestrian crossings at Cummings and Main are frightening.

20	Speeding in the Fairmount District
21	In my neighborhood corner of Kentucky and Cypress, really all crossings around the Fairmount School
22	Exit 7 & Exit 5 and all traffic signal in the MPO area. Poor timings and no coordination.
23	Exit 19 area near interstate on and off ramps; Exit 17 entire area surrounding the interstate exchange
24	Exit 5 and 7 congestion.. Also, Taylor street laden with parked trucks/cars..with nowhere else to park.
25	Exit 17 I-81 at Cummings Street in Abingdon is a massive congestion and needs improving for traffic safety and flow. East Main Street Abingdon, VA needs improving to connect the two five lane road widths between Hillman Highway and Exit 19 I-81. With the recent development in this area traffic is only going to continue to grow.
26	Taylor Street is a disgrace to this community on the National Register of Historical places! I have lived here 27 years and it has been patched so many times it looks like a getto. Traffic has increased 100 times since reworking of intersection on Pennsylvania and Taylor. Large trucks, cars, everything comes through our neighborhood now. Concrete trucks too. It is a shame Bristol does not keep up these streets. It should be called patchwork city. It is so ugly, they wasted ugly on our streets. I am so upset with the city for this and also traffic zones designed to catch people speeding. 25 mph was great in horse and buggy days. Come on Bristol! This has almost forced me to move out of this city! It is ugly because of our streets!
27	RR crossings both at State Street & Cedar Street all neighborhood "stop signs", kids on bikes rarely acknowledge them. AND Speed limits in neighborhoods are ignored making for dangerous situations. A ALSO parking on the street too close to an intersection blocking clear site line to on coming traffic--specifically spruce st & florida & Kentucky at Ash st
28	There are some people who travel down Taylor St way too fast.
29	I walk a lot in my own neighborhood and with better/safer sidewalks would enjoy walking even more. I think cars running or rolling through stop signs is a big issue and needs to be addressed with enforcement.
30	Exits 73, 7, 14, 17, and 19. Euclid and Commonwealth, all of Volunteer Pkwy.
31	volunteer parkway state street weaver pike I-81
32	Exit 19 and Exit 17 areas. East Main street area
33	Crossing Volunteer PKWY/ Commonwealth AVE and State Street No sidewalks or bike lanes between King College and Old Jonesboro frequently used by walkers and bikers
34	Exit 17 red light needs to be fixed. The timing usually holds north bound exits for too long and late at night it's very difficult to get them to change. Main Street and Empire drive at exit 19 need adjustments or a light especially with Walmart bringing in more traffic.
35	Congestion in the following areas: Exit 19 South bound exit ramp and East Main Street. 7:20am-9:00am & 2pm-7pm. Exit 17 Northbound exit ramp. 3pm-7pm. East Main Street in Abingdon 4-7pm evenings. Tractor Trailers using Exit 17 south bound ramp and traveling thru town to access Porterfield Highway causing traffic delays due to narrow turns. Delays on Hillman Highway and Route 80 due to narrow roads and no lanes for bike riders during the warmer months due to popularity of the road. West Main Street and Colonial road intersection and West Main Street and Porterfield Highway intersection.
36	Abingdon: Exit 17, Cummings Street.
37	Cummings and Main Street and exit 17. Exit 19 and where the new Walmart is planned and Lowes exists already.
38	11W at the intersection of 394 (Blountville). Elem. school is located on the hill away from the main road. Traffic has been reduced to 25mph when lights are flashing or 45 otherwise. The slowing of traffic is extremely hazardous and will cause more accidents as this is a 4 lane highway. The 25mph is ridiculous and not needed. This is a speed trap and police monitor this area heavily. There is no obvious reason for the speed limit to be 25mph on this hwy. other than to generate revenue.
39	Cummings Street, Old Jonesboro Road, AHS
40	Exit 17, I81 area.

41	When walking unable to safely cross Cummings St even at crosswalks
42	Cummings Street/Exit 17 area of Abingdon. I-81 needs to be widened to three lanes.
43	Pennsylvania Ave - Bristol, TN Road surface conditions in Fairmount neighborhood - Bristol, TN Continue sidewalk improvements in Fairmount neighborhood - Bristol, TN Road conditions/traffic patterns/congestion around Exit 5 and Exit 7 - Bristol, VA
44	Commonwealth & Volunteer are always congested.
45	Turning left at major intersections without a left-turn arrow shouldn't be allowed. Specifically, the intersection at Virginia Avenue and Cedar Street gets backed up from cars waiting for oncoming traffic to clear for them to turn left.
46	All interstate exits because the state has failed to widen the overpasses at exits 14, 17 and 19 and to complete the cloverleafs and to correct major safety issues
47	King College and Old Jonesborough
48	The speed on volunteer parkway should be raised to 45mph instead of 35mph. This cause traffic congestion and it's a 4 lanes highway.
49	Bristol TN/VA has done a decent job in street traffic control other than interchanges Bonham Road to 5 Exit 7 / Lee Hwy (under construction). City of Bristol, TN for safety issue needs to eliminate left hand turn off south bound Hi-way 11W across median and onto Island Road. Allow Island Road traffic to U-Turn on signal at Pinnacle 11-W traffic light.
50	Cummings St.; Main St.; Valley St. and each of the three major exits into Abingdon (exits 14, 17 & 19).
51	Lee Highway Bristol, VA
52	Lee Hwy and Valley Drive intersection signal should stay green longer on Lee Hwy in the morning.
53	We need better/safer pedestrian crosswalk facilities.
54	King College Road needs pedestrian and bicycle trails.
55	VOLUNTEER PARKWAY,PENN AVE. EAST CEDAR STREET,
56	No direct route from Pinnacle to Downtown Bristol to BMS
57	Places where sidewalks stop and none pick up like near east hill cemetery and King University
58	The train blocking State Street!!
59	No clearly identified bicycle lanes anywhere in the city despite a high frequency of fatalities and accidents. Travel across Southeast and Northeast section of Bristol takes to long because there is no main road to provide travel.

Q9 Please use the space below for additional comments regarding transportation improvement needs in the MPO area.

#	Responses
1	Completion of Widening Interstate 81 and State Route 11 to Exit 10.
2	See above
3	After 10 stop lights on secondary roads should blink yellow due to decreased traffic.
4	Traffic lights should revert to blinking lights after 10 or 11 PM.
5	It would be very helpful if cameras were installed in the stoplights. At least one vehicle runs a red light during my morning and afternoon commutes. This is especially truck for tractor trailers and work vehicles. Most of the vehicles that end up running the red lights have more than enough time to stop, which blatantly endagers the safety of other drivers on the road. Having cameras in the stoplights would prevent accidents, which in turn would prevent serious injuries and property damage.
6	Won't do any good as this town is Almost a """"Communistic State"""""
7	need bus to come down East State Street to King College road
8	Don't worry about transportation. Except for the elderly. Hell! Worry about slowing down the damn ones you have in this area that are going to kill the pedestrians in the Fairmount area. You know how many kids walk on these nasty Fairmount sidewalks? They are so narrow, they can't get away from a car of it looses control. I just hope all our neighbors do what they say they will do and band together when we loose a pedestrian or a child because the city officials and police didn't listen.
9	While I would be thrilled to see more public transit in our area, I understand that it's hard to justify with such a spread out population. For me, improving safety and accessibility for pedestrians is an easy first step. I live off of Baugh Lane, and our neighborhood is totally isolated from downtown for pedestrians, because there are no sidewalks and it's a dangerous road. I see people all the time walking to CVS and the shopping center, with small children sometimes, and I am terrified for them. I would certainly walk more places if I felt safe to do so.
10	In working with people who DO NOT have their own transporation it is a REAL ISSUE for people looking for jobs but can only work around when the bus can take them. The times need to be extended.
11	More trails connecting different parts of the town would be wonderful. Exit 17 has a terrible time with traffic as is and if/when Food City makes their upgrades that area will be even worse than it was before.
12	Almost all of the old residential areas need sidewalks replaced, or created in some cases. (some walks just stop with a corner or empty lot, then continue farther on.. The streets may have never had a complete sidewalk in past 50 or 100 years!
13	I would love a safer path to allow my son and I access to the bike path at Steele creek without having to worry about the traffic on Martin Luther King and Anderson St. We are coming from Taylor St.
14	Please increase the connection of bike pathways and pedestrian pathways connecting the great historic neighborhoods and between our cities. A nice path that combined walking/hiking and biking from Abingdon to Bristol would be a great tourist attraction (something from Steele Creek Park through downtown Bristol and up to the Creeper trail in abingdon) sidewalk repair and improvement everywhere would also be really nice and encourage people to walk where they can
15	Needs to run more routes more often. Look at other cities schedules for example. I basically can't use public transportation for this very reason. A Dr's appointment should not entail a days time using public transportation. Nor should grocery shopping.
16	why isn't passenger rail service from Bristol via AMTRAK on your improvement list? I would rate that extremely important.
17	Sidewalks should be required for all commercial and residential development.
18	i would not spend extra money on side walks as people do not use the ones we have.

19	More sidewalk access in Abingdon. Better maintenance of Route 80 with a wider road and bike lane. Better signs for restricting exits and roads for large trucks.
20	17 and Abingdon should be given a top priority.
21	Jonesboro road in Abingdon beyond the Westwood subdivision goes from 35 to 40mph in less than a 1/2 mile. This is a speed trap as police sit on side roads to catch speeders. Their time could be utilized for more important issues. The speed limit should be 40mph.
22	Please repave the roads instead of filling in the holes left from winter/salt damage.
23	Timing of traffic lights seems off. Would love to see some improvements and the addition of a trail system from State Street out to the Falls & Pinnacle areas.
24	Sidewalks downtown are adequate and nicely kept. I would like to see more sidewalks in neighborhoods for families to walk their children to school or in the evening. A bike lane around Steele's Creek would be nice.
25	After interstate exit improvements, highway 11 from Abingdon to Bristol is in very poor condition...as are many roads in Washington County.
26	Bike/walk paths are only along the north/west part of town with nothing south of Windsor Ave.
27	State Street has too many traffic lights (acting as "stop" lights) for efficient flow. As a Civil Eng. PE I highly recommend eliminating lights at 13th St., Carson Lane and possibly others.
28	Would like to see greater improvement to existing infrastructure and multi-modal investments before new roads are built.
29	We generally have adequate roads for traffic loads that are for the most part reasonably maintained, but we lack public transportation, sidewalks in some areas and bike lanes which may be more beneficial in the future.
30	Transit buses and other behicles used for passenger tranportation should be replaced at least every four years of use. Older Transit vehicles require a rigid maintenance schedule, not just something on paper to satisfy the.the FTA.
31	More bicycle and pedestrian compatible areas in all parts of the city, but primarily in the Eastern portion.
32	I am a full time student at King with no vehicle. By the time I catch the bus in the morning to attend classes and catch it again to come home in the evening, I'm left to walk or bike during the weekends to do my shopping. I think one or two rounds during a Saturday afternoon would be beneficial for those folks not able to do it during the weekday...on a side note...Gene as well as Bradey are pure professionals and I enjoy their company when I am riding the bus. Thanks to you two specifically....
33	Neighborhood sidewalks and lighting on the trail at Steele Creek Park and Roosterfront Park. Not safe at dawn or dusk.
34	Speed limits are too low on main arterial roads.

Public Meetings. On-going.

Tennessee Roadway Projects by Funding Source

MPO Project #	Jurisdiction	Project	Cost	NHPP	STBG	HSIP	STATE	STBG-L	LOCAL	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	2,199,044	2,183,117	6,689,511	1,616,101	7,176,996	1,937,091	21,801,860
T1-2	Bristol TN	East Cedar St.	$ 6,650,000	-	-	-	-	5,320,000	1,330,000	6,650,000
			Total Costs	-	-	-	-	5,320,000	1,330,000	6,650,000
			Balance (Carryover)	2,199,044	2,183,117	6,689,511	1,616,101	1,856,996	607,091	15,151,860
Horizon Year 2021-2030			**New Revenue**	5,504,626	5,464,757	16,745,120	4,045,408	7,179,138	4,848,908	43,787,957
			Total Funds Available	7,703,670	7,647,874	23,434,631	5,661,509	9,036,134	5,455,999	58,939,817
T2-1	Bristol TN	Volunteer Parkway	$ 4,488,000	-	-	-	-	3,584,000	904,000	4,488,000
T2-2	Bristol TN	North-South Connecter Route (Medical Park Blvd. Extension)	$ 17,302,000	5,000,000	5,000,000	-	3,302,000	2,000,000	2,000,000	17,302,000
T2-3	Sullivan Co. TN	North-South Connecter Route (Carden Hollow Rd.)	$ 24,707,000	-	1,907,000	15,000,000	2,300,000	3,000,000	2,500,000	24,707,000
			Total Costs	5,000,000	6,907,000	15,000,000	5,602,000	8,584,000	5,404,000	46,497,000
			Balance (Carryover)	2,703,670	740,874	8,434,631	59,509	452,134	51,999	12,442,817
Horizon Year 2031-2040			**New Revenue**	7,397,757	7,344,176	22,504,042	5,436,691	9,648,161	6,516,527	58,847,354
			Total Funds Available	10,101,427	8,085,050	30,938,673	5,496,200	10,100,295	6,568,526	71,290,171
T3-1	Bristol TN Sullivan Co. TN	North-South Connecter Route (SR 126)	$ 58,645,000	9,559,950	8,085,050	25,000,000	5,000,000	8,000,000	3,000,000	58,645,000
T3-2	Bristol TN	North-South Connecter Route (Exide Dr.)	$ 5,872,000			2,672,000	-	2,000,000	1,200,000	5,872,000
			Total Costs	9,559,950	8,085,050	27,672,000	5,000,000	10,000,000	4,200,000	64,517,000
			Balance	541,477	-	3,266,673	496,200	100,295	2,368,526	6,773,171
Horizon Year 2016-2040			**Total Revenue**	15,101,427	14,992,050	45,938,673	11,098,200	24,004,295	13,302,526	124,437,171
			Total Costs	14,559,950	14,992,050	42,672,000	10,602,000	23,904,000	10,934,000	117,664,000
			Balance	541,477	-	3,266,673	496,200	100,295	2,368,526	6,773,171

Virginia Roadway Projects by Funding Source

MPO Project #	Jurisdiction	Project	Costs	NHPP	STBG	HSIP	STATE	LOCAL	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	2,027,055	15,489,069	1,834,349	3,064,752	571,613	22,986,838
V1-1	Abingdon VA	Main St.	$ 5,152,000	-	3,552,000	1,500,000	-	100,000	5,152,000
V1-2	Bristol VA	Lee Highway Exit 5	$ 5,850,000	2,000,000	3,000,000	-	850,000	-	5,850,000
V1-3	Bristol VA	Lee Hwy Signal Interconnect	$ 3,225,000	-	3,160,500	-	-	64,500	3,225,000
			Total Costs	2,000,000	9,712,500	1,500,000	850,000	164,500	14,227,000
			Balance (Carryover)	27,055	5,776,569	334,349	2,214,752	407,113	8,759,838
Horizon Year 2021-2030			**New Revenue**	9,672,945	38,772,090	4,591,725	7,671,657	1,430,857	62,139,274
			Total Funds Available	9,700,000	44,548,659	4,926,074	9,886,409	1,837,970	70,899,112
V2-1	Bristol VA	Lee Highway	$ 9,987,500	-	7,990,000	-	1,797,500	200,000	9,987,500
V2-2	Washington Co. VA	Providence Rd.	$ 14,241,000	-	12,000,000	-	2,241,000	-	14,241,000
V2-3	Abingdon VA Washington Co. VA	Interstate 81 Exit 19	$ 9,736,000	2,500,000	5,286,000	-	1,950,000	-	9,736,000
V2-4	Abingdon VA Washington Co. VA	Interstate 81 Exit 17	$ 21,000,000	7,200,000	9,000,000	3,000,000	1,800,000	-	21,000,000
V2-5	Abingdon VA	East Main St.	$ 13,858,455	-	10,000,000	1,700,000	1,858,455	300,000	13,858,455
			Total Costs	9,700,000	44,276,000	4,700,000	9,646,955	500,000	68,822,955
			Balance (Carryover)	-	272,659	226,074	239,454	1,337,970	2,076,157
Horizon Year 2031-2040			**New Revenue**	2,220,330	52,106,447	6,170,894	10,310,066	1,922,952	72,730,689
			Total Funds Available	$ 2,220,330	$52,379,106	$ 6,396,968	$10,549,520	$ 3,260,922	$ 74,806,846
V3-1	Abingdon VA	Cook St./Lowry Dr.	$ 16,802,000	-	13,442,000	610,000	2,500,000	250,000	16,802,000
V3-2	Abingdon VA	Dr. French Moore Jr. Blvd.	$ 4,575,000	-	3,660,000		815,000	100,000	4,575,000
V3-3	Bristol VA	Lee Highway	$ 31,872,000	-	20,372,000	3,500,000	6,000,000	2,000,000	31,872,000
V3-4	Abingdon VA	Wyndale Rd.	$ 15,081,000	-	12,065,000	2,000,000	1,016,000		15,081,000
			Total Costs	-	49,539,000	6,110,000	10,331,000	2,350,000	68,330,000
			Balance	2,220,330	2,840,106	286,968	218,520	910,922	6,476,846
Horizon Year 2016-2040			**Total Revenue**	13,920,330	106,367,606	12,596,968	21,046,475	3,925,422	157,856,801
			Total Costs	11,700,000	103,527,500	12,310,000	20,827,955	3,014,500	151,379,955
			Balance	2,220,330	2,840,106	286,968	218,520	910,922	6,476,846

Bristol Tennessee Transit Projects by Funding Source

MPO Project #	Jurisdiction	Project	Cost	FTA 5307	FTA 5339	STATE	LOCAL	FARES	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	2,051,788	358,898	1,559,251	946,704	153,710	5,070,351
BTT-1	Bristol TN	Operating	$ 3,362,263	1,604,277	-	802,138	802,138	153,710	3,362,263
BTT-2	Bristol TN	Vehicles	$ 769,371	447,511	167,986	76,937	76,937	-	769,371
BTT-3	Bristol TN	Other Capital	$ 26,000	-	20,800	2,600	2,600	-	26,000
			Total Costs	2,051,788	188,786	881,675	881,675	153,710	4,157,634
			Balance (Carryover)	-	170,112	677,576	65,029	-	912,717
Horizon Year 2021-2030			**New Revenue**	4,657,267	898,389	3,903,102	2,369,780	384,766	12,213,304
			Total Funds Available	4,657,267	1,068,501	4,580,678	2,434,809	384,766	13,126,021
BTT-1	Bristol TN	Operating	$ 8,416,390	4,015,812	-	2,007,906	2,007,906	384,766	8,416,390
BTT-2	Bristol TN	Vehicles	$ 1,263,817	641,455	369,598	126,382	126,382	-	1,263,817
BTT-3	Bristol TN	Other Capital	$ 65,696	-	52,556	6,570	6,570	-	65,696
			Total Costs	4,657,267	422,154	2,140,858	2,140,858	384,766	9,745,903
			Balance (Carryover)	-	646,347	2,439,820	293,951	-	3,380,118
Horizon Year 2031-2040			**New Revenue**	6,258,978	1,207,360	5,245,442	3,184,786	517,093	16,413,659
			Total Funds Available	6,258,978	1,853,707	7,685,262	3,478,737	517,093	19,793,777
BTT-1	Bristol TN	Operating	$ 11,310,925	5,396,916	-	2,698,458	2,698,458	517,093	11,310,925
BTT-2	Bristol TN	Vehicles	$ 1,759,498	275,094	1,132,504	175,950	175,950	-	1,759,498
BTT-3	Bristol TN	Other Capital	$ 93,569	-	74,855	9,357	9,357	-	93,569
			Total Costs	5,672,010	1,207,359	2,883,765	2,883,765	517,093	13,163,992
			Balance (Carryover)	586,968	646,348	4,801,497	594,972	-	6,629,785
Horizon Year 2016-2040			**Total Revenue**	12,968,033	2,464,647	10,707,795	6,501,270	1,055,569	33,697,314
			Total Costs	12,381,065	1,818,299	5,906,298	5,906,298	1,055,569	27,067,529
			Balance	586,968	646,348	4,801,497	594,972	-	6,629,785

NET Trans Projects by Funding Source (District-wide)

MPO Project #	Jurisdiction	Project	Cost	FTA 5311	FTA 5310	FTA 5339	STATE	LOCAL	FARES	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	10,256,511	430,769	4,127,605	5,980,220	5,980,220	1,306,573	28,081,898
NET-1	District-wide TN	Operating	$ 21,819,600	10,256,511	-	-	5,128,258	5,128,258	1,306,573	21,819,600
NET-2	District-wide TN	Vehicles	$ 3,836,920	-	430,769	2,638,767	383,692	383,692	-	3,836,920
NET-3	District-wide TN	Other Capital	$ 406,563	-	-	325,251	40,656	40,656	-	406,563
			Total Costs	10,256,511	430,769	2,964,018	5,552,606	5,552,606	1,306,573	26,063,083
			Balance (Carryover)	-	-	1,163,587	427,614	427,614	-	2,018,815
Horizon Year 2021-2030			**New Revenue**	25,674,001	1,078,296	10,332,181	14,969,630	14,969,630	3,270,600	70,294,338
			Total Funds Available	25,674,001	1,078,296	11,495,768	15,397,244	15,397,244	3,270,600	72,313,153
NET-1	District-wide TN	Operating	$ 54,618,615	25,674,001	-		12,837,007	12,837,007	3,270,600	54,618,615
NET-2	District-wide TN	Vehicles	$ 10,043,994	-	1,078,296	6,956,900	1,004,399	1,004,399	-	10,043,994
NET-3	District-wide TN	Other Capital	$ 1,064,271	-	-	851,418	106,427	106,426	-	1,064,271
			Total Costs	25,674,001	1,078,296	7,808,318	13,947,833	13,947,832	3,270,600	65,726,880
			Balance (Carryover)	-	-	3,687,450	1,449,411	1,449,412	-	6,586,273
Horizon Year 2031-2040			**New Revenue**	34,503,711	1,449,139	13,885,588	20,117,932	20,117,932	4,395,413	94,469,715
			Total Funds Available	34,503,711	1,449,139	17,573,038	21,567,343	21,567,344	4,395,413	101,055,988
NET-1	District-wide TN	Operating	$ 73,402,854	34,503,711	-	-	17,251,865	17,251,865	4,395,413	73,402,854
NET-2	District-wide TN	Vehicles	$ 14,305,532	-	1,449,139	9,995,287	1,430,553	1,430,553	-	14,305,532
NET-3	District-wide TN	Other Capital	$ 1,515,828	-	-	1,212,662	151,583	151,583	-	1,515,828
			Total Costs	34,503,711	1,449,139	11,207,949	18,834,001	18,834,001	4,395,413	89,224,214
			Balance (Carryover)	-	-		2,733,342	2,733,343	-	11,831,774
Horizon Year 2016-2040			**Total Revenue**	70,434,223	2,958,204	28,345,374	41,067,782	41,067,782	8,972,586	192,845,951
			Total Costs	70,434,223	2,958,204	21,980,285	38,334,440	38,334,439	8,972,586	181,014,177
			Balance	-	-	6,365,089	2,733,342	2,733,343	-	11,831,774

Bristol Virginia Transit Projects by Funding Source

MPO Project #	Jurisdiction	Project	Cost	FTA 5307	STBG FLEX	STATE	LOCAL	FARES	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	1,193,494	280,322	541,532	1,094,743	202,942	3,313,033
BVT-1	Bristol VA	Operating	$ 2,962,631	1,193,494	-	493,750	1,072,445	202,942	2,962,631
BVT-2	Bristol VA	Vehicles	$ 270,323	-	216,258	40,548	13,517	-	270,323
BVT-3	Bristol VA	Other Capital	$ 27,798		22,238	4,170	1,390	-	27,798
			Total Costs	1,193,494	238,496	538,468	1,087,352	202,942	3,260,752
			Balance (Carryover)	-	41,826	3,064	7,391	-	52,281
Horizon Year 2021-2030			**New Revenue**	2,987,542	701,700	1,355,557	2,740,352	508,002	8,293,153
			Total Funds Available	2,987,542	743,526	1,358,621	2,747,743	508,002	8,345,434
BVT-1	Bristol VA	Operating	$ 7,416,028	2,987,542	-	1,235,949	2,684,535	508,002	7,416,028
BVT-2	Bristol VA	Vehicles	$ 790,076	-	632,061	112,331	45,684	-	790,076
BVT-3	Bristol VA	Other Capital	$ 72,768	-	58,214	7,277	7,277	-	72,768
			Total Costs	2,987,542	690,275	1,355,557	2,737,496	508,002	8,278,872
			Balance (Carryover)	-	53,251	3,064	10,247	-	66,562
Horizon Year 2031-2040			**New Revenue**	4,015,007	943,027	1,821,756	3,729,833	682,712	11,192,335
			Total Funds Available	4,015,007	996,278	1,824,820	3,740,080	682,712	11,258,897
BVT-1	Bristol VA	Operating	$ 9,966,523	4,015,007	-	1,661,013	3,607,791	682,712	9,966,523
BVT-2	Bristol VA	Vehicles	$ 1,132,416	-	905,933	113,242	113,241	-	1,132,416
BVT-3	Bristol VA	Other Capital	$ 103,643	-	37,094	47,501	19,048	-	103,643
			Total Costs	4,015,007	943,027	1,821,756	3,740,080	682,712	11,202,582
			Balance (Carryover)	-	53,251	3,064	-	-	56,315
Horizon Year 2016-2040			**Total Revenue**	8,196,043	1,925,049	3,718,845	7,564,928	1,393,656	22,798,521
			Total Costs	8,196,043	1,871,798	3,715,781	7,564,928	1,393,656	22,742,206
			Balance	-	53,251	3,064	-	-	56,315

District Three Public Transit Projects by Funding Source (District-wide)

MPO Project #	Jurisdiction	Project	Cost	FTA 5311	STBG FLEX	STATE	LOCAL	FARES	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	7,805,620	58,184	2,437,191	3,589,873	716,362	14,607,230
D3-1	District-wide VA	Operating	$ 10,807,992	4,881,688	-	1,852,407	3,357,535	716,362	10,807,992
D3-2	District-wide VA	Vehicles	$ 2,598,901	2,079,121	58,184	389,835	71,761	-	2,598,901
D3-3	District-wide VA	Other Capital	$ 195,500	156,400	-	29,325	9,775	-	195,500
			Total Costs	7,117,209	58,184	2,271,567	3,439,071	716,362	13,602,393
			Balance (Carryover)	688,411	-	165,624	150,802	-	1,004,837
Horizon Year 2021-2030			**New Revenue**	19,538,953	145,645	6,100,756	8,986,137	1,793,190	36,564,681
			Total Funds Available	20,227,364	145,645	6,266,380	9,136,939	1,793,190	37,569,518
D3-1	District-wide VA	Operating	$ 27,054,462	12,219,794	-	4,636,929	8,404,549	1,793,190	27,054,462
D3-2	District-wide VA	Vehicles	$ 6,790,768	5,286,969	145,645	1,018,614	339,540	-	6,790,768
D3-3	District-wide VA	Other Capital	$ 511,765	409,412	-	76,764	25,589	-	511,765
			Total Costs	17,916,175	145,645	5,732,307	8,769,678	1,793,190	34,356,995
			Balance (Carryover)	2,311,189	-	534,073	367,261	-	3,212,523
Horizon Year 2031-2040			**New Revenue**	26,258,720	195,735	8,198,904	12,076,615	2,409,897	49,139,871
			Total Funds Available	28,569,909	195,735	8,732,977	12,443,876	2,409,897	52,352,394
D3-1	District-wide VA	Operating	$ 36,358,934	16,422,382	-	6,231,644	11,295,011	2,409,897	36,358,934
D3-2	District-wide VA	Vehicles	$ 7,828,481	6,067,050	195,735	1,174,272	391,424	-	7,828,481
D3-3	District-wide VA	Other Capital	$ 728,890	583,112	-	109,333	36,445	-	728,890
			Total Costs	23,072,544	195,735	7,515,249	11,722,880	2,409,897	44,916,305
			Balance (Carryover)	5,497,365	-	1,217,728	720,996	-	7,436,089
Horizon Year 2016-2040			**Total Revenue**	53,603,293	399,564	16,736,851	24,652,625	4,919,449	100,311,782
			Total Costs	48,105,928	399,564	15,519,123	23,931,629	4,919,449	92,875,693
			Balance	5,497,365	-	1,217,728	720,996	-	7,436,089

Tennessee Non-Highway/Transportation Alternative Projects by Funding Source

MPO Project #	Jurisdiction	Project	Cost	TAP	LOCAL	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	1,216,854	304,214	1,521,068
N/A	Bristol/Sullivan Co. TN	Active Transportation Projects	$ 1,521,068	1,216,854	304,214	1,521,068
			Total Costs	1,216,854	304,214	1,521,068
			Balance (Carryover)	-	-	-
Horizon Year 2021-2030			**New Revenue**	3,046,017	761,504	3,807,521
			Total Funds Available	3,046,017	761,504	3,807,521
N/A	Bristol/Sullivan Co. TN	Active Transportation Projects	$ 3,807,521	3,046,017	761,504	3,807,521
			Total Costs	3,046,017	761,504	3,807,521
			Balance (Carryover)	-	-	-
Horizon Year 2031-2040			**New Revenue**	4,093,592	1,023,398	5,116,990
			Total Funds Available	4,093,592	1,023,398	5,116,990
N/A	Bristol/Sullivan Co. TN	Active Transportation Projects	$ 5,116,990	4,093,592	1,023,398	5,116,990
			Total Costs	4,093,592	1,023,398	5,116,990
			Balance (Carryover)	-	-	-
Horizon Year 2016-2040			**Total Revenue**	8,356,463	2,089,116	10,445,579
			Total Costs	8,356,463	2,089,116	10,445,579
			Balance	-	-	-

Virginia Non-Highway/Transportation Alternative Projects by Funding Source

MPO Project #	Jurisdiction	Project	Cost	TAP	LOCAL	TOTAL
Horizon Year 2016-2020			**Total Funds Available**	1,373,049	343,262	1,716,311
N/A	Bristol/Washington Co. TN	Active Transportation Projects	$ 1,716,311	1,373,049	343,262	1,716,311
			Total Costs	1,373,049	343,262	1,716,311
			Balance (Carryover)	-	-	-
Horizon Year 2021-2030			**New Revenue**	3,437,002	859,250	4,296,252
			Total Funds Available	3,437,002	859,250	4,296,252
N/A	Bristol/Washington Co. TN	Active Transportation Projects	$ 4,296,252	3,437,002	859,250	4,296,252
			Total Costs	3,437,002	859,250	4,296,252
			Balance (Carryover)	-	-	-
Horizon Year 2031-2040			**New Revenue**	4,619,044	1,154,761	5,773,805
			Total Funds Available	4,619,044	1,154,761	5,773,805
N/A	Bristol/Washington Co. TN	Active Transportation Projects	$ 5,773,805	4,619,044	1,154,761	5,773,805
			Total Costs	4,619,044	1,154,761	5,773,805
			Balance (Carryover)	-	-	-
Horizon Year 2016-2040			**Total Revenue**	9,429,095	2,357,273	11,786,368
			Total Costs	9,429,095	2,357,273	11,786,368
			Balance	-	-	-

FEDERAL AND STATE PRIMARY ROUTES IN THE BRISTOL STUDY AREA: December 31, 2015

ROUTE	ENTERS STUDY AREA, WEST OR SOUTH	ENTERS STUDY AREA, EAST OR NORTH	NEAREST SERVED COMMMUNITY OUTSIDE STUDY AREA, WEST OR SOUTH	NEAREST SERVED COMMMUNITY OUTSIDE STUDY AREA, EAST OR NORTH	ULTIMATE ROUTE END, WEST OR SOUTH	ULTIMATE ROUTE END, EAST OR NORTH
I-81	cordon line west	cordon line east	Kingsport, Tennessee	Meadowview, Virginia	I-40 in Jefferson County, Tennessee	Canadian border near Lake Ontario, New York
I-381	contained entirely within the Bristol study area		Bristol, Virginia (end of route)	Bristol, Virginia (end of route)	Church St/Keys St in Bristol, Virginia	I-81 at Exit 3 in Bristol, Virginia
US 11	does not reach cordon line west	cordon line east (Lee Highway)	Bristol, Virginia (end of route)	Meadowview, Virginia	Commonwealth Ave and Euclid Ave in Bristol, Virginia	Lake Champlain, New York
Truck US 11	contained entirely within the Bristol study area		Bristol, Virginia (end of route)	Bristol, Virginia (end of route)	Commonwealth Ave and Goode St in Bristol, Virginia	Euclid Ave and Lee Hwy/ Moore St in Bristol, Virginia
US 11E	cordon line south (Highway 11E)	does not reach cordon line	Bluff City, Tennessee	Bristol, Virginia (end of route)	Knoxville, Tennessee	Commonwealth Ave and Euclid Ave in Bristol, Virginia
US 11W	cordon line west (Highway 11W)	does not reach cordon line	Kingsport, Tennessee	Bristol, Virginia (end of route)	Knoxville, Tennessee	Commonwealth Ave and Euclid Ave in Bristol, Virginia
US 19	cordon line south (Highway 11E)	cordon line east (Lee Highway)	Bluff City, Tennessee (end of route)	Lebanon, Virginia	Bluff City, Tennessee	Erie, Pennsylvania
Truck US 19	contained entirely within the Bristol study area		Bristol, Virginia (end of route)	Bristol, Virginia (end of route)	Commonwealth Ave and Goode St in Bristol, Virginia	Euclid Ave and Lee Hwy/ Moore St in Bristol, Virginia
US 58	cordon line west (Gate City Hwy)	cordon line east (Jeb Stuart Hwy)	Weber City, Virginia	Damascus, Virginia	Cumberland Gap, Tennessee	Virginia Beach, Virginia
Alt US 58	cordon line north (Porterfield Hwy)	does not reach cordon line	Lebanon, Virginia	Abingdon, Virginia (end of route)	Jonesville, Virginia	Interstate 81 at Virginia Exit 17
US 421	cordon line west (Gate City Hwy)	cordon line east (Highway 421)	Weber City, Virginia	Shady Valley, Tennessee	Carolina Beach, North Carolina	Michigan City, Indiana
Tennessee SR 1	cordon line west (Highway 11W)	does not reach cordon line	Kingsport, Tennessee	Bristol, Tennessee (end of route)	Memphis, Tennessee	Volunteer Pkwy and Broad St in Bristol, Tennessee
Tennessee SR 34	cordon line south (Highway 11E)	cordon line east (Highway 421)	Bluff City, Tennessee	Shady Valley, Tennessee	Knoxville, Tennessee	North Carolina border south of Trade, Tennessee
Tennessee SR 44	codon line west (Dry Branch Rd)	does not reach cordon line	Bluff City, Tennessee	Holston Valley area of Sullivan County, Tenn	Bluff City, Tennessee	Green Springs Rd at Virginia state line
Tennessee SR 75	cordon line west (Highway 75)	does not reach cordon line	Tri-Cities Regional Airport	Blountville, Tennessee (end of route)	US 11E/US 321 in Greene County, Tennessee	SR 126 in Blountville, Tennessee
Tennessee SR 126	cordon line west (Highway 126)	does not reach cordon line	Kingsport, Tennessee	Bristol, Tennessee (end of route)	Kingsport, Tennessee	W State St in Bristol, Tennessee
Tennessee SR 358	contained entirely within the Bristol study area		rural Sullivan County (end of route)	Bristol, Tennessee (end of route)	Rockhold Rd in Sullivan County, Tennessee	Volunteer Pkwy in Bristol, Tennessee
Tennessee SR 390	cordon line south (Highway 390)	does not reach cordon line	Bluff City, Tennessee (end of route)	Bristol, Tennessee (end of route)	Fleming Dr in Bluff City, Tennessee	Highway 394 in Bristol, Tennessee

FEDERAL AND STATE PRIMARY ROUTES IN THE BRISTOL STUDY AREA: December 31, 2015

ROUTE	ENTERS STUDY AREA, WEST OR SOUTH	ENTERS STUDY AREA, EAST OR NORTH	NEAREST SERVED COMMMUNITY OUTSIDE STUDY AREA, WEST OR SOUTH	NEAREST SERVED COMMMUNITY OUTSIDE STUDY AREA, EAST OR NORTH	ULTIMATE ROUTE END, WEST OR SOUTH	ULTIMATE ROUTE END, EAST OR NORTH
Tennessee SR 394	contained entirely within the Bristol study area		rural Sullivan County (end of route)	Bristol, Tennessee (end of route)	Highway 11W north of Blountville, Tennessee	Highway 421 in Bristol, Tennessee
Tennessee SR 435	contained entirely within the Bristol study area		Bristol, Tennessee (end of route)	Holston Valley area of Sullivan County, Tenn	Highway 421 (W) in Bristol, Tennessee	Highway 421 (E) in rural Sullivan County, Tenn
Virginia SR 75	contained entirely within the Bristol study area		rural Sullivan County (end of route)	Abingdon, Virginia (end of route)	Tennessee state line in Holston Valley, Tennessee	Russell St in Abingdon, Virginia
Virginia SR 113	contained entirely within the Bristol study area		Bristol, Virginia (end of route)	Bristol, Virginia (end of route)	Commonwealth Ave in Bristol, Virginia	Euclid Ave and Lee Hwy/ Moore St in Bristol, Virginia
Virginia SR 381	contained entirely within the Bristol study area		Bristol, Virginia (end of route)	Bristol, Virginia (end of route)	Euclid Ave in Bristol, Virginia	Church St/Keys St in Bristol, Virginia

LISTING OF MODELED ROADWAYS, BRISTOL TRAVEL DEMAND MODEL (954 total links)

SULLIVAN COUNTY, TENNESSEE (427 total links)

ROADWAY	TERMINUS A	TERMINUS B	No. of LINKS
5th St	Weaver Pike	Melrose St	5
6th St	Anderson St	State St	2
7th St	Shelby St	State St	1
17th St	Windsor Ave	W State St	4
24th St	Windsor Ave	W State St	3
Anderson St	24th St	Pennsylvania Ave	6
Ash St	5th St	Pennsylvania Ave	2
Beaver Creek Rd/Enterprise Rd	cordon line south	Hwy 394	4
Beidleman Creek Rd	Hickory Tree Rd/River Bend Rd	Emmett Rd	1
Bellebrook Rd	Wessex Dr	Weaver Pike	1
Bethel Dr	Exide Dr	Hwy 126	5
Big Hollow Rd	Buffalo Rd	Hwy 394	6
Blackley Rd	Hazelwood St	5th St	1
Blountville Blvd	Hwy 394	Hwy 126	3
Blountville Bypass	Hwy 126	Hwy 394	2
Blountville Hwy	Hwy 126	W State St	2
Bluff City Hwy	Volunteer Pkwy	Edgemont Ave	8
Bristol Caverns Hwy	Hwy 421 (W)	Hwy 421 (E)	6
Broad St/Steele Creek Dr	Steele Creek Park Rd/Douglas Ln	Volunteer Pkwy	7
Broyles Ln	Weaver Pike	Vance Tank Rd	2
Buffalo Rd	Fairview School Rd	Beaver Creek Rd	2
Bullock Hollow Rd	Sugar Hollow Dr	Weaver Pike	2
Buncombe Rd	Buffalo Rd	Feathers Chapel Rd	1
Carden Hollow Rd	Bethel Dr	Hwy 126	4
Carolina Ave	Bristol Caverns Hwy	Hazelwood St	4
Cedar Valley Rd	Lavinder Ln	Weaver Pike	3
Chinquapin Grove Rd	Big Arm Rd (E)	Dry Branch Rd/Rockhold Rd	3
College Ave	Weaver Pike	5th St	1
Craig Dr (private roadway)	Bluff City Hwy	Volunteer Pkwy	2
DeVault Bridge Rd	cordon line south	Muddy Creek Rd	3
Dry Branch Rd	cordon line west	Chinquapin Grove Rd/Rockhold Rd	1
E Cedar St	5th St	King College Rd	5
E State St	Sullivan Ln	King College Rd (W)	2
Edgemont Ave	Bluff City Hwy	Melrose St	3
Egypt Rd	Hwy 11E	Hwy 390	2
Emmett Rd	Beidleman Creek Rd	Hwy 421	3
Emmett Way	Hwy 421	Bristol Caverns Hwy	1
Exide Dr	Hwy 394	Hwy 11E/Volunteer Pkwy	3
Fairview School Rd	Sugar Hollow Rd	Ethel Beard Rd/Ridge Dr	1
Feathers Chapel Rd	Hwy 394 (W)	Hwy 394 (E)	3
Franklin Dr	Hwy 126	Blountville Blvd	2
Hazelwood St	Blackley Rd	Carolina Ave	2
Hickory Tree Rd	Old Weaver Pike/Possum Creek Rd	Bristol Caverns Hwy	11
Hwy 11E	cordon line south	Exide Dr	6
Hwy 11E ramps at Hwy 394			4
Hwy 11W	cordon line west	Interstate 81	12
Hwy 44	Hwy 421	Virginia state line	4
Hwy 75	cordon line west	Hwy 126	4
Hwy 126	cordon line west	Blountville Hwy	20
Hwy 390	cordon line south	Hwy 394	3
Hwy 394	Hwy 11W	Hwy 421	25
Hwy 421	Hogtown Creek bridge	cordon line east	15
Industrial Dr	Weaver Pike	Hwy 394	3
Interstate 81, northbound	cordon line west	Virginia state line	10
Interstate 81, northbound	cordon line west	Virginia state line	10
Interstate 81 Exit 69 ramps			4
Interstate Exit 74 ramps			8
Island Rd	cordon line west	Hwy 11W	8
King College Rd	E State St (W)	Old Jonesboro Rd	7

LISTING OF MODELED ROADWAYS, BRISTOL TRAVEL DEMAND MODEL (954 total links)

SULLIVAN COUNTY, TENNESSEE (427 total links)

ROADWAY	TERMINUS A	TERMINUS B	No. of LINKS
Lavinder Ln	Volunteer Pkwy	Cedar Valley Rd	2
Maple St	Pennsylvania Ave	Virginia Ave	1
Martin Luther King, Jr Blvd	Melrose St	Virginia state line	4
Medical Park Blvd	Meadow View Rd	W State St	2
Meadow View Rd	Walnut Hill Rd	Hwy 126	3
Muddy Creek Rd	cordon line west	Hwy 75	3
Old Jonesboro Rd	Weaver Pike	Virginia state line	12
Old Weaver Pike	Hickory Tree Rd/Rockhold Rd	Weaver Pike	2
Painter Rd	Virginia state line	Hwy 44	1
Paperville Rd	Old Jonesboro Rd	Bristol Caverns Hwy	3
Pennsylvania Ave	Maple St	E State St/State St	3
Peoples Rd	Weaver Pike	Bullock Hollow Rd	2
Pleasant Grove Rd	Silver Grove Rd	Weaver Pike	3
Raytheon Rd	Bluff City Hwy	Vance Tank Rd	2
Reedy Creek Rd	Seneker Rd	Virginia state line	1
Ridge Dr	DeVault Bridge Rd	Ethel Beard Rd/Fairview School Rd	2
Rockhold Rd	Chinquapin Grove Rd/Dry Branch Rd	Old Weaver Pike/Possum Creek Rd	2
Seneker Rd	Hwy 11W	Reedy Creek Rd	1
Shelby St	Volunteer Pkwy	Martin Luther King, Jr. Blvd	3
Silver Grove Rd	Hwy 390	Weaver Pike	4
Steele Creek Dr	Hwy 126	Steele Creek Park Rd/Douglas Ln	1
Sugar Hollow Dr	Bullock Hollow Rd	Hickory Tree Rd	2
Sugar Hollow Rd	DeVault Bridge Rd	Buffalo Rd/Fairview School Rd	2
Sweet Knbos Trl	Vance Tank Rd	Hwy 394	1
Trammel Rd	Old Jonesboro Rd	King College Rd	2
Valley Pike Rd	Carolina Ave	Old Jonesboro Rd	1
Vance Tank Rd	White Top Rd	Weaver Pike	6
Virginia Ave	Hwy 421	Maple St	3
Volunteer Pkwy	Exide Dr	State St/W State St	22
Walnut Hill Rd	Hwy 126	Island Rd	3
Weaver Pike	Rockhold Rd	Volunteer Pkwy	24
Weaver Pike ramp	Hwy 394	Weaver Pike	1
Wessex Dr	Raytheon Rd	Bellebrook Rd	1
W State St	Interstate 81	Euclid Ave/Gate City Hwy	15
White Top Rd	Hwy 11E	Vance Tank Rd	5
Windsor Ave	24th St	Volunteer Pkwy	4
ALONG TENNESSEE/VIRGINIA STATE LINE (9 total links)			
E State St	Pennsylvania Ave	Sullivan Ln	1
State St	Volunteer Pkwy/Commonwealth Ave	Pennsylvania Ave	4
W State St	Euclid Ave/Gate City Hwy	Volunteer Pkwy/Commonwealth Ave	4
BRISTOL, VIRGINIA (204 total links)			
Bob Morrison Bvld	W State St	Euclid Ave	2
Bonham Rd	Old Airport Rd (S)	Lee Hwy	4
Campground Rd	Island Rd	Benhams Rd	1
Clear Creek Rd	Lee Hwy	Bristol corporate limits	1
Columbia Rd/Montpelier Ave	Martin Luther King, Jr Blvd	Massachusetts Ave	1
Commonwealth Ave	State St/W State St	Church St/Keys St	8
Commonwealth Ave Ext	Keys St	Island Rd	2
Cumberland St	Commonwealth Ave	Martin Luther King, Jr. Blvd	5
E Mary St	Goodson St	Fairview St	1
E Valley Dr	Lee Hwy	Kings Mill Pike	4
Euclid Ave	Gate City Hwy/W State St	Lee Hwy/Moore St	9
Fairview St	E Mary St	Massachusetts Ave	2
Gate City Hwy	Bristol corporate limits	Euclid Ave/W State St	13
Glenway Ave	Commonwealth Ave	Piedmont Ave	2
Goode St	Commonwealth Ave	Piedmont Ave	2
Goodson St	E State St/State St	E Mary St/W Mary St	2
Harleywood Rd	Reedy Creek Rd (E)	Wallace Pike	2
Hillside Ave	Kings Mill Pike	Massachusetts Ave	1

LISTING OF MODELED ROADWAYS, BRISTOL TRAVEL DEMAND MODEL (954 total links)

SULLIVAN COUNTY, TENNESSEE (427 total links)

ROADWAY	TERMINUS A	TERMINUS B	No. of LINKS
Interstate 81, northbound	Tennessee state line	Bristol corporate limits	8
Interstate 81, southbound	Tennessee state line	Bristol corporate limits	9
Interstate 81 Exit 1 ramps			9
Interstate 81 Exit 3 ramps			4
Interstate 81 Exit 5 ramps			8
Interstate 81 Exit 7 ramps			4
Interstate 381, northbound	Church St/Keys St	Exit 3 ramps	1
Interstate 381, southbound	Church St/Keys St	Exit 3 ramps	1
Island Rd	Tennessee state line	Lee Hwy	9
Keys St	Commonwealth Ave Ext	Commonwealth Ave/Interstate 381	1
Kings Mill Pike	Hillside Ave	Bristol corporate limits	5
Lee Hwy	Euclid Ave/Euclid Ave Ext	Bristol corporate limits	18
Linden Dr	Bonham Rd	Old Airport Rd	2
Martin Luther King, Jr Blvd	State St	Moore St/Oakview Ave	5
Massachusetts Ave	Fairview St	Hillside Ave	3
Moore St	State St	Martin Luther King, Jr. Blvd/Oakview Ave	6
Oakview Ave	Piedmont Ave	Moore St/Martin Luther King, Jr Bvd	3
Old Abingdon Hwy	E Valley Dr	Lee Hwy	3
Old Airport Rd	Kings Mill Pike	Lee Hwy	8
Peters St	W State St	Vance St	1
Piedmont Ave	State St	W Valley Dr	9
Pittstown Rd	Commonwealth Ave Ext	Island Rd	1
Randolph St	Vance St	Spurgeon Ln	2
Reedy Creek Rd	Harleywood Rd (W)	Harleywood Rd (E)	1
Spurgeon Ln	Randolph St	Commonwealth Ave	1
Sycamore St	Commonwealth Ave	Piedmont Ave	2
Texas Ave	Massachusetts Ave	E Valley Dr	2
Vance St	Peters St	Randolph St	2
Wallace Pike	Bristol corporate limits far east	Bordwine Rd	2
Wallace Pike	Island Rd	Bristol corporate limits north	1
Wagner Rd	Randolph St	Bristol corporate limits	3
Wagner St	W State St	Euclid Ave	1
W Mary St	Piedmont Ave	Goodson St	5
W Valley Dr	Piedmont Ave	Lee Hwy	2
WASHINGTON COUNTY, VIRGINIA (314 total links)			
Abrams Falls Rd	Rich Valley Rd	cordon line north	1
Astor Rd	Lee Hwy	Wallace Pike/Wyndale Rd	2
Benhams Rd	Campground Rd	Rich Valley Rd	7
Black Hollow Rd	Wallace Pike	Porterfield Hwy	7
Bordwine Rd	Lee Hwy	Wallace Pike	2
Buffalo Pond Rd	Reedy Creek Rd	cordon line north	1
Campground Rd	Benhams Rd	Reedy Creek Rd	4
Clear Creek Rd	Bristol corporate limits	Wallace Pike	2
Cleveland Rd	Tennessee state line	Green Springs Rd	5
Court St	E Main St/W Main St	Valley St	1
Cummings St	Exit 17 south ramps	Valley St	5
E Main St	Court St	Empire Dr	8
Enterprise Rd	Hillman Hwy	Lee Hwy	5
Gate City Hwy	cordon line west	Bristol corporate limits	8
Green Springs Church Rd	Green Springs Rd	cordon line east	2
Green Springs Rd	Tennessee state line	Exit 17 south ramps	10
Halls Bottom Rd	Lee Hwy	Old Jonesboro Rd	2
Haskell Station Rd	Cowan Dr	Rich Valley Rd	3
Hillman Hwy	E Main St	cordon line north	7
Hutton St	E Main St	Valley St	1
Industrial Park Rd	Wallace Pike	Lee Hwy	4
Interstate 81, northbound	Tennessee state line	Bristol corporate limits west	1
Interstate 81, northbound	Bristol corporate limits east	cordon line north	14
Interstate 81, southbound	Tennessee state line	Bristol corporate limits west	1

LISTING OF MODELED ROADWAYS, BRISTOL TRAVEL DEMAND MODEL (954 total links)

SULLIVAN COUNTY, TENNESSEE (427 total links)

ROADWAY	TERMINUS A	TERMINUS B	No. of LINKS
Interstate 81, southbound	Bristol corporate limits east	cordon line north	13
Interstate 81, Exit 10 ramps			4
Interstate 81, Exit 13 ramps			4
Interstate 81, Exit 14 ramps			8
Interstate 81, Exit 17 ramps			4
Interstate 81, Exit 19 ramps			6
Interstate 81, Exit 22 ramps			4
Jeb Stuart Hwy	Lee Hwy	cordon line east	4
Jonesboro Rd	Old Jonesboro Rd	W Main St	5
Junction Dr	Kings Mill Pike	Old Jonesboro Rd	1
Kings Mill Pike	Bristol corporate limits	Old Jonesboro Rd	4
Lee Hwy	Bristol corporate limits	Forest Hills Cemetery entrance	11
Lee Hwy	Empire Dr	cordon line east	11
Litchfield Rd	cordon line north	Walden Rd	1
Livingston Creek Rd	cordon line north	Rich Valley Rd	1
Majestic Dr	Exit 10 south ramps	Lee Hwy	3
Mallicote Dr	cordon line north	Walden Rd	1
Mock Knob Rd	Old Jonesboro Rd	Cleveland Rd	3
Musick Dr	cordon line north	Reedy Creek Rd	1
Nordyke Rd	cordon line north	Benhams Rd	1
Northridge Rd	Old Saltworks Rd	Hillman Hwy	2
Old Jonesboro Rd	Tennessee state line	Junction Dr	1
Old Jonesboro Rd	Kings Mill Pike	Jonesboro Rd	9
Old Saltworks Rd	cordon line north	Hillman Hwy	5
Pairgin Rd	Reedy Creek Rd	Wallace Pike	2
Pecan St	E Main St	Valley St	1
Porterfield Hwy	W Main St	cordon line north	8
Providence Rd	Lee Hwy	cordon line north	6
Reedy Creek Rd	Tennessee state line	Black Hollow Rd	15
Rich Valley Rd	Gate City Hwy	cordon line north	7
Russell Rd	Porterfield Hwy	W Main St	4
Shell Rd	Cleveland Rd	Green Springs Rd	1
Smith Creek Rd	cordon line north	Black Hollow Rd	1
Spring Creek Rd	Lee Hwy	Old Jonesboro Rd	3
Stanley St	Thompson Dr	Walden Rd	1
Tanner St	E Main St	Valley St	1
Thompson Dr	E Main St	Stanley St	1
Valley St	Russell Rd	Walden Rd	7
Village Blvd	Wyndale Rd	Porterfield Hwy	1
Walden Rd	Valley St	Old Saltworks Rd	5
Wallace Pike	Bristol corporate limits	Astor Rd	11
Watauga Rd	Green Springs Rd	Lee Hwy	5
W Main St	Forest Hills Cemetery entrance	Court St	10
Whites Mill Rd	Valley St	Rich Valley Rd	4
Wolf Run Rd	cordon line north	Benhams Rd	1
Wyndale Rd	Astor Rd	W Main St	9

Appendix D

List of Acronyms

BTT	Bristol Tennessee Transit
BVT	Bristol Virginia Transit
DBE	Disadvantaged Business Enterprise
DOT	Department of Transportation
DRPT	(Virginia) Department of Rail and Public Transportation
DTPT	District Three Public Transit
EPA	Environmental Protection Agency
FAST Act	Fixing America's Surface Transportation Act
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FTDD	First Tennessee Development District
FTHRA	First Tennessee Human Resource Agency
FY	Fiscal Year
GIS	Geographic Information System
INVEST	Infrastructure Voluntary Evaluation Sustainability Tool
ITS	Intelligent Transportation System
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act
MOA	Memorandum of Agreement
MPA	Metropolitan Planning Area
MPO	Metropolitan Planning Organization
PL	Metropolitan Planning Funds (Section 112 of the Federal-Aid Highway Act)
PPP	Public Participation Plan
RPO	Rural Planning Organization
Section 5303	Transit Planning Funds (U.S. Title 49, Section 5303)
SPR	State Planning and Research Funds
TAZ	Traffic Analysis Zone
TDEC	Tennessee Department of Environment and Conservation
TDM	Travel Demand Model
TDOT	Tennessee Department of Transportation
TDP	Transit Development Plan
TIP	Transportation Improvement Program
TMPD	(Virginia) Transportation and Mobility Planning Division
TN	Tennessee
TNMUG	Tennessee Model Users Group
TRIMS	Tennessee Roadway Information and Management System
TSM	Transportation Systems Management
UPWP	Unified Planning Work Program
USDOT	United States Department of Transportation
UZA	Urbanized Area
VA	Virginia
VDOT	Virginia Department of Transportation