

# Freight Needs and Project Identification

## draft report

*prepared for*

**Tennessee Department of Transportation**

*prepared by*

**Cambridge Systematics, Inc.**

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# 1.0 Introduction

The purpose of this report is to identify freight needs and projects for the State of Tennessee. Additionally, this report develops and applies a prioritization framework to the identified solutions to provide a general ranking of projects in terms of meeting freight-related goals.

While the Tennessee Department of Transportation (TDOT) has the broadest responsibility for freight planning in the state, there are several additional relevant freight stakeholders in the state. Metropolitan Planning Organizations (MPOs), counties, chambers of commerce, development authorities, port authorities, development districts, and several private sector entities are all involved in shaping freight transportation planning and decision making in Tennessee. Many of these stakeholders have conducted freight-related studies in the past to identify needs and solutions for improving the movement of goods in Tennessee. Many of them are also actively engaged in implementing these solutions.

To develop a comprehensive perspective on freight needs and projects, the information contained in this report was generated from several sources including:

- Previous studies on Tennessee’s freight needs and potential solutions;
- Direct stakeholder outreach via telephone interviews; and
- Technical analysis conducted by the technical team in regards to location of freight-related congestion and crashes.

This process identified a long-list of projects which were then prioritized using metrics that are based on the ongoing update of the Tennessee Statewide Transportation Plan. This prioritization is designed to identify the most critical freight-related projects for the state.

## 1.1 REPORT STRUCTURE

The remainder of this report is divided into the following sections:

**Section 2.0 Freight Projects Identification** reviews information collected in several previous efforts. Most notably, the recently-completed Tennessee DOT Scan of Freight Planning Efforts was used as a reference for freight-related projects and planning efforts in the state.

**Section 3.0 Stakeholder Outreach** documents the freight needs and deficiencies identified by various stakeholders for their relevant jurisdiction. Planned, programmed and illustrative projects identified by stakeholders are also identified and discussed.

**Section 4.0 Freight Bottleneck Identification** highlights interstate and state highway locations that have both high levels of congestion and high truck counts. These freight bottleneck locations are summarized, compared to the list of freight solutions, and used as a reference for generating new projects focus on freight bottleneck relief.

**Section 5.0 Top Crash Locations** identifies the locations in the state with the highest crash rates. It also recommends a truck safety program to address these high crash locations.

**Section 6.0 Project Prioritization** lists all of the projects identified in Section 2 through Section 5, and it evaluates each project based on a list of criteria developed for the Tennessee Statewide Transportation Plan update. This project list is referred to as the Tennessee Priority Freight Project List. This section produces a list of ranked freight-related projects that TDOT can use to develop a freight program for the State of Tennessee.

## 2.0 Freight Projects Identified in Previous Studies

Several major freight projects were identified from previous studies. Most notably, the recently-completed Scan of Freight Projects chronicled freight-related plans, programs, and projects that were either in progress or completed in recent years. The following projects were judged to be major due to their statewide significance of freight movement.

### 2.1 I-75 AND I-40/I-81 CORRIDOR FEASIBILITY STUDIES

These statewide corridor studies were conducted to identify deficiencies and multi-modal solutions to address these deficiencies along the I-75 and I-40/I-81 corridors. These studies are the first of a series of studies that focus on the state's strategic statewide corridors. Figures 2.1 and 2.2 show the recommended projects from these studies. The solutions ranged from passenger-focused to technology-focused to freight-focused, and included several multi-modal solutions. For purposes of the freight project list that are compiled in Section 6 of this report, major freight-related projects were considered to be all of the truck climbing lane project, and new capacity projects that were shown to have a benefit-cost ratio in 2030 that is greater than 1.0.

Figure 2.1 I-40/I-81 Corridor Feasibility Study Recommended Projects

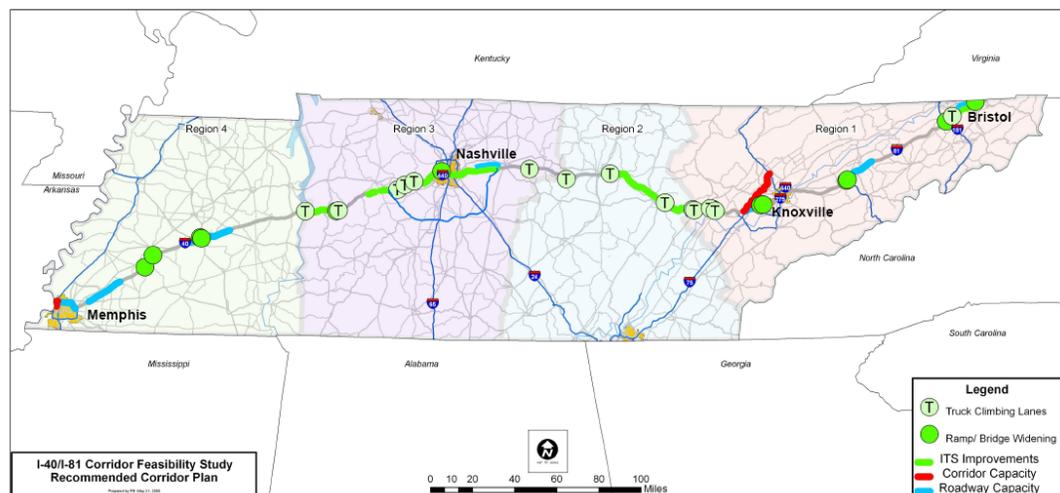
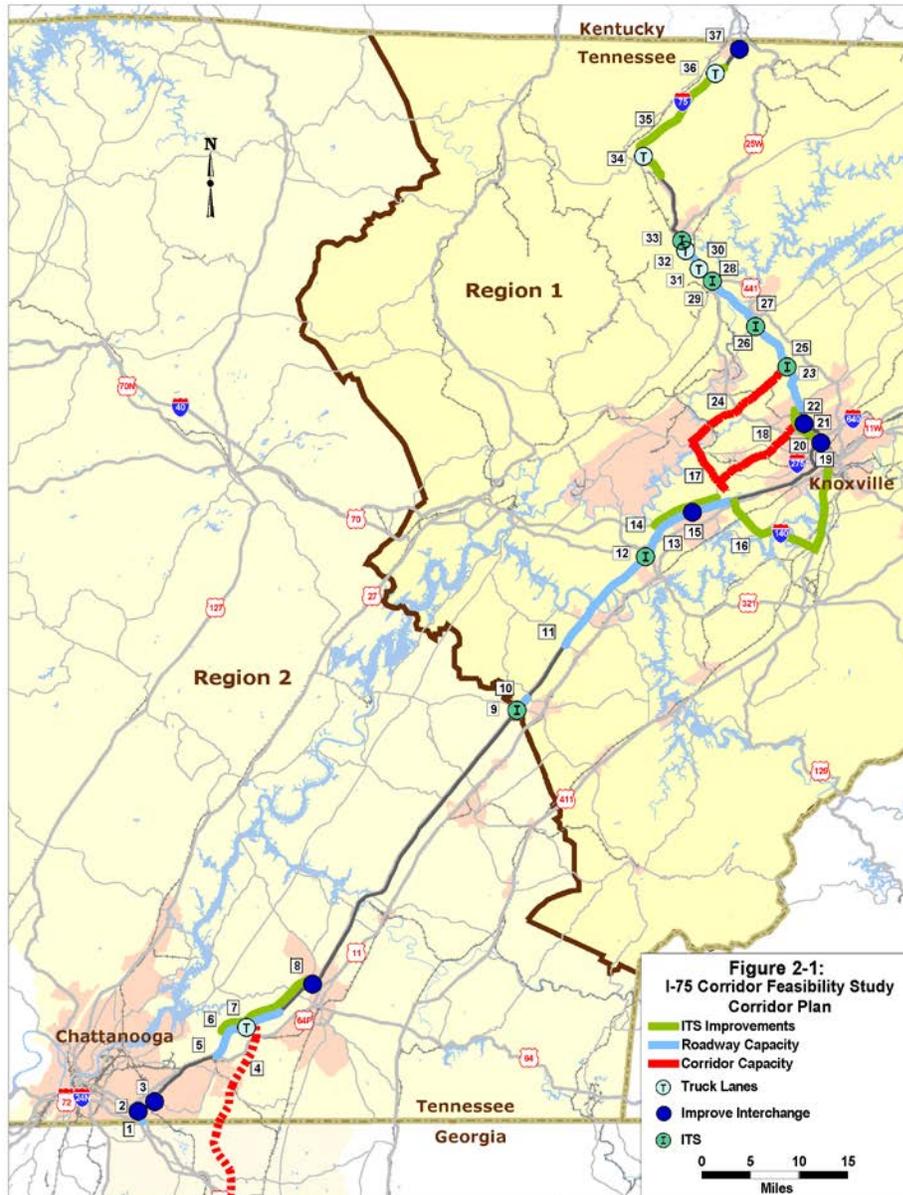


Figure 2.2 I-75 Corridor Feasibility Study Recommended Projects



## 2.2 I-69/I-269 CONSTRUCTION AND COMPLETION

I-69 currently runs from the Michigan/Canada border to Indianapolis, IN. It is proposed to be extended from Indianapolis, IN to the Texas/Mexico border in the Lower Rio Grande Valley. This corridor for I-69 has been designated by Congress as a High Priority Corridor of National Significance due to its potential to encourage trade between the United States, Canada, and Mexico. As a new interstate corridor and international trade route it has great significance to future

freight movements in Tennessee. Therefore, this list is included in the Tennessee Priority Freight Project List provided in Section 6.

I-69 has been split into segments of independent utility (SIU) for study and construction. Out of the 32 segments of I-69 from Indianapolis, IN to the Mexican border, parts of three segments are in Tennessee. These can be seen in Figure 2.3. The following are descriptions of the three Tennessee segments.

- **Segment 7** - This segment follows US-51 and upgrades it to interstate standards. It travels from Fulton, KY (interchange of US-51/US-45E) to Dyersburg, TN (interchange with I-155/US-412/US-51). The Final Environmental Impact Statement (FEIS) has been accepted and one section has been let to construction. Right of way will soon be acquired on the remaining sections.
- **Segment 8** - This segment will go to the west or the east of US-51 and be built on a new location. It travels from Dyersburg, TN (I-155/US-412/US-51 interchange in Dyer County) to Milington, TN (State Route 385/Proposed I-269 (Paul Barrett Parkway) in Shelby County). The FEIS has been submitted to the FHWA, but not yet approved. The final alignment has not yet been determined.
- **Segment 9** - This segment travels from Milington, TN (State Route 385/Proposed I-269 (Paul Barrett Parkway) in Shelby County) to Hernando, MS (I-55/MS-304 Interchange). This segment will be constructed on a new location west of US-51 and north of central Memphis; however, in central Memphis, it will follow existing Interstates I-40, I-240, and I-55. This segment also contains a second alignment that will be built as I-269 and loops around the east side of Memphis. It also begins at the I-55/MS 304 Interchange in Hernando, MS, extends east approximately 28.6 miles on new location, and connects with State Route 385 south of Collierville. It will then follow the approved route for State Route 385 (currently in the development and construction phases) from Collierville to I-40 at Arlington, and will then follow existing State Route 385 into Millington. It will interchange with I-69 at the existing US-51/SR385 Interchange. Figure 2.4 contains a map of I-69 and I-269 for Segment 9. The FEIS for this segment has been accepted.

Figure 2.3 The Complete Interstate 69 Corridor

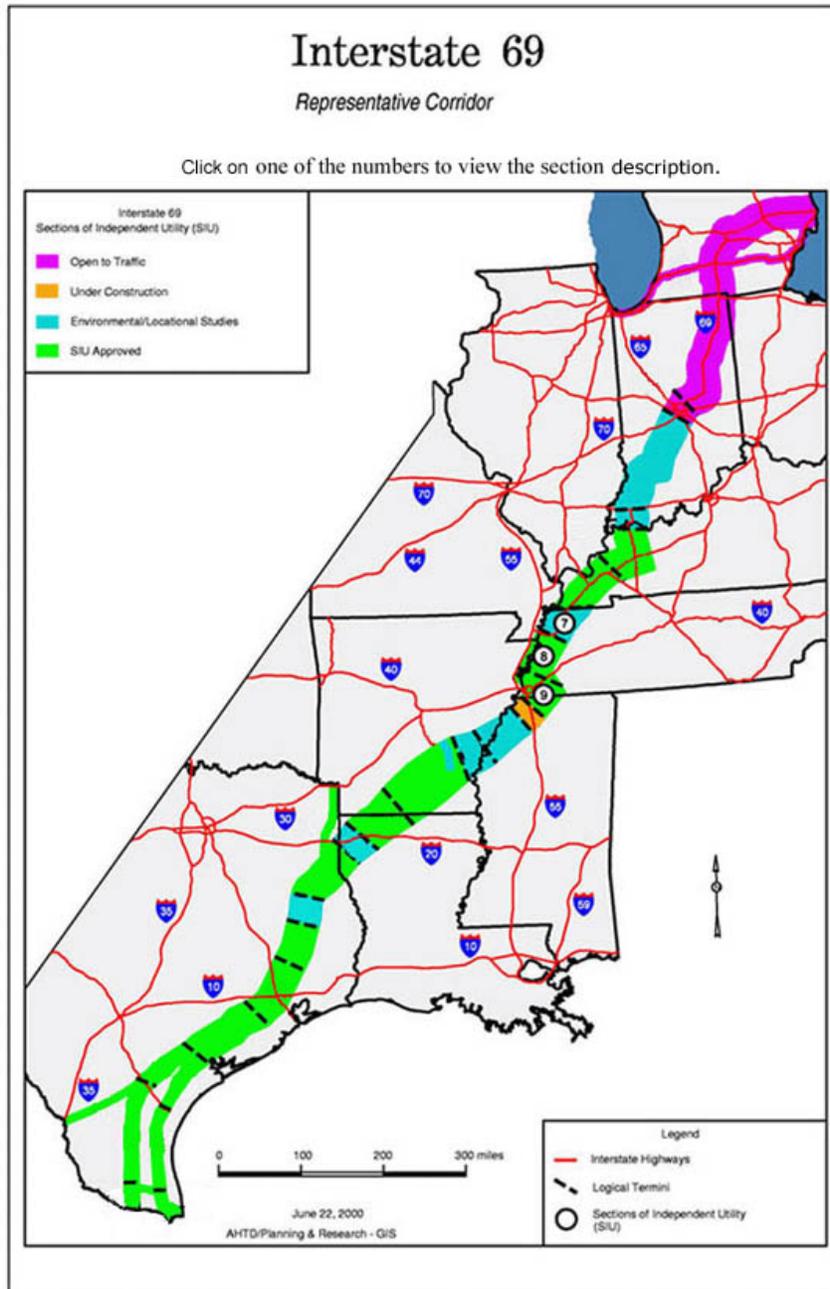
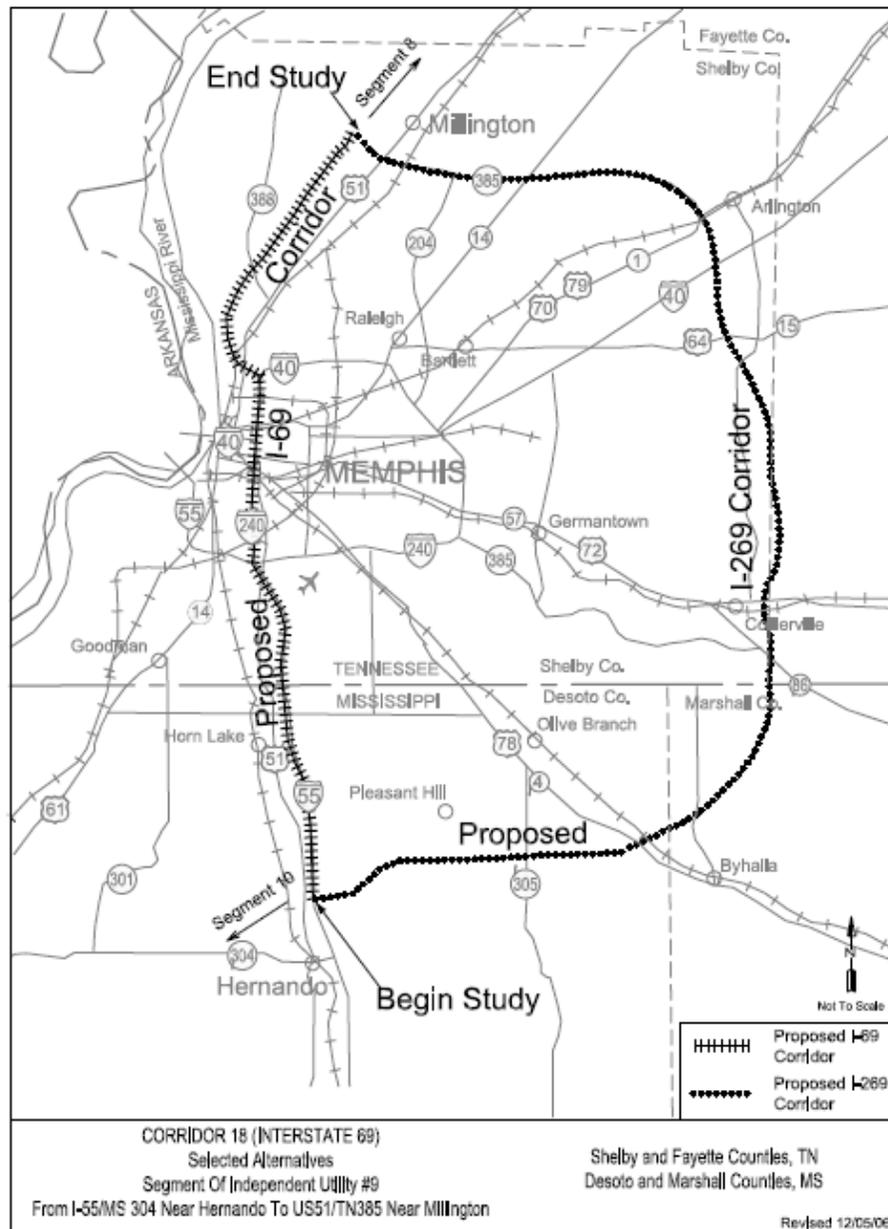


Figure 2.4 I-69 Segment 9 in Memphis, TN



## 2.3 TENNESSEE RAIL SYSTEM PLAN

The primary project analyzed in the Tennessee Rail System Plan is focused on studying two alternatives for providing a connection to complete the east-west rail network in Tennessee. There is currently a break in the network between Algood and Oliver Springs. The Basic Freight Rail Connection (Figure 2.5) completes this link by following a southern route near I-40 and utilizing some existing track. The Planning Horizon Scenario (Figure 2.6) completes this link by

following a northern route largely on new locations, across the Cumberland Plateau, which provides a more direct rail connection between Algood and Oliver Springs. This route appears to be more expensive than the Basic Freight Rail Connection, but it cannot be determined exactly how much more expensive because it includes different termini and improvements for passenger rail service. However, because the benefit-cost ratio of both of these alternatives is well below 1.0, it is not included in the Tennessee Priority Freight Project List.

Figure 2.5 Basic Freight Rail Connection

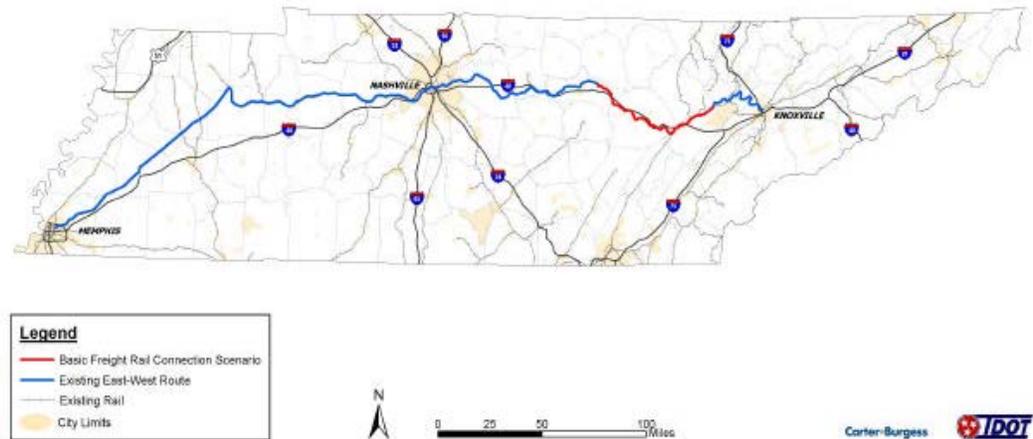


Figure 2.6 Planning Horizon Scenario



## 2.4 THE CRESCENT CORRIDOR

The Crescent Corridor is an initiative by Norfolk Southern (NS) to make improvements on a 2,500-mile rail network supporting the supply chain from Memphis and New Orleans to New Jersey. NS is making improvements that will enable it to handle more rail freight traffic. These include straightening curves; adding signals, building passing lanes and double tracks; constructing

and expanding terminals; and running more efficient trains. The map in Figure 2.7 shows that portions of the corridor go through eastern Tennessee including Knoxville and Chattanooga and that another portion of it ends in Memphis, but the connection is made through northern Alabama and Mississippi.

The Crescent Corridor won a TIGER grant from the USDOT for the new Memphis and Birmingham regional intermodal facilities. It won the biggest TIGER grant award at \$105 million, which will be evenly split between the two intermodal facilities. In addition to these two intermodal facilities, which are slated for Phase I, NS is also planning an East Tennessee Intermodal Facility near Knoxville, which is part of Phase III. This is expected to meet the intent of the project originally identified in the Tennessee State Rail Plan, which is to reduce truck traffic on the I-81 corridor, and to address safety issues associated with increased rail traffic.

Figure 2.7 Crescent Corridor Overview



Source: Norfolk Southern presentation, August 2010.

## 2.5 CAPITAL NEEDS OF WATERWAY PUBLIC PORTS

There are no formally planned or programmed projects for waterways in Tennessee. However, Phase II of the Tennessee Waterway Assessment Study identified capital needs of Tennessee's four public waterway ports. Two of the ports are located on the Mississippi River and two are on the Tennessee River. The four public ports have various capital needs, such as roadways, railroads, dock facilities, dredging, crane replacement, and warehouse/storage facilities. The four public ports are:

- Port of Cates Landing in Dyersburg – Located on the Mississippi River in Northwest Tennessee, this is a port still under development. The capital needs of this port total to \$49.4 million.
- Port of Memphis – Located on the Mississippi River in southwest Tennessee, this is the 4<sup>th</sup> largest inland port in the United States. This port has 5 categories of capital needs that total to \$31 million.
- Port of Nickajack in South Pittsburg – This port is located on the Tennessee River in southeast Tennessee. There are 7 categories of capital needs that total to \$3.0 million.
- Centre South Riverport in Chattanooga – This port is located on the Tennessee River in southeast Tennessee. There are 8 categories of capital needs that total to \$13 million.

## 2.6 FREIGHT IMPACTS OF VOLKSWAGEN PLANT

The current construction of the Volkswagen auto assembly plant and the associated transportation facilities to serve it are among the most important current freight issues in the Chattanooga area. Seven projects on local roads are planned to serve the new plant. These are shown as the first seven items in Table 2.1 and in yellow in Figure 2.5. Two of these build new roadways in the Enterprise South Industrial Park and five of these widen existing roads in and around the area. In addition, a Freight Impact Study for the VW plant recommends widening I-75 to the north and south of the plant, which is included in the 2035 LRTP as illustrative projects that are not funded. The study recommends widening I-75 to a total of 8 lanes from I-24 to the VW plant (LRTP ID 171 in Table 2.1 and shown in red in Figure 2.7) and to a total of 6 general purpose lanes from the VW plant to Cleveland, TN (Exit 20) (LRTP ID 172 in Table 2.1 and shown in purple in Figure 2.7). I-75 currently fluctuates between four, six and eight lanes in this area.

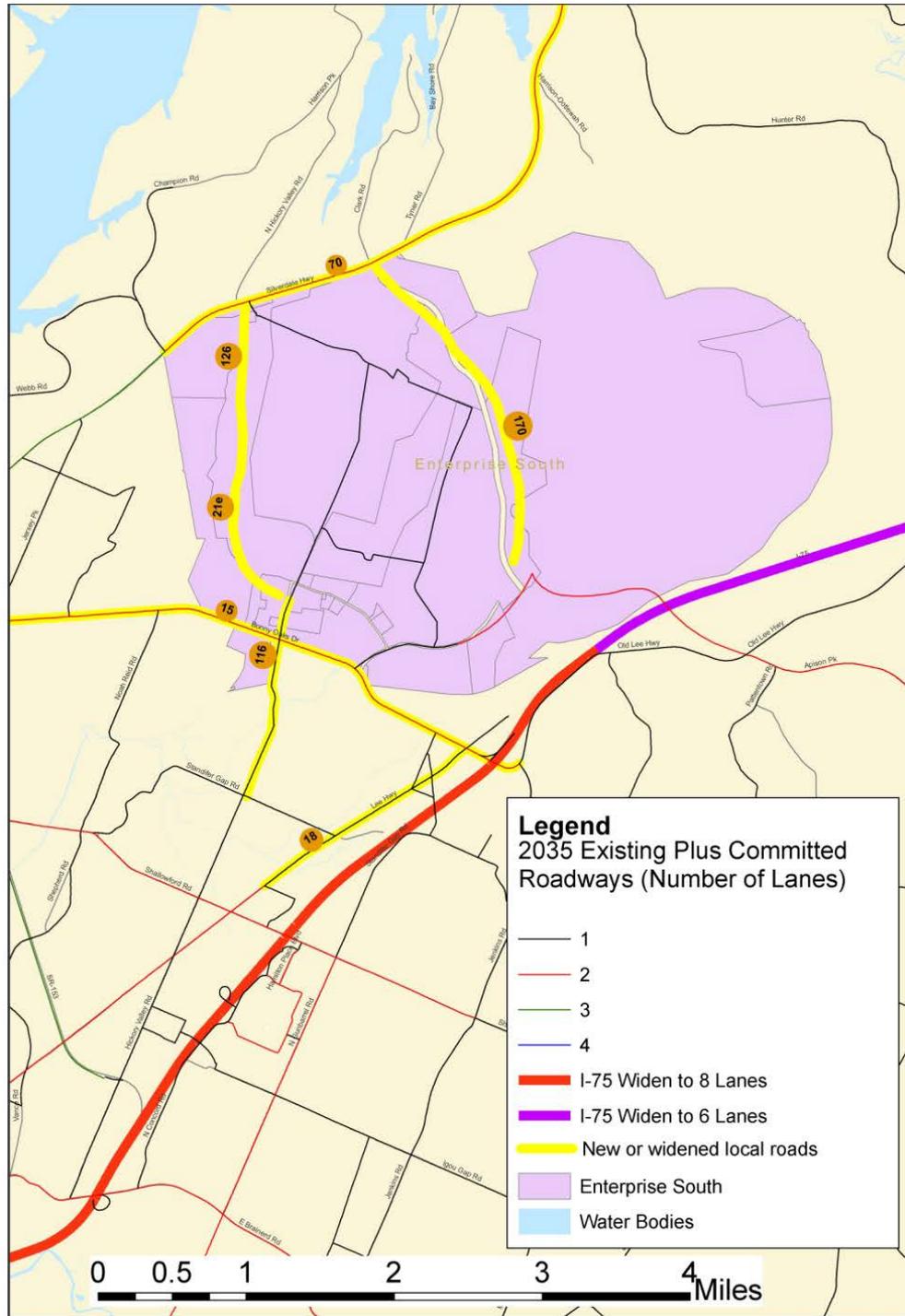
**Table 2.1 Planned Projects Associated with VW Plant**

LRTP ID	Route	Start Point	End Point	Length (mi)	Proposed Improvements	Year of Completion
170	SIA Road for VW (Industrial Access Rd.)	Enterprise Boulevard/Discovery Dr.	SR 58	2.3	Industrial access road for Volkswagen	2015
21e	Enterprise Parkway	Hickory Valley Road	1 mile south of Highway 58	0.6	New alignment/widening of Hickory Valley Road through Enterprise South	2015
126	Hickory Valley Rd.	Enterprise Parkway Extension	Highway 58	1.1	Widen from 2 to 4 lanes	2015
116	Hickory Valley Rd	Standifer Gap Rd	Enterprise Parkway	1.4	Widen from 2 to 4 lanes	2025

18	US 11/ US 64 / Lee Highway	McCutcheon Rd.	SR 317	1.6	Widen from 2 to 4 lanes	2025
70	SR 58	Champion Rd.	SR 312	8.7	Widen from 4 to 6 lanes	2035
15	SR 317/Bonny Oaks Drive	SR-17	I-75	5.1	Widen from 2 to 4 lanes	2015
171	I-75	I-24	Exit 12	11.6	Increase to 8 general purpose lanes	illustrative
172	I-75	Exit 12	Exit 20 (Cleveland)	8.0	Increase to 6 general purpose lanes	illustrative

Source: Cambridge Systematics. Chattanooga Volkswagen Plant Freight Impact Study. Prepared for Tennessee Department of Transportation and Chattanooga-Hamilton County/North Georgia Transportation Planning Organization. December 2009.

Figure 2.8 Planned Project Associated with VW Plant



## 3.0 Stakeholder Outreach

A number of stakeholders were contacted to provide input to the identification of freight needs and deficiencies, and potential projects. The stakeholders contacted included metropolitan planning organizations for the State's four largest urban areas, chambers of commerce, various statewide agencies and trade organizations, and regional entities, such as the Appalachian Regional Commission and Tennessee Valley Authority. Some of the stakeholders provided a large amount of input on these topics, while others provided very little input. This section describes the input provided by each stakeholder.

### 3.1 CHATTANOOGA MPO

The Chattanooga MPO will be conducting a Regional Freight Study during the fall of 2010. The Chattanooga Regional Freight Study will include a detailed process to identify freight facilities, deficiencies, and solutions based on a combination of stakeholder outreach and technical analysis. Until that study is complete, the best sources for information on freight needs in the Chattanooga area is the VW Plant Freight Impact Study (see Section 2.6) and two contacts at the Chattanooga Transportation Club. Select comments from members of the Chattanooga Transportation Club are provided below as they provide a good private sector perspective on the region's freight transportation strengths and weaknesses.

- A representative from a national trucking and logistics firm said that his company uses primarily interstates in Tennessee. He believes that I-24 between Nashville and Chattanooga should be widened due to congestion and maybe I-75 between Knoxville and Chattanooga. He thinks that I-40 congestion levels are acceptable and metro areas in Tennessee also seem good to him, especially with new bypasses in Nashville.
- A representative from another national trucking and logistics firm, mentioned two problem areas on interstates in the Chattanooga region. The I-75/I-24 split and on I-24 outside Chattanooga heading towards Nashville from Mockison Bend to Monteagle are both congested areas.

### 3.2 MEMPHIS MPO

The Memphis MPO described the extensive freight activity in the Memphis area due to FedEx at the Memphis International Airport, five Class I railroads that use Memphis as a meeting point and have large intermodal yards, and major cross country interstates like I-40, I-55, and future I-69. The MPO has three significant

freight-related projects already in its 3-year Transportation Improvement Program:

- Reconstruct interchange on I-55 at Crump
- I-240 interchange with I-40
- I-240 between poplar and walnut grove (south of I-40)
- Lamar Ave. (US-78)

The Memphis MPO also mentioned the Memphis Freight Infrastructure Plan developed by the Memphis Chamber of Commerce as a reference for freight-related projects to consider. This report is described in Section 3.6.

### **3.3 NASHVILLE MPO**

The Nashville MPO is currently working on Phase II of a Regional Freight and Goods Movement Study, which is not complete as of mid-September 2010. This study is expected to identify projects from the TIP and LRTP that contribute to freight movement and identify additional projects based on field observations and surveys. The result of this study should be a list of freight-related projects for the Nashville area. When complete, this list can be used as an input to update the Freight Priority Project List provided in Section 6.

### **3.4 KNOXVILLE MPO**

The Knoxville MPO has completed freight planning in previous studies and it incorporates freight planning into its long range transportation planning process. The Knoxville Regional Freight Movement Study was completed in 2005 and it contains the following key freight projects for the Tennessee Freight Priority Project List:

- Widen I-81 in Jefferson and Hamblen County from 4 lanes to 6 lanes (Planned)
- Construct new access road from McGhee Tyson Air Cargo facilities to Alcoa Highway or I-140, or improve Airbase Road, Wrights Ferry Road, and Topside Road to allow for improved access to Alcoa Highway and I-140 (New, recommended for LRTP update)

Several other projects listed, including a widening of I-75 and the development of a Norfolk Southern intermodal terminal are already mentioned elsewhere. Since Knoxville MPO is currently performing other freight studies, it is recommended that the Tennessee Freight Priority Project List be updated upon the completion of its ongoing study.

### 3.5 APPALACHIAN REGIONAL COMMISSION

A large part of eastern Tennessee falls within the jurisdiction of the Appalachian Regional Commission (ARC). An ARC representative noted that possible freight projects in Tennessee could come from either their Appalachian Development Highway System (ADHS) or their Network Appalachian Plan, which identified a list of 30 tactical opportunities. Scanning these materials yielded the following possible freight projects for Tennessee.

**Complete ADHS Corridor K** - Corridor K runs from I-75 at Cleveland west to the North Carolina State line. The total length of the corridor in Tennessee is 43.8 miles. Out of this distance, work is complete on 13.8 miles, there are 15.9 miles of remaining stage construction, and 14.1 miles in the location studies stage. The location/environmental study is in the US-64/74 (SR-40) corridor in the vicinity of Ocoee River and Ocoee Lake.

**Complete ADHS Corridor J** - Corridor J runs from I-124 at Chattanooga to the Kentucky state line north of Celina. The total length of the corridor is 140.8 miles. Most of the corridor is complete, but there are 13.8 miles of remaining stage construction (open to traffic, but additional work or widening to be completed), 3.7 miles of construction under way, 2.6 miles in the design and right of way stage, and 3.4 miles in the location studies stage. The location study is on a 3.4 mile section of SR-52 from Allons Rd. to SR-111 in Livingston, Overton County.

**Complete ADHS Corridor V** - Corridor V runs from the Alabama State line near South Pittsburg to I-24 at Kimball. The total length of the corridor is 3.8 miles. The entire 3.8 miles is in stage construction. There is currently a project underway for the design and ROW acquisition for upgrading the existing I-24 interchange at US-72 (SR-27) in South Pittsburgh, Marion County.

**Inland Port, Intermodal Container Transfer Facility, East Tennessee.** In cooperation with the Norfolk Southern Crescent Corridor project, develop new intermodal container transfer facility to enhance access to both domestic and international markets for east Tennessee, southwest Virginia, and western North Carolina.

**Atlanta-Huntsville-Memphis Highway Corridor, GA, AL, MS, & TN.** Plan, design, and construct a new highway trade corridor between Atlanta, Huntsville, and Memphis to enhance access to both domestic and international markets for Georgia, Alabama, Mississippi, and Tennessee.

**Tenn-Tom Intermodal Corridor, AL & MS.** Develop new intermodal container-on-barge services along the Tenn-Tom Waterway Corridor between northern Mississippi/Alabama and the Port of Mobile, enhancing access to both domestic and international markets for northeast Mississippi, northwest Alabama, and southern Tennessee. The Mississippi Container on Barge Marine Highway Intermodal Supply Chain (MsCoBMHISC) proposal includes inducement services on the Tenn-Tom Waterway from Cairo/Paducah, KY to Mobile, AL in

Phase III of that proposed project. This corridor passes through western Tennessee.

**Murphy Gap Restoration, NC, GA, TN.** Restore abandoned rail link near Murphy, NC to reconnect western North Carolina, northern Georgia, and eastern Tennessee rail corridors, enhancing rail access for western North Carolina, northern Georgia, and eastern Tennessee.

### 3.6 MEMPHIS CHAMBER OF COMMERCE

Due to the abundance of freight activity in the Memphis area the Memphis Chamber of Commerce initiated a Regional Freight Infrastructure Plan for the Memphis tri-state area including Tennessee, Mississippi, and Arkansas. The study recommended strategic projects that have the most potential to integrate these systems with emerging global-supply chain requirements. The study listed 32 freight projects for the Memphis area, which are all included in the prioritization process for Task 5. However, only the five key recommendations are described below.

**Lamar Avenue (U.S. 78) Corridor Improvements** - Lamar is also one of the most congested corridors in the region, with a volume to capacity ratio of 0.9 or greater. Nationally, the corridor links Memphis to the southeast United States and Birmingham, Alabama. Locally, it supports a highly dense network of truck terminals, warehouses, industrial development, and the BNSF intermodal terminal off East Shelby Drive and SR 175, as well as air freight transport to and from Memphis International Airport via Democrat Road. Currently, the corridor is under study by Cambridge Systematics to examine options to alleviate congestion through various capacity enhancements to the corridor and connecting facilities, such as synchronized signals, extension of I- 22 from the Mississippi state line to I-240, rerouting traffic around the corridor by way of Interstates 69 and 269 or other roads, and creating grade-separated interchanges at key intersections to provide limited access. Also under review will be the application of Intelligent Transportation System (ITS) technology to the corridor.

**Holmes Road Corridor Improvements** - Holmes Road runs east and west just south of the Memphis International Airport, beginning at US-61 and intersecting other major freight arterials including Lamar Avenue and I-55 (although there is no interchange access with I-55). Holmes Road is an important freight corridor due to its location near the Memphis International Airport and Lamar Avenue. Providing more capacity on Holmes Road could alleviate freight congestion there and on East Shelby Drive, which is a parallel corridor. The Holmes Road widening project has been on the MPO Transportation Plan since 1969, and is included in the MPO TIP58. Similar to Lamar Avenue, this recommendation proposes including the use of ITS technology where appropriate.

**Interstate 40/Interstate 55 Interchange Modifications.** Interstates 40 and 55 are not only important connectors to local freight generators in the region, but

critical components of the national interstate system for the movement of freight. I-55 links New Orleans, Memphis, St. Louis, and Chicago, while I-40 crosses from California to North Carolina. More importantly, these interstates locally serve the UP intermodal facility in Marion, Arkansas, several West Memphis national trucking terminals, as well as warehouse and distribution facilities for a number of national retail chains. They are major arterials to and from the International Port of Memphis, Memphis International Airport, and local West Memphis water and air facilities. Segments on both these interstates in West Memphis exceed a congestion ratio of 0.9. Given the importance of these national and local highways for the efficient flow of freight, the Regional Freight Infrastructure Plan proposes a detailed engineering study to determine the most appropriate solution for the I-40 and I-55 and I-40, I-55, Highway 77, and Highway 191 intersections in West Memphis, Arkansas. This study could potentially result in the complete redesign of the I-40 and I-55 and the I-40, I-55, Highway 77, and Highway 191 intersections.

**Construction/Completion of I-69/I-269.** Dubbed the "NAFTA superhighway," Interstate 69 (I-69) is planned to be a new north-south interstate route that provides a continuous controlled access highway link between Mexico and Canada, a route length of approximately 1,650 miles. I-269 is part of the larger I-69 system. It is intended to divert through traffic around the city and reduce congestion. Besides the national freight goal of facilitating North American highway freight between the United States, Canada, and Mexico, I-69 and I-269 offer significant local benefits to the region. I-69 increases highway freight accessibility to the largely rural Western Tennessee portion of the study region, and will stimulate economic development. I-269 provides greater highway and freight access to eastern Shelby County and north Mississippi, and minimizes freight congestion in Memphis by diverting through freight traffic away from downtown Memphis. Both interstates support the Plan's objectives of freight connectivity and intermodal growth, especially for the outlying UP and proposed NS intermodal terminals.

**Third Mississippi River Bridge Crossing.** A third Mississippi River bridge crossing would not only reduce congestion in the region, but become a critical link for local and national freight connectivity. The need for the third river bridge has been documented by multiple agencies, and has been studied by the Tennessee Department of Transportation (TDOT). The project is also identified by the Memphis and West Memphis MPO in their Long Range Transportation Plans. A third Mississippi River Bridge Crossing would help provide adequate cross-river system linkage and rerouting opportunities for the region in the case of vehicular incidents, an earthquake, or other catastrophes that cause closures and congestion on the current two bridges. It would also provide capacity relief for existing I-40 and I-55 bridge crossings, enhance connectivity between major regional freight hubs in the region, and ensure efficient mobility for expected population and employment growth, including protecting the economic vitality of the region.

### 3.7 OTHER CHAMBERS OF COMMERCE

Several additional chambers of commerce were contacted in addition to the Memphis Chamber of Commerce described above. These included:

- Tennessee Chamber of Commerce
- Chattanooga Chamber of Commerce
- Nashville Chamber of Commerce
- Knoxville Chamber of Commerce

These organizations responded that they are focused on trade and that they are not involved in transportation or freight at all. Therefore, these organizations did not provide input that added to the understanding of freight needs or projects.

### 3.8 US ARMY CORPS OF ENGINEERS AND TENNESSEE VALLEY AUTHORITY (TVA)

The US Army Corps of Engineers and Tennessee Valley Authority (TVA) are both responsible for operating the Tennessee River in Tennessee. There are two major projects currently under construction to replace lock systems on the river that will improve efficiencies of moving barge traffic through Tennessee. They are as follows:

- **Kentucky Lock Addition** - While this lock is on the Tennessee River in Kentucky near Paducah, barge traffic from Tennessee must go through here, so it is included. This project will increase the lock length from 600 to 1200 feet allowing barges to avoid a double lockage procedure that takes more than 3 hours to perform when they are more than 600 feet long, which is the case for most of the barge traffic. The project began in 1998 and is still under construction. Without funding constraints the project could have been completed in 10 years, but funding constraints have extended the expected completion beyond that timeframe. The federal government is paying for the entire \$532 million cost, but 50% of the costs are funded through an Inland Waterways Trust Fund, which is funded through a federal tax levied on diesel fuel used by the marine industry.
- **Chickamauga Lock and Dam** - the Chickamauga Lock and Dam is located on the Tennessee River 13 miles upstream from the Port of Chattanooga. It is currently under reconstruction due to structural and capacity problems. The structural problems are due to deteriorating concrete, which is causing increasingly costly maintenance costs and could threaten the structural integrity of the lock. The capacity of the current lock only holds one jumbo barge causing average locking times of 8 hours, the longest on the Ohio River system. The new lock will have capacity for 9 jumbo barges at a time, dramatically decreasing locking

times. Construction began in 2004 with utility and roadway relocation. Currently construction is underway on a new cofferdam, which will be followed by construction of the new lock. The total cost for the new lock is estimated at \$135 million.

### **3.9 TENNESSEE TRUCKING ASSOCIATION**

The Tennessee Trucking Association (TTA) is a trade organization that represents 400 motor carriers and 200 related companies. In relation to congestion in Tennessee, TTA referenced the American Transportation Research Institute (ATRI)'s work to identify the top 100 highway freight bottlenecks in the country and relayed the four of these that are located in Tennessee, which are shown below:

- 24<sup>th</sup> worst freight bottleneck - Interchange of I-65 and I-40 in Nashville
- 54<sup>th</sup> worst freight bottleneck - Interchange of I-40 and I-240 on the east side of Memphis
- 72<sup>nd</sup> worst freight bottleneck - Interchange of I-75 and I-24 in Chattanooga
- 92<sup>nd</sup> worst freight bottleneck - Interchange of I-40 and I-275 west of downtown Knoxville

The representative from the Tennessee Trucking Association did not have in-depth information on the cause of these bottlenecks, but he suspected that it is based on their geometric design. In addition, the representative also commented on other statewide freight concerns. For example, they said that while eastern Tennessee does have challenging terrain, TDOT has done a good job at adding climbing lanes in appropriate places. They did note that there is a lack of truck parking near interstates, resulting in unsafe practices of trucks parking in many ramp areas. While there are some conflicts with passenger traffic, trucks usually stay out of urban areas during rush hour and bypasses around these areas, such as SR-840 in Nashville and the future I-269 in Memphis, help them do this. The association would support legislation to require truck traffic to use the SR-840 bypass (once it is complete) around Nashville during peak hours.

### **3.10 TENNESSEE SHORT LINE RAIL ALLIANCE**

The Tennessee Short Line Rail Alliance represents more than 20 short line railroads in Tennessee that provide local connections to Class I railroads. The Alliance mentioned that a rehabilitation fund for short line railroads established by TDOT, which is funded by a tax of diesel fuel for locomotives, is crucial to maintaining tracks and infrastructure in short line rail corridors. There are not many short line railroads that meet the 286,000 pound limit, which is quickly becoming the industry standard; however, it is vital to move toward that standard. The rehabilitation fund should help them move toward that by

improving track and reconstructing some bridges, which will likely be the most difficult part. The overall capital needs of short line railroads in Tennessee are outlined in a 2005 Needs Assessment study.

The investment in shortline railroads have not been studied extensively. The main question regarding shortline investment is whether such investments are economically viable. An economic impact study carried out in Kansas measured the effect of truck traffic increase, changes in transportation cost, roadway damage and increase in traffic accidents as a result of shortline railroad abandonment. The results indicate that shortline railroads can save the state of Kansas millions of dollars in roadway damage, transportation and safety costs.<sup>1</sup> On the other hand, in an assessment of Texas' Shortline Railroads, total pavement damage savings was found to be unable to cover investment needs, unless the shortlines support medium density areas.<sup>2</sup> This indicates that certain factors must be present for shortline rail investments to be successful. Adequate traffic density and connections to Class I railroads are identified as the most important factors to invest in shortlines.<sup>3</sup>

### 3.11 TENNESSEE DEPARTMENT OF ECONOMIC DEVELOPMENT

The Tennessee Department of Economic Development works with companies to identify locations to expand or develop new facilities in the State. It also works with TDOT to identify transportation facilities that need to be upgraded to serve large industrial and manufacturing sites. Representatives of the department believe that most areas are well served, but congestion in the Memphis area creates some problems. They see the lack of private capital, lack of tax revenue, and insufficient planning as reasons for freight transportation deficiencies. They mentioned several potential projects to correct deficiencies and help them enhance economic development for the state.

- **Norfolk Southern Crescent Corridor** - NS plans to build intermodal rail terminals in Memphis and East Tennessee. The Memphis terminal is currently underway, while the East Tennessee terminal will be complete in a few years. The Crescent Corridor is described in more detail in Section 2.4 of this report.
- **Port of Cates Landing** - TDOT applied for a USDOT TIGER II grant to complete Phase II construction for this port on the Mississippi River in

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<sup>1</sup> Source: [http://ntl.bts.gov/lib/24000/24500/24597/KS034\\_Summary.pdf](http://ntl.bts.gov/lib/24000/24500/24597/KS034_Summary.pdf)

<sup>2</sup> Source: [http://ctr.ra.utk.edu/LRRFT/cmte\\_activities/papers/TRBAM%2006-WarnerTerra.pdf](http://ctr.ra.utk.edu/LRRFT/cmte_activities/papers/TRBAM%2006-WarnerTerra.pdf)

<sup>3</sup> Source: <http://www.allbusiness.com/operations/shipping/480970-1.html>

northwest Tennessee. This would fund the construction of port facilities and roadways on site.

- **East-West Rail Connection** - The railroads on either side of the rail network gap are currently owned by different companies (Norfolk Southern and Nashville Eastern). Competition between these railroads and the high cost of closing this gap make this project difficult to complete.
- **Provide second Class I rail access to Memphis Megasite** - Many large manufacturers demand access to two Class I railroads to ensure reasonable shipping rates. Right now this site is only served by CSX, but it is feasible to provide to a connection to Canadian National by building a 25 mile short line railroad. However, this could likely not happen until a potential tenant has committed to locating there.
- **Clarksville, TN Public Port** - TDOT has submitted a USDOT TIGER II Grant application on behalf of RJ Corman RR to upgrade a private port on the Cumberland River near Clarksville to a public port. This port would provide rail access along with existing truck access to the port.

## 4.0 Freight Bottleneck Identification

Relief from congestion is one type of freight need identified by multiple stakeholders and several previous studies. This section identifies freight bottlenecks in the state based on the Tennessee statewide travel demand model outputs. Specifically, volume-to-capacity (V/C) ratios estimated in the model are used to identify the most congested locations in the state, and truck volume estimates in the model are used to identify where congested locations overlap with freight-intensive highway segments.

This section also describes the result of a scan of bottlenecks from two GPS sources: ATRI truck-equipped GPS data and INRIX GPS data.

### 4.1 BOTTLENECKS BASED ON TRAVEL DEMAND MODEL OUTPUTS

The Tennessee statewide travel demand model provides base year (2003) and future year (2030) truck volume and V/C ratio estimates. Future year data includes the existing and committed network, with programmed new and widening projects included as part of the model. The roadway segments included in the committed network are shown in Figure 4.1 below.

Figure 4.2 shows the daily truck volume estimates for 2003 and 2030. For year 2003, the highest truck traffic volume is in the Knoxville metropolitan region. These highest volumes occur at the I-40/I-75 merge and to the east of Knoxville as well. As a whole, I-40 and I-75 appear to be the corridors with the highest truck volumes. In the year 2030, truck volumes will be above 15,000 for all corridors in the state.

Figure 4.3 shows the base and future year V/C ratio and the corresponding LOS based on the Statewide Travel Demand Model. The base year model output shows traffic congestion is most prominent in urban areas, especially Memphis. The year 2030 model shows not only increasing levels of congestion in urban areas, but also the general spreading out of the congestion from the urban areas to more rural areas.

Figure 4.1 Committed Network in the Statewide Travel Demand Model  
2030

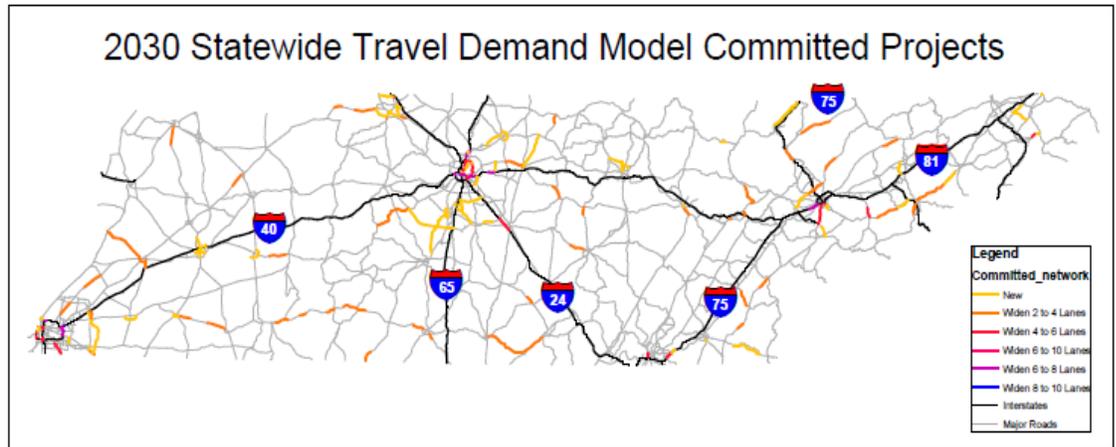


Figure 4.2 Daily Truck Volumes on Tennessee Roadways  
2003 and 2030

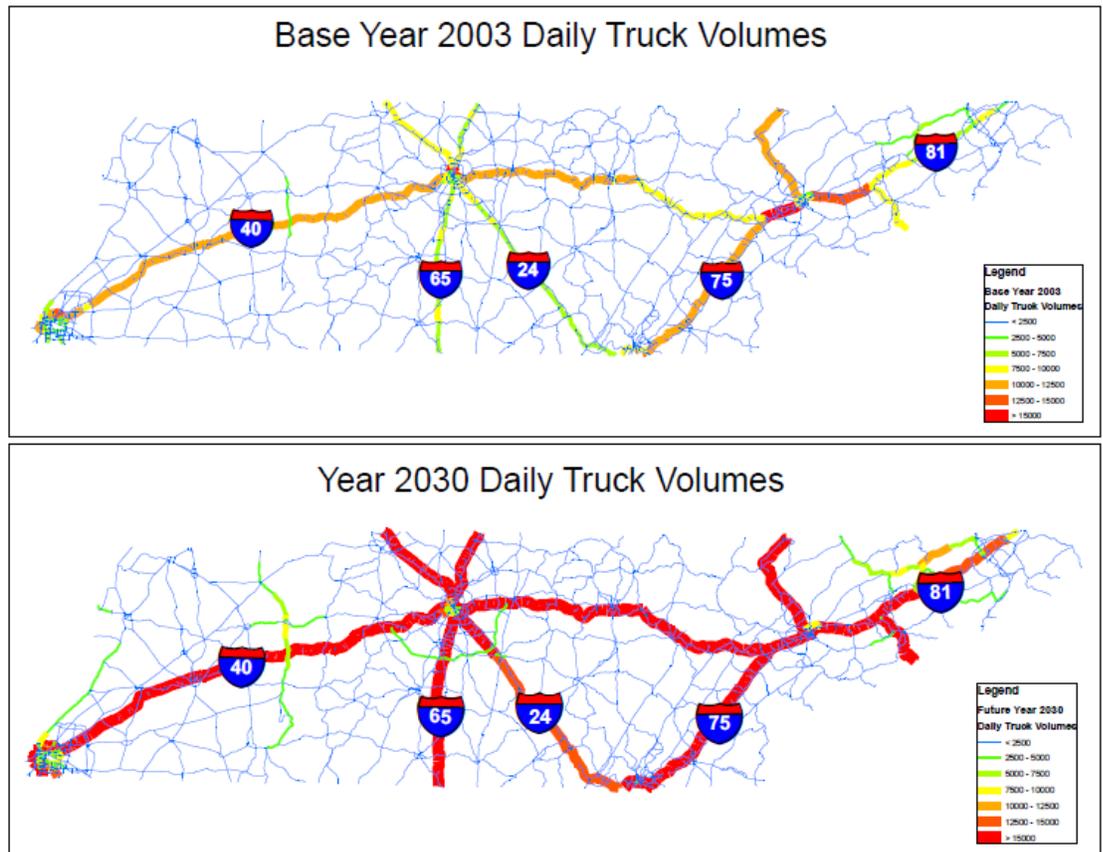
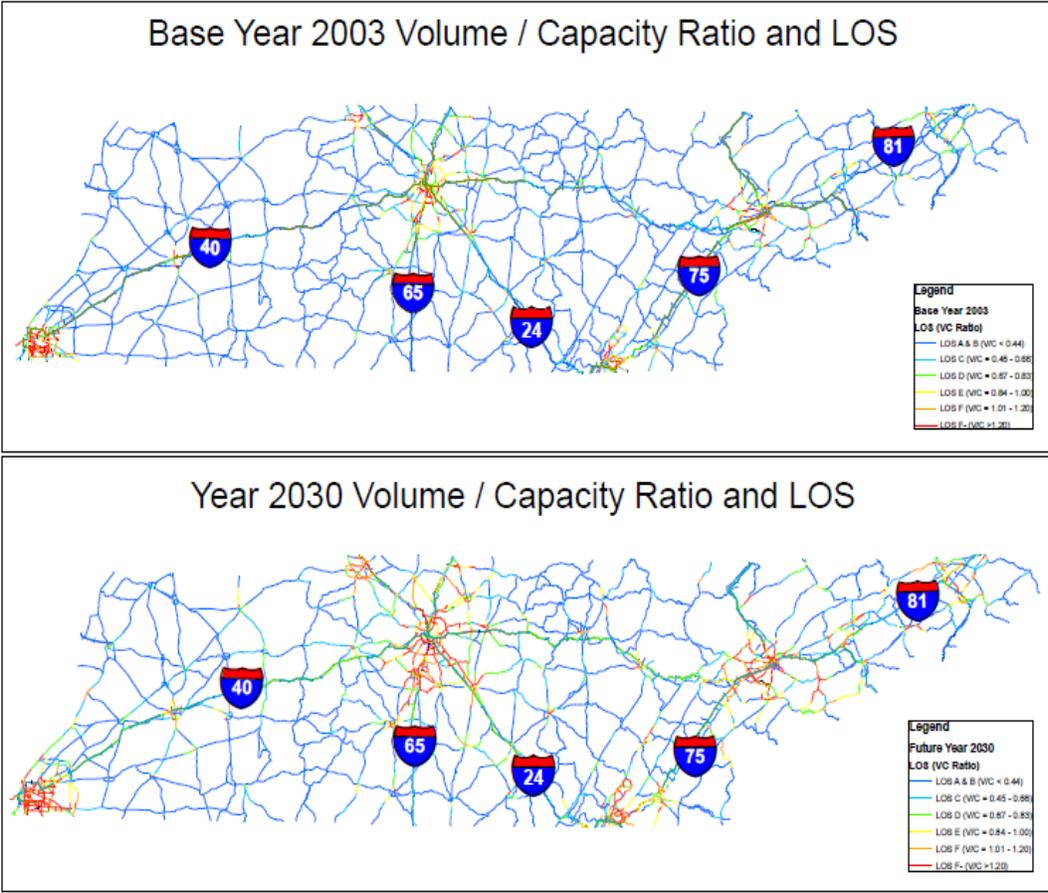


Figure 4.3 Volume/Capacity Ratios and LOS of Tennessee Roadways  
2003 and 2030



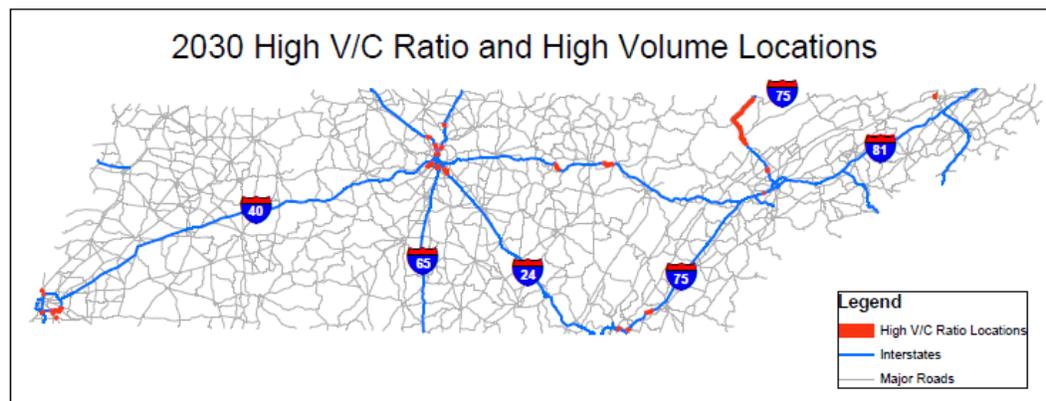
## 4.2 TOP BOTTLENECK LOCATIONS AND PROJECT IDENTIFICATION

The overlap between high V/C ratios and high truck volumes is used to identify the worst truck bottlenecks in Tennessee. The first step in this process was to identify the top 100 highway segments with the highest V/C ratios and truck volumes greater than 5,000 daily vehicles. A segment is defined as a link in the roadway as defined in the network for the travel demand model. High V/C and truck volume segments that were found to be adjacent to other high V/C and truck volume segments were combined together. High V/C and truck volume segments that were found to be less than one mile in length were removed from the list to ensure that the focus was on congested corridors rather than congested points or model anomalies.

This process resulted in 19 high V/C ratio and high truck volume segments. These 19 segments can be considered to be the worst truck bottlenecks in the state. They can also be used to identify the locations of needed congestion relief for trucks in the state. These locations are primarily located in the urban areas of Memphis, Nashville, and Chattanooga. However, there are congested, high truck volume locations along the northern portion of I-75, on I-40 east of Nashville, and on I-75 north of Chattanooga as shown in Figure 4.4.

Detailed information regarding the 19 segments is provided in Table 4.1. Several of the segments identified through this analysis were identified in other freight-related studies such as Lamar Avenue, portions of I-75, and US 51. For the remaining locations, capacity improvement projects are recommended and these are included in the Tennessee Freight Priority Project List in Section 6.0.

Figure 4.4 Top 19 High V/C Ratio and High Truck Volume Locations  
2030



**Table 4.1 Top High V/C Ratio and High Volume Locations**  
2030

Segment	Region	Route	Length (mi)	Speed (MPH)	Volume (Vehicles)	Truck Volume (Vehicles)	V/C Ratio
1	Greater Nashville	US 70	3.73	40	74,105	15,878	2.61
2	East Tennessee	I-75	2.29	70	97,100	26,366	2.54
3*	Memphis Delta	US 51	1.49	40	69,822	9,424	2.27
4	First Tennessee	US 11W	1.27	40	48,310	7,151	2.23
5	Greater Nashville	I-24	5.13	68	105,670	24,393	2.23
6*	Memphis Delta	US 78 (Lamar Ave)	4.26	40	94,557	12,094	2.20
7	Memphis Delta	I-240	4.69	60	254,482	8,531	2.15
8	Greater Nashville	I-24	3.60	60	200,426	20,089	2.14
9*	East Tennessee	I-75	1.18	60	192,595	40,625	2.11
10	Greater Nashville	I-440	2.43	60	149,232	7,670	2.10
11	South East Tennessee	I-24	1.27	60	162,244	24,356	2.06
12	Greater Nashville	I65	2.18	60	178,014	43,103	2.02
13	South East Tennessee	I75	5.73	66	117,671	24,421	2.01
14	Greater Nashville	I65	1.93	60	89,924	17,589	1.98
15	East Tennessee	I75	29.14	70	54,468	26,507	1.98
16*	Upper Cumberland	I40	3.67	70	60,085	24,641	1.96
17	Memphis Delta	I240	1.32	60	222,787	23,478	1.95
18*	Upper Cumberland	I40	5.90	70	61,493	23,283	1.92
19	Greater Nashville	I65	1.91	60	196,094	19,121	1.87

\* These are projects appearing elsewhere either as part of a whole project or a complete project.

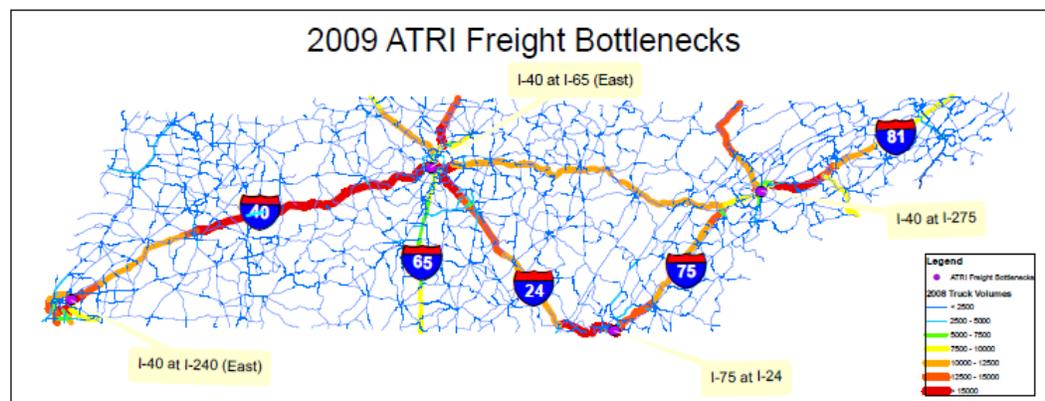
### 4.3 BOTTLENECKS IDENTIFIED IN GPS DATA

Figure 4.5 shows the bottlenecks identified from the American Transportation Research Institute (ATRI) 2009 Bottleneck Analysis of 100 Freight Significant Highway Locations in the U.S. The figure also shows 2008 Truck AADT based on TDOT classification counts. The four bottlenecks identified by ATRI are:

- I-40 at I-240 (East) in the Memphis region;
- I-40 at I-65 (East) in the Nashville region;
- I-40 at I-275 in the Knoxville region; and
- I-75 at I-24 in the Chattanooga region.

The GPS data indicates that there are significant truck-related bottlenecks in each of the four largest metropolitan areas in Tennessee. Only the GPS truck bottleneck location in Chattanooga matches exactly with a location identified by the travel demand model. The mismatch found in the other three locations is primarily due to the fact that GPS data focuses on finding locations with lower actual speeds relative to free flow highway speeds. This tends to occur on interstate-to-interstate interchange locations such as those shown in Figure 4.5. This contrasts with travel demand models which identify congestion based on segments that have higher volumes than design capacity. Therefore, each of these steps will identify different locations as being the most congested.

Figure 4.5 Freight Bottlenecks Identified in Tennessee by ATRI\*  
2009



\*TDOT vehicle classification count data shown for 2009.

## 5.0 Top Truck-Involved Crash Locations

Truck-involved crashes are a major concern for both truck drivers and passenger car drivers. Nationally, the crash data indicate that the majority of truck-involved crashes are caused by passenger car drivers. However, the severity of these crashes is much greater than for non-truck-involved crashes. Understanding the location of truck-involved crashes can serve as a starting point for developing solutions that reduce truck-involved crashes, and therefore significantly reduce the average severity of crashes in Tennessee

The purpose of this section is to identify locations with the most truck-involved crashes and locations with the highest truck-involved crash rates. The process used for this analysis was to obtain raw crash data from the TDOT Safety Division. This crash data was mapped to specific roadway segments. Then, the truck-involved crash rates were calculated based on crashes per million truck VMT, where VMT is calculated by multiplying truck AADT, segment length and 365 days. Locations with high truck-involved crashes are then compared to truck volumes to determine the most significant high truck-involved crash rate locations in the state. Additionally, the locations with the highest number of truck-involved crashes are also identified to develop an understanding of where the most truck-involved crashes are occurring within the state.

It should be noted that there are alternative methods to estimating truck-involved crash rates. Therefore, figures in this analysis may not perfectly match figures derived from alternative analyses. For example, because of the way the crash rates are provided, the analysis used in this report may have double counted a portion of the accidents as they are mapped to roadway segments. Therefore the crash rates only serve as a general estimate rather than a hard figure.

### 5.1 CRASH ANALYSIS

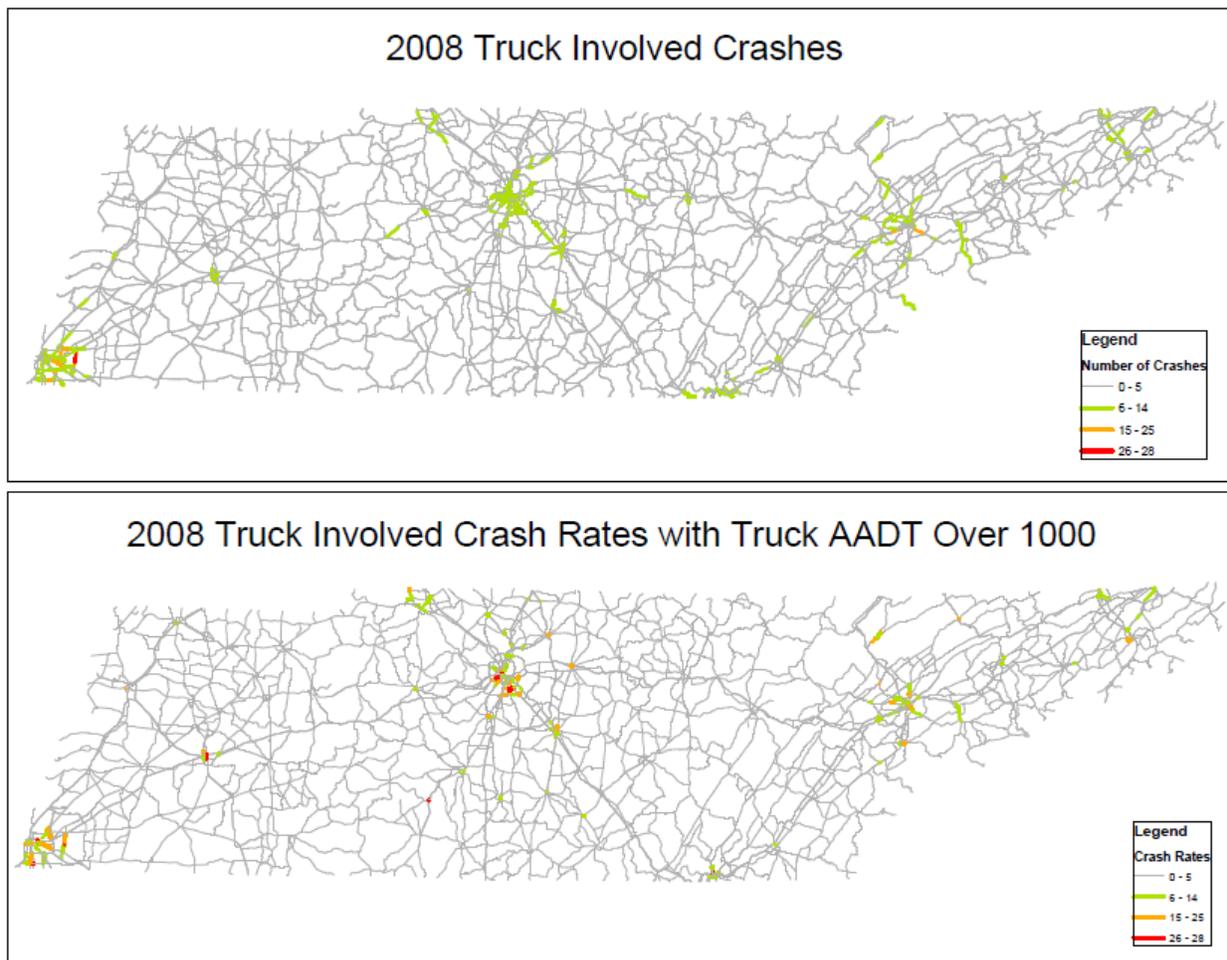
Figure 5.1 shows the truck involved crashes and the crash rates for major roadways in Tennessee based on 2008 crash and truck volume data. Top Truck-Involved Crash Rate Locations and Projects Identification

Figure 5.2 shows the location of the top 15 locations where the crash rate is highest and where the truck AADT is greater than 5,000. These locations are concentrated in the urban areas. Most notably, Memphis, Nashville, and Knoxville have the locations with the highest crash rates. Chattanooga does not have any of the highest truck-involved crash locations. These high truck crash rate locations are listed on Table 5.2. These locations also warrant further

investigation to determine the cause of the truck-involved crashes and potential solutions to reduce the truck-involved crash rate. Statewide truck involved crash rate average is 1.12 crashes per million truck VMT.

It is recommended that TDOT establish a Tennessee Statewide Truck Safety Program that begins this process. The first step in this program would be a detailed analysis of the top truck-involved crash locations and the top truck-involved crash rate locations to identify a long-list of crash hot spots in the state. This analysis would then go to each specific location and document the average severity of crashes, the nature of these crashes, the cause of these crashes (where possible), and it would also recommend specific project, program, and policy changes that would potentially reduce crashes at these locations.

Figure 5.1 Truck Involved Crashes and Crash Rates for Truck AADT Over 1000  
2008



**Table 5.1 Top 15 Highest Crash Rate Locations with Truck AADT over 5000  
2008**

County	Route	From Mile	To Mile	Total Volume (AADT)	Total Truck Volume (AADTT)	Number of Truck Involved Crashes	Truck Involved Crash Rate (Crashes per Million VMT)
Shelby	I-240	0.0	1.4	64,720	6,472	12	3.60
Shelby	I-240	1.4	2.9	89,210	6,245	12	3.53
Loudon	SR 73	4.7	6.3	27,640	5,252	10	3.26
Shelby	SR 4	4.8	5.3	37,220	6,700	4	3.15
Shelby	SR 4	5.3	7.4	33,270	6,654	15	3.00
Loudon	SR 73	3.8	4.7	16,830	5,217	5	2.89
Davidson	I 40	19.4	19.7	152,370	19,808	6	2.77
Knox	I 40	18.8	19.4	100,610	9,055	6	2.75
Davidson	I 65	10.9	11.7	161,410	9,685	8	2.73
Shelby	SR 175	6.8	9.8	43,720	5,246	15	2.61
Sumner	SR 6	3.0	3.9	35,040	8,760	7	2.49
Davidson	I-65	8.4	9.3	98,780	8,890	6	2.10
Shelby	SR 385	1.2	2.4	115,880	9,270	8	2.00
Davidson	I-65	4.9	6.0	146,040	10,223	8	1.94
Davidson	I-40	19.7	20.6	160,570	19,268	11	1.88

\*A truck weighing greater than 10,000 lbs GVWR or displaying a HazMat placard was involved

## 5.2 Top High Number of Crash Locations in Tennessee 2008

County	Route	From Mile	To Mile	Total Volume (AADT)	Total Truck Volume (AADTT)	Number of Truck Involved Crashes	Truck Involved Crash Rate (Crashes per Million VMT)
Shelby	SR 177	5.8	7.3	60,870	2,435	28	20.7
Shelby	SR 177	7.3	10.1	46,410	2,321	28	11.7
Knox	SR 1	9.1	13.8	37,770	1,889	25	7.6
Knox	SR 71	3.2	8.1	30,670	1,227	22	9.9
Davidson	I-24	18.4	20.5	155,370	21,752	21	1.3
Shelby	SR-57	4.7	7.0	36,200	1,448	18	14.5
Shelby	SR-15	1.6	5.1	31,660	317	17	42.9
Rutherford	SR-96	9.4	11.0	33,500	4,355	17	6.8
Shelby	SR 177	3.0	5.8	57,010	2,280	16	6.9
Shelby	SR 23	0.0	1.2	30,790	924	15	37.7
Davidson	SR 11	4.5	6.1	32,400	1,296	15	19.5
Shelby	SR 204	0.0	1.8	40,590	1,624	15	14.2
Shelby	SR 57	1.9	4.7	27,830	1,392	15	10.7
Shelby	SR 4	5.3	7.4	33,270	6,654	15	3.0
Shelby	SR 175	6.8	9.8	43,720	5,246	15	2.6

## 6.0 Project Prioritization

The projects identified, once implemented, would all benefit Tennessee and improve Tennessee's transportation system. However, realistically, not all projects can be implemented at once and therefore a methodology must be established to prioritize the list of projects. This section details the methodology used as well as the result of the prioritization.

### 6.1 METHODOLOGY

The method chosen for project evaluation is a multi-attribute weighted evaluation methodology. This means that attributes are chosen and assigned a weighting out of 100 percent. Then each project is evaluated against each attribute based on a scale of 1 to 5, with 1 being the lowest score, indicating that the project did not achieve the objective of the attribute at all, and 5 being the highest score, indicating that the project achieved to the fullest extent the objective of the attribute. The score for each attribute is then multiplied with its weighting and then added together to achieve an overall score used to rank the projects. A qualitative evaluation of the Benefit/Cost is also included to provide a relative measure of cost effectiveness.

The projects used for evaluation are not broken down into multiple modes for two main reasons. First, many projects are either multi-modal, or impact several modes of transportation, and therefore it is difficult to assign such projects to one mode category. Second, by grouping each of the projects together it emphasizes the intermodal focus of freight projects, which is stated as an important objective in TDOT's Long Range Transportation Plan.

The attributes chosen for evaluation pivot off of the TDOT Long Range Transportation Plan's Guiding Principles, as well as the goals and objectives focused on the goods movement sector. Each attribute is discussed below:

- **Freight Congestion Relief (20%)** - This attribute addresses mobility of goods on Tennessee Roadways. This attribute is often addressed by TDOT by adding roadway capacity, building bypasses around urban areas, and providing highway traffic diversion. A high rating will indicate the project will effectively reduce congestion either directly (such as lane widening) or indirectly (such as providing alternative mode of transportation).
- **Safety (15%)** - Maximizing safety and security is stated as a Guiding Principle in TDOT's LRTP. Specifically for freight, safety includes highway safety, such as safety issues as a result of higher volumes and higher truck percentages. Any project that improves safety either by

reducing congestion, improving infrastructure, or diverting freight to a safer mode in terms of crashes per ton-mile will receive a high score.

- **Environmental Impacts (15%)** – This addresses the Guiding Principle of promoting stewardship of the environment. Projects that divert freight to more efficient modes in terms of emissions or reduce congestion have positive impacts on the environment by lowering emissions of air pollutants. Rail projects therefore receive high scores in this category.
- **Infrastructure “Wear and Tear” Impacts (10%)** – This attribute addresses the Guiding Principle to “preserve and manage the existing transportation system.” System preservation is now seen as more important than system expansion and is important for achieving a sustainable transportation system. Highway and railway maintenance and upgrade projects will receive high ratings in this category. Additionally, diverting freight to modes with the lowest maintenance costs on a ton-mile bases will also score well.
- **Number of Major Freight Facilities Served (10%)** – This addresses the need to connect freight facilities with the freight infrastructure. Projects that improve access to more freight facilities, such as warehouses, distribution centers, rail yards, air cargo airports, and marine ports along with major freight generators and attractors, such as manufacturing areas, should receive high scores.
- **Ability to Enhance/Retain/Create Jobs (10%)** – Supporting the State’s Economy is stated as an important objective. New construction projects that have positive impacts on surrounding areas can lead to creation of more jobs and hence stimulate the economy. Additionally, projects that connect underserved industrial or rural areas to the interstate system can also score well.
- **Coordination (20%)** – Finally, no project can be implemented without agency coordination. Therefore, a project that has already been approved, or has received considerable public support will score high in this category.

## 6.2 LIST OF PRIORITIZED PROJECTS

Table 6.1 shows the complete list of prioritized projects from sections 2.0 to 5.0 above. The region will the projects are and the sources for each of the projects are also included for easy reference. It is important to note that this rating serves as the starting point in a dialogue about freight priorities in Tennessee. Other factors such as a more rigorous benefit-cost analysis and regional equity will also need to be considered in a finalized freight program for the State.

**Table 6.1 Tennessee Freight Priority Project List**

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source
	Weighting	20%	15%	15%	10%	10%	10%	20%	100%			
	Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	High/Medium/Low		
1	The Crescent Corridor	5	5	5	5	5	4	3	4.50	High	1,2,3,4	Freight Scan
2	Lamar Ave. (US 78) Corridor Improvements	5	3	4	1	5	5	5	4.15	High	4	Memphis Chamber, Memphis MPO, Congestion Analysis (Chapter 4)
3	Holmes Rd. Corridor Improvements	5	3	3	1	5	4	5	3.90	Medium	4	Memphis Chamber
4	I-69/I-269 Completion (West TN)	5	3	2	2	5	4	5	3.85	Medium	4	Freight Scan, Memphis Chamber, Dept of Econ Development
5	Third Mississippi River Bridge Crossing	5	2	3	4	5	3	4	3.75	Medium	4	Freight Scan, Memphis Chamber, Dept of Econ Development
6	I-75 Widening (I-24 to VW Plant) - Widen to 8 lanes	5	3	3	2	4	5	3	3.60	Medium	2	VW Plant Study
7	I-240 midtown widening and interchange improvement	4	3	3	1	5	3	5	3.60	Medium	4	Memphis Chamber
8	I-240 and Poplar Interchange Improvements	4	3	3	3	5	3	4	3.60	High	4	Memphis Chamber

Freight Needs and Project Identification

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
9	Chickamauga Lock and Dam Reconstruction	4	2	3	4	4	2	5	3.55	Medium	2	TVA/US Army Corps of Engineers	
10	Complete East Shelby Drive intersection improvements: I-55 to Lamar Avenue	4	4	3	3	4	2	4	3.55	Medium	4	Memphis Chamber	
11	Reconstruct I-240 and Airways Boulevard interchange	5	4	3	3	5	1	3	3.55	Medium	4	Memphis Chamber	
12	Interstate 40/Interstate 55 Interchange Modifications	5	5	2	1	4	2	4	3.55	Medium	4	Memphis Chamber	
13	Tenn-Tom Intermodal Corridor, AL & MS.	3	1	4	4	5	3	5	3.55	Medium	4	Appalachian Regional Commission	
14	Kentucky Lock Addition	4	2	3	4	3	2	5	3.45	Medium	closest to 4	TVA/US Army Corps of Engineers	
15	I-240 from Poplar Ave. to Walnut Grove Rd. (Memphis) - Widen 6 to 8 lanes	5	2	2	1	5	2	5	3.40	High	4	Memphis MPO	
16	Widen I-24 on southeast side of Nashville from 8 to 10 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
17	Widen I-440 near I-65 in Nashville from 6 to 8 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	
18	Widen I-24 in Nashville north of I-65/24 split from 6 to 8 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	
19	Widen I-65 north of Nashville from 6 to 8 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	
20	Widen I-240 in Memphis from Poplar Ave to SR-176 (Getwell Rd.) to 10 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	
21	Widen I-240 in Memphis from SR300 to Smith Rd from 6 to 8 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	
22	Increase capacity of I-65/I-24 in Nashville from 10 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	
23	Increase capacity of I-65 from Briley Parkway to SR-45 from 10 lanes	5	4	4	1	5	4	1	3.40	Medium	3	Congestion Analysis (Chapter 4)	

Freight Needs and Project Identification

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
24	Widen US-72 (Poplar Avenue) between SR 57 to Shelby Drive from 2 to 5 lanes	3	3	3	3	5	3	4	3.40	High	4	Memphis Chamber	
25	Upgrade Tennken Railroad to support 286,000-pound load limits	1	1	4	5	4	5	5	3.35	Medium	4	Memphis Chamber	
26	Upgrade Mississippi Central Railroad to support 286,000-pound load limits	1	1	4	5	4	5	5	3.35	Medium	4	Memphis Chamber	
27	Widen US-72 (Poplar Avenue) between Shelby Drive to SR 196 from 2 to 4 lanes	3	3	3	3	4	3	4	3.30	High	4	Memphis Chamber	
28	East-West Rail Connection (Planning Horizon Scenario)	3	1	4	4	5	4	3	3.25	Medium	2,3	Freight Scan	
29	Complete ADHS Corridor J	3	4	1	3	2	4	5	3.25	Medium	2,3	Appalachian Regional Commission	
30	Upgrade Short Line Railroads to 286,000 pound standard	3	2	3	5	3	3	4	3.25	Medium	1,2,3,4	TDOT, Short Line Rail Alliance	
31	Widen US 70 near I-440 from 4 to 8 lanes	5	4	4	1	3	4	1	3.20	Medium	3	Congestion Analysis (Chapter 4)	

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
32	Access Rd improvements to McGhee Tyson Air Cargo facilities	4	3	1	3	5	2	4	3.20	High	1	Knoxville Regional Freight Movement Study	
33	East-West Rail Connection (Basic)	3	1	4	4	5	3	3	3.15	Low	2,3	Freight Scan	
34	Improve safety and increase capacity of I-24 from Dodds Ave to S Germantown Rd	5	5	3	1	3	3	1	3.10	Medium	3	Congestion Analysis (Chapter 4)	
35	Complete ADHS Corridor K	3	3	1	3	2	4	5	3.10	Medium	2	Appalachian Regional Commission	
36	I-75 Widening (VW Plant to Cleveland) - Widen to 6 lanes	4	3	1	2	4	5	3	3.10	Medium	2	VW Plant Study	
37	Atlanta-Huntsville-Memphis Highway Corridor, GA, AL, MS, & TN	4	2	1	3	5	4	3	3.05	Medium	2,3,4	Appalachian Regional Commission	
38	Widen I-81 in Jefferson and Hamblen County from 4 to 6 lanes	4	2	1	3	3	2	5	3.05	Medium	1	Knoxville Regional Freight Movement Study	
39	I-24 Nashville to Chattanooga - Widen to 6 Lanes	5	4	3	1	4	3	1	3.05	Medium	2,3	Interview with Shipper	

Freight Needs and Project Identification

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source
	Weighting	20%	15%	15%	10%	10%	10%	20%	100%			
	Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	High/Medium/Low		
40	Tennessee Statewide Safety Program	3	5	1	1	3	1	5	3.00	Medium	1,2,3,4	Safety Analysis (Chapter 5)
41	Complete ADHS Corridor V	3	2	1	3	2	4	5	2.95	Medium	2	Appalachian Regional Commission
42	Statewide Truck Parking Facilities	1	5	4	5	1	2	3	2.95	Medium	1,2,3,4	Tennessee Trucking Association
43	Once SR-840 is complete require truck traffic to use this bypass around Nashville during peak hours	5	4	3	1	1	1	3	2.95	High	2	Tennessee Trucking Association
44	Upgrade at I-55 and McLemore interchange and access road to President's Island	5	1	1	2	5	1	4	2.90	Medium	4	Memphis Chamber
45	Volkswagen Plant local roadway improvements	3	2	1	1	4	5	4	2.85	Medium	2	VW Plant Study

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source
	Weighting	20%	15%	15%	10%	10%	10%	20%	100%			
	Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	High/Medium/Low		
46	Construct Chattanooga Parkway (a new 4 lane fully access-controlled facility from I-75 in Georgia to I-75 at the Hamilton/Bradley County Line)	5	3	2	2	4	3	1	2.85	Medium	2	Freight Scan (I-75 Corridor Study)
47	I-40 @ I-240 Interchange East of Memphis (construct new flyover ramp)	4	2	1	1	4	1	5	2.85	Medium	4	Memphis MPO, Tennessee Trucking Association
48	I-55 @ Crump Blvd. (Memphis) Interchange Modification	4	2	1	1	4	1	5	2.85	Medium	4	Memphis MPO
49	West Memphis Airport 10 year Capital Plan	2	1	2	3	3	3	5	2.75	Medium	4	Memphis Chamber
50	Construction of rail marshalling yard and rail access to Port of Helena	2	1	4	1	4	3	4	2.75	Medium	4	Memphis Chamber
51	Murphy Gap Restoration, NC, GA, TN.	2	1	2	5	3	3	4	2.75	Medium	1	Appalachian Regional Commission

Freight Needs and Project Identification

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
52	Widen Hacks Cross Road to four lanes	4	2	2	2	4	1	3	2.70	Medium	4	Memphis Chamber	
53	I-75 Knoxville to Chattanooga Widen to 6 lanes	4	3	3	1	4	3	1	2.70	Medium	1,2	Interview with Shipper	
54	Widen US 11W in Kingsport from 4 to 6 lanes	5	3	3	1	3	2	1	2.70	Medium	1	Congestion Analysis (Chapter 4)	
55	Widen I-75 from US-25W to KY state line from 4 to 6 lanes	5	3	3	1	3	2	1	2.70	Medium	1	Congestion Analysis (Chapter 4)	
56	Brownsville, Tennessee, megasite rail access	2	1	3	5	4	4	2	2.70	Low	4	Memphis Chamber	
57	Tunica Mega Site Rail Access	2	1	3	5	4	4	2	2.70	Low	4	Memphis Chamber	
58	Widen I-40 to 6 lanes from Mt. Juliet Rd (Exit 226) to SR-840 (Exit 235)	5	2	2	1	5	2	1	2.60	Medium	3	Freight Scan (I-40/I-81 Corridor Study)	
59	Widen I-40 to 6 lanes from Germantown (Exit 18) to SR-59 (Exit 35)	5	2	2	1	5	2	1	2.60	Medium	4	Freight Scan (I-40/I-81 Corridor Study)	

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
60	Widen I-40 to 8 lanes from SR-300 (Exit 3) to Sycamore View Rd (Exit 12)	5	2	2	1	5	2	1	2.60	Medium	4	Freight Scan (I-40/I-81 Corridor Study)	
61	Widen I-75 from 6 to 8 lanes plus 2 auxiliary lanes from the I-40/I-75 east to Pellissippi Pkwy (SR 162)	5	2	2	1	5	2	1	2.60	High	1	Freight Scan (I-75 Corridor Study)	
62	Improve Rail access to Frank C. Pidgeon Industrial Park	3	1	3	2	5	1	3	2.60	Medium	4	Memphis Chamber	
63	I-75 @ I-24 Interchange in Chattanooga	5	2	1	1	3	1	3	2.55	Medium	2	Tennessee Trucking Association	
64	Widen I-75 from 4 lanes to 6 lanes from SR 68 to Oakland Road (SR 322)	5	2	2	1	4	2	1	2.50	Medium	1	Freight Scan (I-75 Corridor Study)	
65	Widen I-75 from 4 to 6 lanes from Pond Creek Road (SR 323) to the I-40/I-75 Junction	5	2	2	1	4	2	1	2.50	High	1	Freight Scan (I-75 Corridor Study)	
66	Widen I-75 from 4 lanes to 6 lanes from Emory Road (SR 131) to SR 63 (US 25W)	5	2	2	1	4	2	1	2.50	Medium	1	Freight Scan (I-75 Corridor Study)	

Freight Needs and Project Identification

Rank	Evaluation Measure	Freight Congestion Relief	Safety	Environmental Impacts	Infrastructure "Wear and Tear" Impacts	Number of major freight facilities served	Ability to enhance/retain/ create jobs	Coordination	Overall Score	Benefits Relative to Costs	Region	Source	
		Weighting	20%	15%	15%	10%	10%	10%	20%				100%
		Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5				1-5
67	Plough Boulevard and Winchester Road interchange design completion	2	1	1	2	5	1	5	2.50	Medium	4	Memphis Chamber	
68	I-75 Truck Climbing Lanes Knoxville to KY State Line	4	4	1	1	3	1	2	2.45	High	1	Freight Scan (I-75 Corridor Study)	
69	I-40 Truck Climbing Lanes Memphis to Nashville	4	4	1	1	3	1	2	2.45	High	3,4	Freight Scan (I-40/I-81 Corridor Study)	
70	I-40 Truck Climbing Lanes Nashville to Knoxville	4	4	1	1	3	1	2	2.45	High	1,2,3	Freight Scan (I-40/I-81 Corridor Study)	
71	I-40/I-81 Truck Climbing Lanes East of Knoxville	4	4	1	1	3	1	2	2.45	High	1	Freight Scan (I-40/I-81 Corridor Study)	
72	I-65 @I-40 Interchange in Nashville	4	2	1	1	3	1	3	2.35	Medium	3	Tennessee Trucking Association	
73	I-40 @I-275 Interchange west of downtown Knoxville	4	2	1	1	3	1	3	2.35	Medium	1	Tennessee Trucking Association	
74	West Memphis Port Access to UP	1	1	2	4	3	2	4	2.35	Medium	4	Memphis Chamber	
75	SR 78 and Inland Port Highway Accessibility, Port of Cates Landing	2	1	1	4	4	2	3	2.30	Medium	4	Memphis Chamber	

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	Weighting	20%	15%	15%	10%	10%	10%	20%	100%			
	Scale	1-5	1-5	1-5	1-5	1-5	1-5	1-5	1-5	High/Medium/Low		
76	Port of Cates Landing Access to CN	1	1	1	4	4	3	3	2.20	Medium	4	Memphis Chamber
77	Expansion of Millington Regional Jetport terminal building and construction of new t-hangers and storage hangers.	2	1	1	1	3	2	3	1.90	Low	4	Memphis Chamber

# Appendix

## Stakeholder Interview Questions

For the Tennessee Department of Transportation we are collecting information on freight needs and deficiencies in Tennessee. The goal is to identify freight hotspots across the state and projects that can be used to correct deficiencies.

### Background Questions

What freight modes are you most familiar with?

- Highway (trucking)
- Rail
- Waterways
- Air

What geographic area(s) of Tennessee are you most familiar with?

What freight related activities is your organization involved in?

- Represent users of the freight system
- Work with shippers on their freight needs
- Planning and programming freight-related projects
- Other

### Freight Needs/Deficiencies

For the mode and geographic area that you are familiar with, where are the areas of major freight activity?

If familiar with a local area, what are the specific locations of the biggest freight generators/receivers.

Are these areas of freight activity well served by transportation networks? Do you see any deficiencies/bottlenecks:

- Now?
- Expected in the future?

What do you think are the reasons for the deficiencies?

- Lack of capacity?

- Lack of access to alternative modes?
- Conflict with passenger traffic?
- Difficult terrain?
- Lack of specific facilities (bridges, truck stops, truck climbing lanes)
- Other

What projects would help correct these deficiencies in the freight network?  
(planned projects that they know about or ones that they propose)

- Please describe the specific location of the project
- Please describe the type of improvement and ideal timing of implementation
- What agency should be responsible for the project?

### **Documentation/Closing**

If naming a large number of locations, can you send us some type of list or map with multiple locations drawn in.

Has your organization completed any studies that would be helpful to us on this subject? Can you send them to us please.

Do you recommend that we talk to anyone else with knowledge of these topics?

Thanks so much for your time. We greatly appreciate your input.