

Freight Infrastructure Intermodal Analysis

draft report

prepared for

Tennessee Department of Transportation

prepared by

Cambridge Systematics, Inc.

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date

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1.0 Introduction

Intermodal freight transportation is becoming increasingly important to the economy due to the increase in global trade and the increased use of containerization. With growing intermodal transportation comes the need for more seamlessly integrated intermodal freight hubs and terminals. This means that the capacity of each intermodal terminal must be able to accommodate future needs and that the access to these terminals by rail, water, air and highway modes must also match with future demand.

The access to intermodal freight facilities is especially important for Tennessee, as the State is a major transportation hub and home to several major freight shippers and carriers. This report examines Tennessee's intermodal system by conducting the following four activities:

1. Providing an overview of access to international, domestic and intra-regional markets by freight,
2. Cataloging potential intermodal opportunities in Tennessee,
3. Identifying modes and locations where enhanced modal connectivity may be possible, and
4. Exploring potential options for capturing emerging opportunities related to intermodal transportation.

This report is one of a series of reports designed to provide inputs into Tennessee Statewide Freight Plan under development in the Fall of 2010.

This task will explore potential improvements to Tennessee's highway network that could make more useful connections to other freight modes and move freight more efficiently. This task will also examine the potential for new truck-rail connections and truck-waterway connections around the State.

1.1 REPORT STRUCTURE

The remainder of the report will include the following four sections:

- **Section 2.0 - Overview of Freight Access for Tennessee.** This section describes the general trends in freight movement and the access of Tennessee to international, domestic and intra-regional markets by freight.
- **Section 3.0 - Key Intermodal Infrastructure in Tennessee.** This section identifies and maps the key rail intermodal facilities, inland waterway port terminals, and air cargo facilities. These facilities are compared to the rail freight network, FAF2 freight highway network and inland waterways.

- **Section 4.0 – Access and Capacity Needs of Key Intermodal Infrastructure.** This section evaluates the access and capacity needs of key elements of the intermodal infrastructure identified in Section 2.0. The detailed access and capacity needs are established separately for each type of intermodal facilities.
- **Section 5.0 – Policy Options to Increase Tennessee’s Freight Capacity.** This section describes opportunities to improve intermodal connectivity in the state, which will include evaluation of intermodal connectivity for each of the nine Tennessee Development Districts.
- **Section 6.0 – Conclusions and Recommendations.** This section summarizes the key results from this report and offers recommendations for improving access to intermodal facilities and improving connectivity for the overall intermodal freight network in Tennessee.

2.0 Overview of Intermodal Freight Access for Tennessee

This section considers Tennessee's access to intermodal freight infrastructure from three perspectives:

- Access to international markets,
- Access to major markets in the U.S., and
- Access between the largest Tennessee cities.

For each of these perspectives, this section describes the available infrastructure for accessing freight, and this section also provides general comments on the alignment, quality, and capacity of the freight infrastructure.

2.1 TENNESSEE ACCESS TO DOMESTIC AND INTERNATIONAL MARKETS

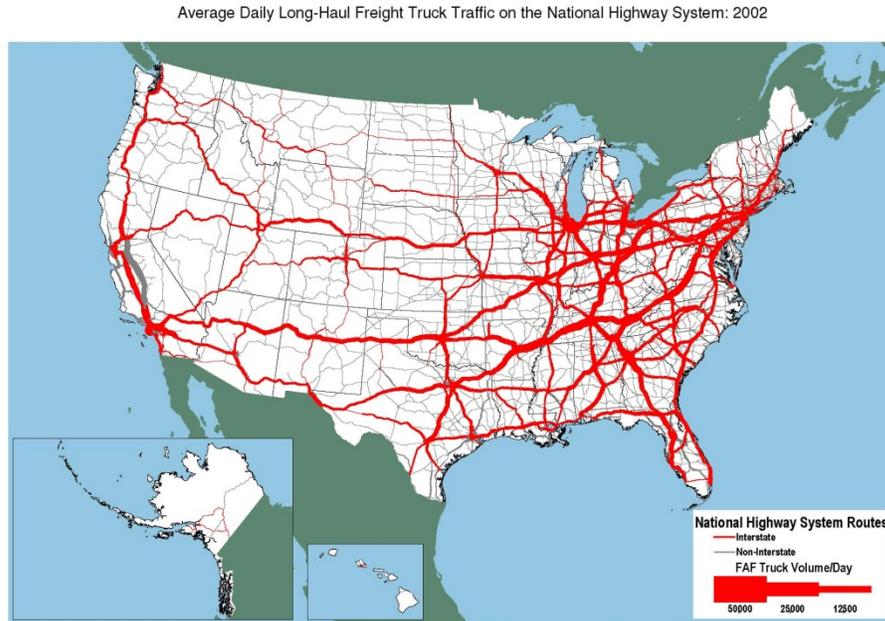
2.1.1 Highway Access

Figure 2.1 shows truck tonnage on the national highway system in 2002. This map shows that Tennessee has strong highway access to the other domestic markets in the U.S. The highway system flows in all directions from Tennessee, and allows access to all 50 states in the country via the interstate system. Of particular note, is that I-40 appears to be the most heavily trafficked east-west interstate route in the country that connects the east coast with the west coast.

Figure 2.2 shows truck routes that are above 10,000 trucks per day and routes with 25 percent or more trucks in 2002. This figure shows that Tennessee sits at a crossroads of high truck volumes and high truck percentage interstates. In particular, Tennessee has three interstates (I-40, I-75, and I-24) which are high truck volume and high truck percentage roadways. Tennessee seems to be the only state in the U.S. with three interstates of this type throughout their entire alignments through the state. This is in part due to the high percentages of through truck traffic in the state. However, it is also an indicator that the interstate system in Tennessee is in good condition and provides strong access to both freight supply and demand markets in the U.S. The extensive interstate system is a significant competitive advantage for Tennessee.

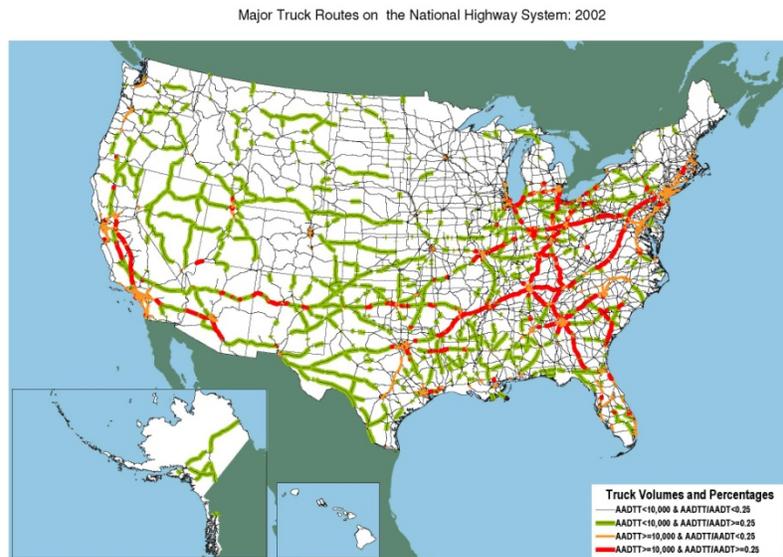
Figure 2.1 also shows that there is good highway access between Tennessee and its two largest international trading partners, Canada and Mexico. There are interstate connections between Tennessee and the largest cities in Canada, including the cities on the Canadian west coast.

Figure 2.1 Truck Tons on U.S. Highway System



Note: Long-haul freight trucks serve locations at least 50 miles apart, excluding trucks that are used in intermodal movements.
 Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007.

Figure 2.2 High Truck Volume and High Truck Percentage Locations in the U.S.



Note: AADTT is average annual daily truck traffic and includes all freight-hauling and other trucks with six or more tires. AADT is average annual daily traffic and includes all motor vehicles.
 Source: U.S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, version 2.2, 2007.

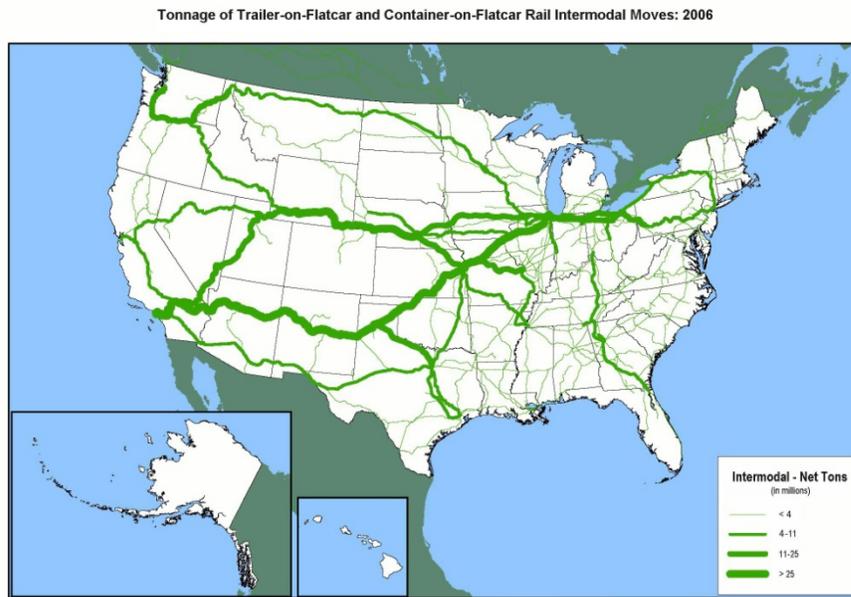
2.1.2 Intermodal Rail Access

Figure 2.3 shows intermodal rail tonnage on the nation's rail network. Unlike the highway system, there are significant discontinuities in intermodal rail volume in the U.S. There are a few heavy intermodal rail volume routes that connect port cities on the west coast with the Midwest. There are some mid-sized intermodal rail volumes connecting the Midwest to the Mid-Atlantic, Memphis to the west coast, and Jacksonville through Tennessee to the Midwest. However, there are major routes which show minimal intermodal rail volume, particularly in the southeast and connecting the southeast with the northeast. Memphis is well-known for being one of the few cities in the U.S. that is served by all five Class I railroads and has direct connectivity with both the west and east coast and all major cities in the middle of the country. However, actual intermodal rail volumes in the state are actually quite low relative to other locations, and relative to the full potential of the state.

The low volume intermodal rail routes in the southeast overlap with large and rapidly growing population centers, and indicate the most significant freight growth opportunities for Tennessee. This is also the growth opportunity that the Norfolk Southern Crescent Corridor is attempting to capitalize on as well. Figure 2.4 shows the alignment of the Crescent Corridor. When complete, this intermodal rail corridor will significantly enhance Tennessee's connection with markets in the Northeast. It will also streamline the connection between Tennessee markets and the Port of Virginia at Norfolk. It will also improve cross-state trade through the development of the intermodal railyard in East Tennessee. This rail yard will be used to ship goods from East Tennessee to Memphis. The goal of the Crescent corridor is to remove over 1 million trucks from the interstate system, and this will also be of benefit to Tennessee in terms of pavement damage, safety, congestion, and air quality.

While the Crescent Corridor will be a significant improvement for freight flows in Tennessee, it is also important for Tennessee to have strong intermodal rail links along other alignments. In particular, having intermodal rail connections to ports in the southeast will provide shippers and receivers in Tennessee with significant options above and beyond using the Crescent Corridor to connect with the Port of Norfolk. Ideally, Tennessee would have strong intermodal rail links with one intermodal port in the southeast (either the Port of Savannah or the Port of Charleston), and it would have strong intermodal rail links with one of the faster growing container ports in the Gulf of Mexico (e.g the Port of Mobile). These options will allow for the most cost-competitive freight services to be available to Tennessee-based companies. This improved freight mobility along with the freight diversion from the Tennessee interstate system would serve as powerful reasons for public investment in the private railroad infrastructure.

Figure 2.3 U.S. Intermodal Rail Tonnage, 2002.



Source: U.S. Department of Transportation, Federal Railroad Administration, November, 2008.

Figure 2.4 Crescent Corridor Overview



2.1.3 Intermodal Waterways Access

Over 15% of the nation's freight is moved on inland waterways. According to research by the Tennessee Valley Authority, this cargo translates into over \$7 billion annually in transportation savings to the economy of the United States due to per ton transportation savings.¹ This makes waterway barge movement an important area of freight movement not only domestically, but also movement that connects to deep water ports that serve international markets.

The most important international market accessible through Tennessee waterways is the Port of New Orleans, which is the world's busiest waterway. It is also the only deepwater port in the US served by six class I railroads. Figure 2.5 shows that Tennessee (via Memphis) is on the busiest inland waterway route in the country along the Mississippi River allowing for barge movements from Tennessee to the Port of New Orleans. Figure 2.6 shows U.S. inland waterway volumes in 2002 in blue. Access to this inland waterway is a significant advantage for Tennessee as bulk commodities can be shipped, manufactured or mined in Tennessee locations then shipped by barge to the Port of New Orleans for international shipment. Alternatively, the inland waterways can be used to ship commodities north to the Midwest for final destinations in the Midwest, Northeast, and Canada. The inland waterways provide a strong option for freight delivery in the north-south direction for Tennessee. This compliments the highway network and provides an alternative to the north-south rail network which is not heavily used. Figure 2.6 shows that the volume of goods carried north-south on the inland waterways through Tennessee is comparable to the tonnage carried north-south by trucks, and far surpasses the tonnage carried by rail in the north-south direction.

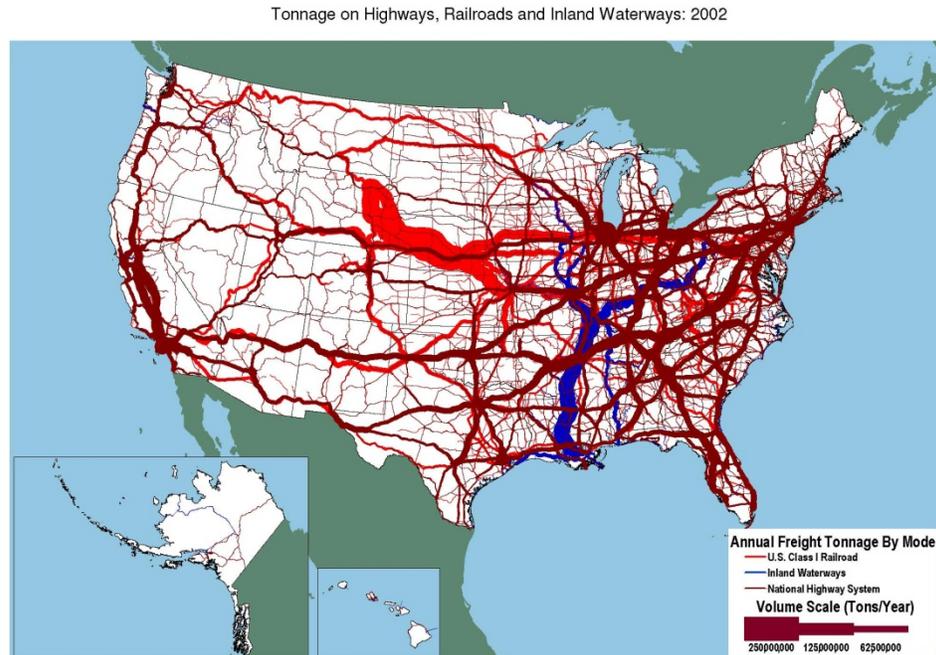
¹ Source: Tennessee Waterway Assessment Part I

Figure 2.5 Inland Waterway System²



² Source: http://www.portno.com/pno_pages/about_overview.htm

Figure 2.6 U.S. Inland Waterway Tonnages, 2002 (shown in blue)



Sources: Highways: U.S. Department of Transportation, Federal Highway Administration, Freight Analysis Framework, Version 2.2, 2007. Rail: Based on Surface Transportation Board, Annual Carload Waybill Sample and rail freight flow assignments done by Oak Ridge National Laboratory. Inland Waterways: U.S. Army Corps of Engineers (USACE), Annual Vessel Operating Activity and Lock Performance Monitoring System data, as processed for USACE by the Tennessee Valley Authority; and USACE, Institute for Water Resources, Waterborne Foreign Trade Data, Water flow assignments done by Oak Ridge National Laboratory.

2.1.4 International Port Access

Table 2.1 shows the truck driving distance between the four largest cities in Tennessee and container ports in the southeast. Interestingly, each city has a different port that is its closest. The closest distance to a container port from any of the cities is the 365 miles between Chattanooga and the Port of Savannah. Knoxville's closest port is the Port of Charleston which is 373 miles away. The closest deepwater port to Memphis is the Port of New Orleans which is 396 miles away. Nashville is the furthest major Tennessee city to a port with the city being located 447 miles from the Port of Mobile.

The planned expansions of each of these five ports is significant for Tennessee. Overall, the Port of Mobile is the lowest average distance from each of the four cities. This implies that Mobile is the lowest cost port to access from the state. The Port of Norfolk is the furthest major port from each of the four cities, but with the Crescent Corridor, it will also be a port that can be accessed at low costs. This will be an important development for Tennessee, because currently it would be very difficult to access Norfolk in one day's driving time from most cities in Tennessee. Therefore, it is very likely that rail will be the dominant access mode between Tennessee and the Port of Norfolk.

The Port of Savannah is the largest of the five ports, and will provide the most number of ships serving the rapidly growing Asia and South America markets. The Port of Charleston will become more important as Tennessee continues to improve access to South Carolina. The Port of New Orleans will be important because it can be reached by all four modes from Tennessee: truck, rail, water, and air.

Table 2.1 Trucking Distance from Tennessee Cities to Major Ports
Miles

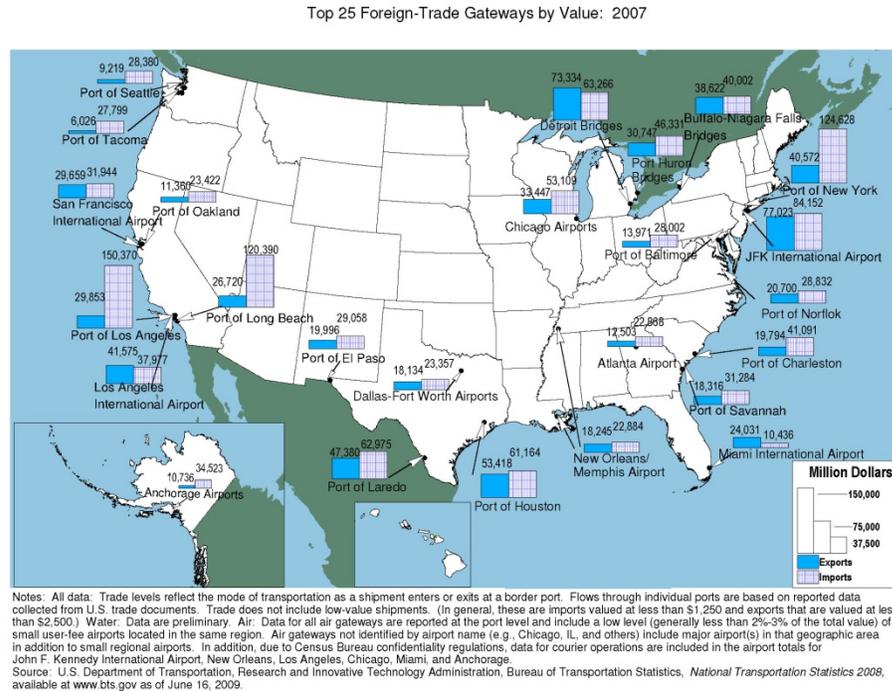
Southeast Deepwater Port	Memphis	Nashville	Chattanooga	Knoxville	Average
Port of Norfolk	916	705	637	526	696
Port of Charleston	700	551	435	373	515
Port of Savannah	630	496	365	416	477
Port of Mobile	397	447	400	509	438
Port of New Orleans	396	531	492	601	505

2.1.4 International Air Cargo Access Through Memphis

The Memphis International Airport is also another competitive advantage for Tennessee-based companies. The large volume of air cargo shipped through this airport makes it the largest in terms of air cargo volume in the U.S. Over 90 percent of this air cargo volume is due to Memphis being the primary domestic hub for Federal Express. Companies that need to ship their products around the country or around the world very quickly (e.g. pharmaceutical companies) can locate their production facilities in Memphis and be confident that they have a great deal of service range and flexibility in their supply chains.

In terms of shipments by value, the Memphis Airport is roughly comparable to the value of goods shipped through some of the largest container ports in the southeast (Figure 2.7).

Figure 2.7 Top Foreign Trade Destinations from the U.S.



2.2 TENNESSEE ACCESS TO DOMESTIC MARKETS

Table 2.2 shows the truck driving distance between the four largest cities in Tennessee and the ten largest metropolitan areas³. Atlanta is the closest large metropolitan region from each city in Tennessee. It is therefore likely that the Tennessee economy is very interdependent with the Atlanta metropolitan region, and that increasing efficiency of freight between Tennessee and Atlanta would be beneficial to Tennessee’s overall economy. There is already good connectivity between the four major cities in Tennessee and Atlanta. However, potential improvements to consider would be improving the connection between Knoxville and Atlanta by creating a Chattanooga Bypass on I-75. Additionally, improving Lamar Avenue would create a better connection between Memphis and Atlanta. Improvements to I-24 west of Chattanooga will improve the flow of truck freight between Knoxville and Atlanta. The next three closest metropolitan regions to Tennessee are Chicago, Dallas, and Washington, D.C. are also well served by the highway mode.

³ Top 10 metropolitan areas by population from the 2009 US Census Population Data

Table 2.3 shows the Class I rail connections between the city pairs. Several city pairs are served by multiple railroads, but there is usually only one direct route, while the other routes are longer and more indirect. Memphis has the best access to all of the metropolitan regions due to the presence of all five Class I railroads in the city. Knoxville will benefit from the completion of the intermodal yard in East Tennessee on the Norfolk Southern Crescent Corridor line. This will provide East Tennessee with rail access to the major metropolitan regions in the eastern half of the U.S. However, Knoxville, Chattanooga, and Nashville all suffer from the lack of direct connections with cities west of the Mississippi River. These cities will likely send intermodal freight to Memphis for connection with the west coast railroads.

Table 2.2 Trucking Distance Between Largest U.S. Metropolitan Regions and Major Tennessee Cities

In Miles

Metropolitan Areas	Memphis	Nashville	Chattanooga	Knoxville	Average
Atlanta-Sandy Springs-Marietta, GA	383	248	118	214	241
Chicago-Naperville-Joliet, IL-IN-WI	531	468	601	538	535
Washington-Arlington-Alexandria, DC-VA-MD-WV	876	665	597	486	656
Dallas-Fort Worth-Arlington, TX	451	662	796	841	688
Houston-Sugar Land-Baytown, TX	571	781	816	926	774
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	1013	802	734	623	793
New York-Northern New Jersey-Long Island, NY-NJ-PA	1097	886	818	708	877
Miami-Fort Lauderdale-Pompano Beach, FL	1010	909	779	875	893
Boston-Cambridge-Quincy, MA-NH	1310	1099	1031	921	1,090
Los Angeles-Long Beach-Santa Ana, CA	1772	1983	2117	2162	2,009

Table 2.3 Direct Rail Routes Between Largest Tennessee Cities and Largest U.S. Metropolitan Regions

Metropolitan Areas	Memphis	Nashville	Chattanooga	Knoxville
Atlanta-Sandy Springs-Marietta, GA	NS, CSX	CSX	-	NS
Boston-Cambridge-Quincy, MA-NH	-	-	-	-
Chicago-Naperville-Joliet, IL-IN-WI	NS, CN, UP, BNSF	CSX	-	NS
Dallas-Fort Worth-Arlington, TX	NS, UP, BNSF	-	-	NS

Houston-Sugar Land-Baytown, TX	UP, BNSF	-	-	-
Los Angeles-Long Beach-Santa Ana, CA	UP, BNSF	-	-	-
Miami-Fort Lauderdale-Pompano Beach, FL	NS	CSX	-	NS
New York-Northern New Jersey-Long Island, NY-NJ-PA	NS	-	-	NS
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	NS	-	-	NS
Washington-Arlington-Alexandria, DC-VA-MD-WV*	NS	-	-	NS

2.3 ACCESS BETWEEN MAJOR CITIES WITHIN TENNESSEE

Freight access between the four cities within Tennessee is also important to promote the State's economy. Trucking access between the four cities is very good, as all connections are made on interstates. The one exception is traveling between Memphis and Chattanooga. The only interstate option between these cities is connecting via Nashville using I-24 and I-40. This route is roughly 40 miles longer than the direct connection between the two cities which exists on US 64. While there is currently no congestion on US 64, this route should be monitored regularly to ensure that truck traffic can move reasonably well on the facility. Additionally, as rail freight becomes increasingly more cost-competitive with trucks, there is the possibility that an intermodal rail yard in the Chattanooga region could become more of a possibility.

There are few intra-state rail connections between the four cities. CSX connects Memphis to Nashville, and Norfolk Southern connects Memphis, Chattanooga and Knoxville. However, the only route that is likely to be cost-competitive for intermodal traffic is between Memphis and Knoxville due to rail's competitive advantage for longer distance freight trips.

3.0 Key Intermodal Infrastructure in Tennessee

This section describes key freight infrastructure in Tennessee, including bulk rail yards, rail intermodal yards, inland waterway ports and terminals, and major airports with cargo handling capabilities. In addition, intermodal facilities that serve freight activities in Tennessee, but are not located in Tennessee, are also included to provide a more accurate picture of the key intermodal infrastructure influencing freight movement in the State. Maps of the Memphis, Nashville, Knoxville and Chattanooga regions are included to show more clearly the interaction of the intermodal facilities in these metropolitan areas.

3.1 DATA AND METHODOLOGY

Several sources have information on intermodal facilities within Tennessee. However, none of them alone is comprehensive enough to capture the geographic relationship between all of the intermodal facilities. As a result, different sources of data are combined for mapping out each type of intermodal facility, and they are listed below:

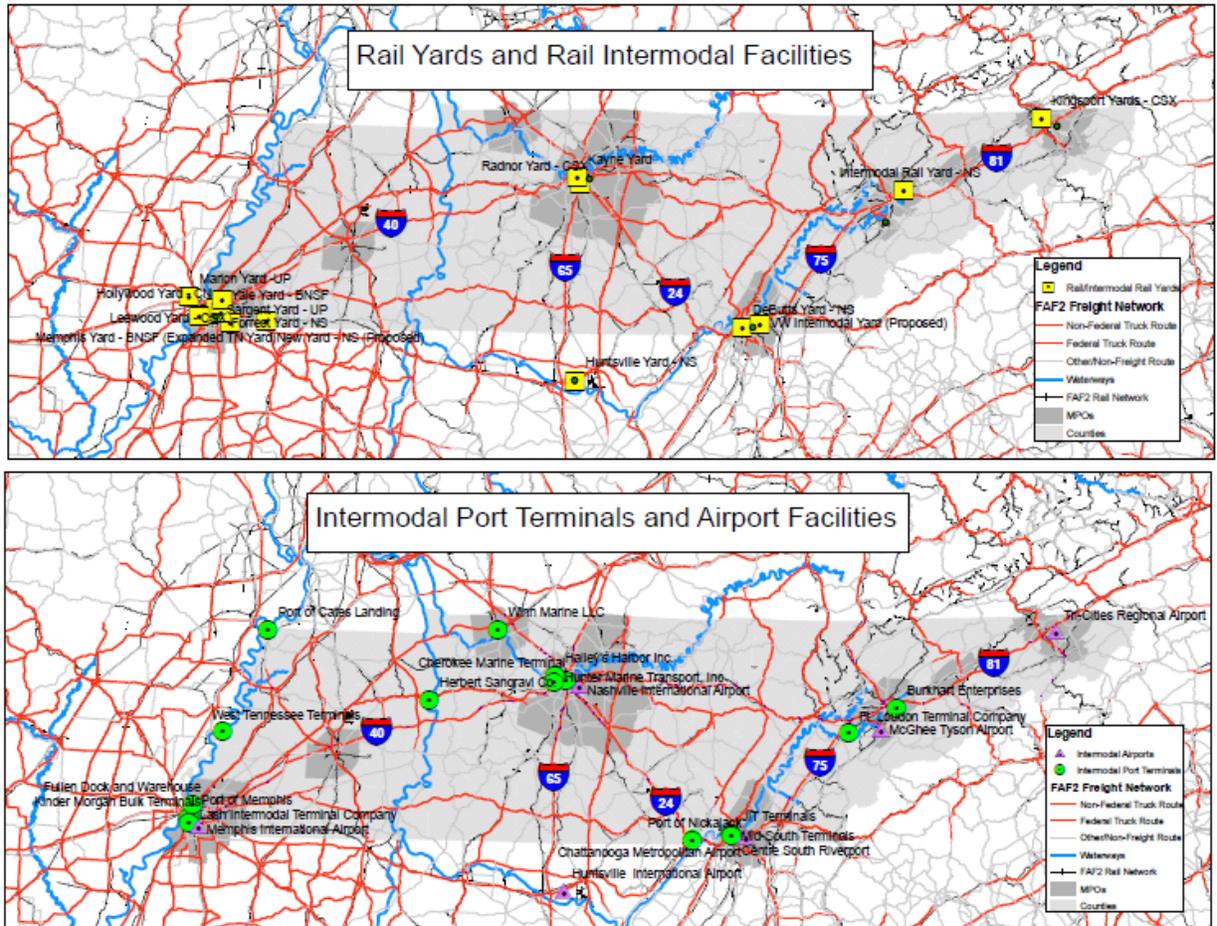
- Rail yards and rail intermodal yards:
 - Class I railroad websites
 - Memphis 2030 Long Range Transportation Plan
 - Memphis Freight Infrastructure Plan
 - Nashville 2030 Long Range Transportation Plan
 - 2010 National Transportation Atlas
 - Tennessee Rail Systems Plan
 - Various Websites (for proposed facilities)
- Inland waterway ports and terminals:
 - Tennessee Waterway Assessment Study Phase I
 - Nashville 2030 Long Range Transportation Plan
 - TDOT Waterways Directory
 - NHS Intermodal Freight Connectors: Report to Congress
- Cargo airports:
 - 2010 National Transportation Atlas

The information from the different sources of data are used to identify which intermodal facilities are the most important for the region. As a result, not all levels of details are included. The intermodal facilities are also compared to freight flows provided in FAF2 to provide information on freight flows over various pieces of Tennessee's freight infrastructure.

3.2 TENNESSEE INTERMODAL FACILITIES

Figure 2.1 shows the rail yards and rail intermodal facilities, along with intermodal port terminals and airport facilities. As can be seen, the majority of intermodal freight terminals are in urban areas with the largest concentration occurring in Memphis. This continues to be true as proposed intermodal rail yards are intended to be built in Chattanooga (VW Yard), Memphis and near Knoxville (part of Crescent Corridor). Each of the major metropolitan regions are served by airports that also handle cargo. The port terminals are spread along each inland waterway.

Figure 3.1 Intermodal Infrastructure in Tennessee



3.2.1 Intermodal Facilities in Tennessee Major Metropolitan Areas

The intermodal facilities for Memphis, Nashville, Knoxville and Chattanooga are shown separately in Figures 2.2 through 2.5 respectively. The Memphis area contains the most intermodal facilities, due to its strategic location and presence of major freight shippers and carriers. All of the intermodal yards are located in the vicinity of the interstate system. The most important intermodal rail yards in the area include the newly expanded Memphis Yard, Harrison Yard, Forrest Yard, and Marion Yard in Arkansas. All of the major railway companies are also in presence in the area, including Union Pacific (UP), Norfolk Southern(NS), Burlington Northern Santa Fe (BNSF), CSX and Canadian National (CN). There is also tremendous port activity in the area along the Mississippi area, and the two most prominent port terminals in the area are located within the Port of Memphis. The ports and the rail yards are further served by the Memphis International Airport.

The main intermodal rail yard in Nashville is Radnor Yard operated by CSX. Three public port terminals are situated along the Cumberland River. While the presence of intermodal yards in the Knoxville and Chattanooga area are not significant, future proposed projects are likely to increase freight activities in these areas.

Figure 3.2 Intermodal Infrastructure in Memphis

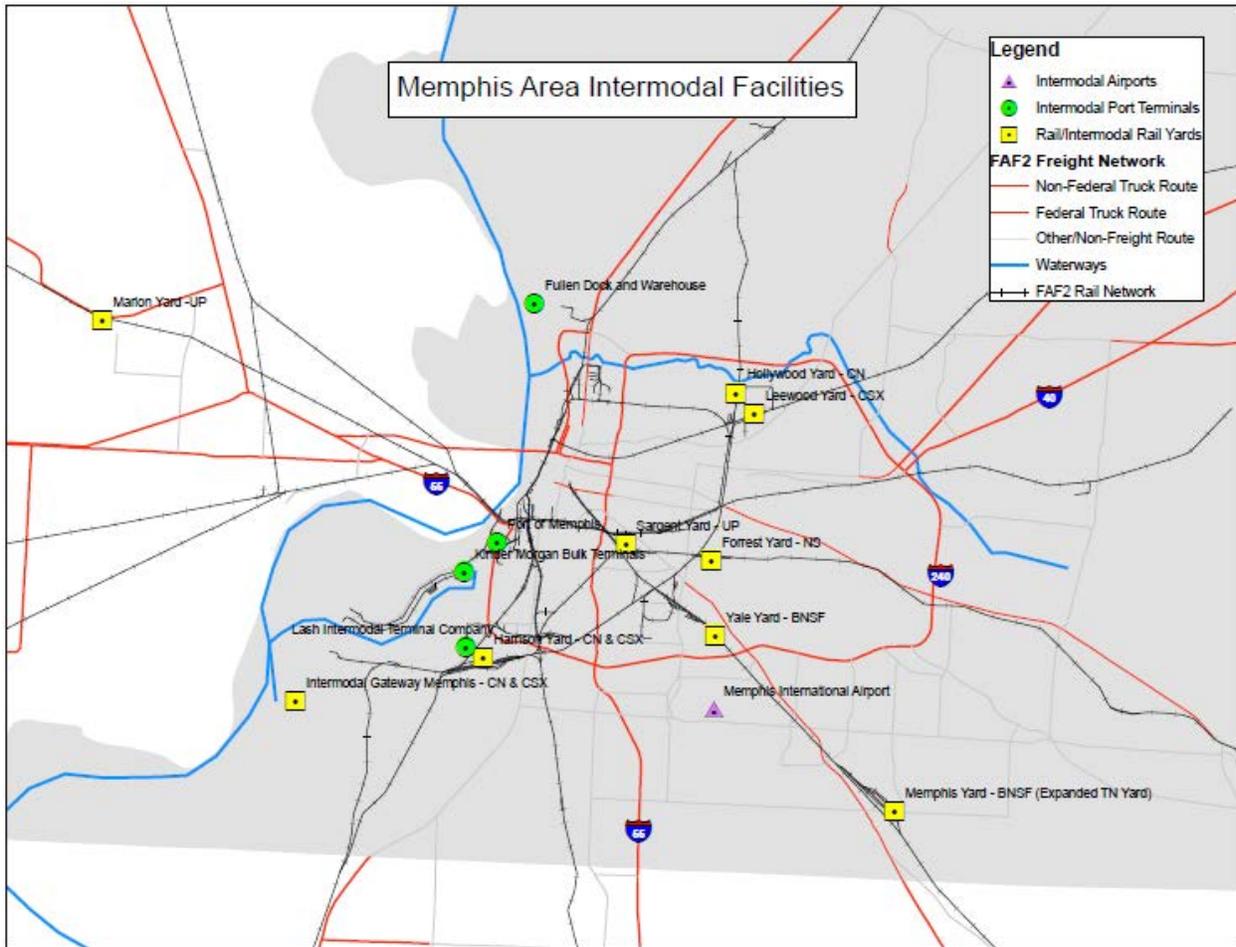


Figure 3.3 Intermodal Infrastructure in Nashville

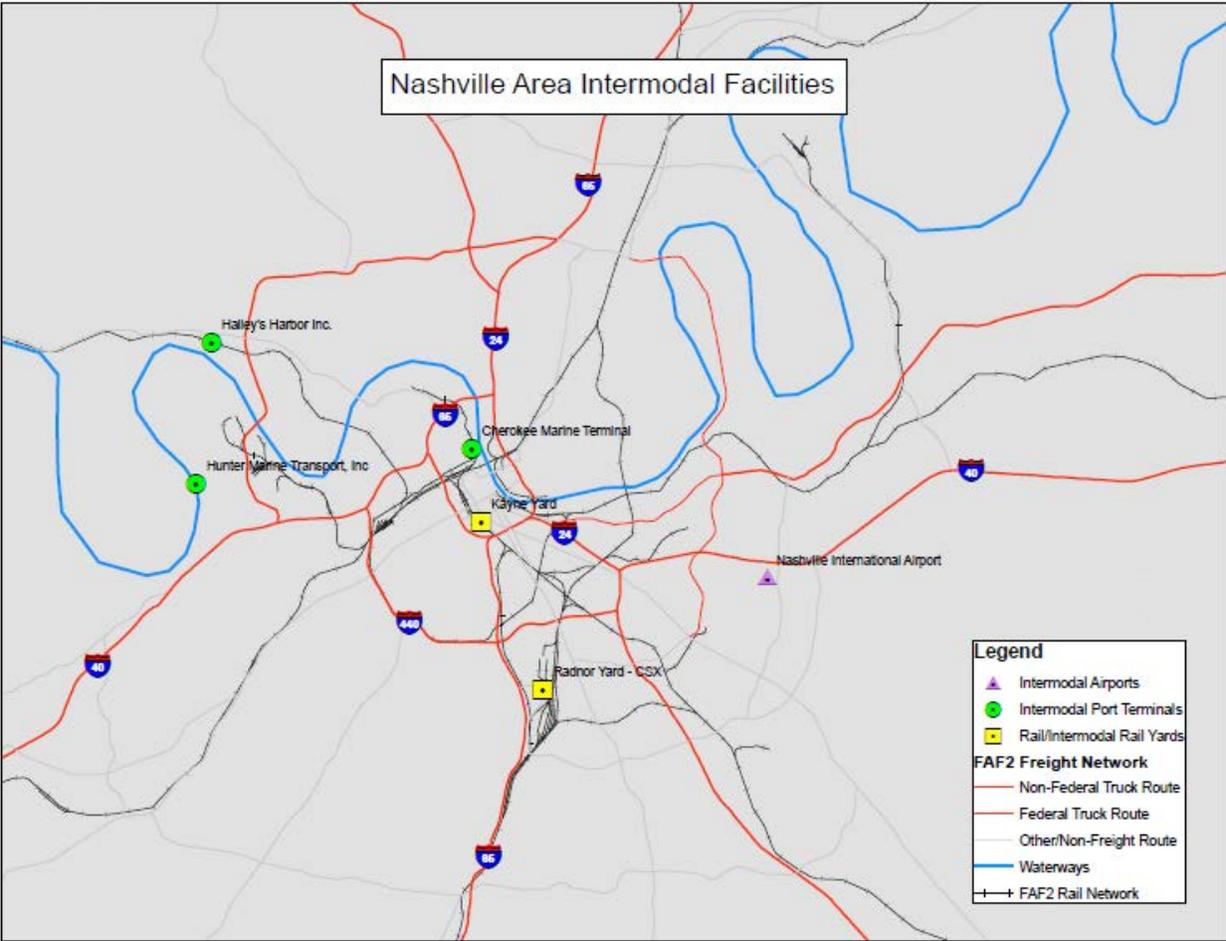


Figure 3.4 Intermodal Infrastructure in Knoxville

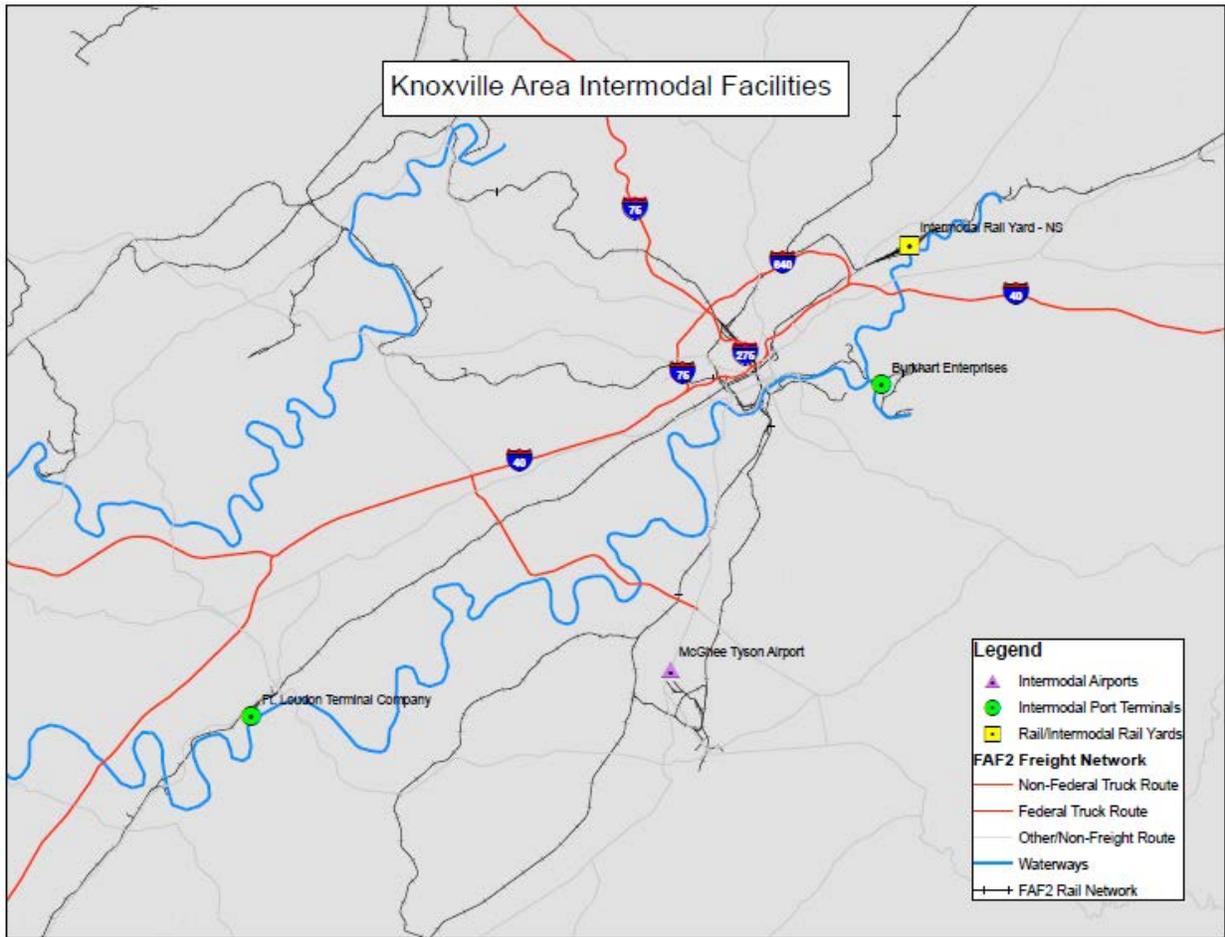
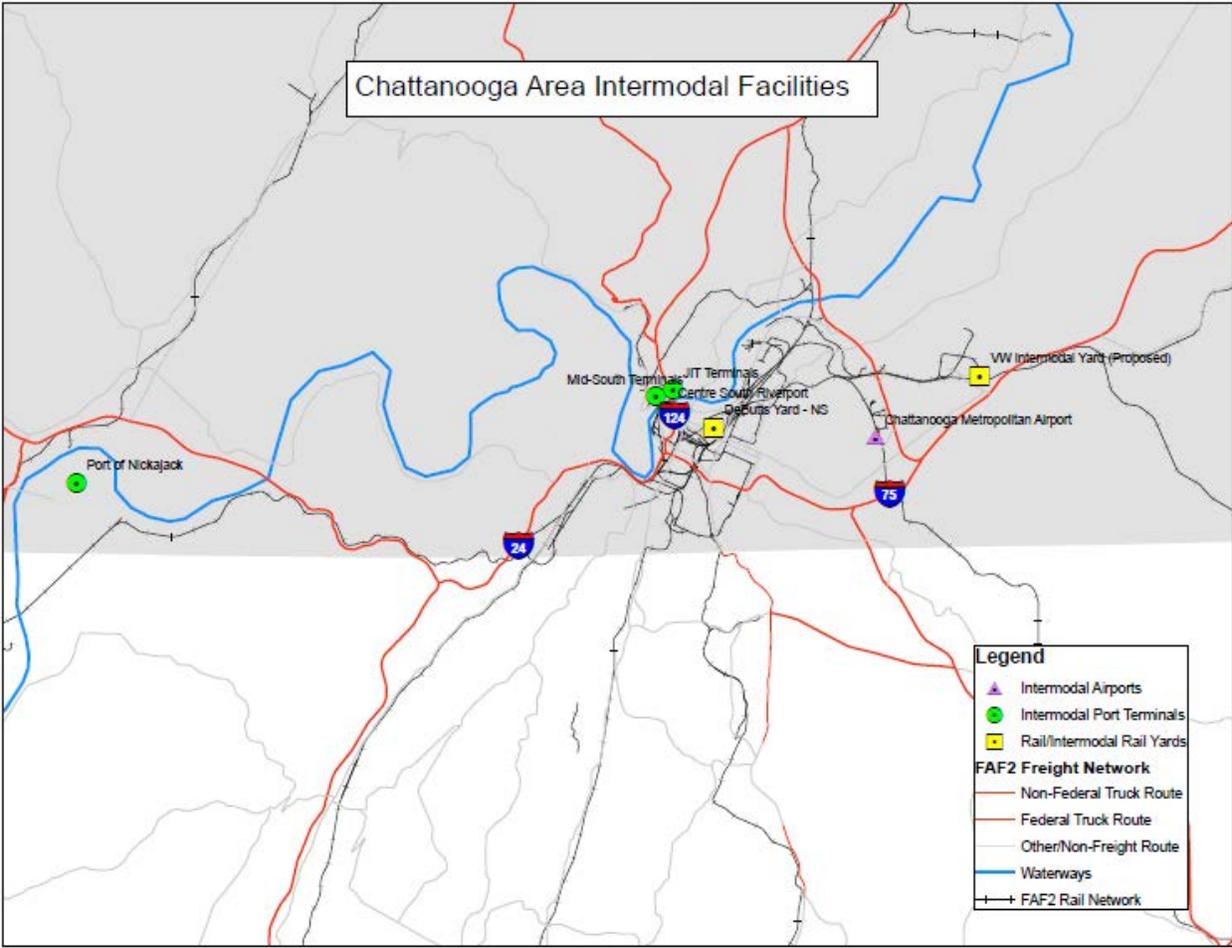


Figure 3.5 Intermodal Infrastructure in Chattanooga

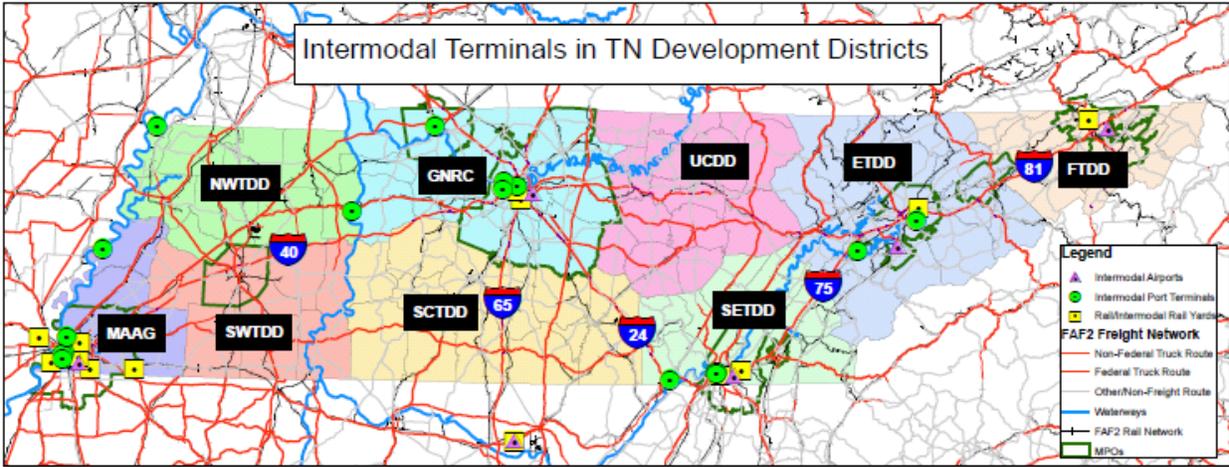


3.3 TENNESSEE DEVELOPMENT DISTRICTS

Tennessee development district presents an unique opportunity for improving intermodal connectivity in the state. Development districts are regional planning and economic organizations owned by cities and counties. The nine development districts were established by the general assembly under the Development District Act of 1965, intended to provide the most effective and efficient means for cities and counties to organize and carry out general planning and economic development, and make the best use of federal, state and other programs designed to stimulate economic development.

Figure 3.6 shows the intermodal terminals in each of the development districts, as well as the boundaries of each of the development districts. By looking at the intermodal facilities, highway and class I and shortline railroads in Tennessee, we can identify opportunities for improving intermodal opportunities in each of the regions.

Figure 3.6 Intermodal Terminals in Tennessee Development Districts



3.3.1 First Tennessee Development District (FTDD)

This district consists of Carter, Greene, Hancock, Hawkins, Johnson, Sullivan, Unicoi, and Washington counties in Northeast Tennessee. It contains the Tri-Cities Regional Airport, Kingsport Yards and two major interstates (I-81 and I-26).

CSX operates a mainline going North-South through the district, while NS operates two parallel lines that goes through the region. East Tennessee Railway, LP operates 11.2 miles of shortline rail track from Johnson City to Elizabethton with Norfolk Southern and CSX as principal connections.

3.3.2 East Tennessee Development District (ETDD)

The district contains 16 counties and Knoxville. Two port terminals are situated along the Tennessee River, along with the McGhee Tyson Airport and the proposed NS rail yard that is part of the Crescent Corridor plan. Major freight corridors include I-81, I-40, I-75, I-640, I-140 (Pellissippi Parkway), US 27 and US 25 E.

NS and CSX have several lines that are in the region. NS has two rail lines that goes from Knoxville to Tennessee State boundary, and 1 line that goes up to Kentucky. CSX's line also goes to Kentucky. Several shortlines are also in the area. A portion of the Franklin Industries shortline railroad exists in this district that comes from Crab Orchard to Rockwood and connects to NS. In addition, Heritage Railroad Co. also operates 9.5 miles of shortline rail through Oak Ridge that is meant to serve the East Tennessee Technology Park. An 18 mile portion of shortline rail road going through Knoxville connects to NS and is owned by Knoxville and Holston River Railroad. Lastly, National Coal Company has a shortline rail purchased from NS that transport coal from mines between Oneida and Devonia.

3.3.3 Southeast Tennessee Development District (SETDD)

The district includes 10 counties that surround Chattanooga. Since the Tennessee River flows through Chattanooga, four port terminals are found in the region. Two rail yard and the Chattanooga Metropolitan Airport are also present in the region. Two interstate traverse through the region, I-24 from Nashville and I-75 going to Knoxville.

Two main class 1 railroads are present in the region. CSX has a line that runs to ETDD in the Eastern portion of the district. NS has two parallel lines that go from Chattanooga to Knoxville. Several shortlines also exist. First, the East Chattanooga Belt Railway has a portion of railroad that connects to NS. Second, Hiwassee River Railroad Company operates a contract carrier between Wetmore and Copperhill in Polk County. Third, Sequatchie Valley Railroad operates 11 miles of shortline rail from Bridgeport Alabama to Kimball in Sequatchie County that connects to CSX. Fourth, Chattooga and Chickamauga Railway Company has operations from Chattanooga to Lyerly, GA and Hedges, GA, with distance

totaling 68 miles where 3 miles are in Tennessee. Lastly, the Tennessee Valley Railroad Museum operates a small, and mainly tourist line that connects to NS as well.

3.3.4 Upper Cumberland Development District (UCDD)

The district consists of 14 counties. I-40 serves as the interstate that goes through and connects the districts to other major cities. In addition, US 70, US 70S, and US 127 are other major truck corridors in the region.

There are no class 1 railroads in this region, but two shortline operations do exist. Franklin Industries Railroad operates a spin-off line of NS that runs from Crab Orchard in UCDD to Rockwood in ETDD, as mentioned above. Also, the Nashville and Eastern Railroad shortline traverses through Davidson and Wilson County in GNRC before going through Smith and Putnam County in UCDD. The line is 110.3 miles and connects to CSX Transportation in Vine Hill/Nashville.

3.3.5 South Central Tennessee Development District (SCTDD)

The district contains 13 counties in the south central region, and has no intermodal facilities. Interstates I-65 and I-24 continue from Nashville down to Georgia. In addition, US 64 and US 231 traverses through the region and acts as major freight corridors along with the interstates.

Three branches of CSX mainlines continues from GNRC. Remaining rail tracks are from shortline rail. Caney Folk and Western short line Railroad operates in Coffee County. Together with the operations in Warren and White county as part of GNRC, the track is 59.1 miles and is owned by the Tri-County Authority who purchased the line from CSX. South Central Tennessee Railroad operates 49.9 miles of shortline rail from Hohenwald to Colesburg, in GNRC. Tennessee Southern Railroad shortline has 118 miles of track that runs from Pulaski in Giles County, to Columbia in Maury County, and then to Florence in Alabama. It connects to CSX in Natco, TN. Finally, Walking Horse and Eastern Railroad, Inc runs a small line from Wartrace to Shelbyville in Bedford County and connects to CSX.

3.3.6 Greater Nashville Regional Council (GNRC)

The GNRC includes the counties of Stewart, Montgomery, Robertson, Sumner, Houston, Cheatham, Davidson, Wilson, Trousdale, Humphreys, Rutherford and Williamson. Since Nashville sits in the area, major freight corridors are interstates passing through Nashville. I-40 goes from east to west and connects to Knoxville, I-65 goes North-South, and I-24 goes to Chattanooga. The I-440 connector also is an important freight corridor. US 79, 70 and 234 are US highways that are important truck corridors in the region. Intermodal activity is also active in the region, as it harbors five inland port terminals (three in

Downtown Nashville along Cumberland River), two rail yards and the Nashville International Airport.

CSX dominates the class I railroad operations in GNRC, as several CSX lines go through Nashville. Various shortlines also operate in the area. The South Central Tennessee Railroad shortline mentioned above connects to CSX in Colesburg, Dickson County. R. J. Corman Railroad Co. controls 35 miles of railroad running from Bowling Green, KY into Montgomery and Stewart County. It connects to CSX in Kentucky. Caney Folk and Western Shortline Railroad operates in Warren and White county, and in Coffee county as mentioned above. Also mentioned above is the Nashville and Eastern Railroad. Finally, the Nashville and Western Railroad also owns a shortline rail from Ashland City to Nashville which also connects to CSX.

3.3.7 Southwest Tennessee Development District (SWTDD)

Chester, Decatur, Hardeman, Hardin, Haywood, Henderson, McNairy and Madison counties make up the SWTDD. While there are no intermodal terminals in the region, I-40, US 70, US 64 continues on from Memphis and forms the major highway truck corridor. US-45 going through the region in the North South direction, in addition.

Class I railroads in the region include the CSX line that originates from Memphis. Shortline activity in this region is prominent. The West Tennessee Railroad operates perhaps the most extensive shortline railroad in Tennessee, running from Kenton, TN to Jackson and from Fulton, KY to Corinth, MS. It connects to Norfolk Southern and Kansas City Southern at Corinth, MS, CSX at Humboldt and Canadian National at Fulton, KY. It passes through NWTDD in Weakley and Gibson County.

Another shortline railroad owned by Mississippi Central Railroad Co. runs from Oxford, MS to Grand Junction, TN in Hardeman County. It connects to NS and Burlington Northern. Hardeman County also is the termination point for another shortline railroad that starts in New Albany, MS totally 55.5 miles. It is owned by the Mississippi Tennessee Railroad, LLC and connects to NS and BNSF.

3.3.8 Northwest Tennessee Development District (NWTDD)

This districts consists of Benton, Carroll, Gibson, Dyer, Henry, Crockett, Obion, Lake, and Weakley counties. Port of Cates Landing along the Mississippi is the only port in the region. The region also has several truck corridors. I-155, US 412, US 45W, US 51, US 70 and US 79 are major truck routes in the region. Connectivity to adjacent districts are through US 51, 45 and 79.

The region is defined by two class 1 railroad systems. The first one is CN line that continues from Memphis in the North-South direction in the east side of the region. The second is the CSX line that originated from Memphis and goes diagonally across the region, before changing direction and heading southeast in Mackenzie.

There are also prominent shortline activities in the region that connects to the main lines. KWT Railways, Inc operates two shortline railroads in Weakley, Carroll, and Henry Counties. The first shortline runs from Bruceton to Tennessee border for 51.5 miles and continues on to Kentucky. The second line runs from McKenzie to Dresden for 13 miles. Both connects to CSX in Bruceton. 51 miles of shortline rail also runs from Dyersburg to Kickman in Kentucky. It connects to CN in Dyersburg and is operated by TennKen Railroad. The West Tennessee Railroad also contains portions of its shortline as mentioned above.

3.3.9 Memphis Area Association of Governments (MAAG)

The MAAG development district consists of Fayette, Lauderdale, Shelby, and Tipton Counties in Tennessee. Its name reflects the fact the Memphis Area is the region's economic driver. As such, freight activities in the region are centred around Memphis.

The area contains a plethora of intermodal facilities mapped out in Section 2, almost all of which are in Shelby County. The region contains nine rail yards, including the Memphis Yard, Forrest Yard and Harrison Yard. The region also contains five port terminals along the Mississippi river, with four of them in the Memphis area. The Memphis International Airport serves the region and is claimed as the busiest cargo airport in the nation.

There are several key freight route corridors in the region. Interstates 69, 40, and the I-240 connector make up the interstate network in the region. Other truck corridors include US 51, US 70, US 64, US 72 (Poplar Avenue) and US 78 (Lamar Avenue).

Railroad activities is also centered around Memphis. There are four main Class I railroads going through the region. In the North-South direction running through Memphis is the CN line that splits in Memphis before going as two separately lines to Mississippi. In the East-West Direction runs the NS line that goes into Hardeman County in SWTDD. Further, The CSX line starts in Memphis and goes into Haywood County in SWTDD. The BNSF line traverses through Memphis in the southeast direction going into Mississippi. On the other hand, however, there are no shortline railroads listed for this region.

4.0 Access and Capacity Needs of Key Intermodal Infrastructure

This section identifies the access to each of the intermodal facilities in Section 2.0, the capacity needs of the intermodal facilities and the planned improvements of the access road, where the information is available. For each intermodal facility, its distance to the interstate, and detailed access road information are provided. For port facilities, outreach to port personnel was also attempted where information was inaccurate.

4.1 DATA AND METHODOLOGY

Several sources of data are used for identifying access and capacity needs for each type of intermodal terminal. Note that certain modes or facilities have more accurate and comprehensive information than others due to data availability. In addition, inaccurate information from different sources are corrected and verified to the best extent possible. The data source for each type of intermodal facility is discussed below.

4.1.1 Rail Intermodal Yards

Satellite imagery from Google Map was used to identify distance to interstates and access road information, as well as physical locations. The rail yard capacity is obtained from Tennessee Rail System Plan's Rail System Inventory, and the route type information is verified from GIS layers obtained from TDOT's traffic division. Where available, capacity needs information for each intermodal yard is found from internet news sources. The access road planned improvements information was found from Memphis Freight Infrastructure Plan. No planned improvements were found in any regional Long Range Transportation Plans (LRTP) or Transportation Improvement Programs (TIP) for the other intermodal rail yards.

4.1.2 Intermodal Port Terminals

The primary source of the general information of the terminals is from the Tennessee Waterway Assessment Study Phase I and II, and the Tennessee Waterways Directory. Where information was missing or inaccurate, contact was made to terminal personnel to verify terminal details, such as loading/unloading capabilities. The access information for each of the port are determined from satellite imagery (Google Map), GIS map layers with FAF2 roadway and rail networks, and contacts with terminal personnel. The needs information was obtained from Waterway Assessment Report Phase II, contacts

with terminal personnel as well as the internet. Planned improvements are found by reviewing each MPO's LRTP and TIP.

4.1.3 Airport Cargo Facilities

Information on access roads to cargo airports are found from Google Maps. For airports, each airport's master plans, the Tennessee Airport System's Plan and airport websites have been reviewed to identify future improvements. In addition, each MPO's LRTPs and TIPs are also reviewed to identify planned improvements for the access roads.

The information gathered are then input into tables to identify access and capacity needs.

4.2 INTERMODAL FACILITY ACCESS AND CAPACITY NEEDS

4.2.1 Rail Intermodal Yards

Table 3.1 provides detailed information on major existing and proposed intermodal rail yards in the Tennessee Region. All of the intermodal rail yards are located within urban areas, including the proposed VW intermodal yard and the Crescent Corridor rail yard in Knoxville. Interestingly, the biggest rail yards are also the ones that are undergoing expansion, such as Marion Yard, Memphis Yard and Harrison Yard, all situated in the Memphis region. This indicates that the Memphis region will continue to be the center of freight movement in Tennessee in the near future. As the table shows, the distance to interstates from the intermodal yards are all within 10 miles and functional and state roads, including major truck corridors, serve as connecting roads to the interstates. However, many of the roads are two lanes only, indicating a need for future expansion. Apart from the Lamar Avenue Corridor Study which is currently under study by Cambridge Systematics, no current planned improvements are found for access to these access roads, and future studies looking into mobility and pavement conditions of these roadways should be conducted.

Table 4.1 Planned Improvements of Rail Intermodal Yards in Tennessee

Intermodal Railyard	Railroad	City	Design Lift Capacity (TEUs/Yr)	Planned Improvements
Huntsville Yard	NS	Huntsville (AL)	N/A	
Kingsport Yards	CSX	Kingsport	50,000	
East Tennessee Railyard	NS	Knoxville	N/A	
Marion Yard	UP	Marion (AR)	100,000	Yard expansion
Forest Yard	NS	Memphis	100,000	
BNSF Memphis Yard	BNSF	Memphis	100,000+	8,300 foot long track added, triple capacity
Harrison (Johnston) Yard	CN/CSX	Memphis	70,000	\$100 million for yard expansion
Leewood Yard – CSX	CSX	Memphis	20,000	
Intermodal Gateway Memphis - CN & CSX	CN/CSX	Memphis	N/A	
Radner Yard	CSX	Nshville	100,000	

Table 4.2 Access Needs of Rail Intermodal Yards in Tennessee

Intermodal Railyard	Railroad	City	Route Type	Access Road Name	Distance to Interstate	# Lanes
Huntsville Yard	NS	Huntsville (AL)	Func. Rd	Wall Triana Hwy	2 miles to I-565	5
Huntsville Yard	NS	Huntsville (AL)	Func. Rd	James Record Rd	2 miles to I-565	2
Huntsville Yard	NS	Huntsville (AL)	Func. Rd	Glenn Hearn Blvd	2 miles to I-565	7
Kingsport Yards	CSX	Kingsport	State Rd	SR 93 (S Wilcox Dr)	2.5 miles to I-526	4
Intermodal Rail Yard	NS	Knoxville	N/A	N/A	N/A	N/A
Marion Yard	UP	Marion (AR)	State Rd	SR 77	2 miles to I-55	2
Marion Yard	UP	Marion (AR)	Func. Rd	Military Rd	2 miles to I-55	2
Forrest Yard	NS	Memphis	State Rd	S. Pkwy East	3 miles to I-69	4
Forrest Yard	NS	Memphis	State Rd	Southern Ave	4 miles to I-240	4
Forrest Yard	NS	Memphis	State Rd	Airways Blvd	4 miles to I-240	5
Forrest Yard	NS	Memphis	State Rd	Lamar Avenue	4 miles to I-240	5
BNSF Memphis Yard	BNSF	Memphis	State Rd	Lamar Avenue	6 miles to I-240	5 – 9
Harrison (Johnston) Yard	CN/CSX	Memphis	Func. Rd	Kansas St	1 mile to I-55	2
Harrison (Johnston) Yard	CN/CSX	Memphis	Func. Rd	Kansas St	1 mile to I-55	5
Leewood Yard	CSX	Memphis	State Rd	SR 14 (Jackson Ave)	5 miles to I-240	5
Intermodal Gateway Memphis	CN/CSX	Memphis	Func. Rd	Paul R Lowry Rd	8 miles to I-55	2 to 5
Radner Yard	CSX	Nashville	Func. Rd	Powell Avenue	0.5 miles to I-65	2
Radner Yard	CSX	Nashville	Func. Rd	Sidco Drive	0.5 miles to I-65	4

4.2.2 Intermodal Port Terminals

Intermodal port terminals range greatly in size and capabilities, and therefore, only key intermodal port terminals are selected and shown in Table 3.2. The majority of the intermodal port terminals selected are from the general cargo terminals listed in the Tennessee Waterways Assessment Study Part 1. The existing terminals contain four publicly owned terminals and 11 privately owned terminals, which are all privately operated. The Kinder Morgan Bulk Terminals and the Lash Intermodal Terminal Company are both part of the Port of Memphis. Apart from existing ports, the Port of Cates Landing, which is currently under construction is also included.

To assess the importance of the port terminals, their capacities are determined. While the number of docks does not provide the full picture about the size of the terminal, it does give an idea about the general handling capability of the terminal. Most terminals have one dock or two docks, with the exception of Fullen Dock and Warehouse, which has six docks. Fullen dock and Warehouse is also the only dock that explicitly handles containers, while the rest of the docks handle mostly steel, other metals, building material and bulk.

Regarding railroad access, most terminals either have access nearby, or onsite, with the exception of Winn Marine LLC and West Tennessee Terminals which only has highway access. The distance to interstates, however, varies significantly depending on where the terminal is located. Terminals within large urban areas especially Memphis and Nashville have access to interstates that are within 5 miles of the terminal. However, terminals in smaller cities, such as Dyersburg are more than 10 miles away from the interstates, and often have to traverse winding roads. This can be a significant problem as future port activities rise in those locations. The ports have already attempted to address such issues, and the Port of Cates Landing is in process to expand access roads, and the Port of Nickajack has already done several studies regarding straightening access roads which proved to be too expensive.

Table 4.3 Capacity Needs of Intermodal Port Terminals in Tennessee

Port	Rail Access	City	Top Commodities	No. of Docks	Needs/Planned Improvements
Mid-South Terminals	Y	Chattanooga	Iron, Steel, Coal	1	
JIT Terminals	Y	Chattanooga	Steel, Chemicals, Propane	2	
Centre South Riverport	Y	Chattanooga	Steel, Dry/Breakbulk	1	\$13m capital needs, \$96.4m identified for improvements
Winn Marine LLC	N	Clarksville	Limestone, Sand	1	
Port of Cates Landing	Y	Dyersburg	Unknown	1*	\$49m capital need; in process to expand access rds
Burkhart Enterprises	Y	Knoxville	Wood products, Bulk	2	
Ft. Loudon Terminal Company	Y	Lenoir City	Fertilizers	1	SR 73, 3 mi corridor improvement (Knoxville TIP)
Kinder Morgan Bulk Terminals	Y	Memphis	Bulk, Liquids, Special cargo	2	
Lash Intermodal Terminal Company	Y	Memphis	Unknown	1	Paul R lowry Rd expansion - \$11m needed
Fullen Dock and Warehouse	Y	Memphis	Containers, Steel, Aggregates, etc	6	
West Tennessee Terminals	N	Memphis	Bulk, Fertilizer, Aluminum, Steel, etc	1**	
Cherokee Marine Terminal	Y	Nashville	Steel	3	
Hailey's Harbor Inc.	Y	Nashville	Steel, Scrap, etc	1	
Hunter Marine Transport, Inc	Y	Nashville	Steel, Sand, Dry bulk etc	2	
Herbert Sangravl Co.	Y	New Johnsonville	Aggregate, Steel, Coke, etc	1	
Port of Nickajack	Y	South Pittsburg	Pig Iron, Wood, etc	1	\$3m capital need; Previous study on straightening of SR 156, Hwy 28 feasibility (too expensive)

* expandable dock, **floating dock

Table 4.4 Access to Intermodal Port Terminals in Tennessee

Name	City	Rail access	Distance to interstate	Road Type	Road Name	# Lanes
Mid-South Terminals	Chattanooga	NS	3 mi. to I-24	Functional and State Rd	Manufacturer's Rd, US 27	4
JIT Terminals	Chattanooga	NS	2.5 mi. to I-24	Functional and State Rd	Manufacturer's Rd, US 27	4
Centre South Riverport	Chattanooga	NS	6 mi. to I-24	Functional Rd	River Terminal Road, SR 58	4
Winn Marine LLC	Clarksville	None	11 mi. to I-24	State Rd	US 79	5
Port of Cates Landing	Dyersburg	CN (nearby)	30 mi. to I-155	Functional Rd	SR 78, SR 181	2
Burkhart Enterprises	Knoxville	KXHR; NS, CSX (nearby)	5 mi. to I-40	Functional and State Rd	SR 168 E	2 to 3
Ft. Loudon Terminal Company	Lenoir City	NS	4 mi. to I-40, 7 mi to I-75	State Rd	W Broadway St, SR 73	4
Kinder Morgan Bulk Terminals	Memphis	CN	1.5 mi. to I-55	Functional Rd	Channel Avenue	4
Lash Intermodal Terminal Company	Memphis	CN	1 mi. to I-55	Functional Rd	Paul R. Lowry Rd	4
Fullen Dock and Warehouse	Memphis	CN (nearby)	4 mi. to I-40	Functional Rd , State Rd	Klinke Avenue, US 51, SR 300	2 to 8
West Tennessee Terminals	Memphis	None	40 mi. to I-155	Functional Rd	SR 19, US-51	2 to 4
Cherokee Marine Terminal	Nashville	CSX	0.5 mi to I-24	Functional Rd	Cowan Ct, Spring St	2 to 7
Hailey's Harbor Inc.	Nashville	NWR	5 mi to I-40, 0.3 mi to Bailey's Pkwy	State Rd	SR 155 (Briley Parkway)	
Hunter Marine Transport, Inc	Nashville	CSX (nearby)	0.5 mi to I-40	Functional Rd	Robertson Avenue	2
Herbert Sangravel Co.	New Johnsonville	CSX	20 mi. to I-40; 1 mi. to SR 1	State Rd	US 70 W, SR 191	2
Port of Nickajack	So. Pittsburg	CSX	6 mi. to I-24	State Rd	SR 156	2

4.2.3 Airport Cargo Facilities

Major airports with significant intermodal cargo traffic are included. As Table 3.3 shows, all of the airports planned or have already expanded its cargo area and facilities, including improving access to cargo centers. The distances of the airports are also closely located to interstates to allow for easy freight movement. The connecting access roads to the airports are in general major corridors and several planned improvements were seen in MPO's transportation plans. These improvements are specifically target towards improve access to and from airports.

In general, it can be said that rail intermodal yard and airports have good access to interstates, while certain port terminals have poor access. This indicates that while truck-rail and air-truck-rail terminal access are sufficient, more attention needs to be paid to improve barge-truck-rail intermodal access. Improvements to smaller access roads should also be an important area to consider when prioritizing road improvement programs.

Table 4.5 Capacity Needs of Cargo Airports in Tennessee

Airport	City	Main Cargo Carriers	Airport Future Cargo Improvements
Tri-Cities Regional Airport	Blountville	Emery, Fedex, Bax, UPS	Recent 35 acre cargo expansion for direct aircraft access/warehouse, distribution center; can be expanded more to meet needs
Nashville International Airport	Nashville	BAX, Fedex	1 runway should be extended for future cargo aircraft, new cargo buildings
McGhee Tyson Airport	Louisville (KY)	Fedex, UPS	Realignment of Alcoa Hwy, truck access to cargo area. Possible future cargo site expansion
Memphis International Airport	Memphis	Fedex, UPS	131 acre of land by Plough Blvd can allow Fedex to expand in future
Chattanooga Metropolitan Airport	Chattanooga	Mountain Air Cargo (Fedex), ABX	\$10m reconstruction of the existing air cargo area over short, medium, long terms
Huntsville International Airport	Huntsville (AL)	Palnapina, BAX/Schenker, Cargolux,	Newly opened 92,000 sq ft air cargo buiding, expanded international intermodal center, possible passenger and cargo hubbing.

Table 4.6 Access Needs of Cargo Airports in Tennessee

Airport	City	Dist. to Interstate	Type	Name	# Lanes	Access Road Planned Improvements
Tri-Cities Regional Airport	Blountville	3 mi to I-81	State Rd	SR 75 (Bristol Hwy), SR 357 (Airport Pkwy)	2, 4	New 4 lane road serving airport (Kingsport MPO)
Nashville International Airport	Nashville	1 mi to I-40	State Rd	SR 155 (Briley Pkwy), SR 1 (Murfreesboro Pike)	4,6	N/A
McGhee Tyson Airport	Louisville	3 mi to I-140	State Rd	SR 115 (Alcoa Hwy)	4	New 1.3 mi, 8 Lane road serving airport; new 2.4 mi, 6 lane (w/aux lane) road serving airport (Knoxville TIP)
Memphis International Airport	Memphis	5 mi to I-240	Func. Rd	Airways Blvd, Plough Blvd	7,2	Plough Blvd interchange improvement (Memphis TIP)
Chattanooga Metropolitan Airport	Chattanooga	2.5 mi to I-75	State Rd, Func. Rd	SR 153, Shepard Rd, Airport Rd, Lee Hwy (US 64)	6, 5, 2, 5	N/A
Huntsville International Airport	Huntsville	2 mi to I-565	Func. Rd	Wall Triana Hwy	5	N/A

5.0 TDOT Policies to Increase Freight Capacity

5.1 STRENGTHS OF TENNESSEE'S FREIGHT INFRASTRUCTURE

This report has demonstrated that Tennessee has a unique set of freight assets whose performance is directly linked to the strength of the State's economy. The strength of these assets can be summarized as follows:

- An extensive interstate and state highway network that provides direct access to the major U.S. metropolitan markets and international markets in Canada and Mexico
- Access to five Class I railroads through the freight hub of Memphis
- An extensive river port and inland waterway system with several benefits
 - Capability to move large tonnages of freight in both the north-south direction and the east-west direction
 - The lowest cost mode of transportation in terms of cost per ton-mile
 - Connections with the deepwater ports in the Gulf and the population centers in the Midwest
- Less than a day's truck travel time to several major deepwater container and bulk ports in the Gulf of Mexico and the southeast Atlantic
- The largest air cargo airport in the U.S. which provides the fastest door-to-door travel time from the U.S. to major cities around the world

5.2 CHALLENGES AND OPPORTUNITIES FOR TENNESSEE'S FREIGHT INFRASTRUCTURE

This report has also identified challenges and opportunities for Tennessee's freight infrastructure which will need to be addressed to ensure that the potential of the State's freight infrastructure is maximized. A summary of these issues is as follows:

- The State's strong interstate and state highway network attracts a high volume of long-haul, high volume traffic that passes through the state,

but does not increase the economic activity of the state. I-40 is the busiest east-west interstate in the country in terms of truck volumes. This increases congestion and adds to wear and tear of the pavement along with creating safety and environmental issues in the state. Similarly, I-75 has a high percentage of through truck traffic

- There is less than optimal usage of the intermodal rail network between Tennessee and the Mid-Atlantic as well as Tennessee to the northeast. Other rail lines in the country carry much heavier volumes of intermodal traffic
- There are significant local impacts of freight activity in residential Memphis communities. While Memphis has historically been very supportive of freight, as freight facilities continue to multiply and expand along with the local population, there need to be special efforts to ensure harmony between freight and passenger movements
- There is no strategy for investing in Tennessee's river ports and inland waterway system. Investments in these assets have been sporadic and piecemeal
- To connect to the fast growing emerging markets, Tennessee will need to partner with other states and ensure that road, rail and waterway access to coastal deepwater ports is preserved
- There is no strategy for investing in last-mile connectors to the many freight facilities around the state

5.3 POLICIES TO SUPPORT LONG TERM DEVELOPMENT OF FREIGHT INFRASTRUCTURE

The key policy recommendations that are developed from analyzing the state's infrastructure are described in the following paragraphs.

Continue the statewide corridor planning process. The I-40/I-81 Corridor Feasibility Study and the I-75 Corridor Feasibility Study were successful in developing a long-term vision for these facilities that ensures they will be able to support both passenger and freight traffic. This planning process works much better than addressing corridors in shorter segments which simply pushes congestions to new locations in the state. This corridor planning process has also introduced a specific methodology for developing benefit-cost ratios of projects which can be used to compare projects around the state in a unified fashion.

Support the Crescent Corridor. This project represents the best option to improve the utilization of the State's rail infrastructure and bring intermodal rail volumes in the state closer to what is experience in other regions. This project will generate only modest benefits in terms of addressing current urban peak period congestion issues. However, it could have a significant impact on avoiding peak spreading, reducing pavement wear and tear, improving safety,

and reducing emissions. Additionally, the Crescent Corridor will result in a new intermodal terminal in East Tennessee that will provide more freight options for shippers and receivers in that region, in addition to providing “highway speed” direct rail access to the Port of Norfolk and ports in the northeast.

Consider operational alternatives to more efficiently move through truck traffic. This includes consideration of alternative truck size and weight regimes along with consideration of tolls, diesel taxes, and urban bypass routes to minimize the negative impacts of through trucks and ensure that through trucks are paying their fair share relative to the full range of impacts that they generate.

Develop a strategy for investing in the inland waterway system. This strategy should identify specific goals and objectives for the inland waterway system over the next 30 years. It should also include a roadmap with funding options that provide the steps to achieve these goals. This strategy should be consistent with the statewide corridor studies in that it uses a similar set of metrics and weights to prioritize and sequence projects to meet the long-term objectives.

Develop standards for locating freight facilities and preserving highway access to freight facilities. The Memphis region likely has more freight facilities per capita than any other metropolitan region in the country. Likewise, the state of Tennessee has several freight facilities scattered across the state. To ensure cohesion between new and expanding freight facilities and other activities in their surrounding communities, Tennessee should develop guidelines on where to locate different kinds of freight facilities. Similarly, to encourage continued private sector investment in freight facilities in the state, Tennessee should develop a set of standards for minimum levels of service on primary access roads to freight facilities.

Dialogue with neighboring states to ensure continued access to coastal deepwater ports. Tennessee is fortunate that it is within a day’s drive of several major deepwater coastal ports. However, all of these ports are outside of the state and both the ports and the access roads are controlled by state and local agencies outside Tennessee. Tennessee should identify priority access routes and ports and dialogue and track the developments relative to these facilities to ensure that shippers and receivers inside Tennessee can access international markets through the coastal ports.

Some of these policy actions can be enacted immediately, while many others require additional study and consideration by agencies outside of TDOT. Therefore, these recommendations should be seen as the beginning of a discussion as to what the freight policy will be for the State of Tennessee. A fully vetted set of recommendations will incorporate thorough outreach to numerous stakeholder groups, and additional technical analysis to refine the policies and quantify the opportunities that are embedded within the policy options.