2012 Piedmont Triad Region Freight Movement Report

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Report

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The Piedmont Authority for Regional Transportation,

and

In cooperation with
The Burlington-Graham Metropolitan Planning Organization,
The Greensboro Metropolitan Planning Organization,
The High Point Metropolitan Planning Organization,

and
The Winston-Salem Metropolitan Planning Organization
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1 Introduction

1.1 Purpose of chapter
Freight movement is critical to an advanced industrial economy, and the ease of freight movement is a component of a region’s economic competitiveness. Freight movement can also have an impact on a region’s quality of life, particularly with the need to ensure heavy truck traffic has suitable routes to/from the national highway or rail networks, avoiding established residential areas.

Federal legislation has recently placed additional emphasis on the role of freight in regional transportation planning. Freight must be considered both in its own right and in terms of supporting an area’s economic vitality and competitiveness.

According to “The Journal of Commerce” May 28th, 2012, on page 66 “10 Steps to an effective National Freight Policy”, the following are 10 suggestions to Congress and the current administration for ways to move toward a true national policy for freight:
1. Clearly define national goals with respect to all transportation
2. Begin work on strategic performance measures for freight
3. Create a competitive freight discretionary grant program
4. Strengthen and diversify freight funding sources
5. Better define the national freight system
6. Strengthen the freight component of the planning process
7. Develop a plan for the reorganization of the DOT
8. The marine transportation and ports need a stronger voice to speak to their needs in the national interest
9. Embrace private sector participation
10. Raise revenue

This chapter encompasses the freight element of the Long Range Transportation Plans for the Metropolitan Planning Organizations in the Piedmont Triad. It describes the existing conditions and trends at national, statewide and within the Piedmont Triad study Area. It then identifies the current and future issues, at the same levels. NC ports and airport situations are included, followed by a summary of key points and a list of recommendations. The chapter includes information on both highway freight and rail freight Many of the issues and trends differ between the highway mode and the rail freight mode and are discussed separately. However, the two modes are closely linked and there are many cross-cutting issues.

1.2 Relevance to the Transportation System and the Plan

Since the issuance of NCDOT’s previous State Transportation Plan (STP), “Charting a New Direction for NCDOT” in 2004, a number of national and North Carolina initiatives have highlighted the importance of freight and logistics in relation to long-term economic health and growth in the state. In North Carolina, freight and logistics have emerged as a state priority that can improve economic development and economic competitiveness. In North Carolina, this topic then relates to the movement of raw goods and materials as well as finished goods and products, between their origins and ultimate destinations including in-state distribution to businesses and consumers and out-of-state markets. As a result, freight and logistics touch all key aspects of the state’s multifaceted economic development targets including agriculture, bio//medical, tourism, education, military, and manufacturing. The updated 2040 State Transportation plan (September 2012) notes freight is a key issue. This section examines how and to what extent freight and logistical considerations are addressed in the newly adopted 2040 Plan. (2040 North Carolina Statewide Transportation Plan, page 2-25, 2012)
The effectiveness and efficiency of freight transportation is a major factor in manufacturing costs and, directly and indirectly, in retail costs. Manufacturers look for reliability, speed, and quality control in the carriers that deliver their raw materials and deliver their finished products. If shipments of raw materials do not arrive on time, all other processes are affected, degrading productivity, which in turn affects total company costs.

On the retail side, sellers currently assume that the cost of transport will be less than the cost of maintaining large inventories (and paying for additional real estate to house it). This process, called 'just-in-time' inventory, is now widespread and points to the overall strength of our transportation system. However, as congestion affects transportation reliability, costs will increase because reliability will be a premium – affecting the price of retail items from bread to basketballs at the local distributor.

The movement of freight may be slightly mysterious to the average consumer, but it is crucial to maintaining the high quality of life that we expect. An excellent way to explain this to the general consumer is voiced in a video produced by the Federal Highway Administration titled “Keeping the Global Supply Chain Moving” (http://www.youtube.com/watch?v=OVYcxi1rDqE). In this video the following is offered:

If the US Supply chain slows down:
- In 6-12 hours manufacturers assembly lines will stop,
- In 24 hours many hospitals will run out of critical supplies,
- In 48 hours Gas Stations will begin running out of fuel, and
- In 72 hours most Grocery Stores will run out of perishable foods.

In addition, transportation jobs generally pay well and, through multipliers, this income positively affects the local economy in a direct way.

Freight, in the study capture area, moves by highways, rail, aviation, pipeline and waterways (ports). The Piedmont Triad was an early crossroad for the railroads, moving freight between the ports to the east and inland connections to the north, west and south. This logistical network contributes significantly to the regional economy. The highway system placed the Piedmont Triad at a crossroad of the interstate system. Two major pipelines provide another important source of freight transport, once again with the Piedmont Triad at the crossroad. (LRTP of Winston-Salem Area, 2009)

The Piedmont Triad (the Region) remains at an economic crossroads. Low-wage global competition, combined with productivity increases in manufacturing, has stripped the Region’s traditional industrial clusters in furniture, textiles, and tobacco manufacturing of tens of thousands of jobs since 2000. With 1.6 million residents and a 1.5% annual growth rate, the population of the Piedmont Triad is expected to exceed 2 million by 2030. Guilford and Forsyth counties are home to the largest concentrations of population.

On a positive note, new regional high tech clusters are emerging, and the FedEx decision to establish its Mid-Atlantic hub at PTI, as well as the region having a major UPS sort center, provides the Piedmont Triad special competitive advantage in air logistics, offering time-sensitive industries fast, reliable long-distance connectivity. Airport-linked e-commerce fulfillment centers complement flow-through facilities for perishables, just-in-time supply chain and emergency parts provision centers, and reverse logistics facilities for the repair and upgrade of high-tech products such as notebook computers and mobile phones. The clustering of time-critical goods facilities near air-express airports is stimulating further expansion of air cargo, less than trailer load trucking (LTL), freight forwarders, and third party logistics providers (3PLs) along major highways with strong accessibility to these airports.
The Piedmont Triad is rich in logistics assets and is strategically located in the center of the Atlantic Coast Air Transport Corridor. The Triad offers excellent interstate highway access and competitive rail service, and is within six-hour trucking proximity to deep-water ports at Wilmington, NC, Morehead City, NC, Charleston, SC, Norfolk, VA and Savannah, GA. In addition, the area is served by the Norfolk Southern and CSX rail lines.

Table 6-1, Piedmont Triad Major Distribution Facilities

<table>
<thead>
<tr>
<th>Company</th>
<th>Total Sq Ft</th>
<th>County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ralph Lauren Corp.</td>
<td>1,873,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Kmart Distribution</td>
<td>1,600,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Liberty Hardware</td>
<td>1,210,000</td>
<td>Forsyth</td>
</tr>
<tr>
<td>Hanesbrands</td>
<td>930,451</td>
<td>Forsyth</td>
</tr>
<tr>
<td>Harris Teeter</td>
<td>908,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>USPS Bulk Mail Center</td>
<td>892,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Philips Van-Heusen</td>
<td>750,000</td>
<td>Yadkin</td>
</tr>
<tr>
<td>Kay Chemical Company</td>
<td>600,000</td>
<td>Forsyth</td>
</tr>
<tr>
<td>Powell Company</td>
<td>600,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Gildan Activewear</td>
<td>597,898</td>
<td>Rockingham</td>
</tr>
<tr>
<td>Gold Toe Brands</td>
<td>570,000</td>
<td>Alamance</td>
</tr>
<tr>
<td>Liberty Hardware</td>
<td>524,160</td>
<td>Forsyth</td>
</tr>
<tr>
<td>Lowes Companies Inc.</td>
<td>516,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Jockey International</td>
<td>500,000</td>
<td>Davie</td>
</tr>
<tr>
<td>Schenker Logistics</td>
<td>500,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>VF Jeanwear</td>
<td>494,700</td>
<td>Davie</td>
</tr>
<tr>
<td>Replacements Ltd.</td>
<td>460,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Loomcraft Textiles</td>
<td>454,219</td>
<td>Alamance</td>
</tr>
<tr>
<td>FedEx Ground</td>
<td>415,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Klaussner Furniture Industries</td>
<td>381,402</td>
<td>Randolph</td>
</tr>
<tr>
<td>Dart Container</td>
<td>366,000</td>
<td>Randolph</td>
</tr>
<tr>
<td>Legacy Classic Furniture</td>
<td>349,490</td>
<td>Guilford</td>
</tr>
<tr>
<td>United Parcel Service</td>
<td>336,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>Sav-A-Lot</td>
<td>325,000</td>
<td>Davidson</td>
</tr>
<tr>
<td>Lentz Property Management</td>
<td>315,000</td>
<td>Forsyth</td>
</tr>
<tr>
<td>Mylan Pharmaceuticals</td>
<td>312,000</td>
<td>Guilford</td>
</tr>
<tr>
<td>O’Reilly Automotive Inc.</td>
<td>300,000</td>
<td>Guilford</td>
</tr>
</tbody>
</table>

Recognizing the key role that freight transportation plays in the Piedmont Triad region; the Burlington-Graham, Greensboro, High Point, and Winston-Salem Metropolitan Planning Organization’s (MPO’s) are undertaking a more Regional approach to the Long Range Transportation Plan (LRTP) for this four year update to develop a framework for an integrated freight planning document for their respective areas. The Piedmont Triad has become increasingly focused on freight transportation planning over the last several years with the loss of textile manufacturing and a shift to major Freight and Goods Movement Industry. The goals guiding regional freight planning and investments are:

1. To maintain or improve existing levels of freight access and mobility;
2. Support the region’s economic well-being, while remaining sensitive to environmental needs and concerns; and
3. Achieve efficiency in operations and investments in the freight transportation system.

(LRTP of Winston-Salem Area)

The Piedmont Triad Region consists of twelve counties located in the central part of the state. A regional focus on economic development has spurred efforts to coordinate opportunities for
workforce development, higher education, infrastructure networks, and attract an array of businesses that contribute to the continued economic and job growth of the region.

2 Existing Conditions and Trends

2.1 Entire Freight System: Statewide and Regional Conditions and Trend
The NC Maritime Strategy report (completed in June, 2012) shows that trucks carried 82.4% of freight traffic in North Carolina in 2007, while rail carried 13.6%. The same analysis predicts that by 2040 the total truck freight carried will increase to 85.18% while the rail freight will decrease to 10.16%.

This information appears to contradict information released by the railroad industry. A CSX application to the Federal Highway Administration’s Corridors of the Future program says “Each intermodal train can take 280 trucks off the roadways, while each bulk and merchandise train can remove up to 500 trucks.” While true, it is important to emphasize that in most cases truck movement is the method that carries the finished goods to and from the rail facility. Intrastate freight movement in North Carolina moves primarily by truck, which is borne out by the following analysis. Railroads are experiencing a major challenge and are working to increase their capacity. However, we would be remiss not to plan on increased truck freight movements through and within the Piedmont Triad region.
<table>
<thead>
<tr>
<th>Year</th>
<th>Mode</th>
<th>Within NC</th>
<th>From NC</th>
<th>To NC</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(within%)</td>
<td>(from)</td>
<td>(to)</td>
<td>(total)</td>
</tr>
<tr>
<td>2007</td>
<td>Truck</td>
<td>284,419</td>
<td>83,087</td>
<td>77,433</td>
<td>444,939</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(96%)</td>
<td>(87%)</td>
<td>(52%)</td>
<td>(82%)</td>
</tr>
<tr>
<td></td>
<td>Rail</td>
<td>8,530</td>
<td>6,264</td>
<td>58,535</td>
<td>73,329</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3%)</td>
<td>(6%)</td>
<td>(40%)</td>
<td>(14%)</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>2,859</td>
<td>5,724</td>
<td>13,257</td>
<td>21,840</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1%)</td>
<td>(6%)</td>
<td>(8%)</td>
<td>(4%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>295,808</td>
<td>95,075</td>
<td>149,225</td>
<td>540,108</td>
</tr>
<tr>
<td>2040</td>
<td>Truck</td>
<td>379,961</td>
<td>183,460</td>
<td>115,836</td>
<td>679,257</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(95%)</td>
<td>(89%)</td>
<td>(60%)</td>
<td>(85%)</td>
</tr>
<tr>
<td></td>
<td>Rail</td>
<td>13,624</td>
<td>10,203</td>
<td>57,154</td>
<td>80,981</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(4%)</td>
<td>(5%)</td>
<td>(29%)</td>
<td>(10%)</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>4,599</td>
<td>11,814</td>
<td>20,786</td>
<td>37,199</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1%)</td>
<td>(6%)</td>
<td>(11%)</td>
<td>(5%)</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>398,184</td>
<td>205,477</td>
<td>193,776</td>
<td>797,437</td>
</tr>
</tbody>
</table>

Table 6.2 Freight Movements in North Carolina

Source: North Carolina Maritime Strategy, page 20 – all units in thousands of tons
2.2 Highway Freight: National Conditions and Trends
Truck mileage has been consistently increasing nationally over the past decades, but has been confined to essentially the same road capacity. Urban freeways and arterials in particular have become increasingly congested, and this trend is expected to continue. Trucks are affected just as much as commuters by congestion with additional implications for freight travel time and reliability. The graph below compares truck congestion cost with TTI's travel time index in the Triad.

By 2020, the U.S. trucking expects to move three billion more tons of freight than is hauled today. To meet this demand, the industry will put another 1.8 million trucks on the road. On average, 10,500 trucks a day travel some segments of the Interstate Highway System. By 2035, this will increase to 22,700 trucks for these portions of the Interstate, with the most heavily used segments seeing upwards of 50,000 trucks a day. (Transportation reboot, 2010)

2.3 Highway Freight: Statewide and Regional Conditions and Trends
Highway infrastructure in North Carolina includes state, municipal, and federally owned roadways. According to the 2010 Maintenance Condition Assessment Report, the NCDOT owns and maintains 80,000 miles of roadways, which represents approximately three-fourths of the total roadway inventory in the state. The state-owned roadway inventory includes 160,806 paved lane miles, approximately 4,500 centerline miles of unpaved roads, and 18,205 structures.

*This wealth of paved roads is critical to the overall economic vitality of our state and region. Just as critical however is the need to properly maintain this road system after initial construction.*

The 2004 STP established the North Carolina Multimodal Investment Network (NCMIN). The NCMIN stratifies each modal system into three tiers: statewide, regional, and sub-regional.
Table 6-3, Highway Tier Definitions in North Carolina Multimodal Investment Network

<table>
<thead>
<tr>
<th>Statewide Tier</th>
<th>Regional Tier</th>
<th>Subregional Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strategic Highway Corridors as approved by the Board of Transportation</td>
<td>All primary routes (US and NC) not on the statewide tier</td>
<td>All secondary routes not on the statewide tier</td>
</tr>
</tbody>
</table>

Beginning with the 2004 STP effort, all transportation facilities in the state were classified into one of three NCMIN (North Carolina Multimodal Investment Network) tiers. Statewide tier facilities serve long-distance trips, connect regional centers, have the highest usage, and provide a mobility function. Regional tier facilities connect major population centers and have a mix of functions. Sub-regional tier facilities service localized movements and provide access functions beyond mobility. For the highway mode, the statewide tier includes facilities that have been designated as Strategic Highway Corridors. Currently, 55 corridors have this designation, with a total length of approximately 5,500 miles. Regional tier facilities include all primary routes (designated US or NC) that are not on the statewide tier. Sub-regional tier facilities include all secondary routes that are not on the statewide tier. (2040 North Carolina Statewide Transportation Plan 3-1, 2012)

Existing roadway conditions, along with future conditions under various scenarios, were evaluated based on funded highway projects, long range planning projects, and other projects under consideration. Travel time, distance, and potential capital costs were identified for various highway investment alternatives for existing and proposed ports and inland freight nodes. In consideration of freight movement patterns within the South Atlantic region, evaluation of regional highway infrastructure included interstate and state highway networks in North Carolina as well as Virginia, South Carolina and Georgia.

The multi-state highway network was evaluated using the Freight Analysis Framework-3 (FAF) model, developed by the Federal Highway Administration (FHWA) in cooperation with the US Department of Transportation (USDOT). The GIS-based FAF model is a national network of roads developed to evaluate 2007 truck flow and to assess system wide congestion on the nation’s highway system in forecast year 2040. (Maritime Strategy, page 100, 2012)

2.4 Highway Freight: Conditions and Trends in the Piedmont Triad Study Area

In general the highway and road conditions for freight movement are much better than many areas throughout the US. However, the region must remain ever vigilant to ensure that our growth does not create bottlenecks and conditions that will limit our ability to increase current and bring new business to our area.

According to the Seven Portals Study, page 100, six Triad regional TIP projects seem relevant.
- The first is the relocation of NC 119 from I-85 to North of SR 1918.
- The second is completion of the Greensboro Western and Eastern Loops.
- The third is the US 220-NC68 Connector.
- The fourth is the widening of NC 24-27 from US 220 to Carthage.
- The fifth is the Winston Salem Northern Beltway Western and Eastern Sections.
- The sixth is the Macy Grove Road Interchange with I-40 Business.

Although additional projects benefitting freight and logistics will be cited later in this report, one particular project should be noted in this section. The NC Ports Authority Piedmont Triad Inland Terminal (PTIT) is located at 505 Chimney Rock Road with the major point of access being the intersection of Chimney Rock Road and Gallimore Dairy Road. PTIT is a location for the storage and pick-up and delivery of containers utilized in international container shipping for steamship
lines calling at the port of Wilmington. This terminal, and other terminals of its type are a major link in international transportation and logistics movements and give the region an additional asset in economic development efforts.

An infrastructure project in the works is the widening of Gallimore Dairy Road from NC 68 to the south of International Drive in Greensboro. The widening of NC 68 in this location will assist the current and future congestion at the intersection of Chimney Rock and Gallimore Dairy Roads. In addition, this project will enable quicker response by emergency vehicles for any incident at the Colonial Pipeline Tank Farm on Gallimore Dairy Road.

In addition to the above and other areas and locations mentioned elsewhere in this document, two challenges come to mind immediately. One being US 52 in Winston Salem, and the other being the signage on Interstate 40/85 in Greensboro. US 52 is a major transportation corridor between I-85 in the south, I-40 in the center and I-74 in the north. US 52 from I-85 to I-40 is in good repair and offers free flow movement. However, from I-40 North to University Parkway it is limited in its ability to positively contribute to the economic growth of the area. Although major construction is taking place on this segment, until it and the northern loop around Winston Salem is completed, this transportation corridor is crippling. Secondly a simple matter of road signage can drastically change the flow through and around Greensboro. Upon the completion of the southern loop around Greensboro (I-73/I-85), signage properly directed east and westbound I-40 traffic to and from Raleigh/Durham via the by-pass taking traffic off of the major interstate through Greensboro. Within the past 3 years however, the signage has been changed directing east and westbound I-40 traffic through Greensboro and off of the I-73/I-85 by-pass. While this may be a blessing in disguise for truckers (they know about the by-pass), anyone not familiar with the area is directed through one of the most congested sections of the region.

An interesting question has been posed during the creation of this document. “What is the ideal roadway network for freight movement?” The following is offered to allow the reader(s) to better understand various criteria that can be utilized in the future for highway/roadway development:

1. Site Distance – Trucks are large heavy vehicles traveling at least as high a speed as most automobiles on the nation's roadways. As such the distance that a truck driver can see the road before him/her adds additional safety benefits to the highway system. Benefit: Safety and Fuel Economy

2. Entrance and Exit Ramp Radii – The most efficient entrance and exit ramp design for any motor vehicle is one that allows the vehicle to slow to a stop or turn gracefully or to enter a high speed section of highway safely and smoothly. This design takes a large amount of land and not all current highway designs are able to offer this opportunity at all times. When a tighter entrance/exit ramp is necessary, it should be understood that the larger the radii the safer the entrance/exit to/from a roadway will be. This is not only a matter of weight distribution shift as a truck enters a corner, but as well allows a “site distance safety” as well as monetary economies due to lessened brake wear and tire scrub. Benefit: Safety, Fuel Economy, Operating Costs, Less Congestion

3. Truck Lanes – Everyone has seen and understands HOV (High Occupancy Vehicle) Lanes. However, many do not stop to realize that this in turn forces the heavier and larger moving vehicles into general traffic flow. This in turn creates additional congestion as trucks take longer to stop and accelerate and this in turn slows down traffic flow in general. Better to have through moving truck traffic in a lane of its own freeing the general traffic lanes for local truck traffic if entering/exiting a highway and passenger automobiles which can by their nature flow together and maintain speed easier. Benefit: Safety, Fuel Economy, Less Congestion

4. Road Grade – Each of us has been in a situation while climbing a hill behind a large truck. Trucks are heavy and powerful. They are however built to be powerful in order to
carry the load, not to move more quickly. The steeper a grade is designed and built, the more congestion it will create as long as trucks share the road with automobiles. In every case careful consideration should be given to a roads grade. This is not always possible, but remember, this section is based on a “perfect” scenario. **Benefits: Safety, Fuel Economy, Less Congestion**

5. Intersections – “The devil is in the details”. Turning radius is not an item that can be explained simply and in enough detail in this document. However, the simple matter is a car can turn in a much shorter distance than a truck. Especially if the truck in question is a tractor/trailer combination. These units can be anywhere from 60’ to 75’ in total length. Compare that to an automobile which is normally 10’ to 15’ and you can see the difficulties in designing a turn or intersection for both. How do you plan for this? From a freight perspective “always plan” for at least a 60’ unit. **Benefits: Safety, Operating Costs, Less Congestion**

6. Lane Width – As always, from a freight perspective, wider is better. It can be hard enough at times to estimate the furthest edge of a road from a passenger car drivers perspective. As a heavy freight vehicle is 8’ wide with the driver at 6’ from the road surface additional width adds a safety factor that is lacking in many newly designed road networks. In addition a wider road allows truck drivers to better see and react to traffic around them. **Benefits: Safety**

7. Road Surface – Simply put, there is a trade-off is discussing road surfaces. Smoother roads allow for better fuel economies, Rougher surfaces create better adhesion. The newest technologies developed for road engineering should always be utilized. **Benefits: Fuel Economy, Safety, Operating Costs**
2.5 Rail Freight: National Conditions and Trends
The US freight railroad industry is in a period of stability and growth following the major structural changes of the 1970s through the 1990s. The economic growth experienced in recent years has particularly benefited some freight flows, such as containers to and from the major ports, with the result that railroads have been adding or reinstating capacity on their main lines. Although there is a strong focus on unit trains (entire trains of a single commodity, such as coal or containers), the more traditional, smaller-scale service (single cars or small numbers of cars to/from local industries (carload freight) remains an important part of the industry.

Figure 6-2, US Rail Traffic

Figure 6-2 presents recent information on US shipments by rail. Until recently, bulk products have dominated US rail shipments. Coal accounts for approximately half of US rail tonnage, so that coal shipments dominate the map. Coal’s importance is clear once the reader understands that coal fields in Colorado fuel power plants all across the eastern and southern U.S and are a significant part of the exports through the port of Houston. The Heavy lines connecting the areas of Los Angeles, Portland, and Salem to the east are dominated by container trains moving to Chicago, Saint Louis, and Dallas before being transshipped further east.

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1 John McPhee provides an excellent discussion of unit trains in *Uncommon Carriers*
Intermodal rail shipments have been growing rapidly. In Figure 6-3, several popular intermodal routes are visible, including one from Los Angeles east to the Chicago distribution yards. An increase in intermodal traffic from Mexico north along the NAFTA Corridor is expected should energy cost, urban Chinese wages, or the relative value of Chinese currency increase. Accordingly, a set of rail-based intermodal terminals are developing along that corridor which also serve east-west traffic. (Seven Portals Study, page 34) *Note that this figure shows major container movements discharging at USWC Ports. With the completion of the Panama Canal in 2014, a large portion of container movements may shift to a USEC discharge.

2.6 Rail Freight: Statewide and Regional Conditions and Trends
North Carolina’s rail network serves 86 of the state’s 100 counties. The network provides access to strategic locations, such as ports, power plants, mines, and military installations, and facilitates the movement of goods for agriculture, forestry, plastic, furniture, coal, food products, and chemicals.
The following table shows how North Carolina’s rail system compares to other states per 2008 data:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>13th in total number of railroad companies</td>
<td>23</td>
</tr>
<tr>
<td>17th in total rail miles</td>
<td>3,250</td>
</tr>
<tr>
<td>32nd in originated rail tons</td>
<td>12,086,168</td>
</tr>
<tr>
<td>13th in terminated rail tons</td>
<td>58,440,018</td>
</tr>
<tr>
<td>32nd in originated rail carloads</td>
<td>211,572</td>
</tr>
<tr>
<td>14th in terminated rail carloads</td>
<td>665,580</td>
</tr>
<tr>
<td>32nd in rail tons carried</td>
<td>103,254,917</td>
</tr>
<tr>
<td>34th in rail carloads</td>
<td>1,467,318</td>
</tr>
<tr>
<td>29th in freight rail employment</td>
<td>2,425</td>
</tr>
<tr>
<td>30th in freight rail wages</td>
<td>$163.2 million</td>
</tr>
</tbody>
</table>

The majority of the state’s freight rail system is owned, operated, and maintained by the private sector. Of 3,345 miles of rail lines in North Carolina, only 491 miles are owned by the State. The state of North Carolina owns the North Carolina Railroad Company (NCRR), with Norfolk Southern Railroad Company (NS) operating trackage rights over its 317-mile corridor from Charlotte to Morehead City. Table 6-4 and Figure 6-4 show the miles and locations of freight railroads operated in North Carolina, with 2,422 miles of Class I railroads comprising 72.4 percent of all railroads in the state.

Table 6-4, Freight Railroads in North Carolina, by Type and Miles, FY 2011

<table>
<thead>
<tr>
<th>Type</th>
<th>Miles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Railroads</td>
<td></td>
</tr>
<tr>
<td>CSX Transportation</td>
<td>1,121</td>
</tr>
<tr>
<td>Norfolk Southern Railroad Company*</td>
<td>1,301</td>
</tr>
<tr>
<td>Subtotal Class I Railroads</td>
<td>2,422</td>
</tr>
<tr>
<td>Class III Railroads</td>
<td></td>
</tr>
<tr>
<td>Shortline/local railroads</td>
<td>687</td>
</tr>
<tr>
<td>Switching and terminal railroads</td>
<td>236</td>
</tr>
<tr>
<td>Subtotal Class III Railroads</td>
<td>923</td>
</tr>
<tr>
<td>Total miles of railroads in North Carolina</td>
<td>3,345</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Transportation, 2008 National Transportation Atlas Database
* Includes operating rights on 317 miles of the NCRR
Twenty-two active freight railroad companies operate in the state.

Two active Class I railroads (CSX Transportation and Norfolk Southern Railroad Company): According to size classifications established by the Surface Transportation Board, a Class I railroad had annual carrier operating revenues of $379 million in 2009.25.

Twenty active Class III railroads: 12 short line railroads, and 8 other short line railroads that specialize in switching and terminal services. According to the Surface Transportation Board, a Class III railroad is a railway company with annual operating revenue of less than $20.5 million.

Although most short-line railroads operating in the state and region move freight via box car, tank or flatbed rail cars, any increase in short-line railroad activity will have an impact on transit and transportation flow on our roads and highways at railroad crossings throughout the state.

The defined statewide and regional tiers for freight rail are shown in Table 6-5 and Figure 6-5. The NCMIN (North Carolina Multimodal Investment Network) did not define sub-regional tier for freight rail because rail is not used for short distance transportation, with trips typically exceeding 300 miles. NCDOT defines the statewide tier as rail lines having strategic importance with the remainder of rail lines being considered regional tier facilities. Table 6-5, Freight Rail Tier Definitions in the North Carolina Multimodal Investment Network

<table>
<thead>
<tr>
<th>Mode</th>
<th>Statewide Tier</th>
<th>Regional Tier</th>
<th>Subregional Tier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rail (Freight)</td>
<td>Rail lines of strategic importance as determined by the Rail Division</td>
<td>All remaining rail lines not included on the statewide tier</td>
<td>N/A</td>
</tr>
</tbody>
</table>

The most densely used freight rail corridors in North Carolina in recent years include:

- The CSX corridor in western North Carolina serves through freight traffic and connects South Carolina to Tennessee. Coal from mines in Virginia, West Virginia, and Kentucky dominates the corridor's volume.
- The CSX corridor in eastern North Carolina, parallels I-95 and connects North Carolina to states from Boston, MA to Miami, FL. This corridor is the CSX north/south mainline and is the backbone of the CSX's National Gateway intermodal corridor. It also carries Amtrak rail passenger traffic.
- The CSX corridor from the Port of Wilmington to Charlotte is part of CSX’s National Gateway intermodal corridor. The National Gateway ends in Charlotte but the corridor extends to Atlanta and points south.
- The NCRR corridor runs 317 miles from the port of Morehead City to Charlotte. The line parallels I-40 and I-85. NS has an exclusive trackage rights on the NCRR. Between Charlotte and Greensboro is the NS mainline, which is part of its Crescent Corridor. The corridor is a heavily traveled intermodal corridor with connection to New Jersey and New Orleans. This corridor also serves passenger rail and is included in the Southeast High Speed Rail Corridor. North Carolina’s Raleigh to Charlotte passenger service (the Piedmont and the Carolinian) uses this corridor as does Amtrak’s Crescent from NY to New Orleans, LA.

From the perspective of railroad infrastructure, it is important to recognize that North Carolina is not that critical to either NS or CSX, the two Class 1 railroads that service the state. One estimate is that less than 2% of the revenues for these railroads are derived from shippers in North Carolina. The implication might be that the state needs a strategic plan that relies on partnerships with short lines or shared rights-of-way.
Figure 6-6 shows the railroad network in the state. The primary interest of CSX lies in its north/south main line stretching Weldon to Rowland, through Selma and Fayetteville where it intersects with NS. The primary interest of NS is its north-south main line from Lynchburg (VA) to Greenville (SC) through Charlotte where it intersects with CSX. There are other secondary lines in the state as well as locations served by both CSX and NS: Goldsboro, Colon, and Cary to Raleigh. Arguably, the entire length of the Aberdeen, Carolina, and Western Railway Company is also served by both Class 1 railroads since the ACWR interchanges with both CSX and NS. The same is true for the Carolina Coastal Railway (CLNA) between Raleigh and Wilson and the Aberdeen & Rockfish Railroad (AR).

A tiered network approach to railroad network planning seems needed. There also seems to be value in developing a sense of the types of railroads that would be best to operate what parts of the network – Class 1 railroads versus short lines – and where service by two Class 1 railroads is needed. Figure 6-6 illustrates one realization of this tiered network idea, borrowing from the highway network ideas of interstates, state highways, and local “roads”.

North Carolina has at least two “interstate” quality rail lines (high performance lines). One is the CSX north-south main line from Petersburg (VA), through Rocky Mount, Selma, and Fayetteville to Florence (SC). The other is the NS north-south main line from Lynchburg (VA), through Danville, Greensboro, and Charlotte to Greenville (SC).

The state might want to have or designate additional east-west high performance lines. Reaching the Midwest as well as the Mississippi River crossings in Memphis and St. Louis would be the objectives. One possible choice is the CSX east-west main line from Wilmington, through Monroe, Charlotte, and Marion to Johnson City (TN). It is perfectly straight in the east – in fact it has the longest stretch of tangent (straight) track in the US – steep grades and crooked trackage in western North Carolina limit speed through the Blue Ridge Mountains. It is used there primarily to bring coal out of the Appalachians. Improving the alignment to main line standards would be expensive and require work in two states. Another option involves a combination of the CSX east-west main line from Wilmington through Monroe, and not
Charlotte, to Chester (SC) and then back into North Carolina via NS from Spartanburg (SC), through Asheville into Tennessee. But upgrading this line would also be pricey and would involve putting back in service the Saluda Grade. What might make the most sense would be to use the CSX main line from Wilmington through Monroe to Chester (SC) and not attempt to create an in-state route through the mountains of North Carolina. Two other options make sense, both on NS. The one is from Morehead City west through Raleigh to Greensboro, and then north to Danville en route to Lynchburg, VA. The second is similar: from Morehead City west through Raleigh and Greensboro to Winston-Salem, and then north to Roanoke Virginia.

In a third tier are the rest of the rail lines shown in Figure 6-6. These would have a local focus, either for short hauls or pick-up and delivery to and from shippers and consignees. This third-tier network might best be operated by short lines whose cost structures make short-distance moves profitable. These short line operators might be local to the state or subsidiaries of national-level holding companies. These short-line companies also tend to have a greater interest in local business activity, they provide more frequent service, with shorter trains, and they are invested in the success of the state's economy. As well, the states short line railroads some as "Feeder Lines" to Class I railroads operating in the state.

The basic railroad model business model is for trains and train crews to operate only on trackage owned, or leased by that railroad. Railroads charge fees for hauling freight in other brand cars. A challenging, but valuable idea is to treat the second and third tier lines as public rights-of-way over which any rail carrier can operate. This idea, suggested by Robert L. Banks and others in the 1970's, is at least 40 years old. Except in limited instances where governments have argued successfully before the Surface Transportation Board (and before that the Interstate Commerce Commission) to provide trackage rights for multiple carriers over a particular rail line, this shared use idea has not seen great popularity. Pursuing this idea could be a way to get more competitive rail rates and higher quality service to the ports of Wilmington and Morehead City as well as strategic development locations such as Global TransPark, which have found it challenging to get reasonable rate quotes from the Class I railroads².

The goal is to achieve two objectives:

1. have a high-quality railroad network that connects to all the major locations of industrial activity in the state, and
2. get high quality service at reasonable rates from the railroads that operate over these lines, whether they are Class 1 railroads or short lines.

Several specific improvements that seem helpful from a logistics perspective, surfaced during the review conducted for this project. They include:

- restoring the line from Wallace to Castle Hayne (which is planned),
- building a wye (triangular junction) in Pembroke (which is being addressed);
- getting two-carrier service to both the ports of Wilmington and Morehead City (or make the ports equivalent in terms of the vessels and cargo they can handle, so steamship companies become indifferent between them);
- completing the wye on the branch that services MOTSU (Military Ocean Terminal at Sunny Point);
- providing more direct service to the Port of Wilmington, one that eliminates crisscrossing the City of Wilmington multiple times;
- simplifying the rail alignments through Charlotte, like eliminating the at-grade crossing between CSX and NS (CRISP); and

² Houston Power & Lighting Company took similar approach by building a second rail line to serve a large coal generating station in Texas. By introducing competition into the logistics mix Houston Power saved $10 Million the first year and gained flexibility and redundancy in their supply chain. This case is discussed in Shell’s Bargaining for Advantage.
• eliminating single-track sections along the main lines – Greensboro to Raleigh, Charlotte to Greensboro, (maybe to triple track if high speed passenger services progress) and along the entire length of the CSX main line.

Improvements at site specific locations would also be beneficial such as improving access to Morehead City (including Radio Island), building a larger local yard west of Morehead City to help service the port; and reorganizing the tracks in Goldsboro, as well as Raleigh, Greensboro, and Winston-Salem; and bypassing cities like New Bern.

An important detail is that the state needs to realize that rail service for some parts of the state will come from out of state. This is particularly true in the northeastern region, where the service will be based out of Norfolk. The Chesapeake & Albemarle, for example, interchanges with NS in Chesapeake, south of Norfolk. (Seven Portals Study, page 101, 2011)

2.7 Rail Freight: Condition and Trends in the Piedmont Triad Study Area

Proposed Piedmont Triad Regional Freight Villages\textsuperscript{3} based on NC Governors Logistics Task Force – 7 Portals Report

1. Burlington ( Alamance County Ind. Dev. Corp./ Burlington/ Alamance AP): There is rail service on the north side of the airport, running E-W.
2. Greensboro (Aerotropolis site at PTI): NS is immediately adjacent to the site.
3. Montgomery/Moore (The Heart of NC Mega-site): The site is near the Montgomery Airport; the railroad is next to the airport (Aberdeen), about 2 miles from the site; it would be easy to construct a rail spur into the area; there are connections to CSX in Wadesboro and NS in Albemarle.
4. Winston-Salem (Smith Reynolds Airport): NS is immediately adjacent to the site. (seven portals study 107, 2011)

Rail freight transportation in the Winston-Salem Urban Area is operated by three different railroads, the Yadkin Valley Railroad, the Winston-Salem Southbound Railway, and the Norfolk Southern Railway.

The Yadkin Valley Railroad Company is owned and operated by Gulf and Ohio Railways of Knoxville, TN and operates in the counties of Forsyth, Stokes, Surry, and Wilkes. The railroad carries forest products, coal, grain, and fiberboard. The Yadkin Valley Railroad has two lines, one from Rural Hall to Mount Airy and one from Rural Hall to North Wilkesboro. Both lines connect to the Norfolk Southern Railway at Rural Hall.

Norfolk Southern Railway (NS) is owned and operated by Norfolk Southern Corporation headquartered in Norfolk, VA. NS connects the Winston-Salem Urban Area to Roanoke, VA to the north and Greensboro to the east. NS also owns a line in which is currently not in use that connects Winston-Salem with Charlotte. One of the largest commodities carried by the railroad is automobiles. NS operates an automobile distribution center in Winston-Salem. In October of

\textsuperscript{3} “a defined area within which all activities relating to transport, logistics and the distribution of goods, both for national and international transit, are carried out by various operators.” (NC Governors Logistics Task Force, 7 Portals report December, 2011. Additional information concerning NC Freight Villages may be obtained in this report (section 2.5 pages 41-48) and may be located at: http://www.ncdot.gov/doh/preconstruct/tpb/research/download/2010-34-0masterfinalreport.pdf
2011 Norfolk Southern announced the expansion of its Triad freight operations with a dedicated double-stack train service to the Triad from the Port of Norfolk. This service will run 6 days per week and continue on to Atlanta and points south. This additional intermodal capacity to/from Norfolk ports will increase the amount of truck movement on the I-85/I-40 corridor within this LRTP’s study area as well as the Patterson Street intermodal connector in Greensboro. The impact of the volume is unknown at this point. However, it is important to understand that with the Panama Canal widening to be completed in 2014, and with the larger vessel capacity it brings, coupled with the fact that the Port of Norfolk is the only east coast port with the capacity to handle the large vessels, the Triad stands to gain volume and business. To assist with this possible congestion scenario, the Greensboro MPO has identified a project known as the Norwalk Street Connector which would provide alternate access to I-40 using Patterson Street or full access to I-40 via Wendover Avenue.

Double-Stack Train

Winston-Salem Southbound Railway (WSS) began service in 1910 and is independently operated; however, CSX and Norfolk Southern jointly own all of its stock. WSS connects Winston-Salem and Forsyth County to Lexington, Albemarle, and Wadesboro to the south. The railway operates in Forsyth, Davidson, Stanly, and Anson Counties. The railroad carries grain, sand, gravel, stone, forest products, paper products, coal, coke, cement, clay, fertilizer, chemicals, aluminum, iron, and steel. One of the principal shippers is Ingredion Corporation, manufacturers of corn syrup and related products in Winston Salem. WSS connects with NS in Winston-Salem on the north end and with CSX in Wadesboro on the south end. WSS also connects to High Point, Thomasville, and Denton Railroad (HPTD) and Aberdeen, Carolina, and Western Railroad (ACWR) along the railway. (LRTP of Winston-Salem Area, 2009)

The High Point, Thomasville & Denton Railroad Co (HPT&D) operates from High Point through Thomasville and Denton to a junction with the Winston-Salem Southbound Railway at High Rock. The company, founded in 1923, is owned by the Winston-Salem Southbound Railway. The railroad carries forest products, paper products, chemicals, brick, coal, cement, and furniture. Principal shippers are: Thomasville Forest Products of Shale Brick – a division of Lowes Inc.; Carolina Container Corp. of High Point – manufacturer of pulpboard; and Georgia Pacific of Denton – chemical manufacturer.

Working with the North Carolina Railroad (NCRR), Norfolk Southern Railway (NS) and CSX Transportation, the NCDOT is upgrading existing rail corridors to improve safety, efficiency and capacity for freight and passenger train services. The first phase of improvements is scheduled
along the North Carolina Railroad. The 317-mile, state owned corridor links Charlotte, Greensboro and Raleigh and extends to the state’s seaport at Morehead City. Norfolk Southern Railway operates trains along the entire corridor under a lease agreement with NCRR. CSX Transportation shares operation of a portion of the NCRR's corridor between Raleigh and Cary.

At one time the whole corridor between Greensboro and Charlotte had two tracks. Portions of the second track were removed in the late 1960's as part of a signal system improvement. Railroad traffic has increased greatly since that time and additional capacity is now needed. Rebuilding the second track in four separate areas will create a 92-mile stretch of double-track railroad between Greensboro and Charlotte. This long double-track section will increase corridor capacity, improve traffic flow and schedule reliability by allowing freight and passenger trains to meet or pass one another without slowing down to enter a siding.

Concerning Southeast High Speed Rail Projects in the Greensboro Urban Area, NCDOT has been awarded $545 million from the American Recovery and Reinvestment Act to support implementation of Southeast High Speed Rail Corridor (SEHSR). $520 million in improvements are anticipated between Raleigh and Charlotte to enable higher speeds and more reliable service through the corridor while improving rail security. The goal of the SEHSR corridor upgrade is to allow trains to travel between Charlotte and Washington, D.C. at speeds of 90-110 miles per hour and an average speed of 86 mph. NCDOT’s original request was for $5.2 billion, which is the current estimated cost to fully complete SEHSR improvements in the state.

Since the USDOT designated Charlotte to Washington, D.C. as a high-speed rail corridor in 1992, the N.C. Department of Transportation has invested more than $300 million in the state’s intercity passenger rail service for renovation and construction of train stations, track work improvements and corridor preservation projects in order to pave the way for high-speed service. The ARRA funding requires projects to meet readiness criteria that will enable them to move to construction in the near term. Corridor wide, the improvements include expanding all single track sections to double track, removing and improving crossings, and station security upgrades.

Greensboro to High Point - (Cox to Hoskins)

This project built an 8.7-mile section of second main track on the old roadbed (east of the existing track) between "Cox" in west Greensboro and near Hoskins Street in High Point. New crossovers will be constructed to allow trains to quickly change from one track to the other at Cox and at Hoskins.

Estimated Cost: $20 million

Construction Schedule: The Greensboro News & Record reported that construction was completed in December of 2009, http://www.news-record.com/content/2009/12/16/article/work_ends_to_expand_railroad_tracks_between_greensboro_high_point

Result: The new double track section will improve reliability and traffic flow, increase capacity and at least one minute of travel time per train.

Through track and signal improvements, the NCDOT has reduced the travel time between Raleigh and Charlotte by more than 35 minutes since the work began in 2001. In addition to reducing the travel time, the work will increase efficiency and reliability for both freight and passenger trains in the corridor. (High Point Enterprise)
3 Current and Future Issues

3.1 Entire Freight System: Statewide and Regional Current and Future issues
State Departments of Transportation (DOTs) have a historic linkage to freight and freight movements. This linkage dates to the early days of DOTs, when their primary focus tended to be on creating “farm to market” roads to meet basic societal needs - bringing food from the point of production (the farm) to where people live (cities and towns). Accordingly, including freight considerations in the transportation process is less of a new trend than a revisiting of a historical relationship.

Compared to the historic role of freight in DOT activities and planning, recent efforts to incorporate freight considerations into the transportation planning process tend to be reflective of shifts toward the use of global rather than national or regional supply chains. In a global supply chain environment (where markets are operating freely), it is natural and predictable that labor-intensive industries would tend to locate in areas where labor costs are low (subject to the impact of transportation costs), while industries that tend to be capital-intensive (or for which transportation costs are a major component of final product cost) are less affected. These predictable trends have proven true in the United States and North Carolina and have had significant impacts on many domestic industries such as textiles, furniture, and other industries with similar economics. However, while such industry and employment impacts are predictable, it does not change the difficulty associated with adjusting to the job losses and industry displacements associated with these market-driven adjustments or the desire for governments to attempt to avoid or mitigate these impacts. Such mitigation efforts can and do include using transportation system projects to encourage the location of new businesses or improve the competitive standing of existing businesses.

Because of the factors noted above, the Federal Highway Administration (FHWA) and state DOTs are increasingly devoting resources to understanding and determining how to best incorporate freight considerations into transportation planning and/or project selection. Specifically, the FHWA, through the efforts of its Offices of Planning and Freight Management and Operations, has sponsored the development of, and/or compiled a considerable library of, resources directed to this topic. Specific tools include freight data sources, demand modeling tools, guides, and technical resources directed to practitioners so that they can incorporate freight into state planning activities. Additionally, a number of state DOTs have actively been developing state-specific models for including freight in both project planning and prioritization efforts. Of particular note, the Florida Strategic Intermodal System prioritization model represents one of the more mature and comprehensive efforts to systemically incorporate freight into the project planning and prioritization process. Other notable state DOT efforts to include freight in transportation planning include Indiana, Minnesota, Ohio, and Washington. (2014 North Carolina Statewide Transportation Plan, page 2-25, 2012) It should be noted that while the FHWA and NCDOT are looking at various models to better include freight flow and logistics into their planning efforts, the models and tools do not yet bring the level of detail down to regional and county levels in sufficient detail to be useful.

Since the issuance of NCDOT’s previous STP, “Charting a New Direction for NCDOT” in 2004, a number of national and North Carolina initiatives have highlighted the importance of freight and logistics in relation to long-term economic health and growth in the state. In North Carolina, freight and logistics have emerged as a state priority that can help underpin economic development and economic competitiveness. In North Carolina, this topic then relates to the movement of raw goods and materials as well as finished goods and products, between their origins and ultimate destinations including in-state distribution to businesses and consumers and out-of-state markets. As a result, freight and logistics touch all key aspects of the state’s
multifaceted economic development targets including agriculture, bio/medical, tourism, education, military, and manufacturing.

The 2004 STP included a number of direct and indirect references to the importance of “freight” and “logistics” in establishing transportation planning priorities. Starting with its initial discussion of domestic and international trade factors, the report identified a linkage between North Carolina’s future economic prosperity on the ability of its transportation system to support freight and logistics demands. The report further discusses the importance of the freight rail infrastructure needs and the economic impact of the industries primarily served by rail as a means of further underscoring this freight/economic growth linkage. Finally, the report encouraged the enhanced adoption and use of NCDOT’s Strategic Highway Corridor (SHC) concept, which specifically identifies statewide economic prosperity as a major focus for SHC-designated assets; this effectively acknowledges the linkage between freight movements and economic growth.

This report acknowledges the linkage of economic growth to the state’s transportation infrastructure. However, while the freight/economics/transportation linkage was generally understood, the report did not define how freight/logistics considerations should be weighted within NCDOT’s project prioritization and selection process. (2040 North Carolina Statewide Transportation Plan, 2011) Although NCDOT acknowledges the importance of freight planning, it is struggling with how to evaluate the data. This is an area where regional coordination between industry and transportation planners comes into play. With this team effort, regional freight planning can partner with NCDOT to supply the information and needed to make “informed” decisions.

3.2 Highway Freight: National Current and Future Issues
Nationally decision-makers are realizing that keeping the system in good repair competes with adding capacity and that today’s funding streams are (a) inadequate to the task, and (b) have begun to fall off. Much of the congestion occurs today at bottlenecks on the highway system—specific locations that experience recurring congestion and backups because traffic volumes exceed highway capacity. The American Trucking Associations estimates that the annual cost of delay at these bottlenecks comes to $19 billion. Our economy depends on a well-functioning and efficient transportation system, which in turn depends on the capacity and condition of the underlying infrastructure—our highways, bridges, rail lines, tunnels, ports, harbors, and channels. We know that demand for freight transportation is growing. We know that this will exacerbate congestion that already is adding to shipper and carrier costs. We know where the bottlenecks and choke points are, and we know how to fix them. We are not addressing these problems because few state transportation agencies have the money to tackle them. In the case of several major projects that would create benefits both regionally and nationally, their costs are so high they cannot be funded by a single state. (Transportation reboot) However, as we mentioned “10 Steps to an Effective National Freight Policy” on page 1, the third suggestion, create a competitive freight discretionary program and the fourth suggestion, strengthen and diversify freight funding sources may assist development of funding streams. Nationally, the USDOT TIGER grant program addressed a significant number of major freight bottlenecks including the I-85 Bridge over the Yadkin River, Norfolk Southern Rail Road’s Crescent Corridor Project and the Appalachian Regional Short Line Rail Project (which shows the growing importance of Short Line Rail Roads to the national freight infrastructure. In addition, the MAP-21 reauthorization bill Creates a new competitive projects of national significance program that will help. These are only first steps though and it appears a greater emphasis is needed nationally on these issues.

3.3 Highway Freight: Statewide and Regional Current and Future Issues
Freight mobility through North Carolina’s highway network will rely on improvements that provide direct and timely access for trucks to port facilities from inland freight nodes and
facilities, including rail intermodal facilities, manufacturing, agricultural production, warehousing and distribution centers.

Based on the maritime market opportunities identified for North Carolina, investment in the US 70, I-73/I-74, and I-40 highway corridors will have the greatest effect in reducing trucking travel times within the state. Focused investments along these targeted freight corridors is also consistent with the 2010 Statewide Logistics Plan recommendations for highway improvements, including creating of a multimodal corridor between Charlotte and Wilmington and enhancing the primary highways of the National Truck Network in North Carolina. The Logistics Plan also recommended improvements to I-95 to support pass-through traffic; while there are many benefits to the enhancement of this vital corridor, improvements to I-95 were not demonstrated to support the specific market scenarios evaluated under this study. (North Carolina Maritime Strategy, page 104, 2012)

The roadway needs estimate was developed with assistance from several NCDOT Business Units and all seventeen MPOs in the state. The highway mobility estimate was completed in two parts. Each MPO provided an estimate for highway needs within its jurisdiction based on local plans. For areas not in an MPO, an estimate for highway widening was developed based on a volume-to-capacity analysis using a GIS database developed by the NCDOT GIS Unit and SPOT (Strategic Planning Office of Transportation). In addition, the highway mobility estimate includes the policy-driven estimate for completion of urban loops and the intrastate system. The highway safety needs estimate was developed by the NCDOT Traffic Safety Unit and includes funding needs for the Spot Safety, Hazard Elimination, and High Risk Rural Road safety programs. The infrastructure health needs estimates were developed by the NCDOT Pavement Management and State Road Maintenance Units. (2040 North Carolina Statewide Transportation Plan, page 3-10, 2012)

3.4 Rail Freight: National Current and Future Issues
Nationwide forecasts suggest that long-term economic growth will create demand for substantial additional capacity on the main rail corridors – and that the railroad industry will not be able to pay for all that capacity on its own. Public-private partnerships are therefore likely to be a key funding mechanism for achieving the necessary capacity. Railroads are increasingly open to strategies that combine public funding of public benefits (principally reductions in truck traffic) with railroad funding of private benefits. In particular, states and municipalities are increasingly recognizing the public benefit of diverting truck traffic from highways to railroads. (LRTP of Rock Hill Fort Area)

FHWA has served as the lead agency on many state rail system projects because they have more robust staff resources than the FRA. FHWA is involved in safety improvements as related to railway grade crossings through Section 130 of its Highway Safety Program.

The Rail Safety Improvement Act of 2008 updated safety regulations and authorized the installation of new train control systems on all routes that handle certain classes of hazardous materials. The new regulations take effect at the end of 2015. (2040 North Carolina Statewide Transportation Plan, page 7-7, 2012)

3.5 Rail Freight: Statewide and Regional Current and Future Issues
The General Assembly established the House Select Committee on a Comprehensive Rail Service Plan for North Carolina in 2008 to study development of a comprehensive rail plan. Freight rail needs identified by the committee include rail capacity to promote economic development, better service for the military and ports, accommodating heavier rail cars (286,000 pounds), and addressing rail and highway congestion.
In its 2009 final report the 21st Century Transportation Committee recommended:
- Using more rail to transport freight
- Investing in rail connections between intermodal facilities and inland ports
- Restoring abandoned rail lines
- Expanding and upgrading passenger, freight, commuter, and short line service

In 2007 the General Assembly instructed the Office of State Budget and Management to develop a Statewide Logistics Plan to address long-term economic, mobility, and infrastructure needs. Short- and mid-term freight rail-specific recommendations in the plan include:
- Encourage further development along the Crescent Rail Corridor (0 to 5 years)
- Retain existing rail corridors; halt track removal (0 to 5 years)
- Support short line infrastructure improvements (0 to 5 years)
- Coordinate schedules to optimize freight and passenger services (5 to 15 years)
- Create a Charlotte to Wilmington multimodal corridor (5 to 15 years)
- Expand high-use corridor capacity (5 to 15 years)

NCDOT has pursued multiple initiatives to increase safety on the state’s freight rail systems. These new programs include the Crossing Hazard Elimination Program, Sealed Corridor Program, Private Crossing Safety Initiative, and Safety Oversight Program.

Improvements to the Southeast High-Speed Rail Corridor will benefit freight transportation, double (or triple) tracking will increase the train capacity and freight movement efficiency in the affected areas, and the Sealed Corridor Program will improve trackside safety. NCDOT has been awarded $545 million from the American Recovery and Reinvestment Act to support implementation of Southeast High Speed Rail Corridor (SEHSR). $520 million in improvements are anticipated between Raleigh and Charlotte to enable higher speeds and more reliable service through the corridor while improving rail security. Although this funding is to be utilized for increasing the capability of passenger traffic, any upgrades to the rail system in North Carolina will benefit freight movement as both passenger and freight trains operate on the same tracks.

Major strategic freight rail transportation initiatives will benefit freight rail. These efforts include the NS Crescent Corridor, the CSXT National Gateway, the doubling of the CSXT intermodal yard in Charlotte and the relocation of the NS intermodal yard in Charlotte. The NS intermodal yard relocation is a $100 million joint venture among NS, the state, the City of Charlotte, the federal government, and the Charlotte Douglas International Airport. These initiatives will improve efficiency and cost-effectiveness of the freight rail network.

3.6 Freight System: Current and Future Issues Within the Piedmont Triad Study Area

The three goals of the region are:
1. Be recognized as the Premier Logistics Center of the East Coast of the United States providing air, highway, and rail infrastructure within and easily accessible to companies operating in the region.
2. Be a major player in the aviation industry, including companies that engage in aircraft design and construction, aviation parts manufacturers, and aviation services providers, the aviation industry continues to generate economic and job growth. Most of the
aviation related activity in the region is happening at the Piedmont Triad International Airport. However, aviation-related activity is rapidly spreading throughout the region, notably in Winston-Salem, Davidson County and the area surrounding Burlington-Alamance Airport.

3. Fulfill the potential of the Aerotropolis/NC Center for Global Logistics initiative which targets the melding of business, education, research, and planned economic development to provide a blueprint for a vibrant future for the Triad Region and the entire state. The elements of the initiative operate synergistically to provide the leverage and mass needed to promote economic development, job growth, and educational opportunity in the region and state. (Seven Portals Study, page 84, 2011)

Given the Piedmont Triad's logistics and other assets which are reinforced by the FedEx Mid-Atlantic hub, the Region has a good opportunity to create a world-class, differentiating competency in multi-modal logistics that can strengthen the traditional manufacturing economy and attract new industries such as aerospace equipment, medical devices, microelectronics, and pharmaceuticals. Indeed, the Piedmont Triad's combination location, interstate highways, PTI and its new FedEx hub give the Region a competitive advantage that can help brand the Piedmont Triad the same way that RTP and research have branded the Raleigh-Durham-Chapel Hill area and financial services have branded Charlotte. Beyond branding, the Piedmont Triad's combination of logistics assets gives the Region economic advantage that has the potential to create tens of thousands of new jobs in the 12-county Region.

With the above in mind, an area that should be paid close attention to is the region's push to develop a major economic driver called a "Mega-Site". Because economic development efforts are competitive and as they have far reaching impact to job creation, real estate values and incentive packages, the information, in the following image and paragraphs, are gleaned from open sources (press, publications, internet, etc.)
It appears that there are four possible locations being studied inclusion in the regions efforts to create a mega-site. These are:

1. Heart of North Carolina MegaPark straddling Moore and Montgomery Counties just east of I-73;
2. Davidson County, near the intersection of I-85 Business and I-85;
3. Berry Hill Mega Park in Virginia near the intersection of Rockingham and Caswell County in North Carolina and Pittsylvania County in Virginia and
4. A site in Randolph County Liberty.

Success at any of these sites will have a major impact to traffic and freight flow in the region. Not only will the areas outlined in the comments below have a significant increase in traffic flow, the area surrounding the possible sites and the region in general will see a major increase in commuters and freight flow due to the increase of workers and suppliers of the company or companies that would locate to these sites. Further, with manufacturing now a global endeavor, freight flowing to and from container ports will impact traffic congestion here. Import and export freight movement would increase on primarily I-40 and I-85 as they are the major routes into and out of the region from the ports of Norfolk, Wilmington and Charleston. In addition intermodal cargo movements will increase along these routes with a major impact being felt at the Norfolk Southern Intermodal ramp in Greensboro (Patterson Street). Without room to grow the Greensboro intermodal ramp may be required to shift cargo movement to the Charlotte, NC facility. In any case, the increase of truck traffic will be serious.
Basic comments follow concerning each location mentioned above:

1. Heart of North Carolina MegaPark - The impact to the study capture area in this case would be primarily at the intersections of I-73 and I-85 as well as I-74 and I-85. In addition, freight flow on I-85, I-40 and other major arteries would be affected. Traffic flow south would have no major impact. The Greensboro MPO has several projects identified that address maintenance and upgrades to affected roadways. They include the following:
   b. I-5337 – I-40: Pavement Rehabilitation from I-40 Business To Sandy Ridge Road
   c. I-5363- I-40/I-85: Pavement Rehabilitation from I-40/I-85 Split to Rock Creek Dairy Road
   e. R-952- I-40 Business /US 421: Pavement and Bridge Rehabilitation from Linville Rd. to west of Sandy Ridge Rd.

2. Davidson County - Impact area looks to be both the I-85 corridor as it moves northeast through the region as well as Highway 52 which would be a natural artery to I-40 and beyond. With the current issues as they exist today at Hwy 52 and I-40, this is an area to watch very carefully. Freight traffic moving southwest on I-85 would as well increase, however would not impact our region other than traffic backup if a major accident ensued.

3. Berry Hill Mega Park - As this site is in southern Virginia, the major impact to the region would be freight moving south along both Highway 29/I-785 and perhaps Highway 220/I-73. The intersections of these roadways in Greensboro will become a major bottleneck. The loop around Greensboro will alleviate this somewhat depending upon the entrance/exit ramp design and should be completed before this mega-site begins affecting regional traffic and freight flow. R-4707, a project in the Greensboro MPO, identifies improvements to the interchange at Reedy Fork Parkway. The project includes reconfiguration of the interchange and improvements to Reedy Fork Parkway and Summit Avenue. In addition, the MPO has also identified a project that would upgrade US 29 to Interstate Standards and widen it from south of Reedy Fork Parkway to Rockingham County. Funding is in place for projects on the westside of Guilford County for US 220 (widening from US 220/ NC 68 Connector to Horse Pen Creek) and for the US 220/ NC 68 Connector (widening and new location project from US 220/ NC 68 intersection in Rockingham County to NC 68).

4. Randolph County - Again, understanding that any recruitment of a large manufacturing company will have major impact to this area of the region, the prime freight flow impact will occur at the intersection of Highway 421 and I-85. This will of course lead to increased traffic on both I-85 north and south as well as I-40 east. Fortunately the I-85 expansion project has been completed and is designed and constructed to handle much more traffic than currently exists.

The Region already has two examples of the impact large employers can have on the transportation network. The new Caterpillar plan in Forsyth County will cause a big increase in freight at the Union Cross Road interchanges with I-40 and US 311. Trailers hauling new heavy equipment have capacity, durability, and safety impacts on Union Cross Road and at the two interchanges. In Davie County the new Ashley Furniture manufacturing facility may add as many as 200 trucks per day on I-40. The impact of this freight traffic increase is as yet unknown. However, all major regional highways and interstates will be affected. In addition, Ashley Furniture is a major importer from the Far East we can expect increased container traffic flow from the Port of Wilmington along the I-40/I-85 corridor.
All in all, the above points out that regional transportation planners need to maintain a very close working relationship with all economic development groups in the region and most specifically the North Carolina Department of Commerce. Now economic development in one county affects the surrounding counties and the shared transportation network.

4 NC ports
The North Carolina State Ports Authority is an Enterprise agency reporting to the NCDOT. The North Carolina ports system is owned and operated by the North Carolina State Ports Authority (NCSPA), an independent public agency that has not been part of NCDOT and has not received dedicated state funding for operating or capital expenditures. The North Carolina ports system consists of two seaports (Wilmington and Morehead City) and two inland terminals (Charlotte and Piedmont Triad, located in Greensboro). The inland terminals at Charlotte and Greensboro are served by I-77 and I-85 and I-40 and I-85, respectively. CSX and Norfolk Southern rail lines run through both cities. (2040 North Carolina Statewide Transportation Plan, page 10-1, 2012)

For many years, ships using the Panama Canal have been limited to dimensions of less than 1000 feet of length, 107 feet of width (beam) and 41 feet of depth. At this writing roughly 37% of cargo vessels are too large to use the Canal. However, Panamanian government is funding a project to improve the canal that will eliminate the size restrictions and significantly increase the number of ships that can transit the Canal during the year. This widening will have big effects on the ports of call for the world’s container ships. Once even the largest vessels can transit the Canal, all ships from Asia can travel directly to Port Elizabeth, Norfolk, and other east coast and gulf coast ports. Figure 6-7 shows that the shipping patterns will become more heavily focused on direct shipments through the Panama Canal as well as trade lanes through the Suez Canal. The largest ships may even travel around the world, both east- and west-bound, and make stops at ports in the same direction on a continuing basis, rather than shuttling back-and-forth across the Pacific or to-Europe-and-back through the Suez Canal. (Seven Portals Study, page 17, 2011)
More than 60 percent of foreign imports to North Carolina traveled by water, though primarily through ports in other states. Six states account for 90 percent of North Carolina’s waterborne imports: Virginia, South Carolina, California, Georgia, Florida, and North Carolina. As shown in Figure 6-8, North Carolina is the top destination for imports handled by the Port of Norfolk. (North Carolina Maritime Strategy, page 26) Thus the importance of the information outlined on page 24 of this study concerning the increased capacity of the double-stack intermodal train service from the Port of Norfolk to the Norfolk Southern Rail Road ramp in Greensboro.
North Carolina ports are more reliant on truck freight than their peers. Tables 6-6 and 6-7 summarize the mode of travel to North Carolina’s ports and their peers for exports and imports. As truck freight is more readily divertible than rail freight, this supports efforts to retain North Carolina shipments and attract freight from other ports. The emphasis on retaining North Carolina freight stems from this study’s objective in assessing economic development potential; reducing costs for North Carolina shippers translates into productivity gains and competitiveness for the North Carolina economy directly. Attracting the freight from out-of-state shippers increases volumes at North Carolina’s ports and may yield scale efficiencies that benefit all port users and the state’s costs of operation. However, the productivity gains for out-of-state shippers remain out of state. (North Carolina Maritime Strategy, page 35, 2012)
Table 6-6, Mode of Travel by Weight 2010

<table>
<thead>
<tr>
<th>Port</th>
<th>NC Exports Leaving from the Port (A)</th>
<th>Goods Imported to NC Arriving at the Port (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Truck Only</td>
<td>% Rail Only</td>
</tr>
<tr>
<td>North Carolina</td>
<td>97.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Norfolk</td>
<td>83.8%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Charleston</td>
<td>83.2%</td>
<td>3.3%</td>
</tr>
<tr>
<td>Savannah</td>
<td>55.9%</td>
<td>2.8%</td>
</tr>
</tbody>
</table>

Source: FAF, 3.1
Note: Because of their spatial proximity, the North Carolina Ports cannot be isolated in the FAF 3.1 commodity data. (A) North Carolina exports shipped to the port by the mode indicated. (B) North Carolina imports shipped inland from the port by the mode indicated.

Table 6-7, Mode of Travel by Value 2010

<table>
<thead>
<tr>
<th>Port</th>
<th>NC Exports Leaving from the Port (A)</th>
<th>Goods Imported to NC Arriving at the Port (B)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>% Truck Only</td>
<td>% Rail Only</td>
</tr>
<tr>
<td>North Carolina</td>
<td>77.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Norfolk</td>
<td>70.2%</td>
<td>1.4%</td>
</tr>
<tr>
<td>Charleston</td>
<td>86.3%</td>
<td>1.1%</td>
</tr>
<tr>
<td>Savannah</td>
<td>84.1%</td>
<td>0.5%</td>
</tr>
</tbody>
</table>

Source: FAF, 3.1
Note: Because of their spatial proximity, the North Carolina Ports cannot be isolated in the FAF 3.1 commodity data. (A) North Carolina exports shipped to the port by the mode indicated. (B) North Carolina imports shipped inland from the port by the mode indicated.
5 Airports
Because the region is focusing on aviation related industries and manufacturing, and because the FedEx Mid-Atlantic hub has recently opened airports are an important component of freight movement in the region\(^4\). We will not duplicate the various airport master-plans in this report because most are available on the internet. However, we will comment on specific facilities which we believe are important to readers.

5.1 Piedmont Triad International Airport (PTI)

The PTI’s Airport Master Plan Executive Summary states:

“The expanded airfield infrastructure makes the airport an ideal candidate for enhanced service from its existing air carriers, potential new air carriers, fixed base operators and tenants and provides new capabilities to attract additional aviation-related tenants engaged in distribution, logistics, manufacturing, cargo, and aircraft repair and maintenance.”

“The airport continues to be a center for important regional economic development, with such major tenants as FedEx, Honda Aircraft, TIMCO, and Cessna, and with an outstanding infrastructure to attract new tenants.”

“The Airport Master Plan Update anticipates that the airport’s most likely growth in the Near-Term will be the result of new tenants locating at the airport to take advantage of its outstanding infrastructure and its central location on the East Coast. Airport planning should embrace this trend. Finally, PTAA must plan for Long-Term growth. Undeveloped land, primarily to the north and west of the airport, must be acquired and protected to allow for future growth. This Airport Master Plan Update includes a long range strategic vision that goes beyond the typical 20-year planning horizon addressed in most Airport Master Plan Updates. The strategic vision proposes a future “fence line” to the north and west of the airport that will help guide decision-making as PTAA and land use and transportation planners consider land use around the airport.”

Based on the above statements it is apparent that the growth and expansion of PTI will impact the freight flow in the region. Because economic development can move quickly, it is important that transportation and land planners develop and maintain a close working relationship with PTI to enable them to act quickly as the planned expansion happens and economic development opportunities present themselves.

Projects identified in the Greensboro LRTP that would improve access to the airport include I-73 Connector (I-5110), US 220/ NC 68 Connector (R-2413), Airport Connector, E. Market Street widening (U-3617), Sandy Ridge Road widening and extension and widening of NC 68 and Pleasant Ridge

\(^4\) John McPhee again describes the impact on air freight in *Uncommon Carriers*. 
5.2 Smith Reynolds Airport, Winston Salem
Although Smith Reynolds Airport does not have multiple runways or the runway length of PTI, it is an important asset of the region. Currently utilized primarily for private aircraft and the maintenance of larger commercial aircraft, it maintains the capability for a freight/logistics operation using turbo-prop and regional jets. Smith Reynolds is a solid performer in the region’s aviation efforts and careful attention should be paid to planned expansions, especially as affected by the modernization of Business 40 and highway 52 in Winston-Salem.

5.3 Additional airports in the region
**Burlington-Alamance Regional Airport** (ICAO: KBUY, FAA LID: BUY) is a public use airport in Alamance County. It is 3.5 miles (5.6 km) southwest of the Burlington central business district and is owned by the Burlington-Alamance Airport Authority. The National Plan of Integrated Airport Systems for 2011–2015 categorized it as a general aviation facility. Burlington-Alamance Regional Airport covers 500 acres (202 ha) at an elevation of 616 feet (188 m) above mean sea level. It has one runway designated 6/24, is oriented northeast to southwest (60° /240°), has an asphalt surface measuring 4,999 by 99 feet (1,524 x 30 m). The airport plans to extend its runway to 6,400 feet. The major tenant of the Burlington-Alamance LabCorp’s fleet of aircraft utilized to collect lab test samples for processing throughout the Southeast. The adjacent Burlington-Alamance Airways industrial park is where Honda Aircraft builds its jet engines.

**Davidson County Airport** (ICAO: KEXX, FAA LID: EXX) is a public airport located 3 miles (5 km) southwest of the central business district of Lexington, a city in Davidson County, North Carolina, USA. This general aviation airport covers 75 acres and has one runway.

**Swan Creek Airport** is a private airport located on the western edge of Yadkin County, 5 miles (8km) west of I-77. The airport covers 35 acres and has two runway. Runway 1 is 1650 ft. long and 200 ft. wide and runway 2 is 2600 ft. long and 200 ft. wide. The airport is accessible from I-77.
Mount Airy/Surry County Airport (ICAO: KMWK, FAA LID: MWK) is a public use airport located 2.9 miles (4.6 km) southeast of the central business district of Mount Airy, in Surry County. The airport is owned by the city and county. The National Plan of Integrated Airport Systems for 2011–2015, classed it as a general aviation facility. Mount Airy/Surry County Airport covers an area of 147 acres (59 ha) at an elevation of 1,249 feet (381 m) above mean sea level. It has one runway designated 18/36 is oriented south to north (180°, 360°) with an asphalt surface measuring 4,301 by 75 feet (1,311 x 23 m).

Rockingham County NC Shiloh Airport (ICAO: KSIF, FAA LID: SIF, formerly 78N) is a county-owned, public-use airport in Rockingham County, North Carolina, United States. It is located in the town of Stoneville, 7.9 miles (12.7 km) northwest of the central business district of the city of Reidsville. It is also known as Rockingham County/NC Shiloh Airport, Rockingham County/Shiloh Airport, or simply as Shiloh Airport. The airport covers an area of 220 acres (89 ha) at an elevation of 694 feet (212 m) above mean sea level. It has one runway designated 13/31 is oriented southeast to northwest (130°, 301°) with an asphalt surface measuring 5,199 by 100 feet (1,585 x 30 m).

Hiatt Airport is a private airport on the eastern edge of Davidson County south of I-85. The airport covers 30 acres and has two runways. Runway 1 is 2500 ft. length and 75 ft. width and runway 2 is 1160 ft. length and 50 ft. width. The location is accessible from I-85.

Sugar valley airport is a private airport in northeast Davie County just north of I-40. The airport covers 70 acres and has two runways. Runway 1 is 2424 ft. length and 25 ft. width and runway 2 is 2000 ft. length and 100 ft. width.

Asheboro Regional Airport (ICAO: KHBI, FAA LID: HBI) is a city-owned public-use airport located 5.2 miles (11 km) southwest of the central business district of Asheboro. It was formerly known as Asheboro Municipal Airport. Asheboro Regional Airport covers an area of 454 acres (184 ha) at an elevation of 671 feet (205 m) above mean sea level. It has one runway designated 3/21 with an asphalt surface measuring 5,501 by 100 feet (1,677 x 30 m).

Montgomery County Airport (FAA LID: 43A) is a public use airport located in Star. It is owned and operated by Montgomery County. Montgomery County Airport covers an area of 65 acres (26 ha) at an elevation of 628 feet (191 m) above mean sea level. It has one asphalt paved runway designated 3/21 which measures 4,001 by 75 feet (1,220 x 23 m).

Elkin Municipal Airport (ICAO: KZE, FAA LID: ZEF) is a public airport located 3 miles (5 km) northeast of the Elkin central business district of. This general aviation airport covers 91 acres and has one runway. Elkin airport maintains a 4003 foot runway.
Table 6-8, Lengths of Piedmont Triad Region Airports

<table>
<thead>
<tr>
<th>Airport</th>
<th>Runway Length (s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burlington-Alamance Regional Airport</td>
<td>4999</td>
</tr>
<tr>
<td>Davidson County Airport</td>
<td>5004</td>
</tr>
<tr>
<td>Swan Creek Airport</td>
<td>1650, 2600</td>
</tr>
<tr>
<td>Mount Airy/Surry County Airport</td>
<td>4301</td>
</tr>
<tr>
<td>Rockingham County NC Shiloh Airport</td>
<td>5199</td>
</tr>
<tr>
<td>Hiatt Airport</td>
<td>2500, 1160</td>
</tr>
<tr>
<td>Sugar Valley Airport</td>
<td>2424, 2000</td>
</tr>
<tr>
<td>Asheboro Regional Airport</td>
<td>5501</td>
</tr>
<tr>
<td>Montgomery County Airport</td>
<td>4001</td>
</tr>
<tr>
<td>Elkin Municipal Airport</td>
<td>4003</td>
</tr>
<tr>
<td>Piedmont Triad International Airport</td>
<td>9000, 10001, 6380</td>
</tr>
<tr>
<td>Smith Reynolds Airport</td>
<td>6655, 3938</td>
</tr>
</tbody>
</table>

6 Safety and Security

Increasing safety and security are two important factors the MPOs must consider while evaluating and developing future recommendations. Two goals identified by the MPOs regarding safety and security specifically for freight include: 1) addressing roadway operational issues on routes receiving significant freight movement, including roadway geometry, intersection configurations and capacity; and 2) working closely with the NCDOT Rail Division on planning studies and project development activities for rail safety projects, including rail grade separations at targeted locations.

However, multiple areas should be considered when studying safety and security issues in the freight movement sector. These range from standard practices of governing the speed that a heavyweight vehicle travels, the physical weight of the vehicles load, the physical proper operation of safety devices such as brakes, signaling devices, etc. as well as the routes that these vehicles take to and from locations. The North Carolina’s weigh stations and the NC Highway Patrol’s Motor Carrier Enforcement teams work to ensure that the trucks using our highways operate safely. In addition, the federally mandated Compliance, Safety and Accountability initiative (CSA) is working towards removing unsafe trucks from the road and removing truck drivers that have a history of unsafe driving and closing down trucking operations that have a history of non-compliance or high accident histories.

This is all well and good and shows that the state and national governments understand that safe freight transportation is an important piece of economic viability. However, we cannot leave the safety and security of our regions businesses nor the citizens solely in the hands of government agencies. We need to maintain a proactive stance on any issues concerning freight movement and safety and work agencies and industries that are impacted by this economic sector.

An area that requires additional attention is the consistent availability of truck stops on major highways leading into and out of the study area. The map below shows nine major truck stops leading into the Piedmont Triad. All but 1 of these is a type “A” facility that could be considered a full service “port of call” for the trucking industry. The remaining truck stop is a type “B” stop that as provides most, but not all, services. However, there are no type “A” or “B” facilities on routes leading into the region from the north on I-785/ US29/70on US 421 entering the Triad from the west. The primary significance here is that as Virginia develops the Berry Hill Mega Park at the north east corner of Rockingham County, there will not be a good opportunity for truckers to stop fuel and rest before entering the region. Because truck stops are always provided by the private sector, adding one depends on the amount of freight traffic and demand from the trucking industry. As such, we need to support the existing facilities and ensure that the owners
of these facilities understand the importance we place in them for the greater good of the freight movement to and through the area.

Although there are many additional fueling facilities in and leading into the region, these additional facilities are not locations where a tired truck driver may stop, fuel, eat, shower and sleep before entering our region. It is best for truck drivers to have stopped and be fully rested “before” entering the region than being in a rush to get to a full service truck stop that has the facilities required. This is especially important as our region copes with the expected growth. The increased freight traffic from economic development projects that have been secured or are being planned will only further increase the traffic congestion we currently experiencing. As well, as the region’s major interstates are part of a major traffic corridor, other regions and states that increase their economic development activity will further impact our future congestion challenges.

An additional area that would have major impact to freight movement safety and security would be a “Share the Road” campaign, similar to the NC State bicycle program, that would alert the citizens of our region to the growing importance of the freight movement industry and how to better operate a motor vehicle safely while sharing the road with heavy freight vehicles. The industry would happily receive a safety campaign like this because it shows that local leaders understand the importance of the industry and value the economic contribution of moving freight.

Safety and security in transportation and logistics includes international cargo movements as well as domestic cargo movement. Since the capture area of the Long Range Transportation Plan(s) in the nation’s core freight movement corridor it is important to security as it applies to cargoes moving through the region.
The supply chain, and its freight movement component, is owned by a variety of private sector interests and regulated by multiple international, national, state, and local government jurisdictions. As such, those involved in local and regional transportation planning should become as familiar with the freight transportation industries efforts as possible. The following comments are contained in the Strategy to Enhance International Supply Chain Security – published in July 2007:

Supply Chain Node: One of 13 standard security control points that provide the foundation to assess and model intermodal container threats, vulnerabilities, and security counter measure and protection mechanisms. The better we understand the threat potential, the more prepared we become and the better we are able to plan our freight movement strategies around them.

The 13 standard nodes are:

1. Supplier
2. Factory/Packaging
3. Empty container storage/dray
4. Drayage\(^5\) of cargo to consolidator (if stuffing is not at factory)
5. Container stuffing/sealing (consolidation)
6. Container storage (foreign)
7. Drayage to terminal (from factory or consolidator)
8. Foreign terminal
9. Ocean commerce
10. United States terminal
11. Inland drayage or rail transfer/transport (United States)
12. Deconsolidation (United States)
13. Business processes/information transmission, in particular, the process for booking and transferring containers

Each of the control points faces different security threats so a one size fits all strategy is not appropriate.

**STATE, AND LOCAL GOVERNMENT**

State and local governments under the National Incident Management System (NIMS) principles have responsibility for incident management response and recovery efforts immediately after an incident. To manage their responsibilities, many of these government agencies currently have pre-established emergency response plans in place. However, recovery plans, especially for maritime infrastructure recovery and restoration of cargo flow, are not as prevalent. Many States engage individual task force groups to manage a myriad of disaster scenarios and response situations.

Due to the fact that the responsibilities, capabilities and organizational structures vary from agency to agency, it is difficult to establish specific functional responsibilities that each may be able to provide for recovery from a transportation disruption. However, to coordinate the Federal, State, and local government relationships, the following generic list of functional responsibilities for recovery that State, local, and tribal governmental agencies may perform was developed for the Maritime Infrastructure Recovery Plan, and is applicable for those portions of the international cargo supply chain falling within State and local government jurisdictions.

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\(^5\) Drayage is the transport of goods over a short distance, often as part of a longer overall move and is typically completed in a single work shift. Some research defines it specifically as “a truck pickup from or delivery to a seaport, border point, inland port, or intermodal terminal with both the trip origin and destination in the same urban area.”
STATE GOVERNMENTS
- Coordinate State resources to address recovery.
- Make, amend, and rescind orders and regulations under certain emergency conditions in support of recovery efforts as appropriate.
- Communicate to the public the recovery aspects of an emergency within State jurisdiction.
- Assist people, businesses, and organizations of the State cope with the consequences of recovery.
- Encourage participation in mutual aid and implement authorities for the State to enter into mutual aid agreements with other States, tribes, and territories to facilitate resource-sharing.
- Coordinate requests for federal assistance when it becomes clear that State or tribal capabilities will be insufficient or have been exceeded or exhausted.
- Engage in voluntary exchange of information with other Federal, State, local and tribal government agencies.
- Participate in various advisory committees and task forces regarding recovery management.
- Assist in the assessment of the economic impact created by a security incident.
- Assist in the identification of recovery resources and assets.
- Provide resources as requested and as appropriate.

LOCAL GOVERNMENTS
- Perform emergency first-responder activities as appropriate.
- Coordinate local resources to address recovery.
- Suspend local laws and ordinances, (dependent upon State and local law), under certain emergency conditions in support of recovery efforts as appropriate.
- Communicate to the public any type of declared emergency within local jurisdiction.
- Assist people, businesses, and organizations in the local area to cope with the consequences of any type of declared emergency and its recovery considerations.
- Negotiate and enter into mutual aid agreements with other jurisdictions to facilitate resource-sharing.
- Request State and, if necessary, Federal assistance through the governor of the State when the jurisdiction's capabilities have been exceeded or exhausted, or otherwise as appropriate.
- Engage in voluntary exchange of information with other Federal, State, local and tribal government agencies.
- Participate in various advisory committees and task forces regarding recovery management.
- Assist in the assessment of the economic impact created by a security incident.
- Assist in the identification of recovery resources and assets.
- Provide resources as requested and as appropriate.

PRIVATE SECTOR
As the owners and operators of the vast majority of the infrastructure, assets, commodities, etc., of the international cargo supply chain, the private sector plays the most important role in ensuring its overall security. During normal operations, while government entities legislate, regulate, validate and inspect, the private sector must operate the supply chain safely, securely, efficiently, and at a profit.

As a component of their business, private sector entities have responsibility for planning, operations, and advisory aspects relating to recovery of cargo movement and trade flow, and the restoration of passenger flow.
Following an incident that triggers implementation of this strategy, the Federal government will facilitate the restoration of commerce and recovery of the marine transportation in concert with private sector contingency planning.

To assist the private sector prepare for this role, the DHS advocates the following:

- Private sector owners and operators of vessels and facilities subject to United States government regulation are encouraged to expand their business continuity plans to include recovery operations as part of required planning pursuant to federal regulations, if such planning has not already been completed.
- Owners and operators of vessels and facilities not subject to United States government regulation are encouraged to establish recovery operations and business continuity plans, in coordination with appropriate trade partners.
- All private sector recovery operations plans should include (1) a plan for evacuation, (2) adequate communications capabilities, and (3) a plan for business continuity.
- All private sector recovery operations plans should consider the existing American National Standard on Disaster/Emergency Management and Business Continuity Programs (NFPA 1600), which contains minimum criteria for disaster management and guidance in the development of a program for effective disaster preparedness response and recovery.

To assist in the development of recovery operations plans and other contingency planning, Business Roundtable guidance documents are recommended for private sector continuity of operations plan development:

It is anticipated that the private sector will implement business continuity plans/recovery operations plans on their own accord, based on incident information provided by the Federal government. Information that may influence the decision to implement contingency plans and divert or redirect cargo and/or the conveyances include: national priorities; military requirements; MTS restrictions; and the expected duration of those restrictions.

To facilitate restoration of the flow of commerce, the following list of functional responsibilities that the private sector may perform was developed as part of the Maritime Infrastructure Recovery Plan, and is applicable within the overall cargo supply chain:

- Engage in voluntary exchange of information about recovery operations plans with other potentially affected private sector entities and the Federal government to mitigate potential congestion at non-incident site ports following the diversion of vessel traffic.
- Participate in various maritime industry stakeholder professional organizations and advisory committees such as the AMSCs regarding recovery management and contingency planning.
- Assist in the assessment of economic impact.
- Assist in the identification of recovery resources and assets.
- Provide resources to assist in recovery, as appropriate.
- When requested by the National Maritime Security Advisory Committee (NMSAC) during planning for recovery or the Sector Specific Agency (SSA) during actual recovery management operations, provide experts for advising on recovery management, especially regarding maritime salvage capability.
- Participate in pilot programs to test the effectiveness of the Federal government to communicate recovery activities to the private sector.
- Using existing information-sharing mechanisms such as the National Infrastructure Coordinating Center (NICC), AMSCs, Transportation Sector Coordinating Councils and Information Sharing and Analysis Centers (ISAC), communicate situational and operational information as well as physical asset capabilities for mitigation management.

(Strategy to Enhance International Supply Chain Security – July 2007)
The Local Government section on page 38 and the Private Sector section on Page 39 are most important for this planning effort. In order to ensure and maintain a proper safety and security component within the region it is suggested that local government entities hold, at a minimum, annual meetings with jurisdictions and municipalities and private industry concerns operating in our area. The purpose of these meetings is to discuss and coordinate safety and security challenges and to better understand the responsibilities of all parties that would be involved. In addition, the discussion of a regional response team made up of joint members of this group would alleviate any confusion over jurisdiction and would create a strong team effort as it pertains to freight movement. Organizations that would be best prepared to coordinate meetings of this nature would be the regional MPO's. As they are already involved in day to day and long range regional planning efforts, an additional responsibility of this nature would make sense.

7 Recommendations for Piedmont Triad Study Area

7.1 Truck Route Recommendations
Trucks should be defined as vehicles with a manufacturer’s gross vehicle weight of 33,000 pounds or more. This definition excludes most straight, panel, and delivery trucks, but includes large trucks with more than two axles, such as tractor-trailers (single and double trailers) and tandem axle dump trucks. This definition also excludes public service vehicles, such as garbage collection trucks. When truck routes are designated, signs should be posted at the city limits, highway exits, and other appropriate locations directing truck drivers to streets which permit their movements.

Restrictions may include limiting travel to US and NC routes or designated/signed routes through the city. Within the city limits, consideration could be given to amending the local ordinance to specifically prohibit through truck movements on local streets. Prohibition of trucks on any segment of state-maintained roadways will require approval from NCDOT. In addition, caution should be exercised when permitting vehicles carrying certain types of hazardous materials from utilizing certain routes (proximity to schools, housing, etc.)

Truck designations for major routes and industrial streets could prove beneficial. Using these routes provides better defined freight corridors. Likewise, truck traffic should be discouraged on roadways that do not meet the design criteria necessary to facilitate heavy truck traffic.

Industrial development will require efficient truck access and circulation to the arterial system, ultimately improving freight mobility while limiting cut-through truck traffic in neighboring subdivisions. Additional tasks associated with establishing a series of truck routes through the urban area include:

1. Work with NCDOT to prioritize resurfacing of designated routes in an effort to reduce noise and vibration from trucks.
2. Adjust signal timing along high priority routes to minimize delay to through movements based on posted speed limits. The result will be improved travel times, reduced noise, better fuel economy, and air pollution.
3. Publish and distribute educational materials to businesses and industries concerning proposed designated truck routes and to enlist their assistance in route planning.
4. Work with NCDOT to make improvements to critical intersections on truck routes to facilitate and encourage their use by truck operators. Improved turning radii, lane width and the provision of dedicate turn lanes will greatly improve the efficiency and safety of these corridors. This should include working with rail road operators in the region (North Carolina Rail Road, and Class 1 and Class 2 Rail Roads) to better understand rail traffic increases and/or decreases as they impact rail crossings within the regional infrastructure.
5. Identify streets in industrial areas that function as industrial collectors and work with stakeholders to evaluate and implement the appropriate cross-section
7.2 Summary Recommendations

Efficient and safe movement of goods

The following recommendations are intended to improve the efficient and safe movement of goods and services in the study area:

1. Continued expansion of the highway system to provide improved access and circulation around major transportation corridors. This should include working with NCDOT to complete the road projects suggested by the NC Governors Logistics Task Force “Seven Portals Committee” as outlined on page 11.

2. Continued investments within the vicinity of PTIA as outlined in the Airport Area Plan, Heart of The Triad Comprehensive Plan, Long Range Transportation Plan, Comprehensive Transportation Plan and the Thoroughfare and Collector Street Plan.

3. Coordinate needed improvements to meet the advancements of the PTIA logistical hub, and proposed PTI Air Logistics Hub and Piedmont Triad Aerotropolis.

4. Implement an Intermodal Management System.

5. Coordinate with NCDOT on the development of future rail improvements. This should include discussion with both Class 1 (major) and Class 2 (short-line) railroads.

6. Coordinate area roadway planning with freight objectives, including access and mobility in the context of other planning objectives.

7. Increase the use and availability of intelligent transportation systems to reduce time trucks spend in congestion and ensure efficient timely movement of goods. (LRTP of Winston-Salem Area). This includes regular upgrades and improvement of signal management systems.

8. Coordinate with NCDOT on routine maintenance of truck routes carrying significant freight movements.

Awareness

1. Coordinate and implement methods of keeping the regional consumer aware of the importance of freight and freight flow in the region

2. Monitor the freight traffic pattern shift due to the opening of the widened Panama Canal in 2014. As info, the canal opening may substantially shift Pacific Rim USWC discharge to a more USEC centric model for freight moving east of the Mississippi River.

3. Establish and maintain communication with regional economic development offices as they pertain to large/mega-site projects in the region. (see pages 30-31)

Communication

1. Establish annual meetings with the regions short-line Rail Roads to jointly discuss traffic flow and projected increase/decrease in the region.

2. Establish and maintain communication with NCDOT Logistics Office concerning proposed regional “Freight Villages” studied and recommended for the region in the “Seven Portals Report” from the NC Governors Logistics Task Force.
3. Create, implement and maintain a regional legislative workshop to discuss and promote the region's importance in freight flow and to secure funding to maintain and improve our infrastructure.

4. Create, implement and maintain a “Share the Road” campaign to elevate the importance of freight flow and how to properly share the road with heavyweight freight vehicles.

5. Create an outreach campaign to truck stops serving the region. This is a “first stop” to greater safety for our citizens and national freight flow.


Data Modeling
1. Determine best ways and means of utilizing FHWA/NCDOT resources and data modeling to create a regional macro-view of national, state and regional freight projects/policies and their impact on the region. This capability will be a “must have” as we go forward and will provide a very strong tool for economic development recruitment.

Other
1. Create and maintain a centralized/coordinated regional freight flow agency and ensure that all government entities are aware of and work with it.
## Appendix 1

### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>3PLs</td>
<td>Third Party Logistics</td>
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<tr>
<td>ACWR</td>
<td>Aberdeen, Carolina, and Western Railroad</td>
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<tr>
<td>CLNA</td>
<td>Carolina Coastal Railroad</td>
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<tr>
<td>CRISP</td>
<td>Charlotte Railroad Improvement &amp; Safety Program</td>
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<tr>
<td>CSA</td>
<td>Combined Statistical Area</td>
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<tr>
<td>CSX</td>
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<tr>
<td>DOT</td>
<td>Department Of Transportation</td>
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<tr>
<td>FAF</td>
<td>Freight Analysis Framework</td>
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<td>FHWA</td>
<td>Federal Highway Administration</td>
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<tr>
<td>FRA</td>
<td>Federal Transit Administration</td>
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<tr>
<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>HPTD</td>
<td>High Point, Thomasville, and Denton Railroad</td>
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<tr>
<td>HPT&amp;D</td>
<td>High Point, Thomasville &amp; Denton Railroad Co</td>
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<tr>
<td>LTL</td>
<td>Less Than Truck Load</td>
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<tr>
<td>LRTP</td>
<td>Long Run Transportation Plan</td>
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<td>MOTSU</td>
<td>Military Ocean Terminal at Sunny Point</td>
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<tr>
<td>MPO</td>
<td>Metropolitan Planning Organization</td>
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<tr>
<td>NAFTA</td>
<td>North Carolina Free Trade Agreement</td>
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<td>North Carolina Department of Transportation</td>
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<td>NCMIN</td>
<td>North Carolina Multimodal Investment Network</td>
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<td>NCRR</td>
<td>North Carolina Railroad</td>
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<tr>
<td>NCSPA</td>
<td>North Carolina State Ports Authority</td>
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<td>NS</td>
<td>Norfolk Southern Railroad</td>
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<td>PTIA</td>
<td>Piedmont Triad International Airport</td>
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<td>SEHSR</td>
<td>Southeast High Speed Rail Corridor</td>
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<td>SPOT</td>
<td>Strategic Planning Office of Transportation</td>
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<td>STP</td>
<td>State Transportation Plan</td>
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<tr>
<td>WSS</td>
<td>Winston-Salem Southbound Railway</td>
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Tables and Figures

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Table 6-7 Mode of Travel by Value 2010

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Appendix 3

References

• 2035 Long Run Transportation Plan of Rock Hill Fort Area, March 2009
• The Journal of Commerce, page 66, May 2012
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• Transportation Reboot: Restarting America’s Most Essential Operating System, July 2012
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