

## 4.6 FREIGHT IN THE TRIAD

Moving freight is critical to an industrial economy and easy of freight movement is key to a region's economic competitiveness. Freight movement also affects a region's quality of life, particularly with the need to ensure that truck traffic has access to the national highway or rail networks that avoids residential areas.

Federal legislation emphasizes the role of freight in regional transportation planning. Freight must be considered both in its own right and as a supporting element of an area's economic vitality and competitiveness.

*The Journal of Commerce* recommends that Congress and the President improve our eight policy by:

1. Define clear national goals for all transportation modes,
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. Reorganize USDOT
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 (10 Steps to an Effective National Freight Policy, 2012)

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. North Carolina ports are included, followed by a summary of key points and a list of recommendations. The chapter discusses 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 crosscutting issues.

### Relevance to the Transportation System and the Plan

Since NCDOT issued its previous State Transportation Plan (STP), "Charting a New Direction for NCDOT" in 2004, several initiatives have highlighted the importance of freight and logistics in relation to the economic health of North Carolina. In North Carolina, freight and logistics have emerged as a state priority that can affect economic development and 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 destinations including in- state distribution to businesses and consumers and out-of-state markets. As a result, freight and logistics touch all aspects of the state's economic development targets including agriculture,

biomedical, education, manufacturing, military, and tourism. The updated 2040 State Transportation plan (September 2012) considers freight to be a key issue. This section examines how and to what extent freight and logistical considerations are addressed in the 2040 Plan (Atkins, 2012).

Freight transportation is a major factor in manufacturing retail costs. Manufacturers look for reliability, speed, and quality control in the carriers that deliver their raw materials and finished products. If materials do not arrive on time, all other processes are affected, productivity falls and costs go up.

Figure 4.6-1 shows how shipping reliability is related to shipping cost (Husdal, 2004). Retailers assume that the costs of transportation are less than the cost of maintaining large inventories (i.e., Warehousing). ‘Just-in-time’ inventory is widespread and points to the strength and reliability of the transportation system. However, as congestion affects transportation reliability, costs will increase because reliability will be a premium – affecting the price of retail goods from basketballs to bread.

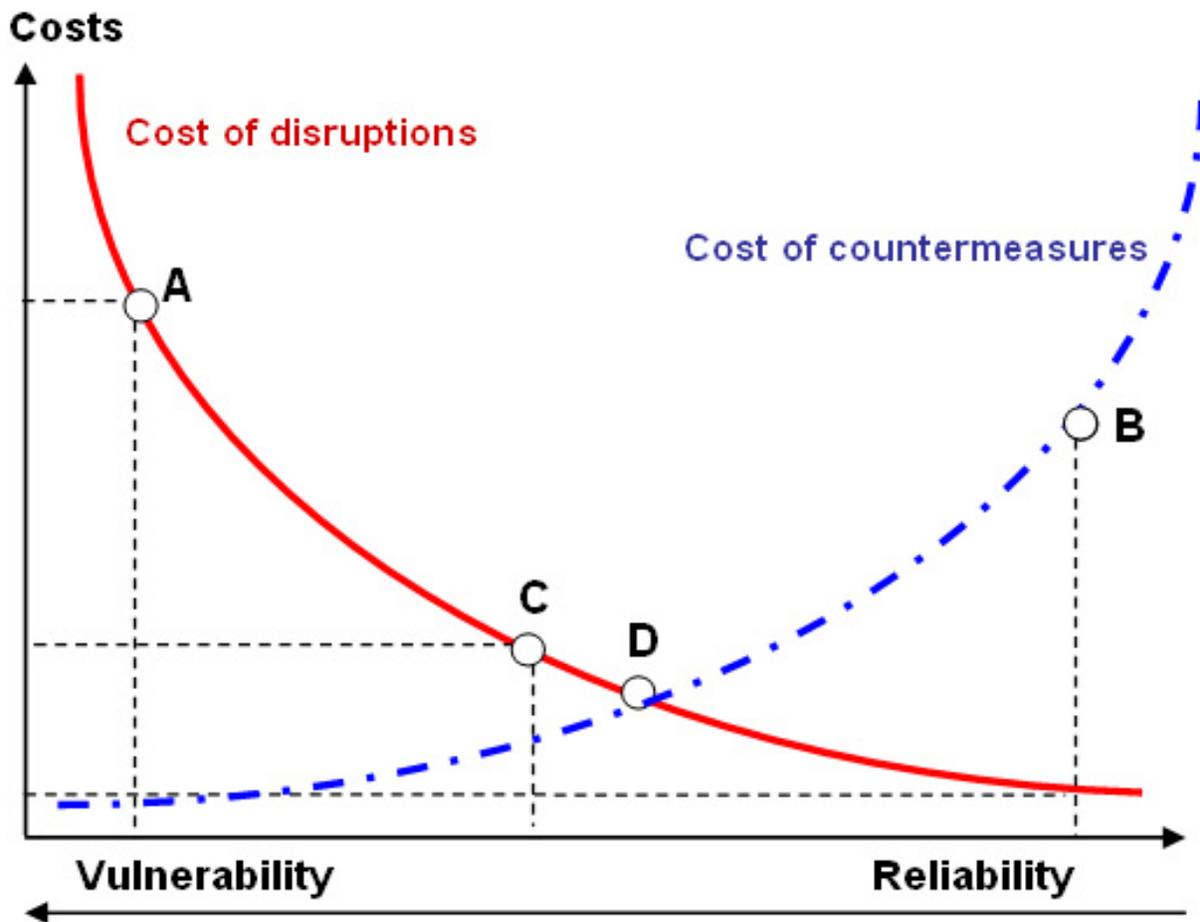


FIGURE 4.6-1: FREIGHT RELIABILITY VS. COST (AFTER HUSDAL)

Freight movement may be mysterious to the average consumer, but is crucial to maintaining our quality of life. The Federal Highway Administration has produced a video entitled “Keeping

the “Global Supply Chain Moving” (<http://www.youtube.com/watch?v=OVYcxi1rDgE>”). The video offers the following information about the supply chain. If the US Supply chain slows down:

- Assembly lines stop in 6-12 hours,
- Hospitals run out of critical supplies in 24 hours,
- Gas stations run out of fuel in 48 hours Gas Stations, and
- Grocery Stores run out of perishable foods in 72 hours.

Transportation jobs generally pay well, and this income benefits the local economy directly way.

Freight, in the study area, moves by air, highway, rail, and pipeline. The Piedmont Triad was an early crossroad for the railroads, moving freight from ports to inland buyers. This logistical network contributes significantly to the regional economy. The highway system placed the Piedmont Triad at a crossroad of the interstate system<sup>1</sup>. 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 is at an economic crossroads. Low-wage global competition and more productive manufacturing have 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.

On a positive note, new regional economic are emerging, the FedEx established its Mid-Atlantic hub at PTI, and the major UPS sort center, provides the Piedmont Triad with a competitive advantage in air logistics, offering time-sensitive industries fast, reliable long-distance connectivity. Just as shippers and manufacturers have traditionally located near seaports and railheads businesses today also want good access to airports (Glaser, 2011). At the airport, e-commerce fulfillment centers complement flow-through facilities for perishables, just-in-time emergency parts centers and reverse logistics facilities. The clustering of time-critical goods facilities near air-express airports is stimulating expansion of air cargo, less than trailer load trucking (LTL), freight forwarders, and third party logistics providers (3PLs) along major highways accessible to these airports.

The Piedmont Triad has many 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 seaports 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 4.6-1: PIEDMONT TRIAD MAJOR DISTRIBUTION FACILITIES**

<sup>1</sup> It can be argued that today’s highway system is where it is because of where North Carolina invested in railroads in the nineteenth century.

<b>Company</b>	<b>Square Footage</b>	<b>County</b>
<b>Ralph Lauren Corp</b>	1,873,000	Guilford
<b>Kmart Distribution</b>	1,600,000	Guilford
<b>Liberty Hardware</b>	1,210,000	Forsyth
<b>Hanes Brands</b>	930,451	Forsyth
<b>Harris Teeter</b>	908,000	Guilford
<b>USPS Bulk Mail Center</b>	892,000	Guilford
<b>Phillips Van-Heusen</b>	750,000	Yadkin
<b>Kay Chemical Company</b>	600,000	Forsyth
<b>Powell Company</b>	600,000	Guilford
<b>Glidan Activewear</b>	597,898	Rockingham
<b>Gold Toe Brands</b>	570,000	Alamance
<b>Liberty Hardware</b>	524,160	Forsyth
<b>Lowes Companies Inc.</b>	516,000	Guilford
<b>Jockey International</b>	500,000	Davie
<b>Schenker Logistics</b>	500,000	Guilford
<b>VF Jeanwear</b>	494,700	Davie
<b>Replacements Lt.</b>	460,000	Guilford
<b>Loomcraft Textiles</b>	454,219	Alamance
<b>FedEx Ground</b>	415,000	Guilford
<b>Klaussner Furniture Industries</b>	381,402	Randolph
<b>Dart Container</b>	366,000	Randolph
<b>Legacy Classic Furniture</b>	349,960	Guilford
<b>United Parcel Service</b>	336,000	Guilford
<b>Sav-A-Lot</b>	325,000	Davidson
<b>Lentz Property Management</b>	315,000	Forsyth
<b>Mylan Pharmaceuticals</b>	312,000	Guilford
<b>O'Reilly Automotive Inc.</b>	300,000	Guilford

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 taking a more Regional approach to the Metropolitan Transportation Plan (MTP) for this update to develop a framework for an integrated freight planning document for their respective areas. The Piedmont Triad has 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:

- To maintain or improve freight access and mobility;
- Support the region's economic well-being, while remaining sensitive to environmental needs and concerns; and

### Existing Conditions and Trends

The NC Maritime Strategy report (AECOM; URS, 2012) shows that trucks carried 82.4% of freight traffic in North Carolina in 2007, while rail carried 13.6%. The 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 seems 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.” Although true, in most cases trucks carry the goods to and from the rail facility. Intrastate freight movement in North Carolina moves mainly by truck. Therefore, we need to consider truck movement into and through the Piedmont Triad.

Highway Freight: National Conditions and Trends

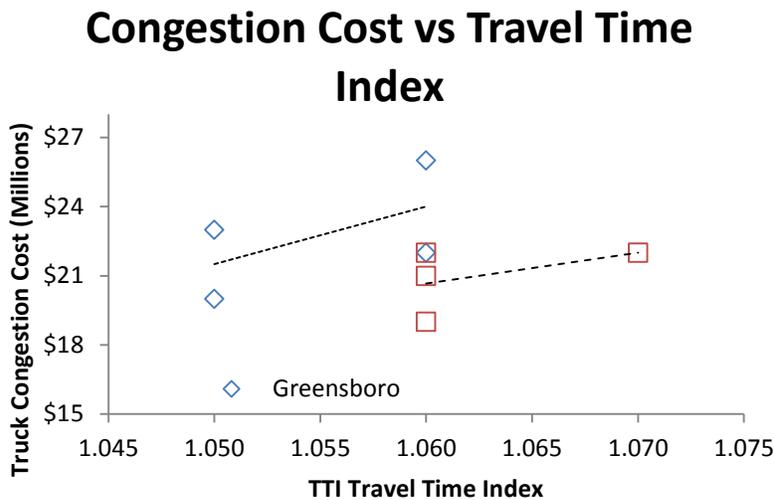


FIGURE 4.6-1 CONGESTION COST VS. TRAVEL TIME INDEX (AFTER TTI)

TRUCK MILEAGE HAS BEEN INCREASING NATIONALLY FOR 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. FIGURE 4-6.2 COMPARES TRUCK CONGESTION COST WITH TTI’S TRAVEL TIME INDEX IN THE TRIAD. THE GRAPH

INCLUDES LINEAR TEND LINES INDICATING THAT AS CONGESTION INCREASE COSTS TO TRUCKERS INCREASE AS WELL.

By 2020, truckers expect to haul three billion tons more freight than they haul today. To meet the demand, the trucking industry will put another 1.8 million trucks on the road. On average, 10,500 trucks a day travel some sections of the Interstate Highway System. By 2035, this will more than double -to 22,700- trucks for the most heavily used parts of the Interstate, with the most heavily used segments seeing upwards of 50,000 trucks a day. (Transportation Reboot, 2010)

Highway Freight: Statewide and Regional Conditions and Trends

Highway infrastructure in North Carolina includes federal, state, and municipal roadways. According to the 2010 Maintenance Condition Assessment Report, the NCDOT owns and maintains 80,000 miles of roadways, or about 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 bridges and culverts. These paved roads are critical to the economic vitality of our state and region. *Maintaining the system is as important as building it was.*

Table 4-6.2 shows the NCMIN definitions of Statewide, Regional, and Subregional facilities for the highway and rail networks.

TABLE 4.6-1: NORTH CAROLINA TIER DEFINITIONS (NCDOT)

Mode	Statewide Tier	Regional Tier	Subregional Tier
<b>Highways</b>	Strategic Highway Corridors as approved by the Board of Transportation	All primary routes (US and NC) not on the statewide tier.	All secondary routes not on the statewide tier.
<b>Rail (Freight)</b>	Rail lines of strategic importance as determined by the Rail Division	All rail lines not included on the statewide tier	N/A

Beginning with the 2004 State Transportation Plan, NCDOT classified all transportation facilities in the state into NCMIN (North Carolina Multimodal Investment Network) tiers. Statewide tier facilities serve long-distance trips, connect regional centers, have high use, and provide mobility at the expense of land access. Regional tier facilities connect major population centers and balance mobility with land access. Subregional tier facilities serve local movements and favor land access over 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) not on the statewide tier. Subregional tier facilities include roads that are not on the statewide or regional tiers (Atkins, 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 in 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. (AECOM; URS, 2012)

**Highway Freight: Conditions and Trends in the Piedmont Triad**

Road conditions are generally better in North Carolina than in much of the US. However, the region must remain 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 the area.

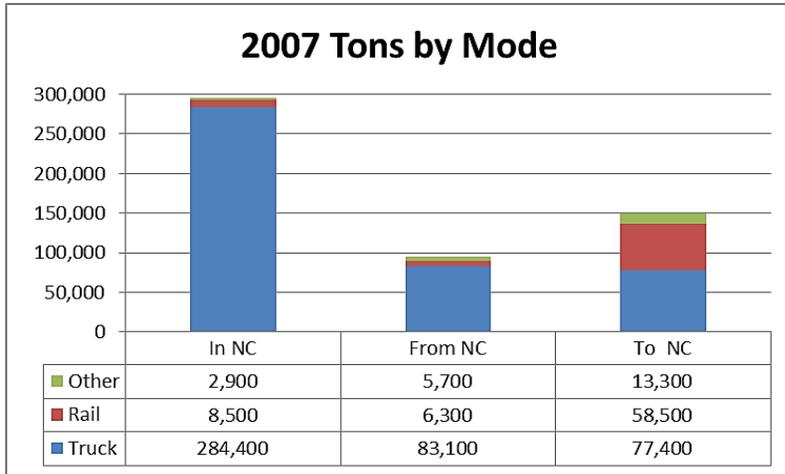


FIGURE 4.6-2: NC FREIGHT TONNAGE 2007

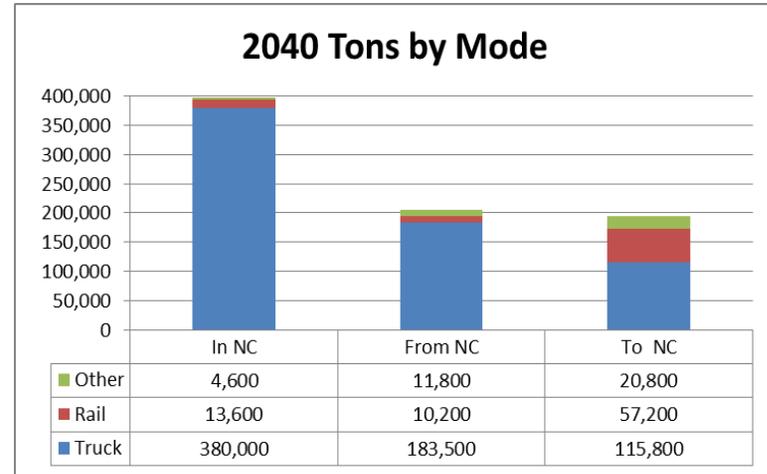


FIGURE 4.6-4: PROJECTED FREIGHT TONNAGE 2040

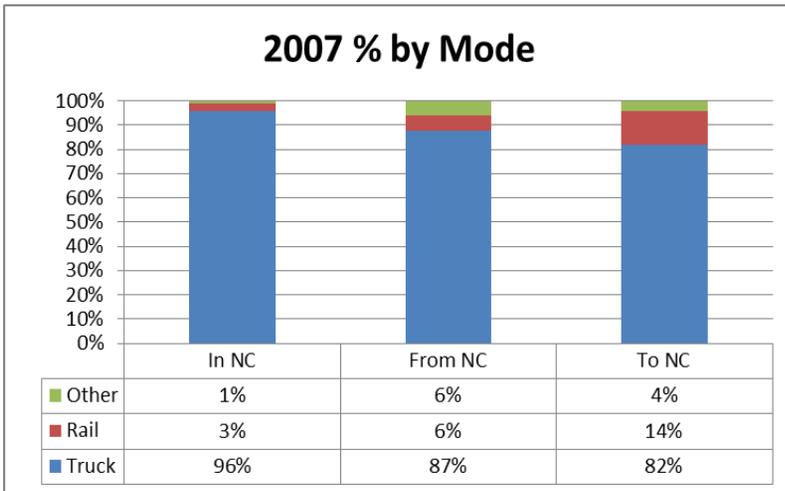


FIGURE 4.6-3: PERCENT OF FREIGHT BY MODE 2007

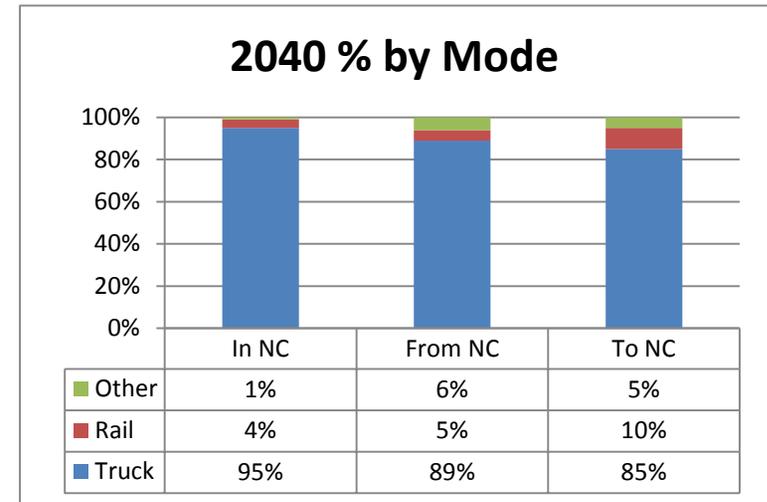


FIGURE 4.6-5: PROJECTED PERCENT OF FREIGHT BY MODE 2040

Six projects in the Triad seem to further this goal (George F. List; Robert Foyle, 2011). Table 4.6-3 describes the projects.

**TABLE 4.6-2 KEY FREIGHT PROJECTS IN THE TRIAD**

TIP Number	Route	Project Description	Construction Year
<b>U-3109</b>	NC 119	Relocate NC 119 from I-85 to Mebane Rogers Road in Alamance County	2015
<b>U-2525</b>	Greensboro Eastern and Western Loop(s)	Greensboro Eastern Loop from Lawndale Drive to I-40/85 in Greensboro	Various (2012 – 2018)
<b>R-2528</b>	NC 24-27	Widening NC 24-27 from US 220 to Carthage in Moore County	Not Scheduled
<b>R-2579</b>	WS Northern Beltway (Eastern Section)	Multi-lane freeway on new location from US 52 to US 311.	Part Under Construction
<b>U-2800</b>	Macy Grove Road Interchange	Construct a new interchange of Macy Grove Rd. with I-40 Business	Under Construction

Although other 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. Its major point of access is the intersection of Chimney Rock Road and Gallimore Dairy Road. PTIT is a location for the storage, pick-up and delivery of containers used in international shipping for steamship lines calling at Wilmington. This terminal and other terminals like it are major nodes in international transportation and logistics movements and give the region an additional asset in economic development efforts. TIP project U-4015A, scheduled for construction in 2020 will improve access to the PTIT for routine and emergency response at both PTIT and the Colonial Pipeline Tank Farm off Gallimore Dairy Road.

Other freight mobility challenges also need to be addressed. First US 52 from University Parkway to I-40 in Winston-Salem is an important north to south between Virginia and South Carolina. Between I-85 and I-40, is in good repair and uncongested. However, from I-40 to University Parkway the road is obsolete and congested. Although major construction is taking place on this segment until it and the northern loop around Winston Salem are completed, this transportation corridor is handicapped. The second is the signage on Interstate 40/85 in Greensboro. Road signage can drastically change the flow through and around Greensboro. The southern loop around Greensboro (I-73/I-85), was originally, and properly, signed to directed I-

40 traffic to use the by-pass taking traffic off of the freeway through Greensboro. However, within the past 3 years the signs have 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. *Benefits: Safety, Fuel Economy, Operating Costs, Less Congestion*

1. Truck Lanes – Everyone has seen and understands HOV (High Occupancy Vehicle) Lanes. However, many do not realize that HOV lanes force trucks (heavier and larger vehicles) into general traffic flow. Forcing trucks into the general purpose lanes additional congestion because trucks take longer to stop and accelerate than cars and slows down traffic flow. It is better for through truck traffic to have a dedicated lane freeing the general traffic lanes for local truck traffic and passenger automobiles which can by their nature flow together and maintain speed easier. *Benefits: Safety, Fuel Economy, Less Congestion*
2. Grade – Each of us has followed a large truck up a long hill. Although trucks are powerful, they are designed to carry loads not accelerate quickly. They have little reserve power to climb hills. The steeper a grade is designed and built, the more congestion it will create when trucks share the lanes with automobiles. To the extent practical, designers should minimize road grades. *Benefits: Safety, Fuel Economy, Less Congestion*
3. 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 that cars are more agile than trucks, especially if the truck is a tractor/trailer combination. These vehicles can be 60’ or 75’ long. Compare that to an automobile that is 10’ or 15’ long 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*
4. Lane Width – For freight wider is better than narrow, a heavy truck is 8 feet wide and the driver sits 6 feet above the road: width adds safety. In addition, wider roads let truck drivers see better and react better to the traffic around them. *Benefits: Safety*
5. 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 used. *Benefits: Fuel Economy, Safety, Operating Costs*

### The High Point International Home Furnishings Market

The High Point MPO has an increased amount of freight shipped into the area above “normal” operating levels twice each year for the High Point Market. The High Point Market is the largest furnishings industry trade show in the world, bringing more than 85,000 people to High Point every six months with about ten percent of the attendees being international. There are 2600 exhibitors located in 188 buildings with 12 million square feet (275 Acres) of showroom space. There are 110 countries represented at the High Point Market (Gerald T. Fox, Ph.D.; Richard M. Hargrove, Ph.D.; David L. Bryden, MLS, 2007).



Before each Market, furniture manufacturers must fill the 12 million square feet of show space with furnishings coming from all over the world. Most, if not all of that freight, arrives in High Point by truck. About three weeks before each market, many vacant lots and sometimes the streets themselves become parking lots for trucks delivering furniture to the Market. The picture to the left illustrates one of the furniture showroom's staging lots in downtown High Point filled with trucks waiting to

unload their freight.

### Entire Freight System: Statewide and Regional Issues

State Departments of Transportation (DOTs) have a historic link to freight and freight movements. This link dates to the early days of DOTs, when their focus was often “farm to market” roads to meet basic societal needs - bringing food from the farm to the cities and towns where people live. Accordingly, considering freight considerations in transportation planning is less of a new trend than returning to a core principle.

Recent efforts to incorporate freight considerations into the transportation planning process reflect shifts toward global rather than regional or national supply chains. In a global environment, labor-intensive industries locate where labor costs are low (subject to the impact of transportation costs), while capital-intensive industries (or for which transportation costs are a major component of the final product cost) are less affected. These trends have had significant negative impact on domestic industries including textiles, furniture, and industries with similar economics. While these impacts are predictable, it does not change the difficulty associated with adjusting to the job losses and industry displacements associated with these changes or the desire for governments to avoid or mitigate them. Such mitigation efforts can include using transportation 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 devoting more resources to understanding and determining how to incorporate freight considerations into transportation planning and 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 been developing models for including freight in project planning and prioritization. The Florida Strategic Intermodal System prioritization model is one of the more mature, comprehensive efforts to incorporate freight into the project planning and prioritization process. Other state efforts to include freight in

transportation planning include Indiana, Minnesota, Ohio, and Washington (Atkins, 2012). While the FHWA and NCDOT are seeking to better include freight flow and logistics in their planning efforts, the tools do not yet reach the regional and county level of detail.

Since issuing “Charting a New Direction for NCDOT” in 2004, a number of national and North Carolina initiatives have highlighted the importance of freight and logistics to long-term economic health and growth of 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 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 economic development targets including agriculture, bio//medical, tourism, education, military, and manufacturing.

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

Although the report acknowledges the link between transportation infrastructure and economic growth the report did not define how freight/logistics considerations should be weighed in NCDOT’s project prioritization and selection process (Atkins, 2012). NCDOT acknowledges the importance of freight planning, but 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.

## Highway Freight: National Current and Future Issues

National decision-makers are beginning to realize that keeping the system in good repair competes with adding capacity and that today’s funding streams are inadequate, and declining. 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, efficient transportation system, which in turn depends on the capacity and condition of 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). As mentioned “10 Steps to an Effective National Freight Policy”, the third suggestion, create a competitive freight discretionary program and the fourth suggestion, strengthen and diversify freight funding sources may assist the development of funding streams. Nationally, the TIGER<sup>2</sup> grant program addressed a 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 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, and more national emphasis is needed on these issues.

### Highway Freight: Statewide and Regional Current and Future Issues

Freight mobility on North Carolina’s highway network depends on improvements that provide direct and timely trucks access to ports from inland intermodal facilities, factories, farms, warehouses 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 biggest effect in reducing trucking travel times. Focused investments along these freight corridors are consistent with the 2010 Statewide Logistics Plan’s 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; although there are many benefits to improving this corridor, improvements to I-95 were not demonstrated to support the market scenarios evaluated for the North Carolina Maritime Strategy. (North Carolina Maritime Strategy, page 104, 2012)

The roadway needs estimate was developed with assistance from several NCDOT Business Units and the 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. Outside the MPOs, the estimate for highway widening was developed using a GIS based on a volume-to-capacity analysis 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)

### Rail Freight: National Current and Future Issues

Nationwide forecasts suggest that long-term economic growth will create demand for 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 may be a key funding

<sup>2</sup> Transportation Investments Generating Economic Recovery

mechanism for adding the needed 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 installing new train control systems on routes that handle certain hazardous materials. The new regulations take effect at the end of 2015. (2040 North Carolina Statewide Transportation Plan, page 7-7, 2012)

### Rail Freight: Statewide and Regional Current and Future Issues

The North Carolina 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 rail to carry more freight,
- Investing in rail connections between intermodal facilities and inland ports,
- Restoring abandoned rail lines, and
- Expanding and upgrading freight, commuter, passenger and short line service.

In 2007, the General Assembly instructed the Office of State Budget and Management to develop a Statewide Logistics Plan addressing long-term economic, mobility, and infrastructure needs. 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 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). NCDOT expects \$520 million in improvements between Raleigh and Charlotte to enable higher speeds and more reliable service through the corridor. Although this funding for increasing the capability of passenger traffic, any upgrades to the rail system in North Carolina will benefit freight movement as well because passenger and freight trains use 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 moving the NS intermodal yard in Charlotte. The NS intermodal yard relocation is a \$100 million joint venture of 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.

### Freight System: Current and Future Issues in the Piedmont Triad Study

The Triad's three goals are:

Be recognized as the Premier Logistics Center on the East Coast providing air, highway, and rail access in easy reach of companies operating in the region.

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.

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, competency in logistics that can strengthen the 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. 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 have far reaching impact on job creation, real estate values and incentive packages much information is privately and closely held. The information, in the following paragraphs is from open sources (*e.g.*, newspapers, trade publications, the internet, *etc.*)



Figure 4.6-1: Piedmont Triad Proposed Mega-Site Locations

It appears that there are four possible locations being studied inclusion in the regions efforts to create a mega-site (Barron, 2012). These are:

- Heart of North Carolina MegaPark straddling Moore and Montgomery Counties just east of I-73;
- Davidson County, near the intersection of I-85 Business and I-85;
- Berry Hill Mega Park in Virginia near the intersection of Rockingham and Caswell County in North Carolina and Pittsylvania County in Virginia;
- And a site in Randolph County near 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. Because manufacturing is a global endeavor, freight flow to and from 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 at the Norfolk Southern Intermodal ramp on Patterson Street in Greensboro. Without room to grow the Greensboro intermodal ramp may have to shift cargo to Charlotte, NC facility. In any case, the increase of truck traffic will be serious.

The next few paragraphs give some basic information about the sites mentioned above.

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.

Davidson County – The impact area appears to be both the I-85 corridor as it moves northeast through the region as well as US which, a natural connection 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 increase; however, it would not impact our region except for traffic backups if a major accident(s) occurs.

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 west side 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).

Randolph County – Recruiting a large manufacturing company will have major impacts to this area of the region; the main freight flow impact will occur at the intersection of US 421 and I-85. This will 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 has two examples of the impact large employers can have on the transportation network. The new Caterpillar plant 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, and component parts, have capacity, durability, and safety impacts on Union Cross Road and at the interchanges. The new Ashley Furniture manufacturing facility, in Davie County, may add as many as 200 trucks per day to traffic on I-40. The impact of this freight traffic increase is 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.

The four MPOs in the Triad along with the Piedmont Authority for Regional Transportation (PART) was awarded a SHRP2 grant to develop an enhanced freight component for the Triad Region's PTRM. In the PTRM, the Commercial Vehicle sub-model, developed based on the 1995 commercial vehicle survey, facilitates the employment data to estimate commercial vehicle trips, which deliver goods and service.

Freight truck trips that are interest of this project are generated at freight nodes such as truck terminals and large distribution centers and these trips are currently estimated in the Commercial Vehicle sub-model, which are part of goods delivery. However, freight truck travel behaviors are not well replicated in the model since 1) freight nodes are not well identified, 2) employment may not be appropriate input to capture freight truck trips, and 3) generally truck terminals and large distributors do not participate in a commercial vehicle survey.

Given that the Piedmont Triad region is one of the world's largest transportation and logistics clusters the objective of this project is developing an advanced freight truck sub-model in the PTRM following three phases listed below. **The expected delivery for consideration of this solicitation will focus primarily on Phase 1.**

- 1) **Phase 1:** Collect data to support development of an advanced freight model
  - Identify sources of data and previous studies (i.e., FAF data, commodity flow data, NC Statewide Freight Model, FHWA Probe data, INRIX) that can be used to update the current commercial vehicle sub-model of the PTRM (these data and reporting sources should be included in the submitted project management plan for the activities associated in phase 1.)
  - Identify all freight nodes such as truck terminals and large distribution centers
  - Develop and execute survey tool to collect information required for trip generation and/or trip distribution steps in an advanced freight model

- 2) **Phase 2:** Develop an advanced freight sub-model in the PTRM to reflect the freight transportation which has an increasingly significant impact on the roadways
  - Analyze the collected data to develop an advanced freight model
  - Develop an advanced freight model
  - Integrate an advanced freight model to the PTRM
  - Provide a methodology for predicting future input to the freight model
  
- 3) **Phase 3:** Conduct travel diary survey to update the freight sub-model developed in the previous phase
  - Conduct travel diary survey to adjust the freight model more specific to our region
  - Update the freight model

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.

### The North Carolina 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). 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%

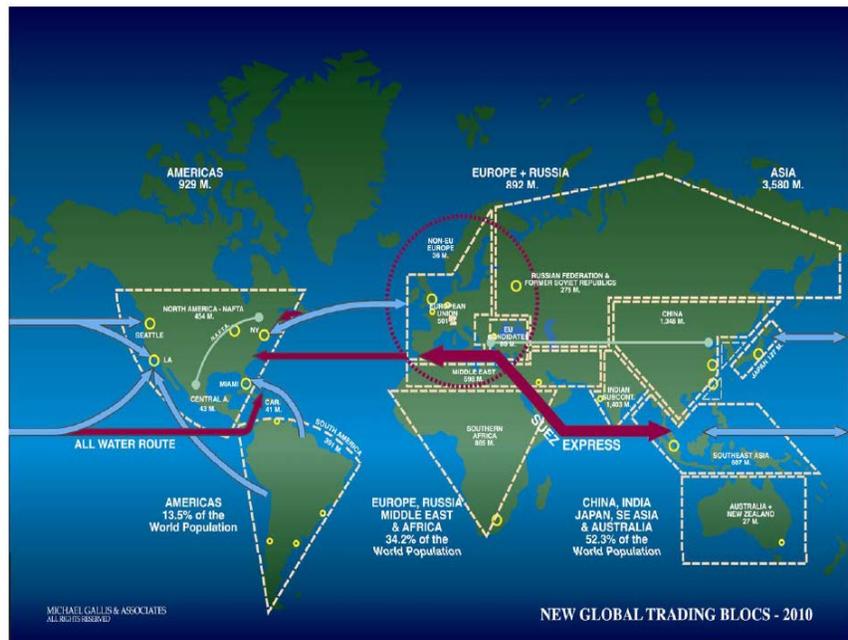
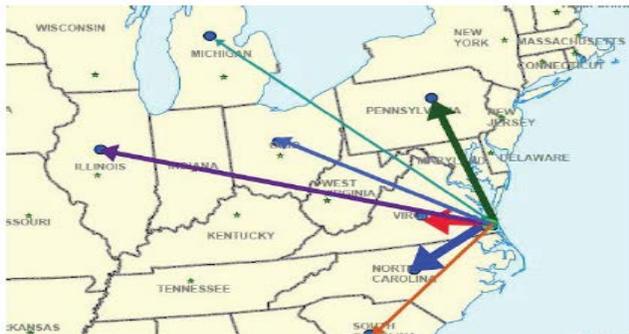


FIGURE 4.6-1 CONTAINER SHIP ROUTES AND BLOCKS

of cargo vessels are too large to use the Canal. Panama 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 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 4-6-8 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 westbound, 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)



**FIGURE 4.6-2: TOP DESTINATIONS OF FREIGHT FROM THE PORT OF NORFOLK**



Source: Delcan, *Private Data for Public Purposes*, AASHTO Special Committee on Intermodal Transportation & Economic Expansion, Richard Mudge PhD, Delcan (October 14, 2011)

Over 60 percent of international imports to North Carolina traveled by water: mainly through ports in other states. Six states account for 90 percent of North Carolina’s seaborne imports: Virginia, South Carolina, California, Georgia, Florida, and North Carolina. Figure 4.6-9 shows that North Carolina is the top destination for imports handled by the Port of Norfolk (AECOM; URS, 2012). 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 rely on trucking more than their peers do. Tables, 4.6-4 and 4.6-5 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 4.6-1: Mode of Travel by Weight Percent 2010

Port	NC Exports Leaving from the Port (A)	NC Imports Arriving at the Port (B)
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	Truck Only	Rail Only	Other <sup>3</sup>	Truck Only	Rail Only	Other
<b>North Carolina<sup>4</sup></b>	97.3%	0.3%	2.5%	94.8%	4.6%	0.7%
<b>Norfolk</b>	83.8%	3.2%	13.0%	90.8%	0.0%	9.2%
<b>Charleston</b>	83.2%	3.3%	13.5%	70.8%	14.2%	15.0%
<b>Savannah</b>	55.9%	2.8%	41.3%	91.9%	1.7%	6.4%

Source: FAF, 3.1

### Safety and Security

Increasing safety and security are important factors for MPOs to consider when evaluating and developing recommendations. Two goals identified by the MPOs regarding safety and security specific to freight include: 1) addressing roadway operational issues on routes carrying significant freight, 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 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 to remove unsafe trucks from the road, remove drivers with a history of unsafe driving from the workforce and closing down trucking operations with histories of non-compliance or high accident histories.

**TABLE 4.6-1 MODE OF TRAVEL BY VALUE PERCENT IN 2010**

Port	NC Exports Leaving from the Port (A)			NC Imports Arriving at the Port (B)		
	% Truck Only	% Rail Only	% Other	% Truck Only	% Rail Only	% Other

<sup>3</sup> Includes Multiple Modes.

<sup>4</sup> Because of their proximity to one another, the North Carolina Ports cannot be isolated in the FAF 3.1 commodity data table. (A) North Carolina exports shipped to a port using the indicated mode. (B) Imports to North Carolina shipped from the port using the indicated mode.

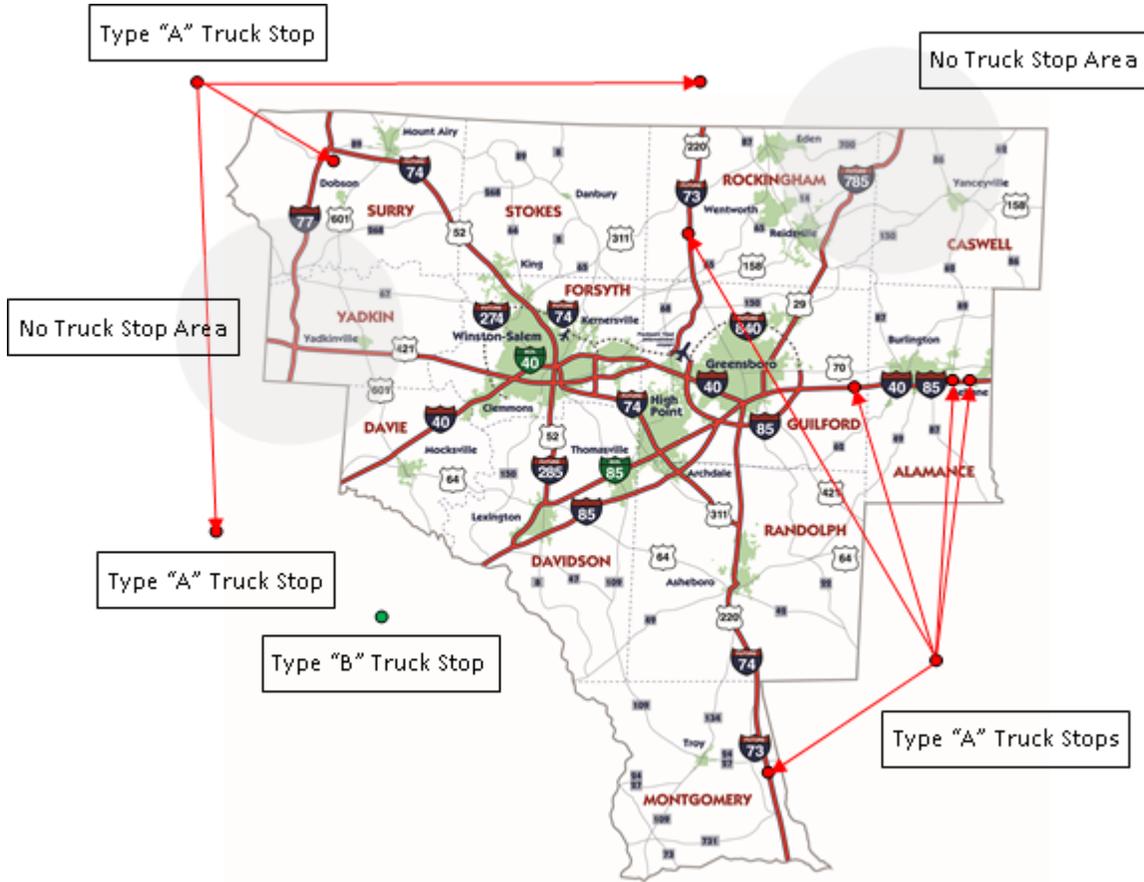
<b>North Carolina<sup>5</sup></b>	77.0%	0.0%	23.0%	94.7%	2.4%	2.9%
<b>Norfolk</b>	70.2%	1.4%	28.4%	81.6%	0.0%	18.4%
<b>Charleston</b>	86.3%	1.1%	12.7%	76.0%	8.4%	15.6%
<b>Savannah</b>	84.1%	0.5%	15.4%	90.2%	2.0%	7.8%

This shows that the state and national governments understand that safe freight transportation is important to 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.

One area needing additional attention is the 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 types “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 the private sector provides truck stops, 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 better for drivers to be fully rested “before” entering the region than to rush to get to a full service truck stop beyond the region. This is especially important as our region copes with the expected growth. The increased freight traffic from economic development projects will increase traffic congestion. 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.

<sup>5</sup> See note 6.



**FIGURE 4.6-1 TRIAD REGION TRUCK STOPS**

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 importance of operating 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. 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 nodes are:

1. Supplier
2. Factory/Packaging
3. Empty container storage/dray
4. Drayage<sup>6</sup> 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

Under the National Incident Management System (NIMS) principles state and local governments are responsible for incident management response and recovery efforts after an incident. To manage their responsibilities, many agencies have emergency response plans in place. However, recovery plans, especially for maritime infrastructure recovery and restoration of cargo flow, are not as common. Many States engage individual task force groups to manage disaster scenarios and responses.

Because the responsibilities, capabilities and organizational structures vary from agency to agency, it is hard to establish the specific responsibilities that each agency should provide for

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<sup>6</sup> 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."

recovery from a transportation disruption. However, the following generic list of functional responsibilities for recovery that state, local, and tribal government agencies may perform was developed for the Maritime Infrastructure Recovery Plan, and applies for those portions of the international cargo supply chain falling within state and local government jurisdictions.

The Local Government section and the Private Sector section below 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 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.

#### State governments

- Coordinate State resources to address recovery.
- Make, amend, and rescind orders and regulations under emergency conditions to support recovery efforts as appropriate.
- Communicate to the public recovery aspects of an emergency within state's jurisdiction.
- Help people, businesses, and organizations 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 if it becomes clear that state or tribal capabilities are insufficient, have been exceeded or exhausted.
- Voluntarily share information with other federal, state, local and tribal agencies.
- Participate in advisory committees and task forces regarding recovery management.
- Help assess the economic impact created of a security incident.
- Help identify 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, under certain emergency conditions to support recovery efforts.
- Communicate any declared emergency in the local jurisdiction to the public.
- Help local people, businesses, and organizations cope with the consequences of a declared emergency and its recovery.
- Negotiate aid agreements with other jurisdictions to facilitate sharing resources.
- Request state and federal assistance through the governor when the jurisdiction's capacity has been exceeded, exhausted, or is inappropriate.

- Voluntarily exchange information with federal, state, local and tribal agencies.
- Participate in advisory committees and task forces regarding recovery management.
- Help assess the economic impact of a security incident.
- Help identify assets and resources for the recovery.
- Provide resources as requested and appropriate.

### Private sector

As the owners and operators of the majority of the infrastructure, assets, and commodities, in the international supply chain, the private sector is most involved in ensuring security. During normal operations, while government entities legislate, regulate, validate and inspect, the private sector operates the supply chain safely, securely, efficiently, and at a profit.

As part of their business, private sector entities are responsible for the planning, operations, and advisory aspects relating to restoring cargo movement, and trade flow, and passenger flow.

Following an incident that triggers implementation of this strategy, the federal government will facilitate restoring commerce and recovery of the marine transportation system in concert with private sector contingency planning.

For the private sector the DHS advocates:

- 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 a plan for evacuation, adequate communications capabilities, and 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 effective disaster preparedness response and recovery programs.

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 entire cargo supply chain:

- Voluntarily exchange information about recovery operations plans with other potentially affected private sector entities and the federal government to mitigate congestion at non-incident site ports after the diversion of vessel traffic.
- Participate in maritime industry stakeholder organizations and advisory committees such as the AMSCs regarding recovery management and contingency planning.
- Help assess the assessment of economic impact.
- Help identify recovery resources and assets.
- Provide resources to assist in recovery, as appropriate.
- When requested by the National Maritime Security Advisory Committee (NMSAC), provide experts for advising on recovery management.
- 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 to communicate situational and operational information as well as the physical asset capabilities for mitigation management. (Strategy to Enhance International Supply Chain Security – July 2007)

## Recommendations for Piedmont Triad Study Area

### Truck Route Recommendations

Trucks may 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, or signed, routes through the city. Within the city limits, consideration could be given to amending the local ordinance to prohibit through trip 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 needed for 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:

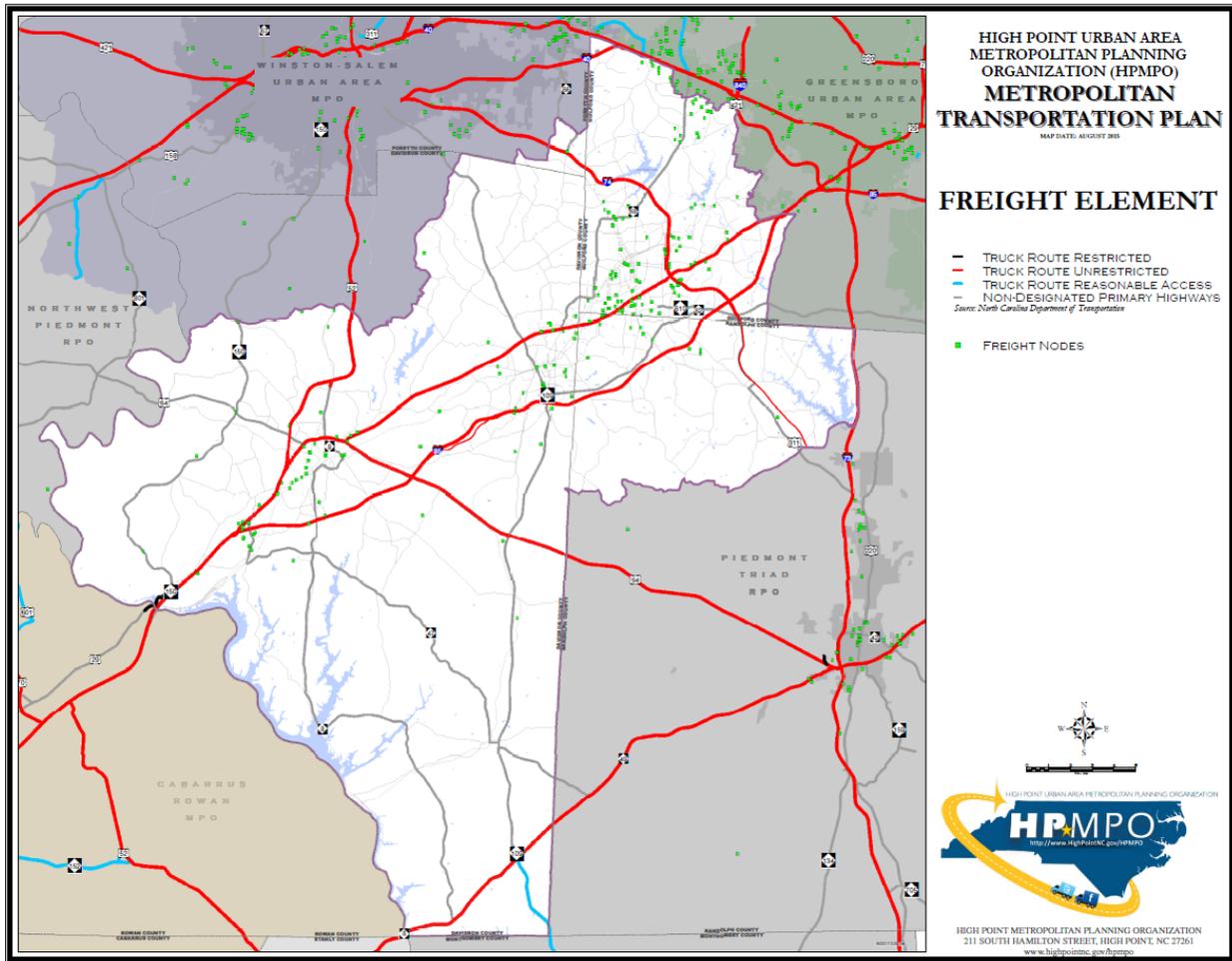
Work with NCDOT to prioritize resurfacing of designated routes in an effort to reduce noise and vibration from trucks.

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.

Publish and distribute educational materials to businesses and industries concerning proposed designated truck routes and to enlist their assistance in route planning.

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.

Identify streets that function as industrial collectors and work with stakeholders to evaluate and implement the appropriate cross-section.



### Summary Recommendations

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

Continue expanding the highway system to improve access and circulation around major transportation corridors. This includes working with NCDOT to complete the projects suggested by the NC Governors Logistics Task Force (George F. List; Robert Foyle, 2011).

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.

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

Implement an Intermodal Management System.

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.

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

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.

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

### Awareness

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

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.

Establish and maintain communication with regional economic development offices as they pertain to large/mega-site projects in the region.

### Communication

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

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.

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.

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

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.

Schedule and maintain an annual regional Safety & Security meeting with government entities, NCDOT, private industry, US Customs and Police and Fire Departments.

## Data Modeling

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

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

## Acronyms and Abbreviations

3PLs	Third Party Logistics
ACWR	Aberdeen, Carolina, and Western Railroad
CLNA	Carolina Coastal Railway
CRISP	Charlotte Railroad Improvement & Safety Program
CSA	Combined Statistical Area
CSX	CSX Railroad
DOT	Department Of Transportation
FAF	Freight Analysis Framework
FHWA	Federal Highway Administration
FRA	Federal Transit Administration
GIS	Geographic Information System
HPTD	High Point, Thomasville, and Denton Railroad
HPT&D	High Point, Thomasville & Denton Railroad Co
LTL	Less Than Truck Load
L RTP	Long Range Transportation Plan
MOTSU	Military Ocean Terminal at Sunny Point
MPO	Metropolitan Planning Organization
NAFTA	North Carolina Free Trade Agreement
NCDOT	North Carolina Department of Transportation
NCMIN	North Carolina Multimodal Investment Network
NCRR	North Carolina Railroad

NCSPA	North Carolina State Ports Authority
NS	Norfolk Southern Railroad
PTIA	Piedmont Triad International Airport
SEHSR	Southeast High Speed Rail Corridor
SPOT	Strategic Planning Office of Transportation
STP	State Transportation Plan
WSS	Winston-Salem Southbound Railway

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