CAMBRIDGE SYSTEMATICS

Eastern North Carolina Regional Freight Mobility Plan

Final Report

prepared for

Greenville Urban Area Metropolitan Planning Organization

prepared by

Cambridge Systematics, Inc.

with

Baseline Mobility Group, Inc.

Kimley-Horn & Associates

Cherry Consulting of the Carolinas, Inc.

October 31, 2019

www.camsys.com

final plan

Eastern North Carolina Regional Freight Mobility Plan

Final Report

prepared for

Greenville Urban Area Metropolitan Planning Organization

prepared by

Cambridge Systematics, Inc.
1201 Edwards Mill Road, Suite 130
Raleigh, NC 27607

with

Baseline Mobility Group, Inc.
Kimley-Horn & Associates
Cherry Consulting of the Carolinas, Inc.

date

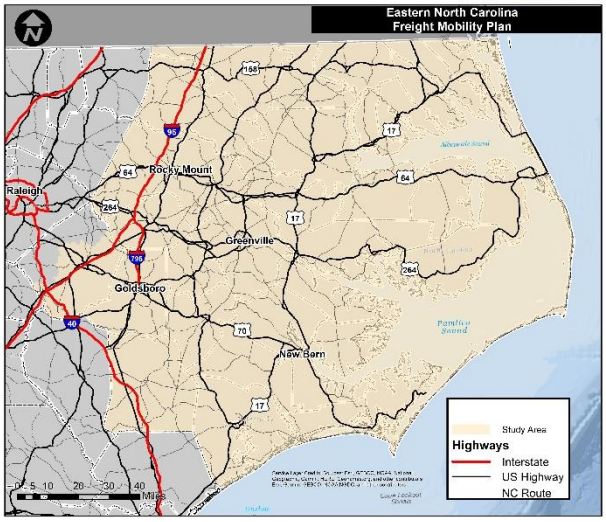
October 31, 2019 ***(Note: Revisions Adopted June 14, 2020)***

Table of Contents

List of Tables

List of Figures

Executive Summary



The Eastern North Carolina Regional Freight Mobility Plan represents a coordinated and collaborative effort to develop a sustainable multimodal freight network to support the strategic goals of the region. This study also referenced the data, strategies and conclusions developed through other pertinent studies and projects, such as the Statewide Freight Plan and local transportation plans to develop a unified vision for the multimodal freight network.

Eastern North Carolina has a rich heritage in the early development of tobacco and textile processing activities as well as the manufacturing of apparel, farm equipment and industrial machinery. Greenville became one of the two largest cities in the region due to East Carolina University. The City of Jacksonville developed largely as a result of Marine Corps Base (MCB) Camp Lejeune, now one of the largest military installations in the world. The region's economy is now very diversified: the military, value-added agriculture, aerospace, life science and health care, advanced manufacturing and tourism are the major economic drivers. Efficient transportation services are necessary in order to keep these companies competitive in regional, national, and global economies. Freight transportation, therefore, is vital to a region's economy, and plays an important role by allowing businesses to stay competitive, by connecting regions to domestic and international trading partners, and by supporting jobs and driving economic activity.

Stakeholder Outreach

Successful development and implementation of the Regional Freight Mobility Plan requires continuing and strengthening the relationship between the regional planning organizations, NCDOT and the private- and public-sector freight community. Stakeholders have and will continue to play a critical role going forward in identifying issues, prioritizing projects, and making investments in freight infrastructure and policy.

Throughout the development of the Eastern NC Regional Freight Mobility Plan, the regional planning organizations lead by the Greenville Urban Area MPO and NCDOT collaborated with a wide range of stakeholders. These included regional planners, local, regional, and nationwide businesses, and private and public agencies to better understand the needs and issues faced by the users of the regional freight system.

The CS Team employed a four-part approach to stakeholder outreach for the study as described in the Public and Stakeholder Involvement Plan (PSIP) developed at the outset of the study. Stakeholder outreach efforts included (1) convening a Regional Freight Advisory Council (RFAC), (2) assembling two targeted focus groups, (3) conducting 20 interviews with key private sector stakeholders, and (4) conducting a freight mobility survey.

Summary of Stakeholder Engagement – Role and Input

RFAC and Technical Committee

Key Role: Guide, Advise, Review

- Goals and objectives
- Needs and challenges
- Regional ENCPHFN
- Recommendations
- Draft Plan

Focus Groups

Key Role: Experiences, Knowledge, Input

- Regional SWOT analysis
- Economic development opportunities and challenges
- Eastern NC Priority Highway Freight Network Needs and challenges
- Recommendations

Freight Stakeholders

Key Role: Experiences, Knowledge, Recommendations

- Industy and modal needs and challenges
- Identification and verification of trends
- Supply chain profiles

Carrier Survey

Key Role: Experiences, Knowledge, Recommendations

- Bottlenecks
- Industy and modal needs and challenges

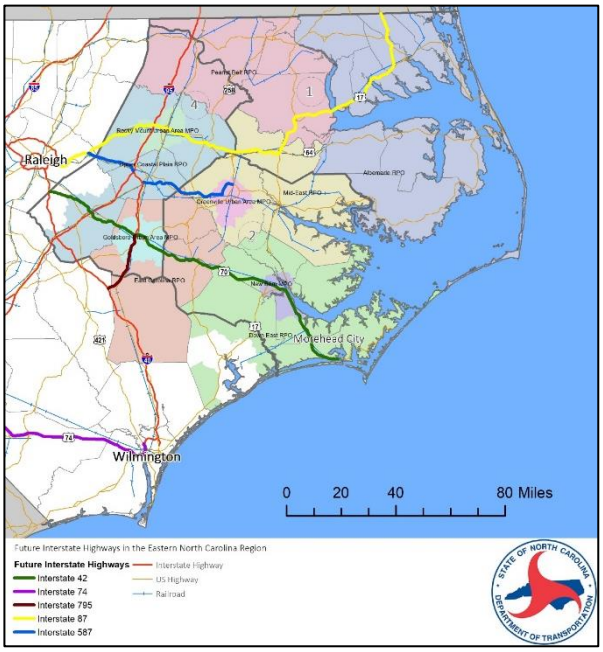
Regional Goods Movement Profile

Highway Profile

Over 187 million tons of cargo were transported over highways in the study area, 94 percent of which by truck. **Bridge conditions** can impact freight flows. Most of the region's structurally deficient bridges are located in Beaufort, Johnson, Nash and Pitt Counties.

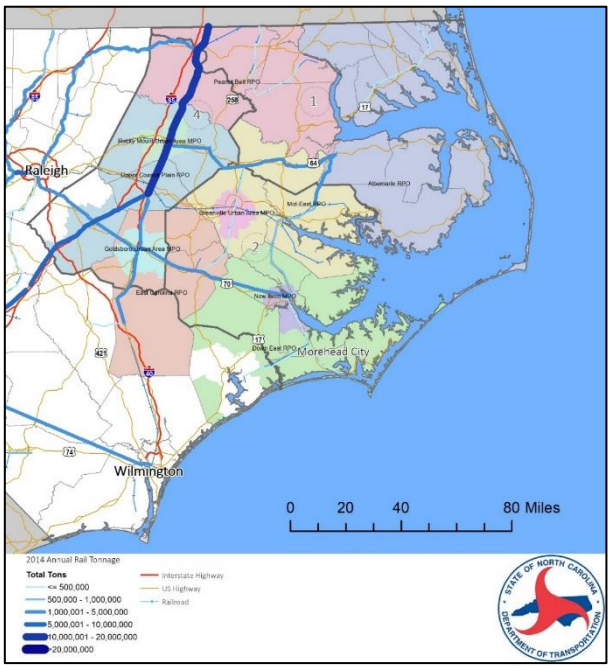
Between 2013 and 2017, a total of 6,584 **truck-involved highway crashes occurred** in the region, over half of which were in Johnston, Pitt, Wayne, Nash, and Wilson. Of the 344 **highway at-grade rail crossings** in the region, the 10 busiest are between Kinston and Morehead City.

Overall, **pavements** are in good condition across the region and most of the region's **structurally deficient bridges** are located in Beaufort, Johnson, Nash and Pitt Counties.



Future Interstate Highways include (1) the Raleigh-Norfolk Corridor/I-87, (2) U.S. 117/I-795, (3) U.S. 70 and (4) the I-73/I-74 North-South Corridor.

Railroad Profile



The freight rail network in Eastern North Carolina provides services to ports, power plants, mines, military installations, and industries including agriculture, forestry, plastics, furniture, food products, and chemicals. The regional rail network includes three classification yards, a deep-water port, and numerous transload facilities. In addition to the existing rail facilities in the region, CSX is planning an intermodal terminal called the Carolina Connector Intermodal Rail Terminal (CCX) in Rocky Mount, North Carolina.

Using data on average daily train volumes from the Federal Railroad Administration (FRA) Highway-Rail Crossing Inventory Database, the busiest rail corridor in the Eastern North Carolina Region is the CSX A-Line, which proceeds north-south through the study area (largely parallel to I-95) and bisects Rocky Mount. Based on the FRA data, this corridor carries about 17-29 trains per day. The CSXT A-Line primarily carries through traffic and it is an important route for accessing both the Port of Norfolk and major consumer markets in the Mid-Atlantic and Northeast.

Maritime Profile

The Port of Morehead City is one of the deepest ports on the East Coast of the United States and is located only four miles from the ocean. The port is served by rail and truck; it sees a ship approximately once every two days and an ocean-going or inland barge daily. The commodities imported at the Port of Morehead City over the past five years include DRI (direct reduced iron) and ores, rubber, metal products, scrap metal, sulfur, rail for railroads, dimensional lumber, asphalt, and grain. On the exports side, phosphate, woodchips, oyster rock, metal products, aircraft parts, dry/liquid fertilizers, and military materiel are the top commodities

One constraint to the movement of goods from inland to the Port of Morehead City is the rail line through downtown Morehead City. Because the train must travel through a more densely populated area, it must

travel at slower speeds. In addition, multiple at-grade crossings may delay trucks as they serve the port terminals.

Air Cargo Profile

While Eastern NC is home to a significant amount of freight activity, very little of it is provided via air – less than 1 percent of all North Carolina air cargo occurs in the Eastern NC region. The Global TransPark (GTP) was originally built around a multimodal transportation network, including Kinston Regional Jetport (capable of handling international flights), undeveloped acreage surrounding the site, proximity to military bases, and the potential for highway, rail, and deep-water port access.

Pipeline Profile

Pipelines have a large impact on North Carolina's transportation infrastructure today and will have in the future. In Eastern North Carolina, pipelines transport natural gas, jet fuel and refined petroleum to businesses, military installations and industries. The infrastructure is privately built and maintained and represents an important investment for stakeholders. Natural gas is used to heat businesses and homes, jet fuel powers our military aircraft and refined petroleum fuels the region's automobiles, trucks, trains and ships.

Economic and Industry Supply Chain Profile

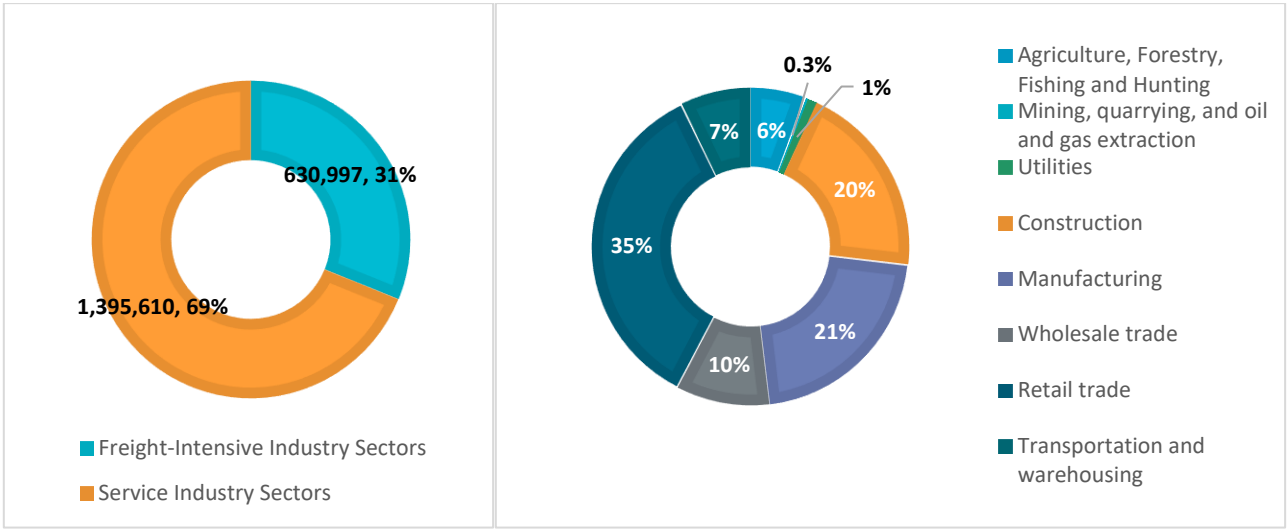
Population Trends

The Eastern North Carolina study area consists of 28 counties out of 100 counties that represent the state of North Carolina. This section of the report provides a summary socio-economic profile of this Eastern North Carolina region in comparison to state's socio-economic profile. Overall, these population projections show that the region will lag behind the statewide as well as nationwide rates of population growth.

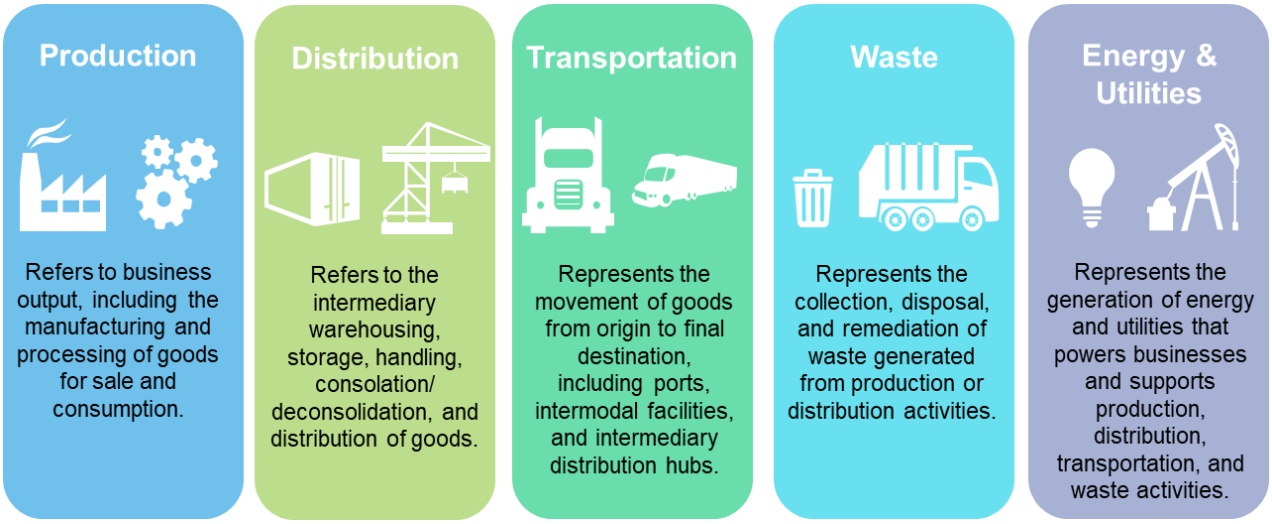
Employment Trends

The labor market conditions remain quite strong for North Carolina as a whole given the statewide unemployment was at 3.7 percent in December 2018. However, recovery from the recession has been uneven across the state, especially for the Eastern North Carolina counties. Rocky Mount had a larger concentration of manufacturing jobs that have not fully recovered, while Goldsboro experienced a brief resurgence in goods-producing industries in 2012, but those jobs have now declined.

Eastern North Carolina 2017 Employment by Freight-Intensive Industry Type



Core supply chain activities represent five interrelated and interdependent activities that support goods movement. These include production, distribution, transportation, waste and energy/utilities.



Key Freight-Intensive Industries

Beyond understanding which freight-dependent sectors are strongest throughout Eastern North Carolina, it is beneficial to identify where they are located, specifically, where they tend to cluster within the region. Cluster or agglomeration economies – geographic concentrations of interconnected businesses, suppliers, and associated institutions – are considered to increase productivity within the industry and increase regional, national, and global competition. As more firms in related businesses locate near one another, costs of production often decline significantly, as firms have competing suppliers, greater specialization, and greater division of labor. This economic environment is particularly beneficial for freight-dependent sectors. Further, understanding where these clusters are located helps public agencies target investment in necessary infrastructure to support freight and goods movement activity.

Commodity Flow and Economic Futures

Overall, in 2015, 199 million tons of freight moved over the region's transportation system, valued at $283 billion. By 2045, this will increase by 43 percent in volume to 284 million tons and 85 percent in value to $525 billion. The substantial increase in volume is due to increases in mineral and agricultural production and other heavy commodities traveling via truck

Multiple modes of transportation are used within Eastern North Carolina's freight system. Today, truck is the dominant mode due to the fact that most of region's production is transported to market via North Carolina's highway system.

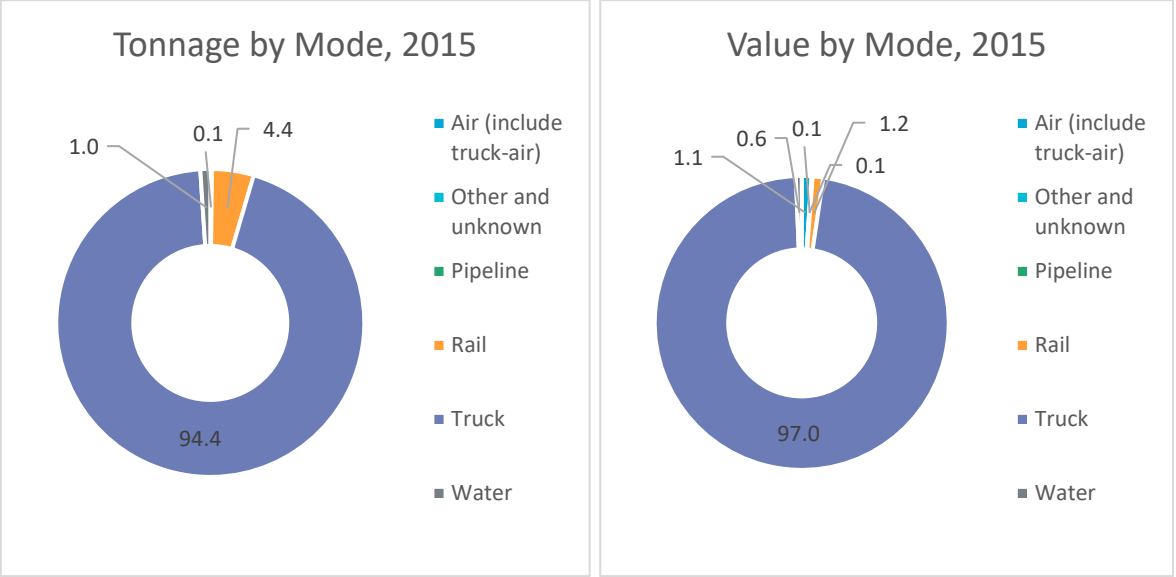
Commodity Flow Profile

In 2015, 199 million tons of freight moved over Eastern North Carolina's transportation system, valued at $283 billion. By 2045, it is projected that Eastern North Carolina's transportation system will carry more than 284 million tons of freight annually, valued at $525 billion, an increase of 43 percent by tonnage and 85 percent by value. This section provides an overview of actual and projected demand for freight

transportation in Eastern North Carolina, including modal split, direction split, top commodities moving in the state, truck traffic on the state network, trading partners, and county-level trade.

When measured by value, trucks carried around $275 billion in goods. This accounts for almost 97 percent of total freight flows in the region. Rail and air each accounted for $3 billion or approximately one percent of the total freight flow value.

Eastern North Carolina Tons and Value by Mode, 2015

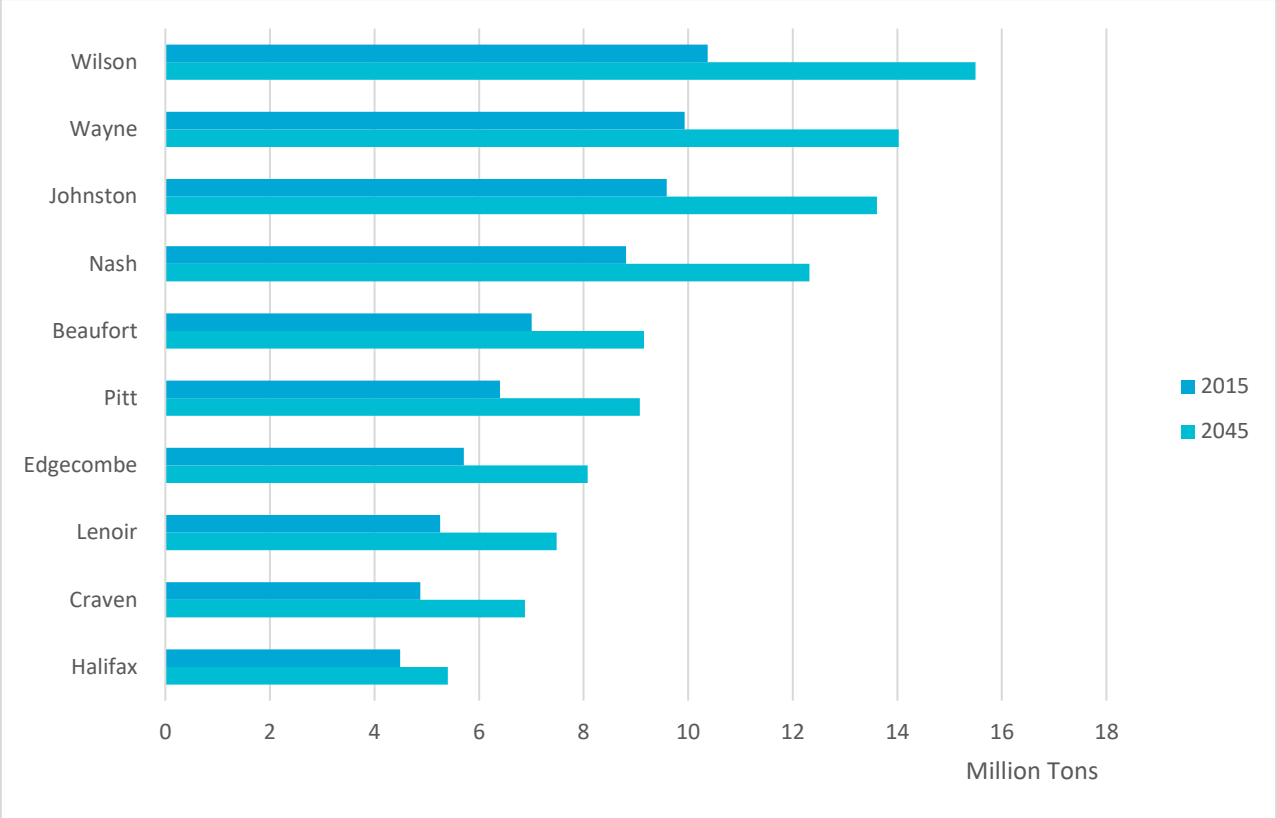


Over the next 30 years, over 284 million tons of freight worth of $525 billion is projected to be transported to, from, within, and through Eastern North Carolina. Truck is expected to remain the dominant mode. Rail and water will be the second and third top freight transportation modes by 2045, the mode share of each is expected to remain constant at four percent and one percent of total volume, respectively.

County Level Trade

Wilson County was the dominant goods-movement county in Eastern North Carolina in 2015, primarily from tobacco production. This accounted for 10 percent of the 99 million tons shipped to, from, and within Eastern North Carolina in 2015. The remaining top counties for freight activity measured by weight were Wayne, Johnston, Nash, and Beaufort. Together, these five counties accounted for 46 percent of all cargo tons shipped to, from and within the region. By 2045, the top five counties with freight activity measured by weight (inbound, outbound and intra-county combined) are projected to remain the same.

Top Eastern North Carolina Counties by Weight, 2015 and 2045



Economic Futures and Trends

In 2015, as part of a strategic plan, the North Carolina State Ports Authority (NCSPA) developed projections of growth in total tonnage for the state's maritime commodities independent of the FHWA Freight Analysis Framework (FAF) data. In 2018, the NCSPA developed an update of the strategic plan, with a forecast of total tonnage at the Port of Wilmington and Port of Morehead City forecast from 2018 to 2023. Compared to the FAF 4.1 data, the NCSPA projected higher short-term growth in bulk materials such as coal coke and other bulk; soil, sand, gravel, stone/aggregates; cement, concrete and fertilizers. The NCSPA projected lower short-term growth in chemicals and related products, grain, and steel/bridge girders.

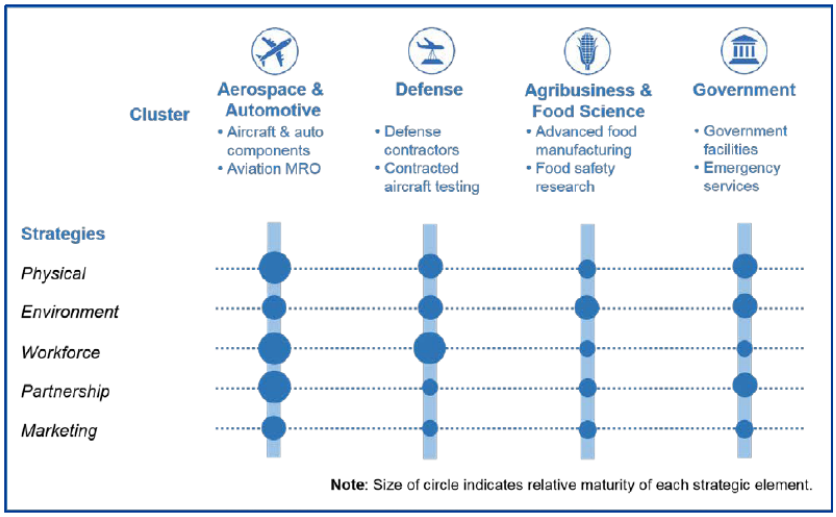
Rail-Related Developments

Intermodal rail traffic throughout the Eastern North Carolina Region will be impacted by the construction of the CCX terminal in Rocky Mount. Located on the CSXT A-Line, the CCX terminal will primarily serve shippers in the Triangle and the Eastern North Carolina region. The CSX operational model shifted from hub and spoke operations to scheduled railroading. It will transfer truck trips to rail, provide shipper savings, and add jobs and economic development opportunities. It will provide the Port of Wilmington with rail intermodal service. The anticipated construction timeline is 18-20 months and construction began in 2019. CSX will operate the terminal for initial 9-year term and provide railroad service to the terminal, including switching to CCX. NCDOT will maintain highway access to the facility, including direct access to I-95.

Development Plans for North Carolina Global TransPark (NCGTP)

In 2018, NCGTP completed a Strategic Plan which included a "cluster approach" to attracting targeted industry groups for which the unique NCGTP assets are attractive. These target clusters included: Aerospace & Aviation, Defense, Agribusiness & Food Science, and Government Services. Strategic actions were defined to enhance the NCGTP's ability to attract businesses in these clusters and expand job opportunities within each of those industry clusters. The action plan strategies were aimed to address the requirements of each targeted cluster.

NCGTP Cluster Approach



Source: GTP Strategic Plan, 2018.

Logistics Freight Market Assessment

Building on the information obtained from the Eastern North Carolina Regional Goods Movement Profile and the Commodity Flow Analysis and Economic Trends, a regional freight market assessment was developed to analyze potential logistics functions and facilities in the region and evaluate the region's strengths, weaknesses, opportunities and threats for logistics-based developments. The freight market assessment includes a comparison of the region's freight modal shares with the rest of the State and the U.S., and furthermore an examination of the potential market for water/port and intermodal rail diversion in the region.

SWOT Analysis

Shippers are increasingly investing in cargo handling facilities and transportation infrastructure to handle the increasing freight needs and demands. These investments include additional warehousing, decentralized storage and distribution, and transfer facilities in and around port facilities. Public sector agencies are also prioritizing similar investments to spur economic development and support local businesses. The emergence of increased cargo handling investments highlights deficiencies in freight transportation that need to be mitigated.

This study utilized the strength, weaknesses, opportunities, and threats (SWOT) approach as an analytical framework that assesses what an entity (a place in this case: Eastern North Carolina) can and cannot do, for

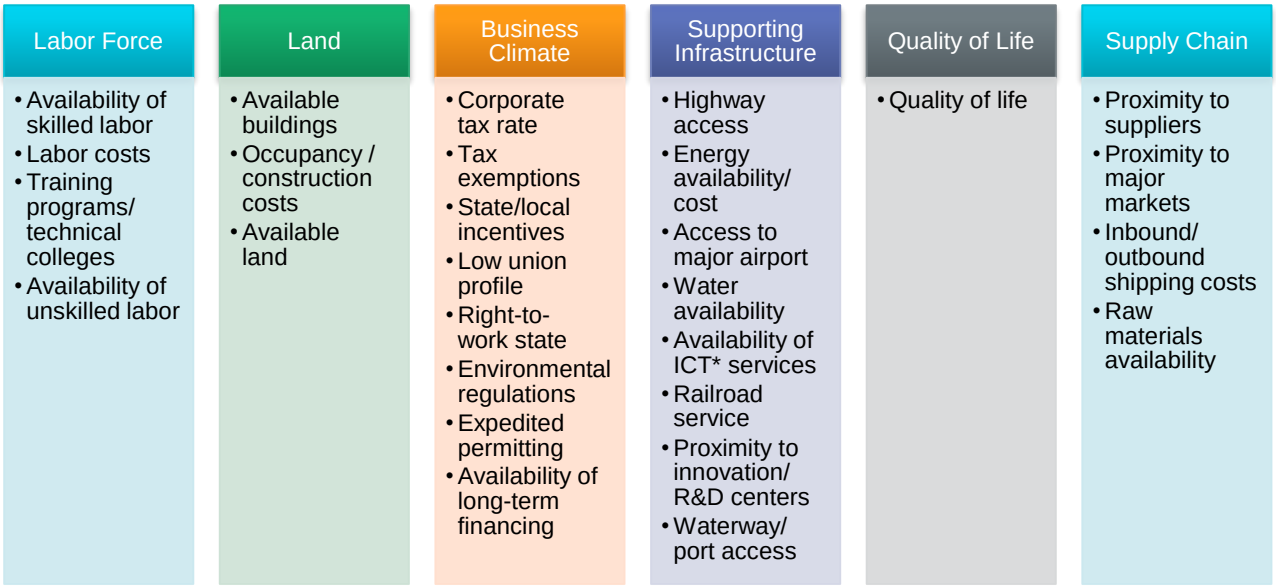
factors both internal (the strengths and weaknesses) as well as external (the potential opportunities and threats). This approach is applied to various industries for strategic decision making. SWOT findings are presented with regard to (1) labor and jobs; (2) transportation, (3) industries, (4) natural disasters and (5) federal regulations and funding.

As part of the Eastern North Carolina Freight Mobility Plan's outreach efforts an Economic Development Focus Group was conducted June 3, 2019. The objectives of the focus group were to: Review freight-intensive target industries for economic development in the 28 county region; Identify Eastern North Carolina freight-related economic development initiatives underway and planned; Obtain input on the region's strengths, weaknesses, opportunities and threats to attract and retain businesses; and, Hear lessons learned from economic development success and failure stories. The findings of the focus group are summarized in this SWOT Analysis.

Cargo-Oriented Development Opportunities and Requirements

The ultimate success of cargo-oriented development in Eastern North Carolina in attracting users depends on the ability to add value to the supply chain. A port or freight facility can provide the means to optimize transportation-related costs associated with supply chains. While a facility has the potential to attract businesses providing additional auxiliary and value-added services, multimodal transfer facilities can be created and exist in absence of these additional developments. However, the port and distribution facilities by definition require the attraction and agglomeration of these value-added activities. Certain site selection factors are critical to the success of promoting cargo-oriented development.

Site Selection Factors



Source: 2018 Corporate Survey Results, Area Development Magazine2018 Corporate Survey Results, Area Development Magazine

*ICT=Information and Communication Technologies

SWOT Findings

Freight Oriented Development SWOT Analysis

Strengths	Weaknesses
• Available land at a competitive price • Labor availability (high unemployment, low-cost, area connection to military personnel) • Many freight-dependent industries' growth rates are higher than national and state rates • Access to I-95, U.S. 64, U.S. 264, U.S. 70 • Access to Class I and Short Line railroads • Access to in-state and out-of-state Ports including Norfolk, Charleston, and Wilmington/Morehead City Ports	• Available labor is unskilled and unreliable • Low-skilled job availability has not recovered to pre-recession levels • Lack of broadband infrastructure in rural areas • Lack of connectivity to natural gas • Traffic congestion at the Port of Morehead City during peak tourist season and large train movements • Population decline and poor health among rural populations

Opportunities	Threats
• Low cost of land, labor, and living • Research capabilities • Clean energy industry opportunities • New Port equipment and warehouses • Further development on Radio Island • Short line railroads acquiring Class I branch lines • Future Interstate, Direct Rail Access, and Airport Access – New Raleigh-Norfolk Corridor – Future Interstate 795, 587, and 42 – CCX terminal in Rocky Mount	• Natural disasters (flood zones and super storms are frequent in the area) • Trade and immigration regulations • Transportation needs exceeding current funding levels • Dredging issues at NC Ports • Inconsistencies in political champion supporting freight industries and development • Class I railroads divesting branch lines to short lines

Source: Eastern North Carolina Freight Mobility Plan Economic Development Focus Group conducted June 3, 2019 facilitated and processed by Cambridge Systematics.

Needs Assessment

The needs assessment scope of work focused only on the Eastern North Carolina Priority Highway Freight Network (ENCPHFN). The ENCPHFN facilities have been identified as most important for the movement of freight in the region. The ENCPHFN was developed by starting from the statewide priority highway freight network and adding roadways that were deemed critical for regional freight movements and regional economic competitiveness. The following sections describe the methodology used to determine the highway freight needs and key findings. The remaining sections address each of the four major need categories and accompanying scoring criteria that assess regional Eastern North Carolina's highway needs:

Key Findings

This analysis led to several key findings pertaining to highway freight needs along the ENCPHFN:

- **Higher needs exist in the region's urbanized as well as rural areas**. Higher than average severe truck-involved crashes are found throughout the region, from urban areas such as Greenville, Rocky Mount, and Wilson, to more rural roadways. The "high" safety needs are primarily along the I-95 corridor through the Selma and Rocky Mount areas, and the connecting US routes to the I-95 corridor. The NC

101 corridor in Morehead City also showed "high" safety needs due to recent fatal crashes. Other "medium" safety needs are spread across the study area region either around the urban areas or along rural two-lane roadways. For mobility and reliability, the analysis shows anticipated capacity constrained traffic conditions along the I-95 corridor, and several other gateway corridors to the region including US 70, US 264, and US 64. A few other key routes in the region, such as US 117, I-795, US 13, US 258, NC 24, and NC 43 are also anticipated to have heavy traffic congestion.

- **Improve rural highways to enhance economic competitiveness**. Roadways with the most rural highway needs for Eastern North Carolina's freight network are primarily in the eastern and northern portions of the region, especially roadways such as US 13, US 258, US 158, US 64 (eastern parts), NC 11, NC 97, NC 43, NC 32, and NC 33 which have long stretches of two lane highways. Improving these corridors may help improve freight flow between rural and urban areas, improving overall mobility.

- **Opportunity to increase truck parking availability**. Truck parking is available along the interstate system, with the highest along I-95. Inadequate truck parking leads to numerous concerns including concerns for the safety of the motoring public, truckers and their cargo; lost productivity and higher business costs associated with parking search times; and concerns over the growing costs of maintaining and adding additional public truck parking facilities. Addressing this shortage may help further regional goals for safety, mobility and reliability, and economic competitiveness.

- **Some needs are prevalent across the region**. Some of region's needs must be addressed at a large scale. Higher than average severe truck-involved crashes are found at locations throughout the region, from urban areas such as Greenville, Rocky Mount, and Wilson, to more rural roadways. Segments of the ENCPHFN with asset management and utilization needs are found throughout the region, in both rural and urban locations. For example, bridges that are functionally obsolete/structurally deficient are primarily along US 64 and a few other corridors, and bridges with vertical clearance issues are primarily along the I-95, US 70, US 264, US 64, US 301 corridors. Similarly, segments of the ENCPHFN with poor pavement conditions are scattered throughout the region, with the longest stretches along US 13, US 17, US 158 and other routes.

Summary Findings and Recommendations

This section describes summary findings from the Eastern North Carolina Freight Mobility Study and recommendations to identify transportation infrastructure and other investments for improving regional goods movement. The recommendations are organized into policy, highway, rail, port, airport and logistics sections. The full findings and recommendations can be found in Section 7.

Freight Policy Findings and Recommendations

Freight policy recommendations will help to define Eastern North Carolina Region's vision and means of engaging freight stakeholders in NCDOT's planning and project development processes for priority areas in the region. This includes engaging in the dialogue between NCDOT's modal agencies, NCDOT Divisions 1, 2 and 4, the Highway 70 Coalition, Eastern Carolina University, and regional economic development agencies, such as Carolinas Gateway Partnership, NC East Alliance, the Economic Development Partnership of North Carolina, and others.

Findings

Eastern North Carolina has a strong transportation planning culture and a history of promoting economic development opportunities for industries and manufacturers. The collaboration between planning agencies and NCDOT was evidenced in the level of participation and enthusiasm throughout the study. The region is strategically located close to multiple seaports and river ports and midway between Canada and Florida which can serve a critical role in promoting the concept of a Central Coast Gateway.

Recommendations

- Adopt Eastern NC Freight Mobility Plan
- Continue RFAC Meetings to communicate with stakeholders
- Measure freight system performance
- Continue implementing NC Global TransPark recommendations
- Coordinate with local planning initiatives
- Support the continued development of multimodal connectivity for Global TransPark (GTP)
- Promote the Central Coast Gateway concept

Highway and Bridge Findings and Recommendations

Highways in Eastern North Carolina carry more than 94 percent of the region's total freight volume by tonnage and nearly 89 percent by value. They are the critical component of the State's freight transportation infrastructure. At the same time, NCDOT is facing funding challenges that has resulted in reducing the size and extent of the current Statewide Transportation Improvement Program (STIP).

Findings

Higher needs exist in the region's urbanized as well as rural areas. Improving rural highways will enhance economic competitiveness. Access to I-95 is critical to the region. Truck parking availability can be improved. Access to the Port of Virginia (POV) is important to area manufacturers. Some needs are prevalent across the region as evidenced in the needs assessment. Future interstates are vital for the region and the region has promoted a Quad-East planning initiative.

Recommendations

- Support the Future Interstate Highway development
- Improve access to I-95 in the region
- Support the Quad-East planning initiative
- Examine Route 301 Improvements
- Improve bridge deficiencies in the region
- Improve highway conditions accessing the Port of Morehead City
- Expand key two-lane rural routes on the Priority Freight Network

- Improve congested areas around Eastern North Carolina's four urban areas
- Continue highway improvements to the Port of Virginia (POV)

Rail Infrastructure Findings and Recommendations

Eastern North Carolina features two Class I railroads, Norfolk Southern Railway (NS) and CSX Transportation (CSX), and multiple short line railroads that connect businesses and industries to the Class I network. Intermodal rail traffic throughout the Eastern North Carolina Region will be improved by the construction of the CCX terminal in Rocky Mount.

Findings

Rail freight market opportunities can be expanded, particularly with the CCX intermodal terminal being built. Regional planners expressed a need for better access to railroad officials. Area manufacturers are interested in moving truck shipments to rail. The corridor from Selma to Morehead City is owned by the North Carolina Railroad (NCRR) and leased to NS. This provides unique economic development opportunities. There has recently been increasing interest in utilizing the military-owned Camp Lejeune Railroad line (CPLJ) for the purpose of transporting commercial freight and enhancing the local economy. The CPLJ would connect to Norfolk Southern at Havelock, NC, and the Port of Morehead City.

Recommendations

- Improve rail access to Morehead City and Terminal Improvements
  - Develop a loop track at the Port
  - Study vehicle/train conflicts and improve traffic flow in downtown Morehead City
  - Repair bascule bridge
  - Provide Radio Island terminal improvements
- Organize an Eastern NC Regional Rail Freight Forum
- Continue supporting the development of the CCX terminal on the CSXT A-Line
- Examine future development options for the Camp Lejeune Railroad (CPLJ)
- Improve the Chocowinity Yard in Beaufort County
- Continue Grade Crossing Improvements, such as the at-grade crossing NC 171 and Andrews Street
- Study New Bern Rail Bypass

Port Findings and Recommendations

The Ports of Morehead City and Wilmington play a critical role in the movements of freight and cargoes in and out of Eastern North Carolina. This study focused more attention on the Port of Morehead City. For some industries sectors, the neighboring Ports of Virginia, Charleston and Savannah move even higher volumes of goods since they serve overseas markets. North Carolina military bases rely on NC Ports and neighboring ports for transporting troops and military equipment. One constraint to the movement of goods

from inland to the Port of Morehead City is the rail line through downtown Morehead City. Related to this constraint are conflicts between the tourism industry and the logistics industry.

Findings

Strong port export trends continue at the Port of Morehead City, and warehouses have reached capacity. Future growth opportunities include soybeans, steel and dimensional lumber. The region's river ports serve key industries and could support more industries.

Recommendations

- Improved Port of Morehead City rail/vehicle infrastructure, such as on-port loop track, bascule bridge repair, and Radio Island terminal improvements
- Continue modernizing the port and port facilities with terminal improvements
- Explore new import and export opportunities
- Expand coastal cargo opportunities
- Promote Radio Island for future development
- Continue regular dredging at the Port
- Increase rail capacity with track improvements
- Promote Global TransPark Rail Access
- Explore New Bern Rail to Barge Transload Facility
- Explore future GTP to Kinston Spur

Airport Findings and Recommendations

There are six airports with cargo activity in Eastern North Carolina. Of these, three provide commercial service and general aviation and three provide general aviation only. One of the greatest challenges for growth of air cargo activity in eastern North Carolina is the limited industrial development near the airports and the expense to ship via air.

Findings

One of the greatest challenges for growth of air cargo activity in eastern North Carolina is the limited industrial development near the airports and the expense to ship via air. The relative proximity of many eastern North Carolina municipalities to the Raleigh-Durham International Airport (RDU) and the Wilmington International Airport (ILM) provide local industry with other options that may have more frequent service options. There is a need to increase marketing efforts to industries and industry clusters whose needs mirror NCGTP assets and amenities. Rocky Mount-Wilson Airport (RWI) has a recently completed 7,000 ft long runway and are in discussions about a new industrial park nearby the airport.

Recommendations

- Promote the GTP to targeted industries requiring multimodal transportation access

- Given new investments at Rocky Mount airport, support the concept of a new industrial park adjacent to the airport which may benefit from access to air cargo services.
- Expand air freight and cargo services available to NC shippers at strategic airports as needed.
- Maintain airport runway surfaces, approaches and instrumentation in state of good repair.

Freight and Logistics Findings and Recommendations

Starting with the North Carolina Statewide Logistics Plan in the early 2000's, North Carolina's agencies, railroad companies, and private businesses have taken an active role in addressing freight and logistics needs to shape the State of North Carolina through policies, programs, and projects that support and encourage freight movement and freight-oriented developments. For example, North Carolina's Port of Morehead City was found to be one of the stronger project cargo ports on the East Coast that could further expand by offering white glove service for new industries such as windmills.

Findings

East Carolina University (ECU)'s Millennial Campus development initiative is currently redeveloping several properties in Greenville by collaborating with the private sector. There may be opportunities to designate heavy haul corridors within the Eastern NC Priority Freight Network connecting NC Ports to energy exploration, military installations and large-scale agricultural production and manufacturing clusters. Industry representatives expressed interest in pursuing opportunities to shift heavy and often over-sized truck shipments to rail and to create a dialogue with Class I and/or short line railroads to promote more truck to rail opportunities. NCDOT is playing an increasing role in promoting statewide freight and logistics.

Recommendations

- Support site development infrastructure for new industrial facilities or other freight-oriented development sites in the region
- Support e-commerce developments that utilize smaller vehicles and alternative delivery methods
- Maintain multimodal connectivity to maintain safe, reliable connections to ports, rail terminals, air cargo facilities, military bases and major logistics and manufacturing sites
- Invest in heavy haul corridors. There may be opportunities to designate heavy haul corridors within the Eastern NC Priority Freight Network connecting NC Ports to energy exploration, military installations and large-scale agricultural production and manufacturing clusters
- Support reverse logistics operations. Reverse logistics will directly impact the North Carolina highway system as many of the support facilities will be located in major metropolitan areas and will be often co-located with other freight assets, such as rail intermodal terminals
- Core / strategic military and freight corridors need a champion at the state level within NCDOT

1.0 Introduction

The Eastern NC Regional Freight Mobility Plan represents a coordinated and collaborative regional planning effort to develop and implement a sustainable multimodal freight network to support the strategic goals of the region. This study also referenced the data, strategies and conclusions developed through other pertinent studies and projects, such as the Statewide Freight Plan and local transportation plans to develop a unified vision for the multimodal freight network.

The goals of the Plan are to:

- Increase economic competitiveness
- Provide a resource to be used by engineers, developers and planners to outline network development to support efficient land-use decision making
- Provide a regional vision for the freight network and strategies for implementation
- Serve as a catalyst for increased regional cooperation
- Spotlight the relationship between the freight industry and economic development at the regional level
  - Identified links between transportation and land-use planning to support continued economic growth.
  - Supported infrastructure development that improves regional mobility for industry.
  - Created an avenue to support potential regional partnerships and commercial/industrial connections.
  - Provided economic development professionals with tools to promote the region to prospective industry leaders and communicate the commitment eastern North Carolina has to providing a connected and efficient freight network.

1.1 Eastern North Carolina Region

Eastern North Carolina is home to a number of regionally significant freight hubs, gateways and corridors, as well as to military bases and industries that are uniquely dependent on a safe, reliable and efficient freight transportation system. The region's economy is now very diversified. Major economic drivers include the military defense sector, value-added agriculture, aerospace, life science and health care, advanced manufacturing and tourism.[1] Efficient transportation services are necessary in order to keep these companies competitive in regional, national, and global economies. Freight transportation, therefore, is vital to a region's economy, and plays an important role by allowing businesses to stay competitive, by connecting regions to domestic and international trading partners, and by supporting jobs and driving economic activity.

Shippers in the region are increasingly investing in cargo handling facilities and transportation infrastructure to handle the increasing freight needs and demands. These investments include additional warehousing, decentralized storage and distribution, and transfer facilities. Public sector agencies are also prioritizing similar investments to spur economic development and support local businesses. The emergence of

[1] NC East Alliance Web Site, access August 9, 2019.

increased cargo handling investments highlights deficiencies in freight transportation that need to be mitigated.

North Carolina is also a top-10 food producer in the United States with freight transportation playing a key role getting food from farms to processing plants to consumers, and the state's agriculture and food processing industry are largely located in Eastern North Carolina. Examples of the region's industries include Butterball, Smithfield, Perdue, Cummins, Bridgestone, PotashCorp, Spirit AeroSystems, Honeywell, and others, each of which depends on the region's highways, rail lines, ports and airports to access national and global markets and to provide quality jobs to North Carolinians.

The region's freight infrastructure faces continually changing demands due to changing freight trends and developments, such as significant population growth in the adjacent Triangle region; the continued development of future interstates, including I-42 and I-87; and future CCX intermodal terminal. As the region adapts to these changing conditions in an era of constrained resources, it must continue to balance freight mobility needs with passenger needs, environmental, social, and financial concerns; address rapidly rising maintenance costs on aging infrastructure; and recognize that neither the public nor private sectors – acting independently – have the necessary resources to fully address rising transportation system demands.

1.2 Organization of the Report

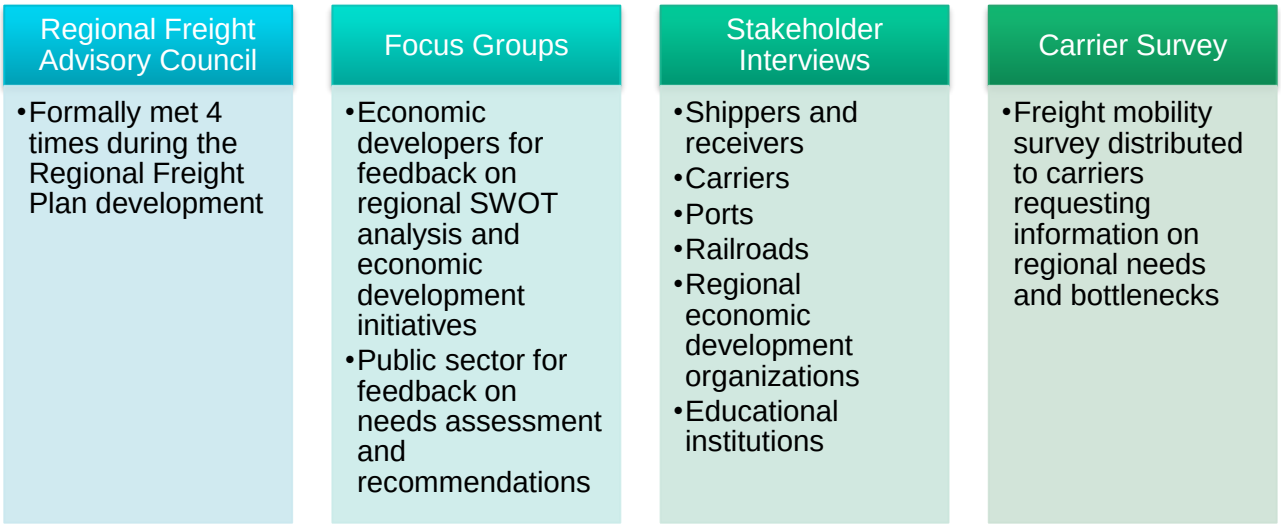
This report is organized into eight sections. **Section 1.0** provides an introduction to the Plan, including the Plan goals. **Section 2.0** provides an overview the Stakeholder Outreach process, including the development of the Regional Freight Advisory Committee (RFAC) to guide the study, two focus groups, stakeholder interviews and a carrier survey. **Section 3.0** describes the regional freight profile, including truck, rail, air, maritime and pipeline modal profiles, as well as an economic and industry profile. **Section 4.0** discusses the commodity flows and economic futures for the region. **Section 5.0** describes the logistics freight market assessment which includes a strengths, weaknesses, opportunities and threats (SWOT) analysis. **Section 6.0** identifies and assesses the regional needs on the Eastern North Carolina Priority Highway Freight Network (ENCPHFN), which was developed by starting from the statewide priority highway freight network and adding roadways that were deemed critical for regional freight movements and regional economic competitiveness. **Section 7.0** discusses the regional strategies developed from the study results and presents recommendation packages for implementation.

The report also contains six appendices: **(A)** RFAC Meeting Agendas and Minutes, **(B)** Focus Group Meeting Agendas and Minutes, **(C)** Freight Stakeholder Interview Guides, **(D)** Freight Stakeholder Interview Notes, **(E)** Freight Mobility Survey Instructions and Results, and **(F)** Regional Corridor Profiles on the ENCPHFN.

2.0 Stakeholder Outreach

The CS Team employed a four-part approach to stakeholder outreach for the study as described in the Public and Stakeholder Involvement Plan (PSIP) developed at the outset of the study (see Figure 2.1). Stakeholder outreach efforts included (1) convening a Regional Freight Advisory Council (RFAC), (2) assembling two targeted focus groups, (3) conducting 20 interviews with key private sector stakeholders, and (4) conducting a freight mobility survey.

Figure 2.1 Stakeholder Engagement to Inform the Plan



2.1 Regional Freight Advisory Council

The CS Team convened a Regional Freight Advisory Council (RFAC) to provide high level policy guidance on issues and strategies. The members of the RFAC are shown in Table 2.1. To select the RFAC members, the CS Team worked with the regional Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), and NCDOT, which served as the study Technical Committee (see Table 2.2). Collecting input from the Technical Committee, the CS Team created a council that included representatives from shippers, carriers, logistics providers, ports authority, county managers, chambers of commerce and economic development agencies, educational institutions and community groups, and others. The RFAC met in different locations around the study area: in Kinston for the project kickoff meeting (October 30, 2018), Greenville (January 10, 2019), Nucor Steel in Hertford County (April 10, 2019), and in Goldsboro (October 17, 2019). Many of the RFAC and Technical Committee Members also participated in the two focus groups. One of the key recommendations of this study is for the RFAC to continue meeting on a regular basis to help implement study recommendations and work closely with NCDOT and economic development agencies to promote economic growth in the region. Appendix A contains the RFAC meeting agendas and minutes, which includes the members of the RFAC and attendees for each meeting.

Table 2.1 Regional Freight Advisory Council (RFAC) Members

Name	Affiliation
Natalie Aman	ECU
Mark Angolia	ECU
John Chaffee	NC East Alliance
Charles Edwards	NCDOT
Heather Hildebrandt	NCDOT
Robert Hosford	NC Dept of Agriculture
Dana Magliola	NCDOT
Kim Maxey	New Bern MPO
Ray McKeithan	Nutrien, Inc.
Mathew Meyer	NC Community Colleges
Ann Lea Moore	NCRR
Simon Rich	Steven's Towing Company
Kevin Roberts	NC Chamber of Commerce
James Salmons	Upper Coastal Plains RPO
Larry Squires	MCAS Cherry Point
Andy Street	Hyster Yale
Allen Thomas	Global TransPark
Angela Welsh	Albemarle RPO
Brent Wooten	Mercer Inc.
Erika Zito	Cummings Diesel

Table 2.2 Eastern NC Regional Freight Mobility Plan Technical Committee

Name	Affiliation
Natalie Aman	ECU
Mark Angolia	ECU
Jennifer Collins	Goldsboro MPO
Marc Finlayson	Hwy 17/64 Association
Patrick Flanagan	Down East RPO
Eric Howell	East Carolina RPO
Eliud De Jesus	Mid-East RPO
Bob League	Rocky Mount MPO
Kim Maxey	New Bern MPO
Ryan Purtle	Greenville MPO
James Salmons	Upper Coastal Plains RPO

Name	Affiliation
Cathy Scott	Peanut Belt RPO
Angela Welsh	Albemarle RPO

2.2 Focus Groups

An important element of this study was convening two focus group meetings to collect input on:

1. Focus Group 1: Economic development and regional SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis.
2. Focus Group 2: Needs and recommendations.

The targeted focus groups for each of these meetings were:

- Local and state Government officials (including economic development officials such as Chambers of Commerce and economic development directors)
- Industry representatives, including shippers and carriers, and
- Local business leaders, including elected and appointed officials

The meetings included an update on project progress and facilitated discussions to allow focus group participants to provide insights into the local freight issues and concerns. The focus group meetings provided an opportunity to communicate the value of freight mobility and freight-based development, solicit input and feedback on freight movement opportunities and challenges and to discuss potential mitigation strategies. The first focus group included economic developers and was convened in Rocky Mount on June 4, 2019. There were 19 people in attendance. The second focus group targeting public stakeholders was convened in New Bern on August 21, 2019. There were 31 people in attendance (see Appendix B for meeting minutes).

2.3 Freight and Industry Stakeholder Interviews

The CS Team conducted over 20 interviews with freight stakeholders, about one third of which were in-person interviews and two thirds were telephone interviews. Table 2.3 shows the freight and industry stakeholders that were interviewed as part of this outreach effort. The CS Team distributed discussion guides (see Appendix C), in advance of each interview and compiled interview summaries. These interviews provided the CS Team with important insights for Eastern North Carolina freight transportation system needs and opportunities, as well as some of the region's key freight-intensive industries' use of the system and trends. Appendix D provides a summary of the findings from the interviews.

Table 2.3 Stakeholders Interviewed

Stakeholder	Contact Name	Stakeholder Type
Barnhill Contracting Company	Lee Cooper	General contracting – asphalt plants
Colonial Pipeline	Tom West	Pipeline
CSX Transportation	Kellen Riley	Class I railroad
Department of Agriculture	Robert Horsford	State government agency
Domtar – Plymouth Mill	Tom Howard	Manufacturing – pulp, paper and personal care products
Eastern Carolina University	Mark Angolia	University
Global TransPark	Allen Thomas	Industrial park / airport
Hyster Yale	Andy Street	Manufacturing – lift trucks
Mercer Transportation	Brent Wooten	Carrier - trucking
NC NE Alliance	John Chaffee	Economic development
Norfolk Southern	Justin Hahn	Class I railroad
Nucor	Jason Holmes	Manufacturing - steel
Nutrien	Ray McKeithan	Manufacturing – phosphate mining and fertilizers
Port of Morehead City	Chip Killmeier	Port
Schneider	John Bozec and Don Osterberg	Carrier – trucking and logistics services
Smithfield, Inc.	Mark Pahl	Pig farming, meat processing and pork products manufacturing
Southeastern Freight Lines (SEFL)	Leslie Hilhorst	Carrier – Less than truckload (LTL)
Stevens Towing	Simon Rich	Tugs, barges and marine transport services
U.S. Marine Corps Marine Corps Installations East	Emily Sylvester	Military
Wanchese Fish Company	James Roddy	Seafood harvesting, processing and distribution
Weyerhaeuser	Kevin Davis	Forestry, logging and wood products manufacturing
YRC Freight	Mike Bauth	Carrier – Less than truckload (LTL)

2.4 Freight Mobility Survey

The CS Team conducted a Freight Carrier Survey using a combination of direct calls to carrier managers and a carrier survey distributed to freight carriers in Eastern North Carolina. The survey included a map of the region with highways and intermodal facilities. Of the 10 carrier managers surveyed, two provided specific feedback. The remaining carriers indicated there were no bottlenecks of concern in Eastern North Carolina. Appendix E includes the survey package that was sent to carriers and a summary of the survey results.

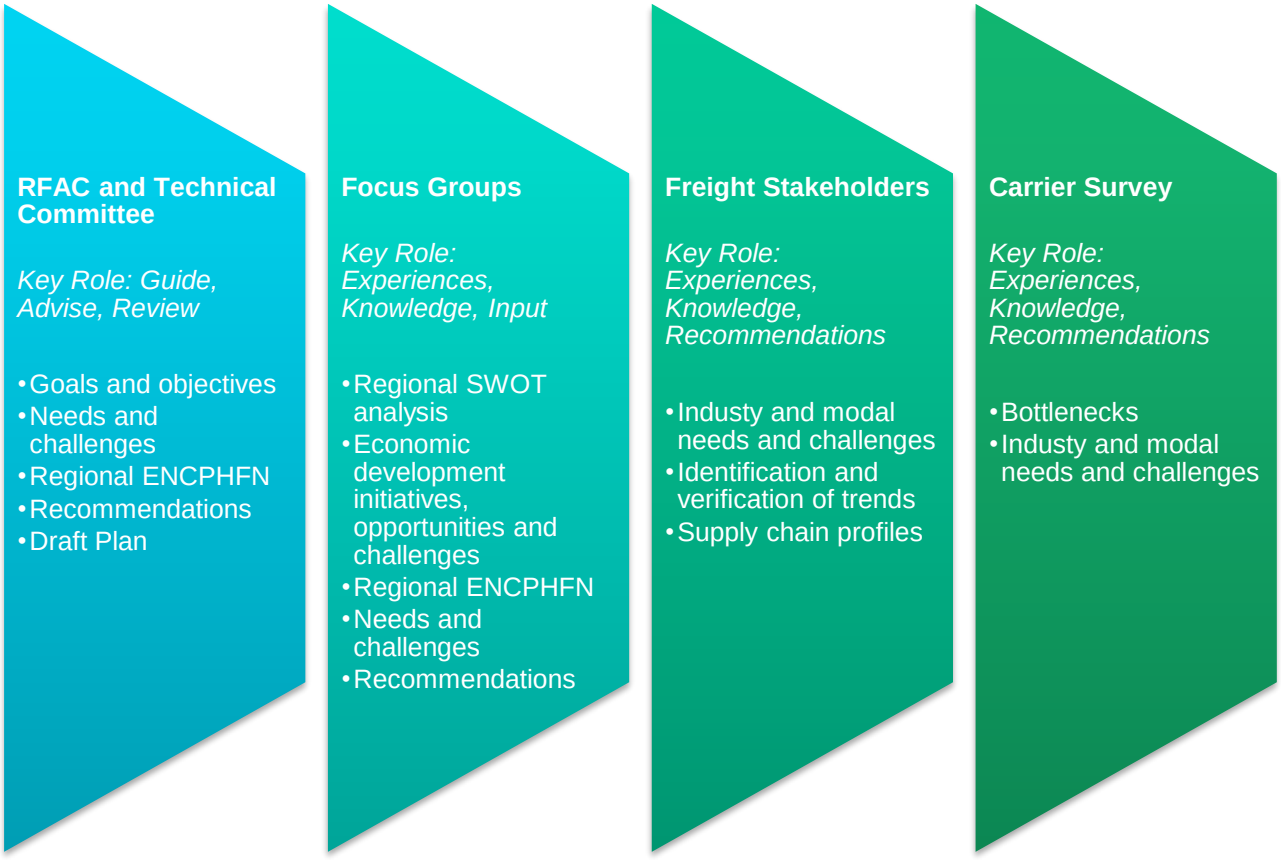
2.5 Summary

Throughout the development of the Eastern NC Regional Freight Mobility Plan, the regional planning organizations lead by the Greenville Urban Area MPO and NCDOT collaborated with a wide range of stakeholders including local, regional, and nationwide businesses, and private and public agencies to better understand the needs and issues faced by the users of the regional freight system, as well as the regional planning organizations and economic development organizations.

Successful development and implementation of the Regional Freight Mobility Plan requires continuing and strengthening the relationship between the regional planning organizations, NCDOT and the private- and public-sector freight community. Stakeholders have and will continue to play a critical role in identifying issues, prioritizing projects, and making investments in freight infrastructure and policy.

Figure 2.2 provides a graphic representation of the Plan's outreach elements, key roles and input. This diversity of engagement enabled the project team to identify potential growth opportunities, understand the unique challenges the Eastern North Carolina region, designate the regional priority freight network, identify needs and gaps in the freight transportation network, and make short-term and long-term recommendations.

Figure 2.2 Summary of Stakeholder Engagement – Role and Input



3.0 Regional Goods Movement Profile

This profile consists of five transportation modal profiles, an economic profile and industry supply chain profile that, taken together, comprise the Regional Goods Movement Profile and identify and evaluate the key elements of the regional freight transportation system in the 28-county study region. The five modal profiles including highway/trucking, railroads, maritime, air cargo and pipelines describe existing conditions, system deficiencies and future performance. This information will help the local and state planning agencies, the Regional Freight Advisory Council (RFAC) and other stakeholders build future strategies to promote freight and economic development for the region in the context of the changing state and global economy. This region of the state comprises diverse industries that rely on local talent and the multimodal transportation system to transport raw materials for production and to move finished products to market, competing in a global economic environment in which North Carolina products are shipped around the nation and the world.

3.1 Data and Methodology

The Study Team used much of the data from the NC Statewide Multimodal Freight Plan completed in 2017 for the FAST Act requirements. This included freight system performance data, demographic, land use and economic data, and freight system infrastructure data. These data were further supplemented by additional data and information from NCDOT, MPO and RPO planners, economic development officials, NC Ports, industry, transportation carriers, and other stakeholders through stakeholder meetings and interviews with local, state and industry stakeholders.

Information used to supplement the data collection and analysis included stakeholder outreach to local transportation planners, state and local officials, economic development organizations, industry officials from key manufacturers, port officials, transportation carriers, and logistics specialists. Using a combination of in-person interviews and conference calls, study team members collected additional information, including different types of industry operations and transportation requirements, manufacturing supply chains, military transportation logistics, transportation bottlenecks and deficiencies, and new opportunities to improve transportation operations and infrastructure in the region.

3.2 Highway/Trucking Profile

Highways comprise one of the key elements of the multimodal freight transportation system. The majority of goods transported in use the highway system for at least one leg of their trips. Based on 2017 data, there are approximately 26,000 centerline miles of roadways in the Eastern North Carolina Region. Of that total, about 67.6 percent is maintained by NCDOT with the remainder being maintained primarily by county and municipal governments.

3.2.1 Regional Priority Highway Freight Network

The Eastern North Carolina Priority Highway Freight Network (ENCPHFN) is the highway network that is most critical to freight transportation in the region. The starting point for the designation of the priority regional network is the statewide North Carolina Priority Highway Freight Network (NCPHFN) which was developed in the 2017 Statewide Multimodal Freight Plan and shown in Figure 3.2. The ENCPHFN was designated through a systematic, data-driven and stakeholder-informed process based on the same methodology used for the NCPHFN. This methodology used weighted metrics that measure economic

activity, goods movement, market access and connectivity, and support to key industries' supply chains. The evaluation process scored every highway segment based on these criteria, and the highway facilities that scored above the mean were added. Input from the RFAC, the regional planning organizations (MPOs and RPOs) and the focus groups, was reviewed and helped shape the final ENCPHFN. The ENCPFHN is shown in Figure 3.1.

Figure 3.1 Eastern North Carolina's Priority Highway Freight Network

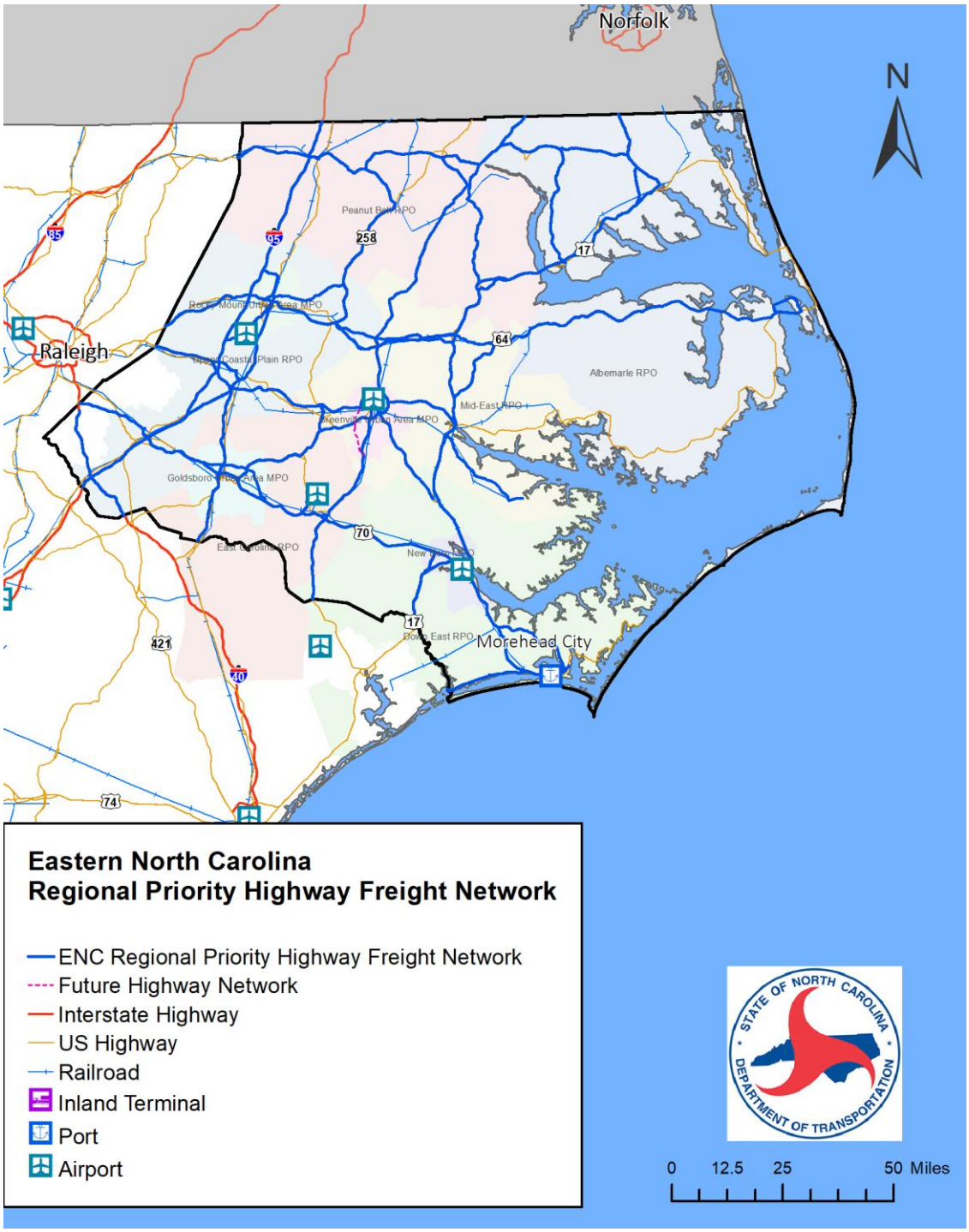
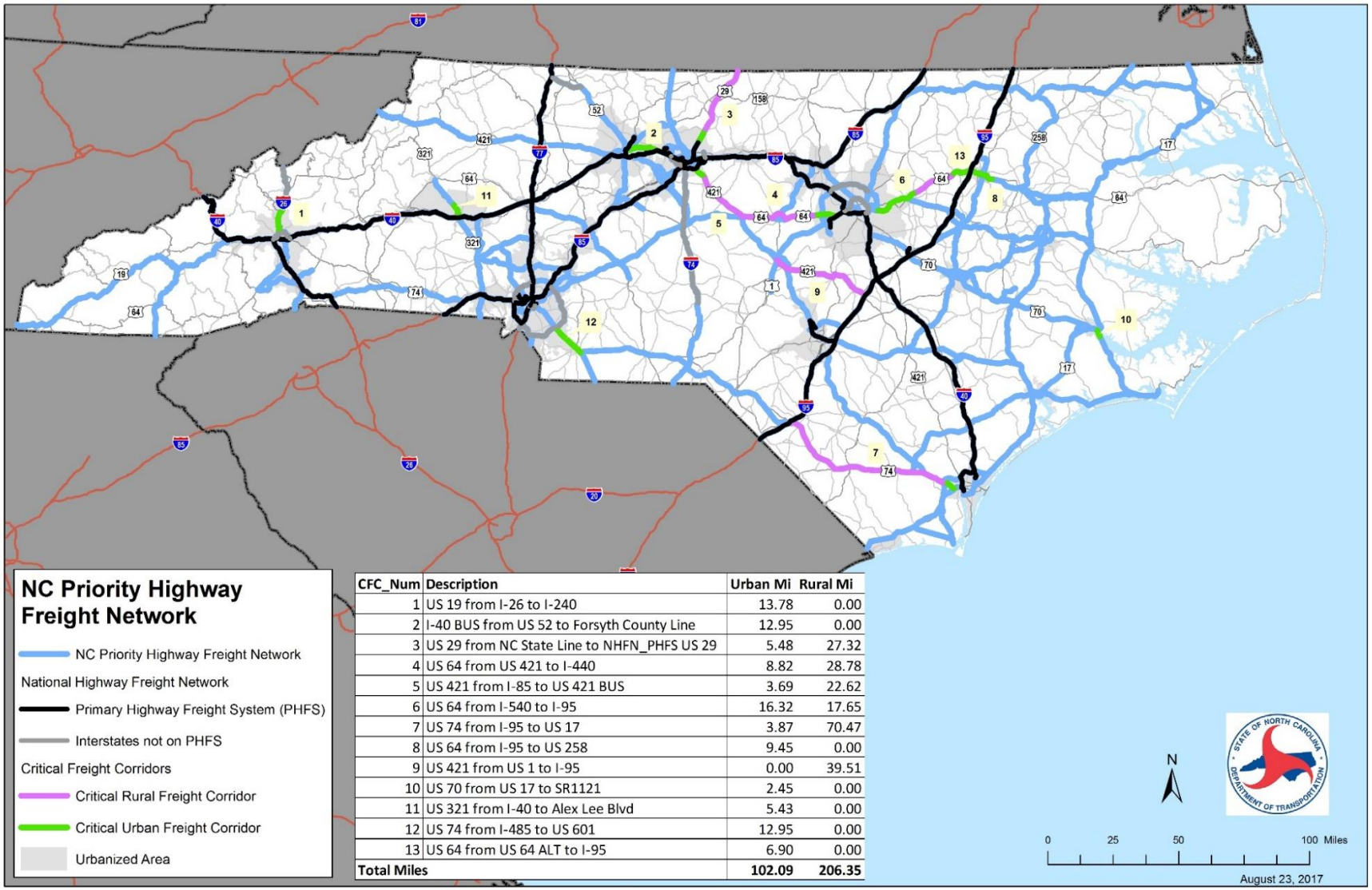


Figure 3.2 North Carolina's Priority Highway Freight Network



CFC_Num	Description	Urban Mi	Rural Mi
1	US 19 from I-26 to I-240	13.78	0.00
2	I-40 BUS from US 52 to Forsyth County Line	12.95	0.00
3	US 29 from NC State Line to NHFN_PHFS US 29	5.48	27.32
4	US 64 from US 421 to I-440	8.82	28.78
5	US 421 from I-85 to US 421 BUS	3.69	22.62
6	US 64 from I-540 to I-95	16.32	17.65
7	US 74 from I-95 to US 17	3.87	70.47
8	US 64 from I-95 to US 258	9.45	0.00
9	US 421 from US 1 to I-95	0.00	39.51
10	US 70 from US 17 to SR1121	2.45	0.00
11	US 321 from I-40 to Alex Lee Blvd	5.43	0.00
12	US 74 from I-485 to US 601	12.95	0.00
13	US 64 from US 64 ALT to I-95	6.90	0.00
Total Miles		**102.09**	**206.35**

Source: North Carolina Department of Transportation Statewide Multimodal Freight Plan, 2017.

3.2.2 System Use and Demand

Over 187 million tons of cargo were transported over highways in the study area, 94 percent of which by truck. Sixty percent represents through traffic, primarily on I-95. Most of the region's truck flows occur on I-95, with the highest volumes from Rocky Mount to Virginia (7,000-11.000 trucks/day). The largest non-interstate truck corridors are U.S. 64 and U.S. 70 with 5,000 and 3,000 trucks per day, respectively.

3.2.3 System Performance

Level of Service

Volume-to-Capacity (V/C) ratios on the Eastern North Carolina highway system are shown for the evening peak period for the 2015 base year (Figure 3.3). Much of I-95 through the study area is approaching capacity-constrained conditions, as indicated by V/C ratios exceeding 0.75. This is the most heavily utilized freight corridor in the region. Other congested areas are concentrated around Eastern North Carolina's four urban areas, or Rocky Mount, Greenville, Goldsboro and New Bern.

Safety

Between 2013 and 2017, a total of 6,584 truck-involved highway crashes occurred in the Eastern North Carolina Region with the total number of crashes increasing in each year between 2013 and 2016. Only five counties accounted for over half of all truck crashes in the region over the 5-year period, including Johnston, Pitt, Wayne, Nash, and Wilson. A heat map of truck crashes is developed by calculating the density of crashes per square mile (see Figure 3.4). Importantly, the truck crash heat map does not indicate that certain roadways pose a higher crash risk than others in the region. Rather, it indicates where crashes are clustered. From the analysis, crashes are primarily clustered along the Eastern North Carolina Region's primary freight corridors: I-95, I-40, I-795 and U.S. 264. The clustering of truck crashes along these routes is likely due to greater truck activity at those locations relative to other areas of the region.

At-Grade Crossings

In total, there are 344 highway at-grade rail crossings in the Eastern North Carolina Region. Using average annual daily traffic (AADT) from the Federal Railroad Administration Highway-Rail Crossing Inventory Database, the top 10 busiest crossings were identified and are shown in Figure 3.5. Most of these crossings are located along the Norfolk Southern (NS) railroad corridor that provides access to the Port of Morehead City. Three of the top ten crossings by AADT are located along the Coastal Carolina Railway (CLNA), which primarily serves agricultural commodities and provides access to the NS mainline, in the City of Greenville.

Highway-Rail Accidents

Since 2013, there were a total of 47 highway-rail accidents in the Eastern North Carolina Region, according to FRA data, 18 percent of the statewide total of 258 highway-rail accidents during the same period.

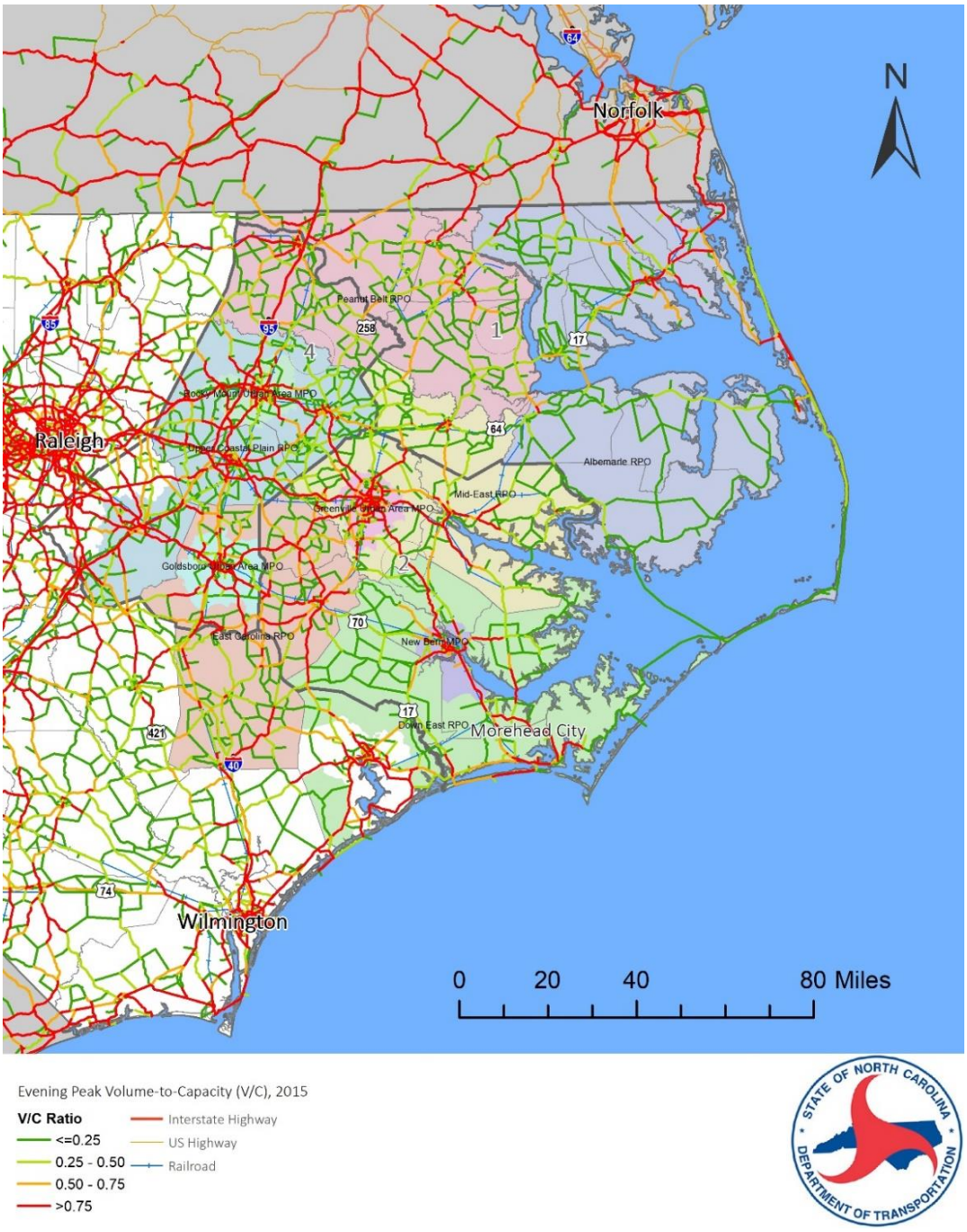
Pavement Conditions

Overall, pavements are in good condition across the region with nearly 61 percent of all roadways achieving a "Good" rating. While the majority of the Interstate system (nearly 83 percent) achieves a Good rating, the Secondary routes have the highest percentage of route mileage in "Poor" condition at 13.5 percent.

Bridge Conditions

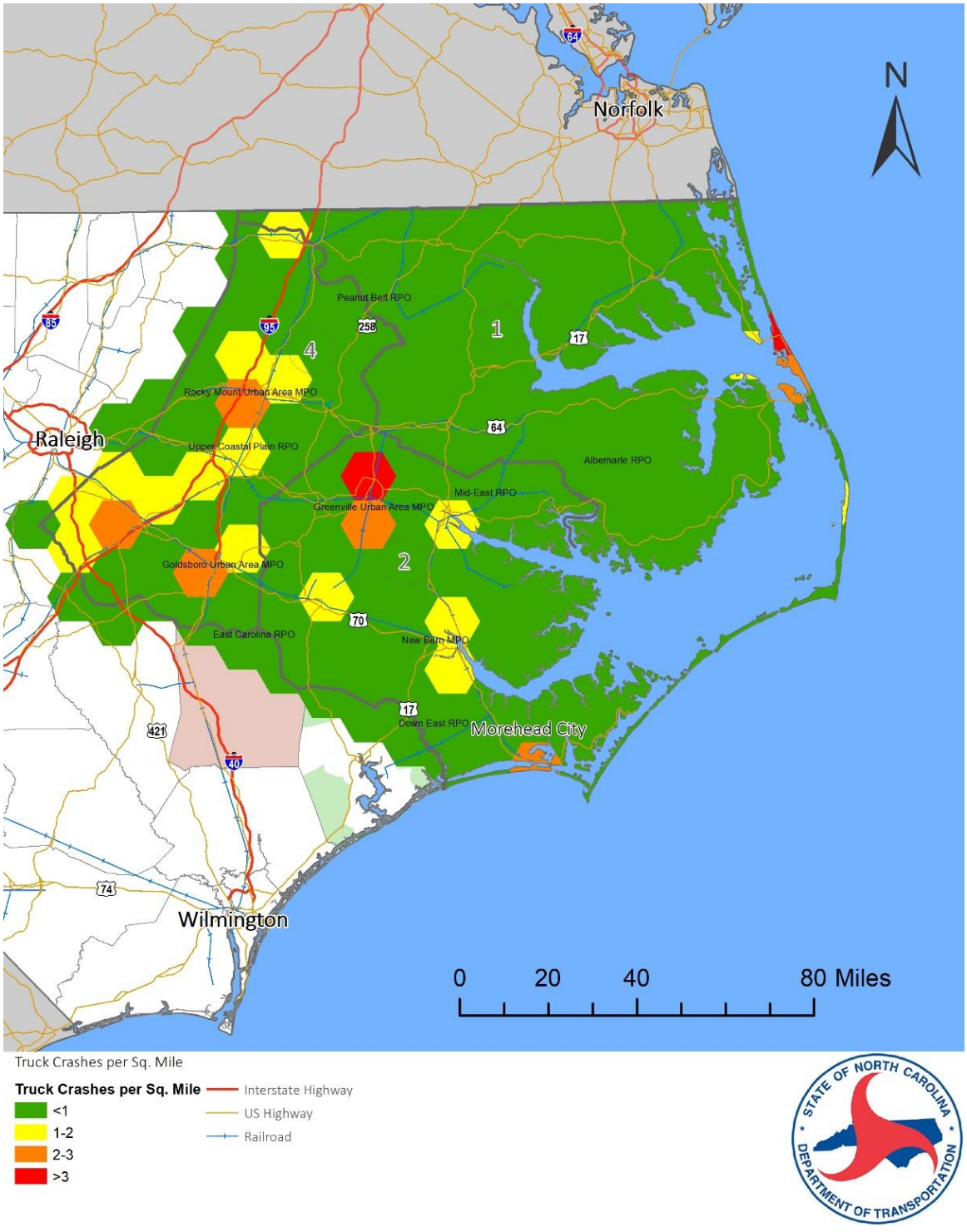
Bridge conditions can impact freight flows. This is evident when the locations of high truck volume routes are viewed in conjunction with the location of structurally deficient, functionally obsolete, or posted bridges. Most of the region's structurally deficient bridges are located in Beaufort, Johnson, Nash and Pitt Counties.

Figure 3.3 2015 Volume-to-Capacity Ratios, Evening Peak



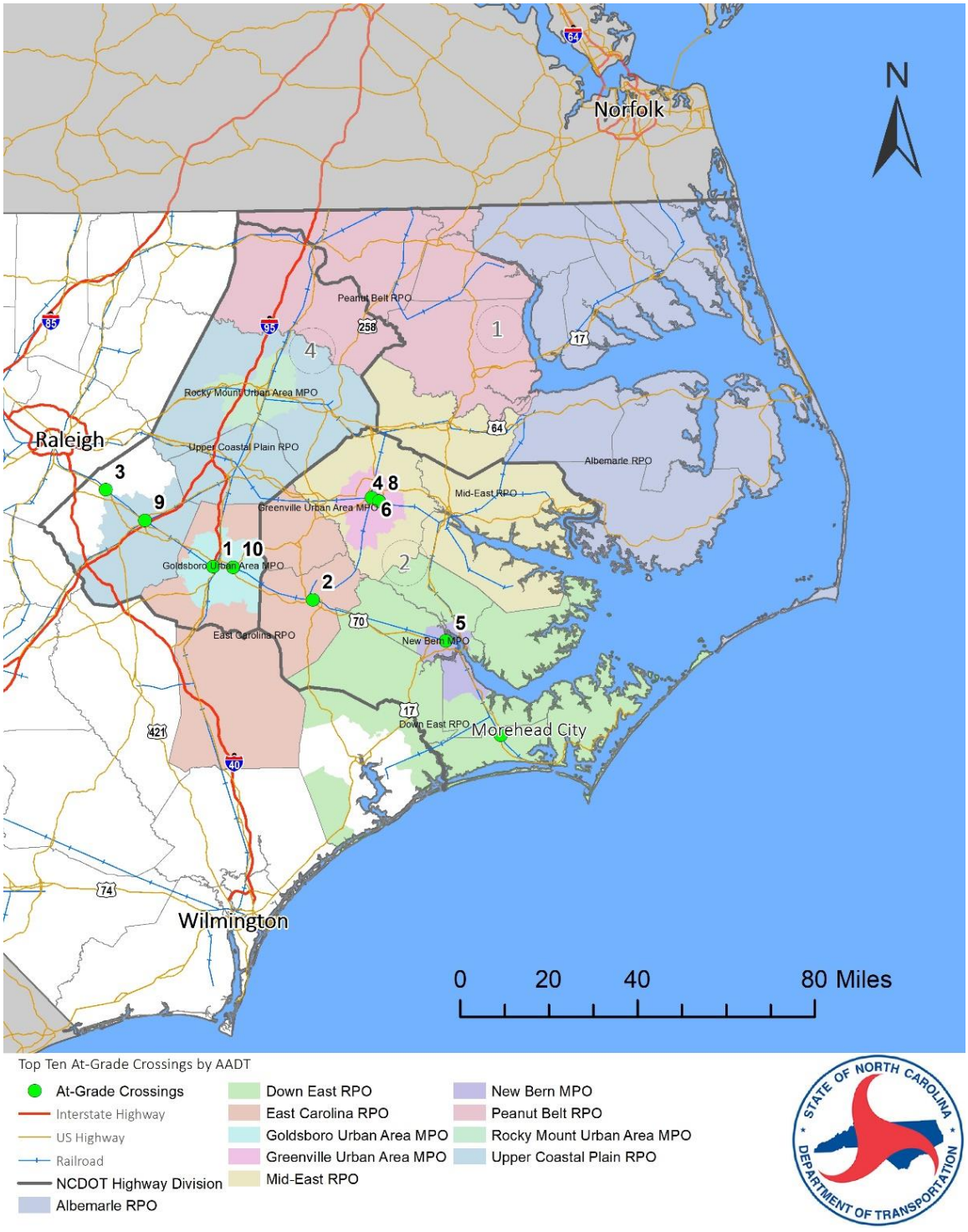
Source: NCDOT Travel Demand Model; Cambridge Systematics, Inc. analysis.

Figure 3.4 Truck Crash Heat Map



Source: North Carolina Department of Transportation; Cambridge Systematics, Inc. analysis.

Figure 3.5 Top Ten At-Grade Crossings by AADT



Source: Federal Railroad Administration Highway-Rail Crossing Inventory Database.

Future Interstate Highways

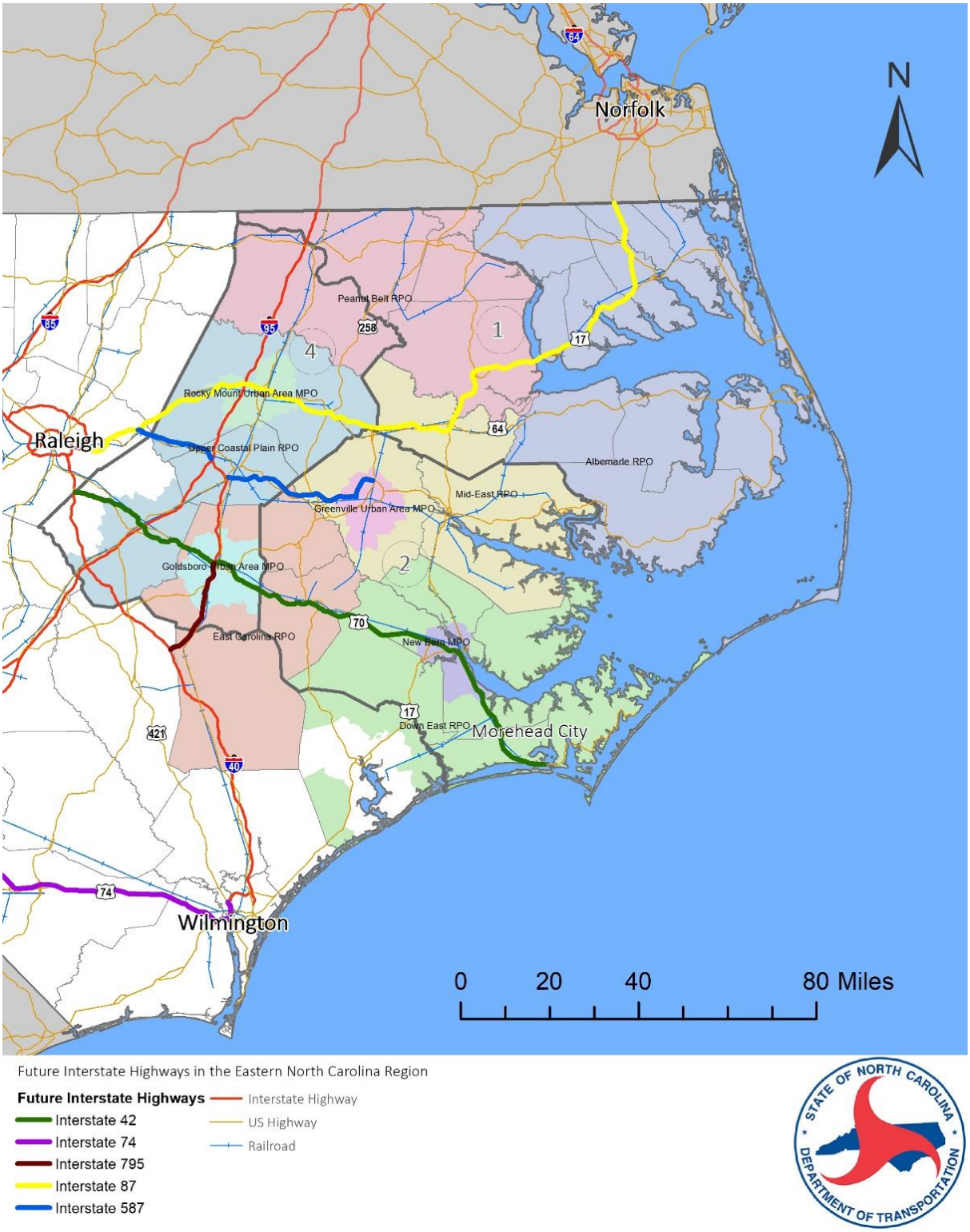
There are a number of interstate highways that are due to open in North Carolina over the next several years, including (1) the Raleigh-Norfolk Corridor/I-87, (2) U.S. 117/I-795, (3) U.S. 70 and (4) the I-73/I-74 North-South Corridor, as shown in Figure 3.6

As its name suggests, the Raleigh-Norfolk Corridor will connect the Triangle Region in North Carolina to the Hampton Roads Region of Virginia. Currently, there is no direct route between these two metropolitan areas. Within the Eastern North Carolina Region, Future Interstate 87 will follow a route along the current corridors for U.S. 64 and U.S. 17 that includes the City of Rocky Mount and Elizabeth City. The new highway will allow shippers in the Triangle and the Eastern North Carolina Regions greater access to the Port of Norfolk.

Future Interstate 795 will be extended along the existing U.S. 117 right-of-way to connect with I-40 near Faison in Duplin County. Extending I-795 to I-40 will decrease the distance (and corresponding average travel time) between the Port of Wilmington and the Eastern North Carolina Region, especially the Cities of Goldsboro and Rocky Mount. This will be especially useful for shippers and carriers transporting containers between the proposed rail intermodal terminal at Rocky Mount and the Port of Wilmington. Given the CSXT and NCDOT rail line that exists between these two locations, I-795 can serve as alternative modal route increasing the redundancy and resiliency of the multimodal freight system.

The City of Greenville is the largest city in North Carolina without direct access to the Interstate highway system. Future Interstate 587 will begin in Greenville and follow the current routing of U.S. 264. It will terminate at Future Interstate 87 near Zebulon in the Triangle Region. Accessibility to the Port of Morehead City from the Triangle and Eastern North Carolina Regions will be improved by the opening of I-42. Interstate 42 will utilize the existing U.S. 70 right-of-way to connect the Port of Morehead City to I-40 near Garner.

Figure 3.6 Future Interstate Highways



Source: FHWA Office of Planning, Environment and Realty; North Carolina Statewide Freight Plan, 2017; Regional Transportation Alliance, http://letsgetmoving.org/priorities/congestion-relief/interstate-87/.

3.3 Railroad Profile

3.3.1 Railroad System

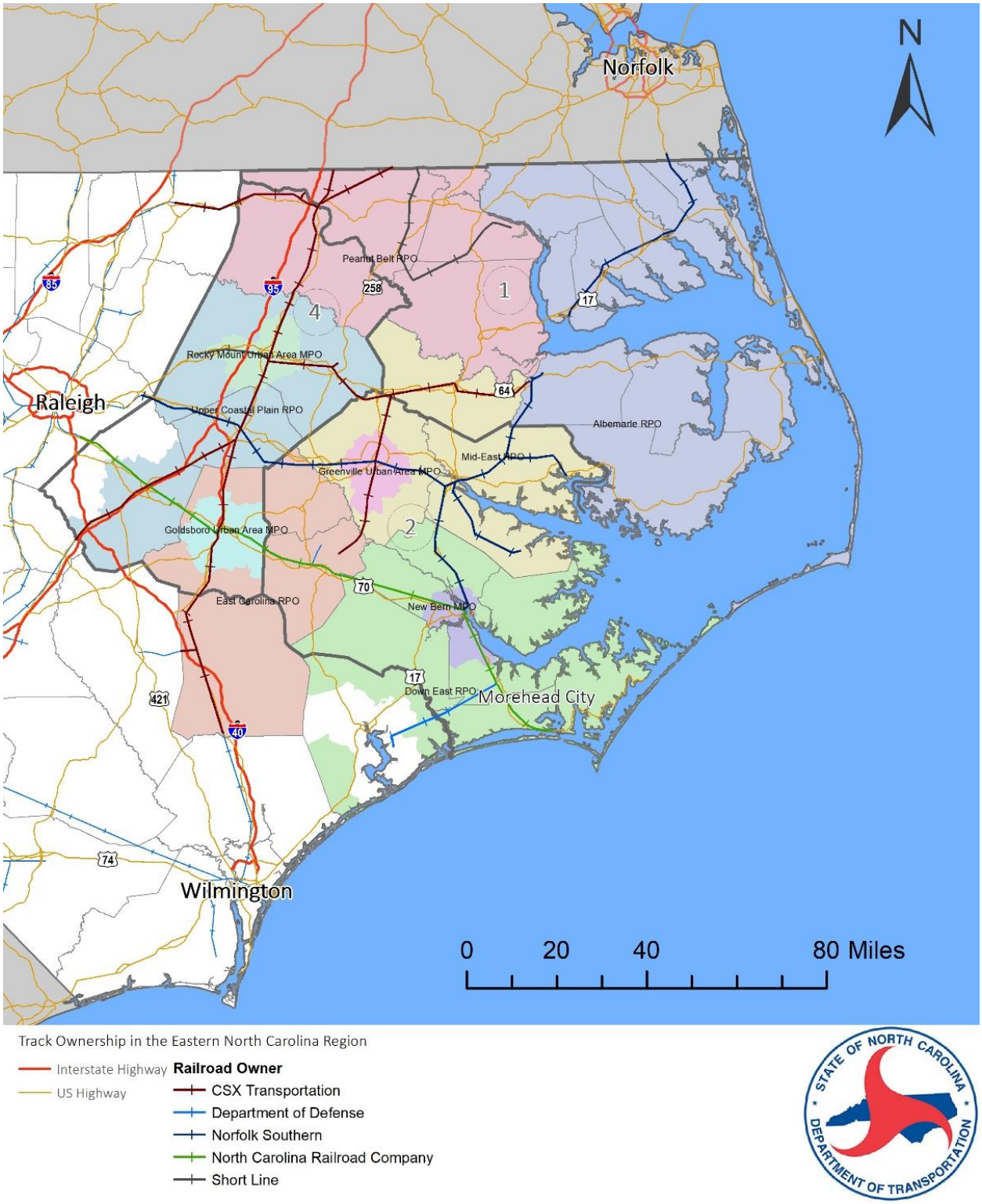
Today there are nearly 800 miles of railroad in the Eastern North Carolina Region, serving each county in the region (see Figure 3.7). There are two Class I railroads – Norfolk Southern (NS) and CSX Transportation (CSXT) – and 3 short line railroads, including the North Carolina and Virginia Railroad (NCVA) which is owned by Rail America, Inc., the Coastal Carolina Railway (CLNA), and the Chesapeake & Albemarle Railroad (CA).

In addition to the Class I and short line railroads, the Department of Defense and the North Carolina Railroad (NCRR) Company also own rail lines throughout the region. Approximately 137 miles of the NCRR corridor are within the Eastern North Carolina Region. NS operates along the corridor through an operating and maintenance agreement.

The freight rail network in Eastern North Carolina provides services to ports, power plants, mines, military installations, and industries including agriculture, forestry, plastics, furniture, food products, and chemicals. The regional rail network includes three classification yards, a deep-water port, and numerous transload facilities. In addition to the existing rail facilities in the region, CSX is planning an intermodal terminal called the Carolina Connector Intermodal Rail Terminal (CCX) in Rocky Mount, North Carolina.

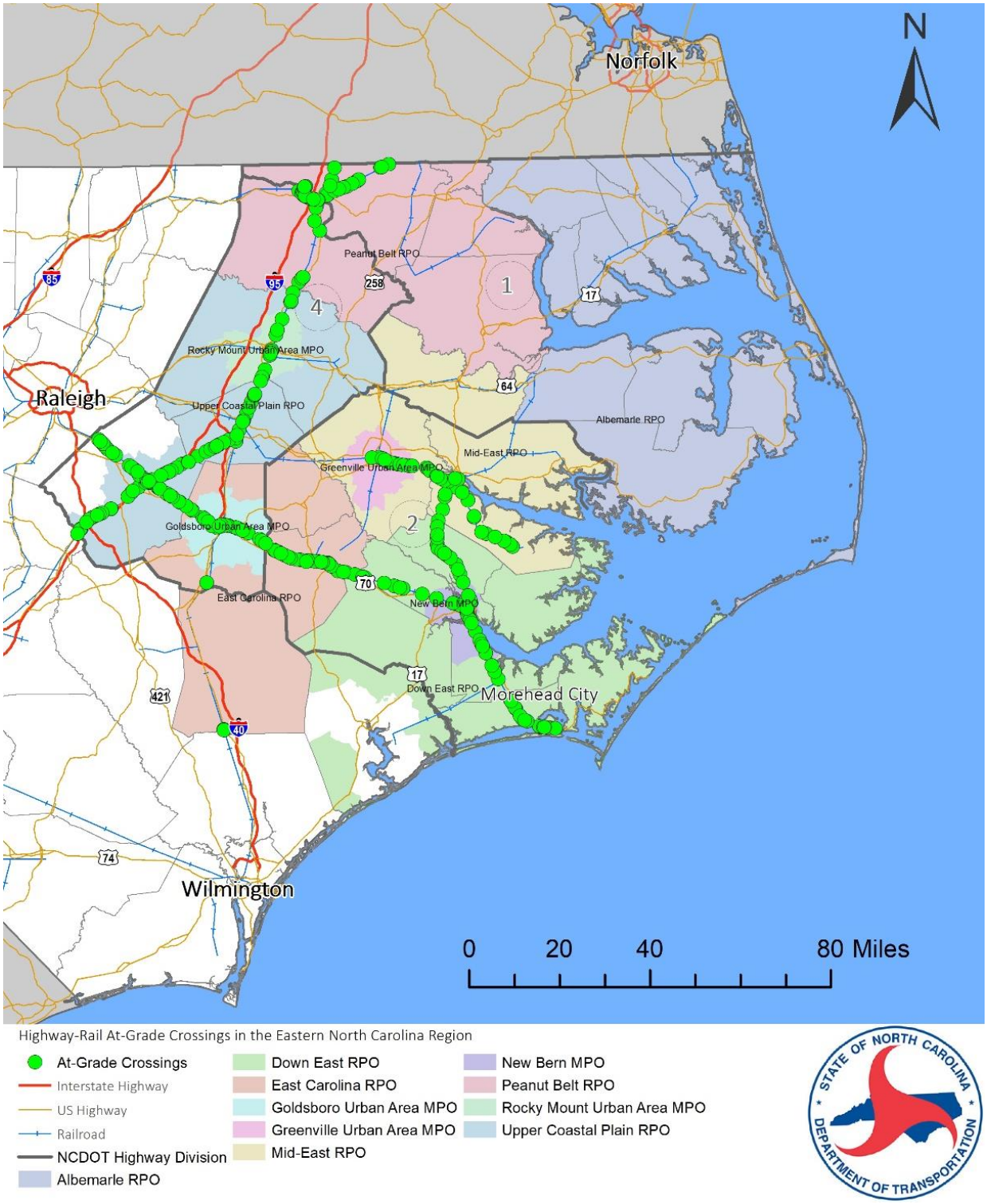
At-grade-level rail crossings have the potential to impose significant delays to trucks as they wait for trains to pass. In addition, trucks idling at crossings emit more pollutants especially as they must accelerate from a complete stop. In total, there are 344 highway at-grade rail crossings in the Eastern North Carolina Region, as shown in Figure 3.8.

Figure 3.7 Rail Corridors in the Eastern North Carolina Region



Source: North Carolina Department of Transportation.

Figure 3.8 Highway-Rail At-Grade Crossings in the Eastern North Carolina Region



Source: Federal Railroad Administration Highway-Rail Crossing Inventory Database.

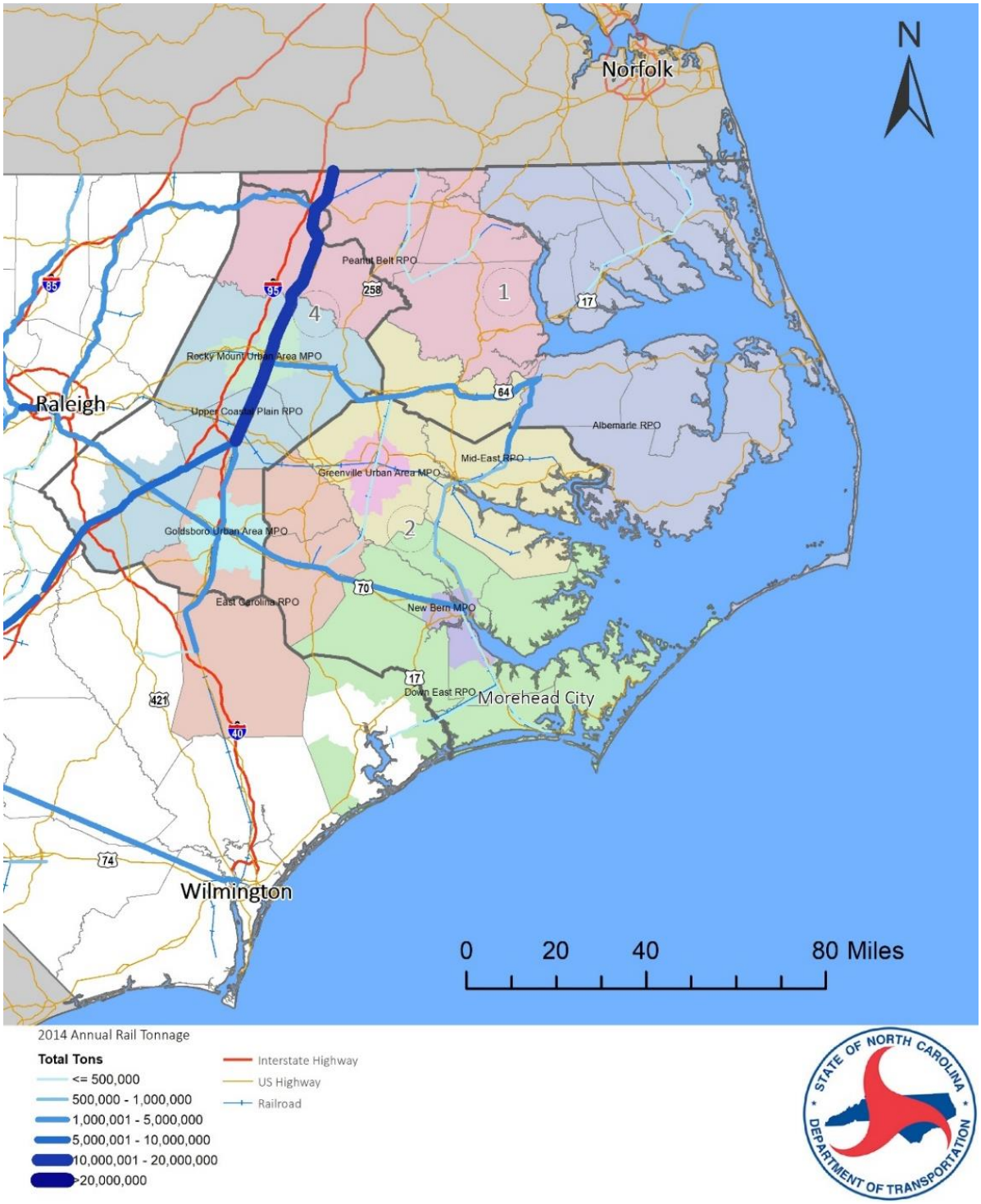
3.3.2 System Use and Demand

Using data on average daily train volumes from the Federal Railroad Administration (FRA) Highway-Rail Crossing Inventory Database, the busiest rail corridor in the Eastern North Carolina Region is the CSX A-Line, which proceeds north-south through the study area (largely parallel to I-95) and bisects Rocky Mount. Based on the FRA data, this corridor carries about 17-29 trains per day. Portions of the CSXT A-Line are estimated to carry nearly 12.4 million tons, including through rail flows, on an annual basis as shown in Figure 3.9. The CSXT A-Line primarily carries through traffic and it is an important route for accessing both the Port of Norfolk and major consumer markets in the Mid-Atlantic and Northeast.

The east-west Class I lines operated by CSXT and NS carry smaller, but significant, volumes. For example, the NCRR corridor operated by NS, which connects to New Bern and Morehead City, was estimated to transport approximately 2.4 million tons of goods, including through flows, on an annual basis. The Class I branch lines provide important connections to national and international markets for industries in the Eastern North Carolina Region.

The predominant commodities transported by rail to/from the region primarily consist of bulk goods such as fertilizers, cereal grains, gravel, nonmetallic minerals, and basic chemicals. Bulk commodities are typically transported by rail and barge.

Figure 3.9 Annual Tonnage on Eastern North Carolina Railroads, 2014



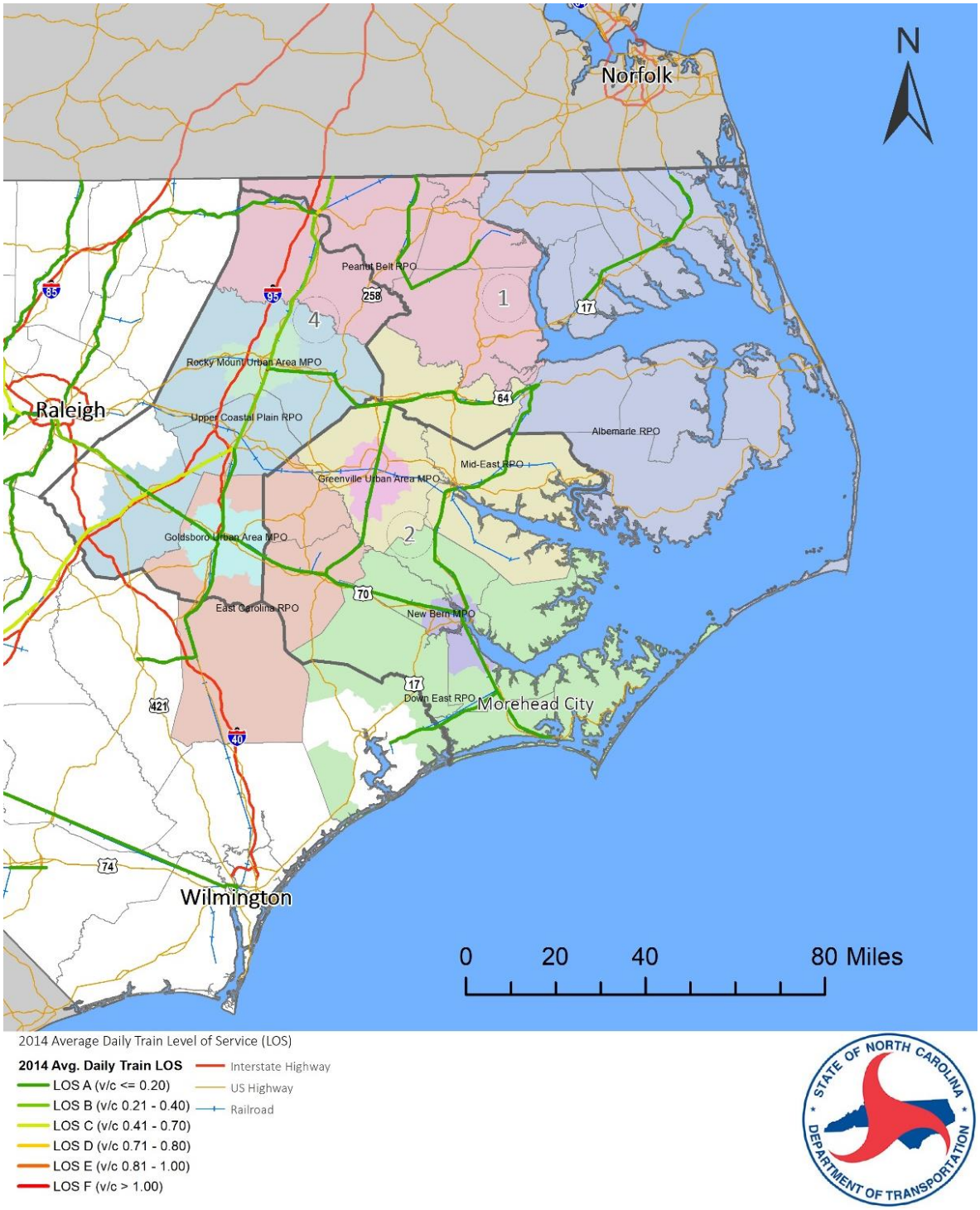
Source: 2014 Confidential Carload Waybill Sample for North Carolina; Freight Analysis Framework version 4 (FAF4) Database; Oak Ridge National Laboratory's Rail Network based TRANSCAD Model for Assignment; Amtrak website; North Carolina Department of Transportation, North Carolina Statewide Multimodal Freight Plan: Rail Profile, 2017.

3.3.3 Level of Service

Using a methodology originally developed for the Association of American Railroads' (AAR) National Rail Freight Infrastructure Capacity and Investment Study, the NCDOT methodology first estimates the capacity of rail lines throughout the State using information on the number of tracks and signal system type. Through the combination of data on origin-destination commodity flows and information on typical train operations (train length by type of train service), the NCDOT methodology then estimates daily train volumes by mainline segment. These volumes are in turn compared to the estimated physical daily train capacity of each segment. Similar to the measurement of Level of Service (LOS) on highways, the ratio of estimated train volumes against available capacity provides an estimate of LOS for each segment of the rail network.

The V/C ratios are expressed as level-of-service (LOS) grades for mainline rail corridors in the Eastern North Carolina Region (see Figure 3.10). The majority of the system has sufficient unused capacity to accommodate maintenance work and recover quickly from incidents such as weather delays or crashes. The most challenged portion of the Eastern North Carolina rail network is the CSX A-line, portions of which exhibit V/C ratios between 0.41 and 0.70, indicating an LOS C rating.

Figure 3.10 Average Daily Volume-to-Capacity Ratio on Rail Mainlines, 2014



Source: 2014 Confidential Carload Waybill Sample for North Carolina; Freight Analysis Framework version 4 (FAF4) Database; Oak Ridge National Laboratory's Rail Network based TRANSCAD Model for Assignment; Amtrak website; North Carolina Department of Transportation, North Carolina Statewide Multimodal Freight Plan: Rail Profile, 2017; Cambridge Systematics, Inc. analysis.

3.3.4 Trends and Implications for Rail Growth

Though the NCDOT Statewide Multimodal Freight Plan predicted that through-rail traffic would not change significantly in terms of routes, there was an expected increase in freight volumes originating in North Carolina destined for locations outside of the state.

The automotive industry has greatly expanded in several Southeastern states including South Carolina, Georgia, Alabama, Tennessee. While North Carolina has not shared in this success, the State continues to actively pursue opportunities with the automotive industry and related products.

North Carolina is one of the largest rubber import states in the U.S., second only to Louisiana. Rubber is transported from the Port to tire manufacturers in the state by truck and rail. Organic grain for feed another growing import commodity coming from Turkey/Morocco (185k tons) which is transported by rail and some truck serving NC customers feed mills (Hasboro, Steley's), with plans to double whole grain imports.

The Port of Morehead City is operating as a rail head for the military for loading railcars to go out to California for exercises. Camp Lejeune rail was damaged by Hurricane Florence, so Morehead City is being used instead.

Exporting soybeans is being explored as a new business opportunity due to excess U.S. capacity, according to talks with Nutrien and their warehouse capacity for dry bulk at the port. Soybeans would be exported to Argentina for crushed soybean byproducts. There is demand for an East Coast outlet for soybeans and whole grain.

The Port conducted a soybean exercise using 350 NS rail cars, which included loading a ship with soybean meal to Europe. This would mostly be a rail movement, although some barge discussions are also underway. Projections included one 40,000 ton ship every month from September to May (winter), which would effectively complement Nutrien's current fertilizer market. Warehousing becomes important when shipping in smaller lots.

Intermodal rail traffic throughout the Eastern North Carolina Region will be impacted by the construction of the CCX terminal in Rocky Mount. Located on the CSXT A-Line, the CCX rail intermodal terminal will primarily serve shippers in the Triangle and the Eastern North Carolina regions. The CSX operational model shifted from hub and spoke operations to scheduled railroading. It will transfer truck trips to rail, provide shipper savings, and add jobs and economic development opportunities. It will provide the Port of Wilmington with rail intermodal service. The anticipated construction timeline is 18-20 months and construction began in 2019. CSX will operate the terminal for initial 9-year term and provide railroad service to the terminal, including switching to CCX. NCDOT will maintain highway access to the facility, including direct access to I-95.

3.4 Marine Port Profile

Eastern North Carolina includes two deep-water ports and the 4 river ports along the Intracoastal Waterway System. According to the North Carolina Ports 2018 Economic Impact Study[2], North Carolina ports contribute approximately $15.4 billion annually to the state's economy. This contribution is constituted by goods moving through the ports, with $12.9 billion attributed to the Port of Wilmington and $2.5 billion attributed to the Port of Morehead City.

3.4.1 Inventory of Marine Assets

Deepwater Ports

Though the Port of Wilmington is outside of the study area, it was included in the analysis because it impacts the regional and statewide multimodal freight system. With 284 acres, the Port of Wilmington is served by CSXT and Wilmington Terminal Railroad (WTRY), handles containers, bulk and break-bulk cargo, and features refrigerated storage capabilities. Located 26 miles up the Cape Fear River, the Port of Wilmington is constrained by a 42-foot channel. At 250 acres, the Port of Morehead City has a 45-foot channel from the sea buoy. It is served by NS (on the NCRR) and CLNA railroads, has nine berths with approximately 5,500 feet of wharf and handles both breakbulk and bulk cargo at its existing facilities. Radio Island, which is part of the Port of Morehead City, is located across the Newport River from the port and includes approximately 150 acres of land suitable for port industrial development.

River Ports

Aurora is located in Beaufort County along the Pamlico River. The port is owned by the Nutrien company which uses the facility to transport phosphate from the nearby mine to the Port of Morehead City[3]. Cofield, located in Hertford County along the Chowan River handles scrap metal for the Nucor steel plant, accessible by rail via the North Carolina Virginia Railroad and by highway via SR 1400. Edenton is on the Chowan River and also handles fertilizers, forest products (i.e., lumber, logs, and wood chips), slag, primary iron and steel products, primary non-ferrous metal products, fabricated metal products, and waste/scrap. The Knobbs Creek Deepwater Barge Port is located in Elizabeth City.[4] The port has a water depth of 30 feet with direct access to shipping traffic lanes through the Albemarle Sound into the Atlantic Ocean.

Neighbor Ports

The **Port of Virginia** comprises the Norfolk International Terminals, Virginia International Gateway, Newport News Marine Terminal, and Portsmouth Marine Terminal. It handles both containers and dry and bulk

[2] North Carolina Ports 2018 Economic Impact Study, by the Institute for Transportation Research and Education at NC State University for the NC State Ports Authority https://ncports.com/wp-content/uploads/2019/01/2018-NC-Ports-Economic-Contribution-Study.pdf

[3] https://www.mining-technology.com/projects/aurora-phosphate-mine/

[4] http://elizabethcitypasquotankedc.com/property-finder/barge-sites/

commodities including coal, petroleum, chemicals, and ethanol. With a depth of 50 feet, it is one of the deepest ports on the east coast due to the naval facilities in the region.

The **Port of Charleston** is 16 miles from the open ocean and is maintained at a depth of 45 feet with plans to increase its depth. There are air draft restrictions (bridges) to reach some of the terminals. The port is located approximately 2.5 miles from the Interstate highway system and is served by both CSX and NS with on-terminal rail yards at two locations. It serves both containerized and bulk cargo.

The **Port of Savannah** is approximately 20 miles from the open ocean and is maintained at a depth of 42 feet, but the harbor is currently being deepened to 47 feet[5]. The Garden City Terminal primarily handles containerized cargo and consists of 1,200 acres with 9,693 feet of berth area for containerized cargo, 1.2 million square feet of warehousing, and 3,378 feet of rail sidings.[6]

3.4.2 Port of Morehead City Activity/Demand

The Port of Morehead City is one of the deepest ports on the East Coast of the United States and is located only four miles from the ocean. The port is served by rail and truck; it sees a ship approximately once every three days and a barge daily. The commodities imported at the Port of Morehead City over the past five years include DRI (direct reduced iron) and ores, rubber, metal products, scrap metal, sulfur, rail for railroads, dimensional lumber, asphalt, and grain. On the exports side, phosphate, woodchips, oyster rock, metal products, aircraft parts, dry/liquid fertilizers, and military materiel are the top commodities. Figure 3.11 charts the import and export volumes at the Port of Morehead City between 2007 and 2017.

Figure 3.11 Import and Export Tonnage at the Port of Morehead City

Source: U.S. Army Corps of Engineer Waterborne Commerce Statistics Center, https://usace.contentdm.oclc.org/digital/collection/p16021coll2/id/1484/rec/1.

[5] http://gaports.com/about/savannah-harbor-expansion-project

[6] http://www.gaports.com/portofsavannah/GardenCityTerminal.aspx Accessed 9/6/2016.

3.4.3 Port Challenges

One constraint to the movement of goods from inland to the Port of Morehead City is the rail line through downtown Morehead City. There are private marinas adjacent to the port. Because the train must travel through a more densely populated area, it must travel at slower speeds. In addition, multiple at-grade crossings may delay trucks as they serve the port terminals.

Related to this constraint are conflicts between the tourism industry and the logistics industry. While local communities support the port, its location near tourist attractions (e.g., state parks, beaches, private marinas, vacation homes, etc.) sometimes results in conflicts with seasonal residents. Furthermore, residential and commercial development has occurred on Radio Island, limiting the port's ability to should expand operations of its facilities at that location should a future opportunity become available. As the tourism industry is an important part of the local economy, this constraint will remain for the foreseeable future as both industries must share the harbor's resources.

Another important challenge that the port is facing is the need for dredging to fully restore the outer channel to its advertised 45 feet. Operating constraints at the Port of Morehead City were also investigated as part of the *Eastern Infrastructure Study*. The study determined that the port is currently not well positioned to handle containerized goods and significant investments would be required to allow it to compete for such cargoes. Although the channel is relatively deep at 45 feet with three berths of equivalent depth, the quay lengths are not sufficient to accommodate container ships of 5,000 TEUs or more. The port's other berths have estimated depths ranging from 35 to 41 feet, sufficient to accommodate bulk and breakbulk ships[7].

Radio Island is located east of and adjacent to the main port area and has been used for liquid bulk activities in the past and retains infrastructure for such cargo. However, residential development has occurred on a portion of the island, introducing an incompatible land use into this industrial hub that may impact its ability to increase operations in the future.

3.4.4 Port of Morehead City Future Growth

The predicted growth is driven by a few key commodities, including agricultural products, basic chemicals, animal feed, waste/scrap, and base metals.

Based on the analysis of FAF4 data, waterborne commerce throughout the Eastern North Carolina Region is projected to grow at a rate of approximately 1.1 percent annually. Applying that growth rate to the current tonnage at the Port of Morehead City as captured by the U.S. Army Corps of Engineer Waterborne Commerce Statistics Center implies that total volumes may reach nearly 2.75 million tons by 2025 (see Figure 3.12). This would mark a return to historic activity levels of the Port of Morehead City.

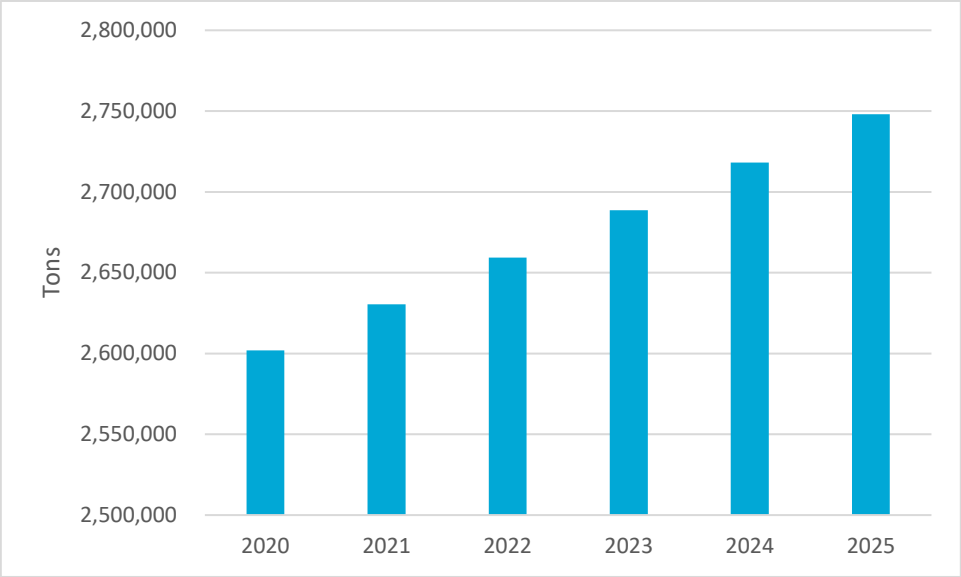
Dimensional lumber from Sweden is a growing import for the port as manufacturers import lumber to the East Coast rather than ship domestic lumber from the Pacific Northwest. Organic grain imported from Turkey and Morocco for animal feed is another growth opportunity. There are more opportunities for rubber growth given the development of Triangle Tire manufacturing facility near Rocky Mount[8].

---

[7] Port Business Case Study, report prepared for the North Carolina State Ports Authority, February 2011, pp. 1-11.

[8] Davis, C. "Tire plant site work nears end," Rocky Mount Telegram, September 24, 2018, http://www.rockymounttelegram.com/News/2018/09/24/Initial-work-on-tire-plant-moves-along.html, Accessed February 8, 2019.

Figure 3.12 Future Growth at the Port of Morehead City



Source: U.S. Army Corps of Engineer Waterborne Commerce Statistics Center; Freight Analysis Framework version 4.1; Cambridge Systematics, Inc. analysis

3.5 Air Cargo Profile

3.5.1 Air Cargo Assets

While Eastern NC is home to a significant amount of freight activity, very little of it is provided via air – less than 1 percent of all North Carolina air cargo occurs in the Eastern NC region. There are six airports with cargo activity in Eastern North Carolina. Of these, three provide commercial service and general aviation and three provide general aviation only. In 2017 these six airports contributed more than $16 billion in economic output, 8,600 jobs, $344 million in personal income, and $49 million in state and local tax revenues.[9] Figure 3.13 shows the location of all the airports in the region.

Eastern NC Airports with Air Cargo in 2018

COMMERCIAL SERVICE AIRPORTS

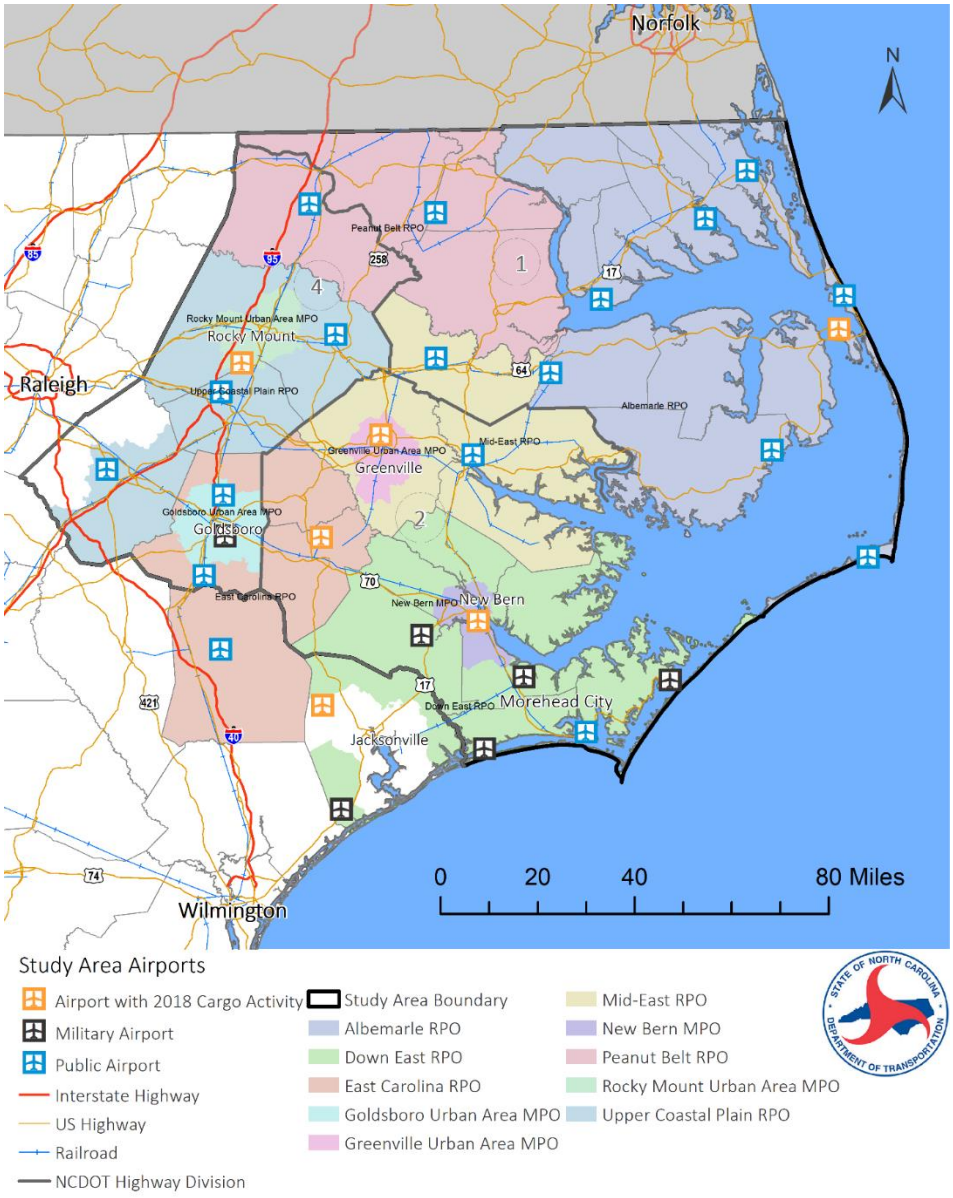
- Pitt-Greenville Airport (PGV)
- Albert J. Ellis (OAJ)
- Coastal Carolina Regional Airport (EWN)

GENERAL AVIATION AIRPORTS

- Kinston Regional Jetport (ISO)
- Dare County Regional Airport (MQI)
- Rocky Mount-Wilson Regional Airport (RWI)

[9] "North Carolina: The State of Aviation, What Aviation Means to Our Economy," NCDOT, January 2019, https://www.ncdot.gov/divisions/aviation/Documents/state-of-aviation.pdf. Accessed 2/25/2019.

Figure 3.13 Eastern North Carolina Airports

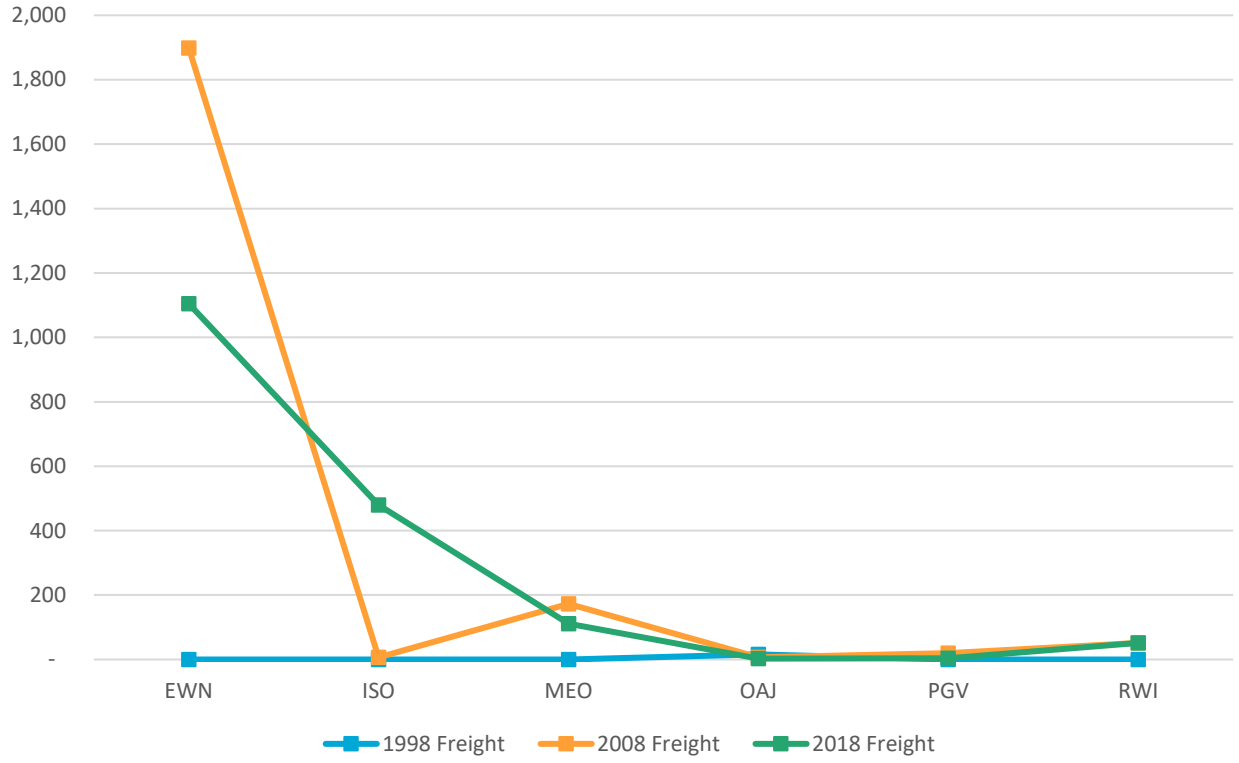


3.5.2 Trends and Implications for Growth

Figure 3.14 below shows the tons of air cargo at each airport in 1998, 2008, and 2018. Other than the Kinston Regional Jetport and Rocky Mount-Wilson Regional Airport, air cargo activity has declined at most other eastern North Carolina airports.

One of the greatest challenges for growth of air cargo activity in eastern North Carolina is the limited industrial development near the airports and the expense to ship via air. Additionally, the relative proximity of many eastern North Carolina municipalities to the Raleigh-Durham International Airport (RDU) and the Wilmington International Airport (ILM) provide local industry with other options that may have more frequent service options. However, continual recruitment of industry in strategic locations such as the Global TransPark is important to attract businesses to the region.

Figure 3.14 Historic Freight (tons) at Eastern NC Airports



Source: BTS TranStats Database, 2018.

The Global TransPark (GTP) was originally built around a multimodal transportation network, including Kinston Regional Jetport (capable of handling international flights), undeveloped acreage surrounding the site, proximity to military bases, and the potential for highway, rail, and deep-water port access. GTP is located approximately 50 miles away from I-95 and approximately 46 miles to I-40, making it difficult for trucks to quickly access the site from an interstate highway. LGM Enterprises is planning to launch Jetstream and operate a state-of-the-art electrostatic paint and coating facility at GTP.[10]

Despite the slow projected growth of the GTP, the facility has served an important role during natural disasters such as the recent impacts of Hurricane Florence (immediately followed by tropical storm Michael).

[10] "Gov. Roy Cooper: 145 new jobs are coming to Global Transpark in Kinston," WNCT.com, December 20, 2018, https://www.wnct.com/news/local-news/gov-roy-cooper-145-new-jobs-are-coming-to-global-transpark-in-kinston/1668857693. Accessed 2/27/2019.

Following Hurricane Florence (2018) and Hurricane Matthew (2016), the Global TransPark served as an incident command post for emergency response.[11]

3.6 Pipeline Profile

Pipelines have a large impact on North Carolina's transportation infrastructure today and will have in the future. In Eastern North Carolina, pipelines transport natural gas, jet fuel and refined petroleum to businesses, military installations and industries. The infrastructure is privately built and maintained and represents an important investment for stakeholders. Natural gas is used to heat businesses and homes, jet fuel powers our military aircraft and refined petroleum fuels the region's automobiles, trucks, trains and ships.

3.6.1 Fuel Transportation System

North Carolina imports all of its petroleum-based fuel and natural gas, as well as, significant quantities of biofuels, such as ethanol. Figure 3.15 displays a map of the Eastern North Carolina pipeline network by commodity Eastern North Carolina pipelines include two branch lines from Colonial Pipeline extending to Selma and Fayetteville, and a natural gas network extending throughout much of the region.

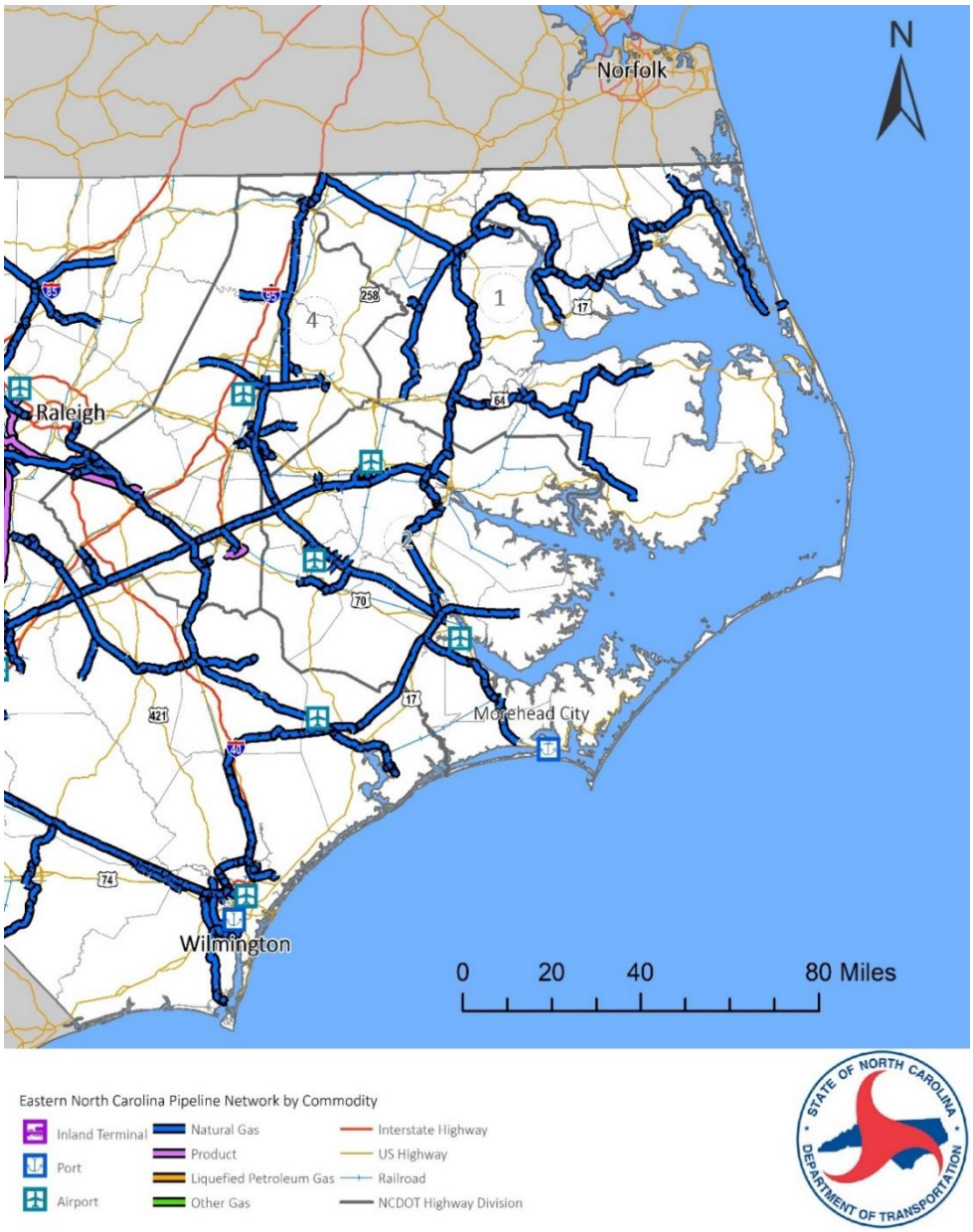
The transportation network used for transportation of fuel consists of:

- 1,150 pipeline miles, 95 percent of which is natural gas and five percent refined petroleum
- Rail transport of petroleum fuels and biofuels not served by a pipeline or port
- Truck tank trailer fleets for transport and local delivery of all fuels but natural gas
- There are 17 refined petroleum terminals in the region:
  - Ten fuel terminals in Selma, NC are clustered together and connected to the pipeline system operated by Colonial. It is estimated a total 66 million barrels of commodities (mainly gasoline and diesel fuel) are transported to Selma, NC by pipelines. Gasolines are blended there with biofuel, which are transported into the terminal by 9,498 rail cars each year. The processed products are shipped out from these terminals by 336,340 trucks each year.
  - Six marine fuel terminals in Wilmington, NC. Are supported by and estimated 118 AFRAMAX class size shiploads per year. It is estimated a total 131 million barrels of commodities are transported to Wilmington, NC by ships. Gasolines are blended there with biofuel, which are transported in by ship at approximate quantity of 13 million barrels. The processed products are shipped out from these terminals by 662,771 trucks each year.

[11] "Global TransPark Serves as Base for Hurricane Florence Response Efforts," NCDOT, September 21, 2018, https://www.ncdot.gov/news/press-releases/Pages/2018/2018-09-21-global-transpark-florence.aspx. Accessed 2/27/2019.

- One terminal in Fayetteville, NC. is supported by a connection to the Colonial Pipeline System. It is estimated a total of 21.1 million barrels of refined petroleum products are shipped to the Fayetteville terminal by pipeline each year. Gasolines are blended there with biofuel which are transported in by 2,220 truck shipments each year. The processed products are shipped out from this terminal by 24,420 trucks each year.

Figure 3.15 Eastern North Carolina Active Pipeline Network by Commodity



3.6.2 Pipeline Operators

The two largest pipeline operators in North Carolina include Piedmont Natural Gas Co Inc. which operates the longest natural gas pipeline in the state, and Colonial Pipeline which operates refined petroleum pipelines in the state. These two operators have the largest presence in Eastern North Carolina.

3.6.3 Future Projects

The proposed Atlantic Coast Pipeline (ACP) is a 600-mile underground pipeline originating in West Virginia, extending through Virginia and south into eastern North Carolina, ending in Robeson County. This project is being built in response to significant natural gas production in Western Pennsylvania, West Virginia and Southern Ohio in the Marcellus and Utica Shale Regions. The proposed pipeline is a multi-agency, multi-state project that will provide opportunities for companies to access more natural gas in Eastern North Carolina. Figure 3.16 illustrates the ACP route through North Carolina.

Figure 3.16 Atlantic Coast Pipeline Proposed Route

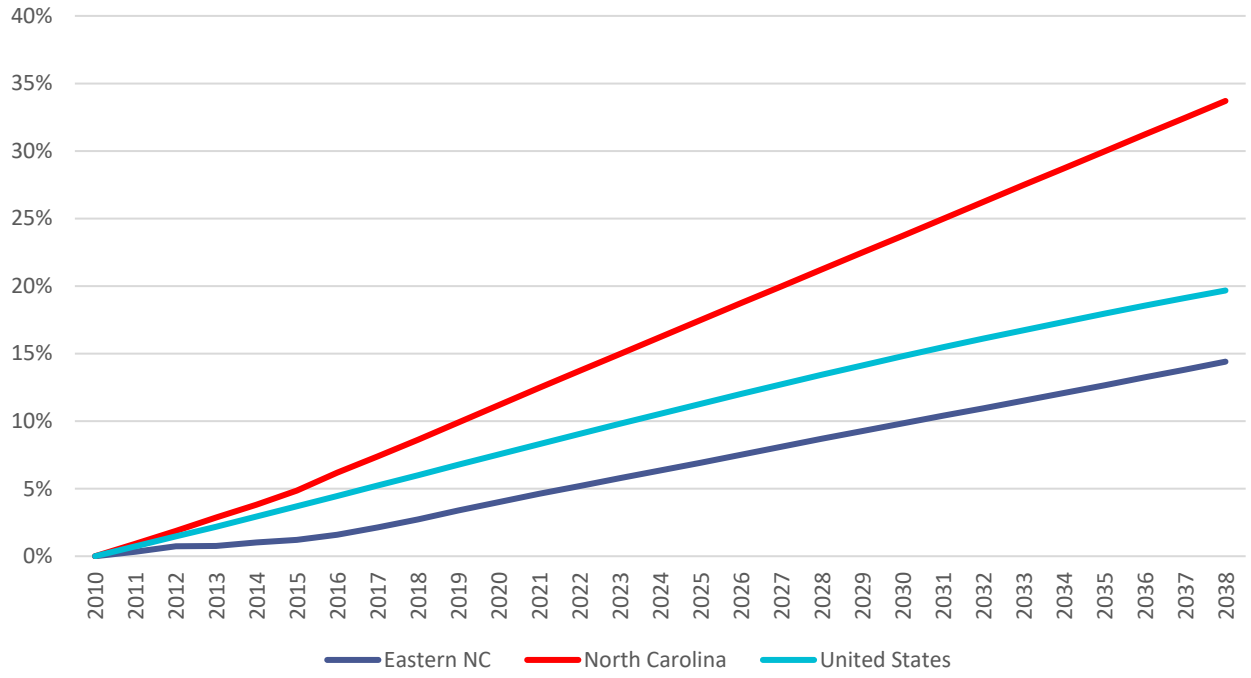
Source: ACP Website accessed March 7, 2019, Cambridge Systematics

3.7 Economic and Industry Supply Chain Profile

3.7.1 Population Trends

The Eastern North Carolina study area consists of 28 counties out of 100 counties that represent the state of North Carolina. This section of the report provides a summary socio-economic profile of this Eastern North Carolina region in comparison to state's socio-economic profile. The region's population growth rates between year 2010 and 2038 are depicted in Figure 3.17 for the Eastern North Carolina region in comparison to statewide and national population growth rates. Overall, these population projections show that the region will lag behind the statewide as well as nationwide rates of population growth.

Figure 3.17 Population Growth Rates for Eastern North Carolina, North Carolina and the United States: 2010 to 2038

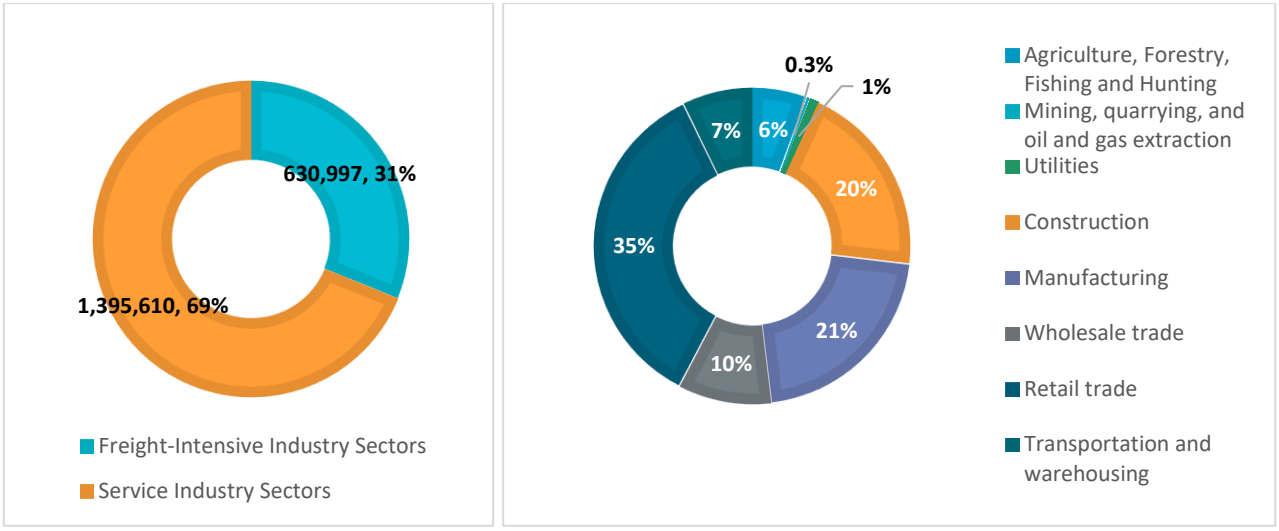


Source: North Carolina Office of State Budget and Management (NC OSBM) and US Census Bureau

3.7.2 Employment Trends

The labor market conditions remain quite strong for North Carolina as a whole given the statewide unemployment was at 3.7 percent in December 2018. However, recovery from the recession has been uneven across the state, especially for the Eastern North Carolina counties. The recent economic recovery was led by service-providing industries. Consequently, the counties with goods-producing industries have not fared as well in terms of job creation. Rocky Mount had a larger concentration of manufacturing jobs that have not fully recovered, while Goldsboro experienced a brief resurgence in goods-producing industries in 2012, but those jobs have now declined. Figure 3.18 shows the employment distribution for freight-intensive industry types and service industry types in the region.

Figure 3.18 Eastern North Carolina 2017 Employment by Freight-Intensive Industry Type



Shift Share Analysis of Employment Growth

A shift share analysis was conducted using national, statewide, and Eastern North Carolina employment data for years 2010 and 2017. This analysis was conducted to explain regional growth in terms of three components, including (1) National Share that measures how much regional employment is influenced by the national economy, (2) Industry Mix that identifies fast growing or slow growing industries in the regional economy and (3) Regional Shift that shows how an industry performs compared to its counterpart at the national level. The shift share results are summarized in Table 3.1 to identify the leading and lagging industries in Eastern North Carolina. This analysis reveals many of the industry sectors in Eastern North Carolina are leading industries, indicating their recent growth rates were higher than national growth rates.

Table 3.1 Shift Share Analysis with 2010 and 2017 Employment Data

NAICS Code	Industry Sector	National Share	Industry Mix	Regional Shift	Leading Industry Rank	Lagging Industry Rank
Freight-Intensive Industry Sectors						
11	Agriculture, Forestry, Fishing and Hunting	35,391	-3,575	3,178	7	
21	Mining, quarrying, and oil and gas extraction	1,385	69	268	15	
22	Utilities	3,126	15	3,249	6	
23	Construction	123,350	8,499	-5,474		2
31-33	Manufacturing	136,875	-4,120	1,490	12	
42	Wholesale trade	61,169	-3,134	2,024	10	
44-45	Retail trade	218,785	-7,797	10,784	1	
48-49	Transportation and warehousing	30,503	7,198	7,739	3	

NAICS Code	Industry Sector	National Share	Industry Mix	Regional Shift	Leading Industry Rank	Lagging Industry Rank
	Service Industry Sectors					
51	Information	36,664	-2,720	3,612	4	
52	Finance and insurance	75,225	531	1,991	11	
53	Real estate and rental and leasing	96,148	4,205	-1,944		5
54	Professional, scientific, and technical services	115,353	3,357	8,165	2	
55	Management of companies and enterprises	18,650	3,077	-2,907		4
56	Administrative and support and waste management and remediation services	128,919	3,217	968	14	
61	Educational services	33,521	325	3,310	5	
62	Health care and social assistance	176,567	4,532	-7,468		1
71	Arts, entertainment, and recreation	37,538	1,402	1,032	13	
72	Accommodation and food services	145,329	11,909	2,889	8	
81	Other services (except government and government enterprises)	115,601	1,182	2,324	9	
92	Government and government enterprises	432,753	-55,386	-4,261		3
	TOTAL	2,022,851	0	3,756		

Source: U.S. Bureau of Economic Analysis (BEA) (https://www.bea.gov/data/employment/employment-county-metro-and-other-areas) and consultant analysis.

3.7.3 Industry Supply Chain Profile

Eastern North Carolina's economy is built in part on the effective movement of goods both to consumers as well as between businesses. This transportation of freight is organized into supply chains which differ based on the economic sectors being considered. Understanding the concept of a supply chain provides a better grasp of freight transportation's impact on the Eastern North Carolina economy and the dependence of key businesses on the state's transportation system.

Core supply chain activities represent five interrelated and interdependent activities that support goods movement and are critical to supply chains for businesses in freight-dependent sectors. All five activities are necessary for the freight-dependent sectors, but their level of activity varies considerable for each sector. The five core supply chain activities are shown visually in Figure 3.19.

Industry clusters were examined for each of the key freight-dependent sectors based on dynamics of the core supply chain activities. The approach helps to describe where goods movement activity takes place within the Eastern North Carolina study region. Several key freight-intensive industries were identified in the region as important drivers of the regional and state economy. Figure 3.20 illustrates the key industries for which this analysis was conducted.

Figure 3.19 Core Supply Chain Activities

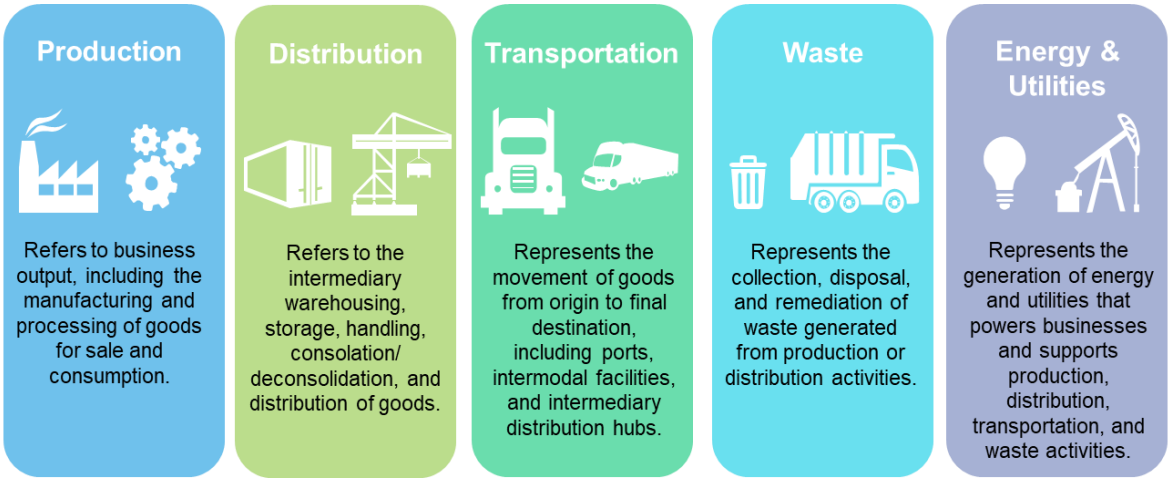
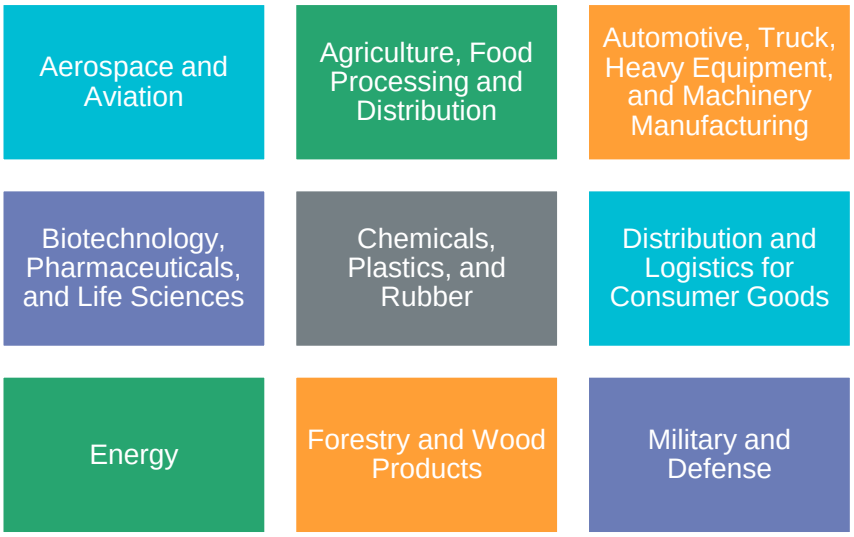


Figure 3.20 Key Freight-Intensive Industries



Beyond understanding which freight-dependent sectors are strongest throughout Eastern North Carolina, it is beneficial to identify where they are located, specifically, where they tend to cluster within the region. Cluster or agglomeration economies – geographic concentrations of interconnected businesses, suppliers, and associated institutions – are considered to increase productivity within the industry and increase regional, national, and global competition. As more firms in related businesses locate near one another, costs of production often decline significantly, as firms have competing suppliers, greater specialization, and greater division of labor. This economic environment is particularly beneficial for freight-dependent sectors. Further, understanding where these clusters are located helps public agencies target investment in necessary infrastructure to support freight and goods movement activity. Table 3.2 identifies the locations of supply chain activities for each key freight-intensive industry in Eastern North Carolina.

Table 3.2 Core Supply Chain Activity Clusters for Key Freight-Intensive Industries in Eastern North Carolina

Freight-Intensive Industry	Production		Distribution	Transportation	Waste	Energy/ Utilities
	Employment	Sales Volume				
Aerospace and Aviation	• Northwest Wilson • East Goldsboro, North or Elroy	• Northwest Wilson	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, 795, U.S. 70, 301, 258, Port of Morehead City	• Roanoke Rapids • Rocky Mount • Elizabeth City • Goldsboro	• Wilson • Washington • Tarboro • Elm City • Kitty Hawk • New Bern • Emerald Isle • Roanoke Rapids • Scotland Neck • Rocky Mount • Greenville
Agriculture and Food Processing	• Northwest of Lewiston Woodville • East of Goldsboro • Tarboro	• Northwest of Lewiston Woodville • Wilson • East of Goldsboro • South Pitt County • Nashville • Tarboro	• Wilson • Southwest of Kingston	Rail network, grain elevators, transload facilities, I-95, U.S. 70, 264, 64, 17, 158, 13, local farm road network, Port of Norfolk, Wilmington and Morehead City		
Automotive, Truck, Heavy Equipment, and Machinery Manufacturing	• Washington • New Bern • Rocky Mount • Greenville	• Cofield • New Bern • Washington • Rocky Mount • Smithfield • Tarboro • Wilson • Greenville • Goldsboro	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, U.S. 70, 17, 258, 158, 13, 64, 264, 301, Port of Norfolk, Wilmington, Morehead City, River Ports in Cofield and Edenton, Rail network and transload terminals		
Biotechnology, Pharmaceuticals, and Life Sciences	• Rocky Mount	• Rocky Mount • Wilson • Garner / Clayton	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, U.S 70, 64, 264		

Freight-Intensive Industry	Production		Distribution	Transportation	Waste	Energy/ Utilities
	Employment	Sales Volume				
Chemicals, Plastics, and Rubber	• Kinston • North of Aurora	• Kinston • North of Aurora	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, U.S. 70, 17, 264, 13, 264, NC 306, NC 33, NC 101, Rail network and transload terminals, Port of Morehead City Wilmington and Norfolk, and River Port in Aurora		
Distribution and Logistics for Consumer Goods	• Wilson • Rocky Mount • Greenville • Kinston • Smithfield	• Wilson • Rocky Mount • Greenville • Kinston	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, I-795, U.S. 70, 264, 301, Port of Norfolk, Charleston, Wilmington		
Energy	• Wilson	• Wilson	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, U.S. 301, 264, 70, 17, 158, 13, Port of Morehead City, River Port in Edenton		
Forestry and Wood Products	• Plymouth • Roanoke Rapids • North of New Bern • Goldsboro / South of Brogden / Mt. Olive	• North of New Bern • Plymouth • Roanoke Rapids	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, U.S. 17, 117, 64, 13, 70, 301, 158, 258, Port of Wilmington, Norfolk, Morehead City River Port in Edenton, Rail network		
Military and Defense	• Havelock • Greenville • Roanoke Rapids • Goldsboro	• Havelock • Rocky Mount • Elizabeth City • Greenville • Goldsboro	• Northeast of Wilson • Roanoke Rapids • Enfield • Jackson • New Bern	I-95, 795, U.S. 70, 117, 13, 17, 158, 264, 64, 301, Rail network, Port of Morehead City, Wilmington and Norfolk		

Key Freight-Intensive Industry Spotlight: Hog Production

Hog production consists of rearing, butchering, processing, and selling hogs and involves six separate stages: research and development, farming, meat processing, packaging, distribution, and retail. Hog farming is a more than $1 billion industry in North Carolina.[12] In 2012 the hog farming industry employed 327,350 workers in 8,031 establishments statewide.[13] Figure 3.21 illustrates an example of the hog production supply chain. According to the establishment data (shown in Figure 3.22), overall locations of Hog Production Industry establishments cluster in Wilson and Rocky Mount. Meat Processing is located mostly in Johnston County while Hog and Pig Farming are concentrated in Wayne, Greene, and Lenoir Counties. Farm Product Warehousing and Storage cluster around the metropolitan areas of Wilson and Rocky Mount with ones in Aurora and Havelock due to the rail facilities located there.

Figure 3.21 Hog Production Supply Chain and Locations

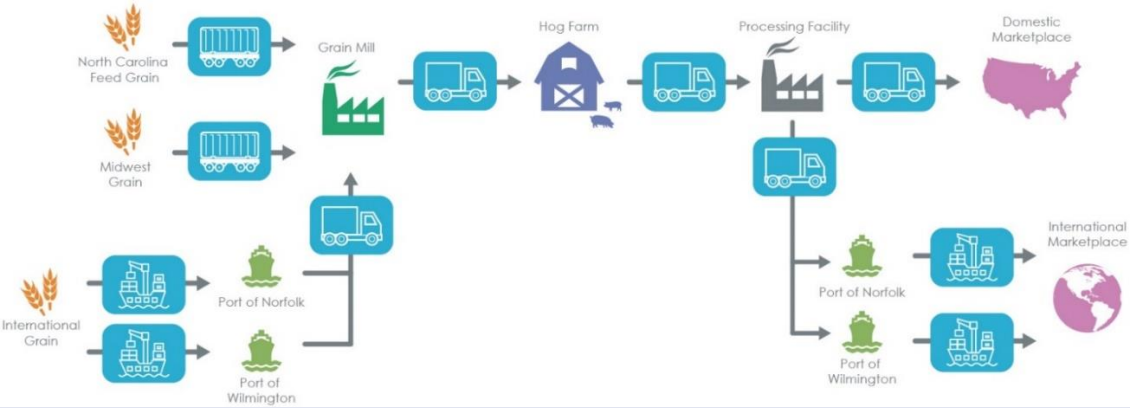
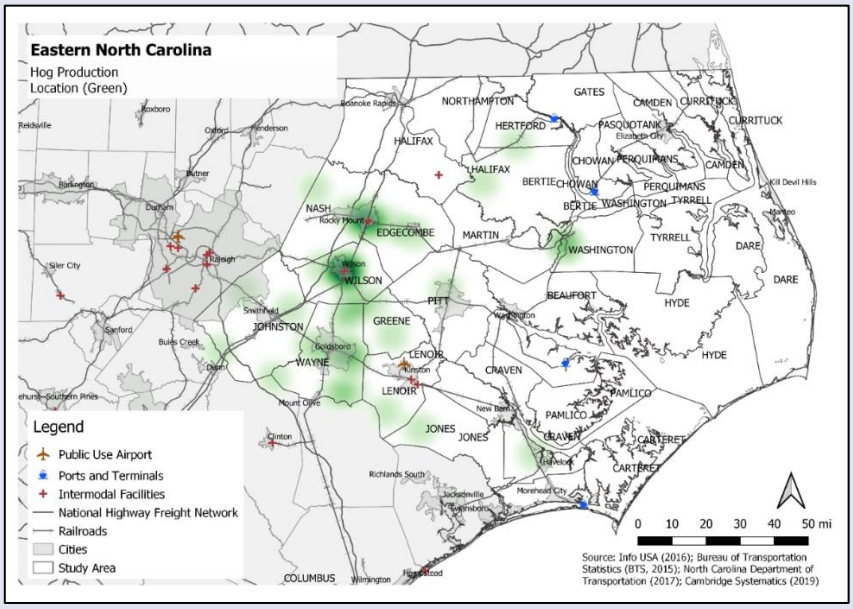


Figure 3.22 Hog Production Locations



[12] https://www.ncpedia.org/anchor/key-industries-hog-farming

[13] http://www.ncglobaleconomy.com/NC_GlobalEconomy/hog/overview.shtml

4.0 Commodity Flow and Economic Futures

4.1 Introduction

The needs of Eastern North Carolina's freight system are driven by both the current and future demand for freight transportation. Overall, in 2015, 199 million tons of freight moved over the region's transportation system, valued at $283 billion. By 2045, this will increase by 43 percent in volume to 284 million tons and 85 percent in value to $525 billion. The substantial increase in volume is due to increases in mineral and agricultural production and other heavy commodities traveling via truck. Significant production growth in high value commodities such as pharmaceuticals, electronics, and machinery are responsible for the increase in value. This section examines the demand for freight transportation to, from, within, and through Eastern North Carolina by analyzing the commodities, or goods, moving on the system both today and in the future. This commodity flow analysis will examine freight modes (truck, air, rail, water, etc.), commodities moved, and trade flows and connections to trading partners both within and outside the region.

Multiple modes of transportation are used within Eastern North Carolina's freight system. Today, truck is the dominant mode due to the fact that most of region's production is transported to market via North Carolina's highway system. Moreover, I-95, an important freight corridor that serves the east coast economy, goes through the region, contributing to truck traffic. The dominance of truck is expected to continue over the next 30 years. Major commodities moved in 2015 include waste/scrap, nonmetal mineral products, gravel, other foodstuff, and wood products. Mineral products dominate the list of top commodities in the region, highlighting the importance of mines to Eastern North Carolina's economy. With respect to domestic trading partners, Rest of North Carolina, Virginia, South Carolina, Georgia, and Illinois are the top trading partners by volume in 2015, and these will remain the top domestic partners in 2045.

A number of data sources were used to develop this analysis. In particular, the two primary sources are the Federal Highway Administration (FHWA)'s Freight Analysis Framework Version 4.1 (FAF4.1), disaggregated to the county level by Cambridge Systematics; and the Surface Transportation Board (STB)'s Rail Carload Waybill Sample for North Carolina. Data for all modes besides rail is presented for 2015 and forecast to 2045. Due to data availability rail data is presented for 2014 and forecast to 2045.

4.2 Commodity Flow Profile

In 2015, 199 million tons of freight moved over Eastern North Carolina's transportation system, valued at $283 billion. By 2045, it is projected that Eastern North Carolina's transportation system will carry more than 284 million tons of freight annually, valued at $525 billion, an increase of 43 percent by tonnage and 85 percent by value. This section provides an overview of actual and projected demand for freight transportation in Eastern North Carolina, including modal split, direction split, top commodities moving in the state, truck traffic on the state network, trading partners, and county-level trade.

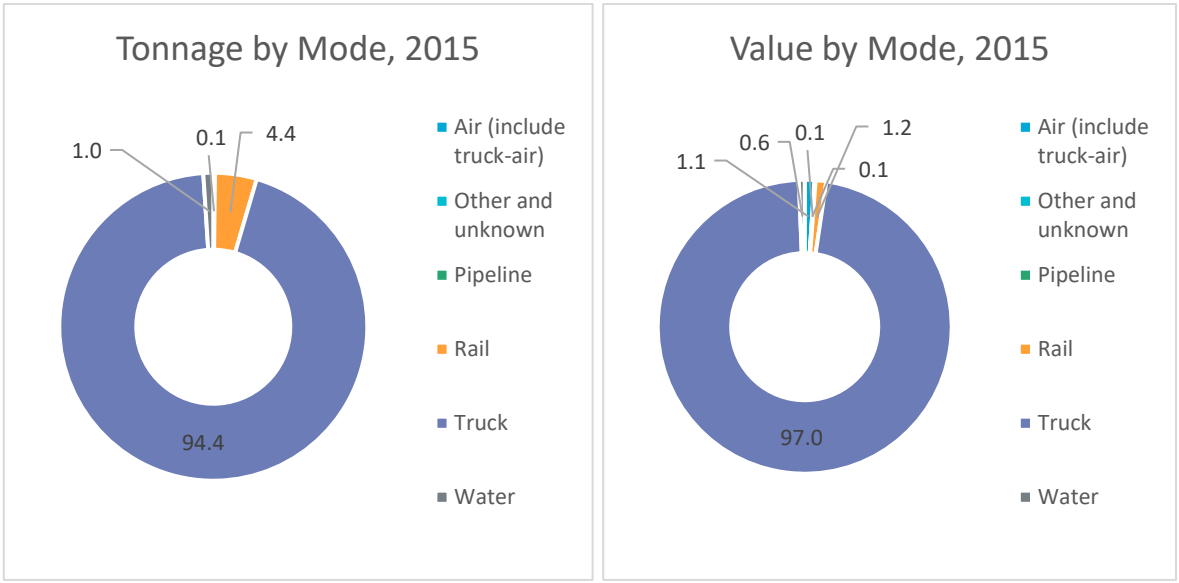
Modal Split

In 2015, over 199 million tons of freight worth $283 billion were transported to, from, within, or through Eastern North Carolina. Truck was the dominant mode utilized for these movements, carrying 94 percent of the total weight, and just more than 97 percent of the total value of goods. The primary commodity carried by truck is waste/scrap. Rail accounted for the second-highest modal share measured by weight, carrying

four percent of the total weight. Water was the third-highest modal share measured by weight with one percent of the total weight.

When measured by value, trucks carried around $275 billion in goods. This accounts for almost 97 percent of total freight flows in the region. Rail and air each accounted for $3 billion or approximately one percent of the total freight flow value. The modal split by both weight and value for 2015 is shown in Figure 4.1.

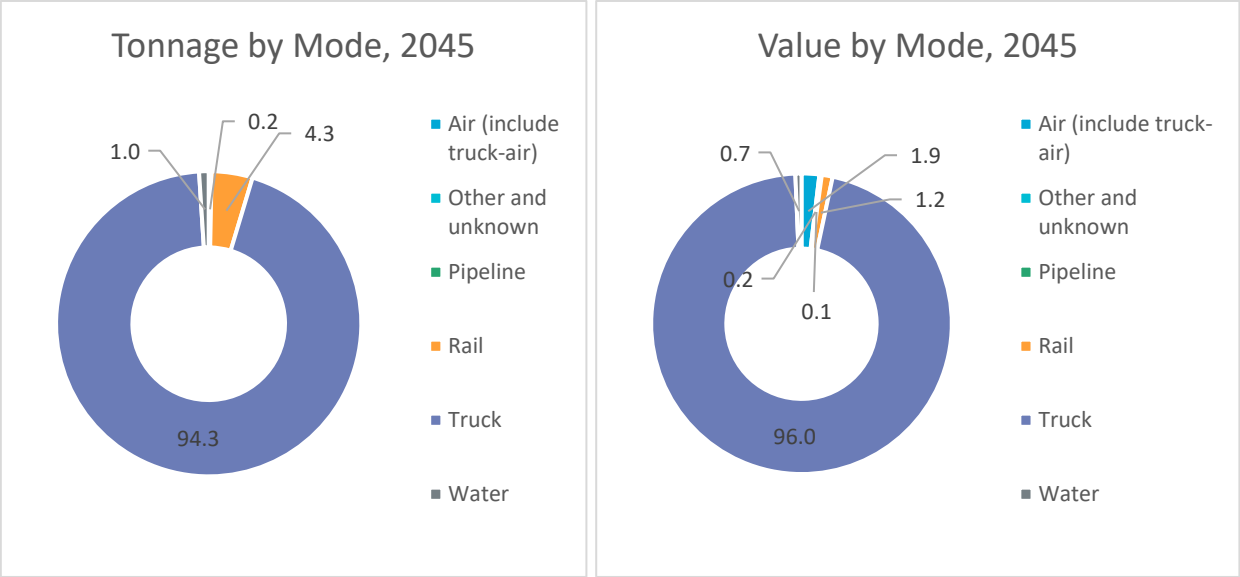
Figure 4.1 Eastern North Carolina Tons and Value by Mode, 2015



Over the next 30 years, over 284 million tons of freight worth of $525 billion is projected to be transported to, from, within, and through Eastern North Carolina. Truck is expected to remain the dominant mode. Rail and water will be the second and third top freight transportation modes by 2045, the mode share of each is expected to remain constant at four percent and one percent of total volume, respectively.

In terms of value, the current trend is expected to remain constant in 30 years. Truck is projected to remain the dominant mode, accounting for 96 percent of the value of goods moved in the region. The second-highest mode is projected to be air with 1.9 percent of the total value. Rail is expected to account for 1.2 percent of the value of goods moved in Eastern North Carolina. Overall, truck is the dominant mode in terms of value of freight and is expected to remain the dominant mode through 2045. The modal split by both weight and value for 2045 is shown in Figure 4.2.

Figure 4.2 Eastern North Carolina Tons and Value by Mode, 2045

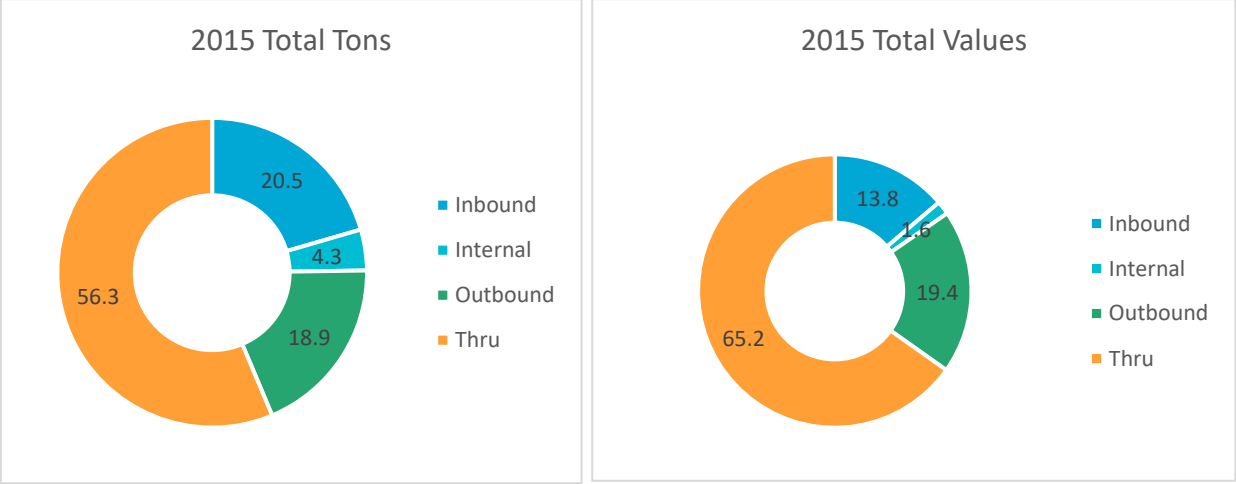


Direction Split

Freight moves to, from, within, and through Eastern North Carolina on a daily basis. By weight in 2015, through shipments accounted for 56 percent of the 199 million tons moved, the largest percent of any direction. Through shipments include only truck mode. Inbound shipments accounted for the next highest direction at 21 percent, and outbound shipments accounting for 19 percent of the total tonnage moving in the region. When measured in value, through traffic account for 65 percent of the total value of goods. Outbound shipments account for 19 percent of value of moved freight and inbound movements account for 14 percent. Internal movements account for approximately two percent of the total value of moved goods and four percent of the total weight of goods moved.

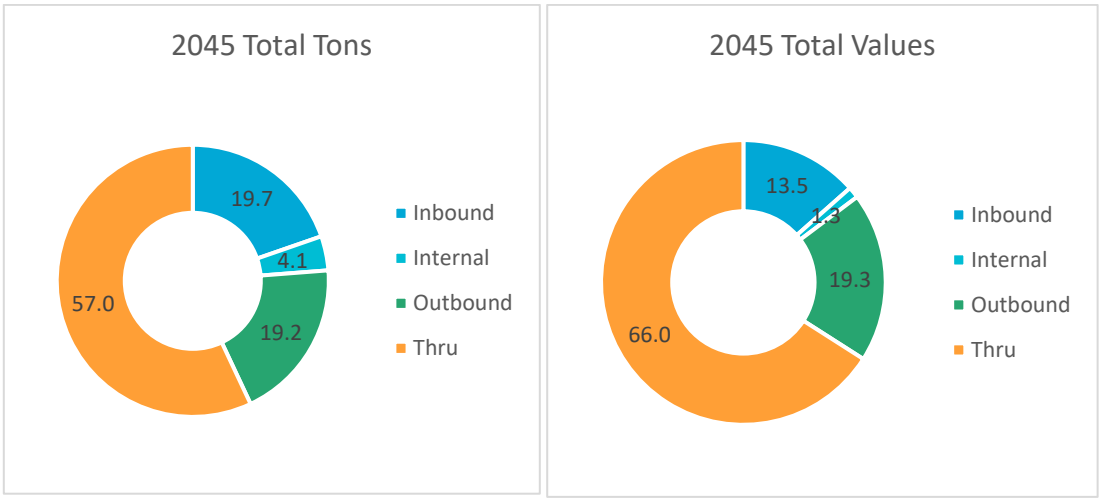
Figure 4.3 shows the direction split by weight and value for goods movement in Eastern North Carolina in 2015.

Figure 4.3 Eastern North Carolina Direction of Goods Movement Weight and Value, 2015



Projected freight movements for 2045 remain mostly consistent with today's trends. By weight, the total tonnage of freight moved through the state is expected to increase slightly to 57 percent. The share by weight of inbound shipments is projected to decrease to 20 percent, and outbound movements are expected to continue to account for 19 percent of goods by weight. By value, the share of all the directions is expected to remain constant with a slight increase in through shipments and a small decrease in inbound shipments. Figure 4.4 shows the projected direction split by weight and value for 2045.

Figure 4.4 Eastern North Carolina Direction of Goods Movement Weight and Value, 2045

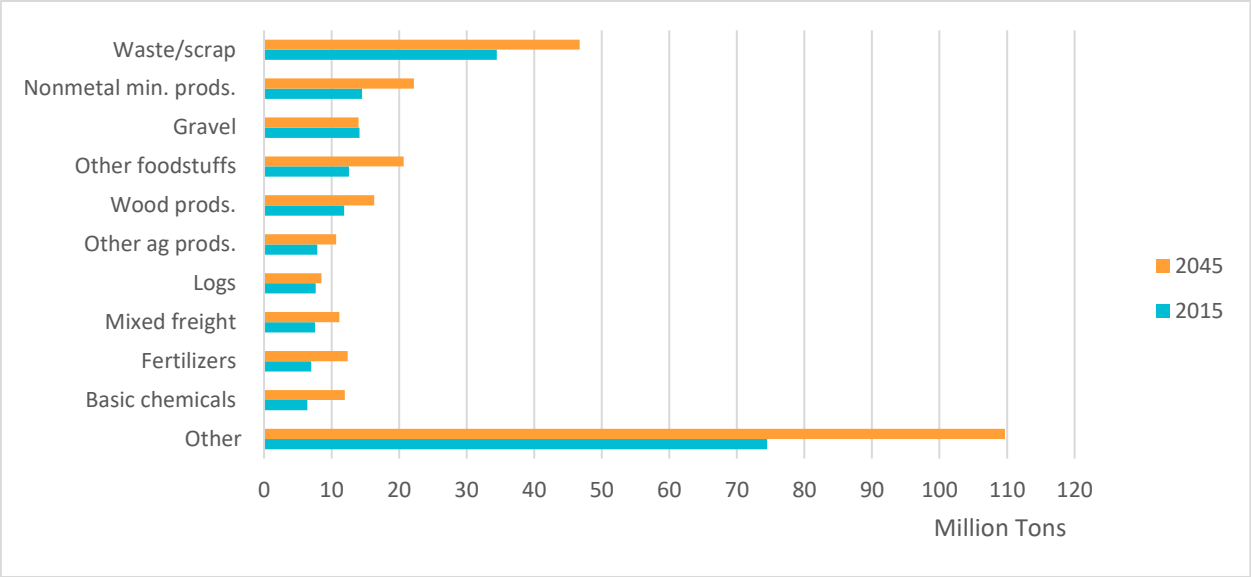


Top Commodities

By weight in 2015, the top commodity moved to, from, and within Eastern North Carolina was waste/scrap, accounting for 17 percent of the total weight of all goods. Almost all of the 34 million tons of waste/scrap is transported by truck. The other top five commodities are all bulk products and include nonmetal mineral products, gravel, other foodstuffs, and wood products. The top five commodities account for 44 percent of the total weight of goods moved to, from, and within Eastern North Carolina in 2015.

Figure 4.5 shows the top 10 commodities moved in Eastern North Carolina by weight for 2015 and their projected growth by 2045. In 2045, all the top commodities moved by weight are projected to be the same as the top commodities in 2015. All the current top five commodities are expected to increase in moved weight except for gravel, which is expected to decrease in weight by one percent. In terms of ranking, waste/scrap and nonmetal mineral products will remain the first- and second-ranked commodities, respectively, other foodstuffs will replace gravel as the third-ranked commodity, wood products will be fourth and gravel will be the fifth-ranked commodity.

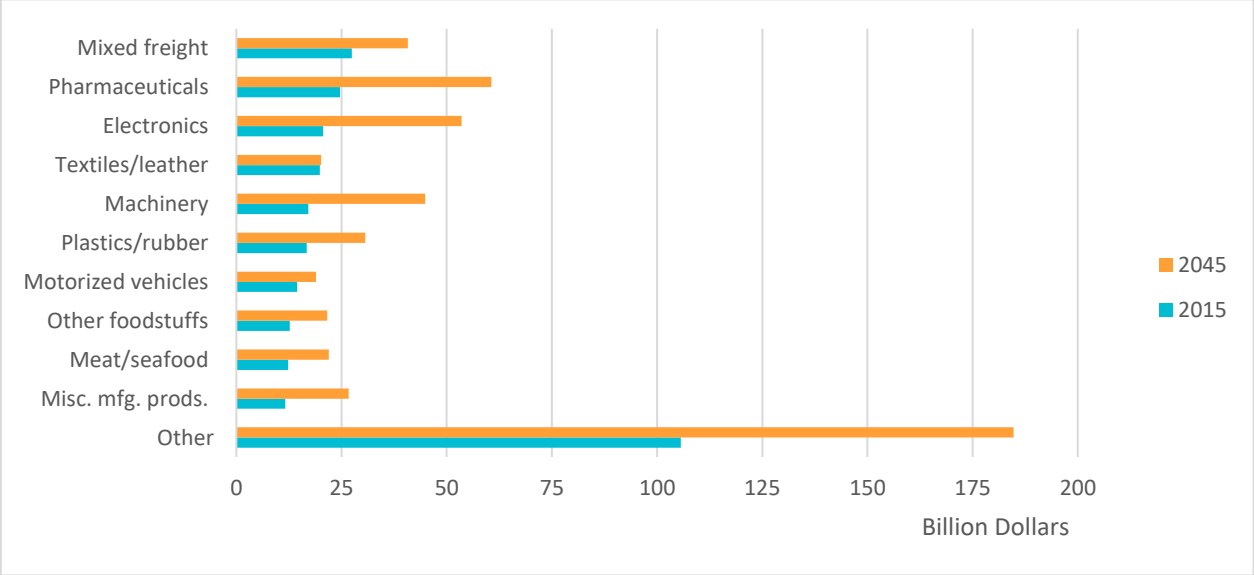
Figure 4.5 Eastern North Carolina Commodities by Weight, 2015 and 2045



By value in 2015, the top commodity moved was mixed freight, followed by pharmaceuticals, electronics, textile/leather, and machinery. These five commodity types accounted for $110 billion or 39 percent of the total value moved.

The top commodities by value are projected to shift by 2045. Pharmaceuticals will replace mixed freight as the top commodity, accounting for approximately 12 percent of the total value of goods moved, followed by electronics, machinery, mixed freight, and plastics/rubber. Textile/leather is expected to drop out of the top five commodities by 2045. The top five products combined will account for more than 44 percent or $230 billion of the total value of all goods moved in the State. Figure 4.6 shows the top 10 commodities moved by value in 2015 and their projected growth by 2045.

Figure 4.6 Eastern North Carolina Commodities by Value, 2015 and 2045



Domestic Trading Partners

Outbound Goods

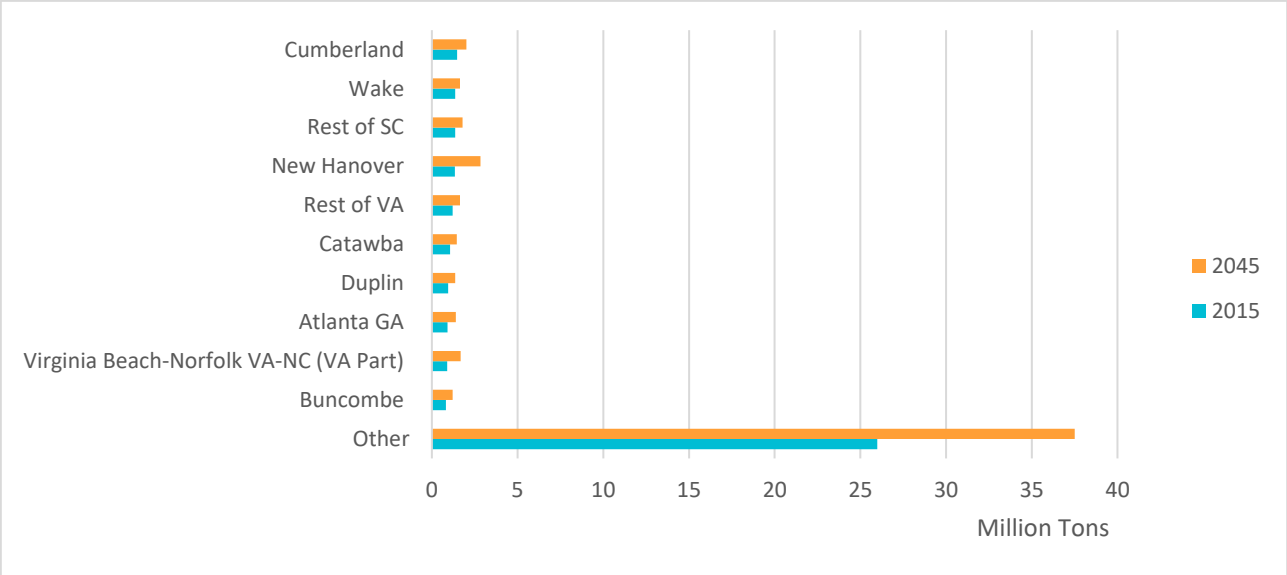
Goods shipped from Eastern North Carolina travel to a wide range of domestic destinations. By weight in 2015, Eastern North Carolina sent over 37 million tons of goods to destinations in the U.S., both within and beyond the State. The top domestic destinations for freight were Cumberland County, Wake County, Rest of South Carolina, [14] and New Hanover County accounting for four percent of the outbound tonnage each. Rest of Virginia is fifth on the list of top destinations, receiving approximately three percent of Eastern North Carolina's outbound shipments by weight.

By value, the top 10 destinations in 2015 were dispersed more across the country than when measured by weight where the top destinations were mostly located in the region surrounding Eastern North Carolina. The study area's top destinations by value and their 2045 projections are shown in Figure 4.8. The top five destinations accounted for $13 billion (23 percent) of the total outbound value in 2015. The top five destinations were Atlanta, GA (11 percent), Rest of South Carolina (4 percent), Virginia Beach-Norfolk VA-NC (VA Part) (3 percent), Columbus, OH (3 percent), and Rest of Virginia (3 percent).

Figure 4.7 shows the top domestic destinations for goods by weight in 2015 and 2045.

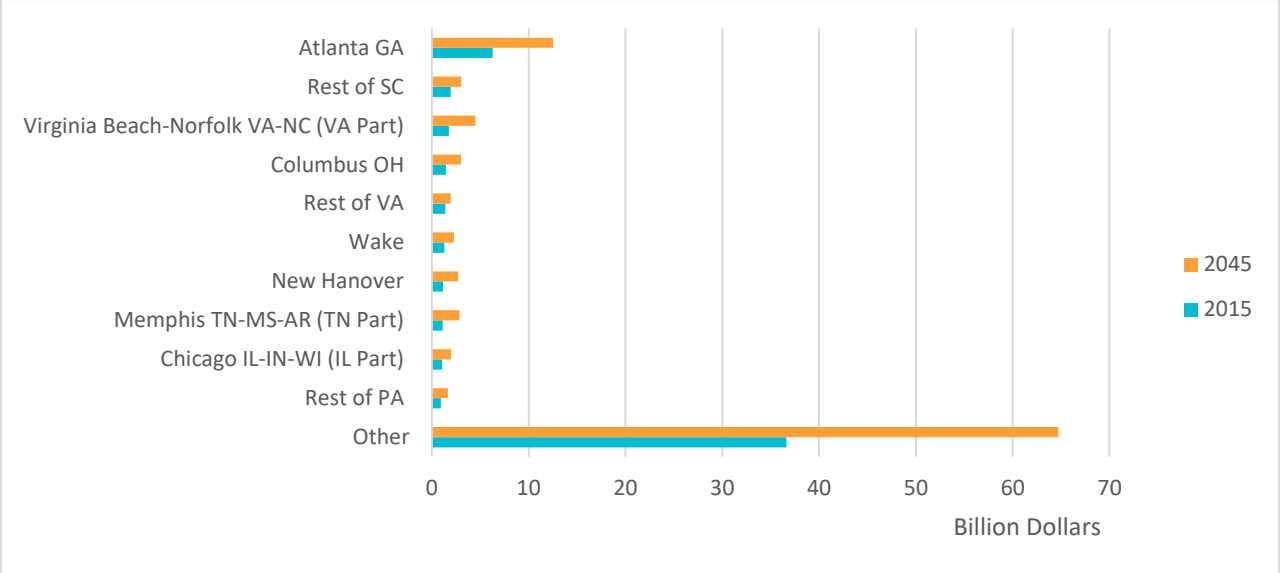
By value, the top 10 destinations in 2015 were dispersed more across the country than when measured by weight where the top destinations were mostly located in the region surrounding Eastern North Carolina. The study area's top destinations by value and their 2045 projections are shown in Figure 4.8. The top five destinations accounted for $13 billion (23 percent) of the total outbound value in 2015. The top five destinations were Atlanta, GA (11 percent), Rest of South Carolina (4 percent), Virginia Beach-Norfolk VA-NC (VA Part) (3 percent), Columbus, OH (3 percent), and Rest of Virginia (3 percent).

Figure 4.7 Eastern North Carolina Top Domestic Destinations by Weight, 2015 and 2045



[14] FAF zones are available in a lookup table at: http://faf.ornl.gov/fafweb/

Figure 4.8 Eastern North Carolina Top Domestic Destinations by Value, 2015 and 2045



Inbound Goods

Eastern North Carolina receives goods mainly from trading partners across the State. The top 10 origins, shown in

By value in 2015, the top domestic origin was Wake County, followed by Atlanta, GA, New Orleans LA-MS (LA Part), Philadelphia PA-NJ-DE-MD (PA Part), and Rest of South Carolina. These five origins accounted for 16 percent ($6 billion) of the total value of goods shipped to Eastern North Carolina. Figure 4.10shows the top domestic inbound trading partners for Eastern North Carolina and their 2045 projections.

Figure 4.9, accounted for 31 percent of the total inbound weight in 2015. Eastern North Carolina received the most goods by weight from Wake County, followed by New Orleans LA-MS (LA Part), Rest of Virginia, Chicago IL-IN-WI (IL Part), and New Hanover County.

By value in 2015, the top domestic origin was Wake County, followed by Atlanta, GA, New Orleans LA-MS (LA Part), Philadelphia PA-NJ-DE-MD (PA Part), and Rest of South Carolina. These five origins accounted for 16 percent ($6 billion) of the total value of goods shipped to Eastern North Carolina. Figure 4.10shows the top domestic inbound trading partners for Eastern North Carolina and their 2045 projections.

Figure 4.9 Eastern North Carolina Top Domestic Origins by Weight, 2015 and 2045

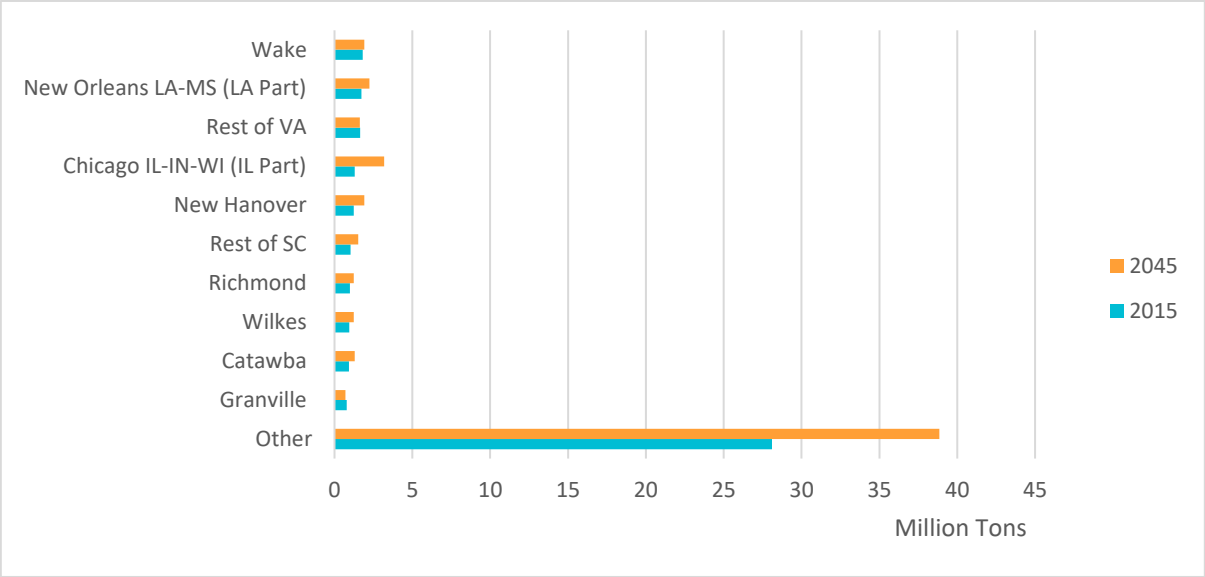
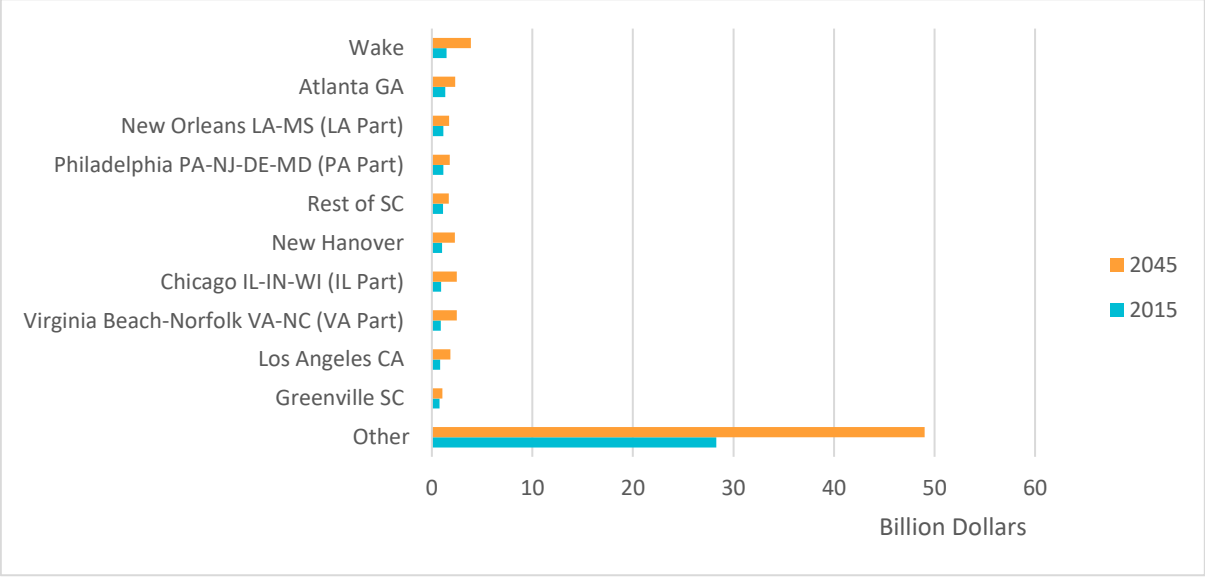


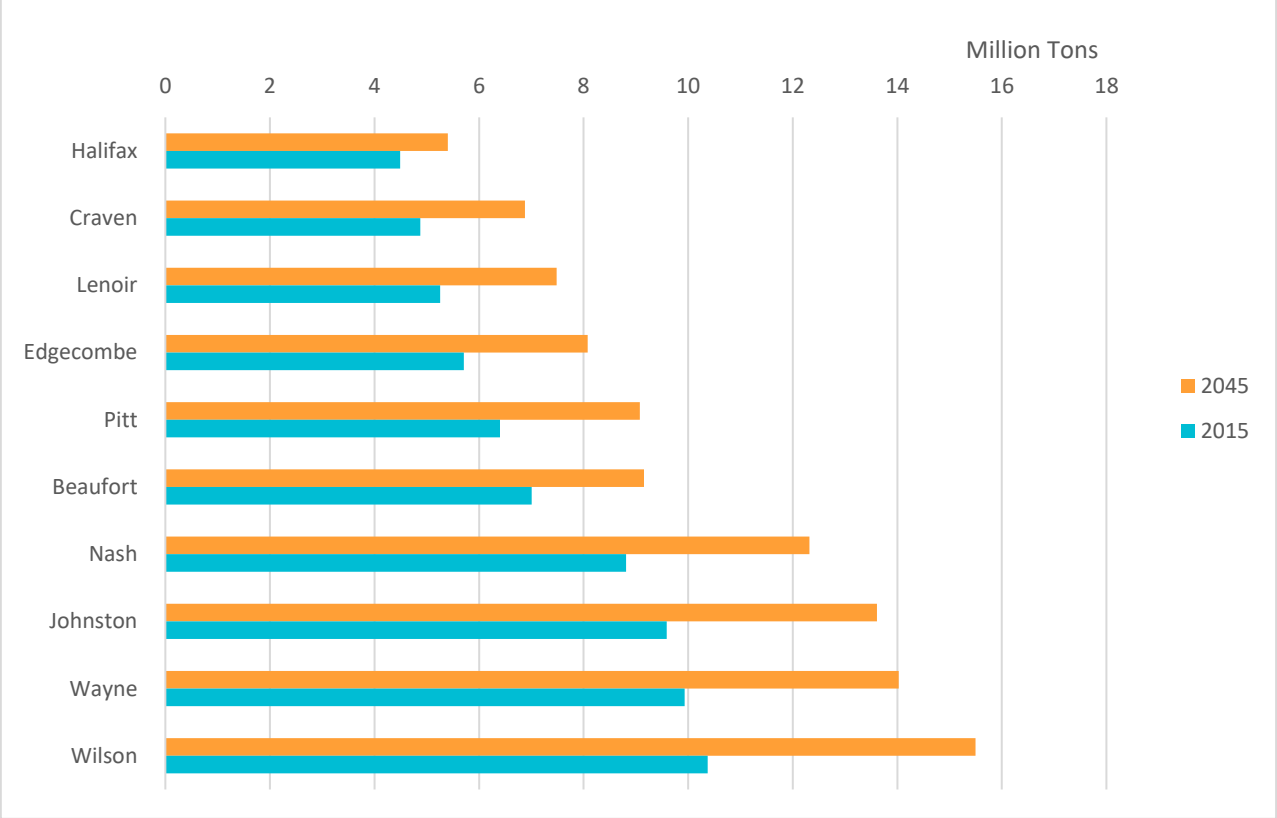
Figure 4.10 Eastern North Carolina Top Domestic Origins by Value, 2015 and 2045



County Level Trade

Figure 4.11 shows the top 10 counties by weight in 2015 and 2045. These figures include shipments that moved into, out of, and within each county. Wilson County was the dominant goods-movement county in Eastern North Carolina in 2015. This accounted for 10 percent of the 99 million tons shipped to, from, and within Eastern North Carolina in 2015. The remaining top counties for freight activity measured by weight were Wayne, Johnston, Nash, and Beaufort. Together, these five counties accounted for 46 percent of all cargo tons shipped to, from and within the region. By 2045, the top five counties with freight activity measured by weight (inbound, outbound and intra-county combined) are projected to remain the same.

Figure 4.11 Top Eastern North Carolina Counties by Weight, 2015 and 2045



4.3 Economic Futures and Trends

Development Scenarios for NC Ports

In 2015, as part of a strategic plan, the North Carolina State Ports Authority (NCSPA) developed projections of growth in total tonnage for the state's maritime commodities independent of the FAF data. In 2018, the NCSPA developed an update of the strategic plan, with a forecast of total tonnage at the Port of Wilmington and Port of Morehead City forecast from 2018 to 2023.

The forecast growth rates by commodity in the 2015 strategic plan are shown in Table 4.1, though the commodity descriptions between the two sources do not match exactly. The NCSPA growth projections are for 2015 to 2020 and were developed by applying Journal of Commerce (JOC) forecasts for containerized imports and exports to data from the United States Army Corps of Engineers Waterborne Commerce Statistics Center Report, Port Import/Export Reporting Service data, and existing volumes. Because the NCSPA forecasts are port-specific, they may be more reliable in the short-term than the long-term forecast from the FAF 4.1 data.

Compared to the FAF 4.1 data, the NCSPA projected higher short-term growth in bulk materials such as coal coke and other bulk; soil, sand, gravel, stone/aggregates; cement, concrete and fertilizers. The NCSPA projected lower short-term growth in chemicals and related products, grain, and steel/bridge girders. The NCSPA projected notable high growth in fuel wood and pellets due to the opening of Enviva wood pellet domes at the Port of Wilmington.

Table 4.1 Comparison of North Carolina State Ports Authority and Freight Analysis Framework 4.1 Projected Commodity Growth for North Carolina Ports

Commodity[1]	NCSPA Projected Average Annual Growth Rate (2015–2020)	FAF 4.1 Projected Maritime Average Annual Growth Rate (2015–2045)
Coal coke/other bulk	2.0%	0.77%
Asphalt, tar and pitch	2.5%	3.15%
Fertilizers	2.0%	-4.37%
Chemicals and related products (including PCS and Vopak)	2.0%	5.60%
Rubber and gums	5.0%	4.68%
Fuel wood / pellets	35.0%	4.00%
Wood chips	2.0%	
Lumber / dimensional	2.0%	
Wood in the rough / logs	2.0%	3.81%
Pulp and wastepaper	4.0%	3.74%
Soil, sand, gravel, rock, and stone/aggregate	2.0%	0.40%
Sulfur/liquid PCS	0.0%	4.36%
Cement and concrete	2.5%	1.20%
Pig Iron/DRI	2.0%	1.58%
Steel/bridge girders	2.0%	3.55%
Grain	2.8%	3.59%
Vehicles and parts	3.5%	2.91%
Aircraft and parts	2.0%	4.80%
Ships and boats	2.0%	
Other	2.0%	2.95%

Note: Commodities do not necessarily align between the FAF 4.1 and NCSPA data.

Source: North Carolina State Ports Association, *2015 Strategic Plan of the North Carolina State Ports Authority*, February 26, 2015; Federal Highway Administration, Freight Analysis Framework version 4.1.

In the 2018 update to the strategic plan, the NCSPA forecast average annual growth from 2018 through 2023 of 11.4 percent in total tons moved through the Ports of Wilmington and Morehead City, compared to forecast average annual growth of 1.1 percent from 2015 through 2045 in total maritime tonnage in the FAF 4.1 data. Morehead City General Terminal is expected to experience average annual growth of 5.8 percent through a doubling of the grain business and new business such as cement. The NCSPA expects growth at Wilmington General Terminal is to average 15 percent per year, driven by Enviva's pellet operations. Also contributing to the expected growth are new services, refrigerated containers (reefers), and intermodal activity.

Rail-Related Developments

Intermodal rail traffic throughout the Eastern North Carolina Region will be impacted by the construction of the CCX terminal in Rocky Mount. Located on the CSXT A-Line, the CCX terminal will primarily serve shippers in the Triangle and the Eastern North Carolina Regions. The CSX operational model shifted from hub and spoke operations to scheduled railroading. It will transfer truck trips to rail, provide shipper savings, and add jobs and economic development opportunities. However, it will also represent a challenge for the region in terms of increased traffic from trucks serving the facility and longer trains potentially blocking crossings more frequently and at longer intervals. Managing these potential negative externalities will be important for achieving the full benefit of the freight system investment.

There has been increasing interest in utilizing the Camp Lejeune Railroad line (CPLJ) for the purpose of transporting commercial freight and enhancing the local economy. The CPLJ would connect to a Class I railroad (operated by Norfolk Southern) at Havelock, NC, and the Port of Morehead City. The CPLJ is a 30-mile line currently operated under an agreement with Norfolk Southern. Approximately 480 carloads and 48,000 tons of coal are carried over the line each year, in addition to about 250 to 275 carloads of military shipments. There is no passenger service on the corridor, and there are approximately 12 public crossings and 20 private crossings. A commercial freight feasibility study found that suitable properties for development exist along the CPLJ corridor, and that three potential industries that need rail access could be targeted for these properties. The current condition of the CPLJ makes it a viable facility for commercial freight use, especially given its proximity to the Class I railroad junction in Havelock and the connection to the Port of Morehead City.

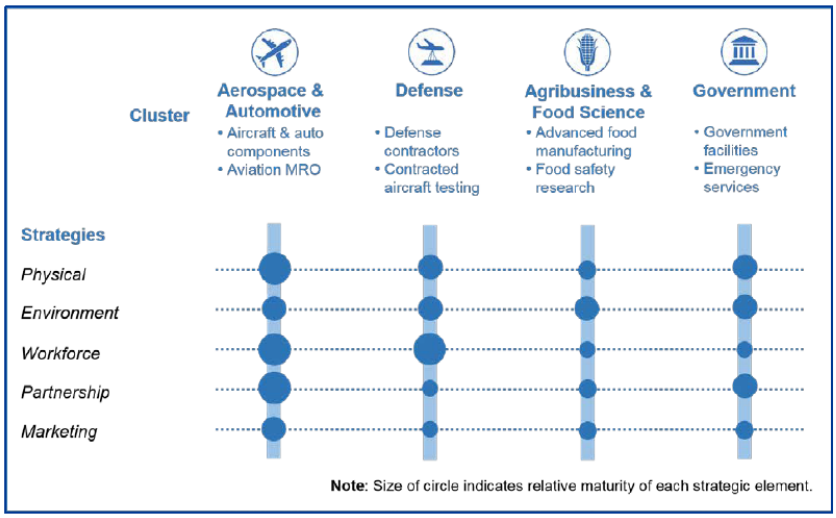
Development plans for NC Global TransPark (GTP)

Continuing to recruit industries in strategic locations such as the NC Global TransPark (GTP) is important to attract businesses to the region. GTP was originally built around a multimodal transportation network, including Kinston Regional Jetport and undeveloped acreage surrounding the site. GTP provides a unique combination of attributes with its ready access to aviation, rail and highway infrastructure at a single facility. Its close proximity to military installations, two state ports, major interstate and rail thoroughfares and its central location in Eastern North Carolina make it a strategic asset at both the state and national level.

The companies at North Carolina Global TransPark draw employees from 21 surrounding counties and represent active and growing industry clusters of aerospace and aviation, advanced manufacturing, logistics, and government services.

In 2018, GTP completed a Strategic Plan which included a “cluster approach” to attracting targeted industry groups for which the unique GTP assets are attractive. These target clusters included: Aerospace & Aviation, Defense, Agribusiness & Food Science, and Government Services. Strategic actions were defined to enhance the GTP’s ability to attract businesses in these clusters and expand job opportunities within each of those industry clusters. The action plan strategies were aimed to address the requirements of each targeted cluster (see Figure 3.1).

Figure 4.12 GTP Cluster Approach



Source: GTP Strategic Plan, 2018.

GTP Economic Development Action Plan

GTP developed an Economic Development Action Plan which seeks to achieve its regional economic potential by creating a network of strategic partners and harnessing the momentum that has accompanied recent advancements in Eastern North Carolina. Strategies include:

Investing in **deferred maintenance** of existing GTP buildings and equipment to maintain the quality and consistency of the GTP and its inventory;

1. **Modernizing the branding of the GTP** to align with the expansion strategies of industries requiring shovel-ready sites, ready-to-go facilities, multimodal transportation, industrial-grade utilities, digital telecommunications service, improved highways and a foreign trade zone (FTZ);

2. **Building on current uses**, without being constrained by them, in order to coordinate the optimization of developable land within and adjacent to GTP;

3. **Tightening the focus on targeted industries and industry clusters**, utilizing the latest cluster data, GIS tools and economic intelligence to hone in on recruitment candidates whose needs mirror GTP assets, amenities and aspirations;

4. **Developing a network of K-12, college and university partnerships** to boost the credibility and readiness through internships, apprenticeships, technology transfer, sponsored R&D and other opportunities;

5. **Engaging in ongoing internal outreach to marketing partners** (NC Ports, EDPNC, Duke Energy, NC Southeast, etc.) to promote the GTP as a leading statewide and regional business destination; and

6. **Aiming for the future while keeping options open**; today's actions will enable the GTP to embrace the opportunities of tomorrow, whatever they may be.

Despite the slow projected growth of the GTP, the facility has served an important role during natural disasters such as the recent impacts of Hurricane Florence (immediately followed by tropical storm Michael). Following Hurricane Florence (2018) and Hurricane Matthew (2016), the Global TransPark served as an incident command post for emergency response.

Federal Government Trade and Freight Policies

The U.S. DOT is tasked with ensuring a fast, safe, efficient, accessible, and convenient transportation system for the U.S. The U.S. DOT has five strategic objectives to ensure the nation's transportation system continues to evolve to meet changing needs: safety, state of good repair, economic competitiveness, livable communities, and environmental sustainability. The U.S. DOT lists four strategic goals in its Strategic Plan for Fiscal Years 2018 to 2022:[15]

- **Safety: Reduce Transportation-Related Fatalities and Serious Injuries Across the Transportation System.** The U.S. DOT seeks to work effectively with State, local, Tribal, and private partners; address human behaviors to reduce safety risks; improve safety data analysis to guide decisions; continue to employ safety countermeasures; ensure that automation brings significant safety benefits; and pursue performance-based rather than prescriptive regulations.

- **Infrastructure: Invest in Infrastructure to Ensure Safety, Mobility and Accessibility and to Stimulate Economic Growth, Productivity and Competitiveness for American Workers and Businesses.** The U.S. DOT seeks to work effectively with State, local, Tribal, and private partners to guide investments that stimulate economic growth, improve the condition of transportation infrastructure, and enable the efficient and safe movement of people and goods. To achieve this goal, DOT will provide guidance, technical assistance, and research that leverages Federal funding, accelerates project delivery, reduces project lifecycle costs, and optimizes the operation and performance of existing facilities. By using innovative forms of financing and project delivery, encouraging partnerships between the public and private sectors, and strategically balancing investments across various modes of transportation to promote greater efficiencies, DOT can maximize the returns to the Nation's economy and people.

- **Innovation: Lead in the Development and Deployment of Innovative Practices and Technologies that Improve the Safety and Performance of the Nation's Transportation System.** The U.S. DOT seeks to continue its leadership role guiding research investments and facilitating the deployment of beneficial transportation technologies.

- **Accountability: Serve the Nation with Reduced Regulatory Burden and Greater Efficiency, Effectiveness and Accountability.** The U.S. DOT will streamline regulations and improve organizational effectiveness of the Department and raise accountability standards that improve the efficient use of taxpayer funds.

As part of the effort to meet infrastructure goals, under the Fixing America's Surface Transportation (FAST) Act passed in December 2015, states will receive apportionments from 2016 through 2020 for six programs

[15] United States Department of Transportation, *Strategic Plan for FY 2018–2022*, https://www.transportation.gov/sites/dot.gov/files/docs/mission/administrations/office-policy/304866/dot-strategic-planfy2018-2022508.pdf.

including the new National Highway Freight Program (NHFP), to improve the condition and performance of the national freight network and to support investment in freight-related surface transportation projects.

Changes in Motor Carrier Regulations.

Commercial motor vehicle labor regulations are under the purview of the U.S. Federal Motor Carrier Safety Administration (FMCSA). For Commercial Motor Vehicles (CMVs), which are broadly defined as a vehicle that is used as part of a business, involved in interstate commerce, weighs 10,001 pounds or more, or transports certain commodities or passengers, the mandatory hours of service (HOS) regulations have the greatest impact on truck transportation and truck parking. The HOS regulations are outlined below:[16]

- **11-Hour Driving Limit**: Drivers may drive a maximum of 11 hours after 10 consecutive hours off duty. All time spent at the driving controls of a CMV in operation is considered driving time. Exceptions to this rule exist, including for adverse driving conditions, retail store deliveries during peak December holiday season, and transport of agricultural commodities. The sleeper berth can be used to meet the 10 consecutive hours off duty requirement with a combination of sleeper berth and off-duty time, but one option must be at least eight hours.

- **14-Hour Limit**: Property-carrying drivers may not drive beyond the 14th consecutive hour after coming on duty, following 10 consecutive hours off duty. Off-duty time does not extend the 14-hour period. Of those 14 hours, 11 may be spent driving. The 14-hour rule is often misunderstood to mean that a driver must be released from all work after 14 hours. However, these rules just regulate driving, not working, and drivers may do non-driving work after that point. Exceptions to this rule exist, including for adverse driving conditions, retail store deliveries during peak December holiday season, and transport of agricultural commodities.

- **Rest breaks**: Drivers may drive only if eight hours or fewer have passed since the end of the driver's last off-duty or sleeper berth period of at least 30 minutes. Exceptions to this rule exist for certain short-haul operators.

- **60/70-Hour Limit**: Drivers may not drive after 60/70 hours on duty in 7/8 consecutive dates. A driver may restart a 7/8 consecutive day period after taking 34 or more consecutive hours off duty. The regulation prohibits a driver from driving after having been on duty for 70 hours in any eight consecutive days. A driver can do non-driving work after reaching the limit and not be in violation, but those hours must be added to the total.

- **Sleep berth provision**: Drivers using the sleeper berth provision must take at least eight consecutive hours in the sleeper berth, plus a separate two consecutive hours either in the sleeper berth, off duty, or any combination of the two.

- **34-Hour restart**: A driver of a property-carrying vehicle may "restart" a 7/8-consecutive-day period after taking 34 or more consecutive hours off duty. After the 34-hour period, the on-duty hours worked before that 34-hour period started no longer have to be considered when calculating the driver's 60/70-hour limit.

[16] Summary of Hours of Service Regulations. FMCSA. Available from: https://www.fmcsa.dot.gov/regulations/hours-service/summary-hours-service-regulations.

HOS regulations are strongly enforced by state agencies, and penalties can be high; trucking companies that exceed driving limits by more than three hours could be fined up to $11,000 per offense, and the driver could be responsible for additional penalties of up to $2,750 for each offense. In addition, regulations in effect as of December 2017 require drivers to track their hours of service with an electronic logging device (ELD). This regulation was part of the MAP-21 legislation in 2012, potentially allowing for closer enforcement of existing hours of service regulations.

Connected and Autonomous Vehicles

Connected and autonomous vehicles are predicted to alter the transportation landscape by significantly decreasing crashes, thereby increasing safety. They are also predicted to increase travel time reliability by decreasing the contribution of accidents and incidents to non-recurring congestion, which accounts for about 50 percent of total congestion.[17] This creates the opportunity to consume wasted capacity in the existing highway system as opposed to increasing capacity through expansions.

Opportunities for connected and autonomous vehicles to impact goods movement are even more considerable than those for passenger travel. Due to the intense pressure faced by the transportation industry to move more goods more frequently with greater reliability and at lower costs, commercial vehicles will likely be the earliest adopters of connected and automated vehicle technology. Making matters worse, the industry currently faces a shortage of commercial vehicle drivers that is likely to worsen over time.[18] These forces combined with a growing consumer population will likely create an environment in the near future where the nation's highways must facilitate autonomous cargo-carrying heavy trucks. Already the state of Nevada has allowed Daimler to operate its automated heavy truck on the state's roadways[19] and, as part of a demonstration, in Colorado an automated truck transporting alcoholic beverages traveled from Fort Collins to Colorado Springs.[20]

Changing Supply Chain Technologies

There are several complementary technologies that may change how the supply chain functions, including the Internet of Things (IoT), machine learning/artificial intelligence, blockchain/distributed ledger technology, automation/robotics, and 3D printing/additive manufacturing.

The IoT is built on an increasing number of connected sensors that digitize the physical world. These sensors help track real-time inventory and the location, temperature, and even the vibrations of containers and vehicles. These sensors collect massive datasets, far too large and unwieldy for a person to process. However, a machine can be taught to parse the data and turn it into insights and knowledge. The combination of data and machines will help supply chain managers better plan for demand in real time at a much more refined level, perhaps down to customer lanes.[21] The machines can also be constantly aware of

[17] FHWA. Office of Operations. http://ops.fhwa.dot.gov/program_areas/reduce-non-cong.htm

[18] American Trucking Association. *Truck Driver Shortage Analysis*, 2015. http://www.trucking.org/ATA%20Docs/News%20and%20Information/Reports%20Trends%20and%20Statistics/10%206%2015%20ATAs%20Driver%20Shortage%20Report%202015.pdf

[19] Grobart, S. "Daimler Veers into Maximum Overdrive." Bloomberg Business Week, May 14, 2015. http://www.bloomberg.com/news/articles/2015-05-14/daimler-s-freightliner-tests-self-driving-truck-in-nevada

[20] Vela, V. "*Thanks to Beer, Robot Trucks are now a Reality. Is Colorado Ready for That?*", Colorado Public Radio, Oct. 31, 2016. https://www.cpr.org/news/story/thanks-to-beer-robot-trucks-are-now-a-reality-is-colorado-ready-for-that

[21] https://www.gartner.com/smarterwithgartner/4-factors-that-will-impact-the-future-supply-chain/

the flow of goods, materials, and inventories and identify any disruptions to the flow of goods, helping managers develop more robust supply chains.

Blockchain can help to create an immutable (i.e., unchanging over time) record of transactions, recorded through time, and approved and validated by machines instead of traditional institutions. This technology, fully enabled, would allow a supply-chain manager to observe and measure the performance of the full supply chain, including whether minerals were mined ethically or produce grown sustainably.[22] This may lead to different sourcing decisions.

3D printing is a form of printing where printers take bulk materials like plastic and 'print' goods, homes, or even structures using computer drawings (available for free or for purchase). The computer drawings can be made inexpensively and replicated as 'digital twins' and distributed instantly everywhere. This additive form of manufacturing also reduces waste and environmental externalities, potentially allowing for neighborhood scale production facilities to emerge. If these trends persist, the demand for bulk goods to supply the printers would increase, perhaps making movement by rail more economical. The last mile of finished goods could be managed through neighborhood-scale robots, pedicabs, drones, or other micro-scale delivery devices.

Business models also might change. As shared and on-demand mobility models proliferate in the passenger space and the gig-economy continues to thrive, the way people buy freight services may change. Uber Freight is one example of a company built in passenger travel that is using its platform technology to enable goods movement. Firms can buy services on-demand. For last mile deliveries, companies like Amazon are tapping into the gig-economy to deliver packages through programs like Amazon Flex.

Increase of E-Commerce and Fulfilment Centers

Electronic commerce (e-commerce) is a key global logistics trend impacting U.S. freight flows as each year an increasing amount of freight is delivered directly to individuals at home or work rather than to retail stores[23]. The total shipping volume of the U.S. Postal Service increased from 3.3 billion pieces in 2011 to 4.5 billion pieces in 2015[24]. According to Forrester Research, Inc., by 2020 online sales in the U.S. are expected to reach $523 billion (up 56 percent from $335 billion in 2015) with much of the growth being driven by mobile device purchases.[25] In response to consumer expectations for expedited deliveries (e.g., same-day or next-day deliveries), retailers have begun to reposition regional distribution centers and smaller distribution centers closer to urban areas – the centers of demand. Given that delivery on such a short time frame is expensive, strategically placed fulfillment centers allow firms to deliver the level of shipping service that consumers demand while maintaining relatively affordable costs.

While the Triangle and Charlotte Regions have already experienced e-commerce driven growth in the development of fulfillment centers and other facilities,[26] the emergence of e-commerce as the norm for serving urban consumer demand is likely to impact the Eastern North Carolina Region as well. As previously discussed, the expansion of the Interstate highway system combined with the planned CSX intermodal facility at Rocky Mount and population growth in the Triangle Region, will strengthen the connection between

[22] https://www.gartner.com/smarterwithgartner/gartner-top-8-supply-chain-technology-trends-for-2019/

[23] Burnell, T. et al., "Delivering the Goods," Public Roads, Vol. 81, No. 3, Autumn 2017, https://www.fhwa.dot.gov/publications/publicroads/18autumn/03.cfm.

[24] Ibid.

[25] https://www.internetretailer.com/2016/01/29/online-sales-will-reach-523-billion-2020-us

[26] http://www.bizjournals.com/triangle/blog/real-estate/2016/07/amazon-signs-lease-for-rtp-warehouse.html

the two regions. The improved connectivity and accessibility resulting from these investments may spur logistics providers to site freight-serving facilities in the Eastern North Carolina Region to a degree not previously observed.

The impact of the emergence of e-commerce and its supporting infrastructure on the Eastern North Carolina Region's freight system is likely to place an increased importance on freight system reliability and result in more frequent truck trips. For example, an e-commerce fulfillment will generate multiple incoming truck trips from larger facilities in order to serve local demand. It will also generate significant numbers of outgoing truck trips as smaller packages and parcels are delivered to consumers.

Furthermore, the portion of the highway network serving rail intermodal facilities, such as the proposed facility in Rocky Mount, will also be impacted, as many e-commerce shipments with longer delivery times utilize rail intermodal service. The ability of the region's freight rail intermodal network to support e-commerce movements will depend on the reliability of the surrounding highway network. Reliability directly affects shipping costs and the ability of retailers to meet consumer demand because it impacts the amount of buffer time that carriers must build into their schedules.

Global trade and Free Trade Agreements

Global Trade

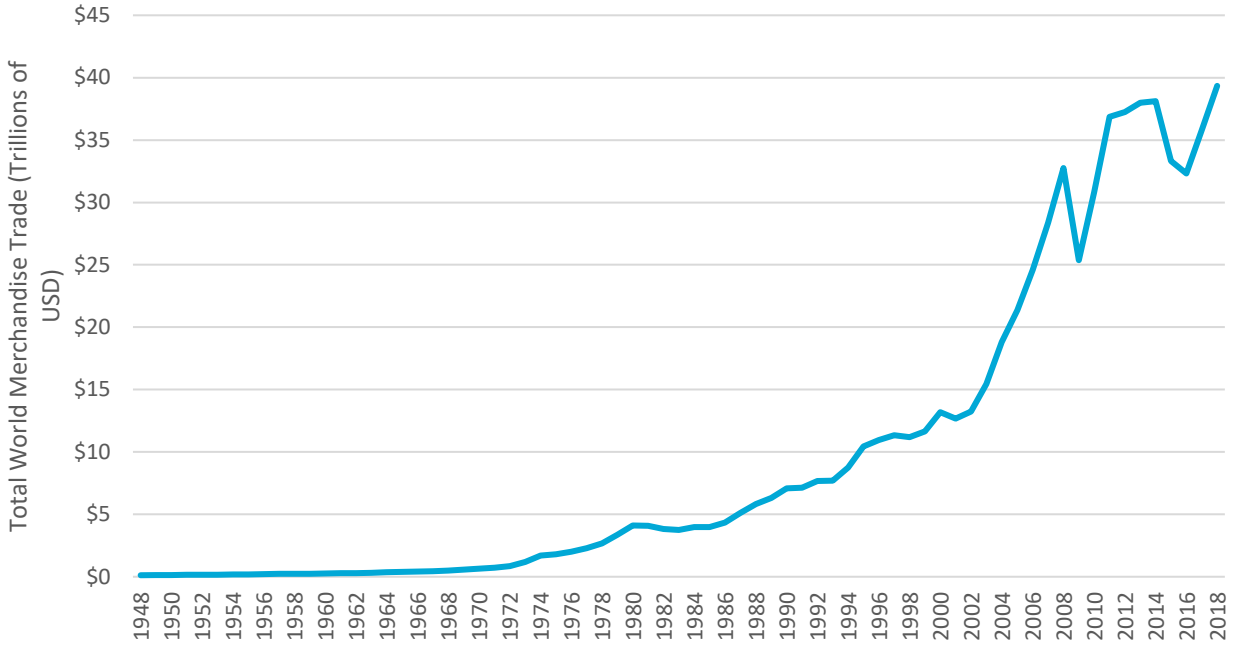
Overall, there was rapid growth in goods traded in the last two decades, growing from $11.2 trillion in 1998 to $39.3 trillion in 2018, an average annual increase of 6.5 percent (Figure 4.13).[27] Two major factors contributed to this rapid growth: falling costs of doing business across borders and China's entry into the global economy. Transport and communication costs decreased across the world as preferential free trade agreements became more common, particularly in the 1990s.[28] The reduced cost of production and the increased realization of profits in developing countries encouraged offshoring of American manufacturing so that the production of parts and components and final assembly took place in the most competitive location overseas. These factors were fundamental for the significant increase in global trade in the last couple of decades. For its part, China's remarkable economic growth in the 2000s was driven by its openness to trade and foreign direct investment (FDI) to make up for domestic shortages by imports and to level excessive supplies of domestic goods by exports.[29]

[27] World Trade Organization (WTO).

[28] Design of Trade Agreements Database (DESTA).

[29] Yao, S. (2006). On Economic Growth, FDI and Exports in China. *Applied Economics*, 38, 339-51.

Figure 4.13 Total World Merchandise Trade Value, 1948 to 2018



Source: World Trade Organization, https://data.wto.org/.

Exceptions to this growth curve include the global recession from 2008 to 2009, during which time international merchandise trade dropped by 23 percent in value and 20 percent in volume.[30] Having initially rebounded sharply in 2011, the value of world merchandise trade experienced a modest growth of 1.1 percent annually between 2011 and 2014, and then a significant fall of 12.6 percent between 2014 and 2015, from $38.1 trillion in 2014 to $33.3 trillion in 2015.[31] From 2015 to 2018, global trade increased at an average annual rate of 5.7 percent. Around 2015, many exporters reduced capital spending in response to weakening commodity prices (Figure 4.14). Since investment relies more heavily on trade than consumption, decline in investment would certainly lead to a slowdown in trade growth.[32] Other factors, such as the slow pace of new international trade policy initiatives and an increase in protectionism[33] since the global financial crisis of 2008 to 2009 are headwinds for global trade.[34]

[30] Estimated based on world trade value and volume provided by the World Trade Organization (WTO).

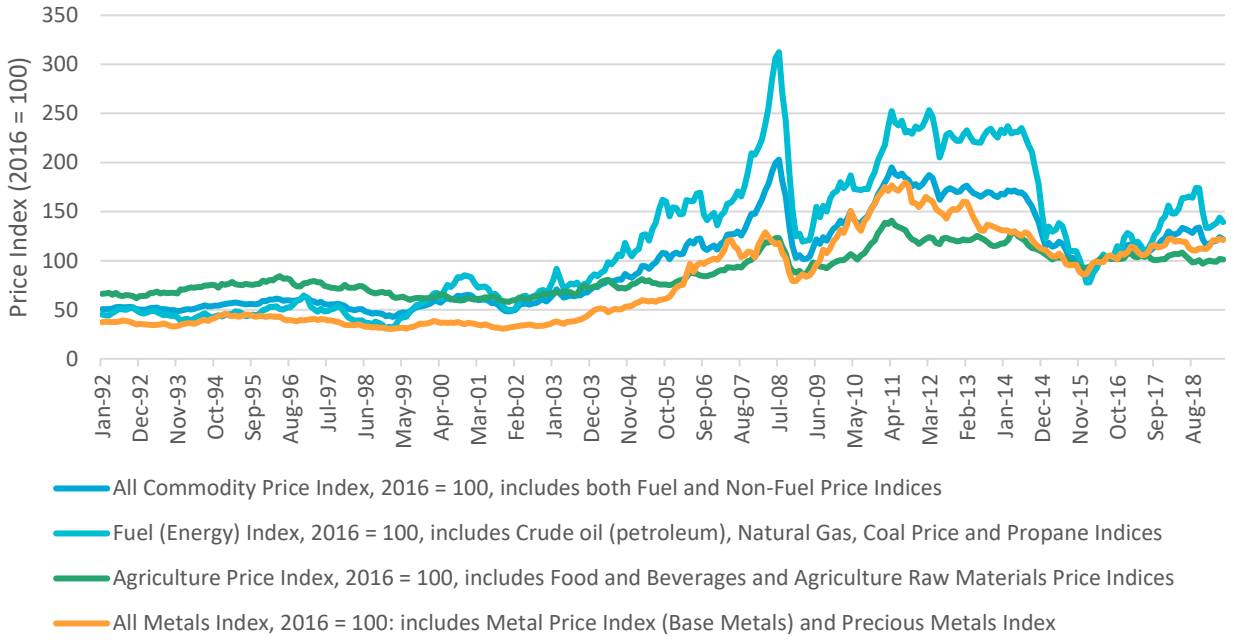
[31] World Trade Organization (WTO)

[32] Freund, Caroline (2016). "The Global Trade Slowdown and Secular Stagnation." Peterson Institute of International Economics.

[33] Protectionism refers to government actions and policies that restrict or restrain international trade, such as tariffs and quotas on imports and subsidies or tax cuts granted to local businesses, often done with the intent of protecting local businesses and jobs from foreign competition.

[34] Freund, Caroline (2016). "The Global Trade Slowdown and Secular Stagnation." Peterson Institute of International Economics.

Figure 4.14 Global Commodity Prices, 1992 to 2018

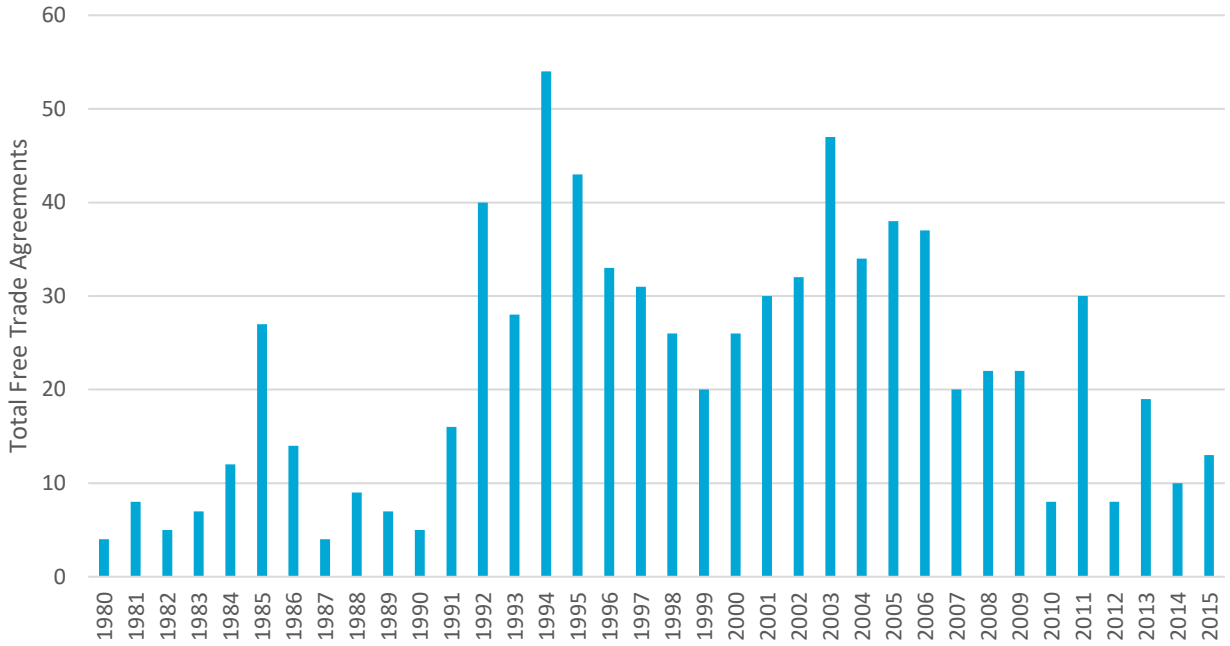


Source: International Monetary Fund, https://www.imf.org/en/Research/commodity-prices.

Free Trade Agreements

Free Trade Agreements (FTAs) are pacts signed between two or more countries to reduce the barriers to trade such as tariffs (taxes and duties on imports and exports) and trade quotas, which are in place to protect local markets and industries. FTAs also cover areas such as government procurement, intellectual property rights, and competition policy. As shown in Figure 4.15, FTAs became more common starting in the 1990s, averaging nearly 30 signed agreements a year in the 1990s and 2000s. However, the number of FTAs signed from 2011 to 2015 averaged about half of that, signaling increasing protectionism and trade restrictions.

Figure 4.15 Free Trade Agreements by Year, 1980 to 2015



Source: Dür, Andreas, Leonardo Baccini and Manfred Elsig. 2014. "The Design of International Trade Agreements: Introducing a New Database". Review of International Organizations, 9(3): 353-375.

Between 1994 and 2012, the U.S. signed 14 FTAs with 20 countries (Table 4.2). These FTA partners comprised approximately 10 percent of global GDP in 2017.[35] FTAs have increased the movement of goods (volume and value) between the U.S. and their trading partners by:

- Fostering freer trade flows and creating stronger ties with trading partners;
- Eliminating (or reducing) tariffs that impede the flow of goods and services between trading partners;
- Encouraging investment and addressing other issues, such as intellectual property, e-commerce, and government procurement;
- Allowing domestic businesses access to cheaper inputs, introducing new technologies and fostering competition and innovation;
- Promoting regional economic integration and building shared approaches to trade and investment through the adoption of common Rules of Origin and broader acceptance of product standards; and
- Delivering enhanced trading opportunities that contribute to the sustainable economic growth of developing economies and less-developed countries.

[35] The World Bank, 2019.

Table 4.2 United States Free Trade Agreements

Free Trade Agreement	U.S. Trade Partners	Date of Congressional Approval
NAFTA	Canada and Mexico	January 1, 1994
The U.S.-Chile FTA	Chile	January 1, 2004
The U.S.-Singapore FTA	Singapore	January 1, 2004
The U.S.-Australia FTA	Australia	January 1, 2005
The U.S.-Israel FTA	Israel	January 1, 2005
The U.S.-Jordan FTA	Jordan	January 1, 2005
The U.S.-Morocco FTA	Morocco	January 1, 2006
The U.S.-Bahrain FTA	Bahrain	January 11, 2006
Dominican Republic-Central America FTA (CAFTA-DR)	Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and the Dominican Republic	CAFTA entered into force for El Salvador on March 1, 2006, for Honduras and Nicaragua on April 1, 2006, for Guatemala on July 1, 2006, and for Dominican Republic on March 1, 2007.
The U.S.-Oman FTA	Oman	January 1, 2009
The U.S.-Peru FTA	Peru	February 1, 2009
The U.S.-Colombia TPA	Colombia	March 15, 2012
The U.S.-Korea FTA	South Korea	March 15, 2012
The U.S.-Panama TPA	Panama	October 31, 2012
The United States-Mexico-Canada Agreement	Canada and Mexico	Replacement for NAFTA; agreement signed on November 30, 2018

Source: United States Office of the United States Trade Representative, "Free Trade Agreements," https://ustr.gov/trade-agreements/free-trade-agreements.

Protectionism and Tariffs

Recently, the U.S. has been curbing free trade, increasing quotas or tariffs on imports. Tariffs are taxes imposed on imported goods, while quotas are restrictions on how much of a good can be imported. Tariffs and quotas are trade restrictions intended to boost a country's industry and shield it from foreign competition.

In theory, these restrictions force U.S. companies to buy locally produced products instead of more expensive (or limited) foreign products. However, some companies, like automobile and airplane manufacturers, need imported raw materials and could pass on any increased costs to obtain those materials to consumers. The U.S. has imposed tariffs on more than $250 billion worth of Chinese goods, with tariff rates between 10 percent and 25 percent, while China has imposed tariffs ranging from five percent to 25 percent on $110 billion worth of U.S. goods. Furthermore, the U.S. has threatened to impose tariffs on goods from Mexico, its third-largest trading partner in 2018 according to the U.S. Census Bureau.[36] Any increase in trade restrictions could negatively impact industries in Eastern North Carolina such as the aerospace and automotive industries.

[36] United States Census Bureau, Top Trading Partners, December 2018 Year-to-Date, https://www.census.gov/foreign-trade/statistics/highlights/top/top1812yr.html.

NCDOT Programs Promoting Security and Quality of Life

Beyond building a transportation system that meets the needs of industry and the traveling public, NCDOT has specific policies in place aimed at environmental stewardship and responsibility. NCDOT has multiple programs and initiatives to help promote quality of life while still meeting transportation goals. The programs and initiatives are:

1. **Anti-Litter Programs:** NCDOT offers opportunities for the public to get involved preventing litter along roadways, which costs millions of dollars to clean up and can negatively impact visitors' perceptions of the State.

2. **Climate Change and Clean Energy:** NCDOT recognizes the increased risk of extreme weather due to global climate change and has implemented strategies such as encouraging people to register and drive zero-emission vehicles and studying how to make its own buildings, equipment, and other facilities more energy-efficient. NCDOT has also focused on assessing vulnerabilities exposed by recent extreme weather events to develop best strategies for responding and for adopting improved transportation system designs to mitigate their impact.

3. **Reducing Noise Pollution:** NCDOT assists local governments in developing noise-compatible land-use guidelines to reduce the impact of traffic noise and helps implement noise reduction measures, such as noise walls, when the noise level is predicted to be 66 decibels or greater, about the level of noise from a normal conversation from three feet away.

4. **Roadside Environmental Aesthetics:** The NCDOT Aesthetic Engineering Section is focused on the use of progressive landscape architecture practices that both create a sense of place (e.g., using species native to North Carolina) and use the State's resources efficiently.

5. **Stormwater Management:** The NCDOT Highway Stormwater Program is designed to protect and improve water quality through the management and reduction of stormwater pollutants from roadways and industrial activities while also providing and supporting a safe and integrated transportation system.

6. **Vegetation Management:** The NCDOT's Vegetation Management Section is responsible for developing planting programs and maintaining roadside vegetation, which help stabilize soils, preventing erosion and improving safety and.

7. **Wildflower Program:** The NCDOT Wildflower Program oversees the installation and maintenance of wildflower beds across the State as an integral part of highway beautification.

Manufacturing Trends in the United States

The combination of a growing wages in China and Southeast Asia and higher transportation costs has led to a number of firms shifting manufacturing back to the United States, a trend known as reshoring. In addition to increasing labor costs, locating production closer to U.S. consumers carries other advantages, such as allowing supply chains to be more responsive to changing consumer tastes and the ability to better manage disruptions. This trend is also connected to the availability of more oil and natural gas, particularly in the last five years. As a result, the U.S., and the Southeast in particular, has become a more attractive location for high-value manufacturing. Not only has this spurred U.S. companies to bring back certain manufacturing activities, it has also increased the attractiveness of the U.S. for foreign direct investment from international firms.

The trend of reshoring along with foreign direct investment has created an opportunity for North Carolina to leverage its freight assets to improve its competitiveness in high-value manufacturing. The expansion of the State's interstate highway system along with improved rail service and connectivity to the Port of Wilmington could make North Carolina more desirable to these types of investments. According to the Reshoring Initiative, North Carolina is fourth (behind South Carolina, Tennessee, and Georgia) in the cumulative number of manufacturing jobs that result from reshoring or foreign direct investment.[37] Planned investments in the highway system, especially the interstate system and roadways that provide access to major freight terminals (e.g., the Port of Wilmington, the CSX terminal at Rocky Mount, etc.); will help North Carolina compete in high-value manufacturing.

[37] Reshoring Initiative. Reshoring Initiative Data Report, 2015. http://reshorenow.org/content/pdf/2015_Data_Summary.pdf.

5.0 Logistics Freight Market Assessment

Building on the information gleaned in the Eastern North Carolina Regional Goods Movement Profile and the Commodity Flow Analysis and Economic Trends a regional freight market assessment was developed to analyze potential logistics functions and facilities in the region and evaluate the region's strengths, weaknesses, opportunities and threats for logistics-based developments.

The freight market assessment includes a comparison of the region's freight modal shares with the rest of the State and the U.S., and furthermore an examination of the potential market for water/port and intermodal rail diversion in the region.

This section presents:

- Cargo-oriented development opportunities and provides an assessment of the region's overall strengths, weaknesses, opportunities and threats for attracting and retaining businesses and users of freight assets; and,
- Examines existing freight flows and volumes as well as the potential for modal diversion to existing or new ports or freight rail facilities in the region.

5.1 SWOT Analysis

Eastern North Carolina has a rich heritage in the early development of tobacco and textile processing activities as well as the manufacturing of apparel, farm equipment and industrial machinery. Greenville became one of the two largest cities in the region due to East Carolina University. The City of Jacksonville developed largely as a result of Marine Corps Base (MCB) Camp Lejeune, now one of the largest military installations in the world. The region's economy is now very diversified: the military (four primary bases) or defense sector, value-added agriculture (including food & beverage), aerospace, life science and health care, advanced manufacturing (motor vehicle assembly & parts mfg., large appliances, industrial machinery, etc.) and tourism are the major economic drivers.[38] Efficient transportation services are necessary in order to keep these companies competitive in regional, national, and global economies. Freight transportation, therefore, is vital to a region's economy, and plays an important role by allowing businesses to stay competitive, by connecting regions to domestic and international trading partners, and by supporting jobs and driving economic activity.

Shippers are increasingly investing in cargo handling facilities and transportation infrastructure to handle the increasing freight needs and demands. These investments include additional warehousing, decentralized storage and distribution, and transfer facilities in and around port facilities. Public sector agencies are also prioritizing similar investments to spur economic development and support local businesses. The emergence of increased cargo handling investments highlights deficiencies in freight transportation that need to be mitigated.

This study utilizes the strength, weaknesses, opportunities, and threats (SWOT) approach as an analytical framework that assesses what an entity (a place in this case: Eastern North Carolina) can and cannot do, for factors both internal (the strengths and weaknesses) as well as external (the potential opportunities and

[38] NC East Alliance Web Site, access August 9, 2019.

threats). This approach is applied to various industries for strategic decision making. SWOT findings are presented with regard to (1) labor and jobs; (2) transportation, (3) industries, (4) natural disasters and (5) federal regulations and funding.

As part of the Eastern North Carolina Freight Mobility Plan's outreach efforts an Economic Development Focus Group was conducted June 3, 2019. The objectives of the focus group were to: Review freight-intensive target industries for economic development in the 28 county region; Identify Eastern North Carolina freight-related economic development initiatives underway and planned; Obtain input on the region's strengths, weaknesses, opportunities and threats to attract and retain businesses; and, Hear lessons learned from economic development success and failure stories. The findings of the focus group are summarized in this SWOT Analysis.

5.1.1 Cargo-Oriented Development Opportunities and Requirements

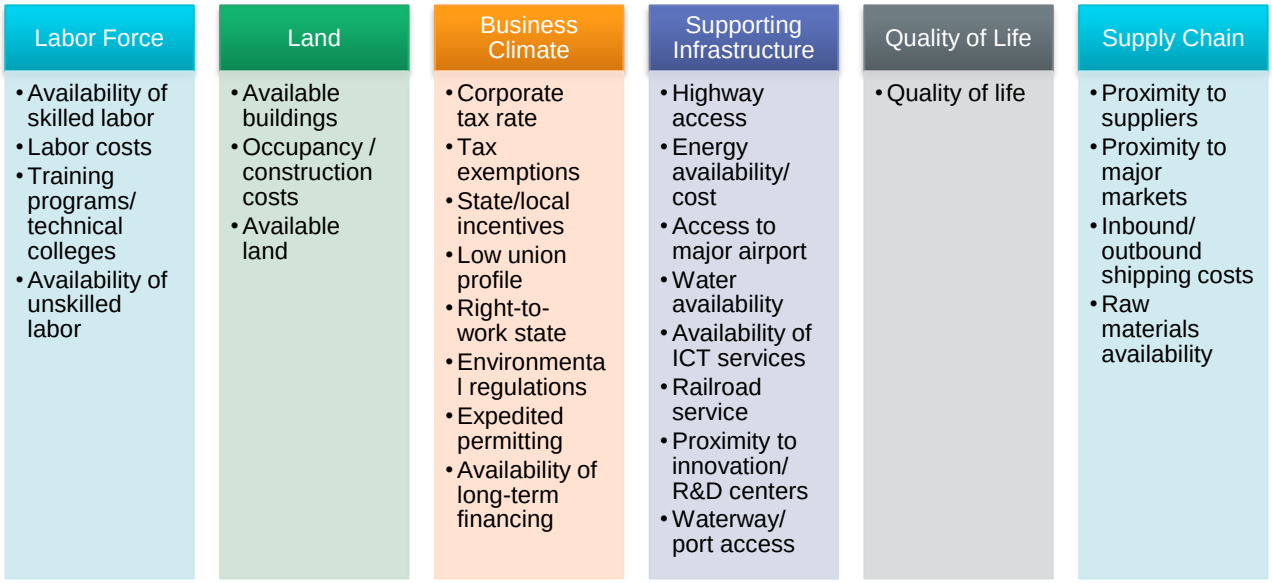
The ultimate success of a cargo-oriented development in Eastern North Carolina in attracting users depends on its ability to add value in the supply chain. A port or freight facility can provide the means to optimize transportation-related costs associated with supply chains. While a facility has the potential to attract businesses providing additional auxiliary and value-added services, multimodal transfer facilities can be created and exist in absence of these additional developments. However, the port and distribution facilities by definition require the attraction and agglomeration of these value-added activities.

At cargo-handling facilities, a strong transportation network – including access to the interstate highway system, rail facilities, and port operations – is critical for businesses seeking competitive advantages. It allows businesses to choose the appropriate modal alternative(s) for their logistics needs. As supply chains become more complex, businesses look for ways to reduce the number of links in the chain and the number of times they have to transload their cargo by incorporating a variety of components at locations that are multimodal and provide integrated logistics opportunities. Overall, these cargo-oriented developments allow businesses to be more competitive through a strong transportation network with multimodal capabilities and value-added services.

While there are many factors that influence the final location decision of cargo-oriented developments as seen in Figure 5.1, there are certain minimum requirements, including:

- Multimodal connectivity;
- Good highway infrastructure, including north-south and east-west connectivity;
- Active railroads;
- Established shipper facilities and/or markets;
- Available and cost-effective land;
- Local cooperation; and
- Competitive energy options and costs.

Figure 5.1 Site Selection Factors



Source: 2018 Corporate Survey Results, Area Development Magazine2018 Corporate Survey Results, Area Development Magazine

5.1.2 SWOT Findings

The findings of the region's SWOT analysis for attracting and retaining businesses and users of freight assets are presented summarized in the following categories: (1) labor and jobs; (2) transportation, (3) industries, (4) natural disasters, and (5) federal regulations and funding.

Labor and Jobs

The labor market in Eastern North Carolina is strong, as many industrial job growth rates are higher than national and state rates.[39] The Utilities industry grew by 131.9 percent between 2010 and 2017 in the study area and only 14 percent nationally. Transportation and Warehousing grew by 69 percent in the same timeframe in Eastern North Carolina and only 40.2 percent nationally. Mining, Quarrying, and Oil and Gas Extraction grew 41 percent in the study area while it grew only 19.1 percent nationally; and, Agriculture, Forestry, Fishing, and Hunting grew 12.2 percent in the study area and only 2 percent nationally between 2010 and 2017.[40] However, unemployment in 25 of the 28 counties in the region have not recovered from the recession at the same rate as the rest of the state. Unemployment in North Carolina as a whole was just under 4 percent in December 2018 while at the same time Hyde County had close to 9 percent unemployment, Tyrrell County had close to 7 percent unemployment, and Washington, Edgecombe, Halifax, Wilson, and Dare Counties all had over 5 percent unemployment as of December 2018.[41] Seven counties in Eastern North Carolina have over 5 percent unemployment rate and the job creation that is happening has

[39] U.S. Bureau of Economic Analysis (BEA) (https://apps.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1) and consultant analysis

[40] U. S. Bureau of Economic Analysis (BEA) (https://apps.bea.gov/iTable/iTable.cfm?reqid=70&step=1&isuri=1) and consultant analysis

[41] Bureau of Labor Statistics (https://www.bls.gov/lau/data.htm)

largely been centered around service-industries and high-skilled employment, leaving low-skilled workers with few options.

Mining, utilities, manufacturing, retail, and transportation and warehousing jobs have all grown at a rate higher than the state and nation. Wholesale trade has grown at a rate higher than the nation, 11.4 percent growth between 2010 and 2017 in Eastern North Carolina and 7.6 in the nation, but has lagged behind the overall state rates, at 11.7 percent growth for the same time period. The construction industry has not recovered from the recession. A shift share analysis of 2010 and 2017 employment data shows retail trade in Eastern North Carolina as the leading industry. In the same analysis transportation and warehousing ranked third, and utilities, and agriculture, forestry, fishing and hunting ranked sixth and seventh, respectively. Non-freight-intensive industries such as professional, scientific, and technical services ranked second, information ranked fourth, and educational services ranked fifth.

Transportation

Over 268 million tons of cargo are expected to be transported over the Eastern North Carolina Region's highways in 2045, a 43 percent increase over 2015 freight flows. The interstates and arterials are expected to continue to carry the heaviest truck flows across Eastern North Carolina. I-95 is considered the backbone of the highway system in the region, supported by three primary east-west routes: U.S. 64, U.S. 264, and U.S. 70. These highways will continue to be the important trucking corridors providing access to and from most areas in Eastern North Carolina to the I-95 corridor, to the Triangle Region, and in-state and out of state ports. These roadways will be challenged in the future with the increase in freight flows.

Within this growth in freight flows, 40 percent are expected to be inbound, outbound, or internal movements, the implication that many of these trips will be on non-interstate roadways for some portion of the trip. Providing modal shifts will relieve the roadway, bridges, and pavements of some of this increase in stress and strain.

Over the next several years a number of interstates highways are planned to open in North Carolina including the Raleigh-Norfolk Corridor/I-87, U.S. 117/I-795, U.S. 70, and the I-73/I-74 North-South Corridor. The Raleigh-Norfolk Corridor will connect the Triangle Region to the Hampton Roads Region along a route that includes Rocky Mount and Elizabeth City providing shippers greater access to the Port of Norfolk. Future Interstate 795 will extend U.S. 117 to I-40, decreasing the distance and average travel time between the Port of Wilmington and the Eastern North Carolina Region. This will be beneficial for shippers and carriers transporting containers between the proposed rail intermodal terminal at Rocky Mount and the Port of Wilmington. Future Interstate 587 will provide direct access to the Interstate highway system to the City of Greenville and I-42 will improve accessibility to the Port of Morehead City from the Triangle and Eastern North Carolina Regions.

I-795 will serve as an alternative route to the CSXT and NCDOT rail line that exists in this corridor, increasing the redundancy and resiliency of Eastern North Carolina's multimodal freight system. North Carolina Global TransPark (GTP) is part of an economic development initiative in eastern North Carolina intended to spur transition in the region from an agricultural base to one of skilled labor and industrial manufacturing. Originally built in 1944 by the United States Navy, the GTP airfield served as a training location for the United States Marine Corps. The facility underwent several transitions and later reopened as the Kinston Regional Jetport, and in May 1996, it was designated as Foreign Trade Zone 214. GTP provides a unique combination of attributes with its ready access to aviation, rail and highway infrastructure at a single facility. Its close proximity to military installations, two state ports, major interstate and rail thoroughfares

have attracted growing industry clusters of aerospace and aviation, advanced manufacturing, logistics, and government services.

Eastern North Carolina features two Class I railroads, Norfolk Southern Railway (NS) and CSX Transportation (CSX), and multiple short line railroads that connect businesses and industries to the Class I network. Intermodal rail traffic throughout the Eastern North Carolina Region will be impacted by the construction of the CCX terminal in Rocky Mount. Located on the CSXT A-Line, the CCX terminal will primarily serve shippers in the Triangle and the Eastern North Carolina Regions, as well as transfer truck trips to rail, provide shipper savings, and add jobs and economic development opportunities. There has recently been increasing interest in utilizing the Camp Lejeune Railroad line (CPLJ) for the purpose of transporting commercial freight and enhancing the local economy. The CPLJ would connect to Norfolk Southern at Havelock, NC, and the Port of Morehead City.

As the Interstate highway system is expanded in the region and investment in the freight rail system grows, the connectivity between Eastern North Carolina, the Triangle Region and the rest of the country grows stronger, facilitating greater goods movement investments and opportunities.

The Ports of Morehead City and Wilmington play a critical role in the movements of freight and cargoes in and out of Eastern North Carolina. For some industries sectors, the neighboring Ports of Virginia, Charleston and Savannah move even higher volumes of goods since they serve overseas markets. North Carolina military bases rely on NC Ports and neighboring ports for transporting troops and military equipment. One constraint to the movement of goods from inland to the Port of Morehead City is the rail line through downtown Morehead City. Related to this constraint are conflicts between the tourism industry and the logistics industry. The Port of Wilmington is located 26 miles from open water, preventing larger ships from calling to port. Both ports face dredging challenges to maintain shipping channels.

Industries

E-commerce is impacting logistics and freight flows everywhere, as increasing numbers of goods are delivered to homes or work. Improved connectivity and accessibility from interstate and rail investments and increased airport access through Future Interstate 42 combined with the population growth expected in the Triangle Region could spur further development of freight-serving facilities in Eastern North Carolina. Rubber and organic grain feed are areas of opportunities for growth. North Carolina is one of the largest rubber import states in the U.S., with increased rail capabilities and a more connected highway network rubber imports could increase. A Triangle Tire manufacturing facility near Rocky Mount is in development and would provide six million passenger vehicle tires and one million commercial truck tires annually. Organic grain feed is also moved by both rail and road and would benefit from the same expansions.

Eastern North Carolina has some of the best offshore wind energy resources along the Atlantic coast[42]. The Amazon Wind Farm in North Carolina began producing power in 2017 and produces power enough for 61,000 homes annually.[43] Eastern North Carolina has also come to the forefront in solar energy production, state-wide North Carolina produces more solar energy megawatts than any other state in the Southeast.[44] North Carolina's General Assembly passed the Renewable Energy Portfolio Standard (REPS), requiring utilities to generate a portion of electricity from clean, renewable sources. Though Eastern North Carolina

[42] https://cleanenergy.org/north-carolina/

[43] https://cleanenergy.org/wp-content/uploads/F-Amazon-Wind-Farm-Fact-Sheet-SACE.pdf

[44] http://www.cleanenergy.org/wp-content/uploads/Solar_Southeast_Report_2017.pdf

has entered the wind and solar markets, there is still progress to be made through energy efficiency programs and clean energy production.

The Research Triangle, comprising of Chapel Hill, Durham, and Raleigh, has attracted an educated workforce making research one of the larger industries in North Carolina. Eastern North Carolina can benefit from this proximity through leveraging and testing new research in the areas of automated vehicles, technology, and food as they are conducted in facilities in Research Triangle.

Natural Disasters

Frequent storm surges and flooding, whether from hurricanes, or blizzards, will disrupt supply chains through closed ports, canceled flights, and blocked roadways. Depending on the severity of the storm, goods movement and production can completely halt for some time during and after a storm. For example, Hurricane Florence disrupted the automotive, agriculture, textile, and manufacturing sectors as well as retail and the biotech industry. Much of I-95 was closed due to flooding and the Port of Morehead had to delay reopening after significant damage to warehouses and buildings on-site.[45] Sections of the Camp Lejeune Railroad were washed out, and major repairs are since in progress one year later. New Bern, North Carolina saw floods rising six to seven feet above the local high-tide line in 2018 due to Hurricane Florence.[46] Eastern North Carolina needs to prepare and plan for the risks and impacts associated with these natural disasters and build redundancy and resiliency into business plans and transportation networks.

Federal Regulations and Funding

Changes in federal immigration and trade policies can have an impact on state goods movement. Trade restrictions can mean fewer goods coming into and going out of local Ports and immigration policy changes may make it harder to hire needed workers. Federal transportation funding typically covers about 40 percent of state and local highway funding yet this does not meet the need for funding support in most states.[47] Additionally, funding often falls short when it comes to maintaining and improving existing infrastructure as the federal funding program does not focus on outcomes, performance, or accountability.[48]

5.1.3 SWOT Findings Summary

Considering the potential in existing freight assets, freight-dependent industries, regional economic development successes and failures, and future development plans, the findings of the SWOT analysis including strengths, weaknesses, opportunities, or threats for the Eastern North Carolina Region are shown in Table 5.1.

[45] https://news.thomasnet.com/featured/how-natural-disasters-affect-the-supply-chain-and-how-to-prepare-for-the-worst/

[46] https://www.washingtonpost.com/graphics/2019/national/gone-in-a-generation/flooding-climate-change.html?noredirect=on#hurricane

[47] https://www.mercatus.org/publications/state-and-local-policy/federal-highway-funding-needs-change

[48] https://www.brookings.edu/wp-content/uploads/2016/07/06_transportation_V.pdf

Table 5.1 Freight Oriented Development SWOT Analysis

Strengths	Weaknesses
• Available land at a competitive price • Labor availability (high unemployment, low-cost, area connection to military personnel) • Many freight-dependent industries' growth rates are higher than national and state rates • Access to I-95, U.S. 64, U.S. 264, U.S. 70 • Access to Class I and Short Line railroads • Access to in-state and out-of-state Ports including Norfolk, Charleston, and Wilmington/Morehead City Ports	• Available labor is unskilled and unreliable • Low-skilled job availability has not recovered to pre-recession levels • Lack of broadband infrastructure in rural areas • Lack of connectivity to natural gas • Traffic congestion at the Port of Morehead City during peak tourist season and large train movements • Population decline and poor health among rural populations
Opportunities	**Threats**
• Low cost of land, labor, and living • Research capabilities • Clean energy industry opportunities • New Port equipment and warehouses • Further development on Radio Island • Short line railroads acquiring Class I branch lines • Future Interstate, Direct Rail Access, and Airport Access – New Raleigh-Norfolk Corridor – Future Interstate 795, 587, and 42 – CCX terminal in Rocky Mount	• Natural disasters (flood zones and super storms are frequent in the area) • Trade and immigration regulations • Transportation needs exceeding current funding levels • Dredging issues at NC Ports • Inconsistencies in political champion supporting freight industries and development • Class I railroads divesting branch lines to short lines

Source: Eastern North Carolina Freight Mobility Plan Economic Development Focus Group conducted June 3, 2019 facilitated and processed by Cambridge Systematics.

5.2 Freight Market Analysis

The objective of the freight market analysis is to examine the potential for modal diversion from the primary mode of transportation in the region to other modes, and what could be the potential demand for a port or rail facility serving the region.

5.2.1 Mode Share Analysis

About 87 million tons of goods moved to, from, or within Eastern North Carolina in 2015. By 2045, it is projected that Eastern North Carolina's transportation system will carry more than 122 million tons of freight annually (excluding through flows), an increase of 41 percent by tonnage.

As indicated in Table 5.2, in 2015 trucks carried approximately 75.6 million tons of goods, representing over 87 percent of the goods that were moved in the study area. Freight rail was the second-highest mode in terms of tonnage, moving 10 percent of the total tons, followed by waterways which moved 2.4 percent of the total goods originating or terminating in the region. Pipelines and air cargo are the smallest mode for moving freight with 295,000 and 32,000 tons moved respectively in 2015.

Table 5.2, Figure 5.2 and Figure 5.3 present the modal shares for the total tons moved in the study area, the State, and the Nation. The modal splits are shown for 2015 and forecasted to 2045 tons originating and/or terminating in the Region, State and Country.

Trucks are the primary mode for freight transport across the country, though the truck mode share for tons originating and terminating in the study region is higher, at 87 percent, compared to 78 percent and 65 percent for the State and U.S. respectively. Conversely, the opposite is true for the regional water, air, and multimodal/intermodal mode shares when compared with the state and national shares for the same modes. This represents an opportunity for the region for modal diversion from truck to other modes such as water/barge, and rail intermodal and carload. The future CCX rail intermodal terminal that is being built in Rocky Mount will be able to capture some of the potential demand for truck to rail intermodal diversion in Eastern North Carolina and surrounding areas, given that currently there is no rail intermodal service in the region.

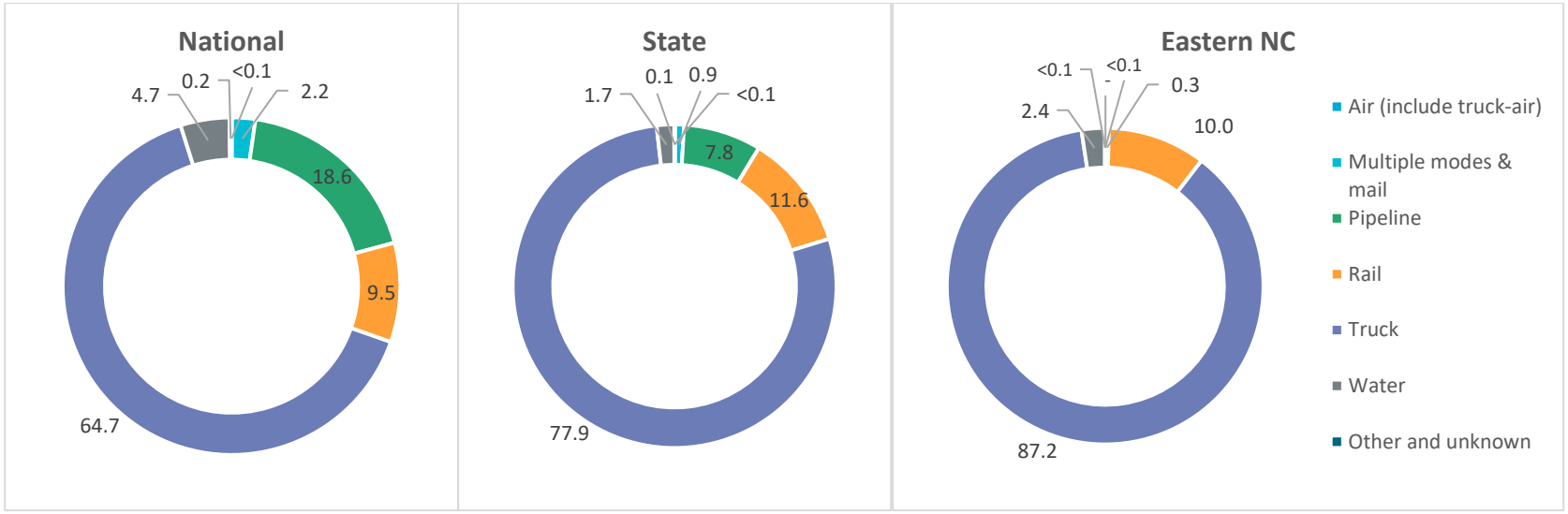
Table 5.2 National, State and Regional Modal Share by Weight, *2015-2045*

	2015 Tons (in Thousands)			2045 Tons (in Thousands)		
Mode	**U.S.**	**NC**	**Eastern NC**	**U.S.**	**NC**	**Eastern NC**
Air (include truck-air)	7,064	283	32	23,604	1,056	125
Multiple modes & mail (include rail intermodal)	397,752	3,970	-	645,644	7,618	-
Pipeline	3,303,158	35,148	295	4,554,351	53,805	695
Rail carload	1,693,524	52,203	8,701	2,093,598	62,641	12,343
Truck	11,512,620	352,234	75,558	16,529,381	493,672	106,173
Water	835,492	7,900	2,069	1,156,421	12,402	2,875
Other and unknown	33,366	147	13	30,829	563	51
Total	**17,782,976**	**451,885**	**86,667**	**25,033,827**	**631,757**	**122,262**

	2015 Tons % Share (%)			2045 Tons % Share		
Mode	**U.S.**	**NC**	**Eastern NC**	**U.S.**	**NC**	**Eastern NC**
Air (include truck-air)	<0.1	0.1	<0.1	0.1	0.2	0.1
Multiple modes & mail (include rail intermodal)	2.2	0.9	-	2.6	1.2	-
Pipeline	18.6	7.8	0.3	18.2	8.5	0.6
Rail carload	9.5	11.6	10.0	8.4	9.9	10.1
Truck	64.7	77.9	87.2	66.0	78.1	86.8
Water	4.7	1.7	2.4	4.6	2.0	2.4
Other and unknown	0.2	<0.1	<0.1	0.1	0.1	<0.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

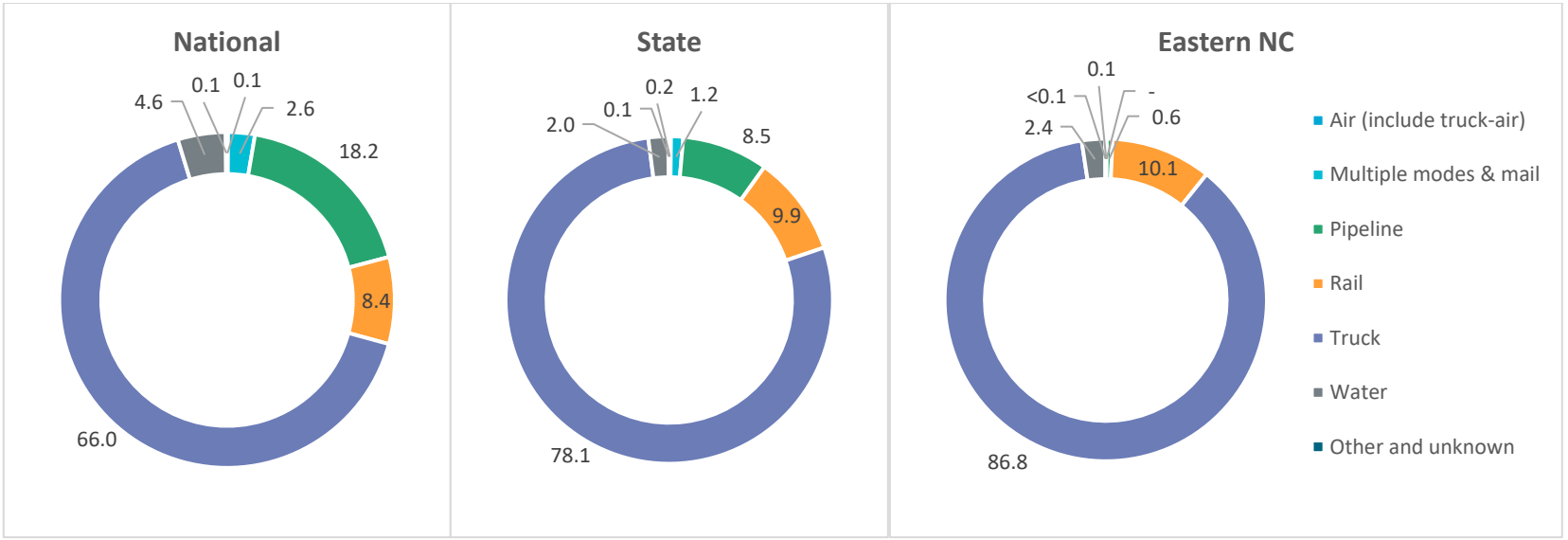
Source: FHWA's FAF4.1 2015-2045, FAF4.1 2015-2045 disaggregated and processed by Cambridge Systematics, 2014 STB Carload Waybill Sample forecasted to 2045.

Figure 5.2 National, State and Regional Mode Share by Weight, *2015*



Source: FHWA's FAF4.1 2015-2045, FAF4.1 2015-2045 disaggregated and processed by Cambridge Systematics, 2014 STB Carload Waybill Sample forecasted to 2045.

Figure 5.3 National, State and Regional Mode Share by Weight, *2045*



Source: FHWA's FAF4.1 2015-2045, FAF4.1 2015-2045 disaggregated and processed by Cambridge Systematics, 2014 STB Carload Waybill Sample forecasted to 2045.

Table 5.3 displays the inbound commodities by tonnage terminating in the region. About 41 million tons of goods were moved inbound. For the waterway commodities the top commodities by tonnage include other coal and petroleum products not elsewhere classified, waste and scrap, nonmetallic minerals, gravel, base metals, other agricultural products, and animal feed. For the rail commodities the top commodities by tonnage include nonmetallic minerals, cereal grains, coal, animal feed, gravel, basic chemicals, fertilizers, nonmetal mineral products, milled grain products, and natural sands.

Table 5.3 Eastern North Carolina Inbound Freight Tonnage by Commodity, *2015 (Tons in Thousands)*

Commodity	Rail Carload	Truck	Water	Total
Gravel	472.76	5,248.36	50.46	5,771.58
Nonmetal min. prods.	248.27	4,049.21	2.30	4,299.78
Logs		3,101.46	0.37	3,101.83
Wood prods.	30.18	2,337.30	1.36	2,368.84
Cereal grains	801.11	1,338.92	0.05	2,140.07
Coal	47.44	261.96	1,635.83	1,945.23
Waste/scrap	12.00	1,478.18	91.37	1,581.55
Other foodstuffs	28.64	1,506.77	0.81	1,536.21
Mixed freight		1,490.49	2.08	1,492.56
Coal	584.49	773.10		1,357.59
Basic chemicals	430.74	905.42	3.74	1,339.90
Animal feed	506.75	753.85	12.44	1,273.04
Nonmetallic minerals	938.46	95.79	87.03	1,121.28
Gasoline		1,103.48	0.37	1,103.84
Natural sands	133.32	967.25	0.00	1,100.57
Fertilizers	252.06	841.69	2.86	1,096.60
Other ag prods.	7.76	905.57	12.97	926.30
Base metals	21.16	738.50	64.94	824.60
Alcoholic beverages	506.99	273.31	0.99	781.29
Plastics/rubber	19.92	735.45	4.26	759.64
Live animals/fish		667.99	0.01	668.00
Milled grain prods.	236.68	240.11	0.05	476.84
Fuel oils	30.24	406.14	0.82	437.20
Motorized vehicles		361.78	2.16	363.94
Newsprint/paper	24.80	281.65	0.11	306.55
Others	*14.40*	*2,389.31*	*27.47*	*2,431.17*
Total	**5,348.16**	**33,253.03**	**2,004.83**	**40,606.02**

Source: FHWA's FAF4.1 2015-2045, FAF4.1 2015-2045 disaggregated and processed by Cambridge Systematics, 2014 STB Carload Waybill Sample forecasted to 2045.

Table 5.4 displays similar information for the outbound commodities for the region by tonnage. Over 37 million tons of goods originated in the region and moved outbound. For the waterway mode, the top outbound commodities in tonnage were fertilizers, fuels and chemicals. For the rail commodities the top commodities by tonnage include fertilizers, base metals, chemicals, wood products, waste and scrap, agricultural products, and cereal grains.

Table 5.4 Eastern North Carolina Outbound Freight Tonnage by Commodity, *2015 (Tons in Thousands)*

Commodity	Rail Carload	Truck	Water	Total
Fertilizers	1,312.13	2,159.40	16.46	3,487.99
Wood prods.	249.84	2,865.04	0.44	3,115.32
Nonmetal min. prods.		2,630.04	0.18	2,630.23
Gravel		2,549.93	5.68	2,555.61
Live animals/fish		2,540.70		2,540.70
Logs		2,222.48	1.48	2,223.96
Basic chemicals	253.16	1,782.61	7.11	2,042.87
Waste/scrap	197.34	1,826.98	0.64	2,024.96
Mixed freight		1,753.54	2.08	1,755.61
Other foodstuffs		1,726.60	0.10	1,726.69
Cereal grains	139.44	1,216.32	0.01	1,355.78
Other ag prods.	142.27	1,154.37	0.05	1,296.69
Animal feed		1,221.73	0.88	1,222.61
Newsprint/paper	191.08	1,014.64	0.10	1,205.81
Base metals	321.75	740.04	0.14	1,061.93
Meat/seafood		1,032.86	0.06	1,032.92
Natural sands		798.83	0.22	799.04
Gasoline		667.97	8.02	676.00
Motorized vehicles		651.11	0.09	651.20
Misc. mfg. prods.		572.20	0.52	572.72
Plastics/rubber	13.84	519.18	0.44	533.47
Fuel oils	3.88	362.74	9.34	375.95
Machinery		368.92	0.23	369.15
Textiles/leather		323.39	1.14	324.53
Chemical prods.	149.92	170.12	0.40	320.44
Others	*2.72*	*1,433.80*	*7.75*	*1,444.27*
Total	**2,977.38**	**34,305.53**	**63.55**	**37,346.45**

Source: FHWA's FAF4.1 2015-2045, FAF4.1 2015-2045 disaggregated and processed by Cambridge Systematics, 2014 STB Carload Waybill Sample forecasted to 2045.

The analysis of existing freight flows reveals that the region is attracting and generating significant volumes of bulk commodities that have potential to be diverted to barge or rail. The following section will provide a high-level analysis for the modal diversion potential.

5.2.2 Potential for Modal Diversion

A key step in determining the feasibility of modal diversion to an existing or new port or rail facility is to understand the market for cargo that would utilize this facility. This section examines the potential for diversion of bulk commodities from truck to barge and/or rail in Eastern North Carolina. The overall process for estimating the potential cargo that may use a port or rail facility in the region involves identifying the amount of cargo that can benefit from barge or rail transportation and the trade lanes or origins and destinations that generate significant volumes of barge/rail benefited cargo into and out of the region.

Bulk commodities that are transportable by barges and/or rail present a good opportunity for diversion from truck. These commodities are displayed in Table 5.5.

Table 5.5 Commodity Filter Identifying Divertible Bulk Commodities

Commodity Group				
Cereal grains	Natural sands	Fertilizers and fertilizer materials	Paper or paperboard articles	Waste and scrap
Agricultural products except live animals, cereal grains, and forage products	Gravel and crushed stone	Chemical products and preparations	Textiles, leather and articles	Articles of base metal
Animal feed and feed ingredients, cereal straw, and eggs and other products of animal origin	Nonmetallic minerals	Logs and other wood in the rough	Base metal in primary or semi-finished forms and in finished basic shapes	Machinery
Milled grain products and preparations, and bakery products	Metallic ores	Products of petroleum refining and coal products	Wood products	
Monumental or building stone	Coal	Basic chemicals	Pulp, newsprint, paper, and paperboard	

Source: FHWA's Freight Analysis Framework (FAF4).

Next, each Origin-Destination (OD) pair in the data is assigned to a certain distance bin. The purpose of doing so is to differentiate between close markets where water and rail are generally less competitive and far markets where water and rail are more competitive. The details of this step are as follows:

- Select OD pairs between which the tonnage moved by water and rail is greater than zero.
- Apply the commodity filter in Table 5.5.
- Add mode filter, selecting Truck, Rail, and Water as the transportation mode.

- Add distance-bin information to each OD pair. The distance-bin contains only two categories: OD distance < 500 miles, and OD distance >= 500 miles.

- Calculate mode share for each distance-bin category by aggregating tonnage on domestic mode and distance-bin. This is done for the national FAF4 freight flow data to come up with national benchmarks for the mode shares, as well as for the study area commodity flow data. Table 5.6 shows the output of this last step.

Table 5.6 National Benchmark and Regional Mode Share for Divertible Bulk Commodities

Mode	Distance-bin (miles)	National Mode Share (% of Tonnage)	Regional Mode Share (% of Tonnage)
Rail	<500	13%	3%
Truck	<500	68%	96%
Water	<500	19%	0.5%
Rail	>500	23%	9%
Truck	>500	36%	88%
Water	>500	41%	3%

Source: FHWA's Freight Analysis Framework (FAF4).

When comparing the regional share of water and rail to the national benchmarks for these commodities it is apparent that there is potential for truck to rail and truck to barge diversion. In order to quantify what the potential market could be for modal diversion to an existing/new port or rail freight facility a more in-depth market assessment is needed. This quantitative analysis would take a look at specific OD markets that are relevant to barge/rail flows and compare the share of water/rail to the national benchmark to decide if the market is either mature or has potential for diversion. If there is potential, then some of the cargo that is currently transported via truck from (to) study area to (from) the market could potentially be diverted to water/rail through an existing or new port facility in the region.

6.0 Needs Assessment

6.1 Introduction

The needs assessment scope of work focused only on the Eastern North Carolina Priority Highway Freight Network (ENCPHFN). The ENCPHFN facilities have been identified as most important for the movement of freight in the region. The ENCPHFN was developed by starting from the statewide priority highway freight network and adding roadways that were deemed critical for regional freight movements and regional economic competitiveness. The following sections describe the methodology used to determine the highway freight needs and key findings. The remaining sections address each of the four major need categories and accompanying scoring criteria that assess regional Eastern North Carolina's highway needs:

- **Safety needs** are based on scoring criteria for truck crash rates, truck-involved injuries and fatalities, and truck parking availability;
- **Mobility and reliability needs** feature scoring criteria on year 2040 AM peak hour volume-to-capacity (V/C) ratio, truck travel time reliability, connectivity to strategic supply chain industries and intermodal terminals and gateways, and presence of at-grade railroad crossings;
- **Rural highway needs** are based on scoring criteria for number of lanes on rural highway corridors and truck traffic volume; and
- **Asset management and utilization needs** feature scoring criteria on bridge and tunnel vertical clearance, load restrictions, structural conditions, and pavement conditions.

Additionally, the results of the needs assessment were used to develop Regional Corridor Profiles, which take a closer look at the existing conditions, needs, projects and improvement strategies for 16 corridors with high needs in the region.

6.2 Methodology

Freight-related highway needs were identified by evaluating the conditions and performance of the ENCPHFN based on the goals of the statewide as well as the regional freight plans. The needs assessment methodology for the Eastern North Carolina Regional Freight Mobility Plan was adapted from the needs assessment methodology that was developed in the North Carolina Statewide Multimodal Freight Plan completed in 2018. The regional needs assessment methodology considered several changes to factor in available current data and to adjust scoring thresholds based on the regional context, while remaining consistent to the statewide approach.

The analysis factors included in each of the needs categories are described in the following sections, along with maps depicting the factors that went into the calculations of the roadway needs.

6.3 Key Findings

This analysis led to several key findings pertaining to highway freight needs along the ENCPHFN:

- **Higher needs exist in the region's urbanized as well as rural areas**. Higher than average severe truck-involved crashes are found throughout the region, from urban areas such as Greenville, Rocky Mount, and Wilson, to more rural roadways. The "high" safety needs are primarily along the I-95 corridor through the Selma and Rocky Mount areas, and the connecting US routes to the I-95 corridor. The NC 101 corridor in Craven County also showed "high" safety needs due to recent fatal crashes. Other "medium" safety needs are spread across the study area region either around the urban areas or along rural two-lane roadways. For mobility and reliability, the analysis shows anticipated capacity constrained traffic conditions along the I-95 corridor, and several other gateway corridors to the region including US 70, US 264, and US 64. A few other key routes in the region, such as US 117, I-795, US 13, US 258, NC 24, and NC 43 are also anticipated to have heavy traffic congestion.

- **Improve rural highways to enhance economic competitiveness**. Roadways with the most rural highway needs for Eastern North Carolina's freight network are primarily in the eastern and northern portions of the region, especially roadways such as US 13, US 258, US 158, US 64 (eastern parts), NC 11, NC 97, NC 43, NC 32, and NC 33 which have long stretches of two lane highways. Improving these corridors may help improve freight flow between rural and urban areas, improving overall mobility.

- **Opportunity to increase truck parking availability**. Truck parking is available along the interstate system, with the highest along I-95. Inadequate truck parking leads to numerous concerns including concerns for the safety of the motoring public, truckers and their cargo; lost productivity and higher business costs associated with parking search times; and concerns over the growing costs of maintaining and adding additional public truck parking facilities. Addressing this shortage may help further regional goals for safety, mobility and reliability, and economic competitiveness.

- **Some needs are prevalent across the region**. Some of region's needs must be addressed at a large scale. Higher than average severe truck-involved crashes are found at locations throughout the region, from urban areas such as Greenville, Rocky Mount, and Wilson, to more rural roadways. Segments of the ENCPHFN with asset management and utilization needs are found throughout the region, in both rural and urban locations. For example, bridges that are functionally obsolete/structurally deficient are primarily along US 64 and a few other corridors, and bridges with vertical clearance issues are primarily along the I-95, US 70, US 264, US 64, US 301 corridors. Similarly, segments of the ENCPHFN with poor pavement conditions are scattered throughout the region, with the longest stretches along US 13, US 17, US 158 and other routes.

6.4 Safety Needs

6.4.1 Background

The safety needs assessment is based on scoring criteria for truck crash rates, truck-involved injuries and fatalities, and truck parking availability.

Data sources used for the scoring criteria come from the following two sources:

Data Source	Data Type
North Carolina DOT	Crash data (2013 – 2017), truck parking information
FHWA Freight Analysis Framework (FAF)	Origin-Destination commodity flows

6.4.2 Results

To measure highway freight transportation safety and identify facilities on the network that could benefit from safety improvement projects, the following factors were utilized in the safety needs assessment. Using this methodology, 1,204 miles (85 percent) were classified as “low” need, 141 miles (10 percent) were “medium” need, and 75 miles (5 percent) were classified as “high” need.

- **Commercial Truck Crash Rates**: Measured the number of commercial motor vehicle crashes over a five-year time frame (2013-2017) on segments of the Eastern North Carolina Priority Highway Freight Network (ENCPHFN). These values were normalized by year 2017 Thousand Truck Highway Miles Traveled (THMT) on each segment. These values were updated compared to what were used in the statewide freight plan.

- **Truck Involved Severe Injuries or Fatalities**: Identified ENCPHFN segments that had higher than average number of crashes resulting in incapacitating injuries and/or fatalities. These values were normalized across the freight network by year 2017 THMT. These values were updated compared to what were used in the statewide freight plan.

- **Truck Parking Availability**: Measured the availability of truck parking as the ratio of truck parking spaces to truck traffic volumes. These values remained the same as the values that were used in the statewide freight plan.

Table 6.1 presents the three safety needs criteria, including definition, scoring methodology, and data sources.

Table 6.1 Criteria Calculation Descriptions: Safety Needs

Criteria	Definition	Scoring	Data	Notes
Truck-Involved Crash Rate	Measures truck safety hot spots	Roadways with crash per 1,000 Truck Miles Traveled: • 0-5 = 0 • 5-10 = 1 • 10-20 = 2 • > 20 = 3	NCDOT Crash Data (2013-2017)	
Truck-Involved Severe Injuries or Fatalities	Roadways with higher than average number of crashes that resulted in incapacitating injuries and fatalities	• Below average number Incapacitating Injury Crash = 0 • Above average number Incapacitating Injury Crash = 1 • Below average number Fatal Crash = 1 • Above average number Fatal Crash = 2	NCDOT Crash Data (2013-2017)	Average Incapacitating Injury crash: 0.030 Average Fatal crash: 0.031

Criteria	Definition	Scoring	Data	Notes
Truck Parking Availability	Provides for safe and adequate parking. Availability measured by ratio of truck parking spaces to average annual daily truck traffic (AADTT)	Mapped and used in qualitative needs assessment, but not scored to highways for quantitative assessment	NCDOT, FAF 2015	
Total Score		**Low = 0-1** **Medium = 2-3** **High = 4-6**		See Regional Adjustment Note

Note: Regional Adjustment: For very small segments in the ENCPHFN with no fatal or severe injury crashes, safety ranking was adjusted downward from "Medium" to "Low" and from "High" to "Medium." This adjustment was necessary as crash rates were artificially high due to how the network was segmented into very small segments. Similarly, for longer segments with fatal & severe injury crashes, safety ranking was adjusted upward from "Low" to "Medium", and for segments with 2040 AM peak Hour Volume to Capacity Ratio greater than 1.0, safety ranking was also adjusted upward from "Medium" to "High" to account for importance of the route.

The factors utilized in the safety needs assessment are shown in Figure 6.1 and in Figure 6.2. Higher than average severe truck-involved crashes are found throughout the region, from urban areas such as Greenville, Rocky Mount and Wilson, to more rural roadways.

Truck parking is found along the interstate system, with the highest along I-95. The I-795, US 258, US 17, US 70, and NC 11 corridors also show truck parking availability.

The resulting identified safety needs are mapped in Figure 6.3. The "high" safety needs are primarily along the I-95 corridor through the Selma and Rocky Mount areas and the connecting US routes to the I-95 corridor. The NC 101 corridor in Craven County also showed "high" safety needs due to recent fatal crashes. Other "medium" safety needs are spread across the study area region either around the urban areas or along rural two-lane roadways.

Figure 6.1 Safety Needs Factors: Truck Involved Crashes

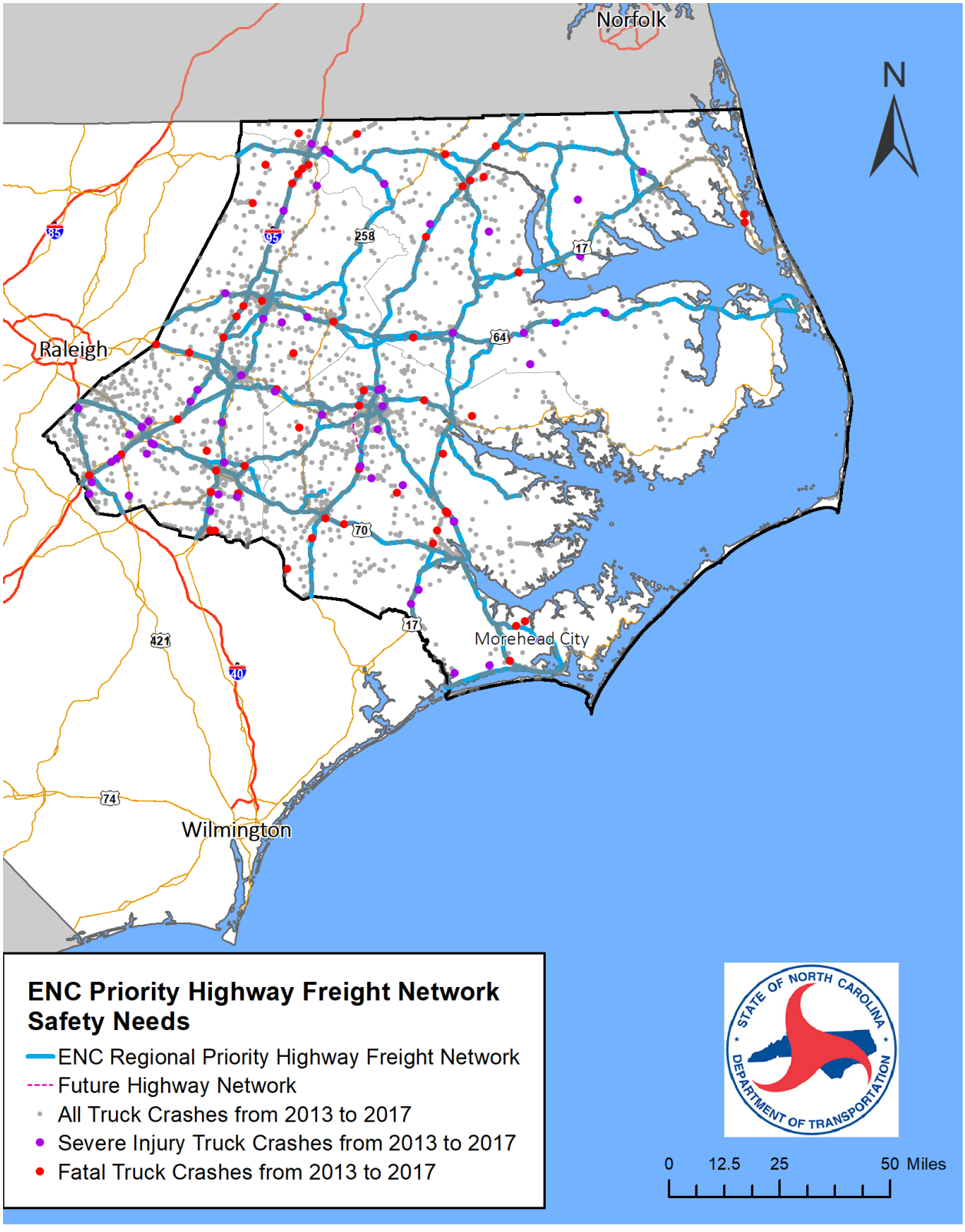


Figure 6.2 Safety Needs Factors: Truck Parking

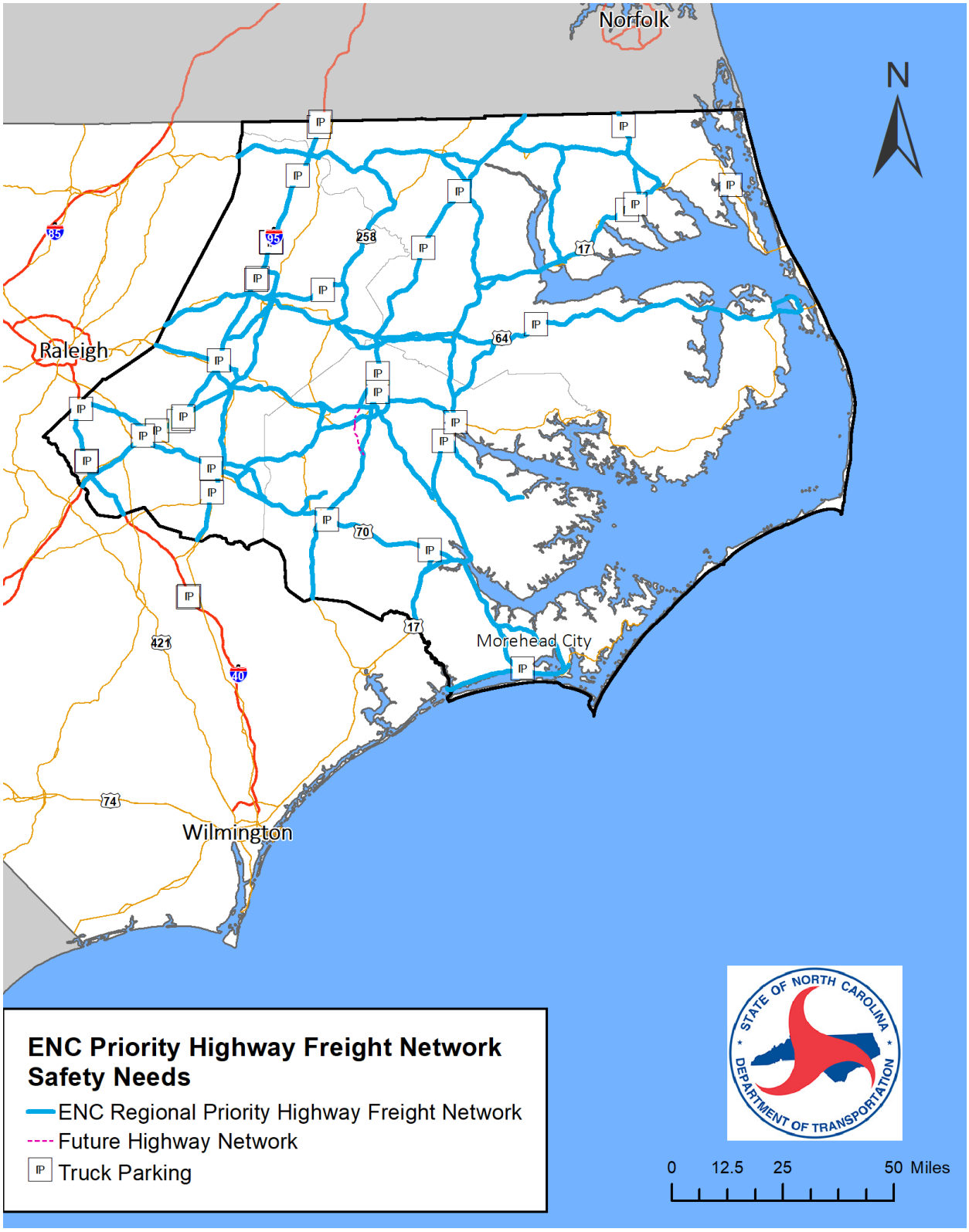
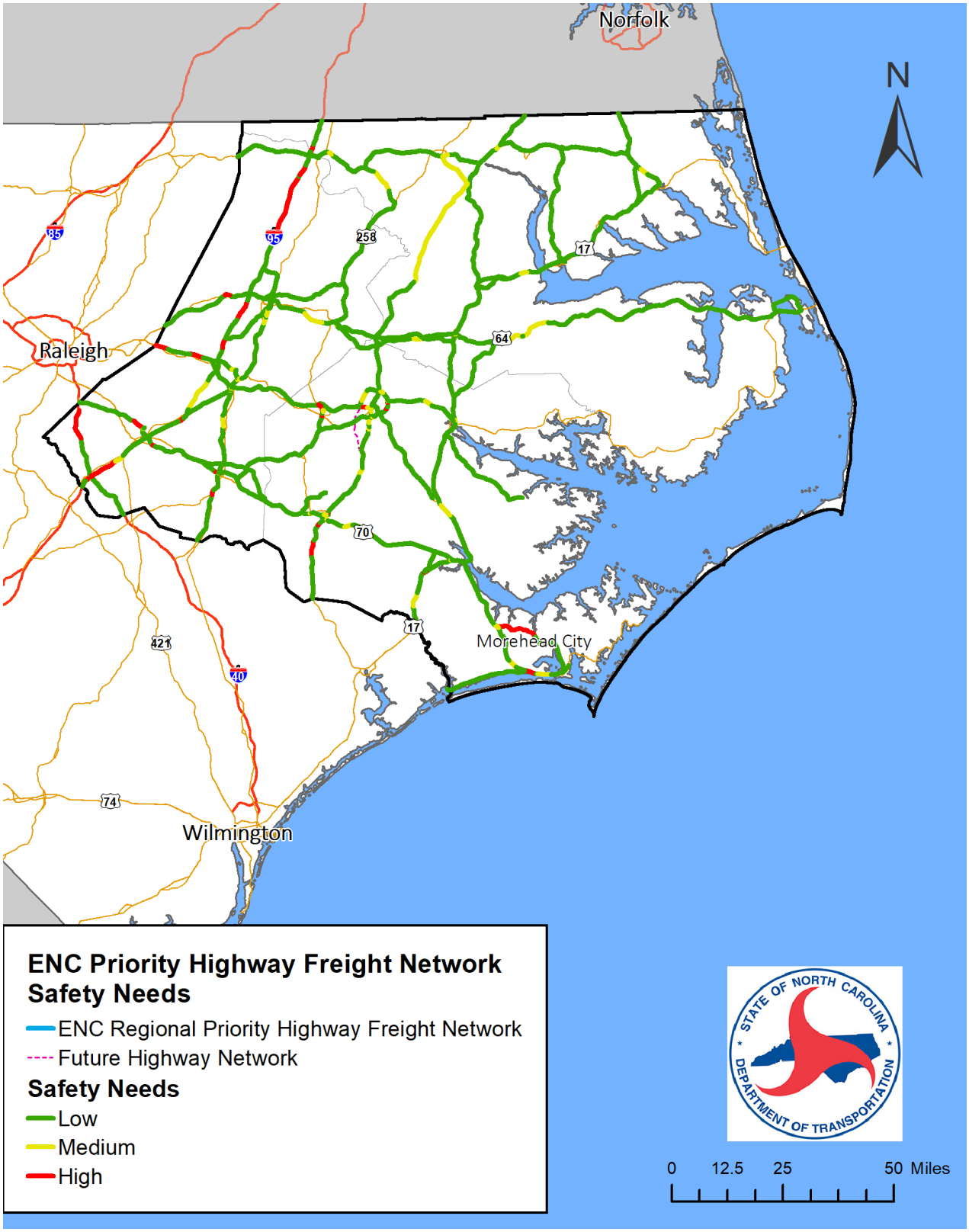


Figure 6.3 Safety Needs Assessment



6.5 Mobility and Reliability Needs

6.5.1 Background

The mobility and reliability needs assessment is based on scoring criteria for volume-to-capacity (V/C) ratio, truck travel time reliability, connectivity to strategic supply chain industries and intermodal terminals and gateways, and presence of at-grade railroad crossings.

Data sources used for the scoring criteria come from the following sources:

Data Source	Data Type
FHWA Freight Analysis Framework (FAF)	Origin-Destination commodity flows
FHWA National Performance Management Research Data Set (NPMRDS)	Performance measures
North Carolina Statewide Travel Demand Model (NCSTM)	Year 2040 AM Peak Hour Volume-to-Capacity Ratios
North Carolina DOT	At-grade crossings, Highway Performance Monitoring System (HPMS)

6.5.2 Results

Efficient highway freight movements require reliable and predicable travel times. The following factors were evaluated to identify portions of the ENCPHFN that would benefit the most from mobility and reliability projects. Using these factors, 501 miles (or 35%) were classified as “low” need, 637 miles (or 45%) were classified as “medium” need, and 283 miles (or 20%) were classified as “high need”.

- **Volume-to-Capacity (V/C) Ratio**: Measured capacity constraints, focusing on roadways with a V/C ratio of 0.5 or higher. V/C ratios were obtained from the NCSTM for year 2040 AM Peak hour. These 2040 AM V/C ratios indicate the severity of anticipated future traffic congestion on a given roadway.

- **Truck Travel Time Reliability:** These reliability data were obtained only for the statewide priority highway freight network (NCPHFN) roadways that were evaluated before for reliable travel times using the Truck Buffer Time Index (TBTI). The TBTI represents the extra time (i.e., buffer) that must be factored into scheduling to ensure an on-time arrival for 95 percent of truck trips. A lower buffer time index indicates that expected travel delays are minimal and additional time may not be required to travel through that corridor. A higher TBTI indicates the opposite, that extra travel time is needed to traverse a corridor.

- **Connectivity to Strategic Supply Chain Industries**: Additional weight was given to ENCPHFN segments with high 2040 AM V/C ratios, by applying factors from the statewide Freight System Designation (FSD) process that measured connectivity to significant economic generators.

- **Connectivity to Intermodal Terminals and Gateways:** Additional weight was given to the ENCPHFN with high 2040 AM V/C ratios, by utilizing FSD measures from the statewide plan for connectivity to key freight generators.

- **At-Grade Railroad Crossings:** Measured the impact of delay due to at-grade crossing of the ENCPHFN by active railroad main lines.

Table 6.2 presents the five mobility and reliability needs criteria, including definitions, scoring methodology, and data sources.

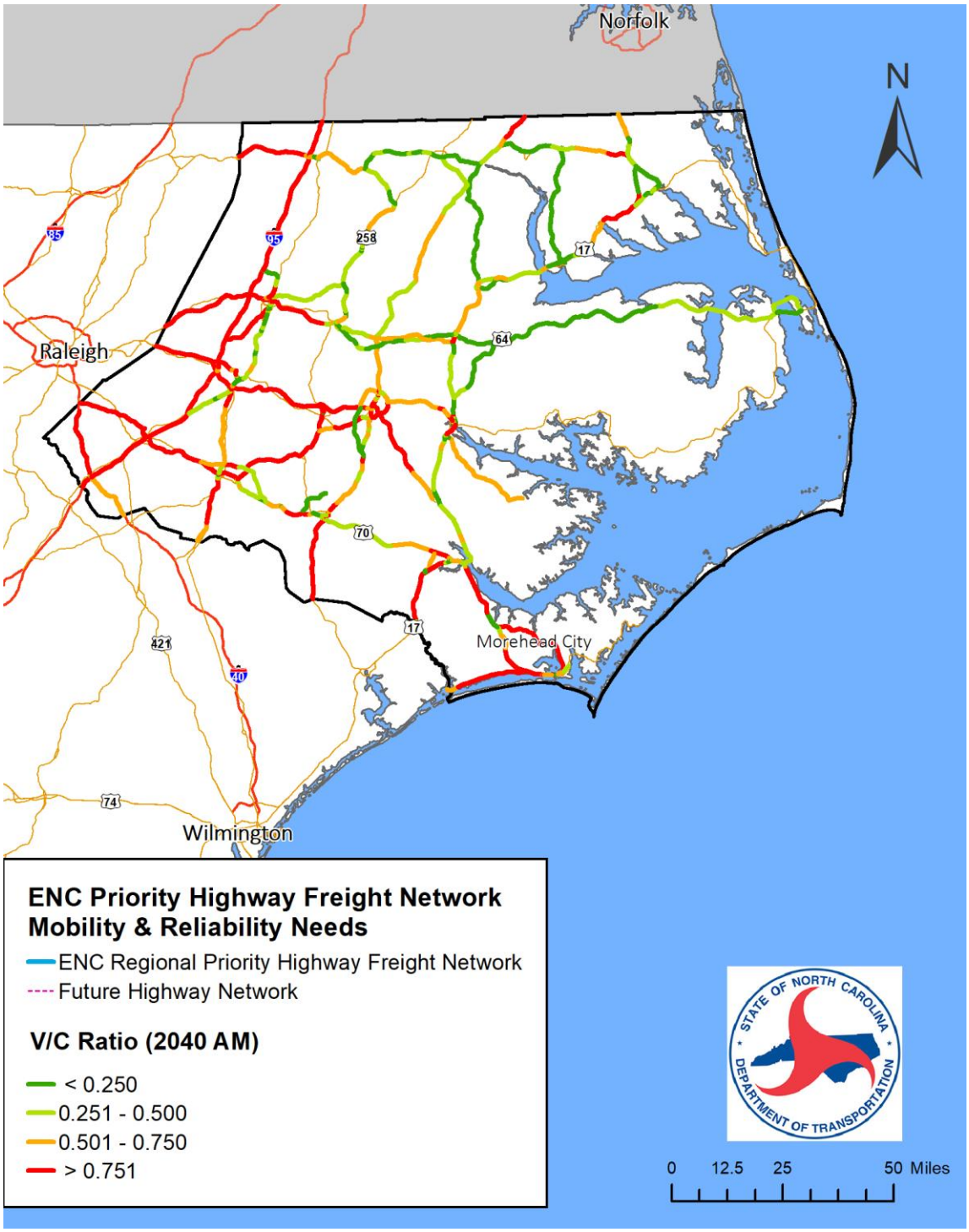
Table 6.2 Criteria Calculation Descriptions: Mobility and Reliability Needs

Criteria	Definition	Scoring	Data	Notes
2040 AM Peak Hour Volume-to-Capacity (V/C) Ratio	Measure of capacity constraints using future Volume to Capacity ratios	• V/C < 0.25 = 0 • V/C 0.25 - 0.5 = 1 • V/C 0.5 - 0.75 = 2 • V/C > 0.75 = 3	North Carolina Statewide Travel Demand Model (NCSTM), Year 2040 Model Run	
Truck Travel Time Reliability	Truck Buffer Time Index (TBTI) is a measure of reliability	• BTI 0 - 0.3 = 0 • BTI 0.3 - 0.6 = 1 • BTI 0.6 - 1.0 = 2 • BTI 1.0 - 2.0 = 3 • BTI > 2.0 = 4	NPMRDS	No data for regional roadways
Connectivity to Strategic Supply Chain Industries	Measure of connectivity to significant economic generators	If 2040 AM V/C is 0.5 or worse and/or TBTI Score > 1, then score follows the Statewide Freight Plan Supply Chain scoring: • 0 - 3 = 1 • 4 - 7 = 2 • > 7 = 3	2040 NCSTM, NPMRDS, and Statewide Supply Chain Scores	
Connectivity to Intermodal Terminals and Gateways	Measure of connectivity to key freight generators	If 2040 AM V/C is 0.5 or worse and/or TBTI Score > 1, then score follows Statewide Market Access scoring: • 0 - 3 = 1 • 4 = 2 • 5 - 6 = 3	2040 NCSTM, NPMRDS and Statewide Freight Plan Market Access Scores (MA_SC)	
At-Grade Rail Crossing on Main Lines	Measure of impact of delay due to at-grade main line rail crossing	If at-grade crossing on ENCPHFN, score based on 2017 AADTT: • 0 - 1,000 = 1 • 1,000 - 2,000 = 2 • > 2,000 = 3	NCDOT at-grade crossings and 2017 AADT	
Total Score		**Low = 0-3** **Medium = 4-6** **High >= 7**		See Regional Adjustment Note

Note: Regional Adjustment: For links with TBTI=0 (i.e., no buffer time data), Total Score was adjusted/normalized by adding a score of 1.

Figure 6.4 presents the mobility and reliability needs factor for 2040 AM peak hour volume-to-capacity ratio. This map show anticipated capacity constrained traffic conditions along the I-95 corridor, and several other gateway corridors to the region including US 70, US 264, and US 64. A few other key routes in the region, such as US 117, I-795, US 13, US 258, NC 24, and NC 43 also show heavy congestion.

Figure 6.4 Mobility and Reliability Needs Factors: 2040 AM Peak Hour Volume-to-Capacity (V/C) Ratio



The mobility and reliability needs criteria for truck buffer time index are shown in Figure 6.5. Like truck congestion, truck travel time is least reliable in the urban areas such as Greenville, Rocky Mount, Goldsboro, and Morehead City.

Figure 6.5 Mobility and Reliability Needs Factors: Truck Buffer Time Index

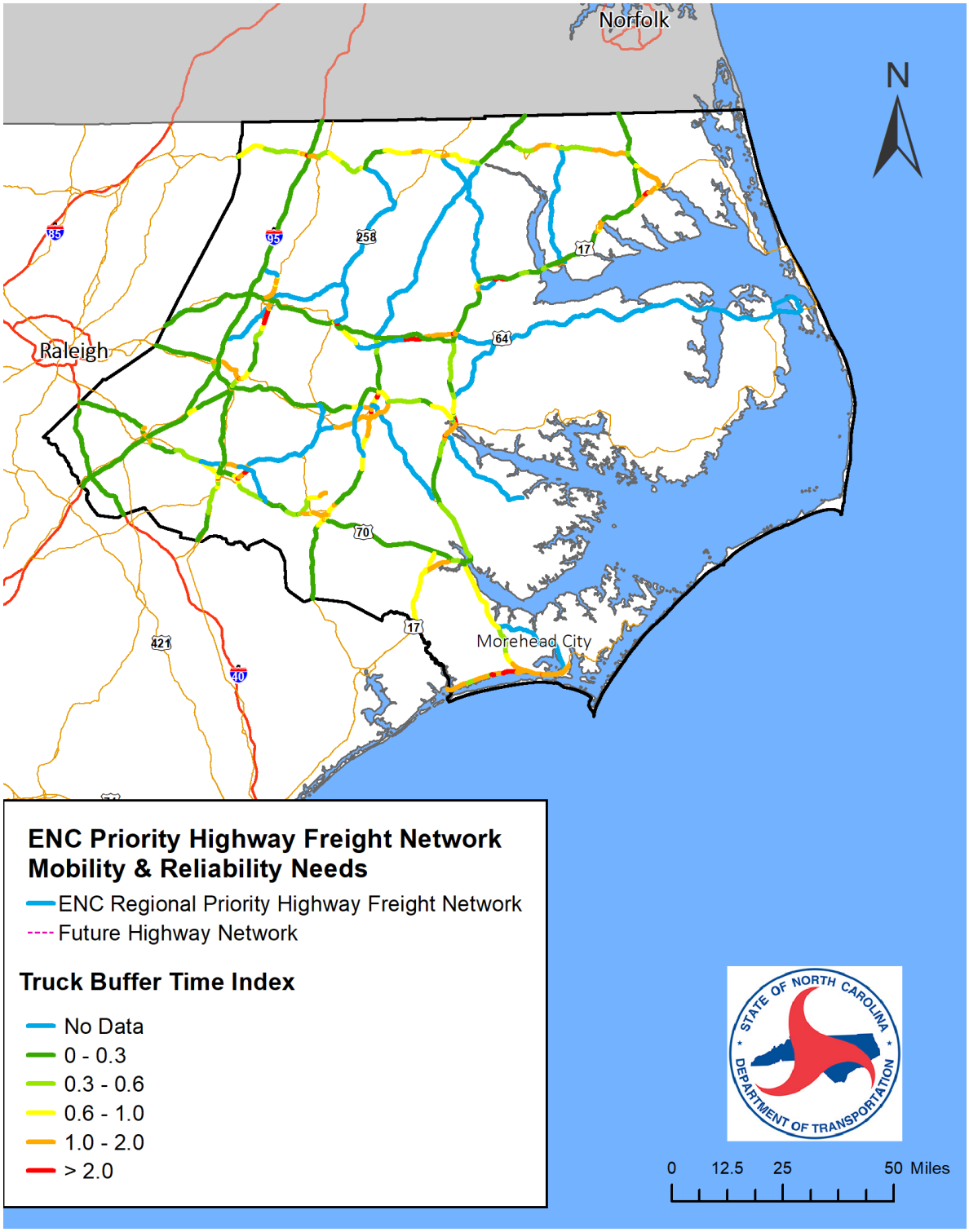
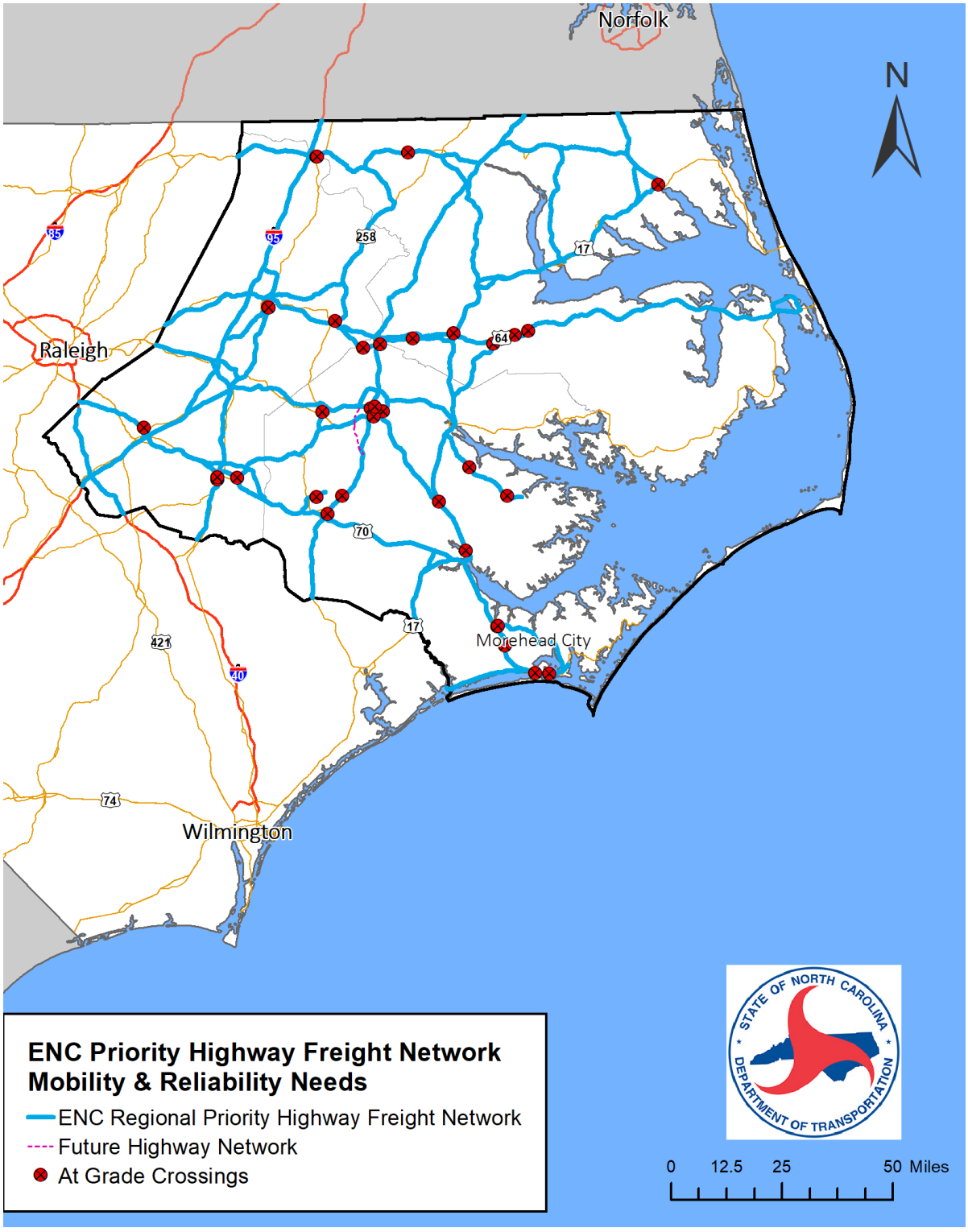


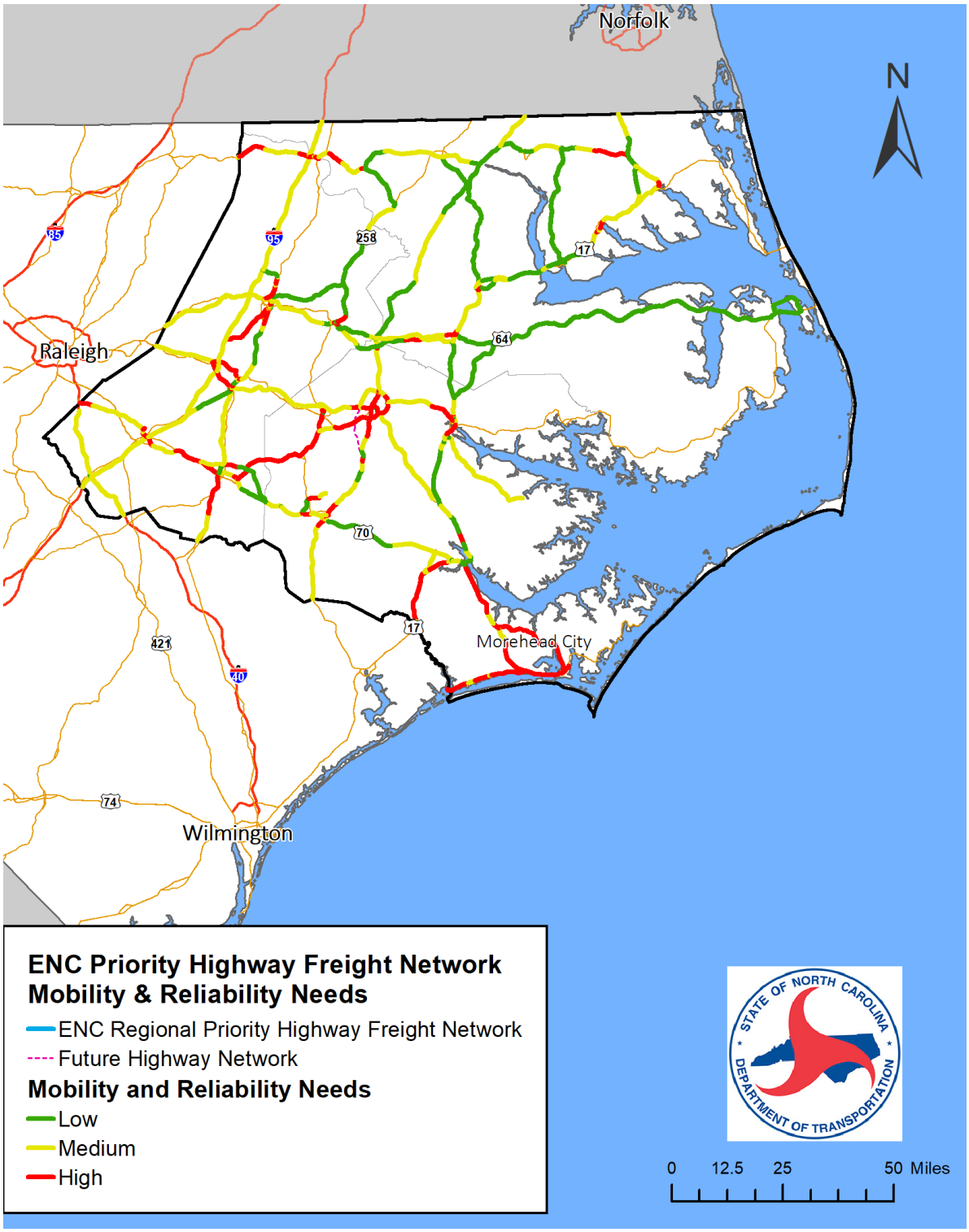
Figure 6.6 presents the at-grade rail crossings included in the mobility and reliability needs assessment. At-grade crossings on the ENCPHFN are found throughout region along the gateway corridors such as US 70, US 264 and US 64.

Figure 6.6 Mobility and Reliability Needs Factors: At-Grade Crossings



Error! Not a valid bookmark self-reference. provides the overall mobility and reliability needs assessment, which incorporates all the factors described in Table 6.2. The total scores for mobility and connectivity needs of Eastern North Carolina's highway freight network are "high" surrounding the urbanized areas, such as Greenville, Rocky Mount, Wilson, Goldsboro, New Bern, and Morehead City.

Figure 6.7 Mobility and Reliability Needs Assessment



6.6 Rural Highway Needs

6.6.1 Background

The rural highway needs assessment is based on scoring criteria number of lanes on rural highway corridors and truck traffic volume. Data sources used for the scoring criteria come from FHWA's Freight Analysis Framework (FAF), which provides origin-destination freight flows for the U.S., Canada, and Mexico.

6.6.2 Results

The two-lane roadways are important to the movement of freight throughout the region and play a key role in providing access to freight generating industries. There are a range of projects that can be identified to improve rural two-lane highways to better accommodate the movement of freight. The rural highway freight needs were measured by evaluating the 2017 AADTT utilizing these roadways. Using this methodology, 276 miles (or 20%) were classified as "low" need, and 16 miles (or 1%) were classified as "medium" need.

Table 6.3 presents the rural two-lane highway mobility needs criteria, including definitions, scoring methodology, and data source.

Table 6.3 Criteria Calculation Descriptions: Rural Highway Needs

Criteria	Definition	Scoring	Data	Notes
Rural Two Lanes	Two lane ENCPHFN rural only	If rural and 2-lane: • Score = 1	Statewide Freight Plan	
Truck Traffic Volume	Measures level of need	2017 AADTT score: • 0-1000 = 0 • 1,000-2,500 = 1 • 2,500-6,000 = 2 • 6,000 – 12,000 = 3 • > 12,000 = 4	2017 AADTT	
Total Score		**Low = 1** **Medium = 2**		

Figure 6.8 shows the rural two-lane highways in the ENCPHFN. These are primarily found in the eastern and northern parts of the region, especially roadways such as US 13, US 258, US 158, US 64 (eastern parts), NC 11, NC 97, NC 43, NC 32, and NC 33 which have long stretches of two-lane highways.

Figure 6.9 shows the results of the rural highway needs assessment. Roadways with the most rural highway needs for the regional freight network are primarily in the northern and central parts of the region that connects the Greenville area to the north and south.

Figure 6.8 Rural Highway Needs Factor: Rural Two-Lane Highways

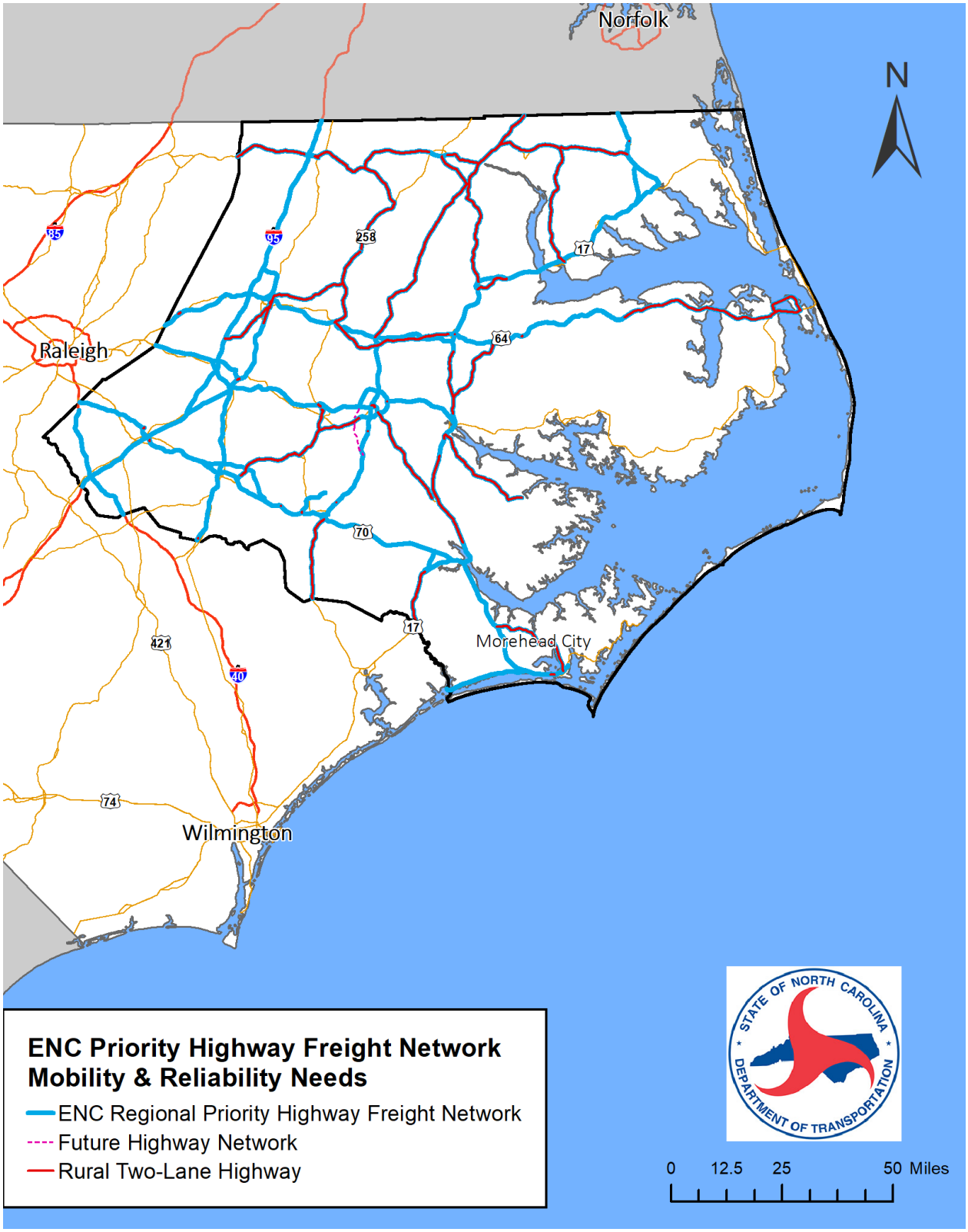
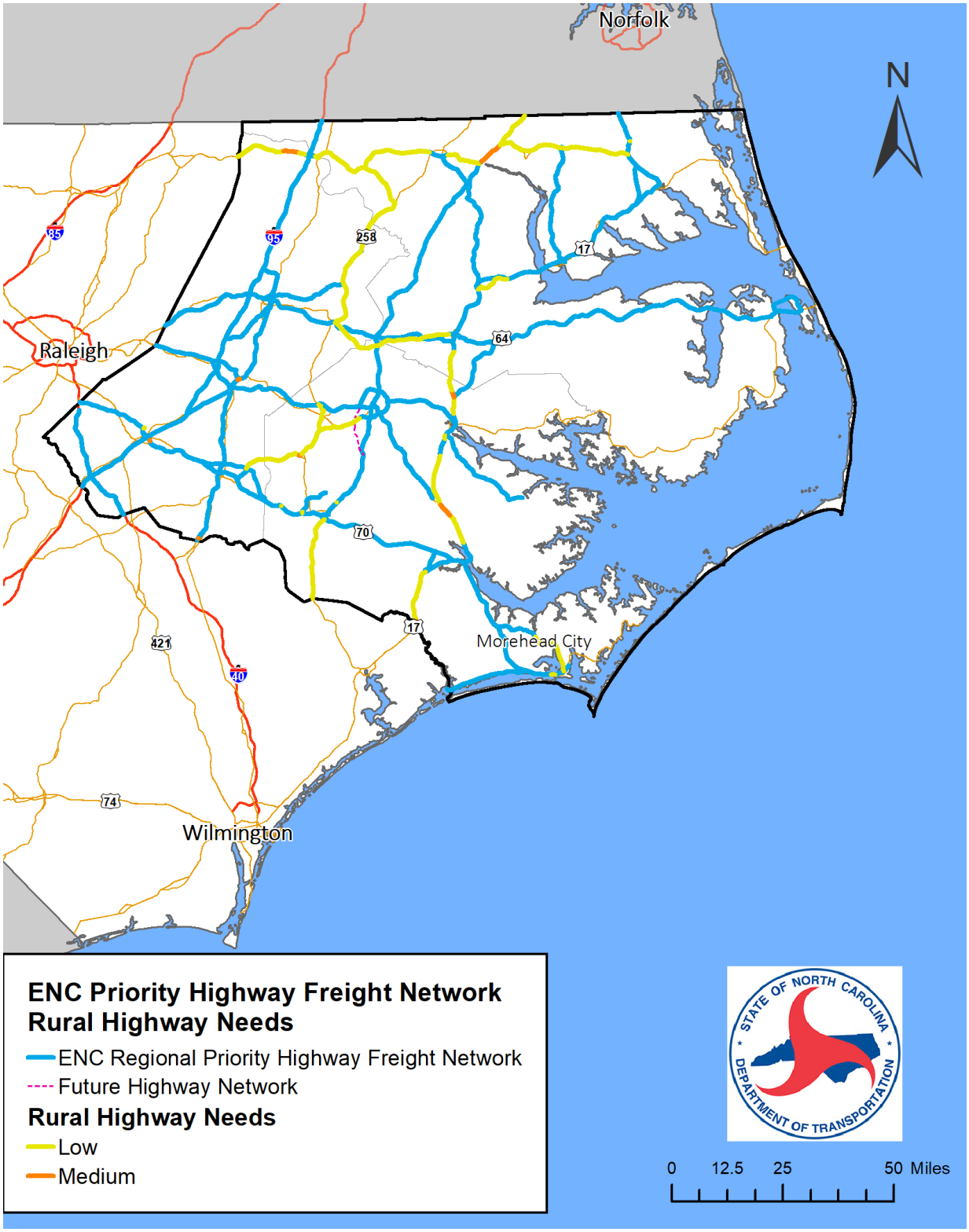


Figure 6.9 Rural Highway Needs Assessment



6.7 Asset Management and Utilization

6.7.1 Background

The asset management and utilization needs assessment is based on scoring criteria for bridge and tunnel vertical clearance, load restrictions, condition issues, and pavement conditions.

Data sources used for the scoring criteria come from the following two sources:

Data Source	Data Type
North Carolina DOT	Bridge and pavement conditions
FHWA Freight Analysis Framework (FAF)	Origin-Destination commodity flows

6.7.2 Results

The condition of the roadways and infrastructure that make up the ENCPHFN plays an important role in facilitating the movement of freight. In addition to pavement condition, several factors related to vertical clearance, load restrictions and structural condition were evaluated to locate facilities on the network that have a need for asset management related projects. These factors were:

- **Bridge and Tunnel – Vertical Clearance:** impacts the ability to accommodate trucks of certain heights. On the ENCPHFN 21 bridges and tunnels were identified with a vertical clearance less than 15 feet.
- **Bridge – Load Restricted:** impacts ability to accommodate trucks of certain weights. On the ENCPHFN 1 bridge was identified with weight restrictions.
- **Bridge – Condition Issues:** High truck traffic accelerates the deterioration of bridges. On the ENCPHFN 6 bridges were identified as being Functionally Obsolete or Structurally Deficient.
- **Roadway – Pavement Condition:** ENCPHFN roadways having poor pavement condition were identified and weighted based on the 2017 AADTT. Approximately 5 percent of the freight network has poor pavement condition.

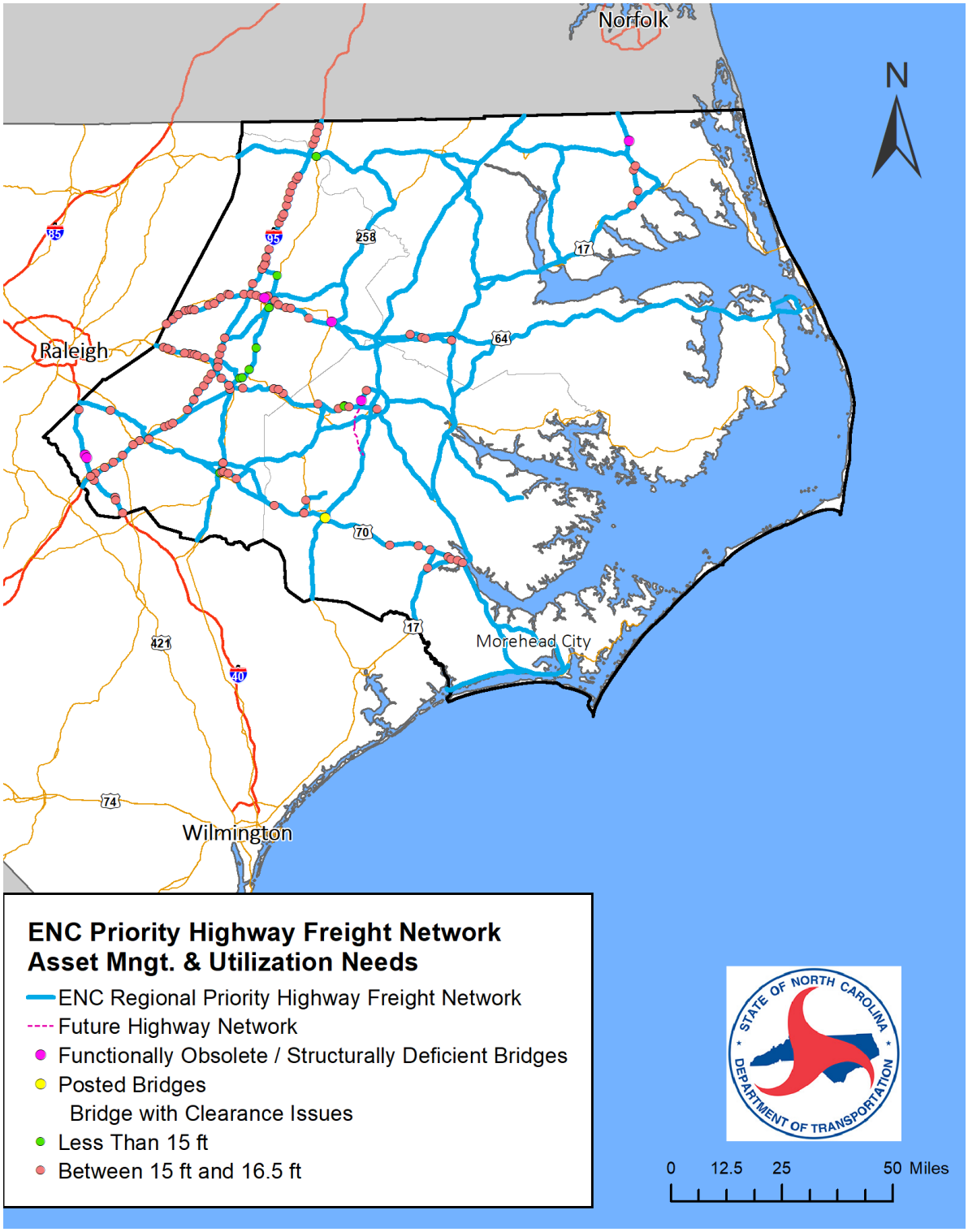
Table 6.4 presents the four asset management and utilization needs criteria, including definitions, scoring methodology, and data sources.

Table 6.4 Criteria Calculation Descriptions: Asset Management and Utilization Needs

Criteria	Definition	Scoring	Data	Notes
Vertical Clearance	Ability to accommodate trucks of certain heights	All bridges/tunnels between 15 feet and 16 feet 6 inches, and less than 15 feet	NCDOT bridge	21 bridges under 15 feet; 222 between 15 and 16.5 feet
Load Restriction	Ability to accommodate trucks of certain weights	All bridges with load restrictions of less than 80,000 lbs.	NCDOT bridge	1 posted bridge
Bridge Condition	Truck traffic accelerates deterioration of bridges	Functionally Obsolete (FO) and Structurally Deficient (SD) ratings	NCDOT bridge	6 bridges FO/SD
Pavement Condition	Condition of pavement on ENCPHFN	All pavement in poor condition scores - based on AADTT: • 0-1,000 = 0 • 1,000-2,500 = 1 (Low) • 2,500-6,000 = 2 (Medium) • 6,000 – 12,000 = 3 (High)	NCDOT, and 2017 AADTT	

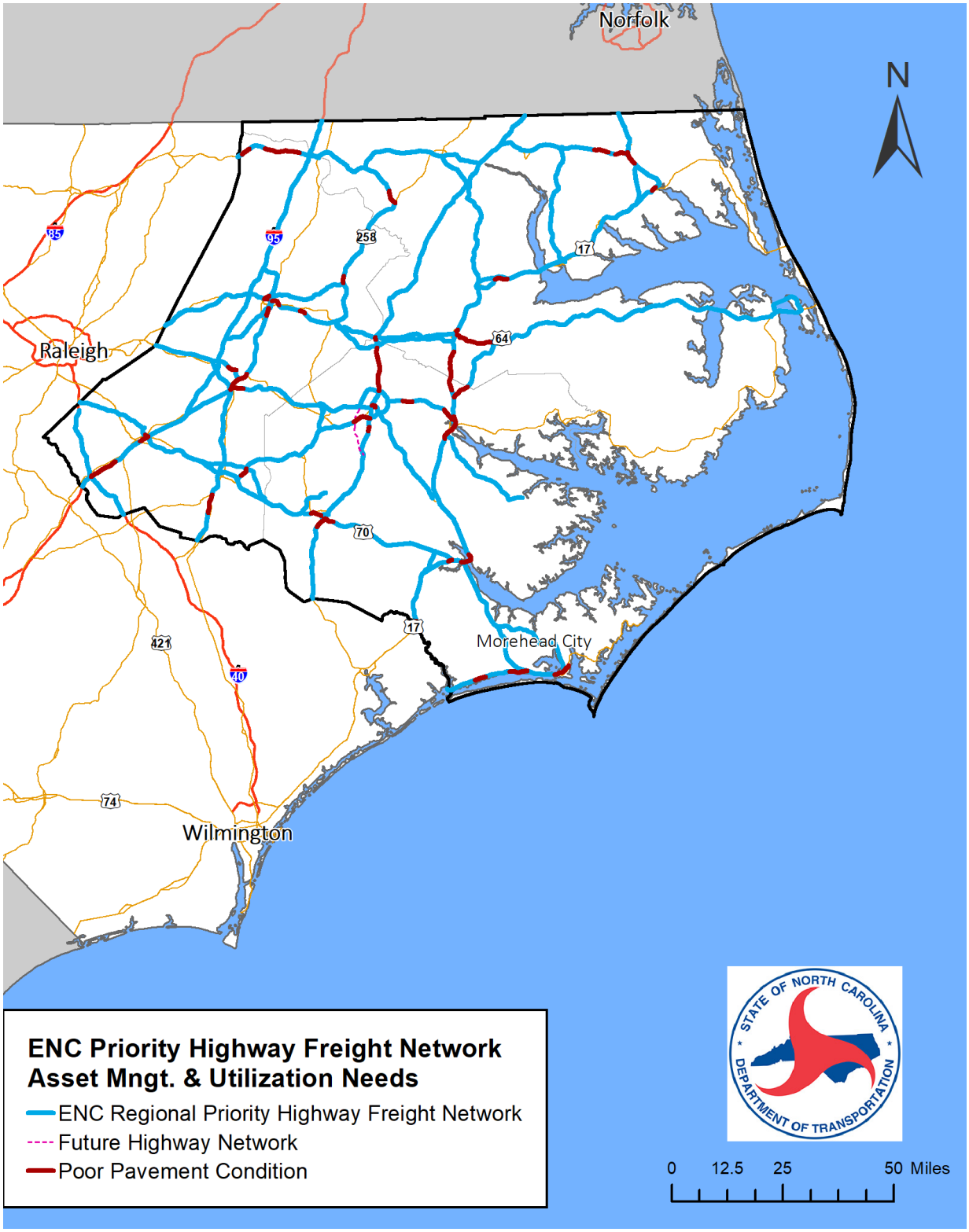
Figure 6.10 shows the asset management and utilization needs factors with bridge conditions. Bridges that are functionally obsolete/structurally deficient are primarily along US 64 and a few other corridors. Bridges with vertical clearance issues are primarily along the I-95, US 70, US 264, US 64, US 301 corridors.

Figure 6.10 Asset management & Utilization Needs Factors: Bridge Conditions



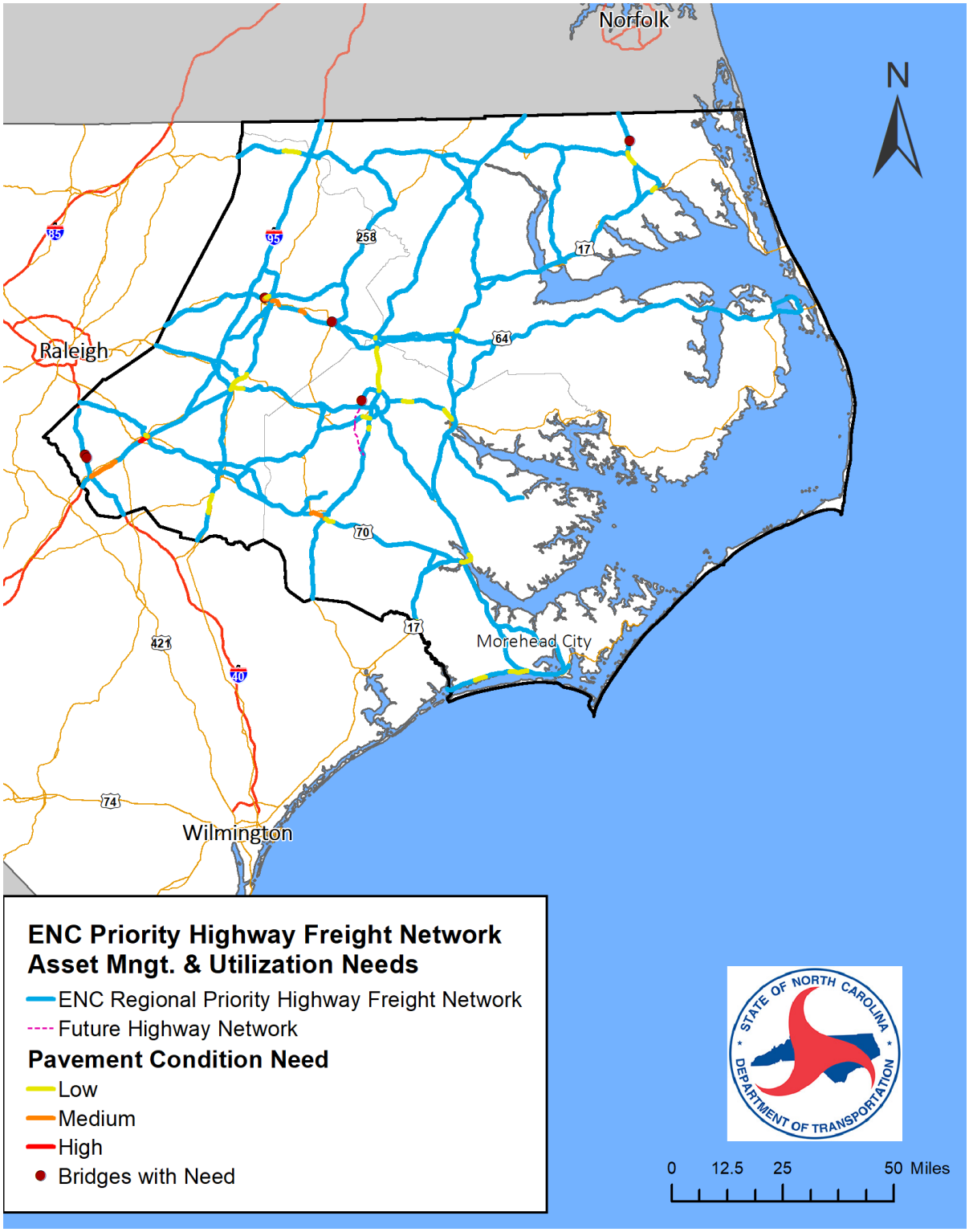
Similarly, **Error! Not a valid bookmark self-reference.** shows the asset management and utilization needs factors with poor pavement conditions. Segments of the ENCPHFN with poor pavement conditions are scattered throughout the region, with the longest stretches along US 13, US 17, US 158 and other routes.

Figure 6.11 Asset management & Utilization Needs Factors: Pavement Conditions



Error! Not a valid bookmark self-reference. shows the results of the asset management and utilization needs assessment. Segments of the ENCPHFN with asset management and utilization needs are found throughout the region, in both rural and urban locations.

Figure 6.12 Asset management & Utilization Needs Assessment



6.8 STIP Projects in the Region

This section presents a summary of the roadway and other spot projects that are currently part of the NCDOT's 2020-2029 State Transportation Improvement Program (STIP). In September 2019, the N.C. Board of Transportation adopted the 2020-2029 STIP, which identifies transportation projects that will receive funding from 2020 to 2029. The STIP program is funded according to the State's 2013 Strategic Transportation Investments (STI) Act using a data-driven prioritization process called Strategic Prioritization.

The NCDOT's Strategic Prioritization process started with over 2,100 projects for highway and non-highway projects related to the aviation, rail, bicycle and pedestrian, ferry and public transportation modes. To calculate a final score for each project, NCDOT combined the technical score and the score used to rank the project by the division engineer, MPO or RPO. Those on the statewide level were scored based entirely on data. NCDOT used these final scores – along with environmental and engineering information – to create a draft of the 2020-2029 State Transportation Improvement Program, encompassing approximately 1,700 projects.

The GIS data that was utilized in the Eastern North Carolina Freight study was actually the final draft STIP that was released in August of 2019, which included 1,319 highway projects, 86 aviation, 234 bicycle and pedestrian, 6 ferry, 23 public transit, and 50 rail projects. This statewide final draft STIP data was clipped for the Eastern North Carolina region (regardless of whether or not they are part of the ENCPHFN) and the projects were categorized to prepare two simpler, meaningful maps. These two maps are presented in Figure 6.13 for the STIP roadway projects and in Figure 6.14 for the STIP spot projects.

The STIP roadway projects are shown in Figure 6.13 using four categories:

1. Upgrade, Modernize or Widen Roadways,
2. New Roadway Connections,
3. Pavement Rehabilitation,
4. Other.

Similarly, the STIP spot projects are shown in Figure 6.14 using four categories:

1. Replace or Rehabilitate Bridges
2. Upgrade or Improve Interchange
3. Improve Intersection
4. Other

Figure 6.13 STIP Roadway Projects in the Region

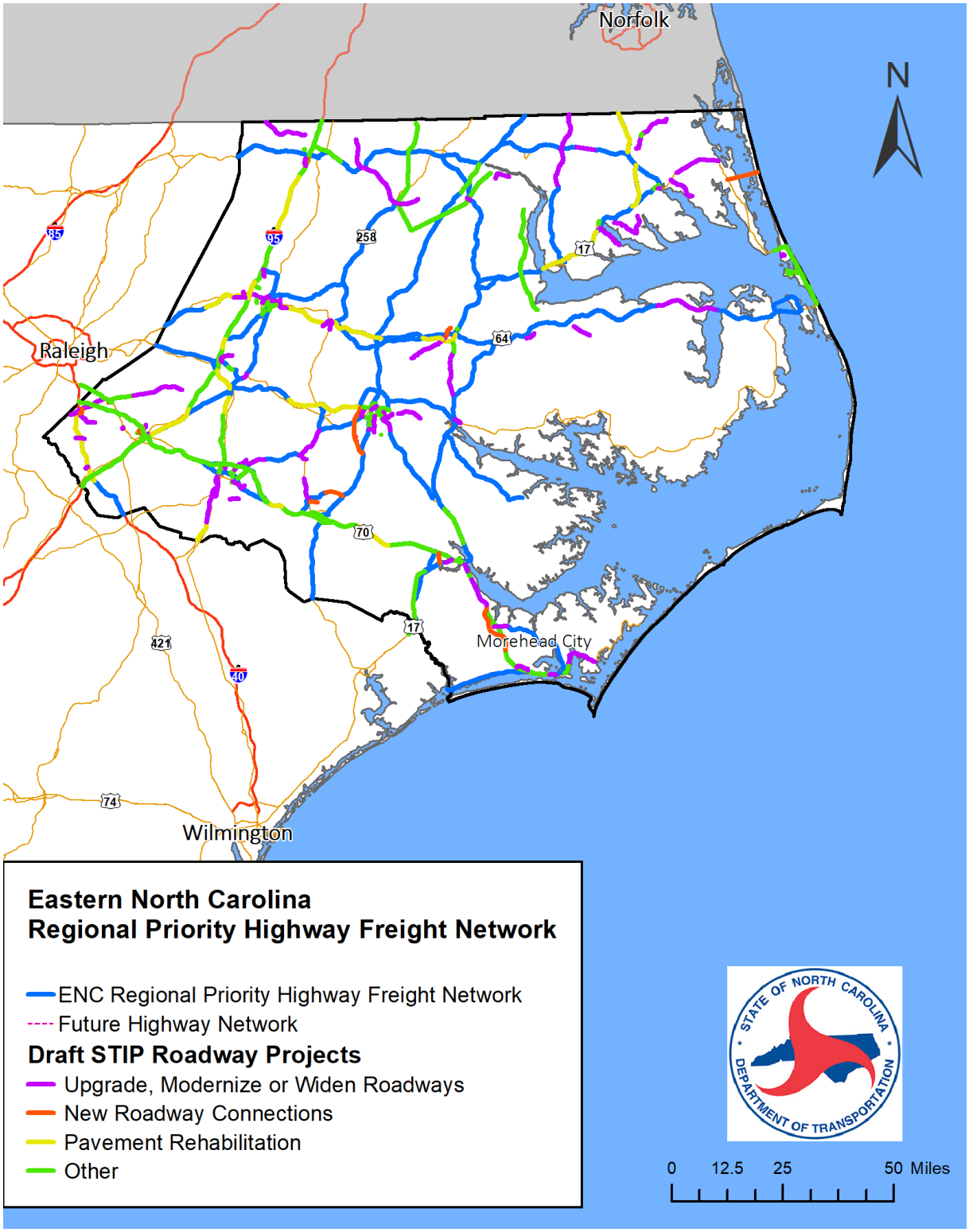
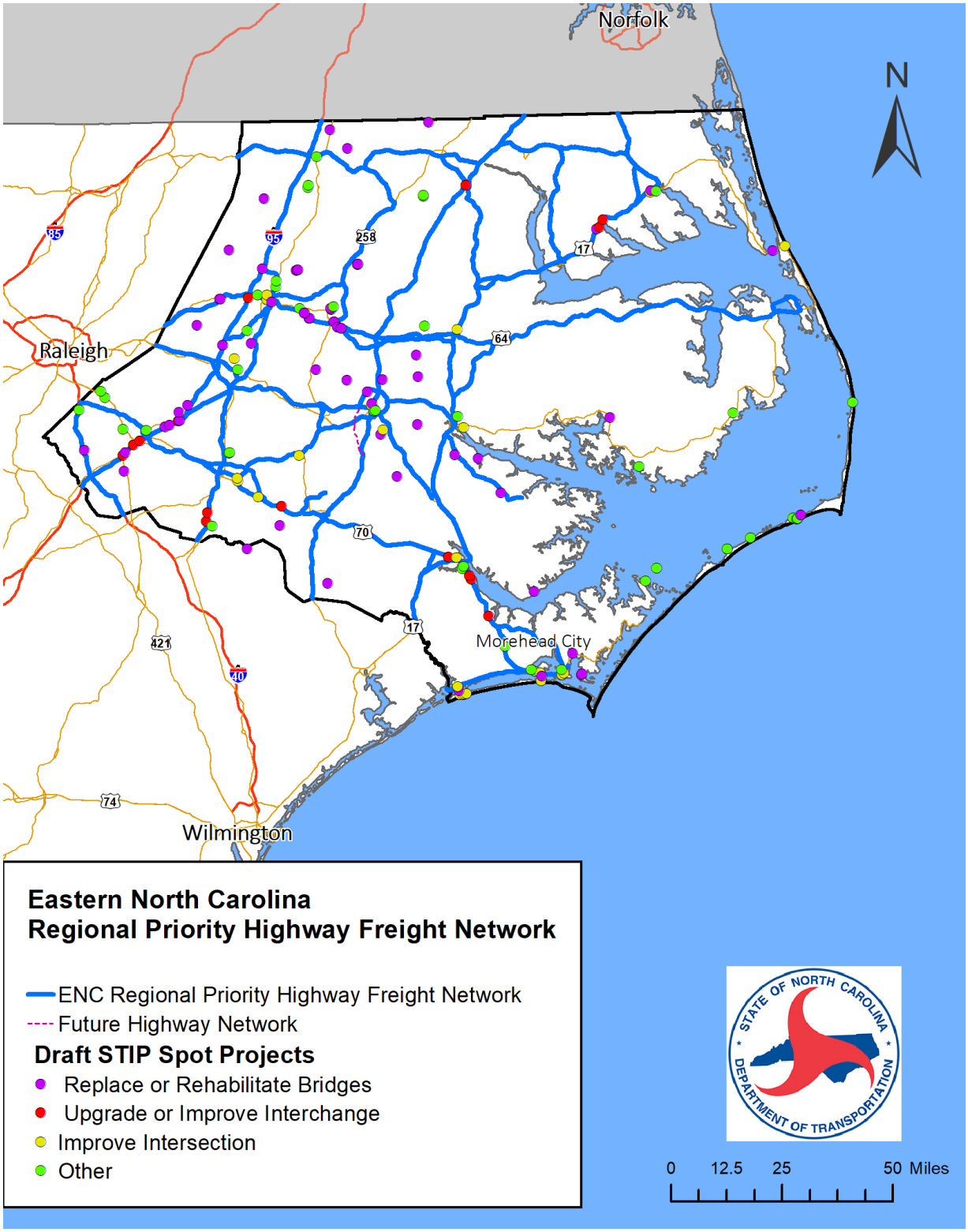


Figure 6.14 STIP Spot Projects in the Region



6.9 ENCPHFN Regional Corridor Profiles

The results of the needs assessment were used to develop Regional Corridor Profiles, which take a closer look at the existing conditions, needs, projects and improvement strategies for 16 corridors with high needs in the region.

6.9.1 Methodology

The results from both the State and the Regional needs assessment were used to identify 16 corridors with high needs in the region:

- The state needs assessment was developed on the state's PHFN as part of the North Carolina Statewide Multimodal Freight Plan, and
- The Eastern North Carolina needs assessment was developed on the ENCPHFN presented in the previous sections.

The statewide assessment and region-specific assessment for Eastern North Carolina were used to analyze the ENCPHFN needs and identify the corridors with higher needs from both the statewide and regional perspectives. Both analysis sets used similar methodologies, with the regional assessment scaled to the relative needs of Eastern North Carolina. Therefore, corridors identified using the statewide needs assessment have relatively higher needs than those using the regional assessment. Corridor extents were determined using the quantitative data from the statewide and regional needs assessments in order to highlight existing needs.

6.9.2 Statewide Needs Assessment Regional Corridor Profiles

Corridors with high mobility and reliability needs and high safety needs were identified first, then corridors with overlapping needs. Appendix F includes all major corridors with high mobility and reliability needs for the region. The Blue corridor profile sheets indicate corridors identified with the statewide needs assessment dataset.

6.9.3 Regional Needs Assessment Regional Corridor Profiles

The regional needs assessment analysis identified significantly more corridors with high mobility and reliability needs (relative to the regional total scores). In order to narrow down the project corridors, the Highway Infrastructure Strategies were used as a guideline:

- Improve access to I-95
- Access to Port of Morehead City
- Address congested areas around the four urban areas (Rocky Mount, Greenville, Goldsboro, and New Bern)
- Improve connections to Port of Norfolk in Virginia

Appendix F includes the regional corridor profiles. The Red corridor profile sheets indicate corridors identified with the regional needs assessment dataset.

7.0 Findings and Recommendations

This section describes findings from the Eastern North Carolina Freight Mobility Study and recommendations to identify transportation infrastructure and other investments for improving regional goods movement. The recommendations are organized into policy, highway, rail, port, airport and logistics sections. Industry input revealed specific market, shipping, and modal needs of the region's key industries. This helps to make the link between freight efficiency and economic competitiveness and building the business case for freight improvement strategies among public and private-sector decision-makers.

A critical part of developing recommendations was evaluating the data from the Eastern North Carolina Needs Assessment. This assessment focused on the Eastern NC Priority Highway Freight Network (PHFC), which included safety, mobility, rural highway and asset management needs. The Needs Assessment helps to develop recommendations that reflect specific multimodal improvements in key areas along the priority freight network.

Regional stakeholders from industry, economic developers and public and private partners provided important insights and added value to the recommendations through personal and telephone interviews, two focus groups and three RFAC Meetings over the course of the study. The successful implementation of these recommendations will depend on the ongoing collaborative efforts of these stakeholders to prioritize key investments, promote economic development, provide input to the NCDOT Statewide Transportation Improvement Program and continue making the case for the future of Eastern North Carolina.

7.1 Freight Policy Findings and Recommendations

Freight policy recommendations will help to define Eastern North Carolina Region's vision and means of engaging freight stakeholders in NCDOT's planning and project development processes for priority areas in the region. This includes engaging in the dialogue between NCDOT's modal agencies, NCDOT Divisions 1, 2 and 4, the Highway 70 Coalition, U.S. 17/64 Association, Eastern Carolina University, and regional economic development agencies, such as Carolinas Gateway Partnership, NC East Alliance, the Economic Development Partnership of North Carolina, and others.

7.1.1 Findings

- **Eastern North Carolina has a strong transportation planning culture**. Study area transportation planners provided considerable support and enthusiasm for this study. Effectively serving as the "technical committee" the close-knit team of MPO and RPO planners provided important guidance to the CS Team, working closely with NCDOT to recommend members for the advisory council and supplying detailed multimodal freight case studies and recommendations from each of the region's long-range transportation plans.

- **Eastern North Carolina promotes economic development**. The combined work of economic development agencies cannot be understated as evidenced by numerous successful business development examples. For example, the CCX Intermodal Facility would not have been successful without the combined efforts of the Carolinas Gateway Partnership and other state and local officials working together.

- **Eastern North Carolina and the Central Coast Gateway.** Eastern North Carolina is strategically located midway between Canada to Florida and can serve a critical role in promoting the concept of a Central Coast Gateway. The region's two deep-water ports and its expansive highway system and two Class I railroads are assets that benefit businesses and residents statewide. The Central Coast Gateway Strategy can be guided by a shared vision and by working with NCDOT to articulate key policies and programs, infrastructure investments and partnerships necessary to plan and implement the strategy.[49]

- **Continued focus on NC Global TransPark (GTP).** The companies at North Carolina Global TransPark draw employees from 21 surrounding counties and represent active and growing industry clusters of aerospace and aviation, advanced manufacturing, logistics, and government services.

7.1.2 Recommendations

- **Continue RFAC Meetings to communicate with stakeholders**. The Eastern NC Freight Mobility Plan took a step toward engaging public and private sector freight stakeholders through a series of RFAC meetings and focus groups held throughout the region. Continuing the RFAC meetings on at least a biennial basis will ensure collaboration between regional planning agencies and leaders from the industry, NCDOT, NC State Legislature and other state agencies.

- **Adopt Eastern NC Freight Mobility Plan**. By adopting the Plan, Eastern NC Planners will formalize the proposed freight policies and recommendations and commit to addressing freight needs and impacts in programs and activities. Adopting the Plan is a low-cost strategy and provides a high level of benefit to Eastern NC Planners and NCDOT as well as benefits freight stakeholders such as shippers, carriers and communities.

- **Measure freight system performance**. The value of effective performance measures for transportation systems and freight has received increasing attention from policymakers, both as a tool to measure the cost-effectiveness of transportation expenditures and as a measure of the broader impacts on transportation on a region's economy, competitiveness and quality of life.

- **Coordinate with local planning initiatives**. Regional recommendations should be consistent with recommendations developed in MPO and RPO Long Range Transportation Plans and the Comprehensive Transportation Plans (CTPs) at the local level to ensure transportation infrastructure investments are coordinated throughout the region. In addition, freight planning requirements could be further integrated into the CTP program at NCDOT.

- **Promote efforts to expand the GTP**. Continue to recruit industries in strategic locations such as the GTP is important to attract businesses to the region. It is important to target industry groups for which the unique GTP assets are attractive, including aerospace & aviation, defense, agribusiness & food science, and government services. This will enhance the GTP's ability to attract businesses in these clusters and expand job opportunities within each of those industry clusters.

- **Support the continued development of multimodal connectivity for the Global TransPark (GTP).** Recommended improvements are anticipated to allow higher speed and safer operation of the route as both highway and rail freight moves to and from the Port of Morehead City.

[49] North Carolina State Freight Plan, 2017.

- Promote the Central Coast Gateway concept. By working closely with NCDOT and economic development agencies in the region, Eastern North Carolina officials and planners can collectively develop an attractive investment climate, promote workforce development, garner community and political support, promote Foreign Trade Zones and develop key partnerships.

7.2 Highway and Bridge Findings and Recommendations

Highways in Eastern North Carolina carry more than 94 percent of the region's total freight volume by tonnage and nearly 89 percent by value. They are the critical component of the State's freight transportation infrastructure. At the same time, NCDOT is facing funding challenges that has resulted in reducing the size and extent of the current STIP.

Over the next several years, four interstates highways are planned to open in North Carolina including the Raleigh-Norfolk Corridor/I-87, U.S. 117/I-795, U.S. 70, and the I-73/I-74 North-South Corridor. The Raleigh-Norfolk Corridor will connect the Triangle Region to the Hampton Roads Region along a route that includes Rocky Mount and Elizabeth City providing shippers greater access to the Port of Norfolk. Future Interstate 795 will extend U.S. 117 to I-40, decreasing the distance and average travel time between the Port of Wilmington and the Eastern North Carolina Region. This will be beneficial for shippers and carriers transporting containers between the proposed rail intermodal terminal at Rocky Mount and the Port of Wilmington. Future Interstate 587 will provide direct access to the Interstate highway system to the City of Greenville and I-42 will improve accessibility to the Port of Morehead City from the Triangle and Eastern North Carolina Regions.

7.2.1 Findings

- **Higher needs exist in the region's urbanized as well as rural areas**. Higher than average severe truck-involved crashes are found throughout the region, from urban areas such as Greenville, Rocky Mount, and Wilson, to more rural roadways. The "high" safety needs are primarily along the I-95 corridor through the Selma and Rocky Mount areas, and the connecting US routes to the I-95 corridor. The NC 101 corridor in Morehead City also showed "high" safety needs due to recent fatal crashes. Other "medium" safety needs are spread across the study area region either around the urban areas or along rural two-lane roadways. For mobility and reliability, the analysis shows anticipated capacity constrained traffic conditions along the I-95 corridor, and several other gateway corridors to the region including US 70, US 264, and US 64. A few other key routes in the region, such as US 117, I-795, US 13, US 258, NC 24, and NC 43 are also anticipated to have heavy traffic congestion.

- **Improving rural highways will enhance economic competitiveness**. Roadways with the most rural highway needs for Eastern North Carolina's freight network are primarily in the eastern and northern portions of the region, especially roadways such as US 13, US 258, US 158, US 64 (eastern parts), NC 11, NC 97, NC 43, NC 32, and NC 33 which have long stretches of two lane highways. Improving these corridors may help improve freight flow between rural and urban areas, improving overall mobility.

- **Truck parking availability can be improved**. Truck parking is available along the interstate system, with the highest along I-95. Inadequate truck parking leads to numerous concerns including concerns for the safety of the motoring public, truckers and their cargo; lost productivity and higher business costs associated with parking search times; and concerns over the growing costs of maintaining and adding additional public truck parking facilities. Addressing this shortage may help further regional goals for safety, mobility and reliability, and economic competitiveness.

- **Some needs are prevalent across the region**. Some of region's needs must be addressed at a large scale. Higher than average severe truck-involved crashes are found at locations throughout the region, from urban areas such as Greenville, Rocky Mount, and Wilson, to more rural roadways. Segments of the ENCPHFN with asset management and utilization needs are found throughout the region, in both rural and urban locations. For example, bridges that are functionally obsolete/structurally deficient are primarily along US 64 and a few other corridors, and bridges with vertical clearance issues are primarily along the I-95, US 70, US 264, US 64, US 301 corridors. Similarly, segments of the ENCPHFN with poor pavement conditions are scattered throughout the region, with the longest stretches along US 13, US 17, US 158 and other routes.

- **Future interstates are vital for the region.** Over the next several years, four interstates highways are planned to open in North Carolina. Feedback from economic developers revealed the fact that proposed developers require interstate access before even negotiating with communities in the region. In addition, the geography of the region requires east-west access to markets. Three out of four of these proposed interstate highways extend east and west across the study area, which is an important need for this region. Freight stakeholders surveyed during the I-95 Study stated that many of the shipments of the raw products in the agricultural and timber industries do not generally use I-95 due to the east-west nature of these industry flows and the desire by these industries to utilize higher weight limits available on several state highways. Therefore, east-west improvements in the study area will improve access to the Port of Morehead City and benefit the agricultural and timber industries.

- **Quad-East planning initiative.** Five years ago, efforts began to connect four cities of Greenville, Wilson, Goldsboro, and Kinston to form an interstate quality loop. Large employers in these cities include ECU, the Vidant Medical Center, BB&T, Bridgestone Tire, Seymour Air Force Base, and the Global TransPark. I-795 already connects Wilson and Goldsboro and US 70 connects Goldsboro and Kinston, which is in the process of being upgraded to I-42. The Felix Harvey Parkway north of Kinston will extend from NC 58 to NC 11. The NC 11 southwestern bypass construction is underway in Pitt County. The last leg of the Quad-East loop is NC 11 between the Harvey Parkway in Lenoir County and the southwestern bypass in Pitt County.

7.2.2 Recommendations

- **Support the Future Interstate Highway development** for the proposed corridors including (1) Raleigh-Norfolk Corridor/I-87, (2) U.S. 117/I-795, (3) U.S. 70 (I-42), and (4) the I-73/I-74 North-South Corridor.

- **Improve access to I-95 in the region**. Much of I-95 through the study area is approaching capacity-constrained conditions. This is the most heavily utilized freight corridor in the region. From the recent I-95 Study, Wilson, Nash and Robeson Counties were estimated to have the highest reliance on I-95 with over 80 percent of the truck tons in these states estimated to use the corridor. Alternatively, Johnston County has the lowest reliance on I-95 with an estimated one-third of its truck tonnage using the corridor. This is likely due to the county's easy access to I-40 and the likelihood that many of its truck shipments travel to and from Wake County.

- **Support the Quad-East planning initiative**. This vision is an effort to connect four cities of Greenville, Wilson, Goldsboro, and Kinston to form an interstate quality loop.

- **Examine Route 301 Improvements**. Focus group participants recommended looking at US 301 to and from Rocky Mount given the future traffic expected from the CCX terminal in Rocky Mount.

- **Improve bridge deficiencies in the region**. The needs assessment revealed bridge deficiencies throughout the study area, which impacts weight limits for agriculture and timber harvesting operations, posted bridge requirements and limitations on access to market.

- **Improve highway conditions accessing the Port of Morehead City**. This is needed for regional access along U.S. 70 from I-95 and at the local level for highway conditions within Morehead City. Several studies have been conducted to begin to address solutions to congested areas.

- **Expand key two-lane rural routes on the Priority Freight Network.** The priority facilities that need expanding will depend on regional and industry growth trends, but plans should be advancing for all two-lane facilities on the Eastern NC priority freight network. This is further described in the regional needs assessment.

- **Improve congested areas** around Eastern North Carolina's four urban areas, or Rocky Mount, Greenville, Goldsboro and New Bern. For example, the widening of the US 301 Bypass in Rocky Mount (once the STIP Project U-3330 is completed) is anticipated to help traffic conditions in and around the Rocky Mount area. The Greenville bypass under construction will relieve congestion in Greenville.

- **Continue highway improvements to the Port of Virginia (POV)**. Many Eastern North Carolina businesses rely on the POV to access overseas markets. Due to the location of industries shipping materials to and from the POV, trucks currently use US 158, US 258, NC 168 to access the Port. For example, improvements are needed along US 17 from New Bern to the Virginia State Line. These highways will continue to need capacity enhancements through widening and other strategies. They represent important connector roadways that require widening to accommodate future growth opportunities.

Additional Recommendations from Needs Assessment

- **Safety Needs** to support the regional freight plan goals for mobility and reliability and safety and security;

- **Mobility and Reliability Needs** to support the regional freight plan goals for mobility and reliability;

- **Rural Highway Needs** to supports the regional freight plan goals for economic competitiveness and mobility and reliability; and

- **Asset Management and Utilization Needs** to support the regional freight plan goals for asset management and economic competitiveness.

7.3 Rail Infrastructure Findings and Recommendations

Eastern North Carolina features two Class I railroads, Norfolk Southern Railway (NS) and CSX Transportation (CSX), and multiple short line railroads that connect businesses and industries to the Class I network. Intermodal rail traffic throughout the Eastern North Carolina Region will be improved by the construction of the CCX terminal in Rocky Mount. Located on the CSXT A-Line, the CCX terminal will serve shippers in the Triangle and the Eastern North Carolina regions. It will transfer truck trips to rail, provide shipper savings, and add jobs and economic development opportunities. There has recently been increasing interest in utilizing the Camp Lejeune Railroad line (CPLJ) for the purpose of transporting commercial freight

and enhancing the local economy. The CPLJ would connect to Norfolk Southern at Havelock, NC, and the Port of Morehead City.

7.3.1 Findings

- **Rail freight market opportunities can be expanded.** North Carolina is in a position to significantly grow rail freight in the State by capitalizing on recent developments within the State as well as global shifts in trade patterns.

- **Regional planners need better access to railroad officials**. Feedback from focus group attendees indicated that Class I railroads are generally very slow to react to economic development projects. There is a perceived lack of channels for towns to communicate and seek collaboration from railroads to improve problematic rail crossings. The suggestion at the August focus group was to propose a mechanism for improved railroad communication through the NCDOT Rail Division. In contrast, Short line railroads can be more receptive to economic development projects.

- **The CCX intermodal terminal will provide new opportunities**. The CCX terminal will primarily serve shippers in the Triangle and the Eastern North Carolina region. It will transfer truck trips to rail, provide shipper savings, and add jobs and economic development opportunities. The anticipated construction timeline is 18-20 months and construction began in 2019. NCDOT has allocated $118.1 million in road improvements and to develop the 330-acre site, including buildings, rail sidings, parking and storage areas and the cranes needed to move the containers. Importantly, inland modal parks will be needed in the region to take full advantage of the growth in container cargo. These modal parks will primarily serve trucking companies, distribution centers, and logistics providers.

- **Improve "Corridor 17" from Selma and Morehead City.** The corridor from Selma to Morehead City parallels US 70 for its entirety, connecting Goldsboro, Kinston, and New Bern to the rest of the state's rail network. Though the corridor currently carries a relatively low volume of freight traffic compared to other Class I lines in the state, it still plays a major role in supporting the economy of North Carolina due to its connection to the Port of Morehead City.

- **Rail freight growth at the Port of Morehead City**. Supporting freight traffic growth at the Port of Morehead City comes with difficulties to overcome.

7.3.2 Recommendations

- **Improve rail access to Morehead City**. Because trains must travel through a more densely populated area, they must travel at slower speeds. In addition, multiple at-grade crossings may delay trucks as they serve the port terminals.

  - Develop a loop track at the Port of Morehead City to facilitate the building and disassembly of larger trains.

  - Study how to reduce the number of vehicle/train conflicts and improve traffic flow in downtown Morehead City.

- **Organize an Eastern NC Regional Rail Freight Forum.** In cooperation with NCDOT and NCRR, regional planners should convene a forum and invite industry stakeholders, railroad representatives from Class I, short lines and economic developers to discuss economic development opportunities, potential truck to rail diversion opportunities, and other topics. The focus for this effort should be to identify potential regionally-focused opportunities to bolster economic development and connect stakeholders from industry, transportation, and the community.

- **Continue supporting the development of the CCX terminal** on the CSXT A-Line. As the project is built, continued support from regional partners Carolinas Gateway Partnership (CGP) will be critical to promote the new facility and encourage businesses to locate in the region to take advantage of the facility. Nash and Edgecombe counties and several Cities and Towns can continue to encourage businesses to locate in Eastern North Carolina and help find and recruit employees.

- **Examine future development options for the Camp Lejeune Railroad (CPLJ).** This military railroad could provide strategic access for new businesses in Onslow County for freight rail service. The CPLJ is maintained to Class 2 FRA track standards from NC 24 to the Havelock junction. The line is a low-density connector line on the Strategic Rail Corridor Network (STRACNET). A review of the track condition and maintenance records indicates that, at this time, the CPLJ can support additional commercial freight service in addition to the existing military use.

- **Improve the Chocowinity Yard** in Beaufort County. This rail yard serves both NS and CSX traffic and is currently experiencing congestion and delays.

- **Continue Grade Crossing Improvements.** This continues to be an issue in the region, particularly in urban areas. This includes at grade crossing improvements and grade separation.

  - Planners expressed interest in better cooperation from railroads on grade crossing improvements both in terms of timely response time and input on design. From focus group participants, several crossings in Selma (such as at NC 171) need attention as there are currently delays at the switching yard. It was suggested this area could be a candidate for a feasibility study.

- **Support the continued development of multimodal connectivity for the Global TransPark (GTP).** Studied improvements are anticipated to allow higher speed and safer operation of the route as freight moves to and the Port of Morehead City. Community impacts associated with the line running down the center of streets in the business districts of Goldsboro, New Bern, and Morehead City are a major concern along this corridor. As such, a Traffic Separation Study was recently completed, making crossing closure and improvement recommendations in Goldsboro.

7.4 Port Findings and Recommendations

The Ports of Morehead City and Wilmington play a critical role in the movements of freight and cargoes in and out of Eastern North Carolina. This study focused more attention on the Port of Morehead City. For some industries sectors, the neighboring Ports of Virginia, Charleston and Savannah move even higher volumes of goods since they serve overseas markets. North Carolina military bases rely on NC Ports and neighboring ports for transporting troops and military equipment. One constraint to the movement of goods from inland to the Port of Morehead City is the rail line through downtown Morehead City. Related to this constraint are conflicts between the tourism industry and the logistics industry.

7.4.1 Findings

- **Strong Port Export Trends Continue**. The Port of Morehead City continues to expand export activities for phosphate, woodchips, oyster rock, metal products, aircraft parts, dry/liquid fertilizers, and military materiel. Port officials have responded by improving port efficiencies and cargo services to a point where the port has now reached warehouse capacity. Future capacity improvements will be needed to expand additional operations.

- **New Import Growth Opportunities.** Dimensional lumber from Sweden is a growing import for the port as manufacturers import lumber to the East Coast rather than ship domestic lumber from the Pacific Northwest. NS is importing steel rails that are then transported by rail for ongoing rail improvements. Organic grain imported from Turkey and Morocco for animal feed is another growth opportunity. There are more opportunities for rubber growth given the development of Triangle Tire manufacturing facility near Rocky Mount.

- **Soybean import and export opportunities**. Exporting soybeans is an emerging opportunity to supplement excess U.S. capacity. The Port of Morehead City participated in an exercise with Nutrien officials to explore the possibility of exporting soybeans and take advantage of excess U.S. capacity. Nutrien has warehouse capacity for dry bulk at the port. Crushed soybean products could be exported to Argentina. A lot grain facilities exporting soybeans and whole grain in the U.S. are looking for additional export capacity on the East Coast as facilities along the Gulf Coast are reaching capacity. Such opportunities to export soybean products by barge and/or rail would help offset Nutrien's fertilizer business season .

- **River Ports serve key industries**. The river ports of Aurora, Cofield, Edenton and Knobbs Creek provide maritime cargo services to industries such as Nutrien, Nucor Steel, lumber companies, metal manufacturers, the U.S. Military and access to the North Carolina Virginia Railroad.

- **Dredging is Important for the Port of Morehead City, the ICW and other inlets**. Stakeholder feedback included the importance of dredging at the Port of Morehead City, the Atlantic Intra-Coastal Waterway (ICW) and inlets along the outer banks, including Oregon, Hatteras and Ocracoke. This region is used for commercial fishing and charter boat operations and the ICW is used for commercial shipping of fertilizers, petroleum products, building materials, food stuffs, manufactured goods and many other products.

7.4.2 Recommendations

- **Continue modernizing the port and port facilities**. In the last two years, there has been a 75 percent increase in commodities, mostly in organic grains imports and lumber imports.

- **Port of Morehead City** (from the NC Rail Plan 2015)

  - In the short term, pursue a super street style advanced and coordinated traffic plan to reduce rail and truck Port traffic conflicts with vehicle and pedestrian traffic on US 70 Arendell Street.

  - Implement an on-port loop track to build/break unit trains.

- **Explore new import and export opportunities**. Exporting soybeans is an emerging opportunity to supplement excess U.S. capacity. Dimensional lumber from Sweden is a growing import for the port as manufacturers import lumber to the East Coast rather than ship domestic lumber from the Pacific Northwest. Organic grain imported from Turkey and Morocco for animal feed is another growth opportunity. There are more opportunities for rubber growth given the development of Triangle Tire manufacturing facility near Rocky Mount.

- **Expand Coastal Cargo Opportunities**. From the focus group, participants encouraged expanded use of waterways to transport goods, and to integrate port & roadways to work well with each other. Recent successes include Stevens Towing barge shipments of scrap steel from the Port of Delaware Bay south and other raw materials from the Port of Morehead City.

- **Promote Radio Island for future development**. A total of 150 acres in Radio Island could provide business opportunities for wind energy, auto manufacturing or other businesses. Leverage public-private partnerships to complete the development of Radio Island and support enhanced rail access to the Port of Morehead City.

  - Evaluate economic feasibility of relocating the NCRR along a new alignment between Morehead City and Havelock, allowing trains to access Radio Island from the east

  - Work with the North Carolina State Ports Authority and Carolina Coastal Railway to develop a loop track at the port

  - Support development of other frontage roads or superstreet intersections to help reduce highway-rail conflicts in Morehead City

- **Continue regular dredging at the Port, the ICW and inlets along the Outer Banks**. Dredging is always a challenge because of the nature of the channel and the need for annual maintenance dredging. This is critical to allow vessels to navigate the channel.

- **Increase rail capacity with track improvements**. Relocate NCRR along a new alignment between Morehead City and Havelock (along NC 101) - GTP to Morehead City Mobility Corridor

- **Promote Global TransPark Rail Access**. Continue to seek new ways to improve intermodal connectivity for GTP and leverage the state's extensive rail network in support of this goal.

- **New Bern Rail to Barge Transload Facility**. Investigate property with water access in New Bern for potential barge transload facility for oversized cargo loads. Determine if the market demand exists to support this pursuit.

- **Future GTP to Kinston Spur**. Conduct an environmental assessment for the CSXT spur from the GTP to railroad point "Elmer" in Kinston and obtain the advance right of way.

7.5 Airport Findings and Recommendations

There are six airports with cargo activity in Eastern North Carolina. Of these, three provide commercial service and general aviation and three provide general aviation only. One of the greatest challenges for growth of air cargo activity in eastern North Carolina is the limited industrial development near the airports

and the expense to ship via air. The GTP was originally built around a multimodal transportation network, including Kinston Regional Jetport, undeveloped acreage surrounding the site, proximity to military bases, and the potential for highway, rail, and deep-water port access. GTP recently developed an **Economic Development Action Plan**.

7.5.1 Findings

- **Limited development near airports.** One of the greatest challenges for growth of air cargo activity in eastern North Carolina is the limited industrial development near the airports and the expense to ship via air. Air cargo access is critical to economic vitality, particularly for high value commodities. Airports serving the region must ensure seamless access to air cargo facilities via the roadway network to stay competitive with other freight modes.

- **Competition from RDU and ILM Airports**. The relative proximity of many eastern North Carolina municipalities to the Raleigh-Durham International Airport (RDU) and the Wilmington International Airport (ILM) provide local industry with other options that may have more frequent service options.

- **GTP still underutilized**. In an effort to better utilize the facility, GTP is "modernizing the brand" to align with the expansion strategies of industries requiring certain site characteristics. There is a need to increase marketing efforts to industries and industry clusters whose needs mirror GTP assets and amenities.

- **Recent airport improvements may promote development**. Rocky Mount-Wilson Airport (RWI) has a recently completed 7,000 ft long runway and are in discussions about a new industrial park nearby the airport.

7.5.2 Recommendations

- Promote the GTP to targeted industries requiring multimodal transportation access

- Given new investments at Rocky Mount airport, support the concept of a new industrial park adjacent to the airport which may benefit from access to air cargo services.

- Expand air freight and cargo services available to NC shippers at strategic airports as needed.

- Maintain airport runway surfaces, approaches and instrumentation in state of good repair.

7.6 Freight and Logistics Findings and Recommendations

Starting with the North Carolina Statewide Logistics Plan in the early 2000's, North Carolina's agencies, railroad companies, and private businesses have taken an active role in addressing freight and logistics needs to shape the State of North Carolina through policies, programs, and projects that support and encourage freight movement and freight-oriented developments. For example, North Carolina's Port of Morehead City was found to be one of the stronger project cargo ports on the East Coast that could further expand by offering white glove service for new industries such as windmills.

7.6.1 Findings

- **Campus redevelopment opportunities should be explored**. East Carolina University (ECU)'s Millennial Campus development initiative is currently redeveloping several properties in Greenville by collaborating with the private sector. These campus development efforts often turned blighted urban areas into research and innovation centers. The focus of the millennial campus development is to attract, train, and retain skilled workers and ECU graduates.

- **Opportunities for heavy haul corridors.** There may be opportunities to designate heavy haul corridors within the Eastern NC Priority Freight Network connecting NC Ports to energy exploration, military installations and large-scale agricultural production and manufacturing clusters.

- **Truck to Rail Freight Potential**. Industry representatives expressed interest in pursuing opportunities to shift heavy and often over-sized truck shipments to rail. While some industries previously tried to do this, issues with timely deliveries and loading requirements prevented further use of rail services. Industry stakeholders are interested in reopening a dialogue with Class I and/or short line railroads to promote more truck to rail opportunities.

7.6.2 Recommendations

- **Support site development infrastructure.** It is important to be prepared to invest in roadways, interchanges and rail spurs that serve large development sites, new industrial facilities or other freight-oriented development sites in the region.

- **Support E-Commerce developments.** E-commerce continues to grow and evolve and its supporting infrastructure on the Eastern NC freight system is likely to be an increased importance on freight system reliability and more frequent truck trips in urban regions that utilize smaller vehicles and alternative delivery methods.

- **Maintain multimodal connectivity**. It is vital to maintain safe, reliable connections to ports, rail terminals, air cargo facilities, military bases and major logistics and manufacturing sites.

- **Invest in heavy haul corridors.** There may be opportunities to designate heavy haul corridors within the Eastern NC Priority Freight Network connecting NC Ports to energy exploration, military installations and large-scale agricultural production and manufacturing clusters.

- **Support reverse logistics operations**. Reverse logistics will directly impact the North Carolina highway system as many of the support facilities will be located in major metropolitan areas and will be often co-located with other freight assets, such as rail intermodal terminals. These support facilities include return, recycling, and refurbishment centers where returned goods will be further processed. Highways connecting into these facilities may experience growth in truck traffic and rail intermodal service is already playing an important role in the forward logistics of e-commerce shipments with longer delivery times.

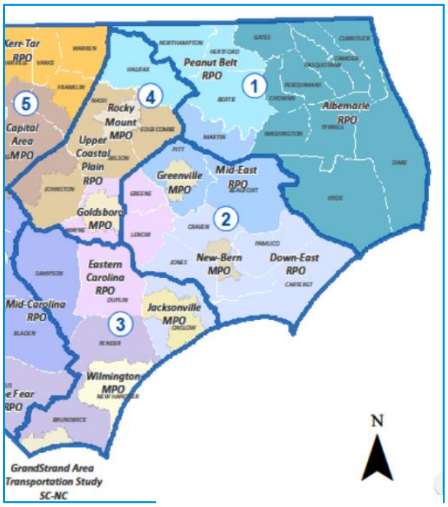
Appendix A. Regional Freight Advisory Committee (RFAC) Agendas and Minutes

Eastern North Carolina Freight Mobility Plan
Project Summary

Overview
This Plan is being jointly developed by NCDOT and the Regional Planning Organizations located within NCDOT Divisions 1, 2 and 4 in Eastern North Carolina.

Eastern North Carolina is home to a number of regionally significant freight hubs, gateways, ports and corridors, as well as to military bases and industries that are uniquely dependent on a safe, reliable and efficient freight transportation system.

The **Study Area** includes the planning areas served by Rocky Mount Urban Area MPO, Goldsboro Urban Area MPO, New Bern Urban Area MPO, Eastern Carolina Rural Planning Organization (RPO), Down East RPO, Mid-East RPO, Upper Coastal RPO, Peanut Belt RPO, and the Albemarle RPO (see map).



Eastern NC Freight Study Area

Plan Goals
- Serve as a catalyst for increased regional cooperation
- Provide a regional vision for the freight network and strategies for implementation
- Increase regional and local economic competitiveness
- Provide a resource to be used by engineers, developers and planners to outline network development to support efficient land-use decision making
- Leverage Federal, State and local infrastructure investment into economic benefits

Plan Elements
- Stakeholder engagement and outreach
- Data collection and research
- Commodity flow analysis and economic futures
- Strategic infrastructure investments for economic value
- Logistics-based development market assessment
- Alternatives and recommendations
- Final Report and Executive Summary

Timeline
The project started in October 2018 and will be conducted over a period of 12 months.

Contacts
Ryan Purtle	Contract Manager	Greenville MPO	252-329-4476
Patrick Flanagan	Planning Manager	Eastern NC RPO	252-638-3185
Heather Hildebrandt	Statewide Initiatives	NCDOT	919-707-0964
David Willauer	Project Manager	Cambridge Systematics	240-515-5223
Lisa Destro	Deputy Project Manager	Cambridge Systematics	212-209-6640

Eastern North Carolina Freight Mobility Study

Kick Off Meeting Attendees

October 30, 2018

Name	Affiliation
Natalie Aman	ECU
Dominique Boyd	NCDOT – TPD
Eliud DeJesus	MERPO
Lisa Destro	Cambridge Systematics
Patrick Flanagan	Downeast RPO
Daniel Green	FEMA Region VIII
Diane Hampton	NCDOT Division 2
Eric Howell	Eastern Carolina RPO
Hanna Johns	ECU
Bob League	CRM
Dan Magliola	NCDOT Logistics/Freight
Terry McLean	ECU
Ryan Purtle	Greenville MPO
Mushtaqur Rahman	Baseline Mobility
Jordan Reedy	CRM
James Saumons	UCP RPO
Allen Thomas	GTP
Angela Welsh	ARPO
Derrick Welch	Greenville-Pitt Chamber of Commerce
David Willauer	Cambridge Systematics
Others?	

On the Phone:

Rebecca Cherry	Cherry Consulting
Heather Hildebrandt	NCDOT

Eastern North Carolina Freight Mobility Study
Regional Freight Advisory Council (RFAC) Invitation

Dear Regional Freight Advisory Council (RFAC) Members and Staff:

On behalf of the NC Regional Planning Agencies and NCDOT, I am writing to invite you to serve on our **Regional Freight Advisory Council (RFAC)** at 10 a.m. EST on Tuesday, Jan 8, 2019 at the City of Greenville City Hall (200 W 5th St) in Conference Room 337.

The purpose of the RFAC is to provide guidance and perspective to the **Eastern North Carolina Freight Mobility Study** Team on freight and economic development issues facing the region (see attached project summary). Eastern North Carolina is home to a number of regionally significant freight hubs, gateways, ports and corridors, as well as to military bases and industries that are uniquely dependent on a safe, reliable and efficient freight transportation system.

Please contact me at 252-329-4476 rpurtle@greenvillenc.gov or David Willauer 240-515-5223 dwillauer@camsys.com with questions.

Very Respectfully,

Ryan Purtle
Transportation Planner
The Greenville Urban Area MPO (GUAMPO)
City of Greenville, NC Public Works Department
www.greenvillenc.gov
252-329-4476

Eastern NC Freight Study Regional Freight Advisory Council (RFAC) Meeting
Tuesday, January 8, 2019 10:00 AM - 12:00 PM EST

Agenda

1. Welcome and Introductions
2. Study Background and Context, Role of the RFAC
3. CS Presentation
4. Questions
5. Facilitated Discussion
6. Next Steps
7. Adjourn

Eastern North Carolina Freight Mobility Study

Regional Freight Advisory Council (RFAC)

Meeting Minutes January 8, 2019 – Greenville City Hall, Greenville, NC

Attendance

Mark Angolia, ECU;
Jennifer Collins, Goldsboro MPO (by phone);
Eliud de Jesus, Mideast RPO;
Lisa Destro, Cambridge Systematics;
Paula Dowell, Cambridge Systematics (by phone);
Marc Finlayson, Highway 17/64 Association;
Heather Hildebrandt, NCDOT (by phone);
Robert Hosford, NC Department of Agriculture;
Erick Howell, Eastern Carolina RPO;
Chip Killmeier, NC Ports;
Bob League, Rock Mount MPO;
Dana Magliola, NCDOT;
Kim Maxey, New Bern MPO;
Anne Meyer (by phone);
Ann Lea Moore, NCRR;
Jordan Reedy, Rocky Mount RPO;
Simon Rich, Steven's Towing (by phone);
Margaret Robertson, NC Community Colleges;
Larry Squires, MCAS Cherry Point (by phone);
Andy Street, Hyster Yale;
Angela Welsh, Albemarle RPO (by phone);
David Willauer, Cambridge Systematics;
Erika Zito, Cummings Diesel (by phone).

Welcome and Introductions

Ryan Purtle introduced the mission of the Eastern North Carolina Freight Mobility Plan, which will be a "coordinated and collaborative regional planning effort to analyze, develop and implement a safe, reliable and sustainable multimodal freight network to support the strategic goals of the region in promotion of economic competitiveness and equity of the region." He described the NCDOT planning regions, comprised of 19 MPOs and 19 RPOs. The study area includes NCDOT Divisions 1, 2 and 4, which includes four MPOs and six RPOs and 28 counties. He reviewed the study timeline and the methodology developed by the Technical Committee and NCDOT to define RFAC, which includes Industrial Sectors & Manufacturing, Defense/Aerospace; Community (MPO, RPO, Tribal, Local Government); Logistics (Freight Forwarding, 3PL, Warehouse/Distribution, Customs); Transportation (Air, Maritime, Rail, Pipeline, Trucking); Workforce Development, Economic Development, and Chambers of Commerce.

Dana Magliola (NCDOT) shared with the RFAC that the State FAC meeting was in November 2018 (first meeting since the completion of the State Freight Plan). The plan is for there to be six RFAC, and this RFAC put in place for this study corresponds to the Eastern NC region.

Cambridge Systematics Presentation
Cambridge Systematics (CS) staff presented an overview of the study scope, stakeholder outreach update, and a first look at the data for the Regional Goods Movement Profile and Commodity Flow Analysis. CS staff further expanded upon how to "tell the freight story" for the region, which will include a compilation of regional perspectives, input from RFAC stakeholders, customizing freight priorities, apply the same freight priority tools used in the State Freight Plan and developing a set of regional priorities and "solution packages" for implementation. Next steps include completing stakeholder interviews, incorporating feedback from RFAC members, and continued work on the Economic/Logistics Profile and Modal Profile Technical Memorandum.

Comments:
CS will update the Future Interstates map in the presentation and Highway Profile.
Rob Hosford (Department of Agriculture) suggested comparing the agriculture/food commodity flow data from the Freight Analysis Framework (FAF) data with data from the Department of Agriculture and the private industry when possible.

Discussion
RFAC members suggested using primary data from the interviews to supplement the Freight Analysis Framework (FAF) data from the NC State Freight Plan. CS indicated this will be a way to provide "ground truthing" for the data collected from industry. There was some discussion about the routes taken to Norfolk, VA, including US 13 and US 264. The Albemarle RPO suggested Virginia would prefer trucks use highways 168 or US-17 rather than US-13 or US-264. CS will review the VA State Freight Plan. This led to more discussions about strategic highways and access issues. Stevens Towing providing an overview of the inbound scrap metal by barge from Chesapeake and Delaware Bay Ports to Nucor Steel and iron ore transported by barge from Morehead City to Nucor.

Hyster Yale has experienced periods of success using rail intermodal for outbound assembled products over a decade ago, however increasingly restrictive loading requirements and safety rules on loading transportation equipment such as forklifts hampered feasibility for rail transport. On the inbound side rail is not an option for transporting raw and finished materials, due to very high transit times led to the current use of trucks for transport. Mexico parts transported to Greenville would take two and a half weeks by rail in contrast to 6-7 days by truck. New Bern has struggled with rail access, with a costly rail bypass around the city looking unlikely.

The discussion of access to Norfolk led to reasons why the Ports of Morehead City and Wilmington were not used more by industry. Factors included transit time up the Cape Fear River, availability of cold storage warehousing, dredged depths, and Wilmington's use of premium carriers. Wilmington is serving niche markets in Europe and South America, while Norfolk is serving Asian markets. Shippers prefer to have choices. The Department of Agriculture has documented $2.5 Billion in Ag exports and it is hoped that CS will reflect this in the data collected. Also, grain is imported to NC because there is not enough produced in state. This translates to five inbound unit trains of grains every day from Indiana. Port of Wilmington is a niche port for proteins and wood products industries in NC. The Port's strategy is not to compete with larger ports in neighboring states (SC/VA/GA), and to actively go after food processing market in NC (in the vicinity of the port). One of the major needs for this strategy is port cold storage.

Economic development coordination will be important in this study combined with transportation analysis. Be sure to capture emerging businesses too, such as pharmaceutical companies in Greenville. What about site location consultants looking for optimal site development opportunities? Where are the available gas utility lines / IT needs that are attractive to industries

locating to the region? NCRR works with all railroads to identify opportunities for transloading heavy equipment, ethanol, soybeans and other products. Every highway in the study area crosses a river at some point, and the recent impacts from Hurricanes Florence and Michael underscore the need to plan for more resilient infrastructure in the region. These disruptive events are likely to continue.

NC Community Colleges highlighted the importance of aligning the workforce needs with development availability and training in the region and bringing in the educational institutions in the implementation of economic development projects.

Next Meeting
The next meeting will be in or near Elizabeth City sometime in late March or early April.

Eastern North Carolina Freight Mobility Study

Regional Freight Advisory Committee Meeting

Nucor Steel - 1505 River Road, Cofield, NC
10:00 to 11:30 a.m., April 10, 2019
Agenda

1. **Welcome, Introductions**

2. **Presentation:**

   a. Eastern NC Modal Profiles (Supply, Demand and Performance)
   b. Supply Chain Analysis Profile with Industry Example
   c. Regional Priority Freight Network

3. **Discussion, feedback on Priority Freight Network**

4. **Next Steps**

   a. Freight Mobility Surveys (April, May)
   b. Commodity Flow Analysis and Trends (April)
   c. Focus Group with Economic Developers (May)
   d. Needs Assessment (April-June)
   e. Logistics-based Development Market Assessment (June)
   f. Focus Group with MPOs and RPOs (July)

5. **Adjourn Meeting**

6. **Lunch, Nucor Facility and Stevens Towing Tour Itinerary**

11:30 Lunch at (adjacent) Hot Plate Café
12:30 Tour of Nucor Steel Facility
1:45 Travel to Edenton
2:30 Tour of Stevens Towing, 125 Dye Plant Rd, Edenton

Note: Attendees please stop at the Main Gate Guard building where you will be checked in (and will require a personal ID). Nucor Facility security will direct you towards parking and the entrance. Attendees are reminded that for safety purposes flat closed toe shoes and long pants are required on site. In addition, jewelry is prohibited in the plant so attendees are asked to remove before entering the plant and cell phones may be damaged by the electronic arc furnace.

Eastern North Carolina Freight Mobility Study

Regional Freight Advisory Committee Meeting

Nucor Steel - 1505 River Road, Cofield, NC

April 10, 2019 - Meeting Minutes

Attendees

Name	Jurisdiction/Organization
Mark Angolia	ECU
Antoni Aguilar Mogas	ECU
John Chaffee	NC East
Emily Cox	NCRR
Eliud De Jesus	Mideast RPO
Lisa Destro	Cambridge Systematics
Paula Dowell	Cambridge Systematics
Patrick Flanagan	Downeast RPO
Heather Hildebrandt	NCDOT
Robert Hosford	NC Dept. of Agriculture
Eric Howell	Eastern Carolina RPO
Chip Killmeier	Port of Morehead City
Ray McKeithan	Nutrien/PCS Phosphate
Dana Magliola	NCDOT
Anne Meyer	Cummings Diesel
Janire Pascual	ECU
Ryan Purtle	Greenville MPO
Jordan Reedy	Rocky Mount MPO
Simon Rich	Steven's Towing Company
Margaret Robinson	NC Community Colleges
James Salmons	Upper Coastal Plain RPO
Andy Street	Hyster Yale
Chris Wheeler	ECU
Angela Welsh	Albemarle RPO
David Willauer	Cambridge Systematics
Ericka Zito	Cummings Diesel (by phone)

Welcome, Introductions

Ryan Purtle welcomed attendees and provided an overview of the study purpose and status. He described a recent effort to designate the NC11 corridor between U.S. 64 and U.S. 70 as a future interstate, and he also described other future interstate initiatives. He thanked Nucor and Stevens Towing for providing opportunities to tour facilities.

Presentation

CS Staff presented the results of the Eastern NC Modal Profiles, including Supply, Demand and Performance. The presentation included a Supply Chain Analysis Profile with and industry example and an exercise to identify the Regional Priority Freight Network using a scoring system with input from MPOs and RPOs adopted from the North Carolina Statewide Freight Plan.

Discussion, feedback on Priority Freight Network

Attendees asked about obtaining data from the study and this will be provided through a shared site. There was a discussion about grade crossings along U.S. 70 and which ones need additional attention. CS projected future roadway volumes using the state travel demand model and projected future rail volumes using Freight Analysis Framework (FAF) data from FHWA. The concept of attracting an automotive industry was discussed and how all other parts of the supply chain are made in the state. It was mentioned that for several overpass projects in Carteret and Craven Counties, NS has requested multi-track clearance, which is a positive sign. FEMA is still using the GTP to transport trailers in the wake of Hurricane Florence. A question came up about defining waste and recycling as part of the supply chain analysis. The CS Team focused on solid waste (and not waste water) movements, not necessarily where waste facilities are located. Nucor is a good example of recycling scrap steel for reuse. While the regional priority network exercise was interrupted by a fire drill, members provided feedback on several sections of the network that could be added. CS Staff explained the methodology that was developed by the MPOs and RPOs during the Statewide NC Freight Plan. There was a discussion about how to characterize the boating manufacturing industry in the priority network. Construction was not identified since they are short term projects with limited impact on the region over the long term. Staff will revisit the number of supply chain industries along different corridor segments. There was a discussion about weighting current infrastructure. CS staff said the first rule of economic development is to take care of what you have, or to promote business retention. There was a discussion about identifying which corridors scored above the mean. NC 101 will likely become an important corridor connecting the Port of Morehead City. CS staff will distribute a link to the online map so participants can help to score the priority network.

Next Steps

- Freight Mobility Surveys (April, May)
- Commodity Flow Analysis and Trends (April)
- Focus Group with Economic Developers (May)
- Needs Assessment (April-June)
- Logistics-based Development Market Assessment (June)
- Focus Group with MPOs and RPOs (July)

Link to Interactive Network Tool:
https://camsys.maps.arcgis.com/apps/webappviewer/index.html?id=f1f1259e1be242a7b6ba0a0177f24751

Link to Eastern NC Regional Goods Movement Profile
https://camsys.egnyte.com/dl/xkxZ1tsh6p

Announcement

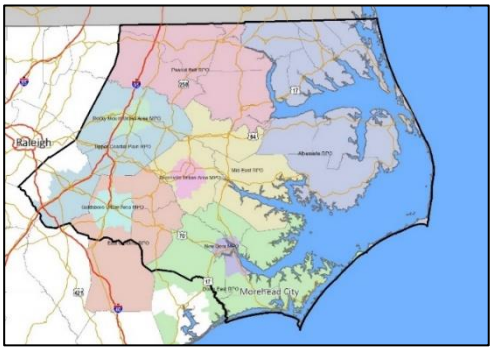
TO: **Eastern NC Regional Freight Advisory Committee** (RFAC)
Eastern NC City and County Managers and Elected Officials
NC Metro Mayors Coalition
Eastern NC MPO and RPO Transportation Committees
NC Departments of Agriculture, Transportation, Ports
Eastern Carolina University

FROM: David Willauer, Cambridge Systematics Project Manager

DATE: October 14, 2019

RE: Fall Regional Freight Advisory Committee (RFAC) Meeting

Overview
On behalf of North Carolina Planning Agencies and NCDOT, please join us for the Fall RFAC Meeting. We value your advice and need your help to review the Eastern NC Freight Final Report Recommendation Packages and to discuss future RFAC topics and meetings.



Date: Thursday, Oct 17, 2019
Time: 1:00 to 3:00 PM
Location: City Hall Annex Building, 2nd Floor, 200 N. Center Street, Goldsboro, NC

Agenda

1. Welcome, introductions
2. Goldsboro MPO Update; Long Range Metropolitan Transportation Plan
3. Presentation, Draft Final Report Findings and Recommendations
4. Facilitated Discussion, Questions and Answers
5. Future RFAC Topics and Meeting Schedule
6. Adjourn

Eastern North Carolina Freight Mobility Study

Regional Freight Advisory Council (RFAC)

Meeting Minutes October 17, 2019 – Goldsboro City Hall, Goldsboro, NC

Attendance

Rebecca Cherry, Cherry Consulting of the Carolinas (by phone)
Jennifer Collins, Goldsboro MPO
Emily Cox, North Carolina Railroad
Chad Davis, Eastern Carolina COG
Eliud de Jesus, Mideast RPO
Lisa Destro, Cambridge Systematics
Rik DiCesare, City of Greenville
Charles Edwards, NCDOT
Patrick Flanagan, Eastern Carolina COG
Kristina King, Kimley-Horn and Associates
Bob League, Rock Mount MPO
Dana Magliola, NCDOT
Kim Maxey, New Bern MPO
Tim Moore, Wayne County Development Association
Jordan Reedy, Rocky Mount RPO
James Salmons, Upper Coastal Plains RPO
David Willauer, Cambridge Systematics
Len White, NCDOT Division 2
Jeff Wood, Craven County
Erika Zito, Cummings Diesel (by phone)

Welcome and Introductions

David Willauer began the meeting with introductions around the room and over the phone. He thanked everyone for their involvement in the RFAC meetings and thanked Jennifer Collins for hosting the meeting. She and Kristina reported that the Goldsboro MPO approved the 2045 Metropolitan Transportation Plan (MTP) earlier today.

RFAC Meeting Presentation

Regional Plan Goals	Needs Assessment Findings
Study Region, 8 RPOs, 4 MPOs	**Findings and Recommendations**
Stakeholder Engagement	Freight Policy
Regional Goods Movement Profile	Highways and Bridges
Regional Priority Highway Freight Network	Sea Ports and River Ports
Key Freight-Intensive Industries	Airports
SWOT Analysis	Freight and Logistics

Dana said NCDOT liked the clusters methodology and how it tied to supply chain. He also explained how South Carolina incentivized suppliers to move near BMW in Greer. David said one of the successes of the planning process was the enthusiastic and consistent involvement from the

MPO and RPO planners representing the study region. NCDOT would like to see the involvement continue and meetings to have a meaningful point whether its training or planning efforts. Bob League reported on an upcoming NCDOT-NCSTATE meeting about rural freight needs. Patrick asked if this would be held across the state. NCDOT said there were two meetings planned: one for the SW part of the state and one in the NE part of the state. NCDOT shared additional efforts at ECU about value-added agriculture via the Collaboratory.

NCDOT would be willing to present to MPO and RPO TCC/TAC members and help with presentations for adoption. Emily Cox from NCRR asked if companies and industries could have a way to review the plan and have a place to share feedback. David said everyone can have input on the plan and recommendations. NCDOT liked the idea of having MPOs and RPOs all adopting and sharing the common vision for the purposes of marketing future businesses.

David suggested it could be beneficial to have a rail freight forum perhaps hosted by NCRR and NCDOT. NCDOT asked if the RFAC would support such a session with the railroads. James Salmons agreed it was a great idea to help build partnerships. Emily Cox said the NCRR organizes an annual Rail Forum in Raleigh and the 2019 Rail Forum was held just a few weeks ago. There was a discussion about some of the rail recommendations. Kim Maxey said New Bern would support a rail bypass because the railroad goes straight through downtown, but the $355 million price tag that makes it very difficult, especially given the water constraints.

NCDOT discussed a recent visit to the Port of Richmond and how this Port started small and became a booming barge port, predominately for containers on barge. NCDOT asked if the RFAC felt as strongly about education about maritime opportunity as they do with rail. Patrick Flanagan said the port already does a good job of this. It may be important to share more detail about the Radio Island rail prospects and NCRR said this may require more conceptual planning.

There was a discussion about the need for heavy haul infrastructure and for moving heavy loads from truck to rail. NCDOT said that this is also an element of the update to the Statewide Rail Plan. Patrick had questions about the corridor profile sheets and the methodology for selection. He said the corridors that are actual recommendations should also have a corridor profile sheet. Kristina and Lisa said these were developed by selecting the segments of the network with higher needs based on the needs assessment data analysis, as a way to take a closer look into those segments. Patrick will provide comments on some of the corridors start and end points to make sure some key bottlenecks in the region are included.

Jennifer asked about next steps the associated timeline. David said the CS Team will collect feedback from today and update the draft report to submit the final report by the end of October. Dana offered to help RFAC members take this plan on a roadshow to facilitate adoption in 2020. Patrick asked who should make up the RFAC - NCDOT shared that he envisions this being planners, chambers of commerce, economic development, local officials and industry. He also shared that industry continues to be the hardest group to bring to the table. Kim Maxey agreed to help Dana organize future RFAC meetings.

Eliud asked to modify the language about rail crossing improvements to include language that the improvements should be “long-lasting” so that they have to be improved as frequently. NCDOT asked if the RFAC should set a deadline for a rail forum in the first or second quarter of next year. RFAC members in attendance expressed support for this. Emily with NCRR offered to help facilitate setting up the forum. Tim Moore offered to take RFAC members on a tour of the US Cargo facility after the meeting. The meeting adjourned at 2:40 p.m.

Appendix B. Focus Groups Meetings Agendas and Minutes

Announcement

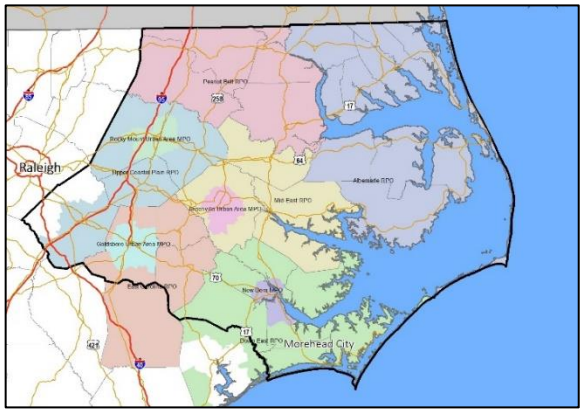
TO: Eastern NC City and County Economic Development Directors
Eastern NC City and County Managers
NC Carolina Gateways Partnership
NC SE Regional Economic Development Partnership
NC Metro Mayors Coalition
NC Rural Center
Economic Development Partnership of North Carolina
Eastern NC Metropolitan and Rural Planning Organizations
NC Department of Agriculture
NC Department of Transportation
Eastern Carolina University

FROM: Ryan Purtle, City of Greenville/Greenville Urban Area MPO

DATE: May 20, 2019

RE: Eastern NC Economic Development Focus Group Meeting

Overview
On behalf of North Carolina Planning Agencies and NCDOT, we are conducting an Economic Development Focus Group Meeting to get feedback on Eastern North Carolina development opportunities. The results of this effort will be to inform the study team on all the economic development initiatives underway or planned in the 29-county region in Eastern North Carolina (see map).



Date: Monday, June 3, 2019
Time: 2:00-4:00 PM EST
Location: Rocky Mount City Hall
331 South Franklin Street, Rocky Mount, NC

Agenda

1. Welcome, introductions
2. Presentation
3. Facilitated discussion
4. Next Steps
5. Adjourn

Eastern North Carolina Regional Freight Plan Study

Economic Development Focus Group Meeting on June 3, 2019

Rocky Mount, NC

At total of 19 people participated in the focus group session in Rocky Mount, hosted by Bob League from the Rocky Mount MPO.

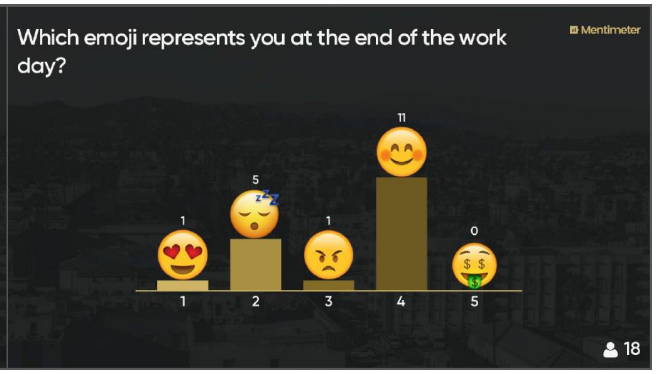
Attendance:

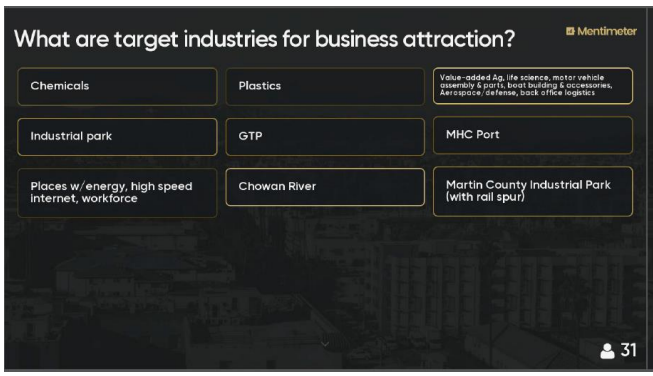
First Name	Last Name	Organization
David	Bone	Martin County
Eliud	De Jesus	Mid-East RPO
Mallory	Denham	Edenton Chowan Partnership
Lisa	Destro	Cambridge Systematics
Paula	Dowell	Cambridge Systematics
Martyn	Johnson	Beaufort County Economic Development
Oppie	Jordan	Carolinas Gateway Partnership
Bob	League	Rocky Mount MPO
Dana	Magliola	NCDOT Logistics and Freight
Eddie	McFalls	NCDOT Rail Division
Mark	Pope	Wayne County
Ryan	Purtle	Greenville MPO
James	Salmons	Upper Coastal Plains RPO
Jason	Semple	Martin County Economic Development Corporation
Ryan	Simons	Wilson Chamber of Commerce
Patrick	Stanley	NCDOT
Josh	Tatum	Carolinas Gateway Partnership
Angela	Welsh	Albemarle RPO
Steve	Yetman	City of Rocky Mount
Ahmed	Zahrani	NCDOT

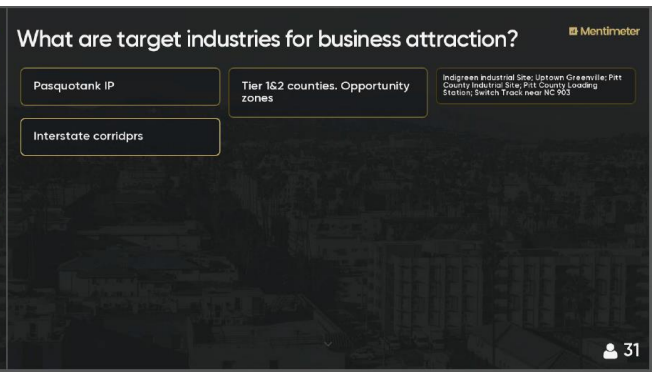
Agenda:

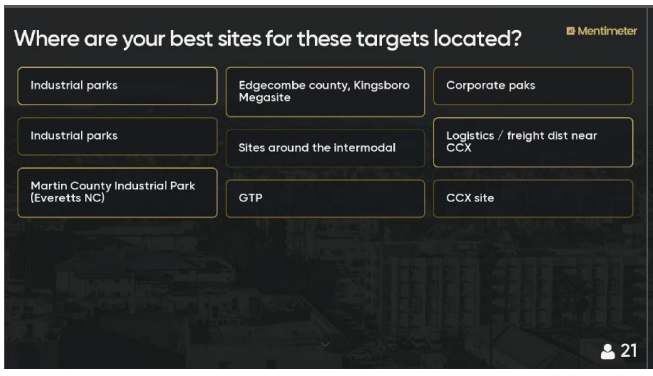
- Welcome and Introductions
- Study Overview and Status Update
- Purpose of the Focus Group: Get input
    - Review freight-intensive target industries for economic development in the 28-county region
    - Identify Eastern North Carolina freight-related economic development initiatives underway and planned
    - Input on the region's strengths, weaknesses, opportunities and threats to attract and retain businesses
    - Hear lessons learned from economic development success and failure stories
- Regional Supply Chain Profile – input on business attraction success and failure stories
- Economic Development in Eastern NC – input on strengths, weaknesses, opportunities and threats
- Regional Priority Freight Network – input on importance of freight transportation facilities to business attraction/retention

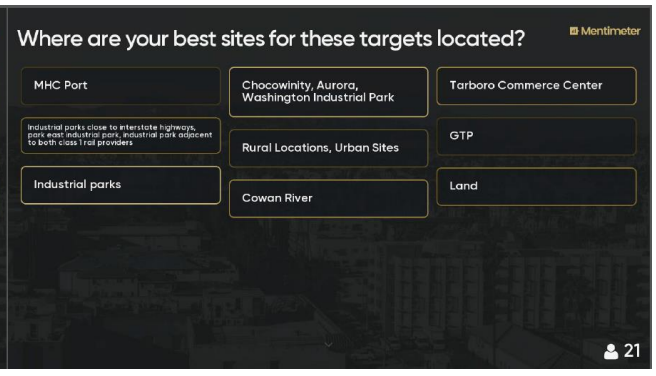
Result of the interactive polling:

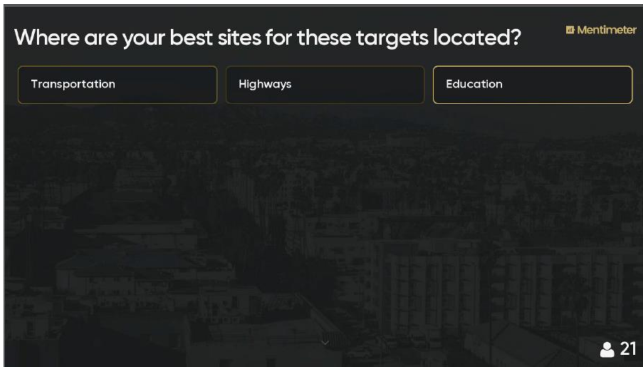











Where are your best sites for these targets located?
Mentimeter
Transportation
Highways
Education
21


Using one word, name the region's top 4 strengths?
Mentimeter
rail
land
labor
csx
sites
highways
infrastructure
workforce
manufacturing
broadband
transportation
community colleges
growing labor force
direct
utilities cost
geographic centrality
future interstates
seaports
large regional university
education
ports
intermodal
open space
lifestyle
affordable
interstate
19


Using one word, what are your region's top 4 weaknesses?
Mentimeter
workforce
broadband
natural gas
education
aging demographics
buildings
metropolitan
public health
not raleigh ir charlotte
driving distance
reliability of labor
future interstate
interstates
logistics
utilities
housing
migration
labor force
decreasing population
amenities
17


Using one word, what are your region's top 4 opportunities?
Mentimeter
interstate
marketing
ccx
access
ports
warehousing
natural disasters
millennial campus
transportation network
entrepreneurship
more distribution hubs
underutilized airports
food processing
future interstates
direct rail acces
rail-served sites
cold chain support
future interstate
sites ready
new interstate hwys
water freight- barge site
auto manufacturing
distribution
transportation models
value-added ag
clean energy
research
low cost
17


Using one word, what are your region's top 4 threats?
Mentimeter
natural disasters
population migration
regulations
raleigh
brac
public health
funding
recession
declining population
population decline
weather events
geographic competition
population decrease
federal government
leadership
15

Announcement

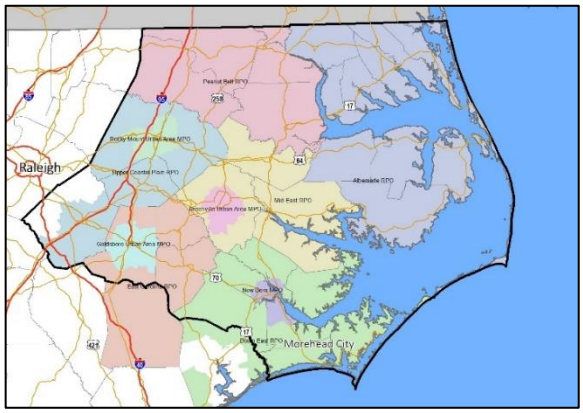
TO: Eastern NC City and County Managers and Elected Officials
NC Metro Mayors Coalition
Eastern NC – U.S. Military Representatives
Eastern NC MPO and RPO Transportation Committees
NC Departments of Agriculture, Transportation, Ports
Eastern Carolina University

FROM: Ryan Purtle, City of Greenville/Greenville Urban Area MPO

DATE: August 21, 2019

RE: Public Sector Stakeholders Focus Group Meeting

Overview
On behalf of North Carolina Planning Agencies and NCDOT, please join us for a Public Sector Stakeholders Focus Group Meeting. We value your advice and need your help to review the Eastern NC Freight Transportation Needs Assessment, review corridor profiles and provide feedback on draft recommendations.



Date: Wednesday, August 21, 2019
Time: 10:00 AM to 3:00 PM
Location: O. Marks Building, 2rd floor, 233 Middle St., New Bern, NC 28560

Agenda

10:00 a.m.	Welcome, introductions
10:10 a.m.	Presentation, Results of Analysis and Key Findings
10:30 a.m.	Discussion
10:45 a.m.	Review Freight Transportation Strategies
11:05 a.m.	Discussion
11:25 a.m.	Next Steps
11:30 a.m.	Break for Lunch on your own in New Bern
1:30 p.m.	Begin Tour of BSH Facility* in New Bern
3:00 p.m.	End Tour

*BSH manufactures a variety of cooking products featuring the Bosch and Thermador Brands

Eastern North Carolina Regional Freight Plan Study

Public Sector Focus Group Meeting on August 21, 2019

New Bern, NC

At total of 31 people participated in the focus group session in New Bern, hosted by Patrick Flanagan and Kim Maxey.

Attendance:

First Name	Last Name	Organization
Steve	Biggs	Bertie County
Jennifer	Collins	Goldsboro MPO
Eliud	De Jesus	Mid-East RPO
Lisa	Destro	CS
Charles	Edwards	NCDOT
Patrick	Flanagan	Down East RPO
Allison Fluitt	Fluitt	KHA
Steve	Hamilton	NC Community Colleges
Diane	Hampton	NCDOT
Eric	Howell	East Carolina RPO
Michelle	Howes	NCDOT
Brad	Hufford	Pitt County
Martyn	Johnson	Beaufort County
Kristina	King	KHA
Bob	League	Rocky Mount MPO
Kim Maxey	Maxey	New Bern MPO
Felicia	Mcree	New Bern MPO
Anne	Meyer	Cummings Diesel
Mark	Pope	Wayne County
Ryan	Purtle	Greenville MPO
Mushtaq	Rahman	Baseline Mobility
Jordy	Reedy	Rocky Mount MPO
David	Rhew	Cherry Consulting
James	Salmons	Upper Coastal Plains RPO
Margaret	Shields	City of New Bern
Jasnim	Siddika	Baseline Mobility
Chris	Wheeler	ECU
Len	White	NCDOT Division 2
David	Willauer	CS
Ben	Williams	Pitt County - Winterville
Matt	Wyandt	Port of Morehead City

Cambridge Systematics and Baseline Mobility staff presented findings from the Logistics Market Assessment, Needs Assessment and draft strategies for review. Kimley Horn Associates presented draft corridor profiles for selected highway segments in the study area. Following the presentations, four breakout groups were assembled and the following feedback on strengths and weaknesses and draft strategies from these sessions are summarized below:

- Add to Strengths: Foreign Trade Zones in the region, and Community colleges for labor training
- Add to Opportunities: GTP underutilization and new investments at Rocky Mount airport.
- The Community College (CC) system is a strength for Eastern NC, given that there are 15 out of 58 NC community colleges are in the region, including the Pitt CC located in Winterville where a new president was recently hired. Pitt CC has over 20 thousand student enrollments in various disciplines that supports the education of the local labor force. The CC curriculum covers education opportunities to serve local industries in logistics and distribution, aerospace, food processing, and biopharma.
- East Carolina University (ECU)'s Millennial Campus development initiative is a strength for the region as it has redeveloped or currently redeveloping several properties in Greenville by collaborating with the private sector. These campus development efforts often turned blighted urban areas into research and innovation centers. The focus of the millennial campus development is to attract, train, and retain skilled workers and ECU graduates.
- ECU has developed partnerships with local businesses in health care, advanced manufacturing, and the military.
- ECU is working with Pitt CC to establish a biopharma work force development and manufacturing center.
- Recent launch of the *RAMP East* program is a very positive news for the region. This stands for the Regional Advanced Manufacturing Pipeline for Eastern North Carolina. This was launched in July 2019 to address shortage of skilled workers in the region by providing teacher externships, technology training, industry tours, and regional job fairs. This multi-county program is intended to bring community colleges, economic development organizations, and workforce development professionals together in a way to prepare job-ready work force.
- Carolinas Gateway Partnership (CGP) is another public-private partnership between Nash and Edgecombe counties and several Cities and Towns that helps businesses locate in Eastern North Carolina and help find and recruit employees. In 2016, the CGP has supported the location of the CSX's Carolina Connector intermodal facility project in Rocky Mount. The CSX project is currently under construction and will be open for business in 2020. The CSX project is expected to handle 110,000 containers a year.
- The CSX intermodal facility is likely to take advantage of the region's strength over time once it is fully operational. However, inland modal parks are needed in the region to take full advantage of the growth in container cargo. These modal parks will primarily serve trucking companies, distribution centers, and logistics providers.
- Mega development sites of the region should be promoted in the region.
- Winterville is a bedroom community of Greenville work force. Winterville is more interested in mid-size companies in biotechnology and power generations.
- Class I railroads are generally very slow to react to economic development projects. In contrast, Short line railroads can be more receptive to economic development projects.
- *Quad-East* is a planning initiative that started within the last five years to connect four Eastern NC cities, namely City of Greenville, City of Wilson, City of Goldsboro, and City of Kinston. The goal is to form an interstate quality loop between Greenville (home of ECU and Vidant Medical Center), Wilson (home of BB&T and Bridgestone), Goldsboro (Home of the Seymour Air Force Base), and Kinston (home of Global Transpark). I-795 already connects Wilson and Goldsboro. US 70 connects Goldsboro and Kinston, which is in the process of being upgraded to I-42. The Felix Harvey Parkway north of Kinston will extend from NC 58 to NC 11. The NC 11 southwestern bypass construction is underway in Pitt County. The last leg of the Quad-East loop is NC 11 between the Harvey Parkway in Lenoir County and the southwestern bypass in Pitt County.

- Future I-87 Corridor: The future I-87 corridor follows US 64 east from Raleigh to Williamston, continue on US 17 near Elizabeth City to Chesapeake in Virginia. There, it will join I-64 and I-464 to Norfolk and the port facilities.
- Future I-587 Corridor: The future I-587 corridor follows US 264 between Zebulon and Wilson, overlaps with I-795 in Wilson, then follows US 264 again between Wilson and Greenville. This Interstate designation will improve the US 264 corridor to Interstate standards and provide a continuous freeway connectivity between Raleigh and Greenville via Wilson.
- I-795 Extension to the South: The current I-795 corridor between I-95 in Wilson and US 70 in Goldsboro will be extended to the south to I-40 near Faison using the US 117 corridor which is already a four-lane divided highway.
- US 17 Highway: The US 17 highway was viewed another important corridor for the region. This highway will continue to need capacity enhancements through widening and other strategies.
- US 13: The US 13 corridor, north of Greenville, between US 264 and US 64 (north of Bethel) is an important connector roadway that requires widening to accommodate future growth opportunities.
- NC 43: The NC 43 serves as a connector roadway between New Bern and Greenville. This highway also needs capacity enhancements with widening, passing lanes, etc.
- Outside the vicinity of Morehead City, the Truck Traffic seems to be shifting from US-70 to NC Highway 101 even though it is more twisty & 2 lanes only. The NC 101 has no traffic signals, which is likely the reason for this travel shift. Traffic from both of these highways are creating bottleneck at the entrance to the Morehead City. This is a possible route to look at for future improvements for Truck Traffic.
- The widening of the US 301 Bypass in Rocky Mount (once the STIP Project U-3330 is completed) is anticipated to help traffic conditions in and around the Rocky Mount area. There are other highway improvement projects in the area that will improve traffic conditions.
- The panel thought that we should look at more sources for Traffic Data besides NPMRDS. Data from INRIX, HERE, DRIVEWISE are some suggestions to look at. Especially Truck Traffic Data from only one source can be unreliable.
- The panel also suggested to look at possible use of waterways to transport goods, and to integrate port & roadways to work well with each other.
- The panel also suggested to take on strategies to reduce strain on truck drivers.
- Rural highway needs for US-17 from New Bern to Chockowinity need for widening - high truck traffic (logging trucks among others), commuter and tourism
- At-grade crossing Anderson St (in Selma) - delays at switching yard - need for feasibility study
- At-grade crossing NC 171 (Andrews St in Jamesville): delayed Rail Crossing Improvements, lack of cooperation from CSX.
- Lack of channels for towns to communicate/seek collaboration from RRs to improve problematic rail crossings. Need for model to do this through NCDOT.
- Rocky Mount Wilson Airport (RWI) has a recently completed 7,000 ft long runway and are in discussions about a new industrial park nearby the airport.
- With the CCX terminal in Rocky Mount on the way, Bob League would like us to look at US 301 headed in and out of Rocky Mount. Perhaps include it as a corridor profile sheet.
- Ryan and Jennifer recommended using a unique symbology for the future interstates on the map.
- Selma – Anderson St of I-95, rail is impacting vehicular movements. Recommend a feasibility study to determine the best option.
- CSX RR crossings NC 171, tight curves for trucks along US 64
- With an accident on I-95, NC 301 gets backed up

Appendix C. Stakeholder Interview Guides

Eastern NC Freight Mobility Study

Freight Interview Guide - Private Sector/Industry

■ Interviewee Data

Company Name:	
Contact:	
Title/Position:	
Phone/Fax:	
E-Mail:	
Address:	
HQ Location:	

Company Type:

☐ Carrier
☐ Facility Operator
☐ Shipper/Receiver (manufacturer)
☐ Other

■ General Company Overview

1. General Overview

- Jot title and responsibilities
- Company overview
- Why do you have a facility here?
- How many terminals/facilities do you have in the region? What types of facilities are they (warehousing, distribution, sorting, manufacturing)? Where are they located?
- Number of employees
- Describe your receiving/shipping facilities (rail yards, loading docks, etc.).
- Do you have good access to other modes of transportation? Please describe.

2. Customers and Suppliers

- Who are your major suppliers? Where are they located?
- Who are your major customers? Where are they located?

■ Company Supply Chain and Logistics Flow

1. Inbound and Outbound Materials

- What are the primary commodities you handle or move (inbound and outbound)

- Where do the inputs come from (international, national, regional)?
- Where are finished or semi-finished products going?
- What modes do you use (truck, rail, air, multi-modal)?
- What facilities/terminals do you use (ports, airports, intermodal/transload terminals, etc)?
- What is the volume of materials/products by commodity and mode?
- How many truckloads/railcars/water do you generate daily from your facilities? (inbound and outbound)
- Are there seasonal variations in your transportation operations? Inbound, outbound?

Freight Transportation System

1. General Questions

- What regional transportation facilities (highways, railroads, ports, airports, distribution centers/hubs, waterways, pipelines, etc.) are most important to your operation? What routes?
- How are they performing? Any general strengths and weaknesses?
- Where are the bottlenecks?
- How well are the various modes of transportation connected? What do you think needs to happen to make the freight transportation system more fully integrated?
- To what degree do non-freight activities (recreation, residential/commercial development) impact your operations? Do changing land use patterns impact your operations?

2. Transportation Improvements and Your Company

- What do you think are the most significant regional transportation problems faced by your industry that could be addressed through:
  - improved traffic operations (e.g., better signage, signalization, more on-street parking, improved truck routes);
  - major facility investments (e.g., increased roadway capacity, improvements to principal arterials, improved roadway geometric design);
  - changes in regulatory practices (re-designation of weight restricted routes, parking restrictions).
- Are you planning to expand your operations in the region?
- What suggestions do you have for improving the area's mobility in the short term?
  - Do you have any area specific recommendations?
  - Do you have any specific systemwide recommendations?

General Trends, Issues, and Challenges

- Has your company projected growth in freight over the next 5 years? If yes, how much?
- Describe how market, economic, or trade trends will affect your operations in the short and long run (e.g., demographic changes, new transportation investments in the region, "re-sourcing" of manufacturing activities in North America, new supply chain strategies, free trade agreements, etc.).

- Are you aware of any planned transportation improvements that would impact your operations? How?
- What can local agencies and NCDOT do to better address your needs? What kinds of policy or institutional changes would be necessary?
- How could the existing infrastructure physically be changed to improve state freight flows?

Other Questions

- Do you have any data/resources/studies you think would help us?
- Are there any individuals in the public or private sectors that you believe we should speak with?
- Do you have any other comments or issues that you would like to discuss?

Eastern NC Freight Mobility Study

Freight Interview Guide - Freight Facility

Interviewee Data

Organization Name:	
Contact:	
Title/Position:	
Phone/Fax:	
E-Mail:	
Address:	

General Overview

- Overview of cargo operations at the facility
- Service providers
- Current planning efforts underway

Needs, Trends, Issues, and Opportunites

- What are the biggest operational challenges with freight at the facility?
- Are the roadways sufficient for accessing the facility for freight activity?
- To what extent is the facility connected to other modes (e.g. rail, water)?
- Is there a desire to increase rail connectivity?
- Has the facility developed cargo forecasts?
- Are there plans to expand cargo service?
- Who are the tenants at the facility?
- Approximately how much vacant space exists throughout the facility?
- What are the facility's most critical infrastructural and operational needs?
- Are there any needs related to institutional, regulatory, community/environmental, safety, or land use?
- Do you foresee any needs arising in the coming decades?
- Any other issues, trends or opportunities you'd like to mention?

Other Questions

- Any useful freight data/resources/studies that can be shared to be analyzed in the regional freight study (freight statistics, commodities, forecast?)
- Recommendations of other stakeholders we should talk to?
- Do you have any other comments or issues that you would like to discuss?

Eastern NC Freight Mobility Study

Freight Interview Guide - Industry Association / Economic Development

Interviewee Data

Organization Name:	
Contact:	
Title/Position:	
Phone/Fax:	
E-Mail:	
Address:	

General Overview

1. **General Overview**

   - Jot title and responsibilities
   - Organization overview
   - Key programs/projects underway

2. **Members**

   - General composition of membership by industry groups
   - How many jobs do they represent by industry sector?
   - What other industry clusters are you targeting to recruit for the region?

General Trends, Issues, and Challenges

- General industry trends in the region
- Issues and opportunities related to freight transportation in the region

Other Questions

- Do you have any data/resources/studies you think would help us?
- Are there any individuals in the public or private sectors that you believe we should speak with?
- Do you have any other comments or issues that you would like to discuss?

Appendix D. Stakeholder Interviews Findings Summary

The Study Team interviewed over 20 stakeholders representing industry, universities, agriculture, timber harvesting, military, fertilizer production, fishing, maritime, trucking companies, railroads, and economic developers. This appendix summarizes stakeholder interview highlights as they pertain to Eastern North Carolina freight transportation, logistics, mobility and economic development.

Trucking companies and aggregate haulers have facilities and offices throughout the region, including Kinston, New Bern, Greenville, Rocky Mount, Williamston and Elizabeth City. One company interviewed transports over 4 million tons of material in and out of the region using over 3 million gallons of diesel fuel and between 2,000 to 5,000 truckloads per day. Primary routes include I-95, I- 40, US 64, US 17, US-74, US-421, 795, US-264, US-70, US-158, US-301, NC-42, NC-11, and NC-13. Generally, there are not many bottlenecks, with the exception of Greenville and the Outer Banks during tourist season. Another LTL truck freight company uses 14 drivers and 2 terminal managers serving VA, NC, SC, TN DC and MD markets with daily trips. In NC this translates to 200 miles to the east and 100 miles to the west and south to as far as New Bern. Rail to truck intermodal transfers occur mostly at the Charlotte Distribution Center, followed by Greensboro, NC, and Richmond, VA (600-700 loads/day). Winter is generally slower than summer. Inbound pups (28' trailers) 5-7 trailers/day, 12-14 over the weekends. Outbound 8-10 trailers/day. Everything goes to hubs in Charlotte, Richmond and Harrisburg. Sometimes full loads go further, such as a full truckload to Buffalo when needed.

Another company relies on the Port of Virginia (POV) for importing raw materials such as specialty fibers and chemicals and export of finished products shipped in containers to international destinations, including Asia. Some of the truck movements from the study area to the POV could be moved by rail. They could support as many as two intermodal trains/week, with 150 containers per train if they could convince the rail carrier.

Eastern North Carolina is fortunate to have people that have been involved in economic development, some for as long as 42 years. These economic development organizations have been instrumental in promoting new business, helping with major development opportunities, and advocating for naming interstate highways to attract businesses, including new Interstate 42, 87 and 587 corridors. There is a strong correlation between where major plants have located in Eastern NC and four lane highways.

Maritime opportunities in the study area include the Intracoastal Waterway (ICW) and the Port of Morehead City. There are barge sites along the study area rivers and opportunities to do more coastwise shipping through the Port of Morehead City to Elizabeth City. Inbound scrap steel from up and down the eastern seaboard is recycling for steel manufacturing.

The Port of Morehead City has seen a 75 percent increase in commodities over the past five years, with the largest being grain, lumber and liquid and dry bulk. Pig iron is imported from Brazil and the Black Sea. The Port could benefit from a re-routed rail line and the proposed Havelock Bypass at Cherry Point will also help. The Port can store up to 250 railcars on site. Spirit Aerospace exports airline parts on vessels once a week.

Exporting soybeans from excess U.S. capacity represents a new opportunity, shipping to Argentina for crushed soybean byproducts. A lot of grain facilities, including soybeans and whole grain, require an East Coast outlet for exports. Opportunities to come in by barge or rail for exports could effectively offset fertilizer business season. Other port opportunities include the 150 acres in Radio Island, promoting wind energy and windmill farms, such as the recent windmill components for farms in Elizabeth City and offshore in Mid-Atlantic region and in New England. While warehouse space at the Port of Morehead City has reached

capacity, there is room at the port for development, especially with the improvements on US 70, which have improved access to the Port. While dredging is always a challenge because of the nature of the channel, the USACE has helped to keep the channel clear for navigation.

Converting coal plants to natural gas has helped several counties that were previously in non-attainment (air quality) status; A new natural gas pipeline is being developed by four leading U.S. energy companies from Western PA and WV to NC and VA. Power plants will take most of capacity but there are opportunities for merchant plants to benefit. Replacing or upgrading pipeline pump stations is another strategy to increase gas throughput the region. More wind farm sites are being explored.

Several companies deliberately chose locations for equal distance between Ports of VA and Wilmington and in part due to the University in Greenville. There is still warehouse capacity in the region, although many are older facilities that may need to be upgraded. There is a shortage of skilled labor, including welders, machine operators, CNC (computer numerical control) programmers and senior engineers. Plant maintenance is another challenge and finding contractors that can move from plant to plant during maintenance periods. Site location consultants cite “lack of interstate highway access” as a constant detriment for companies seeking to locate in Eastern NC.

One of the Class I railroads in the study area is contending with businesses locating too close to industries built on the railroads, creating encroachment and safety concerns. Short lines are facing the same issue. Military cargo and personnel are regularly transported by rail, all of which must by guarded at all times by the NS Railroad Police.

The new CCX Rail Intermodal Terminal is being scaled back from 260,000 to approximately 100,000 containers/year and will require a new Wallace-Castle Haynes track to create a dual connection to the proposed facility. An anchor tenant is still needed to be successful. Other plans include a Wilmington rail loop (although no projects are yet planned) and raising the Arendell Street Bridge. Class I railroads work closely with NCRR for transloading opportunities and identifying areas to serve new businesses (by rail). Grains and soybeans are growing. Multiple military operations increasing each year, most of which include movements divided roughly evenly between the Ports of Wilmington and Charleston. Additional rail operations serve the Military Terminal in Sunny Point (MOTSU).

Several companies in the study area rely on supply chains from other countries, including nearby Canada and Mexico. Truck transit times are more competitive than rail, often the difference between 6 and 14 days, which is a big difference. Inbound parts sourced through POV can amount to between 3-4 containers per day. Large companies can get air freight from Dulles, Atlanta or Charlotte shipped the next day so local airports cannot compete.

Input from stakeholders confirms that truck congestion occurs mostly outside the study area in Charlotte, Greensboro or Raleigh-Durham, not east of I-95. In the study area there are a total of 800 farms, 95 percent of which are located east of I-95 from VA border (including Rocky Mount, Albemarle, New Bern) to SC border and Lumberton, NC).

One agriculture company owns 400 semi tractor-trailer trucks transporting hogs and feed between farms, feed mills and harvest plants. Over 1000 drivers are involved. Most of the inbound goods are feed, 75 percent corn and 25 percent soybean, soybean meal and others. Total of 75 percent of feed is in state delivered by truck (semis) and 25 percent comes from out of state from Ohio. Unit trains with over 100 rail cars hoppers bring in grain via CSX or NS.

Appendix E. Freight Mobility Survey Instructions and Summary of Results

Regional Planning Partners: Albemarle RPO, Downeast RPO, East Carolina RPO, East Carolina University, Eastern Carolina COG, Greenville MPO, Goldsboro MPO, Highway 17/64 Association, Mid East RPO, New Bern MPO, Peanut Belt RPO, , Rocky Mount RPO, Upper Coastal Plains RPO

Memorandum

TO: North Carolina Trucking Companies

FROM: David Willauer, Cambridge Systematics

DATE: May 1, 2019

RE: Eastern NC Freight Survey

Overview

On behalf of North Carolina Planning Agencies and NCDOT, we are conducting a freight survey to get feedback on freight transportation in Eastern North Carolina. The results of this study will be used to evaluate and implement transportation solutions within the State. The study area includes the 22 counties in Eastern North Carolina (see map).

.

Background

Eastern North Carolina includes access to I-95 and important US Highways, including US-17, US-64, US-70 and US-264. Freight is also transported to and from the study area through the Ports of Morehead City, Norfolk, Wilmington, and Savannah.

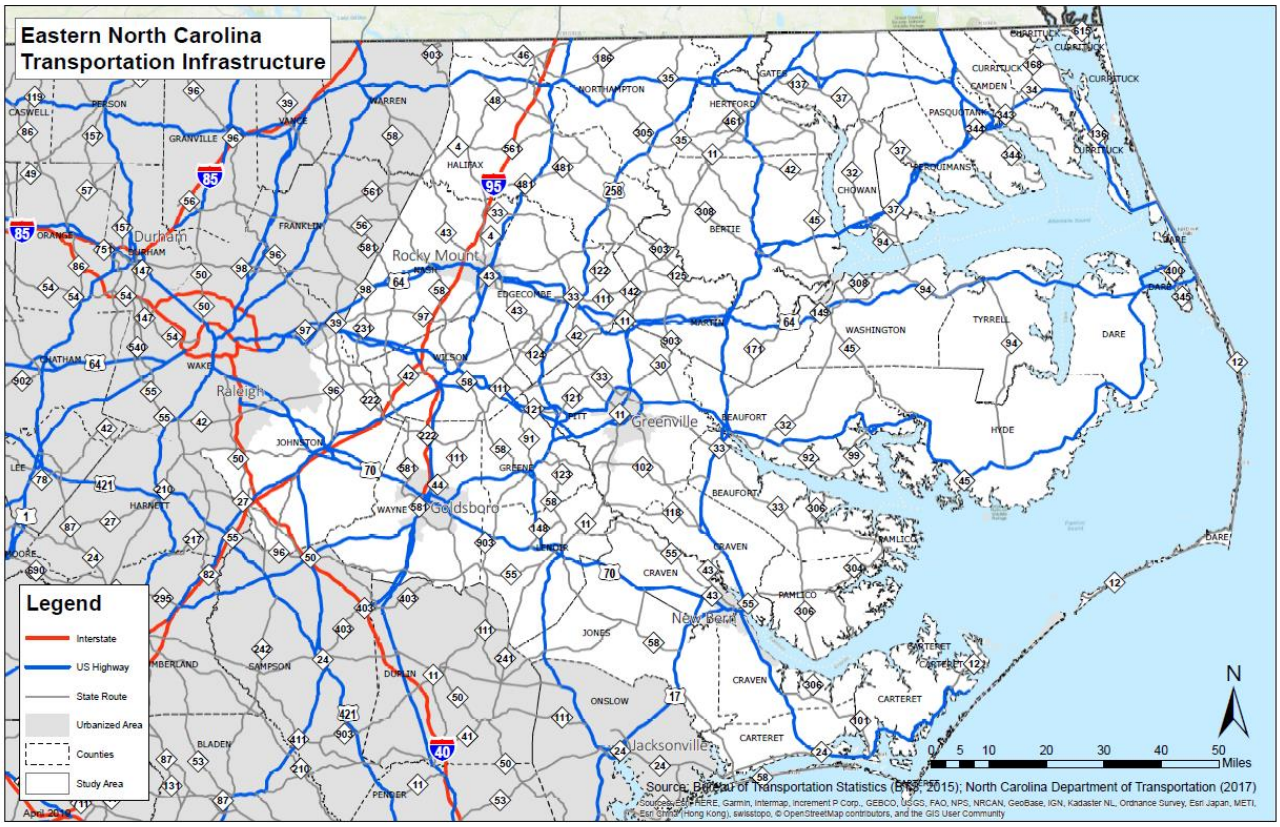
Eastern NC Freight Study Area

Freight Survey Instructions

1. Please distribute the enclosed map to drivers, dispatchers and freight managers
2. Use a highlighter on the map to indicate any areas of concern (such as below) and make any notes on the map or on the back.
    a. Bottlenecks
    b. Additional Travel Lanes or Additional Turning Lanes
    c. Highway-Rail Grade Crossings
        i. Too Close to Intersection
        ii. Creates Highway Congestion
    d. Bridge Conditions
        i. Needs attention
        ii. Preventative Height and Weight Restrictions
3. Please return marked-up maps by the enclosed pre-paid envelope, email (dwillauer@camsys.com), or fax to (301-347-9101) by May 15, 2019.

Thank you in advance for your participation in helping maintain and improve transportation infrastructure in North Carolina.

Cambridge Systematics
3 Bethesda Metro Center, Suite 1200
Bethesda, MD 20814


Eastern North Carolina
Transportation Infrastructure
Legend
Interstate
US Highway
State Route
Urbanized Area
Counties
Study Area
Durham
Rocky Mount
Raleigh
Greenville
Goldsboro
New Bern
Jacksonville
N
0 5 10 20 30 40 50
Miles
Source: Bureau of Transportation Statistics (BTS, 2015); North Carolina Department of Transportation (2017)

Memorandum

TO: Ryan Purtle

FROM: David Willauer, Lisa Destro

DATE: June 20, 2019

RE: Eastern NC Freight Survey Summary

Summary

CS conducted a Freight Carrier Survey using a combination of direct calls to carrier managers and a carrier survey distributed to freight carriers in Eastern North Carolina. Of the 10 carrier managers surveyed, two provided specific feedback (below). The remaining carriers indicated there were no bottlenecks of concern in Eastern North Carolina.

Carrier Telephone Survey Results

Carrier 1

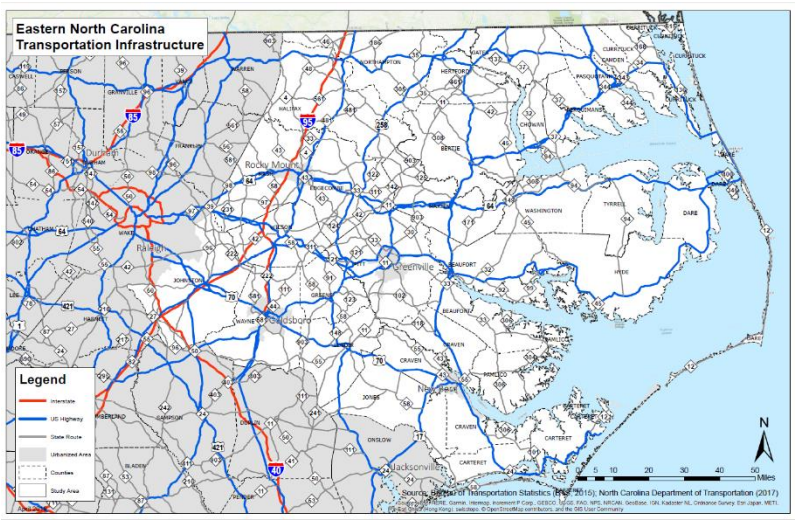
- I- 540 and I-440 in Raleigh presents challenges, particularly during peak commuter periods.
- I-64 and I-264 eastbound access at Zebulon
- I-64 and US 258, most trucks use US 258 north to NC 13 to Norfolk instead of I-95
- Highway/rail grade crossings close to several intersections at I-64 and US 258 create safety problems during peak traffic periods
- Trucks use US 259 to NC 97 to NC 125 to NC 11 to get to the Port of Norfolk
- Primarily transports empty containers to the Port of Morehead City
- US 17 in Elizabeth City—bypass working but access on and off needs improving
- US70 into Morehead City reduced to one lane, another lane is needed
- New bridge to Beaufort is good for Beaufort, not used for commercial traffic
- US 70 and US 258 interchange needs work
- I-95 and US 64 inbound-outbound access needs widening
- I-95 and US 301 in Kenly needs work, US 301 not in great condition

Carrier 2

- Most highways are in good conditions and have “interstate characteristics”
- NC 11 and US 258 needs attention
- Better access to US-264
- US 17 along the Eastern Shore is very slow and time-consuming
- Most drivers use US 64 and US 264 to access I—95 north and points west
- Most severe congestion is around Raleigh, Greensboro and Charlotte
- US 64 and NC 13 finishing Greenville bypass
- US 17 from Washington to New Bern problems
- US 17 to US 70 to Morehead City most used

Carrier Survey Methodology

Using a freight carrier distribution list from the Port of Morehead City, CS sent copies of the Eastern NC Study area to 55 carriers with 5 maps each to share with drivers for feedback on bottlenecks in the region.

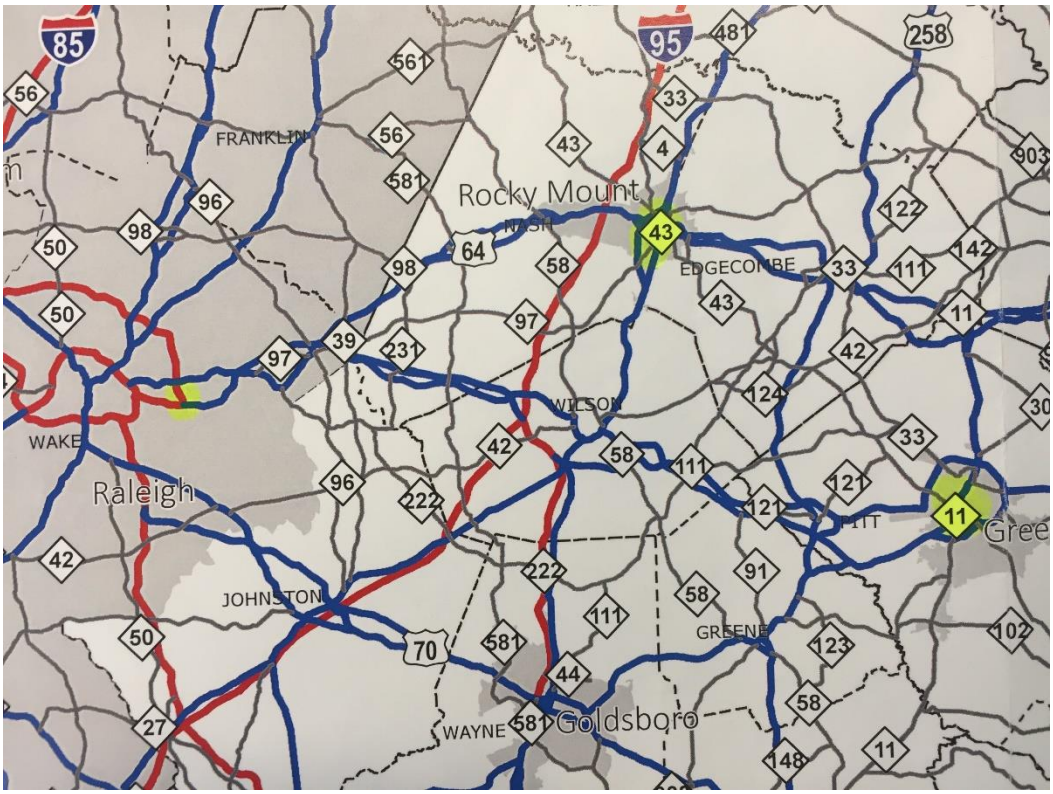


Carrier Survey Results

From the Freight Carrier Survey, one map was returned by a Wilson-based carrier identifying three bottlenecks (see map):

- Raleigh – I-540 and I-440 too much traffic for lanes
- Rocky Mount: US 301 and I-64 bottleneck
- Greenville Blvd and US 264 Alternative – not enough lanes

(Ryan Purtle: SW Bypass may alleviate this, scheduled to open Oct 2019)



Appendix F. ENCPHFN Regional Corridor Profiles

US 13 from US 70 to SR 1700 (Rodell Barrow Road) in Wayne County

Corridor Description

Corridor Description: 8-mile corridor in the City of Goldsboro in Wayne County in eastern North Carolina. US 13 is the gateway to Seymour Johnson Air Force Base and connects Goldsboro to US 70 Bypass (future I-42).

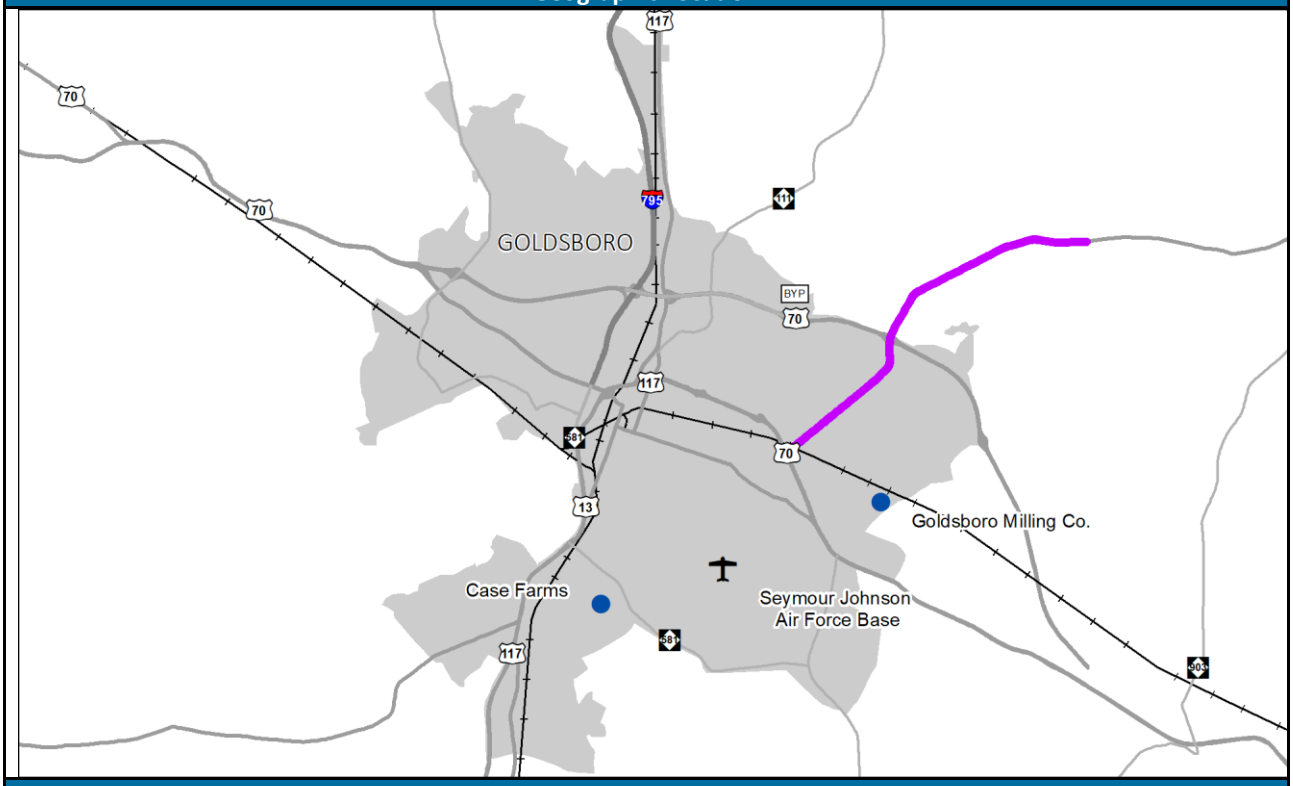
Existing Conditions: Four-lane with center-left turn lane from Royal Road to New Hope Road. Two-lane with no shoulder to Rodell Barrow Road.

Economic Activity Centers: Seymour Johnson Air Force Base, Goldsboro Milling Co., and Case Farms.

Transportation Connectivity: Locally, US 13 connects US 70 to US 70 Bypass (Future I-42). Regionally, US 13 connects to Greenville via US 264.

Intermodal Connectivity: Norfolk Southern and CSX Transportation railroads intersect in Goldsboro. Future I-42 will connect Goldsboro to the Port of Morehead City.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Goldsboro 2045 Metropolitan Transportation Plan** (in progress)

2020-2029 STIP Projects

U-3609A/B: Modernize US 13 from Royall Avenue to north of Saulston Road. Segment A (Royall Avenue to New Hope Road) under construction. Segment B (New Hope Road to Saulston Road) begins construction in 2025.

R-5853: Modernize US 13 from Saulston Road to Rodell Barrow Road. Construction expected to begin in 2026.

U-5724: Realign Central Heights Road at Berkeley Boulevard. Construction expected to begin in 2020.

US 13 from US 70 to SR 1700 (Rodell Barrow Road) in Wayne County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

High mobility needs on the corridor are due to the two-lane typical section north of New Hope Road. The high density of driveways providing access to businesses and residences on the corridor results in decreased mobility as drivers slow down to turn off the highway.

Safety Needs: None

Asset Management Needs: None

Rural Roads Needs: Low

Potential Improvement Strategies

- Existing STIP projects should provide mobility and reliability improvements.
- Corridor should be monitored as US 70 BYP is upgraded to interstate standards (I-42). I-42 will connect to Morehead City, providing Goldsboro direct connection to the port.

Existing Corridor

- US 13 between Royall Avenue and New Hope Road. Widening completed as part of U-3609A.

- US 13 between New Hope Road and Saulston. Future widening as part of U-3609B.

US 264 ALT (Greenville Blvd) from US 13 (Dickinson Ave) to US 264

Corridor Description

Corridor Description: 8-mile corridor in the City of Greenville in Pitt County in eastern North Carolina. US 264 ALT provides a southern bypass of Greenville for US 264.

Existing Conditions: Four-lane with center-left turn lane. Signalized corridor with sidewalks in front of businesses and residences.

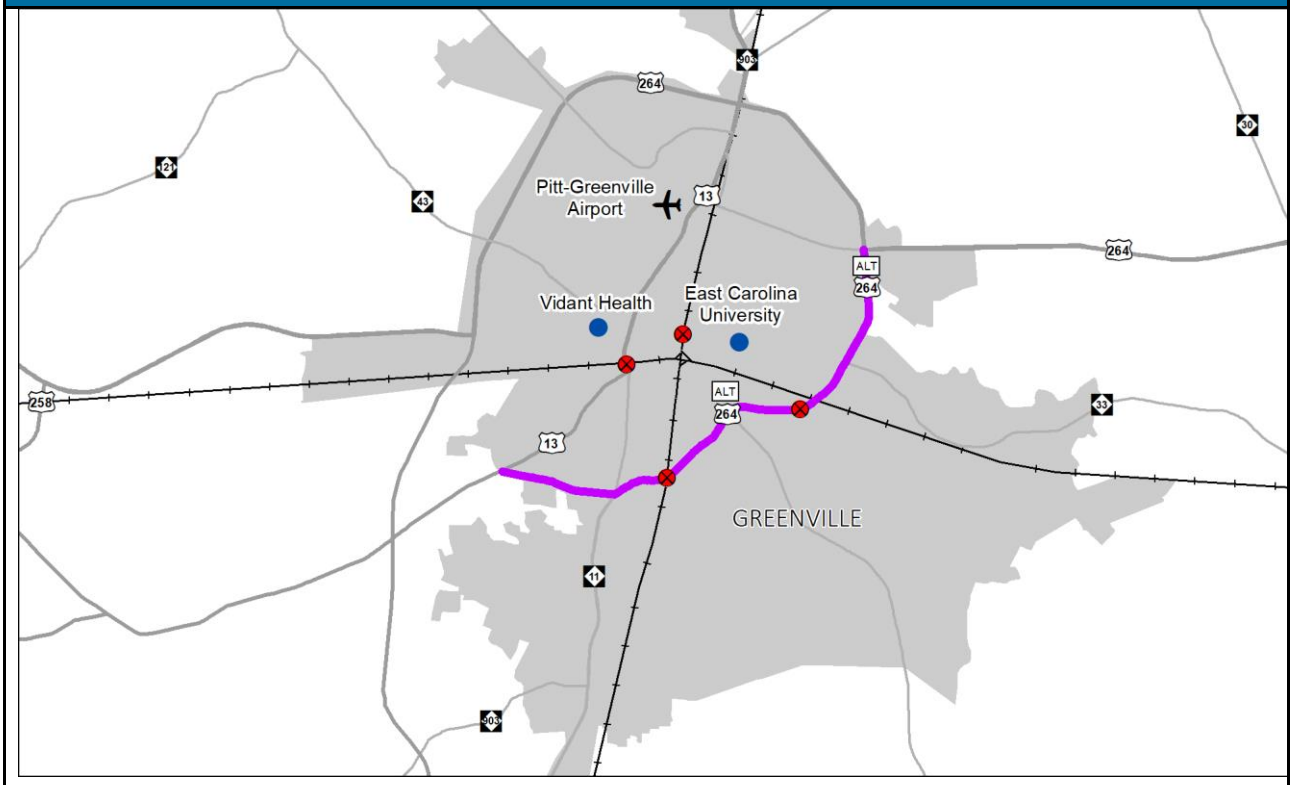
Economic Activity Centers: East Carolina University and Vidant Health.

Transportation Connectivity: US 264 ALT connects the businesses and neighborhoods of southern Greenville to US 13 and to

US 264.

Intermodal Connectivity: Carolina Coastal Railway (Norfolk Southern) and CSX Transportation railroads intersect in Greenville. Pitt-Greenville Airport is located in northern Greenville.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Greenville Metropolitan Transportation Plan 2045 Update**
  - Modernize US 264 ALT corridor: replace existing turn lanes with median, improve intersections at Greenville Boulevard and Memorial Drive and at Greenville Boulevard and Red Banks Road.

2020-2029 STIP Projects

EB-5980: Construct sidewalk from US 264 ALT to US 13 (Dickinson Ave). Construction anticipated to begin in 2028.

US 264 ALT (Greenville Blvd) from US 13 (Dickinson Ave) to US 264

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

There are multiple factors affecting mobility on this corridor: two at-grade railroad intersections (west of Evans Street and west of East 14th Street), signalization, and a high density of businesses.

Safety Needs: None

Asset Management Needs: Low

NCDOT has identified poor pavement condition on US 264 ALT from US 13 to NC 11.

Rural Roads Needs: None

Potential Improvement Strategies

- Improve signal timing and coordination.
- Intersection improvements at major corridor intersections.
- Grade separations at the two railroad crossings on the corridor.

Existing Corridor

- US 254 ALT at Evans Street

US 13 from SR 1139 (Moye-Turnage Road) to US 264 ALT in Greenville

Corridor Description

Corridor Description: 7-mile corridor west of the City of Greenville in Pitt County in eastern North Carolina. This section of US 13 intersects with the Greenville Southwest Bypass and connects Greenville to Goldsboro.

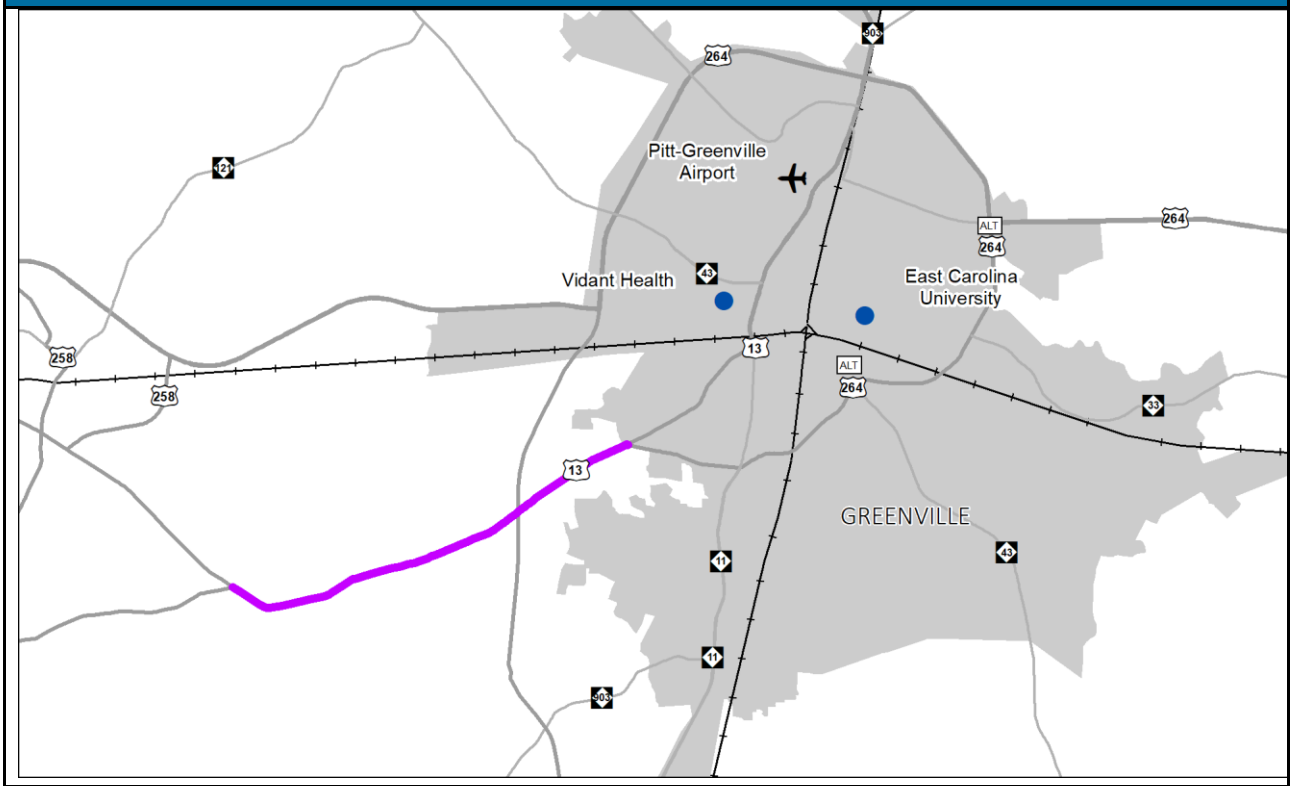
Existing Conditions: Four-lane with center-left turn lane from US 264 ALT to Frog Level Road and two-lane to SR 1139 (Moye-Turnage Road).

Economic Activity Centers: East Carolina University and Vidant Health.

Transportation Connectivity: US 264 ALT connects the businesses and neighborhoods of southern Greenville to US 13 and to US 264.

Intermodal Connectivity: Carolina Coastal Railway (Norfolk Southern) and CSX Transportation railroads intersect in Greenville. Pitt-Greenville Airport is located north of Greenville.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Greenville Metropolitan Transportation Plan 2045 Update**
  - Widen US 13 from Memorial Drive to the Southwest Bypass to a 4-lane divided facility with future access management.

2020-2029 STIP Projects

R-2250: Construct Greenville Southwest Bypass from NC 11 to US 264 (under construction).

U-5875: Widen Stantonsburg Road to US 13. Construction anticipated to begin in 2024.

US 13 from SR 1139 (Moye-Turnage Road) to US 264 ALT in Greenville

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

There are several factors on this section of US 13 potentially affecting mobility: this is primarily a two-lane highway with no shoulders, there is no center-left turn lane for drivers accessing residential and business driveways on both sides of the highway, and there is one signalized intersection at Davenport Farm Road.

Safety: None

Asset Management Needs: None

Rural Roads Needs: Low

Potential Improvement Strategies

- The newly constructed Greenville Southwest Bypass may relieve congestion affecting truck travel time reliability on the corridor. Corridor performance should be monitored as the Bypass is opened for operation.

Existing Corridor

- US 13 near intersection Moye-Turnage Road

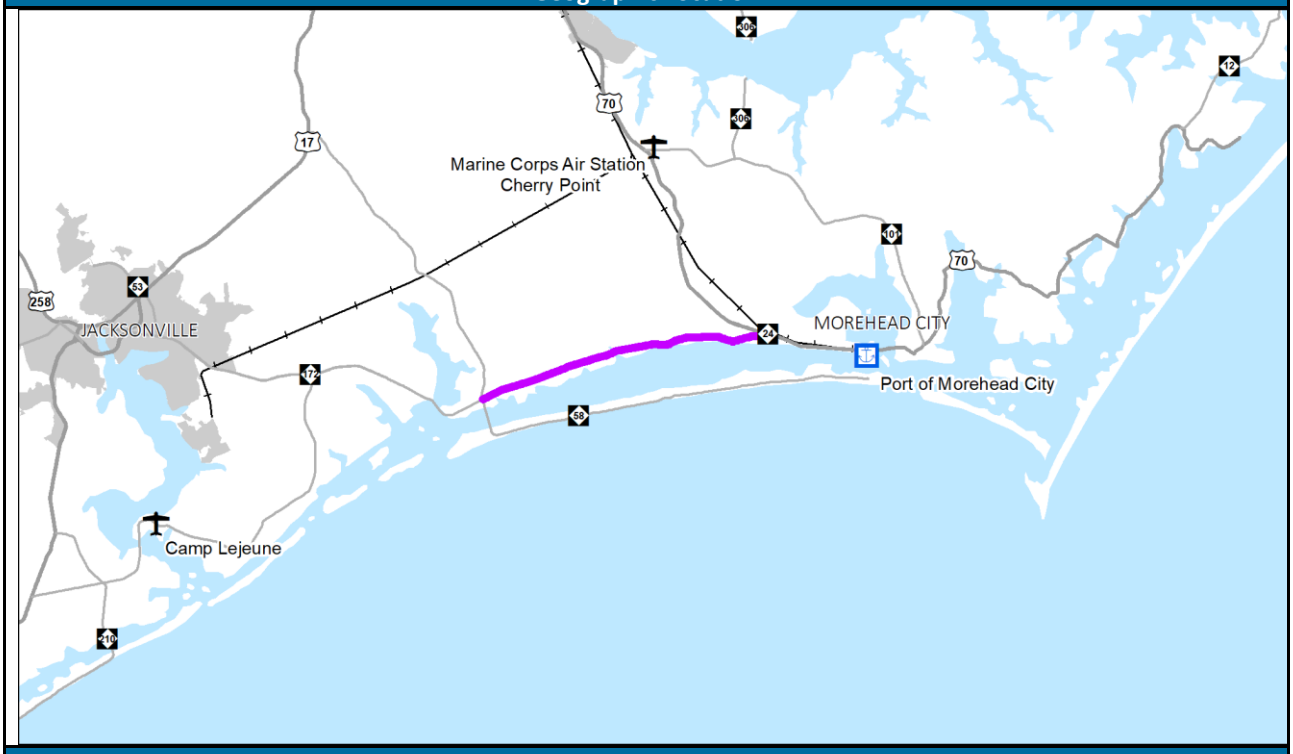
- US 13 near US 264 ALT

NC 24 from NC 58 to US 70 in Carteret County

Corridor Description

Corridor Description: 16-mile corridor south of Morehead City in Carteret County in eastern North Carolina. NC 24 is one of two Priority Highways leading into the Port of Morehead City.
Existing conditions: Four-lane with a center-left turn lane.
Economic Activity Centers: Port of Morehead City, Port of Wilmington, Apex Oil Company (Wilmington), Marine Corps Air Station Cherry Point, and Camp Lejeune.
Transportation Connectivity: Connects to US 70 and US 17 which provides access to Camp Lejeune and Wilmington and I-40.
Intermodal Connectivity: New Hanover International Airport, Albert J Ellis Airport, Norfolk Southern Railroad, and Camp Lejeune Railroad.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Carteret County Comprehensive Transportation Plan (2013)**
  - US 24 identified as needing improvement.

2020-2029 P Projects

R-5858: Improve intersection at NC 24 and NC 58. Construction anticipated to begin in 2021.

NC 24 from NC 58 to US 70 in Carteret County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: Medium
Mobility on the corridor may be affected by the business and residence access to the highway. However, the center-left turn lane decreases any negative mobility effects of drivers turning on or off the highway. There are five signalized intersections on the corridor which may affect truck travel time reliability.
Safety Needs: None
Asset Management Needs: Low
NCDOT has identified poor pavement condition from Page Lane to Salty Shores Road and from Paradise Lane to NC 70.
Rural Roads Needs: None

Potential Improvement Strategies

- Rehabilitate pavement, improve access control, improve signal timing.

Existing Corridor

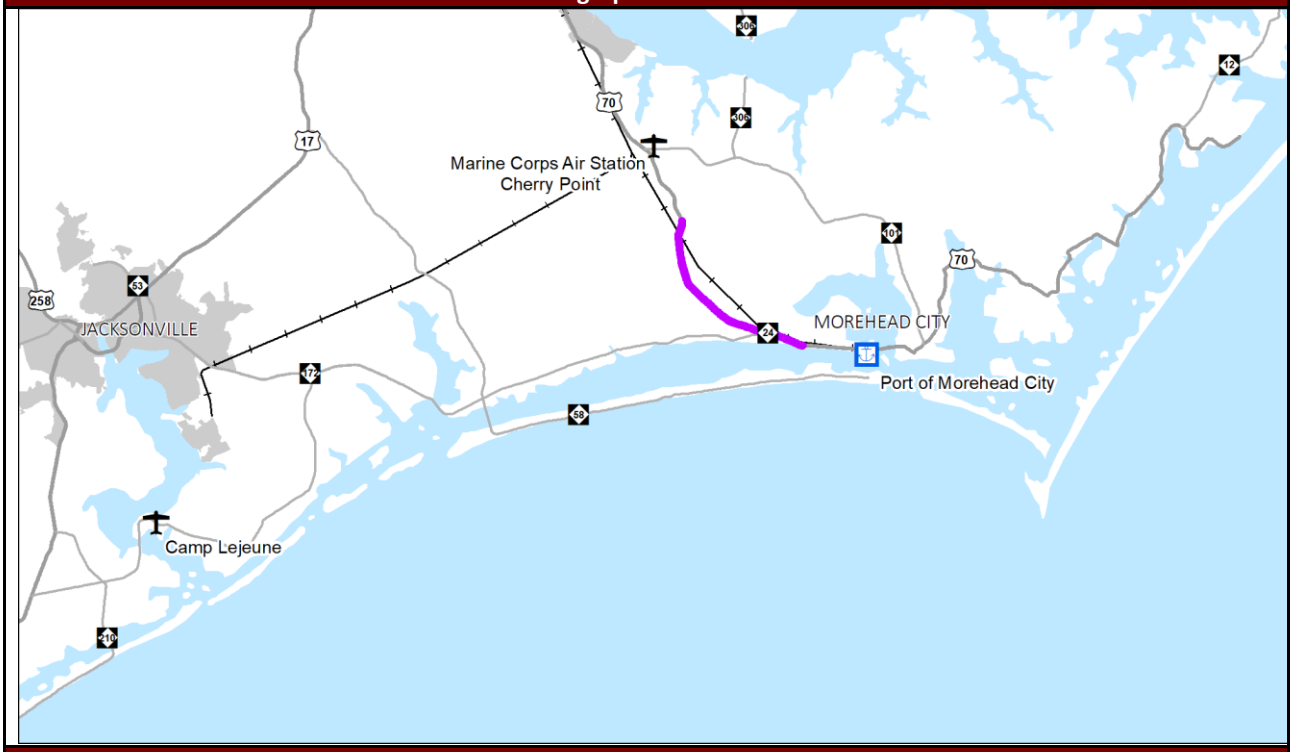
- NC 24 near Paradise Lane

US 70 from SR 1247 (Chatham Street) to South Lockhart Street in Carteret County

Corridor Description

Corridor Description: 11-mile corridor northwest of Morehead City. One of two Priority Highways providing access to the Port of Morehead City.
Existing conditions: Four-lane median divided with partial access control from Chatham Street to NC 24, four-lane with center-left turn lane from NC 24 to South Lockhart Street. One at-grade railroad intersection south of Chatham Street.
Economic Activity Centers: Port of Morehead City, Port of Wilmington, Apex Oil Company (Wilmington), MCAS Cherry Point, and Camp Lejeune.
Transportation Connectivity: US 70 and I-40 are major east-west corridor connecting Morehead City to I-95.
Intermodal Connectivity: New Hanover International Airport, Coastal Carolina Regional Airport, Albert J Ellis Airport, Norfolk Southern Railroad, and Camp Lejeune Railroad.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

Carteret County CTP

2020-2029 STIP Projects

P-5742: Construct grade separation at US 70 eastbound and westbound. Construction estimated to begin in 2029.
R-5727: Bridges Street (SR 1176) Extension. Widen existing roadway from SR 1738 (Bridges Street) to SR 1147 (McCabe Road) and construct part on new location. Construction estimated to begin in 2025.
R-1015: US 70 (Havelock Bypass). Construct multi-lane facility on new location. Under construction.

US 70 from SR 1247 (Chatham Street) to South Lockhart Street in Carteret County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High
Factors affecting mobility on the corridor are: the at-grade railroad intersection at the northern end of the corridor, the transition from partial access control segment north of US 24 to no access control in the business district south of US 24 intersection, and the eight signalized intersections along the corridor.
Safety Needs: High
There are high safety needs at the intersection with US 24 and the transition from median-divided highway to a corridor with a center-left turn lane in a business district.
Asset Management Needs: None
Rural Roads Needs: None

Potential Improvement Strategies

- Improve signal timing and coordination.
- Improve US 70 and NC 24 intersection.
- Mobility needs should be reassessed after the construction of the US 70 (Havelock Bypass) construction.

Existing Corridor

- At-grade intersection at the north end of the corridor.

- US 70 near South Lockhart Street

US 264 from SR 1565 (Grimesland Bridge Road) to US 17 BUS in Pitt County

Corridor Description

Corridor Description: 7-mile corridor east of the City of Greenville in Pitt County in eastern North Carolina. US 264 provides a major east-west connection in eastern North Carolina. This section connects the city of Greenville to US 17, a major north-south route.

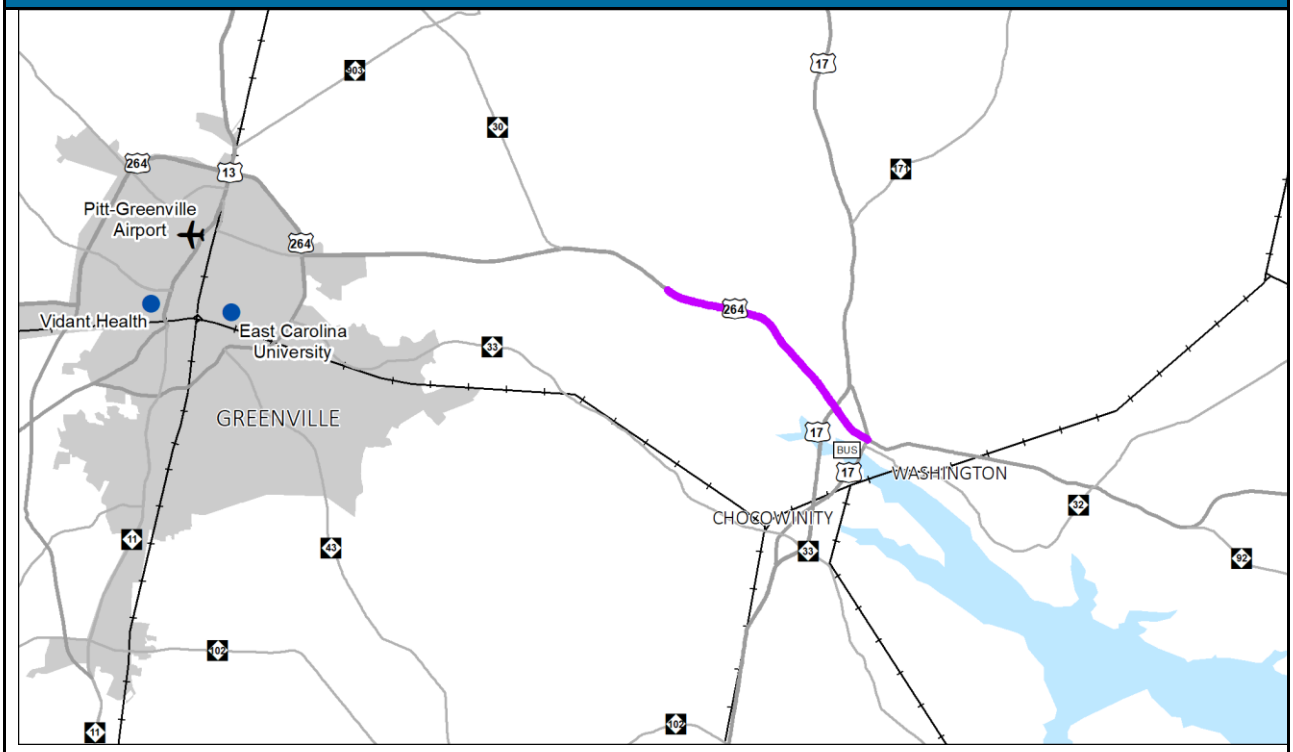
Existing Conditions: Two-lane with no shoulders from US 17 Business to US 17, four-lane with center-left turn lane from US 17 to Flanders Filter Road, and median divided from Flanders Filter Road to Grimesland Bridge Road.

Economic Activity Centers: East Carolina University, Vidant Health, and Port of Morehead City.

Transportation Connectivity: US 264 connects Greenville to US 17.

Intermodal Connectivity: Multiple Norfolk Southern Rail lines intersect in nearby Chocowinity.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Pitt County Comprehensive Transportation Plan (2009)**
  - Recommends upgrading US 264 from an Expressway to a Freeway.

2020-2029 STIP Projects

None

US 264 from SR 1565 (Grimesland Bridge Road) to US 17 BUS in Pitt County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

This section is of US 264 provides supply chain and intermodal connectivity and is approaching capacity. As US 264 approaches US 17, the density of businesses and minor streets with access to the highway increases, potentially decreasing mobility on the corridor.

Safety Needs: High

US 264 has higher than average fatalities and crash severities as the highway approaches the intersections with US 17 and US 17 Business. Between US 17 and US 17 Business, US 264 runs through downtown Washington.

Asset Management Needs: None

Rural Roads Needs: None

Potential Improvement Strategies

- Safety improvements on rural, uncontrolled access sections to address high crash sections or hot spots.
- The recommended upgrade of US 264 from Expressway to Freeway standards will address the mobility and safety needs of the corridor.

Existing Corridor

- US 264 at Hackney Avenue in Washington

- US 264 near Grimesland Bridge Road

NC 11 (Memorial Drive) from US 13 to NC 903 in Greenville

Corridor Description

Corridor Description: 6-mile corridor south of the City of Greenville in Pitt County in eastern North Carolina. NC 11 is a north-south corridor connecting Greenville to US 70.

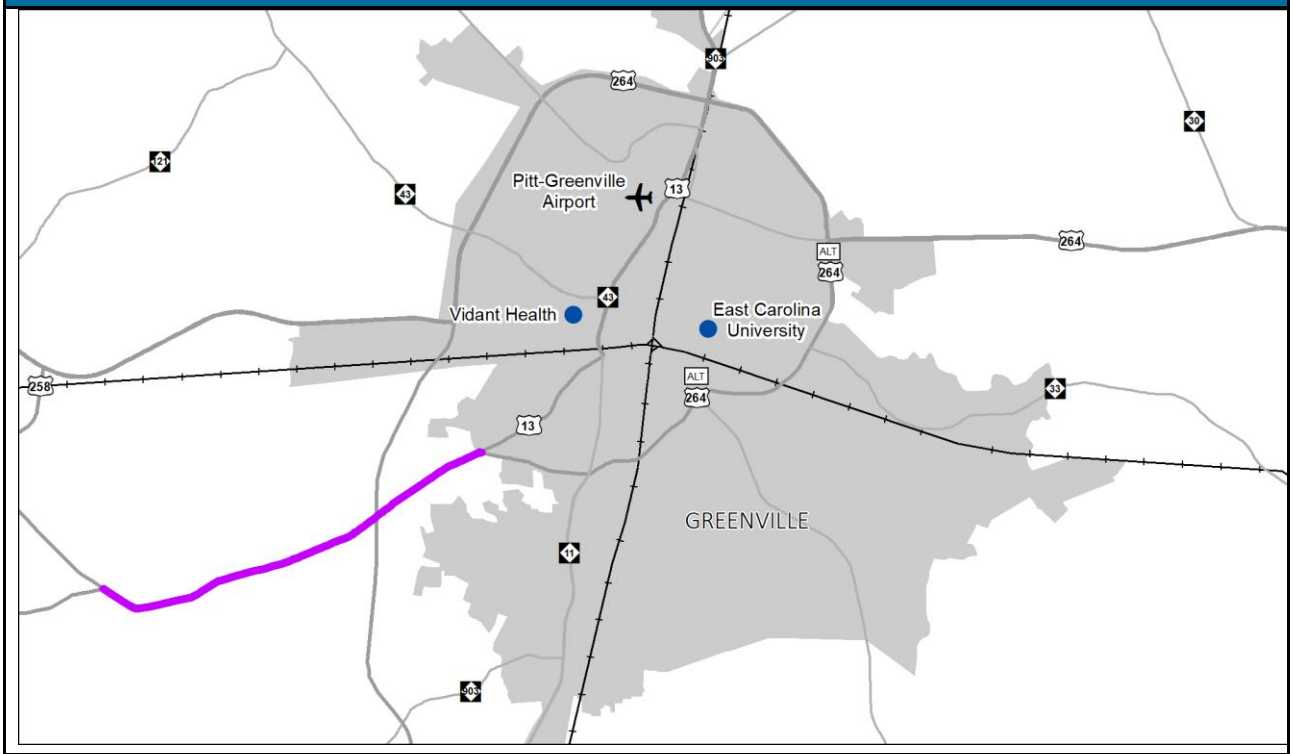
Existing Conditions: Four-lane with center-left turn lane from US 13 to Greenville Boulevard, six-lane median divided from Greenville Boulevard to Davenport Farm Road, and four-lane median divided from Davenport Farm Road to NC 903. Signalized with businesses and residences along the corridor.

Economic Activity Centers: East Carolina University and Vidant Health.

Transportation Connectivity: Corridor connects Greenville to US 70.

Intermodal Connectivity: Carolina Coastal Railway (Norfolk Southern) and CSX Transportation railroads intersect in Greenville. Pitt-Greenville Airport is located north of Greenville.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Greenville Metropolitan Transportation Plan 2045 Plan**
  - High priority project to improve access management by adding median with protected turn lanes and signalized intersections from 10th Street to Greenville Boulevard.
  - Improvements to Mill Street/Vernon White Road and NC 11 intersection in Town of Winterville.

2020-2029 STIP Projects

EB-5981: Construct sidewalk on NC 11 (Memorial Drive) from NC 43 (West Fifth Street) to SR 1128 (Davenport Farm Road). Construction anticipated to begin in 2029.

U-5919: Upgrade SR 1126 (Boyd Street) from NC 11 to Railroad Street. Right-of-way in progress.

NC 11 (Memorial Drive) from US 13 to NC 903 in Greenville

Priority Highway Freight Network Needs

Mobility and Reliability Needs: Medium-High

NC 11 has high mobility needs hot spots at the signalized intersections with US 13, Fire Tower Road, and NC 903.

Safety Needs: Medium

NC 11 has an above average rate of severe injury crashes.

Asset Management Needs: Low

NCDOT has identified poor pavement condition on NC 11 from Boyd Street (SR 1126) to Davenport Farm Road (SR 1128).

Rural Roads Needs: None

Potential Improvement Strategies

- The access management improvements recommended in the Greenville MTP, including improving intersection turn lanes, would improve freight reliability and safety on NC 11.

Existing Corridor

- NC 11 near Greenville Boulevard

- NC 11 near Davenport Farm Road

US 264 ALT from US 264 to NC 42 in Wilson County

Corridor Description

Corridor Description: 6-mile corridor west of the City of Wilson in Wilson County in eastern North Carolina. US 264 ALT is the gateway to the urban core and historic district.

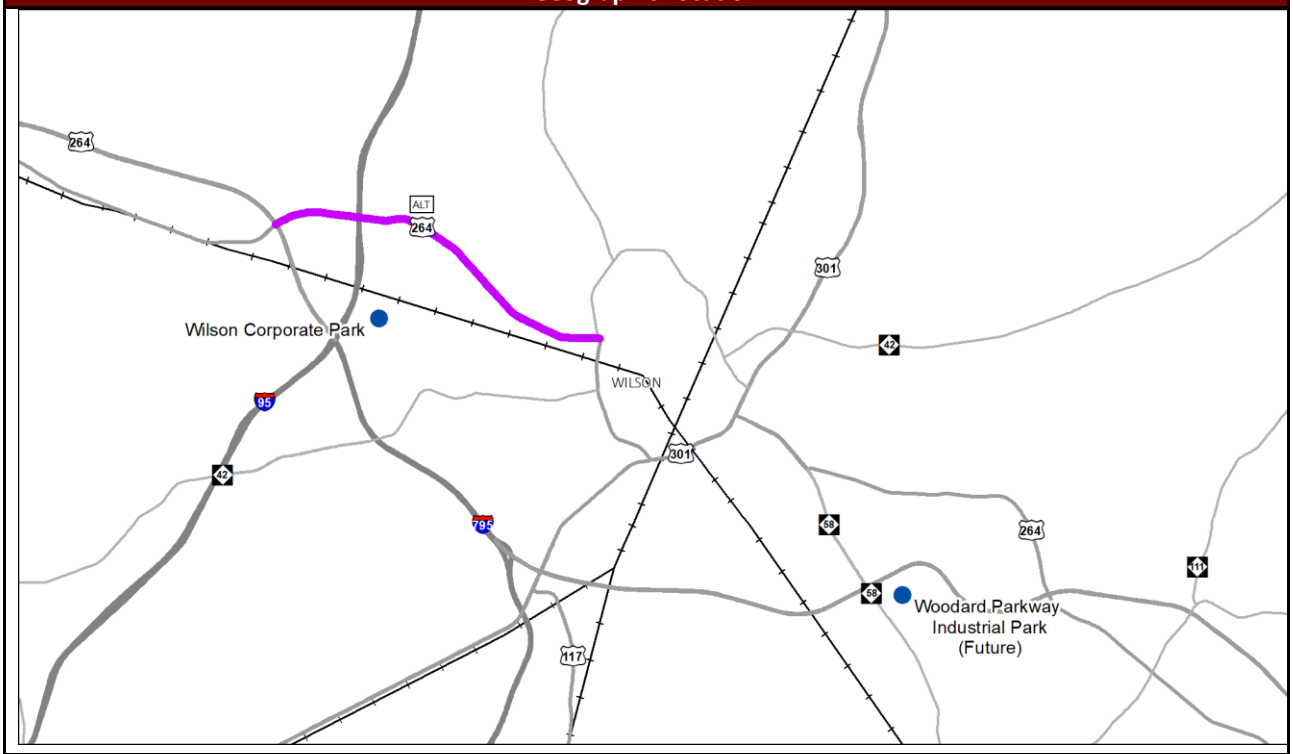
Existing Conditions: Four-lane with center-left turn lane along signalized residential and business corridor from NC 42 to Airport Boulevard NW, four-lane median divided highway from Airport Boulevard to US 264.

Economic Activity Centers: BB&T, Wilson Corporate Park, and Woodard Parkway (future industrial mega-site).

Transportation Connectivity: US 264 ALT intersects with the I-95 corridor and US 264 west of Wilson.

Intermodal Connectivity: Carolina Coast Railway (Norfolk Southern) and CSX Railroad intersect in Wilson.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Wilson County Comprehensive Transportation Plan (2012)**
  - Recommends upgrading US 264 from NC 42 to Airport Boulevard to a four-lane median divided boulevard with a raised landscaped medians, sidewalks, and wide outside lanes for bicycles.

2020-2029 STIP Projects

U-5941: Safety improvements to US 264 ALT from SR 1320 (Airport Boulevard) to east of SR 1165 (Forest Hills Road).

US 264 ALT from US 264 to NC 42 in Wilson County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

The corridor is projected to be over capacity by 2040. There are eight signalized intersections on the corridor from Airport Boulevard to NC 42.

Safety Needs: Low

Low safety needs are identified from Forest Hills Road to NC 42, a section which is primarily residential.

Asset Management Needs: Low

NCDOT has identified poor pavement condition from Forest Hills Road to Airport Boulevard

Rural Roads Needs: None

Potential Improvement Strategies

- The recommended widening and access management project in the Wilson County CTP will increase the capacity and improve mobility and safety for freight on this corridor.

Existing Corridor

- US 264 ALT near NC 42

- US 264 ALT between I-95 and US 264

US 158 from Acorn Hill Road to US 17 in Pasquotank County

Corridor Description

Corridor Description: 11-mile corridor east of Acorn Hill and south of Dismal Swamp State Park in Pasquotank County in eastern North Carolina. US 158 connects to US 17 (future I-87) which is a gateway from eastern North Carolina to the Port of Norfolk in Virginia.

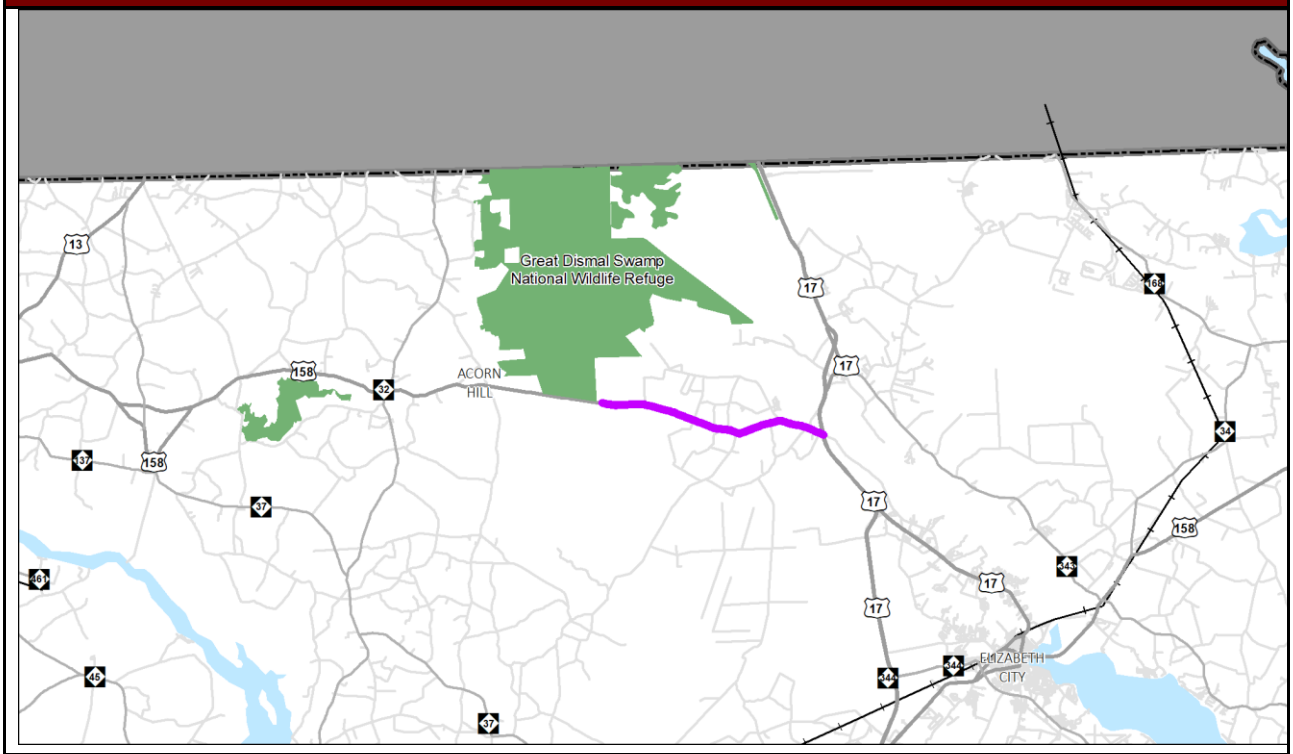
Existing Conditions: Two-lane rural road with no paved shoulders and a signalized intersection at US 17.

Economic Activity Centers: Port of Norfolk and Port of Morehead City.

Transportation Connectivity: US 158 is an east-west corridor through north eastern North Carolina, connecting US 13 and US 17 (future I-87).

Intermodal Connectivity: US 17 (future I-87) connects to the Port of Norfolk in the north and the Port of Morehead City in the south.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

None

2020-2029 STIP Projects

R-5808: Modernize roadway from SR 1002 (Acorn Hill Road) to Pasquotank County Line. Construction estimated to begin in 2023.

US 158 from Acorn Hill Road to US 17 in Pasquotank County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

This segment of US 158 is a two-lane rural highway which is anticipated to be at or over capacity by 2040. US 158 intersects with US 17 which connects to the Port of Morehead City in Virginia. The lack of shoulders, turn lanes, and at-grade signalized intersection with US 17 all contribute to high mobility needs on the corridor.

Safety Needs: None

Asset Management Needs: Low

NCDOT has identified poor pavement condition near Tadmore Road and from Turnpike Road to Mill Pond Road.

Rural Roads Needs: Low

Potential Improvement Strategies

- Improve intersection at US 158 and US 17.
- Continue STIP project R-5808 to modernize roadway to US 17.

Existing Corridor

- US 158 near Dismal Swamp Wildlife Refuge

US 158 from NC 48 to US 301 in Halifax and Northampton Counties

Corridor Description

Corridor Description: 8-mile corridor in Roanoke Rapids and Weldon in Halifax and Northampton Counties. US 158 is an east-west route that intersects I-95 and connects to I-85 in the west and to US 13 in the east.

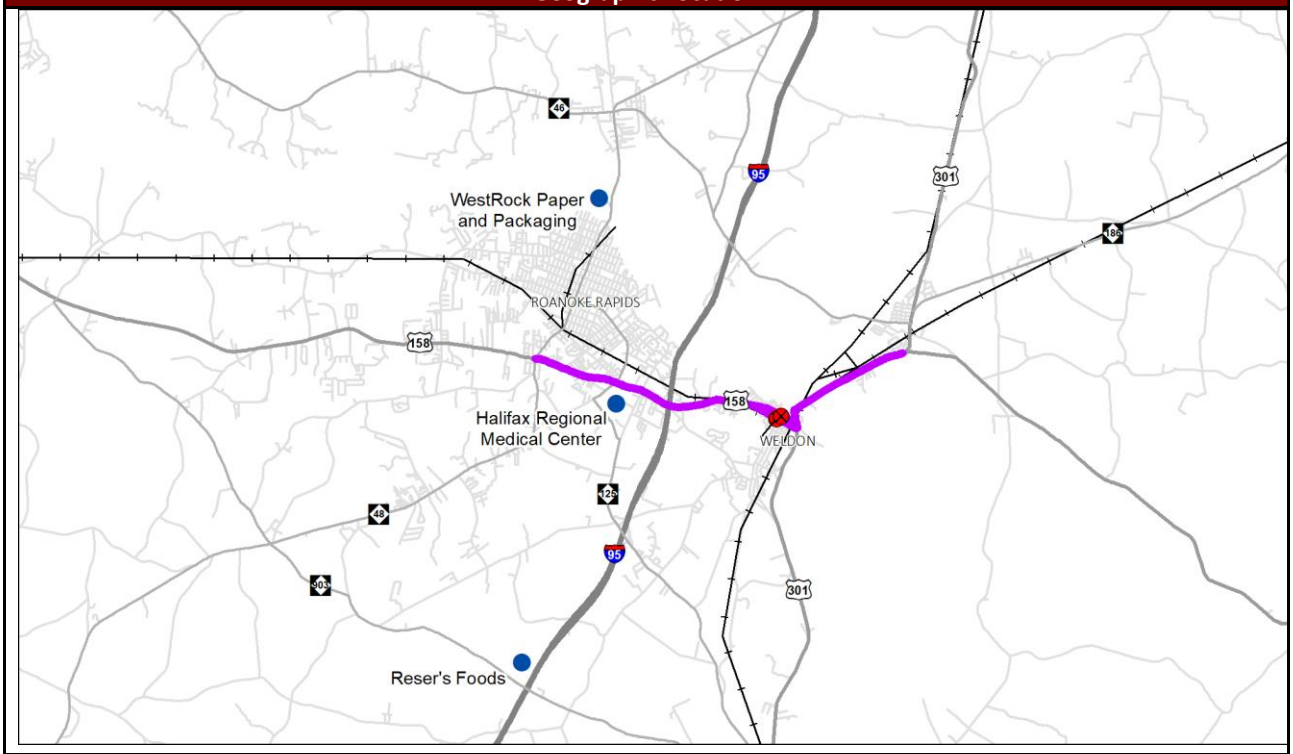
Existing Conditions: Two-lane with center left turn lane from NC 48 to Georgia Ave, two-lane from Georgia Ave to Julian Allsbrook Highway, six-lane with center-left turn lane to I-95, four-lane with center-left turn lane from I-95 to Weldon, splits into eastbound and westbound segments in Weldon with two at-grade railroad crossings, two-lane from Weldon to US 301 split.

Economic Activity Centers: Halifax Regional Medical Center, Reser's Foods, and WestRock Paper and Packaging.

Transportation Connectivity: I-95 corridor

Intermodal Connectivity: Halifax County Airport

Geographic Location



Metropolitan/Comprehensive Transportation Plans

None

2020-2029 STIP Projects

P-5741: Construct new main track including rehabilitation of CSX SA-line bridge over Roanoke River. New connection between A-line and SA-line. Create second main track between new connection and existing Weldon RR control point. Close Existing Carolina avenue at-grade crossing. Construction anticipated to begin in 2028.

US 158 from NC 48 to US 301 in Halifax and Northampton Counties

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

There are several factors affecting mobility on both sides of I-95. To the west of I-95, US 158 is signalized with a high density of businesses as US 158 approaches I-95. To the east of I-95, US 158 continues through Weldon and intersects with US 301. Where US 158 intersects with US 301, drivers are required to make a sharp turn across approaching traffic onto US 301. US 158 through Weldon has no shoulders and on-street parking through downtown. In addition, there are two at-grade railroad crossings in Weldon.

Safety Needs: Low

There are above average incapacitating crashes on US 158 east of Weldon. In this section, US 158 is a two-lane rural road with no shoulders, turn lanes, or access control.

Asset Management Needs: None

On the eastbound segment of US 158, there is both an at-grade railroad crossing and a railroad bridge with less than 15 feet of clearance.

Rural Roads Needs: Low

Potential Improvement Strategies

- Improve intersection at eastern end of NC 158 split in Weldon.
- Improve at-grade railroad intersections.

Existing Corridor

- US 158 and US 301 Intersection

- At-Grade Railroad Crossing on US 158 Eastbound

NC 97 (West Raleigh Boulevard) from I-95 to US 301 BUS in Rocky Mount

Corridor Description

Corridor Description: 13-mile corridor connecting downtown Rocky Mount to I-95 in Nash County in eastern North Carolina.

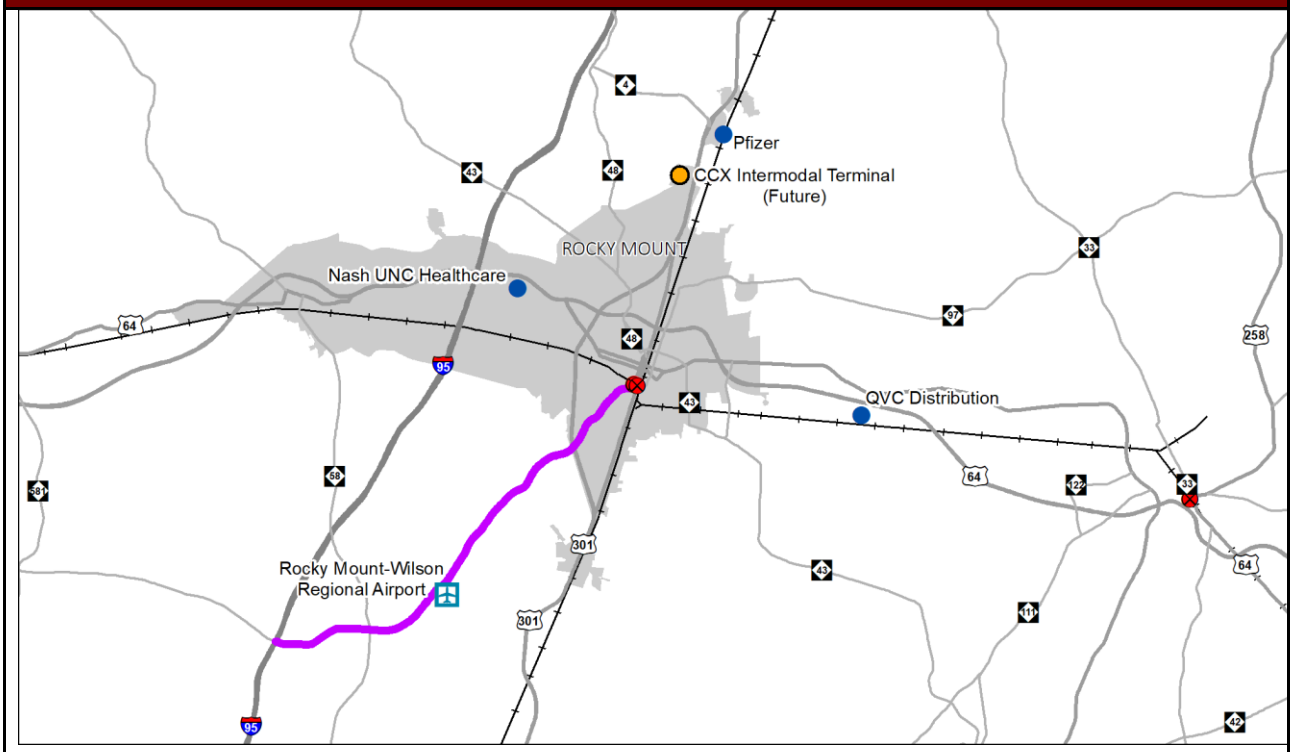
Existing Conditions: Two-lane with center-left turn lane from US 301 BUS to South Grace Street, two southbound lanes and one northbound lane with center-left turn lane from South Grace Street to Paul Street, two-lane with center-left turn lane from Paul Street to South Wesleyan Boulevard, two-lane to I-95.

Economic Activity Centers: Pfizer, Nash UNC Health Care, and QVC Inc. Distribution.

Transportation Connectivity: Connects Rocky Mount to US 301 BYP and I-95.

Intermodal Connectivity: Rocky Mount-Wilson Regional Airport, intersection of north-south rail line (CSX-A) and two east-west rail lines (Carolina Coast Railway and CSX-AB), connects to Carolina Connector (CCX) Intermodal Facility.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Rocky Mount Urban Area Comprehensive Transportation Plan 2045 Update**
  - West Raleigh Boulevard Complete Street (Wesleyan Boulevard to Franklin Street).
- **Raleigh Road/Raleigh Street Corridor Plan (January 2011)**
  - Development and redevelopment of corridor, adding sidewalks and transit.

2020-2029 STIP Projects

C-5549: Construct sidewalk from Kinchen Drive to north of Ravenwood Drive. Under construction.

NC 97 (West Raleigh Boulevard) from I-95 to US 301 BUS in Rocky Mount

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

This section of NC 97 is projected to be at or over capacity by 2040. As NC 97 approaches I-95, NC 97 is a narrow two-lane road with no shoulders, turn lanes, or access control. NC 97 provides access from Rocky Mount and US 301 BYP to I-95.

Safety Needs: None

Asset Management Needs: None

Rural Roads Needs: None

Potential Improvement Strategies

- Study the potential for turning lanes at strategic locations to increase the efficiency of the two-lane facility.
- Upgrade road to current design standards with wider lanes and improved shoulders.

Existing Corridor

- NC 97 north of US 301 Bypass

- NC 97 near I-95

US 70 (Future I-42) from US 70 ALT to I-795 in Goldsboro

Corridor Description

Corridor Description: 11-mile corridor connecting downtown Goldsboro to I-95 in Wayne County.

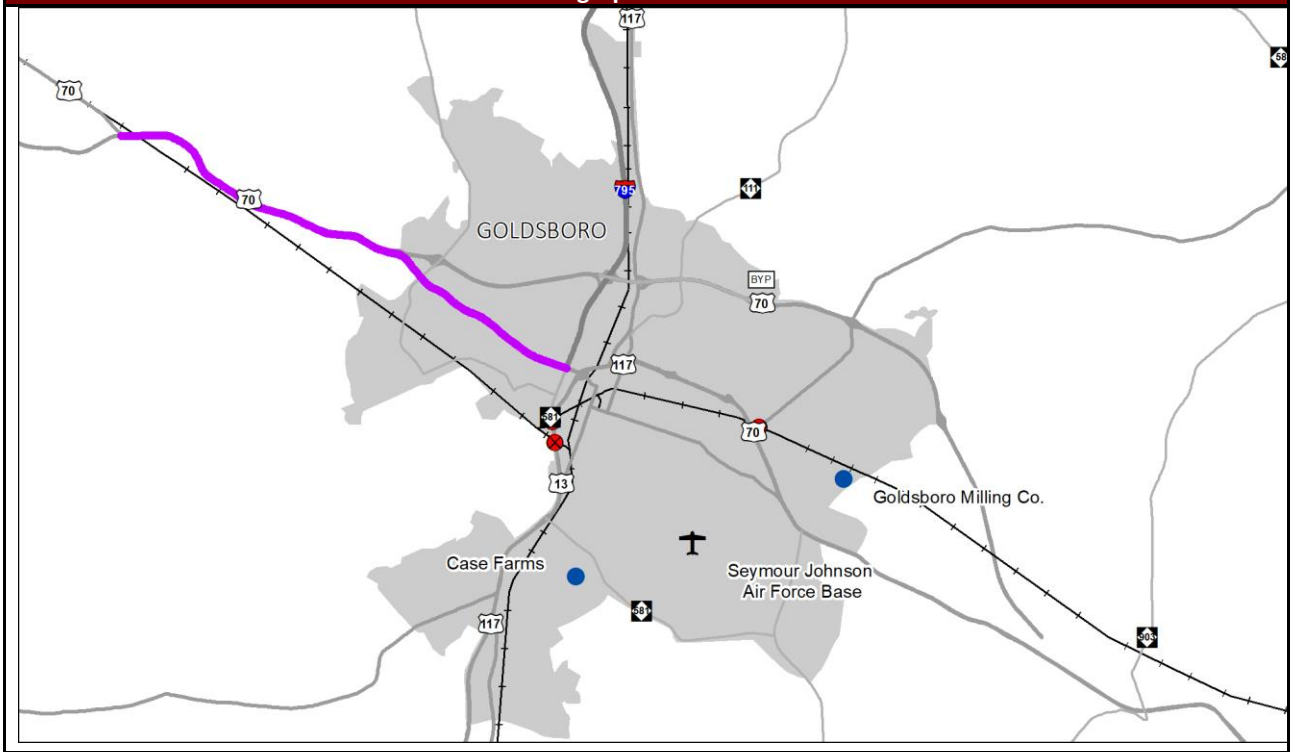
Existing Conditions: Four-lane median divided with partial access control.

Economic Activity Centers: Seymour Johnson Air Force Base, Goldsboro Milling Co., and Case Farms.

Transportation Connectivity: US 70 connects downtown Goldsboro to I-95. US 70 is a major east-west corridor in North Carolina, and a future Interstate.

Intermodal Connectivity: Norfolk Southern and CSX Transportation railroads intersect in Goldsboro. Future I-42 will connect Goldsboro to the Port of Morehead City.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Goldsboro 2045 Metropolitan Transportation Plan** (in progress)

2020-2029 STIP Projects

- **R-5829A:** Upgrade US 70 to freeway standards from US 70 Bypass to SR 1229 (Lube Smith Road). Construction anticipated to begin in 2027.
- **I-6044:** Pavement rehabilitation of US 70 from SR 1003 (Buffalo Road) to Wayne County line.

US 70 (Future I-42) from US 70 ALT to I-795 in Goldsboro

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

This section of US 70 is projected to be at or over capacity by 2040. Mobility may be affected by partial access control and signalized intersections on the highway.

Safety Needs: High

There are high safety needs where US 70 intersects I-795. Business density and access to the highway increases along this section of the corridor.

Asset Management Needs: None

Rural Roads Needs: None

Potential Improvement Strategies

- Upgrading US 70 to freeway standards will improve freight mobility along the corridor.

Existing Corridor

- US 70 near I-795

- US 70 at Rains Mill Road

NC 101 from US 70 to NC 306 in Craven County

Corridor Description

Corridor Description: 5-mile corridor from US 70 (West Main Street) to NC 306, which includes access to Marine Corps Air Station Cherry Point, in Craven County.

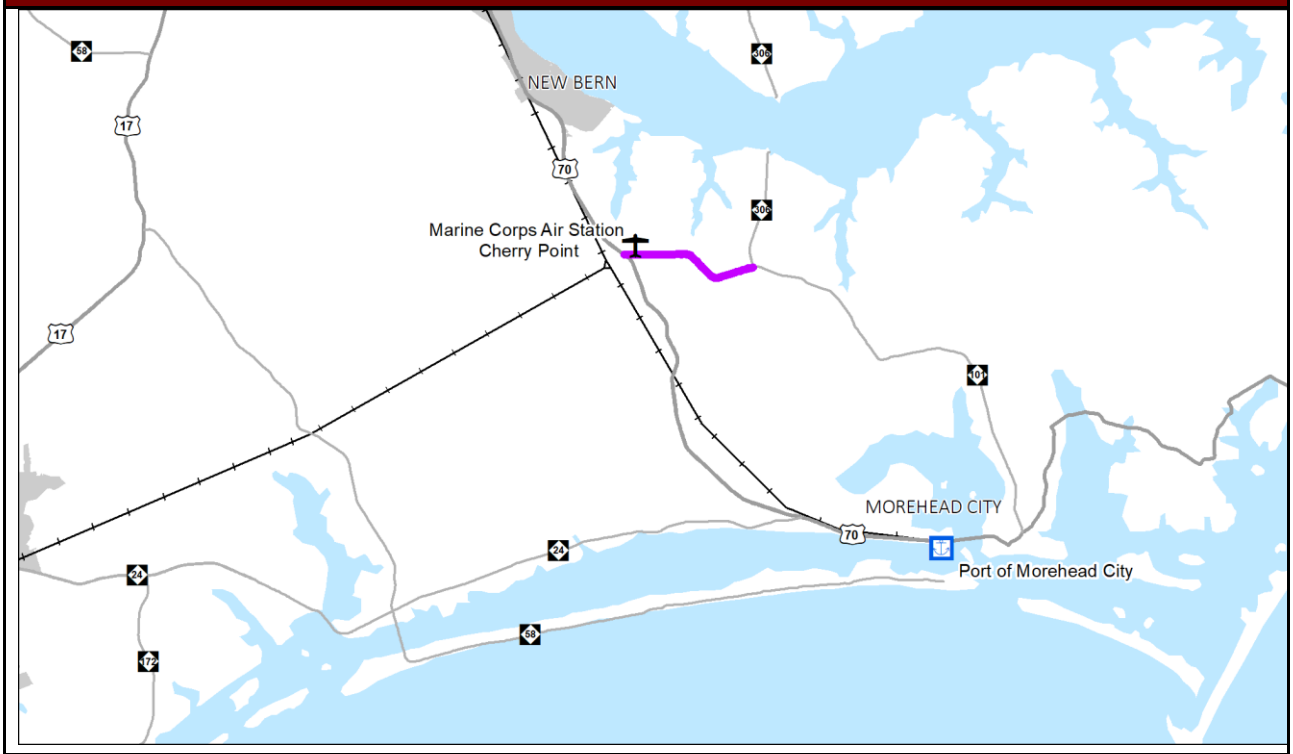
Existing Conditions: Two-lane with no shoulders and one at-grade railroad crossing.

Economic Activity Centers: Marine Corps Air Station Cherry Point, multiple mines located on the corridor, and Port of Morehead City.

Transportation Connectivity: Connection to US 70, a major east-west route.

Intermodal Connectivity: Port of Morehead City, Norfolk Southern Railroad, and Camp Lejeune Railroad.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

None

2020-2029 STIP Projects

U-3431: Widen SR 1763 (Miller Boulevard)/NC 101 to multi-lanes from SR 1756 (Lake Road) to Outer Banks Drive. Construction estimated to begin in 2024.

NC 101 from US 70 to NC 306 in Craven County

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

Mobility on this corridor is affected by trucks accessing the air station and multiple mines along the corridor, in addition to business, residences, and a high school which also have direct corridor access. There is one at-grade railroad crossing entering the air station. The corridor is projected to be at or over capacity by 2040.

Safety Needs: High

The lack of turns lanes, shoulders, and access control contribute to safety needs on the corridor.

Asset Management Needs: None

Rural Roads Needs: None

Potential Improvement Strategies

- Improve access management on the corridor, add a center turn lane, upgrade shoulders and retroreflective pavement markings.
- Signage for trucks turning onto highway from mines and military base.

Existing Corridor

- NC 101 near NC 306 (Ferry Road)

US 301 BUS (Church Street) from US 64 to US 301 BYP in Rocky Mount

Corridor Description

Corridor Description: 5-mile corridor running through the heart of downtown Rocky Mount in Nash County.

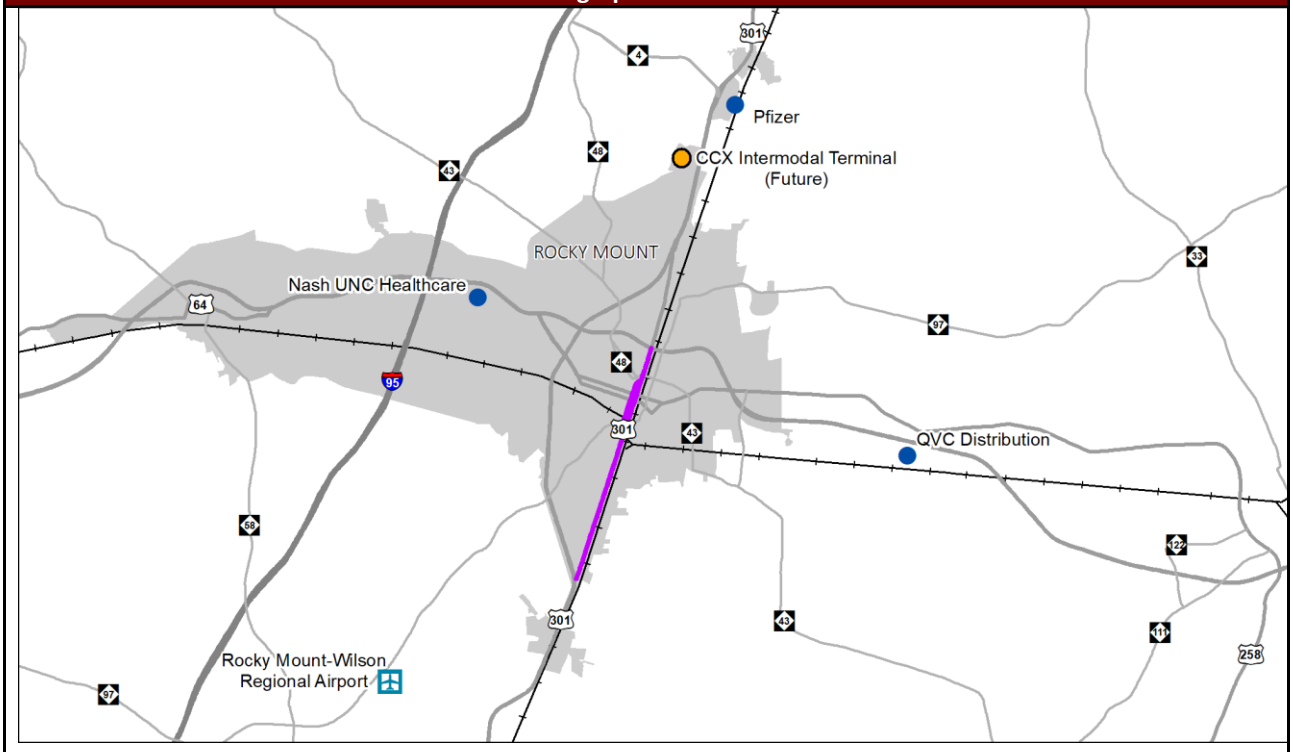
Existing Conditions: Two-lane center left from US 64 to East Grand Avenue, splits at Franklin Street through downtown and rejoins south of NC 97, two-lane with center-left turn lane to US 301 BYP. Signalized corridor through residential, business, and industrial areas. There is one at-grade railroad crossing.

Economic Activity Centers: Pfizer, Cummins Rocky Mount Engine Plant, Nash UNC Health Care, QVC Inc. Distribution

Transportation Connectivity: US 301 BUS connects downtown Rocky Mount to US 64 in the north and US 301 BYP in the south.

Intermodal Connectivity: Rocky Mount-Wilson Regional Airport, intersection of north-south rail line (CSX-A) and two east-west rail lines (Carolina Coast Railway and CSX-AB). Provides service to the future Carolina Connector (CCX) Intermodal Facility.

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **Rocky Mount Urban Area Metropolitan Transportation Plan 2045 Update**
  - US 301 Business (Church Street) Streetscape from US 64 to NC 97 Overpass.

2020-2029 STIP Projects

EB-5761: Construct streetscape improvements on US 301 Business (Church Street) from US 64 to NC 97 Overpass. Construction anticipated to begin in 2023.

US 301 BUS (Church Street) from US 64 to US 301 BYP in Rocky Mount

Priority Highway Freight Network Needs

Mobility and Reliability Needs: High

There are multiple factors affecting mobility: the dense urban area of downtown Rocky Mount, lack of shoulders, density of driveway and side street access, and one at-grade railroad crossing. In addition, where southbound US 301 BUS reconnects with northbound US 301 BUS, drivers must make a tight right-turn at a signalized intersection.

Safety Needs: Medium

This is a dense urban area with businesses, residences, schools, cross-traffic, and only intermittent sidewalks.

Asset Management Needs: None

Rural Roads Needs: None

Potential Improvement Strategies

- Consider study of truck traffic generated after opening of CCX Facility and potential truck restrictions for Downtown.
- Improve access management south of NC 97 Overpass.
- Improve signal timing in downtown area.

Existing Corridor

- US 301 BUS near US 64

- US 301 BUS in downtown

- US 301 BUS near US 301 BYP

US 17 from Antioch Road (SR 1433) to US 17 BYP North of New Bern

Corridor Description

Corridor Description: 11-mile corridor of US 17 north of New Bern.

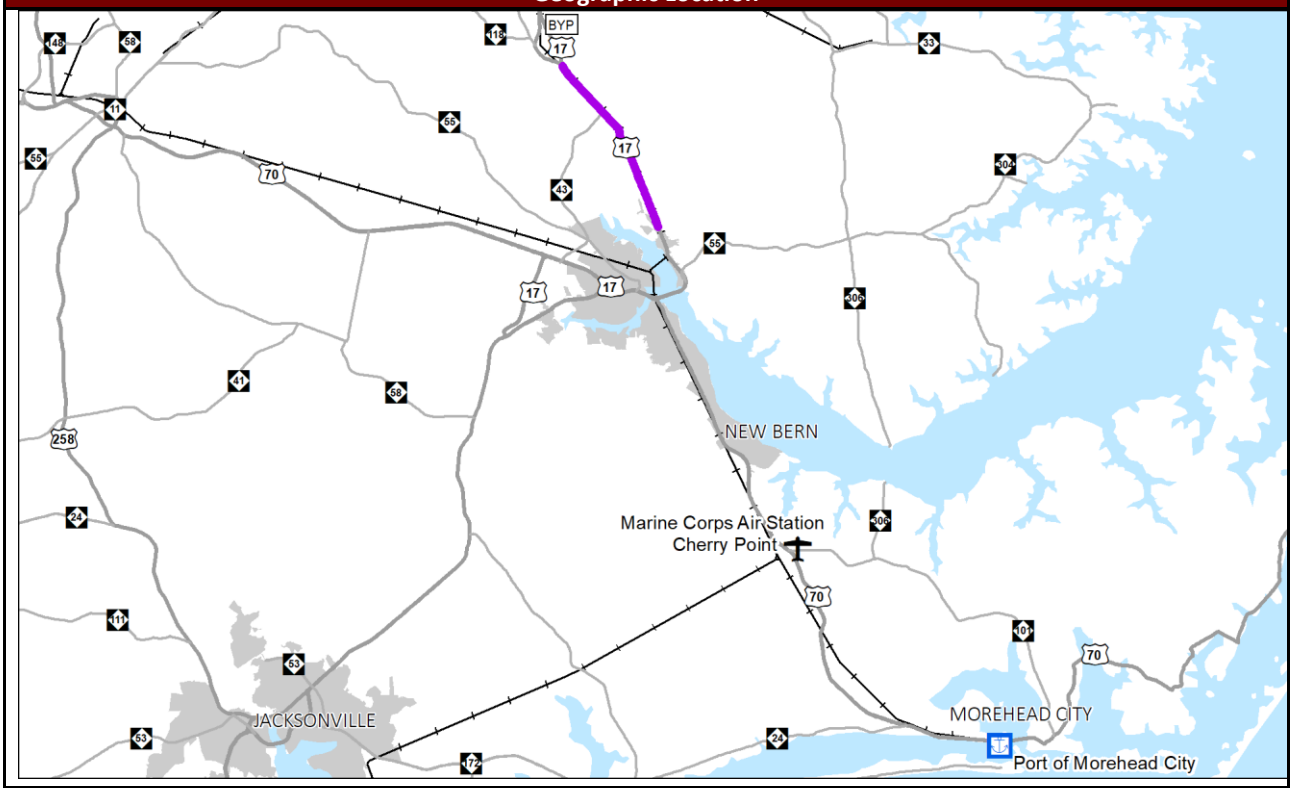
Existing Conditions: US 17 transitions from a four-lane median divided section to a two-lane section with no shoulders at Antioch Road. Continues as a two-lane road with no access control from Antioch Road to US 17/US 17 BYP split. There is one signalized intersection and one at-grade railroad crossing on the corridor.

Economic Activity Centers: Port of Morehead City, Marine Corps Air Station Cherry Point

Transportation Connectivity: US 17 connects the Port of Morehead City and New Bern to Greenville. US 17 is a significant north-south route in Eastern North Carolina.

Intermodal Connectivity: Port of Morehead City

Geographic Location



Metropolitan/Comprehensive Transportation Plans

- **New Bern Area MPO Metropolitan Transportation Plan**
  - **Widen US 17 from Antioch Road (SR 1433) to NC 43 from a two-lane to a four-lane highway.**

2020-2029 STIP Projects

R-3403B: Widen US 17 from Antioch Road (SR 1433) to NC 43. Construction anticipated in FY 2024.

R-2513A: Widen US 17 from NC 43 to SR 1438 (Spruill Town Road) from two-lane to four-lane highway. To be let with R-3403B.

R-2513B-E: Widen US 17 from SR 1438 (Spruill Town Road) to south of SR 1127 (Possum Track Road). Currently unfunded.

US 17 from Antioch Road (SR 1433) to US 17 BYP North of New Bern

NC Priority Highway Freight Network Needs

Mobility and Reliability Needs: Medium-High

High mobility needs identified north of Antioch Road where US 17 transitions from four lanes to two lanes. Medium mobility needs identified where US 17 approaches the US 17/US 17 BYP split south of Vanceboro.

Safety Needs: Medium

Medium safety needs identified where US 17 approaches the US 17/US 17 BYP split.

Asset Management Needs: None

Rural Roads Needs: Low-Medium

Potential Improvement Strategies

- STIP Projects R-3403B and R-2513A, which proposes to widen US 17, should provide improve safety, mobility, and reliability along the corridor.

Existing Corridor

- US 17 north of NC 43

C.F. Harvey Parkway from US 258 to NC 58 in Lenoir County

Corridor Description

Corridor Description: 4-mile corridor connecting Global Trans Park to US 258 and NC 58.

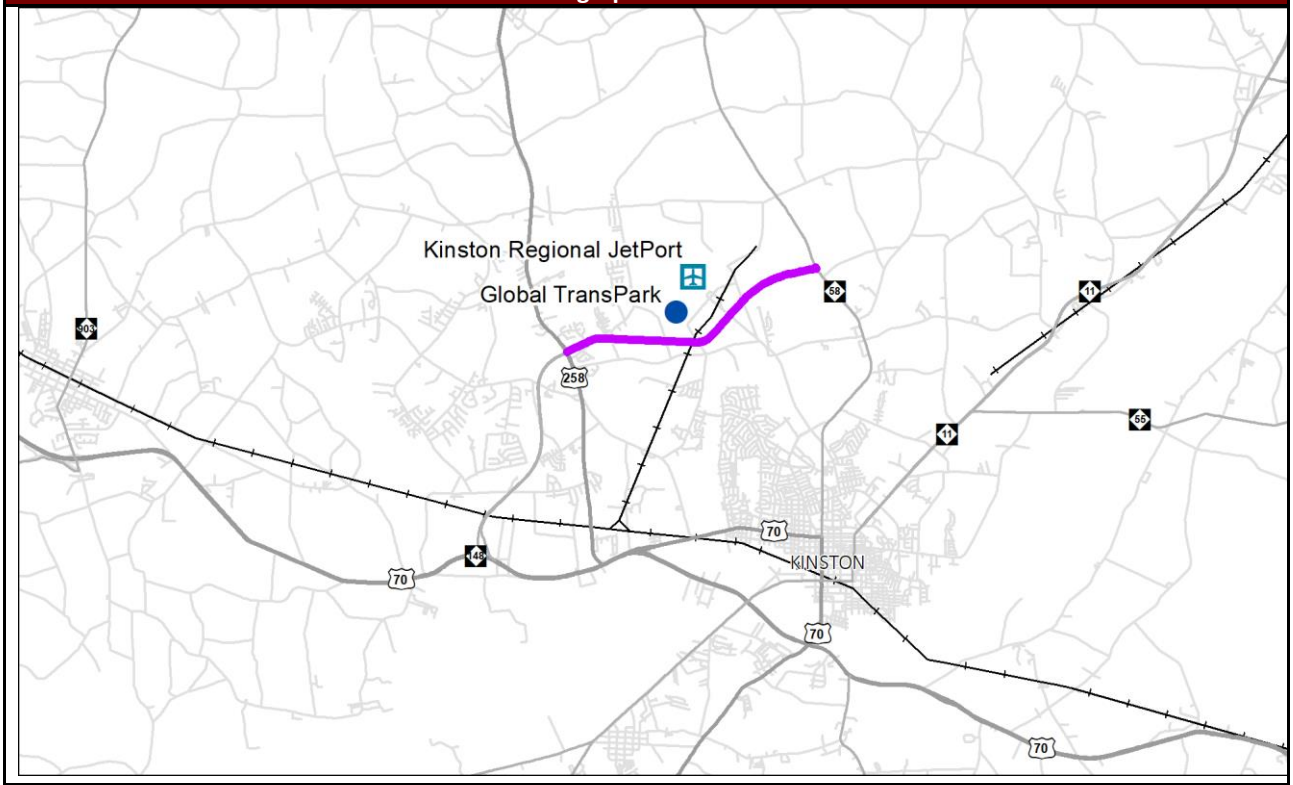
Existing Conditions: Four-lane median divided highway with partial access control. One at-grade rail road crossing and three signalized intersections on the corridor.

Economic Activity Centers: Global Trans Park, Kinston Regional Jetport

Transportation Connectivity: C.F. Harvey Parkway connects Global Trans Park and Kinston Regional Jetport to US 258 for a north-south connection and to US 70 for east-west connection

Intermodal Connectivity: Kinston Regional Jetport, Norfolk Southern (EC branch) with spur to Global Trans Park

Geographic Location



Metropolitan/Comprehensive Transportation Plans

None

2020-2029 STIP Projects

R-5814: Widen US 258 from SR 1101 (Browntown Road) to SR 2010 (C.F. Harvey Parkway).

R-5703: NC 148 (C.F Harvey Parkway) from NC 58 to NC 11. Construct multi-lane facility on new location.

C.F. Harvey Parkway from US 258 to NC 58 in Lenoir County

NC Priority Highway Freight Network Needs

Mobility and Reliability Needs: Medium-High

High mobility and reliability needs identified from Airport Road to US 258.

Safety Needs: None

Asset Management Needs: None

Rural Roads Needs: None

Potential Improvement Strategies

- Local stakeholders recognize the importance of this corridor for maintaining access to the Global Trans Park facility. The corridor should be monitored to ensure reliable access to the facility and its importance to helping promote economic growth in the area.

Existing Corridor

- C.F. Harvey Parkway at Airport Road