Agenda

- Welcome and Introductions
- State Freight Plan Update
  - Vision, goals and objectives
  - Freight trends, challenges and opportunities
  - Modal profiles overview and needs
  - Freight system designation process and tool
- Next steps and meeting
VISION, GOALS AND OBJECTIVES
Developing Vision, Goals and Objectives

- Input received from the Freight Advisory Committee (FAC):
  - The 25-year Vision for North Carolina;
  - Goals and objectives of the NCDOT’s 2040 Plan and the Strategic Transportation Corridors;
  - North Carolina Statewide Transportation Plan; and
  - National freight policy goals defined in the 2012 MAP-21 Act and the 2015 FAST Act.
North Carolina’s multimodal freight transportation network helps us compete globally for quality jobs, provide safe and efficient people and goods mobility and build quality communities for today and the future.
Draft NC State Freight Plan Goals

- Enhance economic development opportunities and competitiveness
- Improve system efficiency and reliability
- Improve infrastructure conditions and preservation
- Enhance safety, security and resilience
- Protect and enhance the natural environment
- Support adoption and deployment of new technologies
- Foster public-private partnerships and collaboration
- Improve access to data and information
- Ensure good fiscal management
Homework

- Review vision, goals and objectives
- Forward comments no later than COB on Monday, Feb 27, 2017 to Heather Hildebrandt at hjhildebrandt@ncdot.gov
Stakeholder Input

Trends and Policies Affecting Freight Flows

» Economic and trade
» Technology
» Business and consumer practices
» Regulations and institutional setting
To Participate in Poll

http://Camsys.participoll.com/
Economic Trends

Over the next 5 years, do you think the economy in the region will:

A. Decline
B. Stay about the same
C. Grow slower than the rest of the state
D. Grow faster than the rest of the state
E. Grow about the same as the rest of the state
F. Not sure
Economic Trends

What do you think will have the largest impact on region’s economy?

A. Population growth
B. Trade dynamics and policy
C. Energy dynamics and policy
D. Business climate
E. Other
Economic Trends

How are proposed changes in trade dynamics and policy likely to impact freight in your region over the next 10 years:

A. Decline
B. Stay about the same
C. Grow slower than in the past 5 years
D. Grow faster than in the past 5 years
E. Grow about the same as the past five years
F. Not sure
How are proposed changes in energy dynamic and policy likely to impact freight in your region over the next 10 years:

A. Decline
B. Stay about the same
C. Grow slower than in the past 5 years
D. Grow faster than in the past 5 years
E. Grow about the same as the past five years
F. Not sure
Economic Trends

How are proposed changes in business climate likely to impact freight in your region over the next 10 years:

A. Decline
B. Stay about the same
C. Grow slower than in the past 5 years
D. Grow faster than in the past 5 years
E. Grow about the same as the past five years
F. Not sure
Technology

What technologies do you think will have the greatest impact on freight movements in your region in the next 10 years:

A. Autonomous and connected trucks
B. Alternative delivery systems (drones, freight shuttles, etc.)
C. Advances in manufacturing
D. “Uber-like” cargo shipping
E. Warehouse and factory automation
F. Other
Business and Consumer Practices

What changes in business practices will have the greatest impact on freight movements in your region in the next 10 years:

A. Near-shoring
B. Off-shoring
C. Supply chain traceability and identity preservation
D. Omni-channel marketing and distribution
E. Transloading
F. Other
Business and Consumer Practices

How will changes in business practices impact growth in freight movements in your region in the next 10 years:

A. Decline
B. Stay about the same
C. Grow slower than in the past 5 years
D. Grow faster than in the past 5 years
E. Grow about the same as the past five years
F. Not sure
Business and Consumer Practices

What change in shipping patterns do you think will most impact freight movements in your region:

A. Truck to rail diversions
B. Rail to truck diversions
C. Containerization of bulk commodities
D. Substitution of all-water routes over land bridges
E. Other
Business and Consumer Practices

What changes in consumer practices will have the greatest impact on freight movements in your region in the next 10 years:

A. E-Commerce
B. Sharing economy
C. Same day/next day delivery expectations
D. Changing consumer attitudes (socially-based consumption)
E. Changing consumer demographics and tastes
F. Other
Business and Consumer Practices

How will changes in consumer practices impact growth in freight movements in your region in the next 10 years:

A. Decline
B. Stay about the same
C. Grow slower than in the past 5 years
D. Grow faster than in the past 5 years
E. Grow about the same as the past five years
F. Not sure
MODAL OVERVIEWS
Maritime Modal Profile

- Inventory
- Activity

Port Needs:
- Infrastructure
- Operations
- Policy
## Inventory

### Facilities

<table>
<thead>
<tr>
<th>Cargo Capacity</th>
<th>Wilmington</th>
<th>Morehead City</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermodal containers (TEUs)</td>
<td>600,000</td>
<td>0</td>
</tr>
<tr>
<td>Breakbulk (Tons)</td>
<td>1,470,000</td>
<td>1,080,000</td>
</tr>
<tr>
<td>Bulk (Tons)</td>
<td>2,220,000</td>
<td>2,730,000</td>
</tr>
<tr>
<td>Ro/Ro (Units)</td>
<td>Unknown</td>
<td>Unknown</td>
</tr>
</tbody>
</table>

Port Traffic, 2002-2016

Port of Morehead City

Port of Wilmington

Source: NCSPA
Container Volumes at Regional Ports

Source: AECOM, from MARAD container ports data, 2000 to 2015
# On-site Port Infrastructure Needs

<table>
<thead>
<tr>
<th>Port of Wilmington</th>
<th>Port of Morehead City</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complete turning basin expansion</td>
<td>• Further develop Radio Island</td>
</tr>
<tr>
<td>• Complete cold storage facility</td>
<td>• Expand wood pellet export facility</td>
</tr>
<tr>
<td>• Finish wood pellet export facility</td>
<td>• Create and partially fund an ongoing dredging agreement with USACE</td>
</tr>
<tr>
<td>• Expand container yard</td>
<td>• Replace aging cranes</td>
</tr>
<tr>
<td>• Purchase additional cranes</td>
<td>• Purchase a rail loader</td>
</tr>
<tr>
<td></td>
<td>• Relocate scales</td>
</tr>
<tr>
<td></td>
<td>• Extend track into warehouse north of Arendell Street</td>
</tr>
<tr>
<td></td>
<td>• Replace aging warehouses and transit sheds</td>
</tr>
<tr>
<td></td>
<td>• Increase building setbacks for better rail access and crane movement</td>
</tr>
<tr>
<td></td>
<td>• Cover a portion of the rail yard for cargo operations</td>
</tr>
</tbody>
</table>
Port Operational Needs

<table>
<thead>
<tr>
<th>Port of Wilmington</th>
<th>Port of Morehead City</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On-site:</strong></td>
<td><strong>On-site:</strong></td>
</tr>
<tr>
<td>• Consider having separate main gate lanes to minimize processing times of freight</td>
<td>• Move military operations to Radio Island</td>
</tr>
<tr>
<td>• Optimize on-site routing</td>
<td>• Optimize on-site routing</td>
</tr>
<tr>
<td><strong>Road (same concepts for both ports):</strong></td>
<td></td>
</tr>
<tr>
<td>• Regularly optimize traffic signals</td>
<td></td>
</tr>
<tr>
<td>• Use variable message signs to notify travelers when the at-grade crossings will be closed</td>
<td></td>
</tr>
<tr>
<td>• Create a cellphone app that updates drivers directly when the crossings will be closed</td>
<td></td>
</tr>
<tr>
<td><strong>Rail:</strong></td>
<td><strong>Rail:</strong></td>
</tr>
<tr>
<td>• Work with Wilmington Terminal Railroad to eliminate non-port freight from being handled on port property</td>
<td>• Prioritize train movements through town to minimize closings of at-grade crossings</td>
</tr>
<tr>
<td></td>
<td>• Have NS drop/pick up cars west of the town and short line conduct operations through town at more convenient times</td>
</tr>
</tbody>
</table>
Port Policy Needs

- Port governance and funding
- Comprehensive maritime vision and marketing plan
- Continued stakeholder input
- Integration of maritime freight needs into statewide transportation planning
- Shared rail service
- Regulation of shipping alliances
Rail Modal Profile

Inventory

Activity

Rail Needs:
  » Rail Service Needs - Freight
  » Freight Rail Needs and Opportunities
Inventory

[Map of North Carolina showing major rail facilities, seaports, and highways]

Major Rail Facilities Across North Carolina
- Interstate Highway
- US Highway
- Rail Facilities:
  - Intermodal
  - Transload
  - Rail Yard
- Railroad Owner:
  - Norfolk Southern
  - CSX Transportation
  - CSX Transportation & Norfolk Southern
  - North Carolina RR Company
- Seaport
- Major Rail Yard

[Scale: 0 25 50 Miles]
Activity

2014 Annual Rail Tonnage

- <= 500,000
- 500,001 - 1,000,000
- 1,000,001 - 5,000,000
- 5,000,001 - 10,000,000
- > 10,000,000
Activity

2045 Avg Daily Train V/C

- LOS A (v/c <= 0.20)
- LOS B (v/c 0.21 - 0.40)
- LOS C (v/c 0.41 - 0.70)
- LOS D (v/c 0.71 - 0.80)
- LOS E (v/c 0.81 - 1.00)
- LOS F (v/c > 1.00)
Prioritized Freight Corridor Needs
Freight Rail Needs

**Rail Service Needs - Freight**

- Maintain and improve track capacities, especially on Class II and III systems, for existing and future high flow corridors.
- Improve safety and strive to minimize delays.
- Expand freight rail infrastructure and/or add redundancy in select locations across the state to support economic development aligned with rail-based markets as well as supply chain reliability.
Freight Rail Needs and Opportunities

- Congestion on lines that carry both passenger and freight traffic that lead to interoperability and performance issues for both passenger and freight service providers
- Increased need for investment in transload facilities
- Need for investment in the intermodal network to continue to efficiently serve industries and also provide consumable goods to the growing population
- Improved access and service to North Carolina’s ports is needed to better serve North Carolina industries and consumers
Freight Rail Needs

Freight Intermodal Advisory Council

- Prepare for the emergence of the energy industry in North Carolina.
- Continue leading and investing in our nationally-recognized best practice safety program.
- Develop implementation plan for the short-term solutions and plan for the long-term recommendations presented in the Eastern Infrastructure Study for GTP, the Port of Morehead City, and the Port of Wilmington.
- Maintain short line support programs such as the Rail Industrial Access Program and Short Line Industrial Access Program via FRRCSI funds.
- Continue efforts to partner with railroads to evaluate placing an intermodal facility to help mitigate future highway congestion’s impacts on the Triangle region’s access to intermodal service(s) that are currently located in Charlotte and Greensboro. Also, support the expansion of existing CSXT and NS intermodal facilities in Charlotte and Greensboro.
- Leverage private sector rail capacity investments and augment them to foster truck-to-rail mode shifts.
Pipeline and Hazardous Material Profile - Overview

-No single or complete source of data is available to evaluate HazMat as freight, many data sources were used in profile – profile focused on two sectors, general industry and fuel.

-HazMat is any chemical that has one or more hazardous properties that meet the definition for USDOT HazMat Classes –
  - Explosives
  - Gasses
  - Flammable Liquids
  - Flammable Solids
  - Oxidizing Substances And Organic Peroxides
  - Toxic And Infectious Substances
  - Radioactive Materials
  - Corrosive Substances
  - Miscellaneous

-NC is the 7th highest value producer and shipper of chemicals in the United States with a value of well over $2.3 billion dollars shipped in 2012 by the chemical manufacturing industry.
Inventory of Facilities for Fuels

- 5,490 miles of pipeline for the movement of petroleum fuel, non-fuel products, propane, and natural gas
- 38 inland motor fuel terminals served by rail, truck and marine transportation modes
- 12 aviation fuel terminals – 7 military bases, 5 supported by pipeline, 3 by rail, and 4 by truck
- 2 propane terminals – one supported by pipeline and one supported by rail, both support truck loading operations
- 2 Transload Facilities that transfer unit train quantities of butane from rail tank cars to truck tank trailers
Inventory of Facilities for Fuels

- 6 marine petroleum terminals - receive ships and barges through the Port of Wilmington

- Rail transport of petroleum fuels and bio-fuels for large volume delivery to terminals and large volume consumers not served by a pipeline or port

- Truck tank trailer fleets and support services to enable the transport and local delivery of all fuels but natural gas

- 6 bio-fuel production facilities with close to 97 million gallons per year production capacity or about 5 percent of demand
Fuel Model - Freight Findings

- Pipelines import 1,877,000 barrels per day into NC
- Nearly **two million fuel shipments** were made into and within the state over all modes of the state’s transportation system in 2015
- 459 million barrels of fuel were delivered to consumers in 2015
- Forecasts project a 23% reduction in NC’s demand for motor fuel out to 2045, reducing demand for motor fuel to 352 million barrels annually
## 2015 Estimated Refined Fuel Shipments in NC by Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percent</th>
<th>Into Terminals</th>
<th>Out of Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Barrels</td>
<td>Shipments</td>
</tr>
<tr>
<td>Pipeline</td>
<td>62</td>
<td>283,435,932</td>
<td>-</td>
</tr>
<tr>
<td>Ship</td>
<td>31</td>
<td>143,622,565</td>
<td>118</td>
</tr>
<tr>
<td>Rail</td>
<td>7</td>
<td>30,522,539</td>
<td>30,508</td>
</tr>
<tr>
<td>Truck</td>
<td>&lt; 1</td>
<td>1,386,690</td>
<td>6,299</td>
</tr>
<tr>
<td>Air *</td>
<td></td>
<td>44,266,596</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Totals**

<table>
<thead>
<tr>
<th>Into Terminals</th>
<th>Out of Terminals</th>
</tr>
</thead>
<tbody>
<tr>
<td>458,967,726</td>
<td>36,925</td>
</tr>
<tr>
<td>458,967,726</td>
<td>1,924,950</td>
</tr>
</tbody>
</table>

Includes Gasoline, Diesel, Bio-Fuels, Propane, Aviation Fuel and Additives. Does not include Natural Gas.

* 44,266,596 barrels of jet fuel is used to fuel aircraft with no outbound shipments.
Combined Extremely Hazardous Substance Flows and Volumes

Sampled EHS (Extreme Hazardous Substance) Chemical Shipment in North Carolina

- Inland Terminal
- Interstate Highway
- Port
- US Highway
- Airport
- Railroad

by Highway in 1,000,000 lb/year
by Rail in 1,000,000 lb/year

0 25 50 100
Miles

CAMBRIDGE SYSTEMATICS
Combined Non-EHS Flows and Volumes

Sampled Non-EHS (Extreme Hazardous Substance) Chemical Shipment in North Carolina

- Inland Terminal
- Interstate Highway
- Port
- US Highway
- Airport
- Railroad

by Highway in 1,000,000 lb/year

by Rail in 1,000,000 lb/year

1 2 5 10 20 50

50 100 200 500 1,000

0 25 50 100 Miles

CAMBRIDGE SYSTEMS

CAMDEN COUNTY, NORTH CAROLINA
Bottlenecks and Deficiencies

- The pipelines are operating at or near peak capacity creating a vulnerability for disruption
- The navigation channel into Morehead City adjacent to Radio Island is filling with sediment and presents a navigation hazard
- The concurrent use of the two Class I railroad mainlines for passenger, freight, and HazMat service presents a significant source of risk
- High risk HazMat transportation areas include: are with heavy land-use development, storage of chemicals at unsecured rail yards, side rails within major communities, at-grade railroad crossings and freeway ramps
- Heavy volume of freight from fuel terminals onto community road networks is a high priority concern
Existing and Future Needs

- All parties should work through the Local Emergency Planning Committee (LEPC) in their county to develop land-use planning policies that prevent incompatible land-uses relative to HazMat storage, use or transportation.

- Communities should eliminate as many at-grade railroad crossing as possible.

- Railroads should consider not using side rails within city limits to store HazMat rail cars.

- Connections to local road networks from fuel terminals need to be improved to allow for safe integration of trucks into traffic.
Air Cargo Overview

- 74 publicly owned airport
- 9 provide scheduled commercial service
- 4 provide international service
- 18 reported air cargo activity in 2015

### NC Airports with Cargo Activity

#### COMMERCIAL SERVICE AIRPORTS
- Asheville Regional Airport (AVL)
- Charlotte/Douglas International Airport (CLT)
- Fayetteville Regional/Grannis Field Airport (FAY)
- Piedmont Triad International Airport (GSO)
- Pitt-Greenville Airport (PGV)
- Albert J. Ellis (OAJ)
- Coastal Carolina Regional Airport (EWN)
- Raleigh-Durham International Airport (RDU)
- Wilmington International Airport (ILM)

#### GENERAL AVIATION AIRPORTS
- Clinton Sampson County Airport (CTZ)
- Hickory Regional Airport (HKY)
- Smith Reynolds Airport (INT)
- Dare County Regional Airport (MEO)
- Cherry Point MCAS (N1C)
- Gastonia Municipal Airport (NC1)
- Rocky Mount-Wilson Regional Airport (RWI)
- Statesville Regional Airport (SVH)
- Person County Airport (TDF)
Airports with Air Cargo Activity in North Carolina

- Primary Airports
- Other Airports
- Interstate Highway
- US Highway
Air Cargo in NC

Three airports comprise 99 percent of air cargo activity in North Carolina:

» Charlotte Douglas International Airport (CLT),
» Piedmont Triad International Airport (GSO) and
» Raleigh-Durham International Airport (RDU).
Air Cargo Service Types

- Scheduled Passenger/Cargo Service (Service Class F)
- Scheduled All Cargo Service (Service Class G)
- Non-Scheduled Civilian Passenger/Cargo Service (Service Class L)
- Non-Scheduled Civilian All Cargo Service (Service Class P)
## Air Cargo Carriers in NC

<table>
<thead>
<tr>
<th>Carrier Name</th>
<th>Freight Tons</th>
<th>Mail Tons</th>
<th>Total Tons</th>
<th>% of Total Tons</th>
</tr>
</thead>
<tbody>
<tr>
<td>FedEx</td>
<td>156,567</td>
<td>-</td>
<td>156,567</td>
<td>53%</td>
</tr>
<tr>
<td>United Parcel Service (UPS)</td>
<td>56,242</td>
<td>552</td>
<td>56,794</td>
<td>19%</td>
</tr>
<tr>
<td>American Airlines Inc.</td>
<td>15,782</td>
<td>8,051</td>
<td>23,833</td>
<td>8%</td>
</tr>
<tr>
<td>US Airways Inc.</td>
<td>13,656</td>
<td>9,383</td>
<td>23,038</td>
<td>8%</td>
</tr>
<tr>
<td>ABX Air Inc</td>
<td>13,351</td>
<td>-</td>
<td>13,351</td>
<td>5%</td>
</tr>
<tr>
<td>Lufthansa German Airlines</td>
<td>6,736</td>
<td>-</td>
<td>6,736</td>
<td>2%</td>
</tr>
<tr>
<td>Delta Air Lines Inc.</td>
<td>1,346</td>
<td>3,814</td>
<td>5,159</td>
<td>2%</td>
</tr>
<tr>
<td>Southwest Airlines Co.</td>
<td>2,863</td>
<td>-</td>
<td>2,863</td>
<td>1%</td>
</tr>
<tr>
<td>Atlas Air Inc.</td>
<td>2,117</td>
<td>-</td>
<td>2,117</td>
<td>1%</td>
</tr>
<tr>
<td>All Other Carriers</td>
<td>2,425</td>
<td>839</td>
<td>3,264</td>
<td>1%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>271,086</td>
<td>22,638</td>
<td>293,724</td>
<td>100%</td>
</tr>
</tbody>
</table>
Trends in Air Cargo in NC

[Graph showing trends in air cargo between 2000 and 2015. The graph plots total tons, inbound tons, and outbound tons over the years.]

- Total Tons
- Inbound Tons
- Outbound Tons
### Top NC Air Cargo Commodities, Tonnage

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Total Tons</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics</td>
<td>62,961</td>
<td>21%</td>
</tr>
<tr>
<td>Machinery</td>
<td>41,210</td>
<td>14%</td>
</tr>
<tr>
<td>Textiles/leather</td>
<td>25,451</td>
<td>9%</td>
</tr>
<tr>
<td>Precision instruments</td>
<td>19,187</td>
<td>7%</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>17,467</td>
<td>6%</td>
</tr>
<tr>
<td>Plastics/rubber</td>
<td>15,577</td>
<td>5%</td>
</tr>
<tr>
<td>Motorized vehicles</td>
<td>12,055</td>
<td>4%</td>
</tr>
<tr>
<td>Basic chemicals</td>
<td>11,305</td>
<td>4%</td>
</tr>
<tr>
<td>Chemical prods.</td>
<td>11,280</td>
<td>4%</td>
</tr>
<tr>
<td>Articles-base metal</td>
<td>11,081</td>
<td>4%</td>
</tr>
</tbody>
</table>

Source: BTS TranStats Database, 2015; FAF4.1 data.
### Top NC Air Cargo Commodities, Value

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Total Value ($M)</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronics</td>
<td>5,156</td>
<td>22%</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>4,247</td>
<td>18%</td>
</tr>
<tr>
<td>Machinery</td>
<td>3,459</td>
<td>15%</td>
</tr>
<tr>
<td>Precision instruments</td>
<td>2,198</td>
<td>10%</td>
</tr>
<tr>
<td>Basic chemicals</td>
<td>1,565</td>
<td>7%</td>
</tr>
<tr>
<td>Transport equip.</td>
<td>1,018</td>
<td>4%</td>
</tr>
<tr>
<td>Plastics/rubber</td>
<td>928</td>
<td>4%</td>
</tr>
<tr>
<td>Chemical prods.</td>
<td>692</td>
<td>3%</td>
</tr>
<tr>
<td>Misc. mfg. prods.</td>
<td>667</td>
<td>3%</td>
</tr>
<tr>
<td>Textiles/leather</td>
<td>603</td>
<td>3%</td>
</tr>
</tbody>
</table>
Projected Growth in Air Cargo, 2015-2045
Air Cargo Needs

Airport access
- US 70 and access to GTP
- US 64 and US 17 access to RDU and eastern NC
- Rail spur at GSO
- The I-85/I-485 interchange, which is directly northwest of the CLT campus

Runway and facility needs
- Extend CLT runway too 12,000 feet
- RDU expanding a runway to 11,5000
- Numerous supporting facilities at GSO aimed at enhancing air cargo handling efficiency

Industrial development needs
NC PRIMARY FREIGHT HIGHWAY SYSTEM DESIGNATION
General Economic Analysis

- Demographic preparedness index – workforce quality and quantity
- Freight intensity index – employment in transportation dependent industries
- Supporting facilities/infrastructure – serves regional economic generators that also require significant freight such as military, education, technology and medical facilities
- Equity – supports/serves economically distressed areas based on income and property values
Goods Movement Analysis

- Truck volumes and percentages
  - Current
  - Growth (% change)

- Truck VMTs
  - Absolute
  - Normalized by lane mile

- Commodity tonnage and value
Supply Chain Analysis

- Examine freight supply chains to understand how businesses move goods between suppliers, producers, distributors and final consumers

- Number of targeted supply chain industries and businesses supported

<table>
<thead>
<tr>
<th>Aerospace, Aviation and Military/Defense</th>
<th>Automotive, truck, heavy equipment</th>
<th>Biotechnology, Pharmaceuticals and Life Sciences</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and Communications Technology</td>
<td>Chemicals, Plastics and Rubber</td>
<td>Distribution/Logistics</td>
</tr>
<tr>
<td>Food Processing and Distribution</td>
<td>Energy / Green Energy</td>
<td>Textiles, Apparel and Textile Machinery</td>
</tr>
</tbody>
</table>
Market Access and Connectivity

- Intermodal connectivity

- Connectivity to North American trading partners via inland gateways

- Access to international gateways via marine port terminals
  - Gateway Access scored based on truck travel times along network
TOOL DEMO AND INITIAL FINDINGS
Weighting of Criteria

- Currently the analyses are equally weighted – 25% each
- Need your input – should some analyses/metrics be weighted more heavily?

Individually worksheets and group polling
  » Complete individual worksheets on how metrics should be weighted
  » Do some group polling
<table>
<thead>
<tr>
<th>Analysis</th>
<th>Proposed Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Economic</td>
<td></td>
</tr>
<tr>
<td>Goods Movement</td>
<td></td>
</tr>
<tr>
<td>Supply Chain</td>
<td></td>
</tr>
<tr>
<td>Accessibility and Connectivity</td>
<td>100%</td>
</tr>
</tbody>
</table>
To Participate in Poll

http://Camsys.participoll.com/
Should all the metrics be equally weighted?

A. Yes
B. No
C. Not sure
Economic Analysis

Should the metrics in the economic analysis be weighted…

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
Goods Movement Analysis

Should the metrics in the good movement analysis be weighted…

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
Supply Chain Analysis

Should the metrics in the supply chain analysis be weighted…

A. Equally with other metrics

B. More heavily

C. Less heavily

D. Not sure
Market Accessibility and Connectivity Analysis

Should the metrics in the market accessibility and connectivity analysis be weighted…

A. Equally with other metrics
B. More heavily
C. Less heavily
D. Not sure
NEXT STEPS
On-going Activities and Next Steps

- Roll out NC Freight Data Tool – Jan 2017
- Finalize needs assessment and system designation – Feb 2017
- Complete supply chain and economic analysis – Feb 2017
- Performance measure development – March 2017
- Start developing and screening recommendations – April 2017
Stakeholder Outreach

- MPO/RPO
  - Update – Jan and Feb
  - Workshops – April – May 2017

- Next FAC meeting – in conjunction with NC MPO conference on April 26-28 in New Bern
DISCUSSION
<table>
<thead>
<tr>
<th>Factor</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Measure</th>
<th>Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demographic Preparedness</strong></td>
<td>Population Growth</td>
<td>US Census 2010 / 2014</td>
<td>Growth rate of tract compared to statewide growth rate</td>
<td>0  = 0</td>
<td>Population growth indicates opportunities for economic growth. All negative growth rates scored as 0.</td>
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<td>1 – 49  = 0.2</td>
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<td></td>
<td></td>
<td>50 – 99  = 0.4</td>
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<td>100 – 149 = 0.6</td>
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<td>150 – 199 = 0.8</td>
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<td></td>
<td>200 and above = 1.0</td>
<td></td>
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<tr>
<td><strong>Workforce Size</strong></td>
<td></td>
<td>US Census 2014</td>
<td>Census tract workforce size compared to tract population relative to state average</td>
<td>0  = 0</td>
<td>Higher density of workers indicates a competitive and efficient labor market.</td>
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<td>1 – 49  = 0.2</td>
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<td>50 – 99  = 0.4</td>
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<td>200 and above = 1.0</td>
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<tr>
<td><strong>Educational Attainment</strong></td>
<td></td>
<td>US Census 2014</td>
<td>Census tract relative to state average</td>
<td>0  = 0</td>
<td>Well trained workforce desirable for investment. Population 18 years of age or older with high school or higher education.</td>
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<td>1 – 49  = 0.2</td>
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<td>50 – 99  = 0.4</td>
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<td>200 and above = 1.0</td>
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<tr>
<td><strong>Per Capita Income</strong></td>
<td></td>
<td>US Census 2014</td>
<td>Tract PCI vs the statewide average</td>
<td>0  = 0</td>
<td>Higher PCI equates to more economic activity generated from a diverse market of goods and services.</td>
</tr>
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<td>1 – 49  = 0.2</td>
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<td>50 – 99  = 0.4</td>
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<td>200 and above = 1.0</td>
<td></td>
</tr>
<tr>
<td><strong>Freight Intensity and Supported Industries</strong></td>
<td>Freight Employment Intensity</td>
<td>US Census 2014</td>
<td>Employment in freight intensive sectors vs state average</td>
<td>0  = 0</td>
<td>Dependence on supporting freight infrastructure key to growth in these areas.</td>
</tr>
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<td>1 – 49  = 0.2</td>
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<td>50 – 99  = 0.4</td>
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<td>200 and above = 1.0</td>
<td></td>
</tr>
<tr>
<td><strong>Technology Centers</strong></td>
<td></td>
<td>US Census 2014</td>
<td>Employment in technology sectors vs state average</td>
<td>0  = 0</td>
<td>High tech industries typically require highly mobile staff and rely on products being shipped rapidly. Improved infrastructure will promote growth.</td>
</tr>
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<td>1 – 99  = 0.4</td>
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<td>100 – 199 = 0.8</td>
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<td>200 – 299 = 1.2</td>
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<td>300 – 399 = 1.6</td>
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<td></td>
<td></td>
<td>400 and above = 2.0</td>
<td></td>
</tr>
<tr>
<td><strong>Medical Centers</strong></td>
<td></td>
<td>US Census 2014</td>
<td>Employment in medical care sectors vs state average</td>
<td>0  = 0</td>
<td>Connectivity to medical centers is important to the regional economy.</td>
</tr>
<tr>
<td></td>
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<td>1 – 99  = 0.4</td>
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<td>100 – 199 = 0.8</td>
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<td>300 – 399 = 1.6</td>
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<td></td>
<td>400 and above = 2.0</td>
<td></td>
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<tr>
<td><strong>Institutions of Higher Learning</strong></td>
<td></td>
<td>US Census 2014</td>
<td>Students enrolled in public / private universities and colleges vs state average</td>
<td>0  = 0</td>
<td>Attract adjacent growth of industry and promote skilled workforce.</td>
</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1 – 99  = 0.4</td>
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<td>100 – 199 = 0.8</td>
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<td>300 – 399 = 1.6</td>
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<td>400 and above = 2.0</td>
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<tr>
<td>Factor</td>
<td>Metric</td>
<td>Data Source(s)</td>
<td>Measure</td>
<td>Scoring Method</td>
<td>Data Usage Methodology</td>
</tr>
<tr>
<td>------------------------</td>
<td>-------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
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<td>----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Key Military Facilities</td>
<td>Census tracts that are comprised of key military facilities.</td>
<td>0 = None 1 = Facility</td>
<td>Fort Bragg; Seymour Johnson AFB; Sunny Point MOCT; New River MCAS; Camp Lejeune; Cherry Point MCAS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property Tax</td>
<td>US Census 2014</td>
<td>Property tax values at tract level vs state average.</td>
<td>0 = 0 1 – 49 = 0.2 50 – 99 = 0.4 100 – 149 = 0.6 150 – 199 = 0.8 200 and above = 1.0</td>
<td>Measure serves as a proxy for economic activity and transportation dependence.</td>
<td></td>
</tr>
</tbody>
</table>
Table 2  Goods Movement Analysis Metrics and Scoring Methodology

<table>
<thead>
<tr>
<th>Mode</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Value Range</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway</td>
<td>Daily Truck Volumes</td>
<td>NCDOT</td>
<td>0 – 16,000 AADTT</td>
<td>0 = Less than 2,500</td>
<td>Measures daily truck volumes on NC roads. Identifies corridors with heavy truck traffic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 2,501 to 5,000</td>
<td>2 = 5,001 to 7,500</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 7,501 to 10,000</td>
<td>4 = 10,001 to 16,000</td>
<td></td>
</tr>
<tr>
<td>Absolute Vehicle Miles</td>
<td>Traveled (VMT)</td>
<td>NCDOT</td>
<td>0 – 50,000</td>
<td>0 = Less than 1,000</td>
<td>Use truck counts by link to derive truck VMT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 1,000 to 2,499</td>
<td>2 = 2,500 to 4,999</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 5,000 to 9,999</td>
<td>4 = More than 10,000</td>
<td></td>
</tr>
<tr>
<td>VMT by Lane Mile</td>
<td></td>
<td>NCDOT, Highway Performance Monitoring System (HPMS)</td>
<td>0 – 12,500</td>
<td>0 = Less than 500</td>
<td>Use truck counts by link to derive truck VMT. HPMS data provides number of lanes by link. These sources together will show truck VMT by lane mile.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 500 to 999</td>
<td>2 = 1,000 to 2,499</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 2,500 to 4,999</td>
<td>4 = More than 5,000</td>
<td></td>
</tr>
<tr>
<td>Total Tonnage</td>
<td>FAF4.1</td>
<td></td>
<td>0 – 200M+ tons</td>
<td>0 = Less than 5M tons</td>
<td>Assessment of annual tonnage by road segment for top commodities transported by truck in North Carolina.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 5M to 10M tons</td>
<td>2 = 10M to 20M tons</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>3 = 20M to 50M tons</td>
<td>4 = 50M to 100M tons</td>
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<td></td>
<td></td>
<td></td>
<td>5 = 100M to 200M</td>
<td>6 = More than 200M</td>
<td></td>
</tr>
<tr>
<td>Total Value</td>
<td>FAF 4.1</td>
<td></td>
<td>0 - $500B+</td>
<td>0 = Less than $10B</td>
<td>Assessment of annual value by road segment for top commodities transported by truck in North Carolina.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1 = $10B to $20B</td>
<td>2 = $20B to $50B</td>
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<td></td>
<td></td>
<td></td>
<td>3 = $50B to $100B</td>
<td>4 = $100B to $200B</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>5 = $200B to $500B</td>
<td>6 = More than $500B</td>
<td></td>
</tr>
<tr>
<td>Tonnage Growth</td>
<td>FAF 4.1</td>
<td>Change in Tonnage (%)</td>
<td>0 = Less than 25%</td>
<td>Assessment of percentage change in total tonnage between base (2015) and forecast (2045) years.</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1 = 25% - 50%</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>2 = 50% - 75%</td>
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<td></td>
<td></td>
<td></td>
<td>3 = 75% - 100%</td>
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</tr>
<tr>
<td>Value Growth</td>
<td>FAF 4.1</td>
<td>Change in Value (%)</td>
<td>0 = Less than 25%</td>
<td>Assessment of percentage change in total tonnage between base (2015) and forecast (2045) years.</td>
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<td></td>
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<td></td>
<td>1 = 25% - 50%</td>
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<td>2 = 50% - 75%</td>
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<td>3 = 75% - 100%</td>
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<td></td>
<td>4 = 100%+</td>
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</tbody>
</table>
### Table 3  Supply Chain Analysis Metrics and Scoring Methodology

<table>
<thead>
<tr>
<th>Mode</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Value Range</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
</table>
| Highway | Support for Targeted Industries | InfoUSA | 0 – 9 | 0 = No support  
1 = Support for 1-4 targeted industries  
2 = Support for ≥ 5 targeted industries | Assess level of support for targeted industries via highway. “Support” determined when industry is located within 2 miles of highway. |
| | Support for Targeted Industries Businesses | InfoUSA | 0 – 71 | 0 = No support  
1 = 1 to 2 TI businesses  
2 = 3 to 5 TI businesses  
3 = 6 to 10 TI businesses  
4 = More than 11 TI businesses | Assess level of support for targeted industries via highway based on number of TI businesses within 2 miles of highway. |
| | Support for Commodities Associated with Targeted Industries (Tonnage) | InfoUSA / Loaded FAF Network | 0 – 74M | 0 = Less than 2M tons  
1 = 2M to 5M tons  
2 = 5M to 10M tons  
3 = 10M to 20M tons  
4 = More than 20M tons | Assessment of how much annual tonnage is supported via highway for each targeted industry. Evaluated for each roadway segment. |
| | Support for Commodities Associated with Targeted Industries (Value) | InfoUSA / Loaded FAF Network | 0 – $180M | 0 = Less than $2M  
1 = $2M to $5M  
2 = $5M to $10M  
3 = $10M to $20M  
4 = More than $20M | Assessment of how much annual value is supported via highway for each targeted industry. Evaluated for each roadway segment. |
Table 4  Targeted Supply Chain Industries

<table>
<thead>
<tr>
<th>Industry Category</th>
<th>NAICS Codes</th>
<th>SCTG Commodity Code(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace, Aviation, and Military/Defense</td>
<td>3364 – Aerospace Product and Parts Manufacturing</td>
<td>34 – Machinery</td>
</tr>
<tr>
<td></td>
<td>481 – Air Transportation</td>
<td>35 – Electronics</td>
</tr>
<tr>
<td></td>
<td>4861 – Support Activities for Air Transportation</td>
<td>36 – Motorized vehicles</td>
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<td></td>
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<td>37 – Transportation equip.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38 – Precision Instruments</td>
</tr>
<tr>
<td>Information and Communications Technology</td>
<td>334 – Computer and Electronic Product Manufacturing</td>
<td>35 – Electronics</td>
</tr>
<tr>
<td>Food Processing and Distribution</td>
<td>311 – Food Manufacturing</td>
<td>01 – Animals and fish</td>
</tr>
<tr>
<td></td>
<td>312 – Beverage and Tobacco Product Manufacturing</td>
<td>02 – Cereal grains</td>
</tr>
<tr>
<td></td>
<td>48312 – Refrigerated Warehousing Storage</td>
<td>03 – Other ag prods.</td>
</tr>
<tr>
<td></td>
<td>48313 – Refrigerated Farm Products</td>
<td>04 – Animal feed</td>
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<tr>
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<td>05 – Meat/seafood</td>
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<td>06 – Milled grain prods.</td>
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<td>07 – Other food stuffs</td>
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<tr>
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<td></td>
<td>08 – Alcoholic beverages</td>
</tr>
<tr>
<td>Automotive, truck, and heavy equipment</td>
<td>331 – Primary Metal Manufacturing</td>
<td>33 – Articles of base metal</td>
</tr>
<tr>
<td></td>
<td>332 – Fabricated Metal Product Manufacturing</td>
<td>34 – Machinery</td>
</tr>
<tr>
<td></td>
<td>336 – Transportation Equipment and Manufacturing</td>
<td>35 – Electronics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>36 – Motorized vehicles</td>
</tr>
<tr>
<td></td>
<td></td>
<td>37 – Transportation equip.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>38 – Precision instruments</td>
</tr>
<tr>
<td>Chemicals, Plastics and Rubber</td>
<td>324 – Petroleum and Coal Products Mfg</td>
<td>20 – Basic chemicals</td>
</tr>
<tr>
<td></td>
<td>3251 – Basic Chemical Manufacturing</td>
<td>22 – Fertilizers</td>
</tr>
<tr>
<td></td>
<td>3252 – Resin, Synthetic Rubber, and Artificial Synthetic Fibers and Filaments Manufacturing</td>
<td>23 – Chemical prods.</td>
</tr>
<tr>
<td></td>
<td>3253 – Pesticide, Fertilizer, and Other Agricultural Chemical Manufacturing</td>
<td>24 – Plastics/rubber</td>
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<tr>
<td></td>
<td>3255 – Paint, Coating, and Adhesive Manufacturing</td>
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<td>3256 – Soap, Cleaning Compound, and Toilet Preparation Manufacturing</td>
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<tr>
<td></td>
<td>3259 – Other Chemical Product and Preparation Manufacturing</td>
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<td></td>
<td>3261 – Plastics Product Manufacturing</td>
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<tr>
<td></td>
<td>3262 – Rubber Product Manufacturing</td>
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</tr>
<tr>
<td>Energy / Green Energy</td>
<td>2111 – Oil and Gas Extraction</td>
<td>15 – Coal</td>
</tr>
<tr>
<td></td>
<td>2121 – Coal Mining</td>
<td>16 – Crude petroleum oil</td>
</tr>
<tr>
<td></td>
<td>2131 – Support Activities for Mining</td>
<td>17 – Gasoline and aviation turbine fuel</td>
</tr>
<tr>
<td></td>
<td>2211 – Electric Power Generation, Transmission and Distribution</td>
<td>18 – Fuel oils</td>
</tr>
<tr>
<td></td>
<td>2212 – Natural Gas Distribution</td>
<td>19 – Coal-n.e.c.</td>
</tr>
<tr>
<td></td>
<td>4861 – Pipeline Transportation of Crude Oil</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4862 – Pipeline Transportation of Natural Gas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4869 – Other Pipeline Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>221111 – Hydroelectric Power Generation</td>
<td>34 – Machinery</td>
</tr>
<tr>
<td></td>
<td>221114 – Solar Power Generation</td>
<td>35 – Electronics</td>
</tr>
<tr>
<td></td>
<td>221115 – Wind Power Generation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>221116 – Geothermal Power Generation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>221117 – Biomass Electric Power Generation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>221118 – Other Electric Power Generation (except hydroelectric, fossil fuel, nuclear, solar, wind, geothermal, biomass)</td>
<td></td>
</tr>
<tr>
<td>Biotechnology, Pharmaceuticals</td>
<td>3254 – Pharmaceutical and Medicine Manufacturing</td>
<td>20 – Basic chemicals</td>
</tr>
<tr>
<td></td>
<td>3391 – Medical Equipment and Supplies Manufacturing</td>
<td>21 – Pharmaceuticals</td>
</tr>
<tr>
<td>Industry Category</td>
<td>NAICS Codes</td>
<td>SCTG Commodity Code(s)</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>and Life Sciences</td>
<td></td>
<td>38 – Precision instruments</td>
</tr>
<tr>
<td>Distribution/Logistics</td>
<td>481112 Scheduled Freight Air Transportation</td>
<td>33 – Articles of base metal</td>
</tr>
<tr>
<td></td>
<td>481212 Nonscheduled Chartered Freight Air Transportation</td>
<td>39 – Furniture</td>
</tr>
<tr>
<td></td>
<td>482 – Rail Transportation</td>
<td>40 – Misc. mfg. prods</td>
</tr>
<tr>
<td></td>
<td>483111 Deep Sea Freight Transportation</td>
<td>43 – Mixed freight</td>
</tr>
<tr>
<td></td>
<td>483113 Coastal and Great Lakes Freight Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>483211 Inland Water Freight Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>484 – Truck Transportation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4921 – Couriers and Express Delivery Services</td>
<td></td>
</tr>
<tr>
<td>Textiles, Apparel, and Textile</td>
<td>313 – Textile Mills</td>
<td>24 – Plastics/rubber</td>
</tr>
<tr>
<td>Machinery</td>
<td>314 – Textile Product Mills</td>
<td>30 – Textiles/leather</td>
</tr>
<tr>
<td></td>
<td>315 – Apparel Manufacturing</td>
<td>34 – Machinery</td>
</tr>
<tr>
<td></td>
<td>316 – Leather and Allied Product Manufacturing</td>
<td></td>
</tr>
</tbody>
</table>
Table 5  Market Access and Geography Metrics and Scoring Methodology

<table>
<thead>
<tr>
<th>Mode</th>
<th>Metric</th>
<th>Data Source(s)</th>
<th>Value Range</th>
<th>Proposed Scoring Method</th>
<th>Data Usage Methodology</th>
</tr>
</thead>
</table>
| Highway                     | Highway Intermodal Connectivity | Bureau of Transportation Statistics (BTS) | N/A                              | 0 = No connection  
2 = Connects Intermodal Terminal Network segments that connect intermodal terminals (truck / rail / air / port) to Major highway defined as having functional class of Principal Arterial higher | Network segments that connect intermodal terminals (truck / rail / air / port) to Major highway defined as having functional class of Principal Arterial higher |
| High-Diversity Market Gateway (HDMG) Access | High-Diversity Market Gateway (HDMG) Access | Esri, HERE                        | N/A                              | 0 = Outside 4 hour TTT  
1 = Within 4 hour TTT  
2 = Within 2 hour TTT  
3 = Within 1 hour TTT | Measured using Truck Travel Times (TTT) from Marine Port Terminals. Includes Norfolk, VA and Charleston, SC. |
| Market Gateway (MG) Access  | Market Gateway (MG) Access   | Esri, HERE                          | N/A                              | 0 = Outside 2 hour TTT  
1 = Within 2 hour TTT  
2 = Within 1 hour TTT  
3 = Within Half hour TTT | Identifies road segments that facilitate access to inland port terminals (rail, airport) as measured using TTT. Includes Greer, SC |
The draft vision statement for the North Carolina Statewide Multimodal Freight Plan is:

- **North Carolina’s multimodal freight transportation network helps us compete globally for quality jobs, provide safe and efficient people and goods mobility and build quality communities for today and the future.**

The vision statement strives to describe a desired outcome, achievement or big-picture orientation from the perspective of transportation customers. It is meant to inspire the imagination of people and industries, and develop a momentum toward implementation of the Statewide Multimodal Freight Plan.

To achieve this vision, the North Carolina Statewide Multimodal Freight Plan will also need to define goals and objectives. The proposed goals and objectives for the statewide freight plan are summarized below. This table also provides an assessment of how the defined goals and objectives are aligned with the national freight policy goals, the 25-year vision for North Carolina, and the NCDOT’s 2040 Plan and the STC policy.

### NC Statewide Multimodal Freight Plan Goals and Objectives

|-------------------|-------------------------|-------------------------------|-------------------------|----------------------------------|
| Enhance economic development opportunities and competitiveness | • Support the state’s freight economy sectors to attract quality growth and high paying jobs  
• Improve the ports and the airports to increase exports to key trading partners and to fully participate in the global markets  
• Improve access to freight-related industries, and potential industrial or mega development sites  
• Improve mobility and access to intermodal operations and facilities  
• Expand access to competitive multimodal transportation options  
• Develop strategic highway and rail connections with regional trading partners  
• Collaborate with local government in improving the “last mile” freight operations and urban area logistics | ✓ | ✓ | ✓ |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------|-----------------------------------|
| Improve system efficiency and reliability | - Enhance integration and connectivity across and between freight modes  
- Strategically expand system capacity where existing infrastructure can longer be optimized  
- Improve mobility and travel time reliability by managing traffic congestion  
- Improve system productivity by lowering transportation costs  
- Improve incident management system by partnering with Emergency Response and Law Enforcement agencies  
- Reduce road closures during peak season and peak hours for construction and maintenance  
- Coordinate traffic lights on US and NC routes  
- Monitor and evaluate system performance to assess operational conditions and effectiveness of congestion management strategies                                                                                                                                                                       | ☑                              | ☑                        | ☑                                  |
| Improve infrastructure conditions and preservation | - Maintain, preserve, and extend the service life of existing and future freight transportation infrastructure  
- Monitor infrastructure conditions and prepare an annual freight state-of-the-system report                                                                                                                                                                                                                                             | ☑                              | ☑                        | ☑                                  |
| Enhance safety, security and resilience | - Reduce fatality, injury and crash/incident rates on all modes to improve public health.  
- Reduce economic losses due to transportation crashes and incidents  
- Eliminate safety hazards by proactively working with stakeholders and agencies responsible for the freight transportation system  
- Improve system security to protect people, cargo and critical infrastructure assets  
- Expand multimodal access to Ports, airports and other intermodal and logistics hubs  
- Maintain alternate access routes and redundancy in the system for rapid recovery from weather or other disaster events                                                                                                                                                                                | ☑                              | ☑                        | ☑                                  |
| Protect and enhance the natural environment | - Reduce freight-induced negative impacts on natural, cultural and environmental resources  
- Reduce mobile source emissions, GHG, and energy consumption  
- Reduce noise, vibration and other freight-induced negative impacts on residential communities  
- Improve quality of life for those communities most impacted by freight operations.                                                                                                                                                                                                                   | ☑                              | ☑                        | ☑                                  |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------|----------------------------------|
| Support adoption and deployment of new technologies  | • Promote the adoption of safety, fuel efficiency, telematics, alternative fuel, electronic logging device, fleet management and other technologies for the trucking industry  
• Implement adaptive signal control and other ITS safety solutions on key freight transportation corridors and freight facilities  
• Foster safe future use of autonomous vehicles & drones in freight transportation  
• Foster the adoption of Mobility-as-a-Service, UberRUSH or similar last mile freight delivery operations in urban population centers | ☑                            | ☑                       | ☑                                |
| Foster public-private partnerships and collaboration  | • Develop and nurture partnerships with private industries with significant role in the state's economy  
• Provide a forum for public agencies, industry groups, US military, and local business chambers to coordinate and integrate freight movements  
• Provide a forum for participation by freight shippers and carriers in metropolitan areas | ☑                            | ☑                       | ☑                                |
| Improve access to data and information                | • Expand access to traffic speed, incidents, and construction management information  
• Expand external communication through social media and mobile apps | ☑                            |                         |                                  |
| Ensure good fiscal management                         | • Secure funding for projects with long-term benefits or high benefit-cost ratio  
• Leverage federal funding in freight projects  
• Maintain high standards in management of public assets and resources | ☑                            |                         |                                  |
NC State Freight Plan

Military Cargo Profile

February 2017
Agenda

- North Carolina Military Bases
- North Carolina National Guard
- NCDOT Strategic Transportation Corridors
- Key Findings
- Future Trends and Needs
## North Carolina Military Bases

<table>
<thead>
<tr>
<th>Military Base</th>
<th>Location</th>
<th>Military Branch</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fort Bragg</td>
<td>Fayetteville</td>
<td>US Army</td>
<td>Special Ops and Forces Command, 2 Airfields</td>
</tr>
<tr>
<td>Military Ocean Terminal Sunny</td>
<td>Southport</td>
<td>US Army</td>
<td>Import and export of weapons, ammunition, explosives and military equipment</td>
</tr>
<tr>
<td>Point (MOTSU)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Camp Lejeune</td>
<td>Jacksonville</td>
<td>US Navy Marines</td>
<td>Marine Expeditionary Force, Special Operations Command and Regiment, Training</td>
</tr>
<tr>
<td>MCAS Cherry Point</td>
<td>Havelock</td>
<td>US Navy Marines</td>
<td>Marine Aircraft Groups, Combat Logistics and Fleet Readiness Center</td>
</tr>
<tr>
<td>MCAS New River</td>
<td>Jacksonville</td>
<td>US Navy Marines</td>
<td>Naval Aviation Technical Training, Marine Wing Support, Air Control and Training Squadrons</td>
</tr>
<tr>
<td>Seymour Johnson AFB</td>
<td>Goldsboro</td>
<td>US Air Force</td>
<td>Air Force base, Air Refueling Wing and Fighter Group</td>
</tr>
<tr>
<td>Coast Guard Air Station</td>
<td>Elizabeth City</td>
<td>US Coast Guard</td>
<td>Aviation Technical Training Center, the Aviation Logistics Center and Station Elizabeth City</td>
</tr>
</tbody>
</table>
# NC National Guard Units

<table>
<thead>
<tr>
<th>National Guard Unit</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>60th Troop Command</td>
<td>Raleigh</td>
</tr>
<tr>
<td>449th Theater Aviation Brigade</td>
<td>Morrisville, NC</td>
</tr>
<tr>
<td>30th Armored Brigade Combat Team</td>
<td>Clinton</td>
</tr>
<tr>
<td>113th Sustainment Brigade</td>
<td>Greensboro</td>
</tr>
<tr>
<td>139th Regiment</td>
<td>Fayetteville</td>
</tr>
<tr>
<td>130th Maneuver Enhancement Brigade</td>
<td>Charlotte</td>
</tr>
<tr>
<td>145th Airlift Wing</td>
<td>Charlotte</td>
</tr>
</tbody>
</table>
Key NC Military Bases and Freight Assets

Fort Bragg and Seymour Johnston are well positioned close to I-95, CSX and NCRR. Cherry Point and MOTSU have good rail access, coastal bases rely on US 17, US 64, US 70 and US 74 for truck access.
### Fort Bragg Shipments FY15

<table>
<thead>
<tr>
<th><strong>Surface Movement Center</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Shipments</td>
<td>11,731</td>
</tr>
<tr>
<td>LTL Loads</td>
<td>1,798</td>
</tr>
<tr>
<td>Pieces</td>
<td>30,595</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Airfield Control Group</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outbound Trips</td>
<td>1,036</td>
</tr>
<tr>
<td>Inbound Trips</td>
<td>172</td>
</tr>
<tr>
<td>Soldiers</td>
<td>71,781</td>
</tr>
<tr>
<td>Pieces</td>
<td>5,932</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Rail Operations Group</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Outbound rail cars</td>
<td>763</td>
</tr>
<tr>
<td>Inbound rail cars</td>
<td>1,299</td>
</tr>
<tr>
<td>Outbound pieces</td>
<td>1,292</td>
</tr>
<tr>
<td>Inbound pieces</td>
<td>2,437</td>
</tr>
</tbody>
</table>
MOTSU Annual Shipment Data

<table>
<thead>
<tr>
<th>Year</th>
<th>Direction</th>
<th>Tons</th>
<th>Containers</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2015</td>
<td>Outbound</td>
<td>135,000</td>
<td>3,833</td>
</tr>
<tr>
<td></td>
<td>Inbound</td>
<td>121,700</td>
<td>3,177</td>
</tr>
<tr>
<td>FY 2016</td>
<td>Outbound</td>
<td>195,000</td>
<td>5,648</td>
</tr>
<tr>
<td>YTD</td>
<td>Inbound</td>
<td>126,000</td>
<td>3,682</td>
</tr>
</tbody>
</table>
## Cam Lejeune Annual Shipment Data

<table>
<thead>
<tr>
<th>Camp Lejeune Shipments, FY15</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small Shipments in US</strong></td>
</tr>
<tr>
<td><strong>Small Shipments outside US</strong></td>
</tr>
<tr>
<td><strong>Less-than-Loaded (LTL) Outbound</strong></td>
</tr>
<tr>
<td><strong>Arms &amp; Ammunition Outbound (Trucks)</strong></td>
</tr>
<tr>
<td><strong>Railcars Outbound</strong></td>
</tr>
<tr>
<td><strong>Railcars Inbound</strong></td>
</tr>
<tr>
<td><strong>Truckloads Outbound</strong></td>
</tr>
<tr>
<td><strong>Truckloads Inbound</strong></td>
</tr>
</tbody>
</table>
### MCAS Cherry Point Shipments

<table>
<thead>
<tr>
<th></th>
<th>Truck Shipments</th>
<th>Capacity</th>
<th>Gal/Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Fuel to Base</td>
<td>175</td>
<td>8,000 gals</td>
<td>16.8 Million</td>
</tr>
<tr>
<td>Fuel Service Stations</td>
<td>8</td>
<td>8,000 gals</td>
<td>64,000</td>
</tr>
<tr>
<td>Parts to Air Depot</td>
<td>12</td>
<td>Semi-trailers</td>
<td>144 trucks/Yr.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Rail Shipments</th>
<th>Capacity</th>
<th>Gals/Yr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Fuel to Base</td>
<td>4</td>
<td>20,000</td>
<td>80,000</td>
</tr>
</tbody>
</table>
### Seymour Johnson Annual Fuel Shipments

<table>
<thead>
<tr>
<th>Fuel Shipments</th>
<th>Annual Gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jet Fuel Rail</td>
<td>29,120,000</td>
</tr>
<tr>
<td>Jet Fuel Truck</td>
<td>37,440,000</td>
</tr>
<tr>
<td>Unleaded Gas Truck</td>
<td>416,000</td>
</tr>
<tr>
<td>Diesel Fuel Truck</td>
<td>416,000</td>
</tr>
<tr>
<td><strong>Total Fuel</strong></td>
<td><strong>67,392,000</strong></td>
</tr>
</tbody>
</table>
# USCG Elizabeth City Annual Truck Shipments

## USCG Elizabeth City Truck Trips

<table>
<thead>
<tr>
<th>Deliveries</th>
<th>Trips/Day</th>
<th>Trips/Year</th>
<th>Route</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTL Trucks</td>
<td>8</td>
<td>2,920</td>
<td>To and from Norfolk, VA</td>
</tr>
<tr>
<td>FedEx trucks</td>
<td>2</td>
<td>730</td>
<td>Fed Ex Hub Norfolk, VA</td>
</tr>
<tr>
<td>UPS trucks</td>
<td>2</td>
<td>730</td>
<td>UPS Hub, Norfolk, VA</td>
</tr>
</tbody>
</table>
NC Military Key Findings

- Military operations generate over 40,000 truck trips and 14,000 rail moves annually.

- Military facilities in North Carolina move more than 100 million gallons of fuel annually, 75 percent by truck and 25 percent by rail.

- The NC National Guard has a team of 800 truck drivers, 380 with Commercial Drivers Licenses.

- Fort Bragg and Seymour Johnson have the best highway and rail access.
NC Military Key Findings

Safe and efficient movement of military cargo required for military operations in a cost effective manner is vital to the retention and expansion of military operations.

NC 17, NC 24, US 70 and US 74 are critical corridors for coastal military installations.

Cherry Point contracts with NS Railroad for heavy cargo but some truck transportation is needed if loads do not meet NS requirements.
Future Needs and Trends

- Projections are for Fort Bragg to continue to significantly grow and expand its mission, leading to more cargo shipments.
- Natural gas will replace coal at several bases, resulting in a shift from rail to pipeline transport.
- The NC National Guard has decreased its number of facilities from 105 to 95 to consolidate into regional armories along I-40 and I-95.
- Significant military growth over the last decade and more growth expected will impact highways and other transportation facilities.
Challenges and Bottlenecks

- Camp Lejeune, Cherry Point, the Marine Air Station at New River are all isolated from major highway corridors, resulting in higher freight costs.

- Fort Bragg does not use Port of Wilmington due to limited staging; insufficient dockside access; and Cape Fear River transit times.

- While rail cargo opportunities exist for some of the military bases, there are cargo restrictions for minimum loads.

- Bridge conditions restrict movements of some large equipment, resulting detours or the need to make the moves by rail.

- Restrictions on over size cargo movements at night creates challenges for convoy movements and increase needs for parking.