NORTH CAROLINA
MARITIME Strategy

Maritime Strategy Update

presentation to the

Joint Legislative Transportation Oversight Committee

January 13, 2012 Wilmington, NC

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Maritime Study Scope

- Evaluate North Carolina's position, opportunities and challenges as a portal for global maritime commerce;
- Examine the role of North Carolina ports in sustaining and strengthening the State's economy;
- Obtain input from freight transportation, economic development, and community interests, and
- Identify specific strategies to optimize benefits received from the State's investments in port and associated transportation infrastructure.

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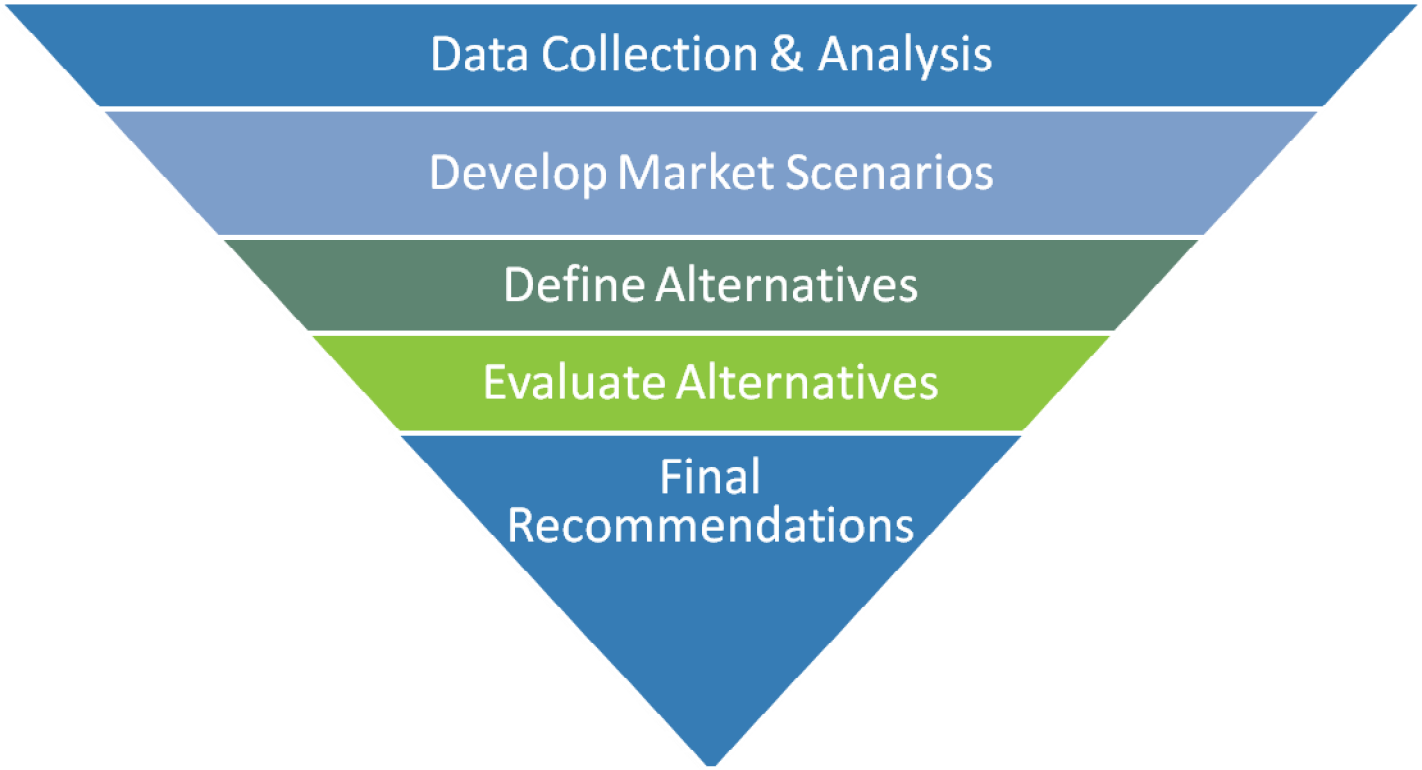
Summary Timeline

Project Kickoff – May 2011



Final Report – February 2012

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Data Collection and Analysis

- Reviewed more than 100 existing documents and reports to identify available and verifiable information that is applicable to the Maritime study.
- Obtained updated import/export market forecasts for US southeast region from IHS Global Insight
- Performed independent analysis of infrastructure constraints
  - GIS-based evaluation of regional highway and rail networks
  - GIS-based evaluation of waterways
  - AECOM's proprietary port modeling tools to assess regional port capacity
- Developed independent Delivered Cost Model to evaluate time-based benefits of infrastructure improvements
- Integrated input from diverse industry stakeholders to assess market needs and opportunities

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Industry and Stakeholder Meetings

- Industry Workshops
  - Agriculture
  - Break-Bulk
  - Shipping Lines
  - Logistics & Special Zones
  - Non-Ag Shippers
  - Military
  - Railroad & Trucking

  Effort supported by hands-on Maritime Advisory Council
- Focused discussions and interviews
  - Metropolitan Transportation Organizations
  - Economic Development Commissions
  - NC Department of Commerce
  - NC Department of Transportation
  - NC State Ports Authority
  - NC Railroad
  - UNC Wilmington
  - Southport/Oak Island Chamber of Commerce
  - US Army Corps of Engineers
  - Progress Energy
  - No Port Southport
  - Save the Cape
  - Clean Carteret County Coalition
  - Morehead City Port Committee
  - YesPort NC
- Public workshops

Summary of Stakeholder Input

- Jobs, economic growth, and the environment are top concerns
- Landside costs represent up to half of the total transportation cost of North Carolina exports – trucking cost is key
- Rail freight cannot be competitive within NC without sufficient volumes to support regular rail service
- Containerized trade requires regular service by ocean carriers
- Targeted investments needed to support the State's major industries: refrigerated storage; roll-on roll-off facilities; bulk handling for grain and wood pellets
- An integrated strategy for NC will include Commerce, Transportation, and the US Military

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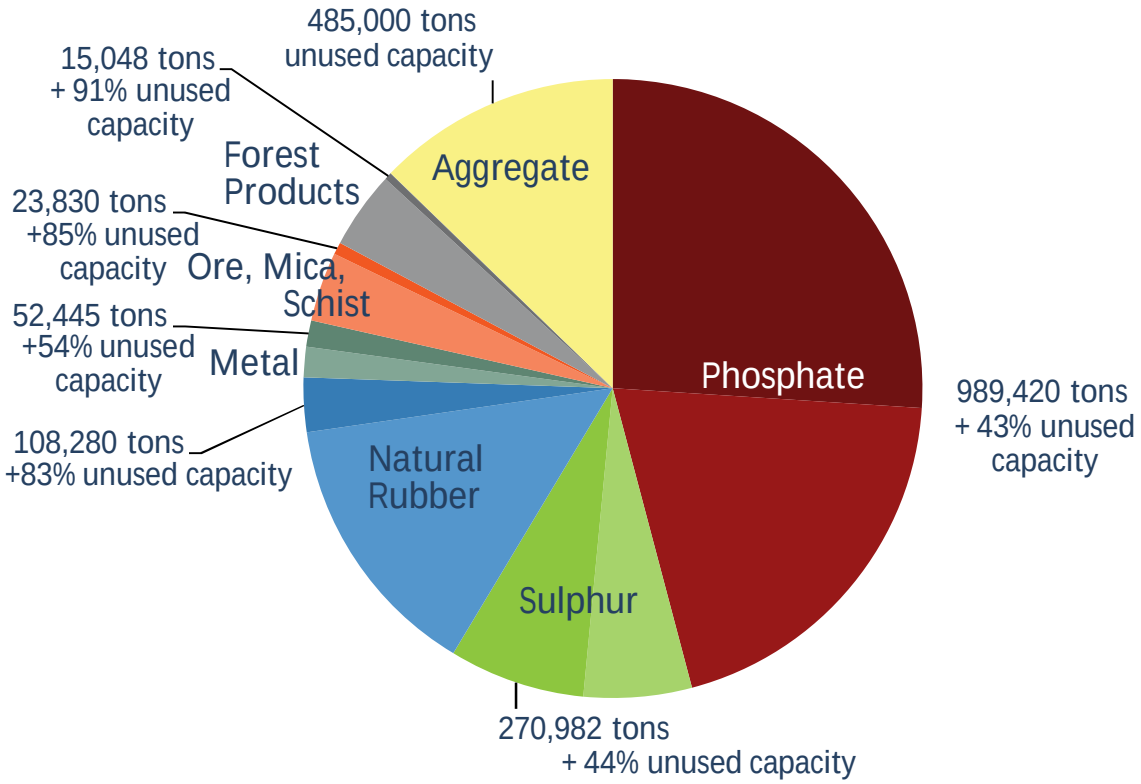
Port of Morehead City

Non-Containerized Goods Handled and Available Capacity (2010)



Source: AECOM from NCSPA data

- Phosphate and sulphur products represent 86% of total tonnage in 2010
- NC Ports provide value-added inventory management and warehousing services for natural rubber
- Slowdown in construction industry has affected import lumber, aggregate, and other construction materials

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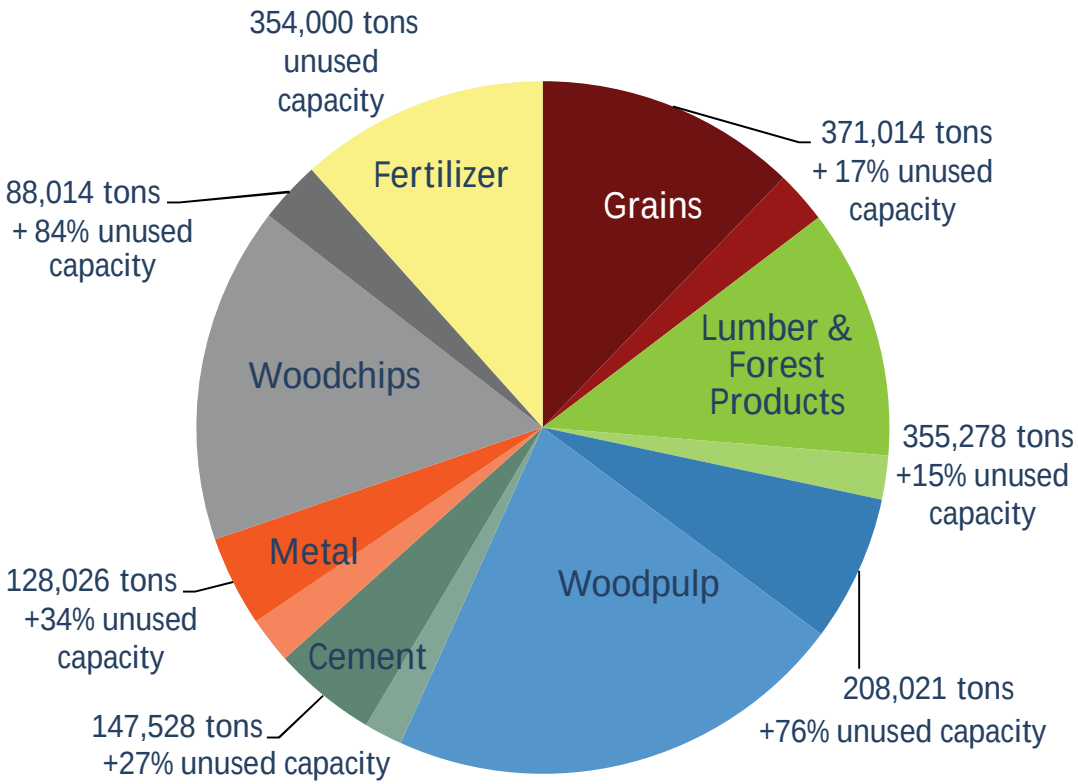
Port of Wilmington

Non-Containerized Goods Handled and Available Capacity (2010)



Source: AECOM from NCSPA data

- Grains and various wood products represent 79% of non-containerized tonnage handled at the Port of Wilmington in 2010
- Volumes of grain and breakbulk lumber products are limited by currently available storage capacity on the terminal

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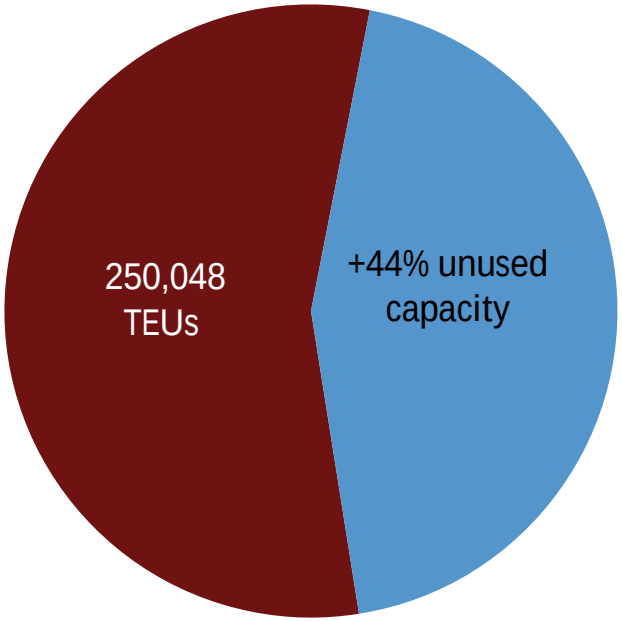
Port of Wilmington

Containerized Goods Handled and Available Capacity (2010)



- Container handling capacity at the Port of Wilmington is currently limited by the capacity of the single premium berth available to unload Panamax vessels
- Available container handling and storage capacity in the yard is also a factor in long-term capacity for expansion at Wilmington

Source: AECOM from NCSPA data

TEU = twenty-foot equivalent unit

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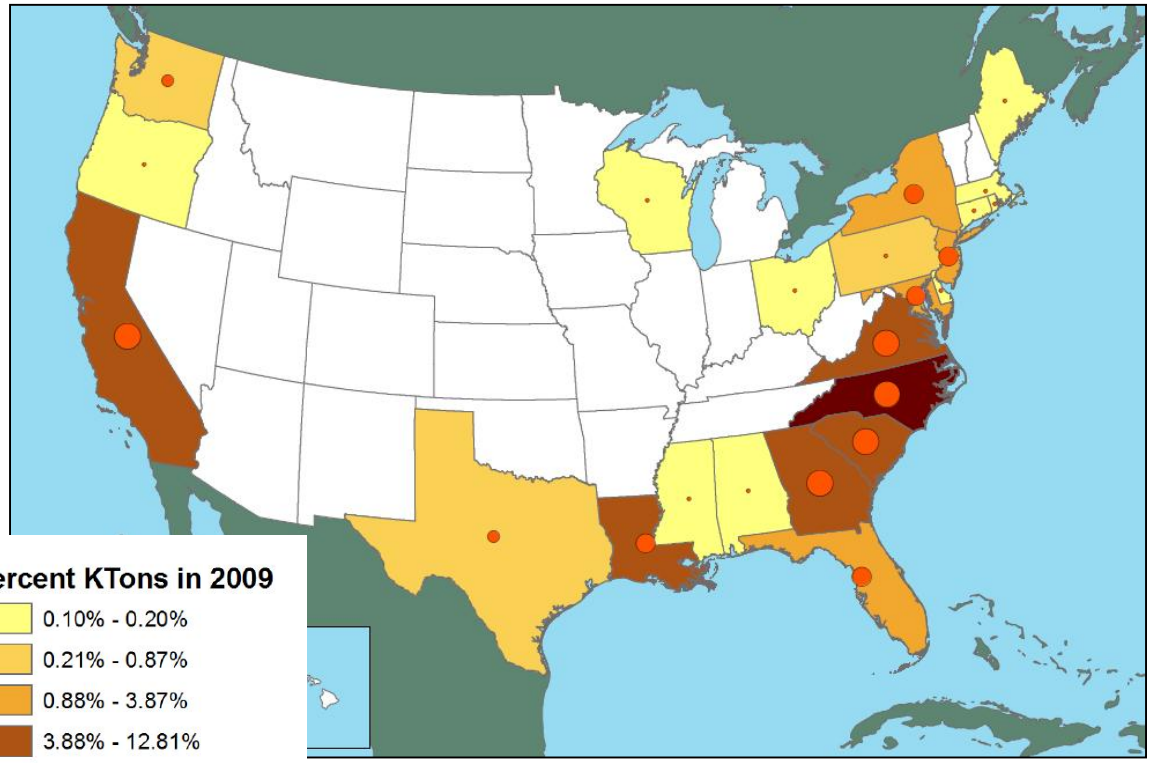
Destinations of imports handled by North Carolina ports



Percent KTons in 2009

- 0.10% - 0.20%
- 0.21% - 0.87%
- 0.88% - 3.87%
- 3.88% - 12.81%
- > 12.82%

Percent KTons in 2040

- 0.10% - 0.31%
- 0.32% - 0.92%
- 0.93% - 6.34%
- > 6.35%

Source: AECOM /URS, assembled from FAF 3.1, 2010, United States Geological Survey, ThematicMapping world borders dataset

- More than 80% of NC imports arrive through ports in North Carolina, Virginia, Georgia, South Carolina, California and Louisiana
- In 2040, use of North Carolina and Louisiana ports for import is projected to decline in favor of ports in Georgia and California

Shading in chart reflects exports by volume.

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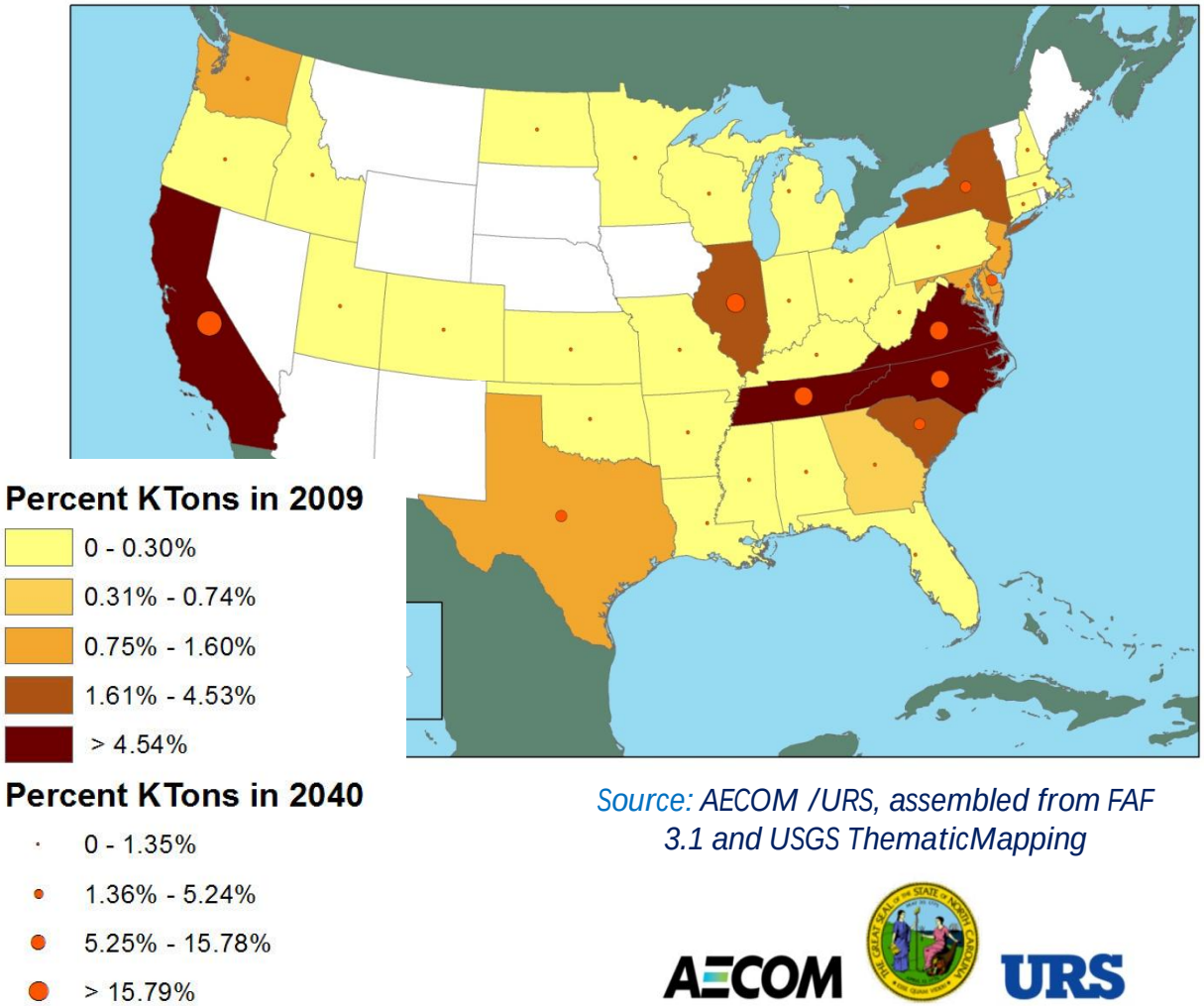
Origins of exports handled by North Carolina ports



Source: AECOM /URS, assembled from FAF 3.1 and USGS ThematicMapping

- North Carolina, Virginia, and Tennessee shippers are major users of NC ports (by volume)
- California shippers are the third largest customer base for NC ports (by volume)
- Despite the ports in their own states, Virginia and South Carolina shippers still rank in the top ten for use of NC ports

Shading in chart reflects exports by volume.

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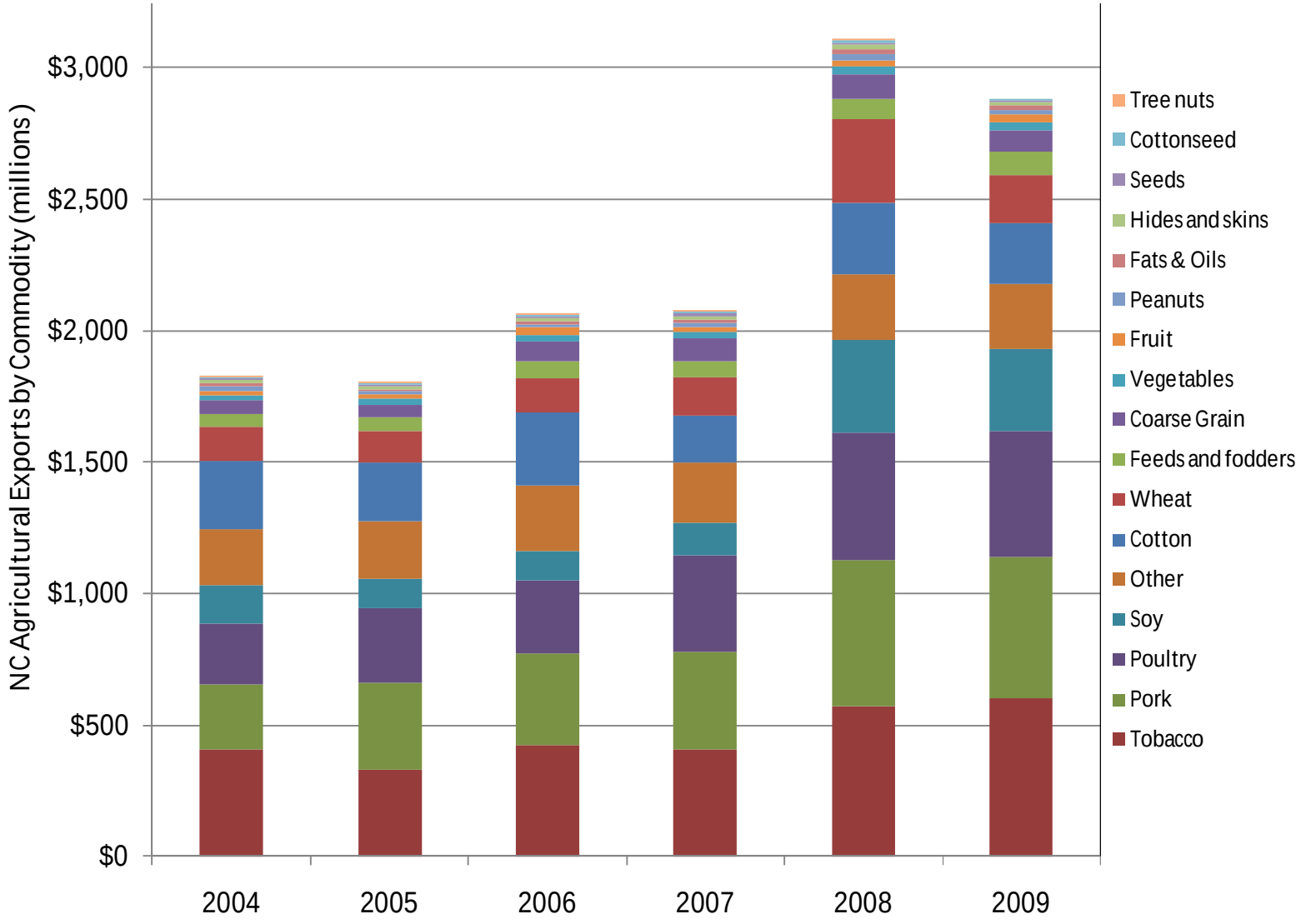
North Carolina agricultural exports

Includes goods exported via all modes



Data source: NC Dept of Agriculture

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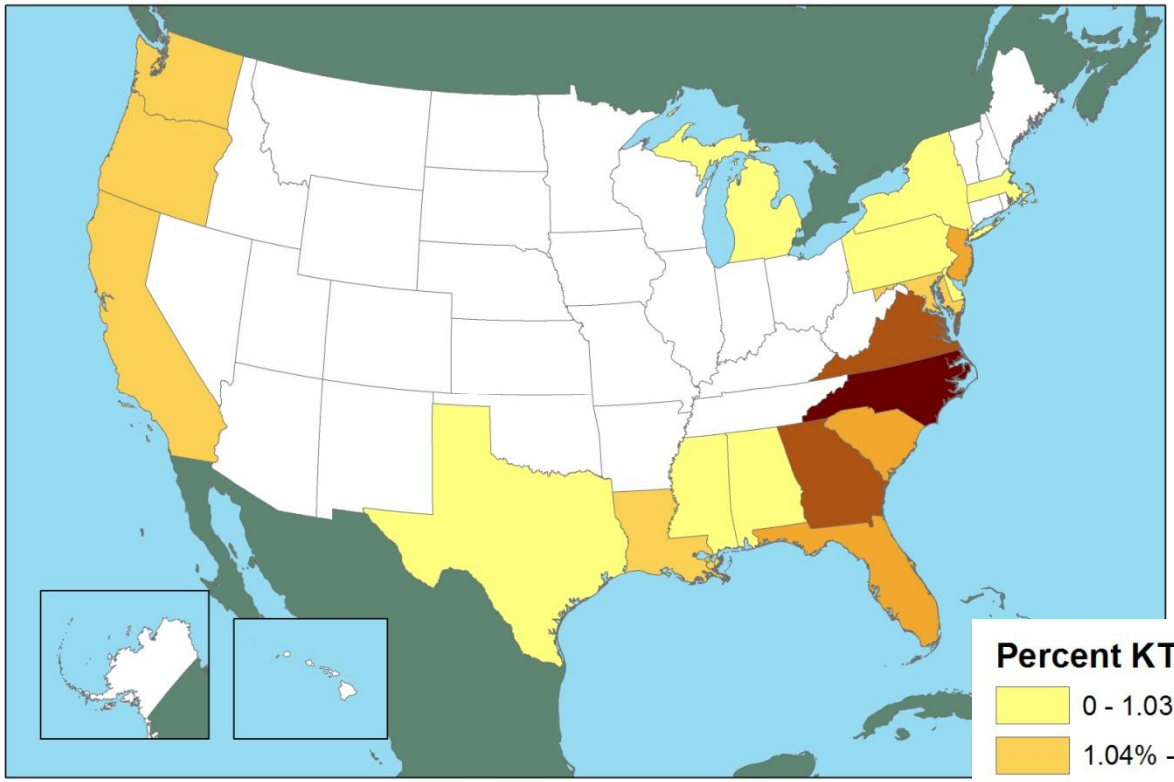
Ports used by North Carolina agricultural producers



- North Carolina exporters of agricultural goods rely most heavily on in-state facilities.
- Virginia and Georgia are also important for North Carolina's agricultural exports.
- Ag products also shipped cross-country to West Coast ports.

Percent KTons in 2009

- 0 - 1.03%
- 1.04% - 4.38%
- 4.39% - 7.96
- 7.97% - 18.53%
- > 18.54%

Shading in chart reflects exports by volume.

Source: AECOM /URS, assembled from FAF 3.1 and USGS ThematicMapping

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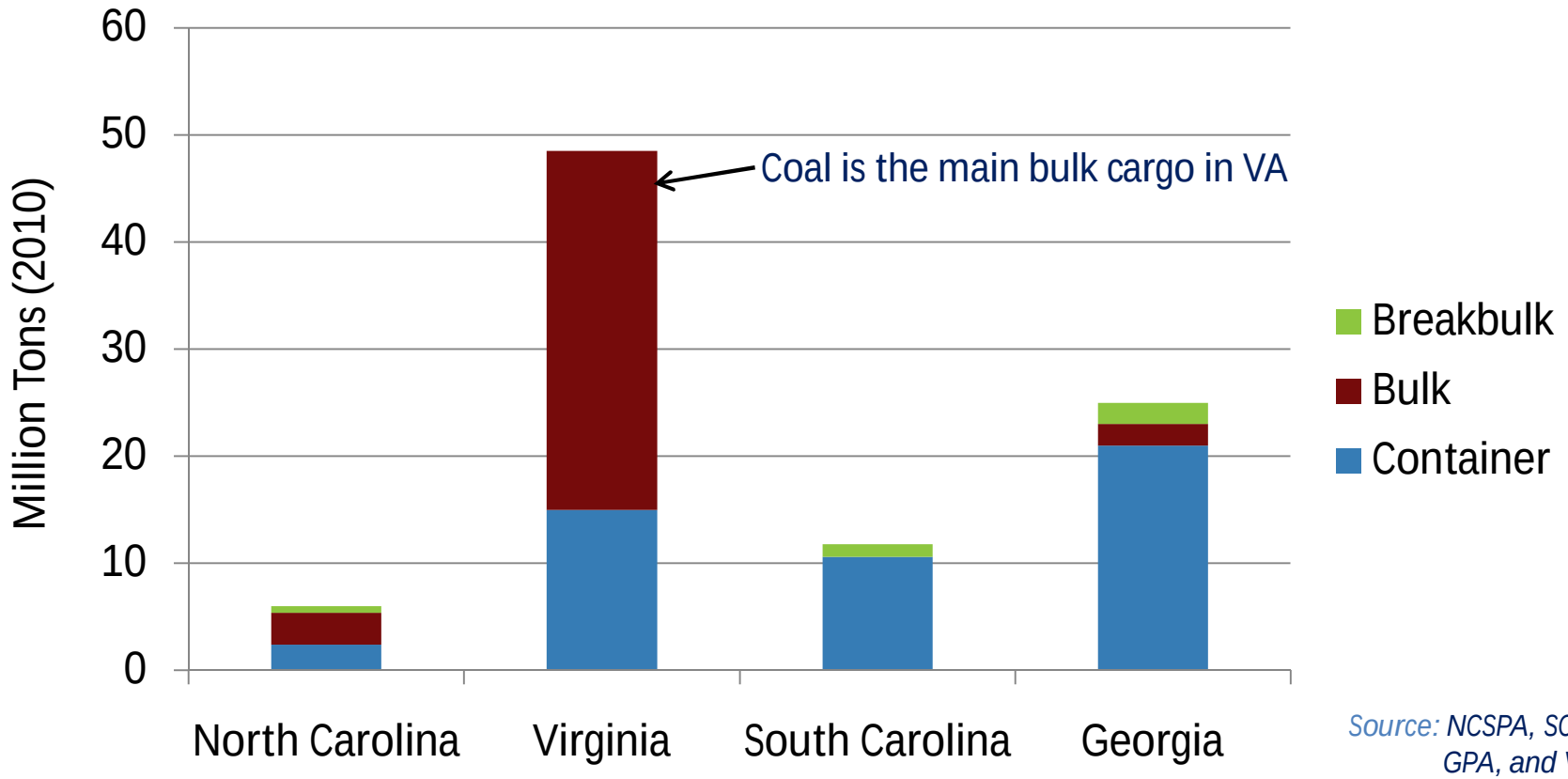
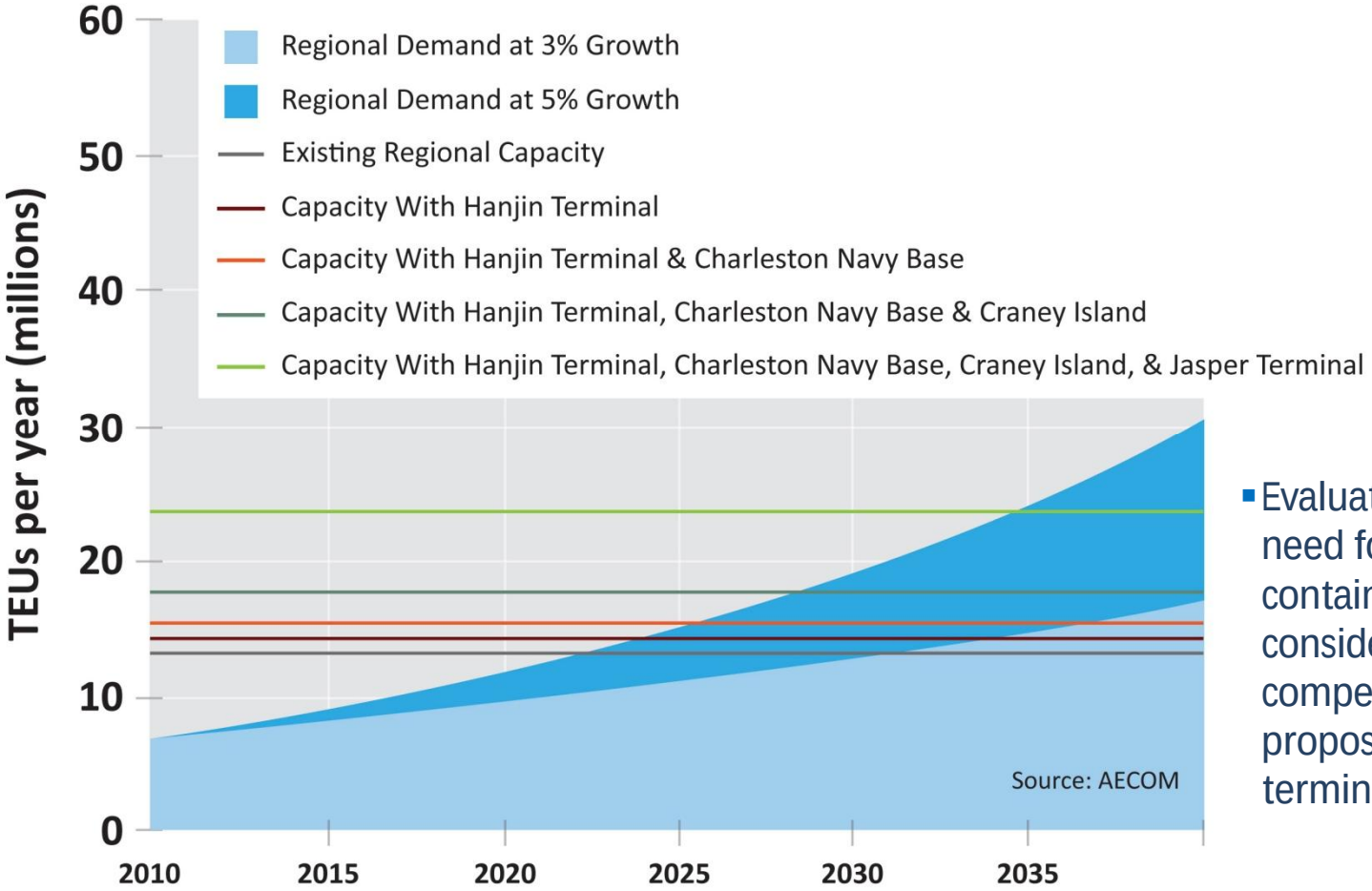
How do NC Ports Compare to other Regional Ports?



Source: NCSPA, SCPA, GPA, and VPA

Regional Container Demand vs. Capacity



- Evaluation of regional need for additional container capacity must consider likelihood and competiveness of proposed container terminal expansions

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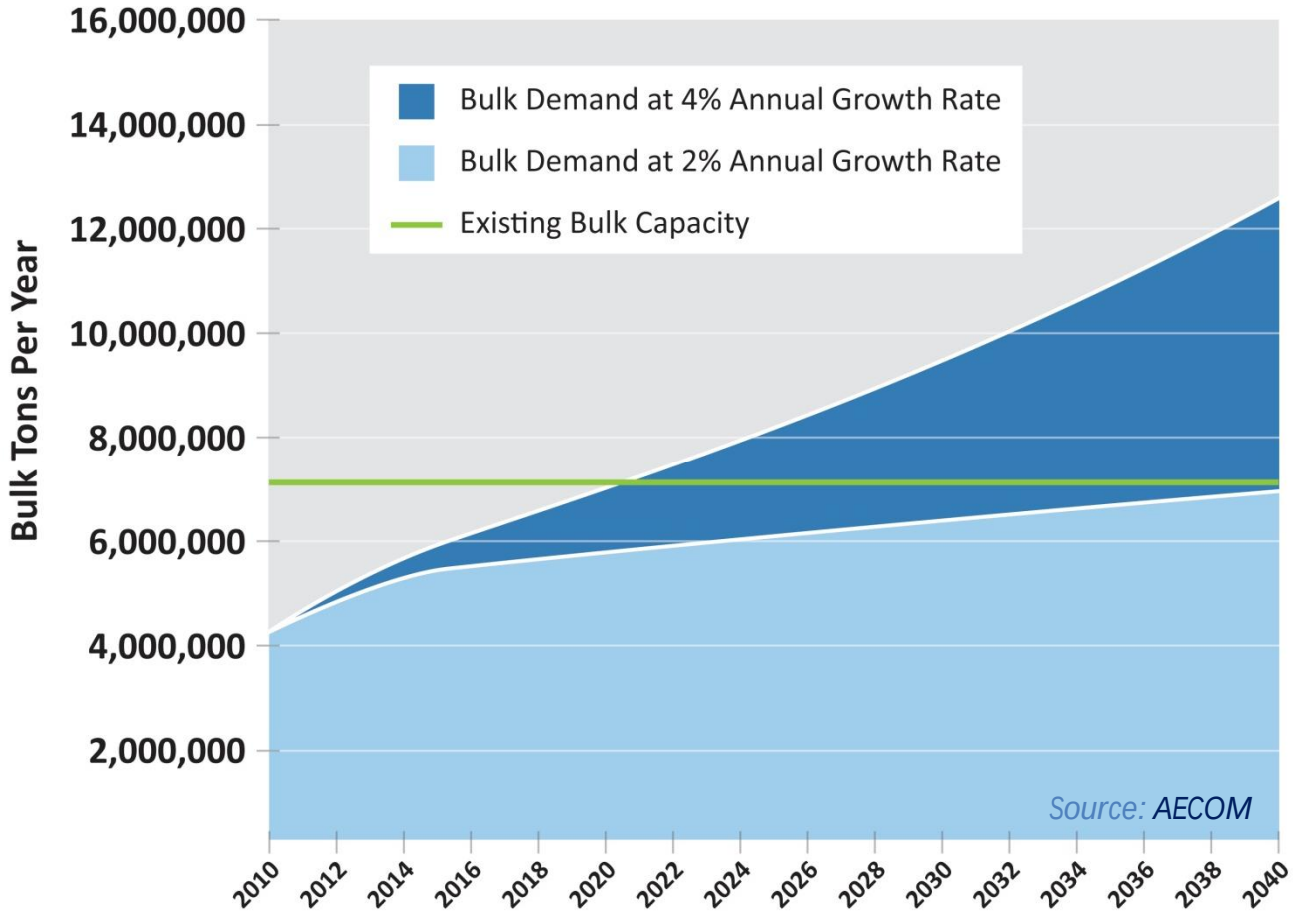
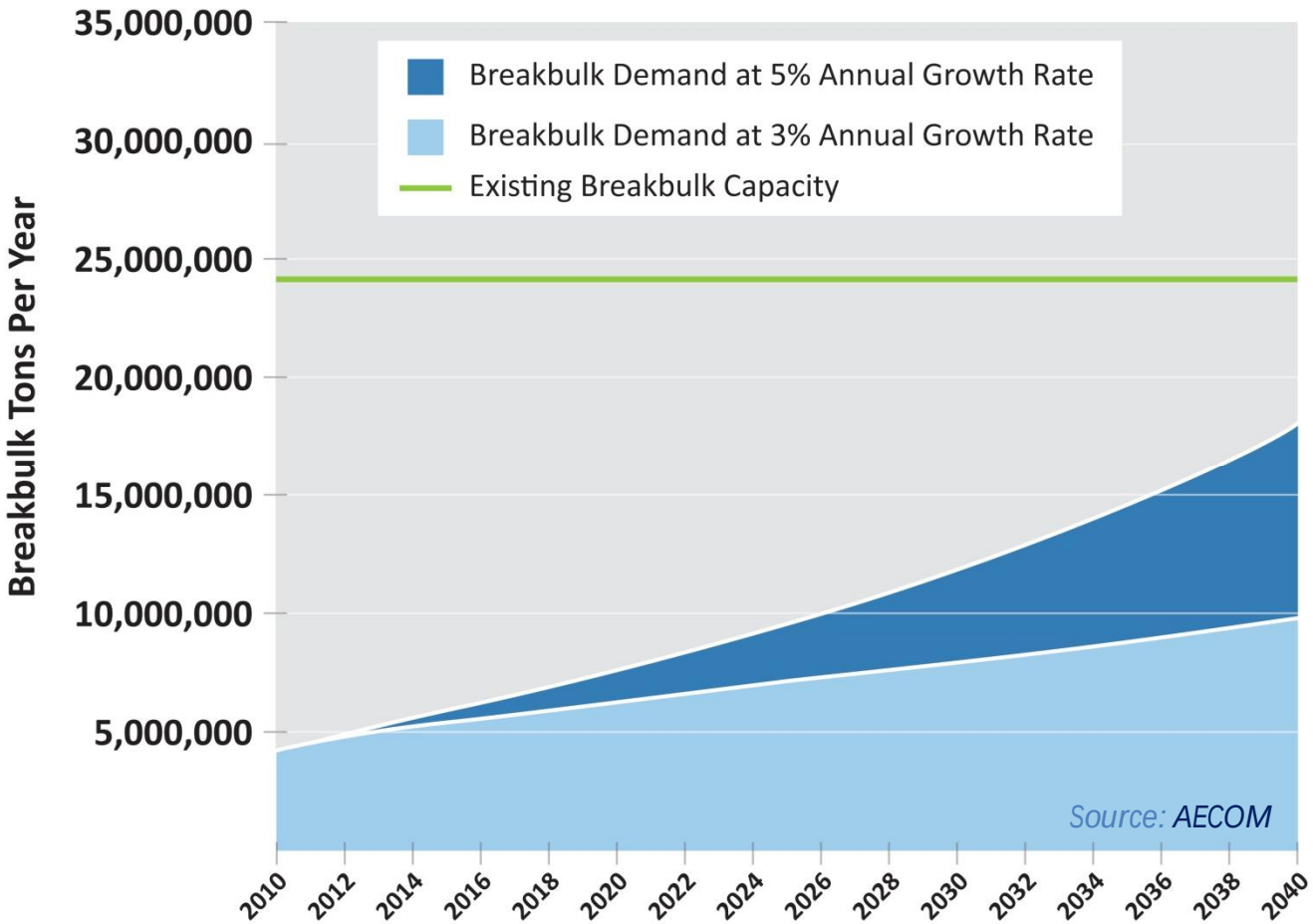
Regional Bulk Demand vs. Capacity



- Excludes coal and petroleum
- Neglects specialized equipment needed to handle individual bulk commodities – *e.g. local grain exporters have identified a need for more grain-handling equipment at regional ports*

Regional Breakbulk Demand vs. Capacity



- Neglects constraints and specialized needs for large or heavy cargo – *e.g. oversize cargo is likely to use the port closest to its ultimate origin or destination due to land-side restrictions and costs*

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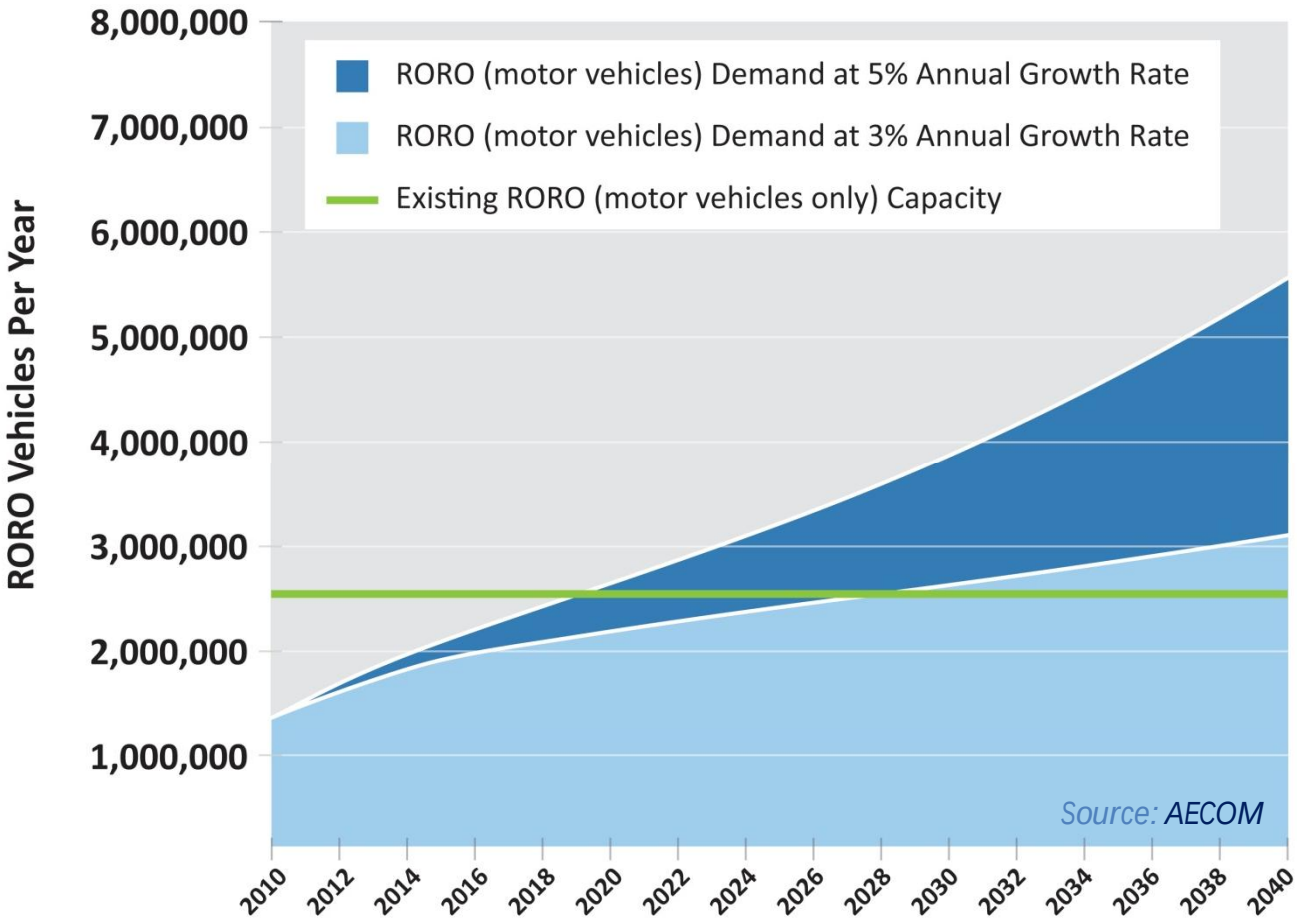
Regional Ro-Ro Vehicle Demand vs. Capacity



- Capacity based on motor vehicle volumes only
- Auto Ro-Ro could be re-purposed to support equipment only if facilities are able to handle large or heavy cargo

RO-RO = roll-on roll-off

Potential Benefits from Port Investment

- Job creation and associated earnings
- Economic diversity
  - Resilience to economic cycles
  - Compatibility with the State's other significant economic drivers
- Productivity gains to industry: competitiveness
- Public benefits
  - Fiscal returns to the state
  - Potential to reduce road VMT when part of larger freight plan
  - Potential to focus freight in particular corridors and reduce freight and passenger conflicts when part of larger freight plan
  - Alignment with State sustainability objectives for land use and environmental impacts

Market Scenario Framework

Upper Bound	Conservative	Lower Bound ("Do Nothing")
Advance Market Position	Maintain Market Position	Declining Market Position

Growth Outcome

- Market share capture or decline
- New markets

Necessary Conditions

- Vessel calls and sizes
- Port capacity and equipment
- Land and water access
- Industry growth

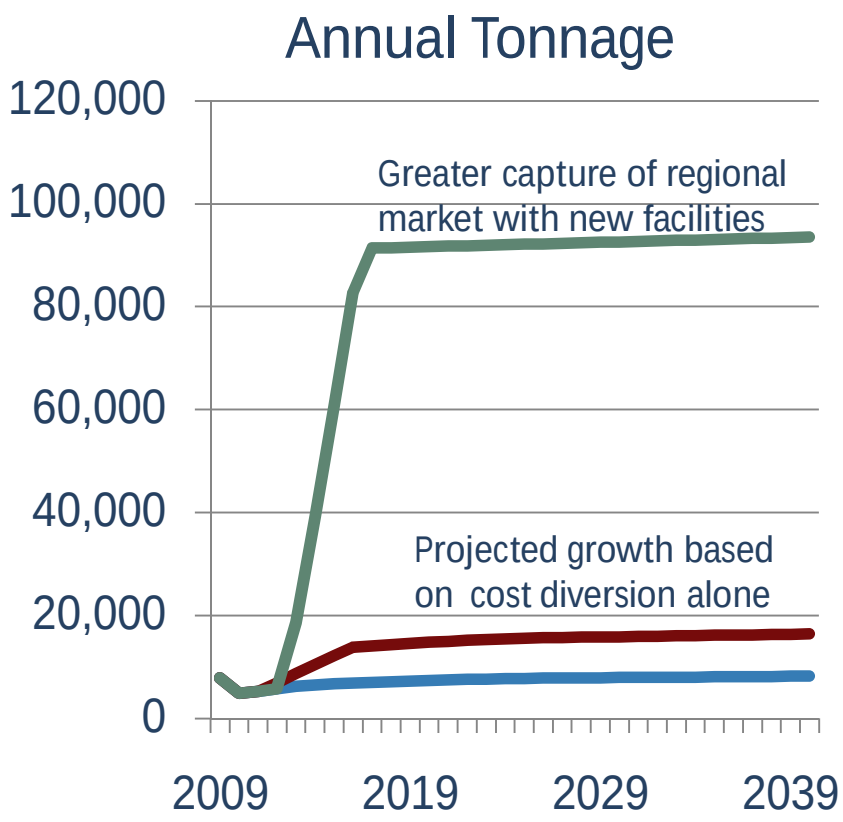
Risks and Opportunities

- Investments in other states encourage businesses to relocate near regional ports outside NC
- Business costs rise in NC, tempering manufacturing growth
- Spending profile of aging NC population shifts away from goods; migration weakens
- Key bulk and breakbulk markets falter
- Containerization of bulk/breakbulk accelerates

Strategies

- Cooperative agreements
- Niche markets
- Targeted infrastructure investments
- Leverage strength in bulk and breakbulk

Grain and Soybeans



Source: AECOM, from IHS Global Insight projected growth and PIERS historical data

- Greater capacity to export grain and soybean through North Carolina ports would support State's existing strength.
- World demand for grain and soybean is projected to grow strongly, so increased exports would attract more income to the State.
- Potential for grain and soybean producers to export more at lower cost if closer in-state ports became an option.
- A bulk grain terminal and rail connection are needed to serve this market.

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Potential Sites for Grain Export Facilities

Radio Island

Wilmington

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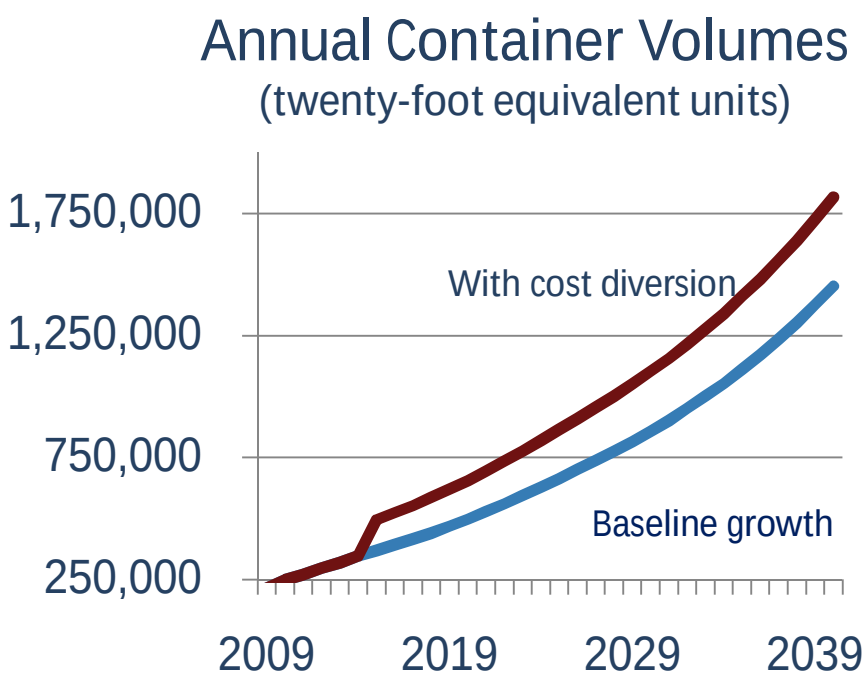
Containerized Goods



***Source:** AECOM, from IHS Global Insight projected growth, PIERS historical data, and FAF 2.1*

- Supports export and import activity across a large variety of industries--from sweet potatoes and frozen chickens to consumer goods destined for local retailers
- Growth in NC port container activity makes containers and vessels available for export needs of NC producers.
- Infrastructure needs include:
  - 50-ft+ water depth for Neo Panamax vessels, 40-ft+ for Panamax vessels
  - 2 or 3 contiguous berths each 1200' long
  - Container storage area of 150-200 acres+
  - Truck and rail access

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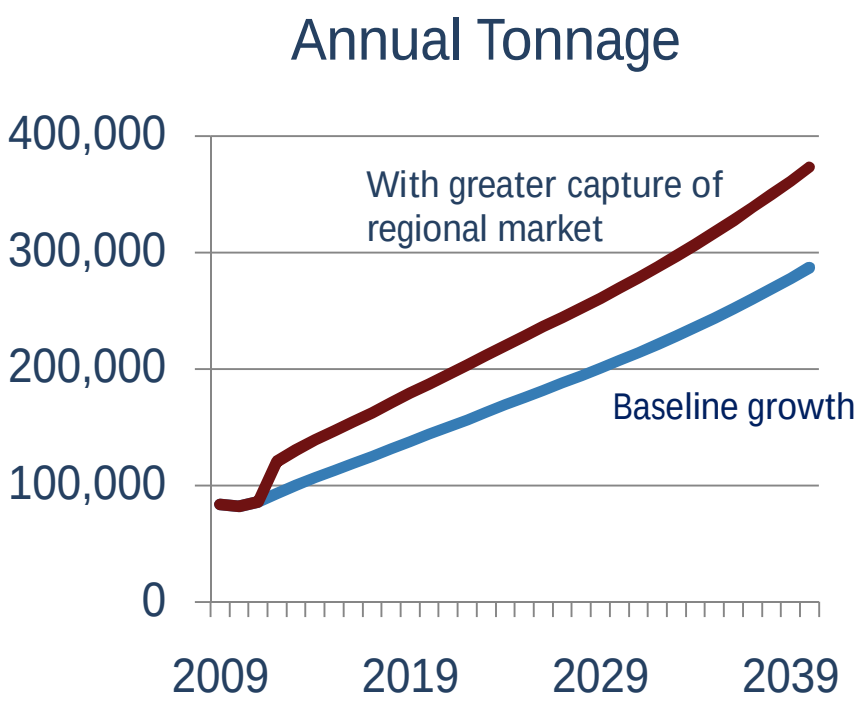
Refrigerated Container Goods



Source: AECOM, from IHS Global Insight projected growth, PIERS historical data, and FAF 2.1

- Serves a variety of markets—both agricultural and manufactured goods
- Potential for greater capture of North Carolina production at North Carolina ports
- Supports sweet potatoes, specialized textiles, fresh and frozen meats and fish
- Requires cold storage facilities and plug-ins for refrigerated containers at or near the port

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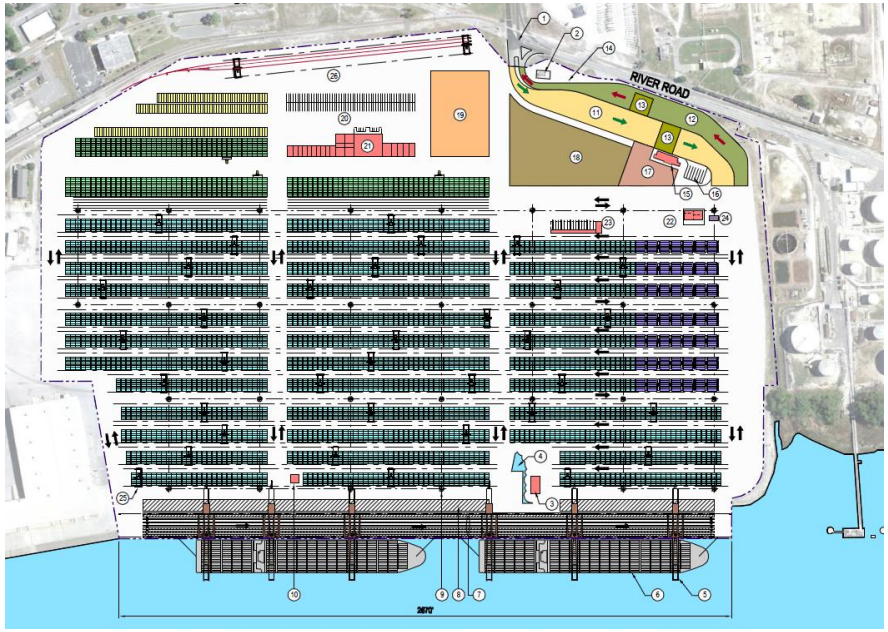
Potential Sites for Expanded Container Facilities

Morehead City

- New terminal on terminal on Radio Island could handle up to 1 million TEUs
- 2 berths, rail access, modern handling equipment

Wilmington

Source: AECOM



- Upgrade existing terminal to achieve annual capacity of more than 1 million TEUs
- Additional berth, expanded yard, new gate and container handling equipment

TEU = twenty-foot equivalent unit

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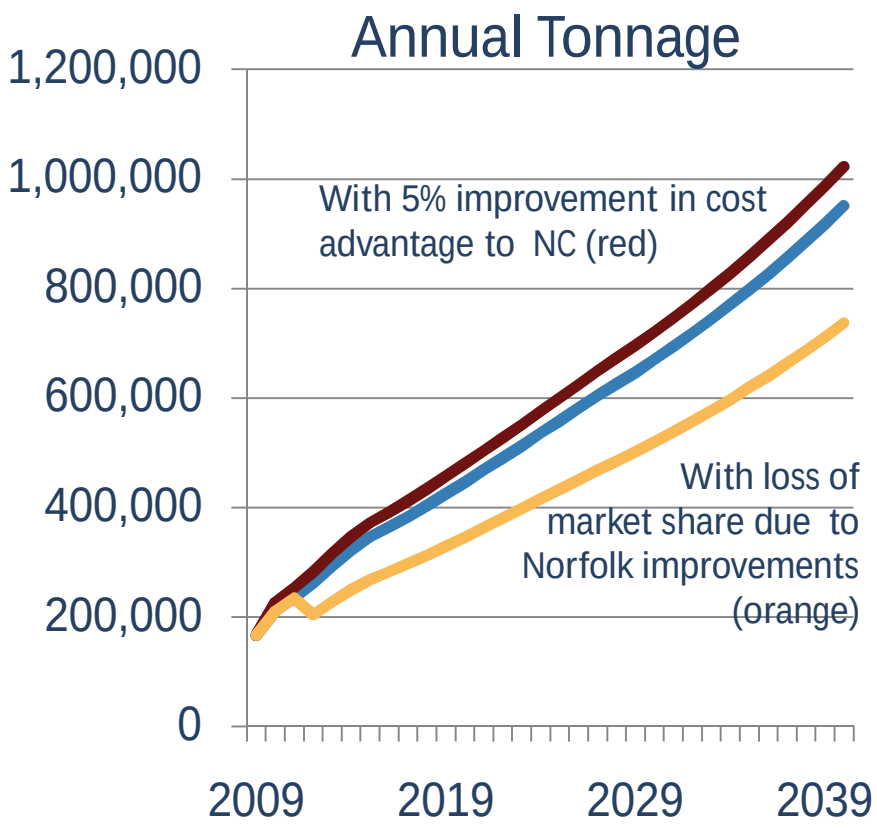
Wood Products



Source: AECOM, from IHS Global Insight projected growth and PIERS historical data

- Increased export of wood products through North Carolina ports would support an important existing industry in the State.
- World demand for wood products, such as pellets as a source of replenishable energy, is expected to grow strongly in next 10 years.
- Heavy commodities such as wood and wood products are particularly affected by transportation costs.
- Improved land access and handling facilities at NC ports would support greater capture of world market by NC producers.

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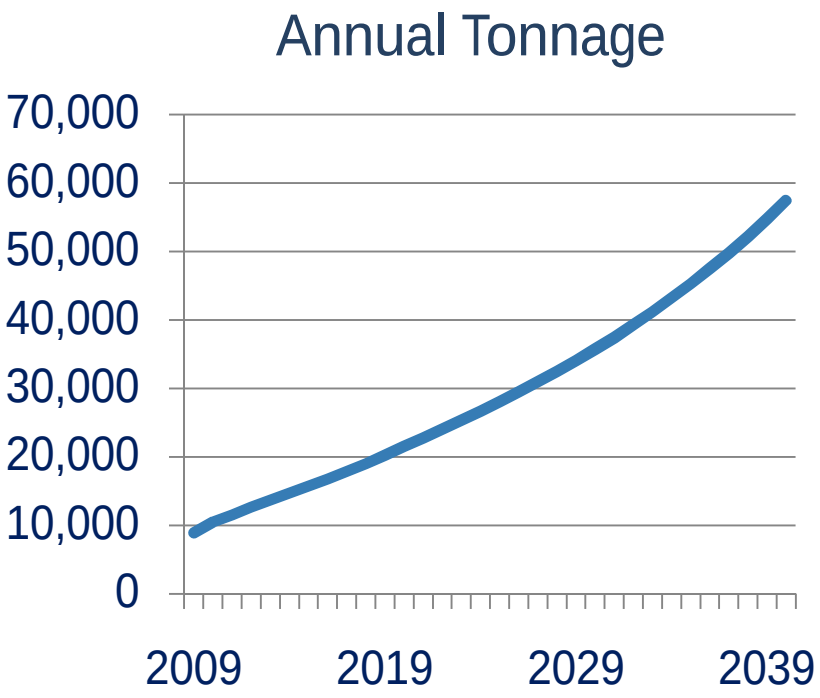
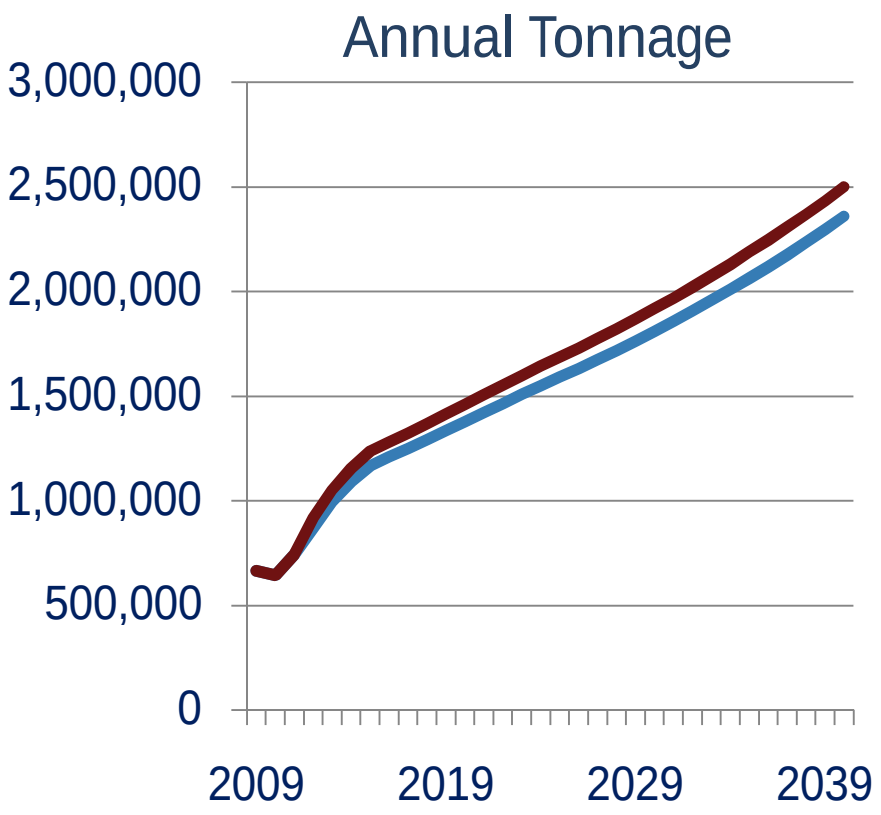
Ro-Ro and Oversize Cargo



Source: AECOM, from IHS Global Insight projected growth and PIERS historical data

- Producers of manufactured goods, especially those who make large bulky products such as Caterpillar and Spirit AeroSystems, rely on port access to receive parts and to deliver products to customers.
- Opportunity includes wind power.
- These are attractive employers because they not only hire workers directly, but they also make large purchases of goods and services from the economy, which also indirectly supports jobs.
- Requires port, road, and rail facilities that can handle large/heavy goods.

Chemicals and Phosphates



- Supports large existing industry with solid baseline growth
- This is already a source of strength for NC Ports; no cost or other impediment to remove to foster stronger growth

Source: AECOM, from IHS Global Insight projected growth and PIERS historical data

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Military Cargo

- Both the Port of Wilmington and the Port of Morehead City are designated as Strategic Seaports, two of just 15 nationwide.
- The economic return on investment to preserving the Ports' attractiveness to the military is important. Military facilities support over 416,000 workers, about 8% of total State employment, through military or jobs supported by military installations in the State.
- Infrastructure needs to handle military cargo:
  - 35-ft+ water depth
  - Container cranes and mobile harbor cranes with various grabs
  - Roll-on Roll-off (Ro-Ro) facilities
  - Open area near the wharf that can meet military storage and security needs
  - Truck and rail access that can accommodate heavy loads

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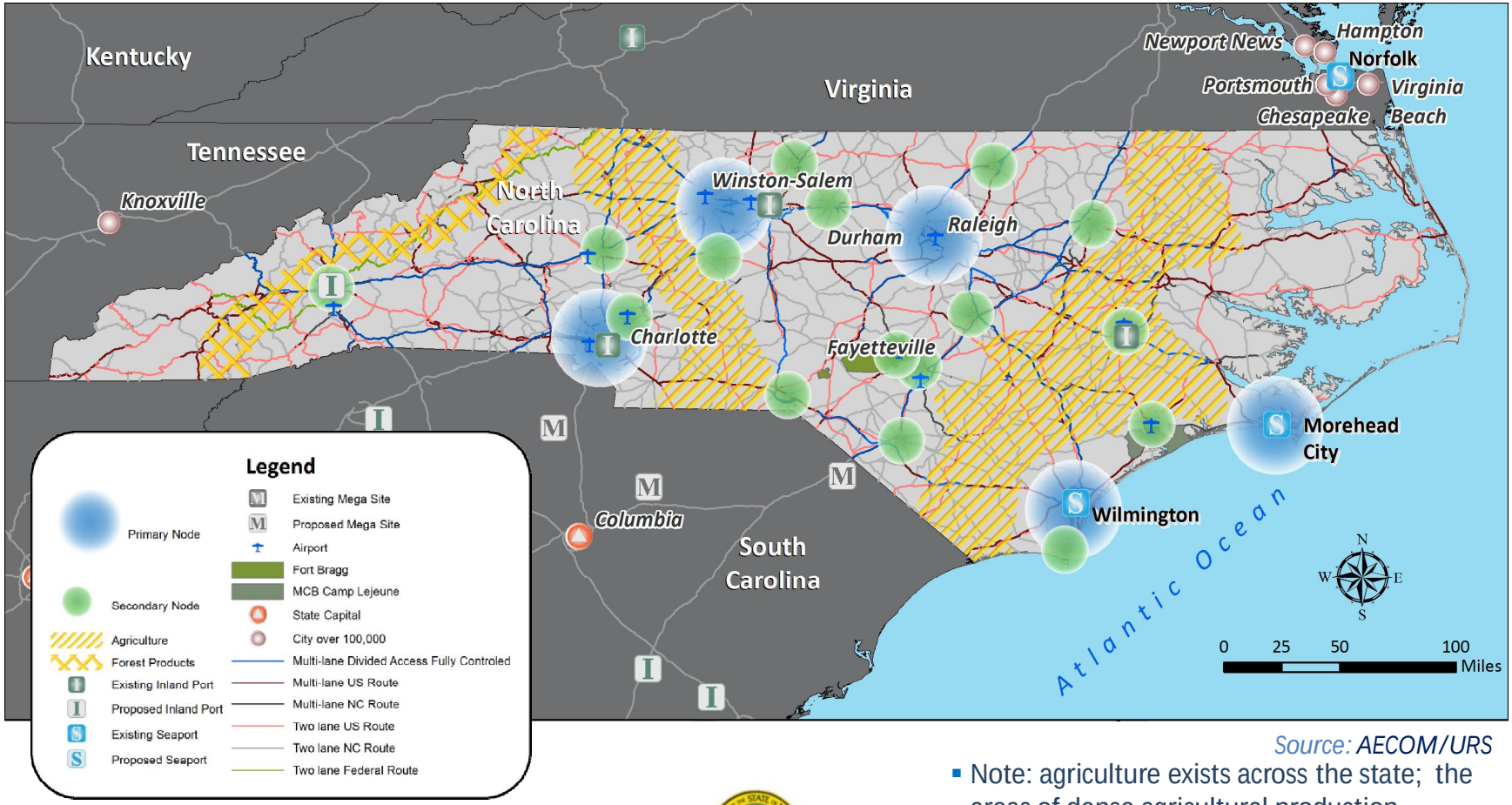
NC Freight Nodes and Facilities



Source: AECOM/URS

- Note: agriculture exists across the state; the areas of dense agricultural production illustrated are intended to be representative

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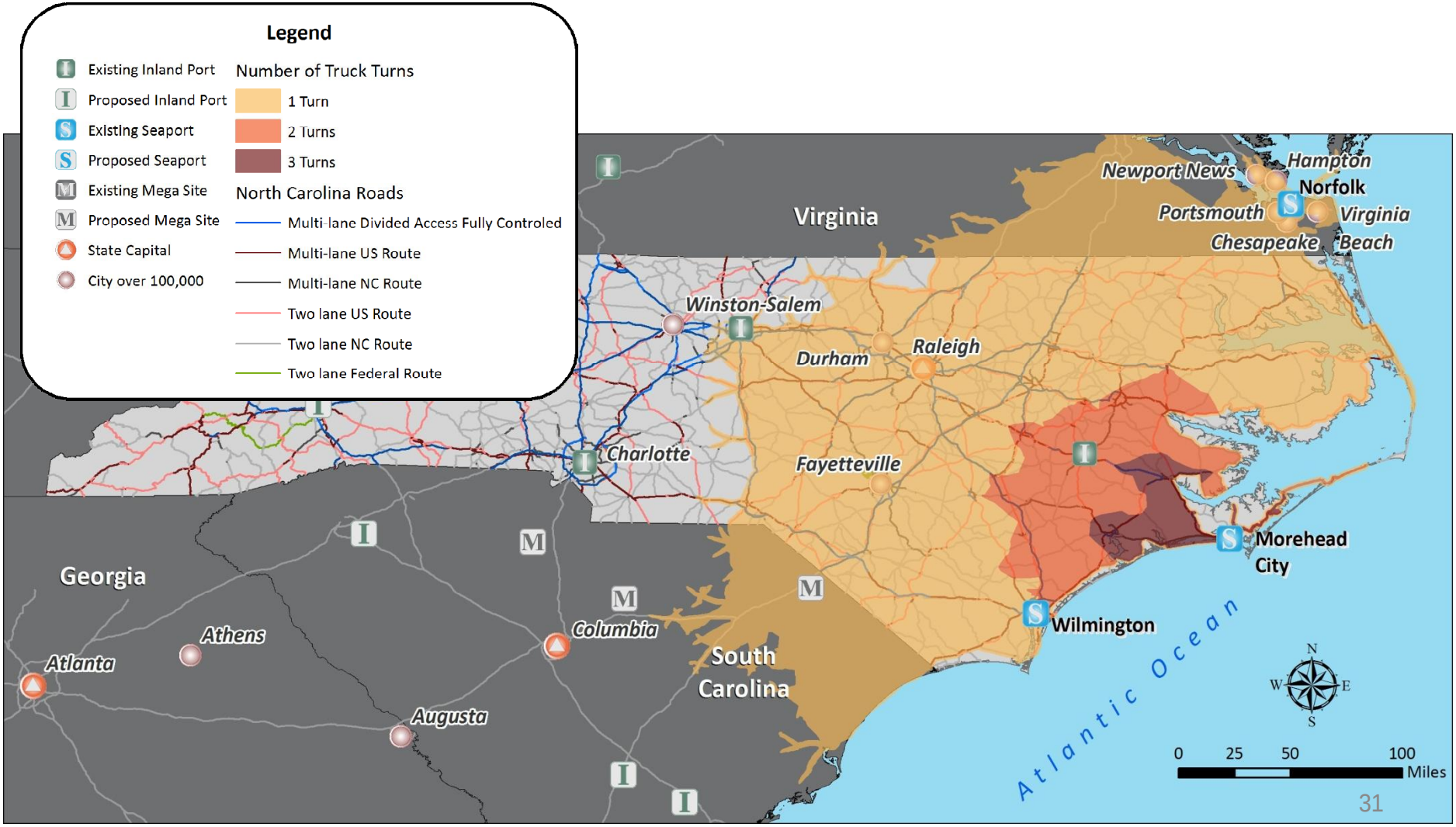
Truck Turn Distances—Morehead City (2007)



Source: AECOM/URS compiled from ESRI, NCDOT, USDOT FAF 3.1, and USGS ThematicMapping

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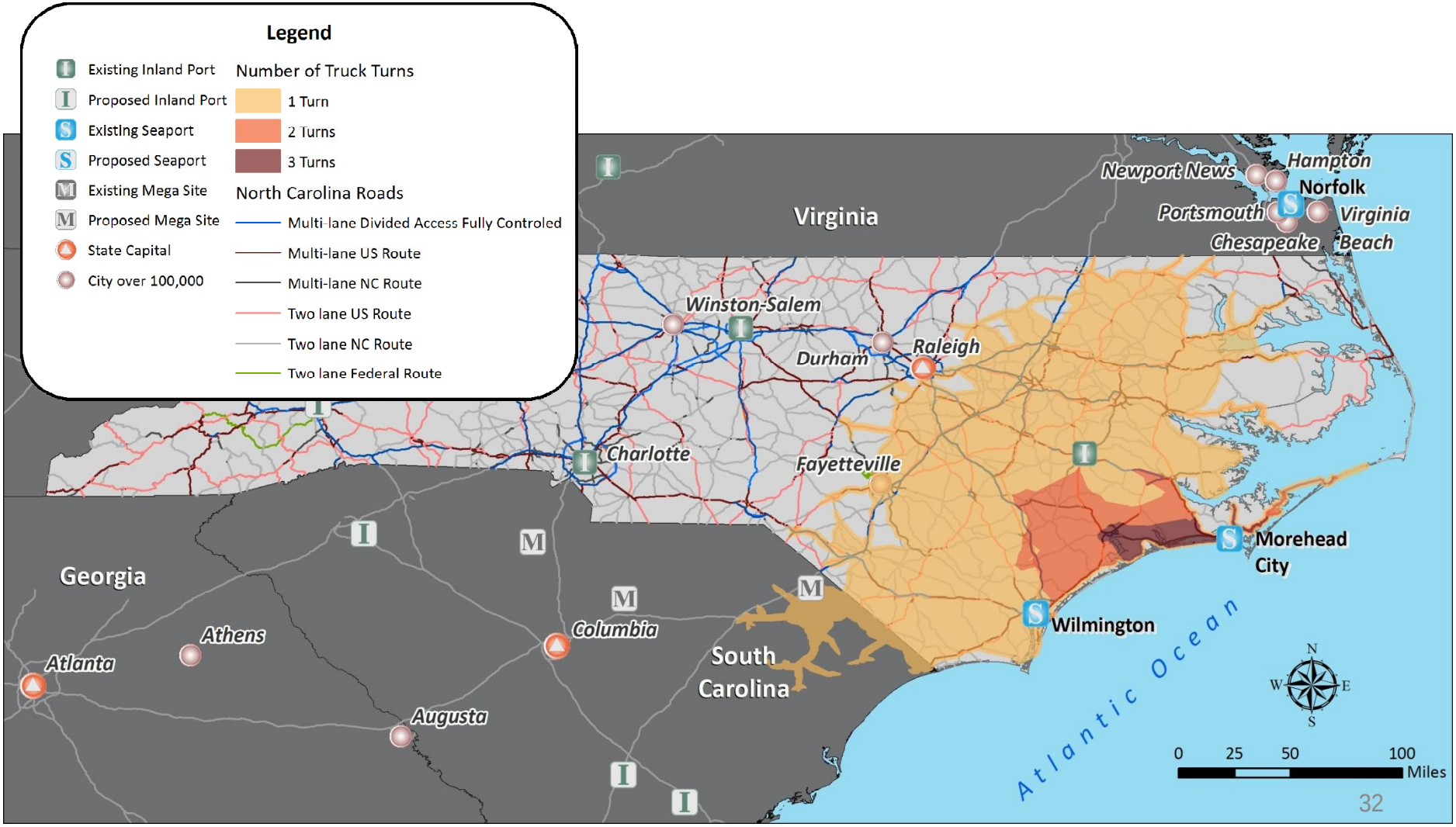
Truck Turn Distances—Morehead City (2040)



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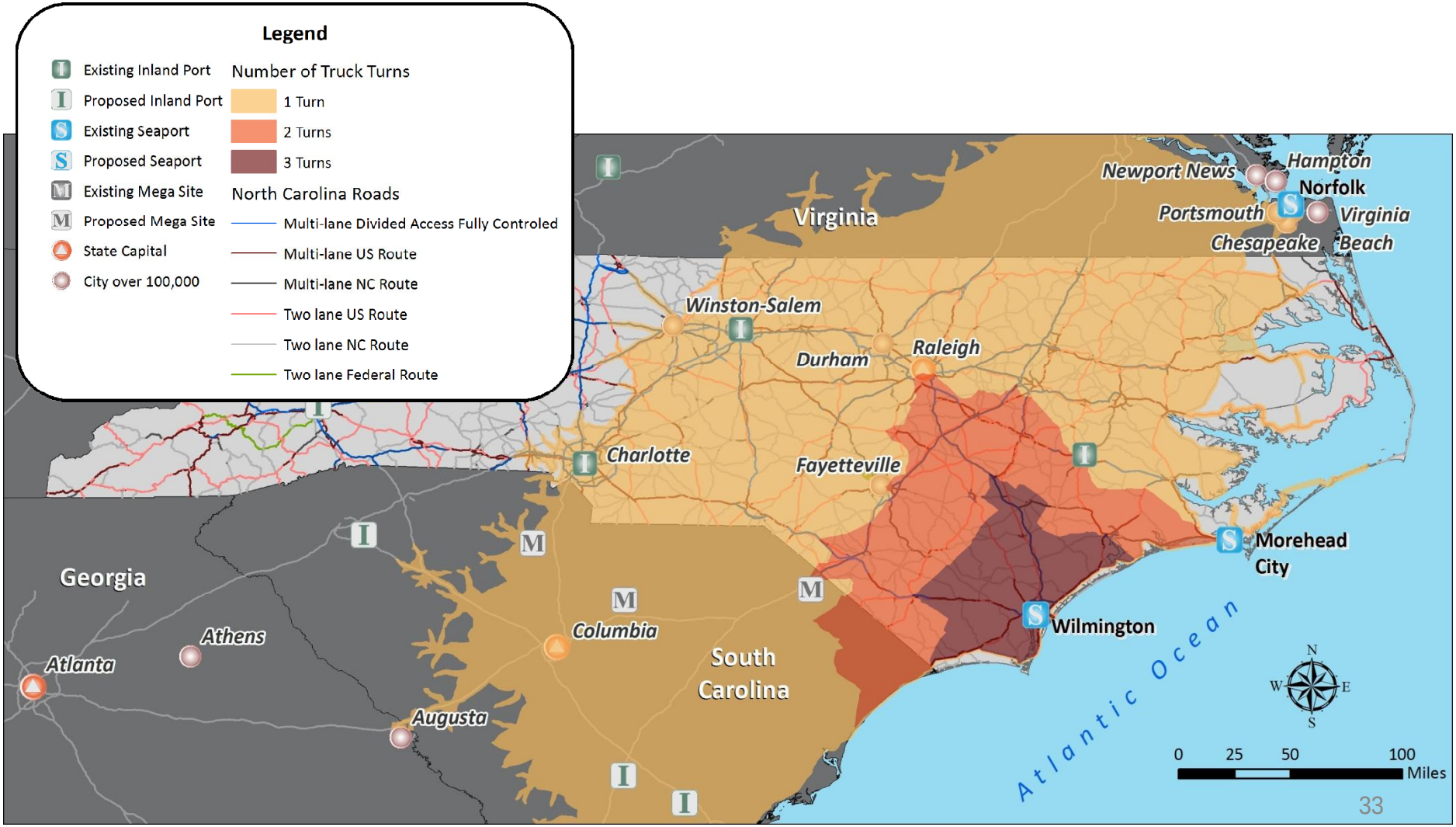

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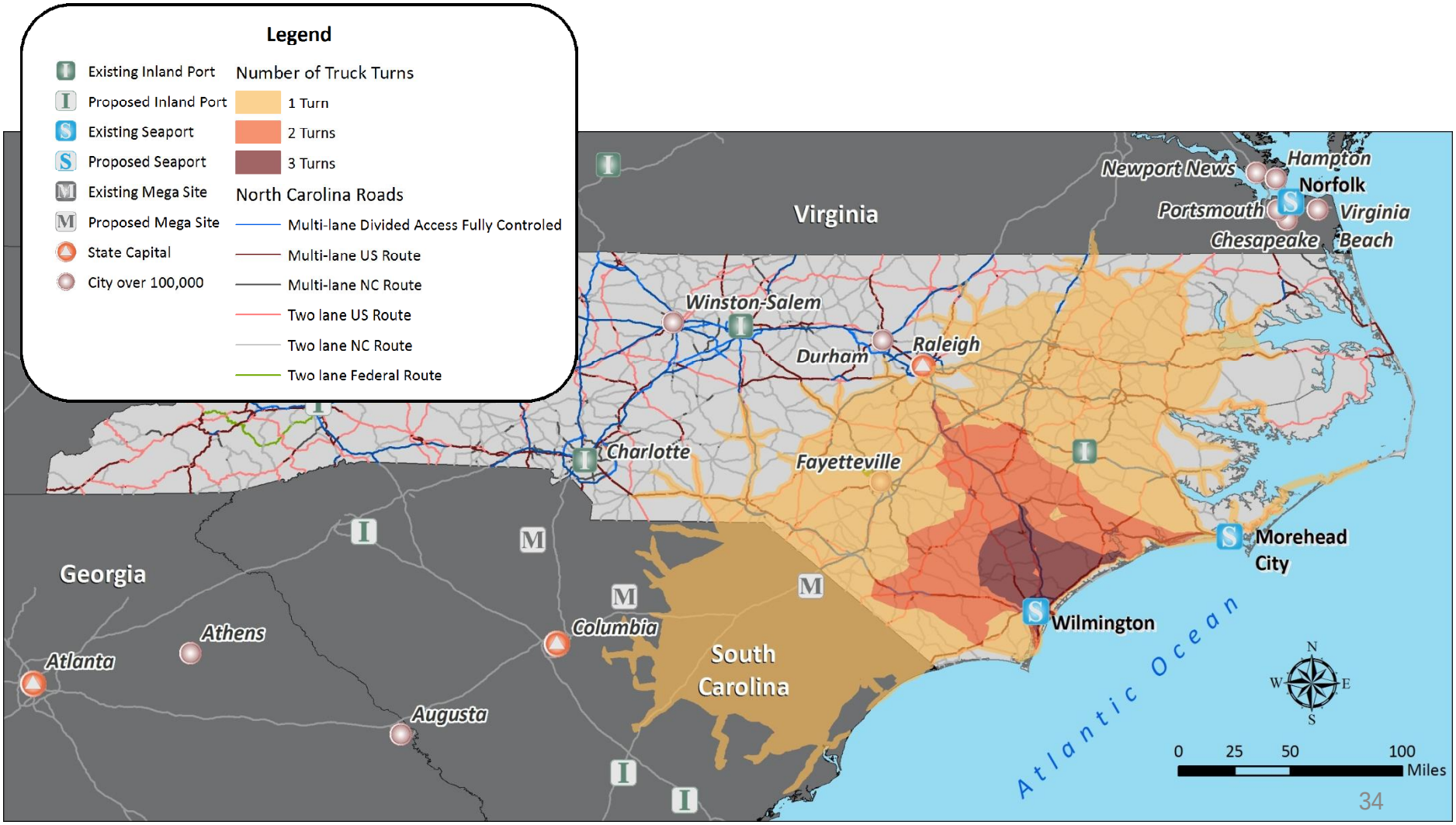

Source: AECOM/URS compiled from ESRI, NCDOT, USDOT FAF 3.1, and USGS ThematicMapping

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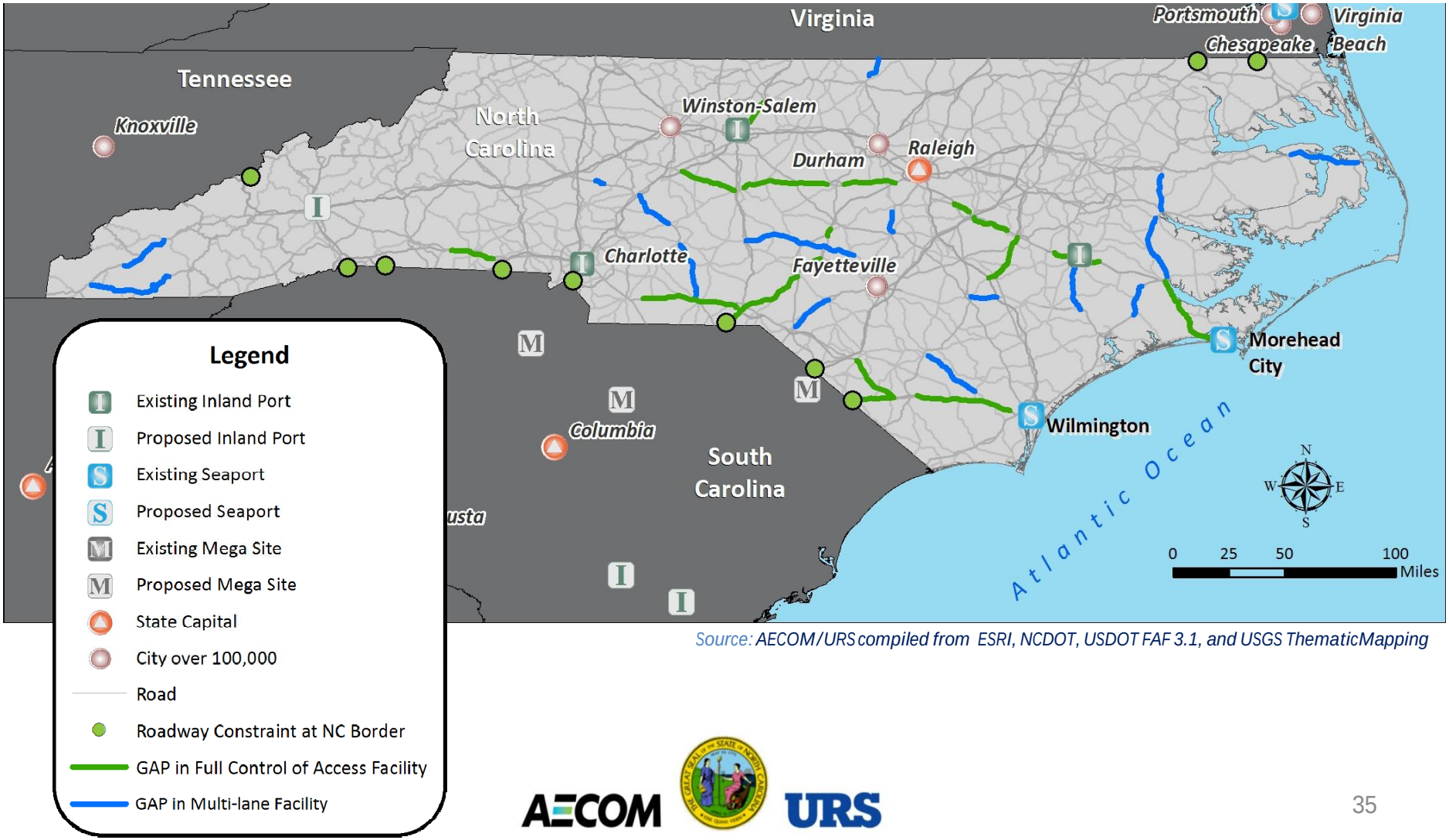
North Carolina Highway Gaps and Constraints



Source: AECOM/URS compiled from ESRI, NCDOT, USDOT FAF 3.1, and USGS ThematicMapping

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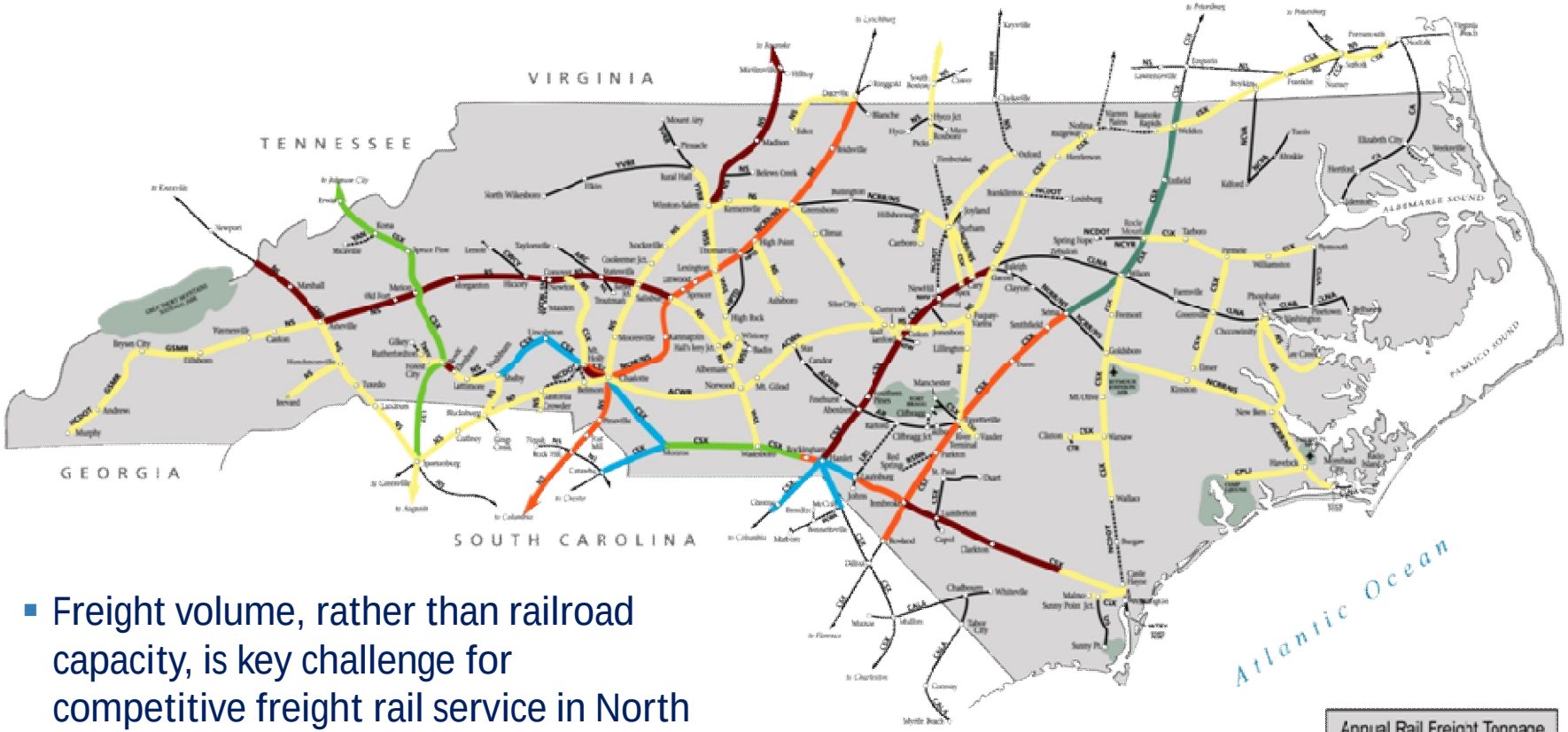
North Carolina Freight Rail Network



- Freight volume, rather than railroad capacity, is key challenge for competitive freight rail service in North Carolina
- Improved connections needed at inland and port sites

Annual Rail Freight Tonnage
All numbers are tens of thousands.
- 0-10
- 11-20
- 21-30
- 31-40
- 41-50
- 51-60

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Transportation Challenges

Prioritized improvement of water, road and rail access to existing and potential port locations is key to the cost-effective movement of goods

- Highways
  - Gaps in North Carolina highways and future congestion would limit access between inland trade centers and port locations.
- Railroads
  - Lack of sufficient volume on NC's freight rail network makes rail service more costly to the State's businesses.
- Water
  - Water depths along the 26-mile long Cape Fear Channel (42 ft) and Beaufort Inlet (45 ft) limit the size of vessels that can call on NC's ports.

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Next Steps

- Prioritize transportation investments that can reduce transport costs to North Carolina shippers
- Translate growth in maritime volumes into economic benefits
- Align strategies with other North Carolina initiatives

Project status and updates can be found on project website at www.ncmaritimestudy.com

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