

# Maritime Advisory Council

February 17, 2012

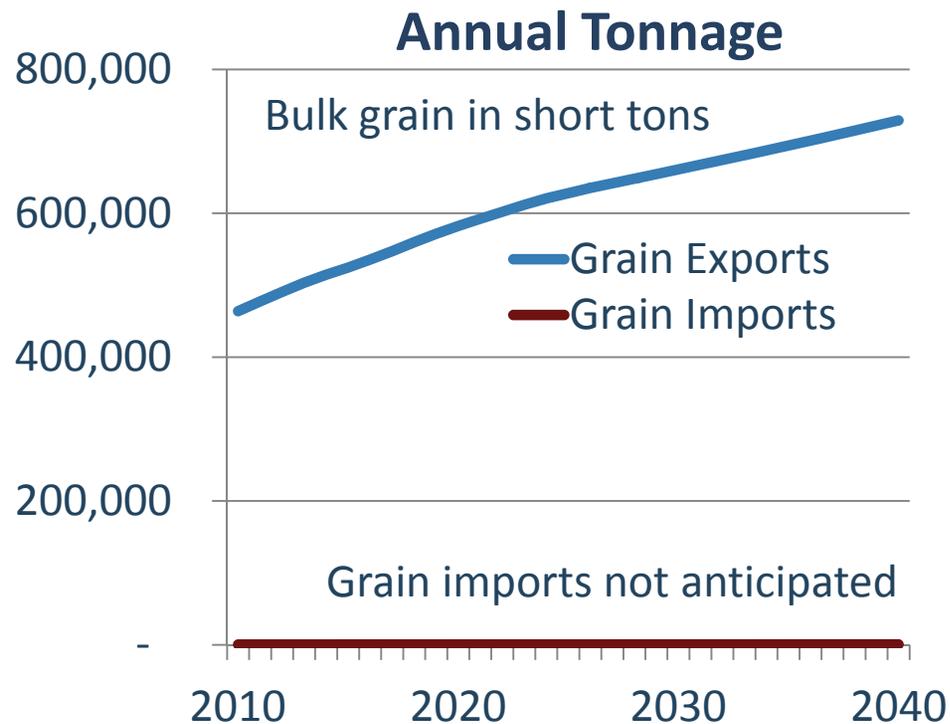
Raleigh, NC



# Welcome

# Updated Market Projections

# Grain and Soybeans

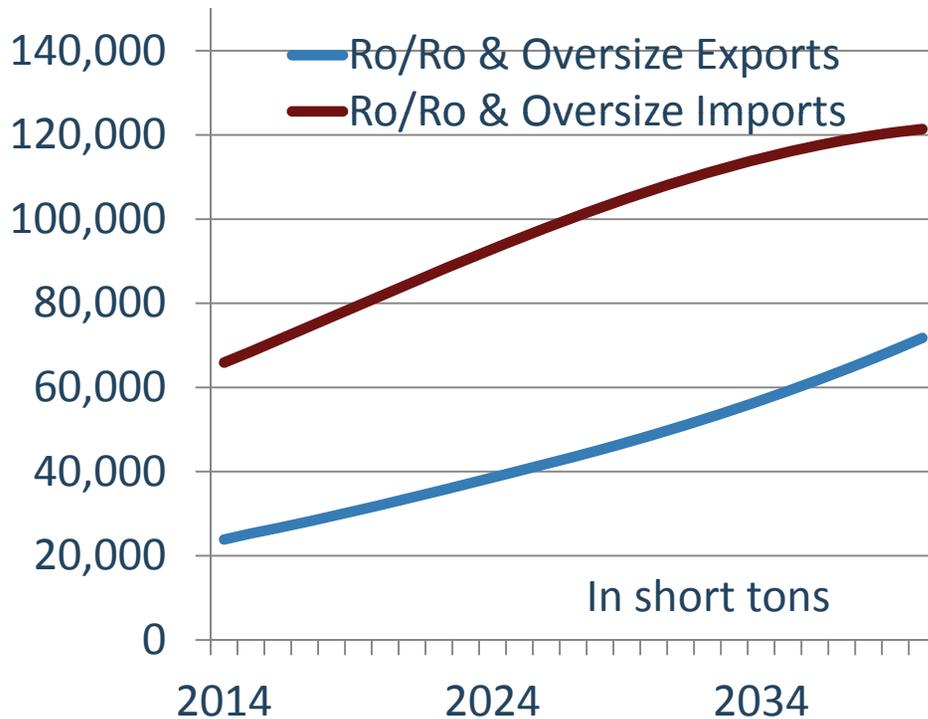


- Market capture forecast reflects stronger projections for soybean exports from NC
- Stakeholder input provided better data on current export volumes
- Market report from soybean association provided additional guidance

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

# Ro/Ro and Oversize Cargo

## Annual Tonnage

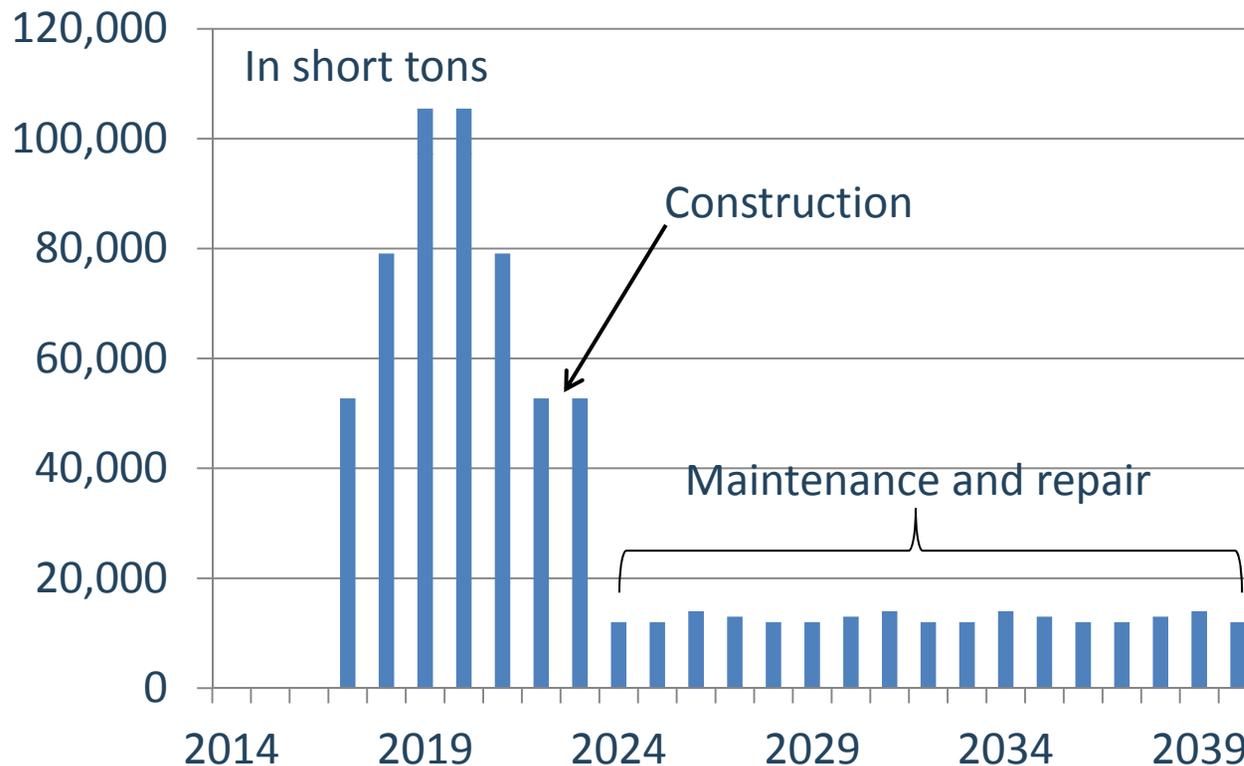


- Updated forecast reflects stronger projection for Ro/Ro and oversize cargo market opportunity
- Better data on current export volumes
- Cost data completed since last projection

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

# Wind Power Cargo

## Annual Tonnage

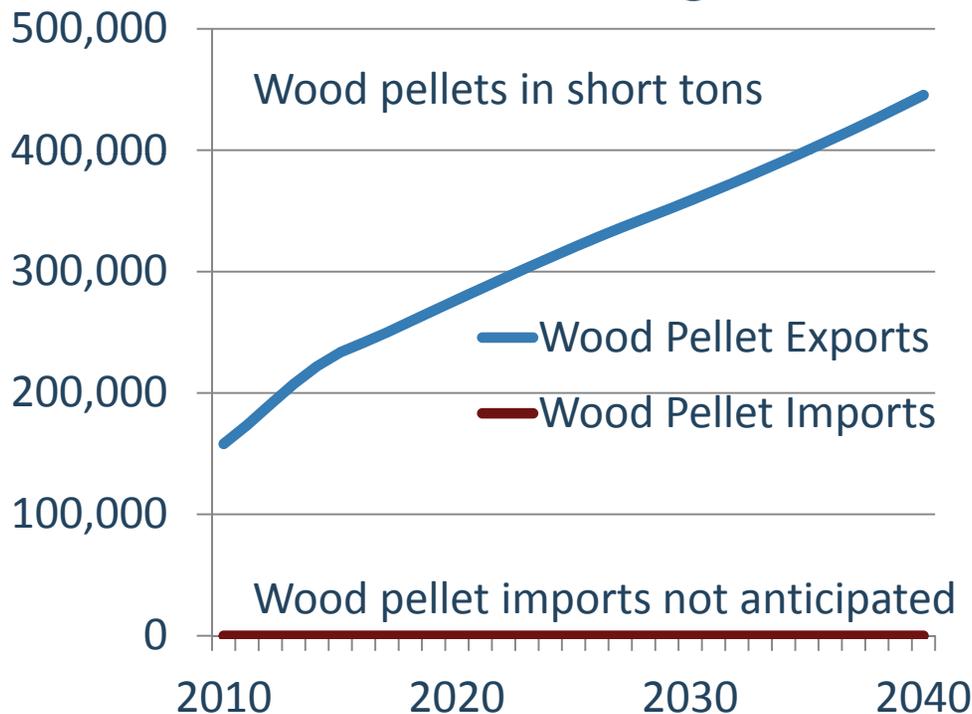


- Illustrative projection of construction and maintenance of offshore wind farm, sized to assume 12.5% of state's retail electricity

*Source: AECOM, based on current dimensions of equipment, NC policy and market maturation forecasts*

# Wood Pellets

## Annual Tonnage

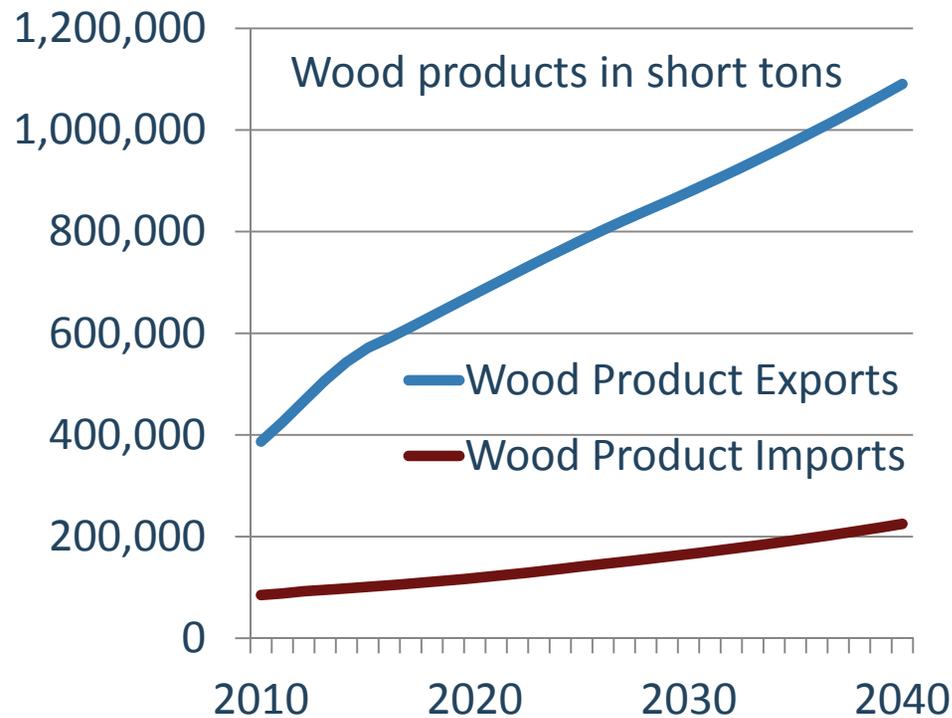


- Assumes two small pellet facilities locate in the state and use in-state ports
- Upside opportunity for greater volumes as some plants have higher volumes, but would need to be supported by inland distribution network

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

# Other Wood Products

## Annual Tonnage

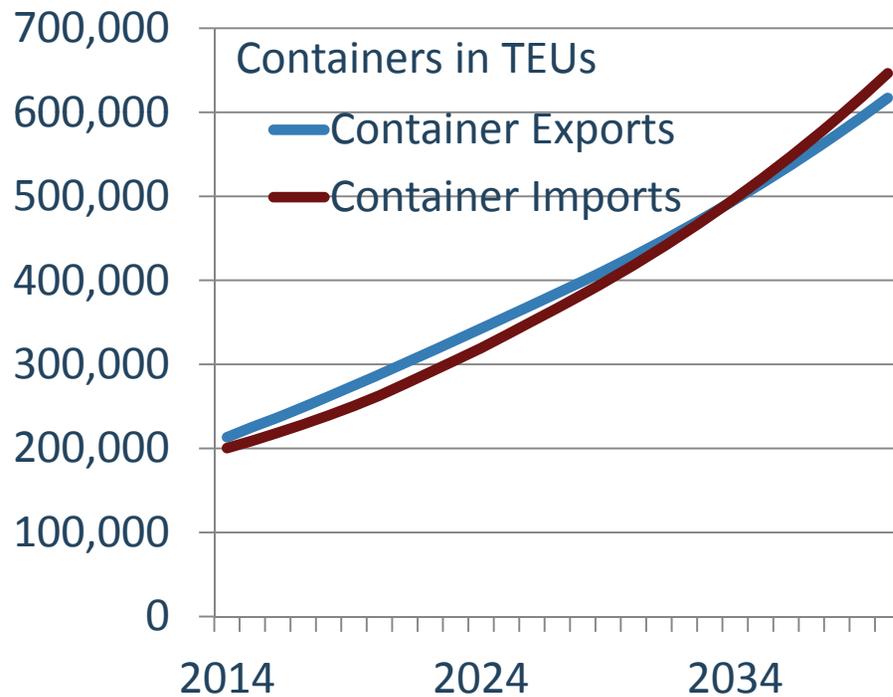


- Updated forecast reflects stronger projection for growth in wood products
- Better industry data on current total NC export volumes
- Cost data completed since last projection

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

# Containers

## Annual Volume

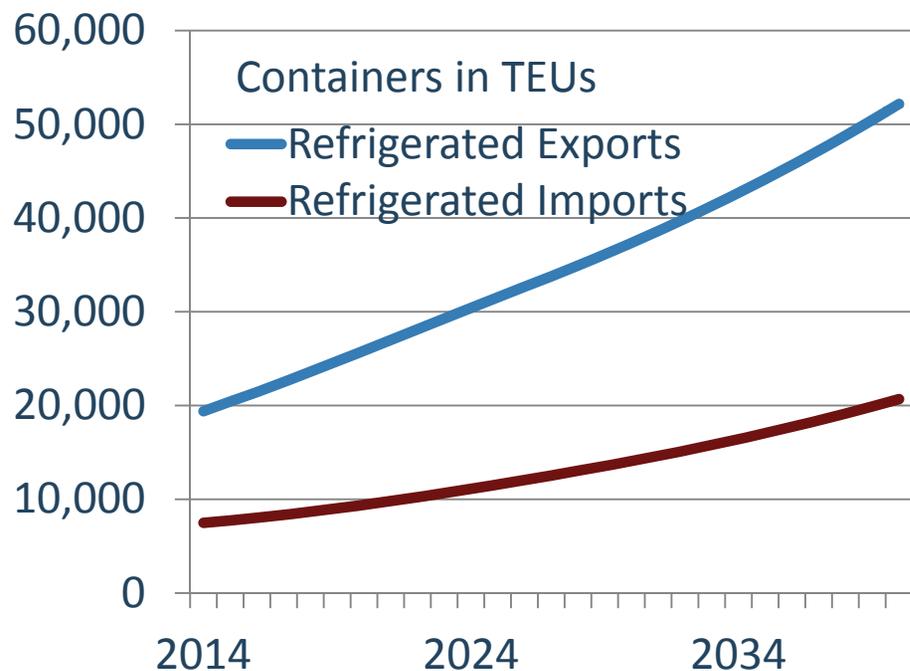


- No significant change from prior forecast
- Good balance of imports and exports

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

# Refrigerated Cargo

## Annual Volume

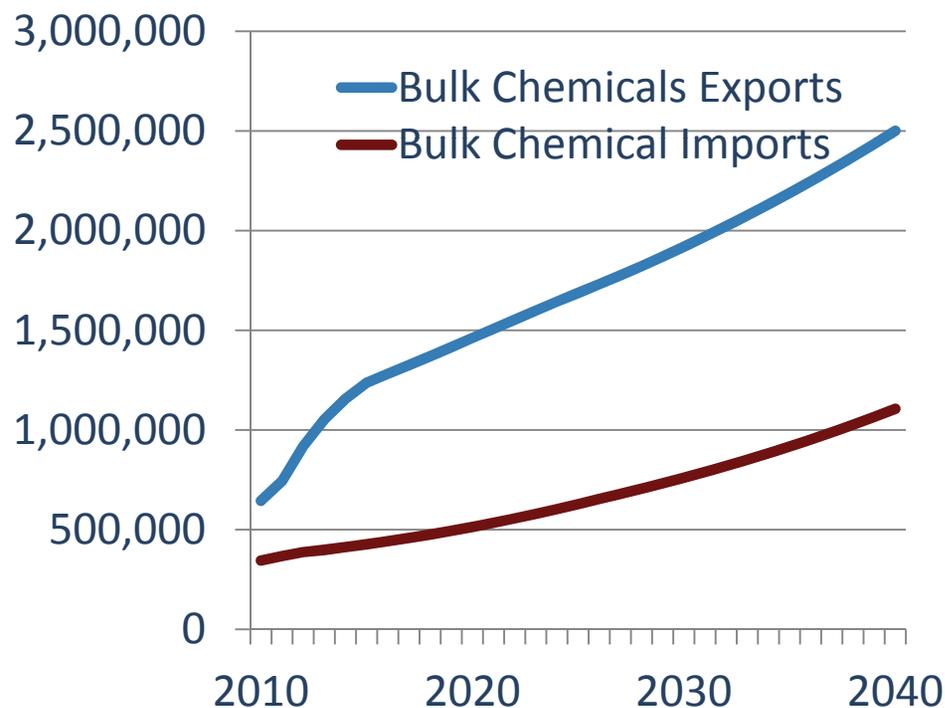


- Updated forecast reflects stronger projection for this market
- Cost data and more detailed export data available

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

# Chemicals and Phosphates

## Annual Tonnage

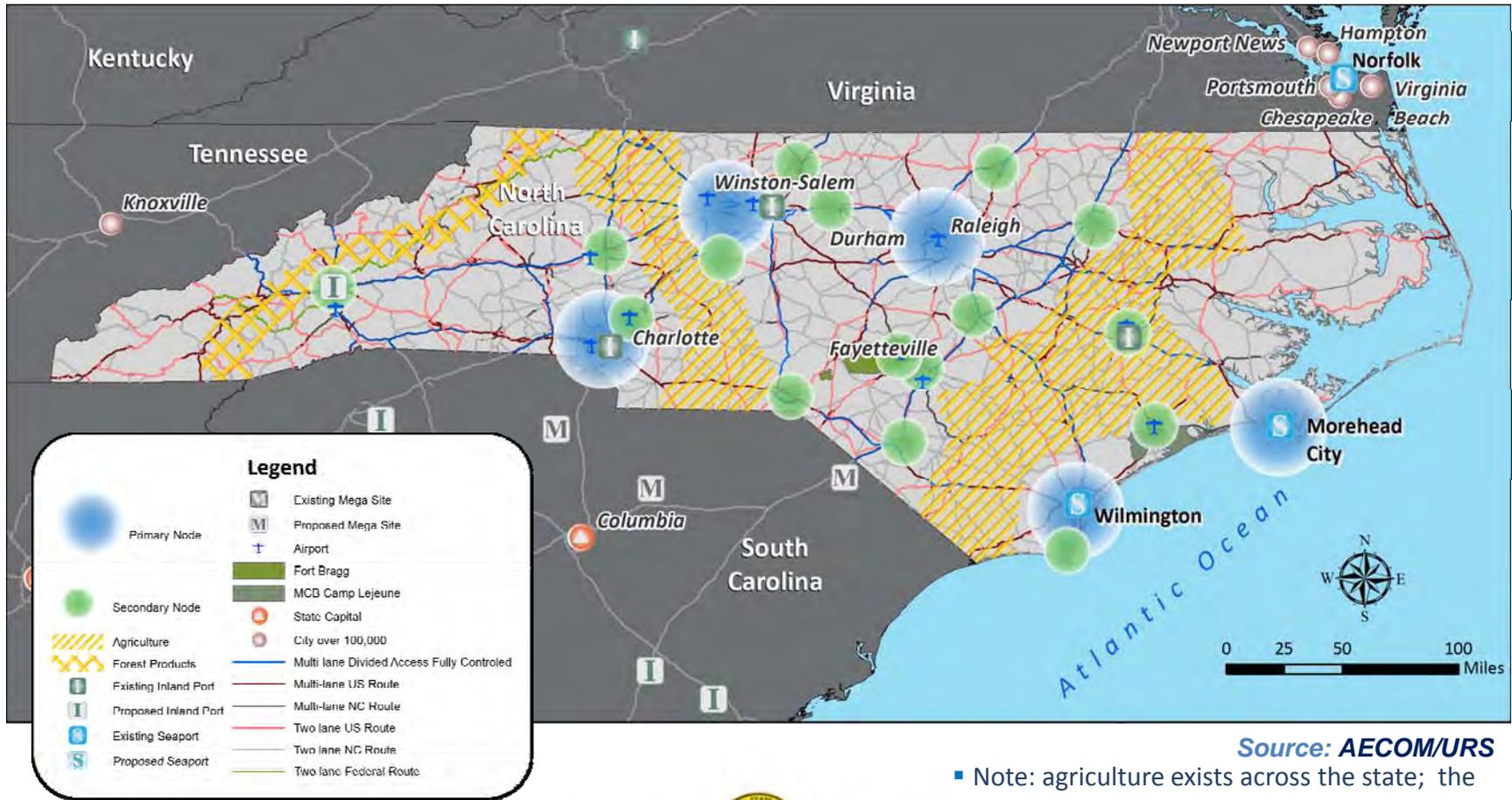


- Organic growth of existing market
- No significant changes from prior forecast

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

# Infrastructure and Costs

# NC Freight Nodes and Facilities



Source: AECOM/URS

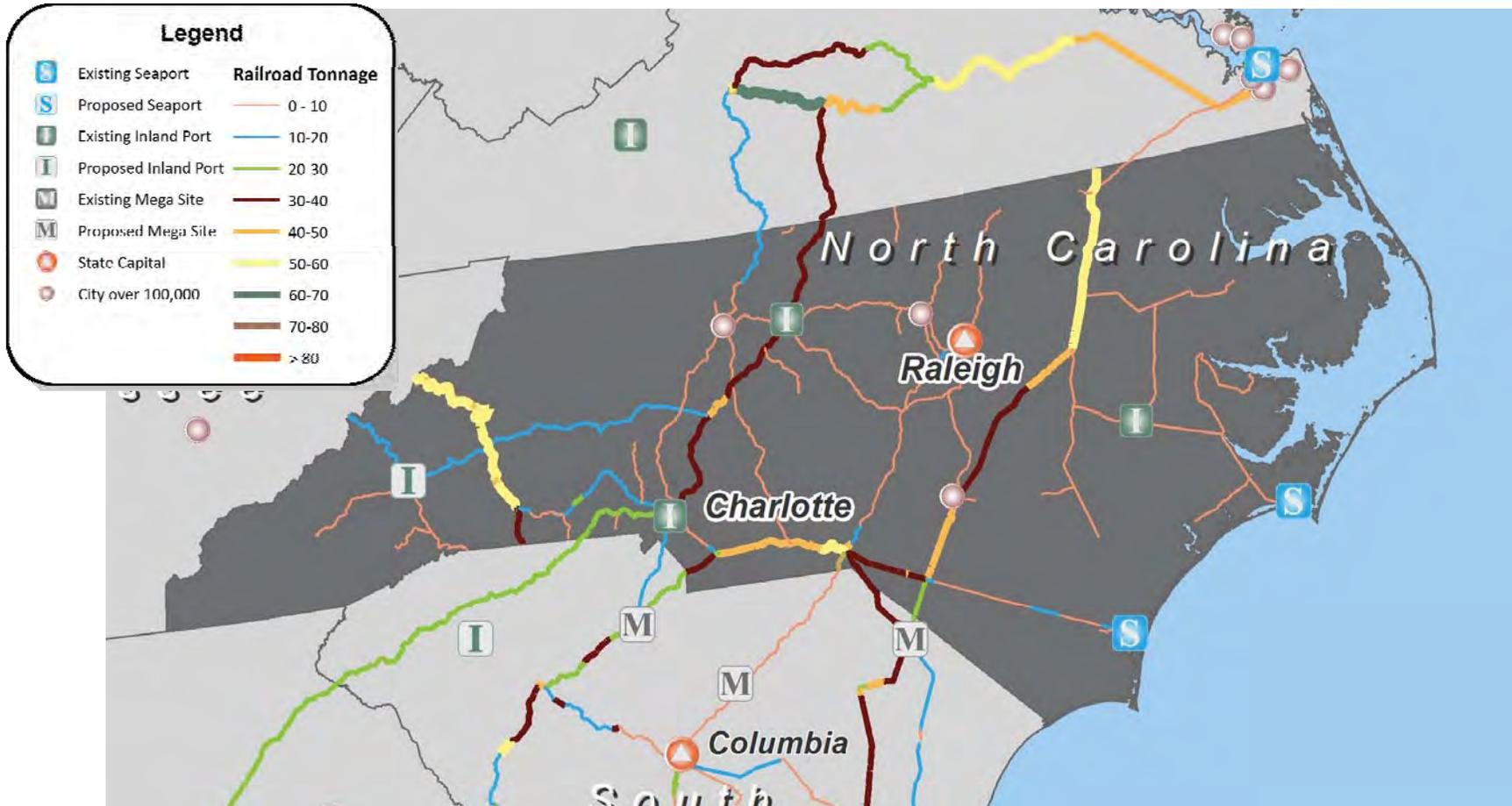
- Note: agriculture exists across the state; the areas of dense agricultural production illustrated are intended to be representative

# Evaluation of Highway Network



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

# Evaluation of Freight Rail Network



Source: AECOM/URS compiled from ESRI, NCDOT, CSX, Norfolk Southern, USGS ThematicMapping world borders dataset

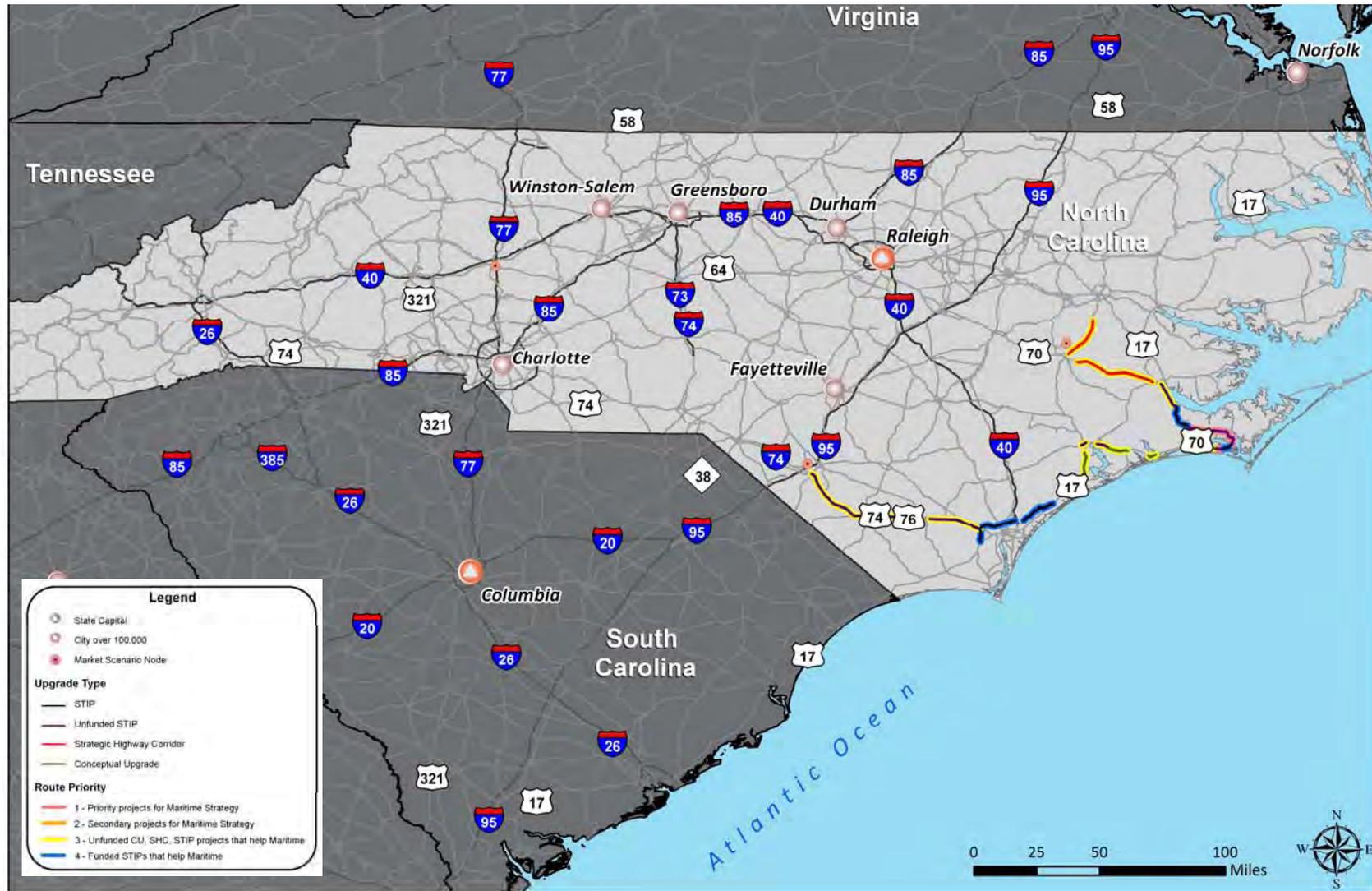
## Grain Infrastructure

- New bulk grain terminal with 3.2 million bushels storage capacity and on-terminal rail with loop track
- Highway improvements to reach eastern NC soybean-producing counties within trucking distances – includes US 70 North Carteret Bypass



Source: AECOM

## Highway Improvements to Support Grain



Source: ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset

## Infrastructure Cost for Grain

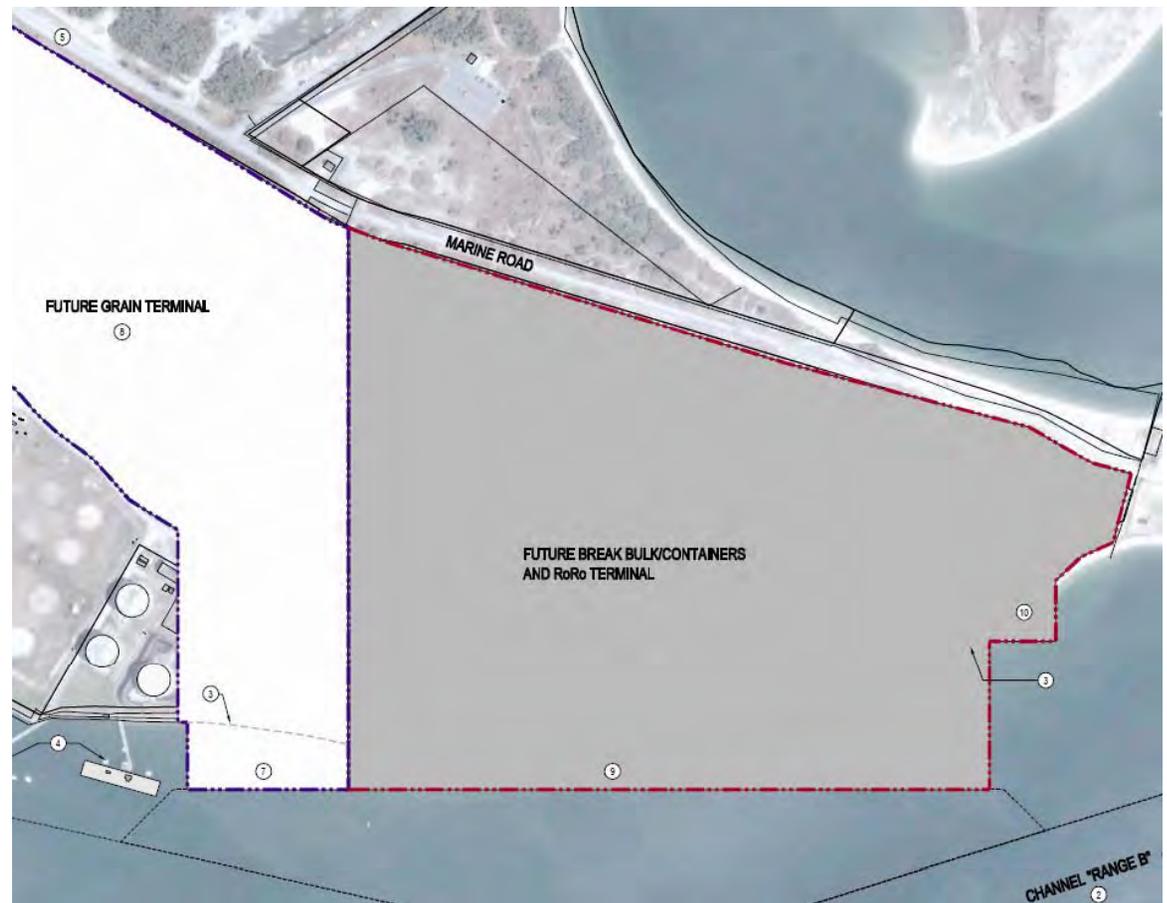
\$ Millions

| Infrastructure       | Radio Island   | Wilmington   |
|----------------------|----------------|--------------|
| Port and terminal    | \$80           | \$80         |
| Highway network      | \$1,498        | \$684        |
| Local highway access | \$23           | \$0          |
| Rail network         | \$0            | \$0          |
| Local rail access    | \$3            | \$1          |
| <b>Total</b>         | <b>\$1,604</b> | <b>\$765</b> |

- North Carteret Bypass is major element of proposed highway access to Radio Island

## Ro/Ro & Oversize Cargo Infrastructure

- New Ro/Ro and heavy cargo terminal (21 acres) - additional area could accommodate upside wind power opportunity
- Two 200-ton cranes
- Inland ramps at targeted locations (2 assumed)
- Highway improvements focused primarily on US 70 corridor
- Rail access

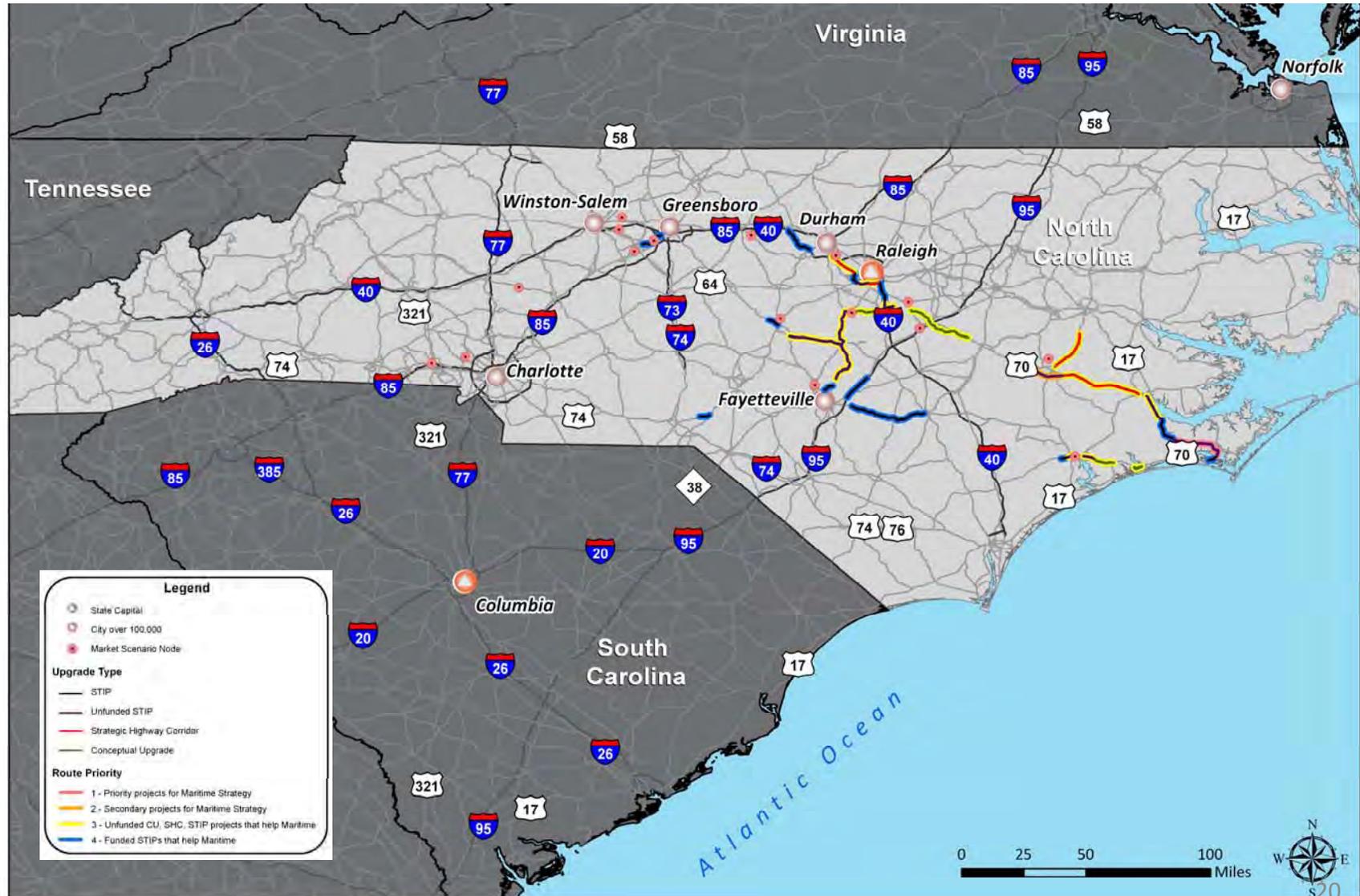


Source: AECOM

NORTH CAROLINA

# MARITIME Strategy

## Highway Improvements for Ro/Ro & Oversize



Source: ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset

# Rail Improvements for Ro/Ro & Oversize



# Infrastructure Cost for Ro/Ro & Oversize

\$ Millions

| Infrastructure       | Radio Island   | Wilmington     |
|----------------------|----------------|----------------|
| Port and terminal    | \$49           | \$49           |
| Highway network      | \$2,248        | \$2,365        |
| Local highway access | \$23           | \$0            |
| Rail network         | \$204          | \$0            |
| Local rail access    | \$5            | \$1            |
| Inland facilities    | \$78           | \$78           |
| <b>Total</b>         | <b>\$2,607</b> | <b>\$2,493</b> |

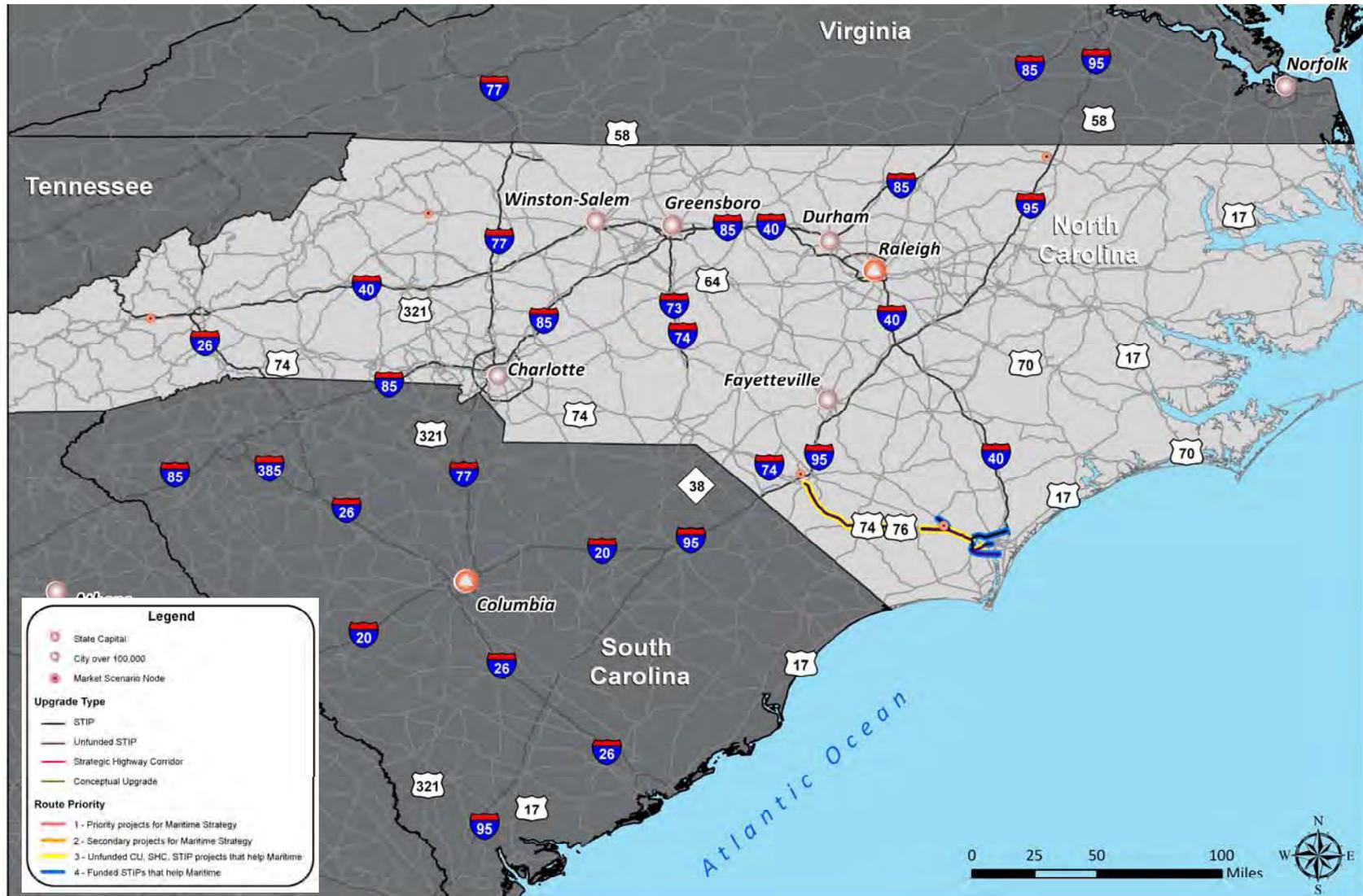
## Wood Products Infrastructure

- New bulk wood pellet terminal with 55,000-ton storage capacity and on-dock rail with loop track
- Wood chips and breakbulk wood products can be accommodated within available terminal capacity
- Highway improvements to enhance access to timber areas in southeastern NC
- Rail service to timber areas in western NC on existing rail network



Source: AECOM

## Highway Improvements for Wood Products



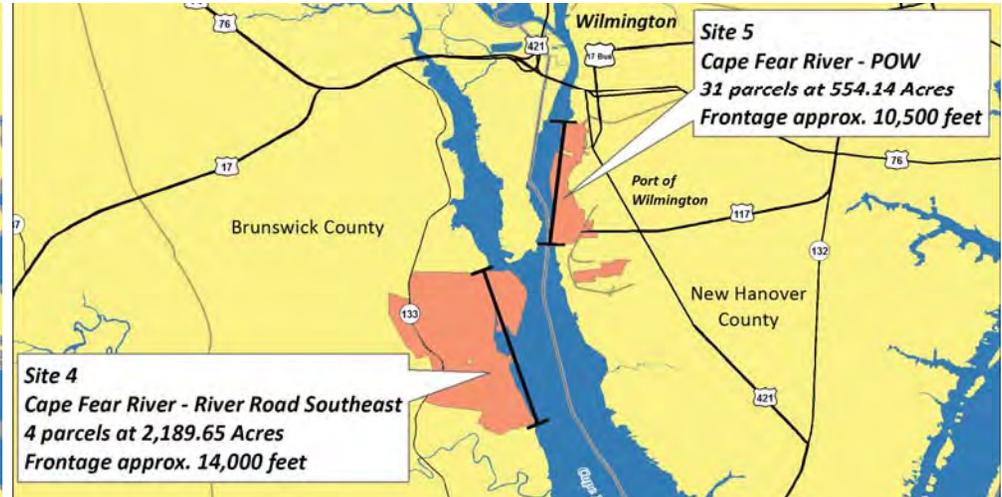
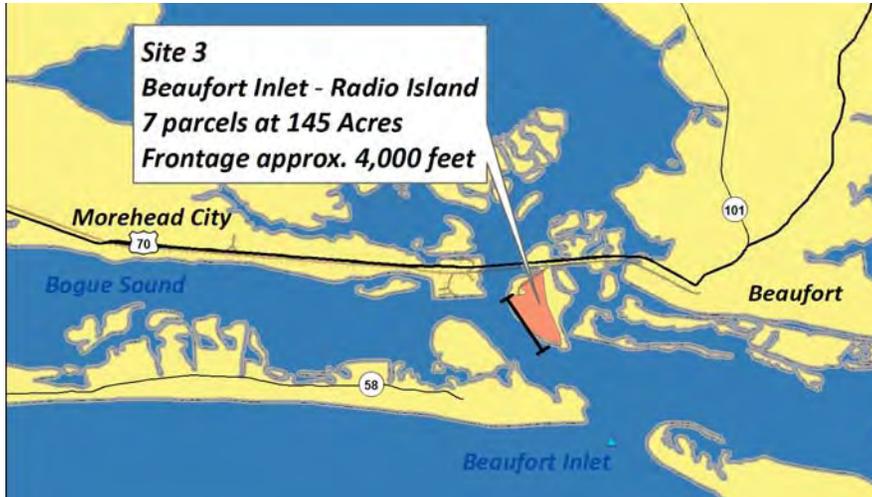
Source: ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset

# Infrastructure Cost for Wood Products

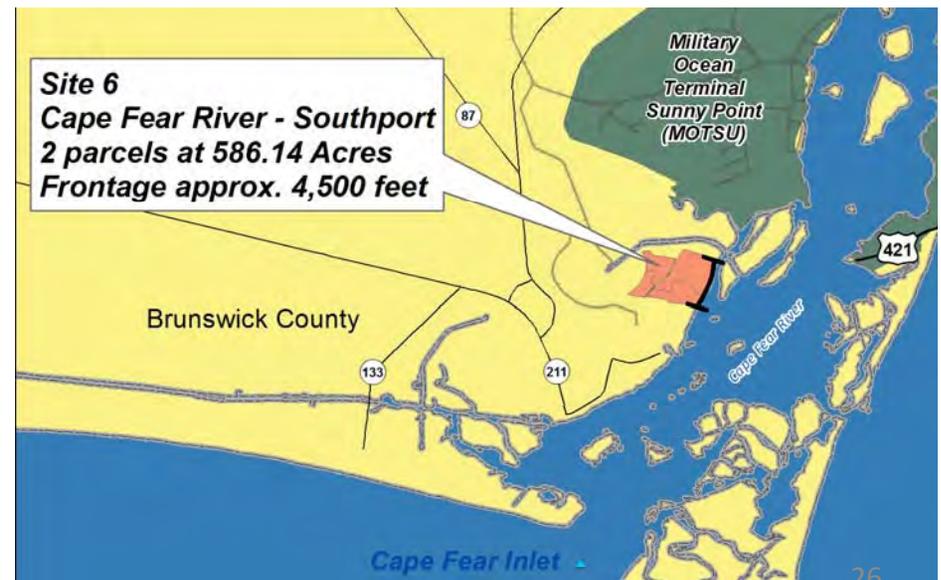
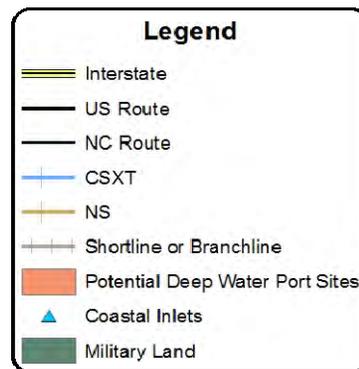
\$ Millions

| Infrastructure       | Radio Island   | Wilmington   |
|----------------------|----------------|--------------|
| Port and terminal    | \$55           | \$55         |
| Highway network      | \$1,053        | \$456        |
| Local highway access | \$23           | \$0          |
| Rail network         | \$204          | \$0          |
| Local rail access    | \$5            | \$1          |
| <b>Total</b>         | <b>\$1,340</b> | <b>\$512</b> |

# Container Port Sites Evaluated



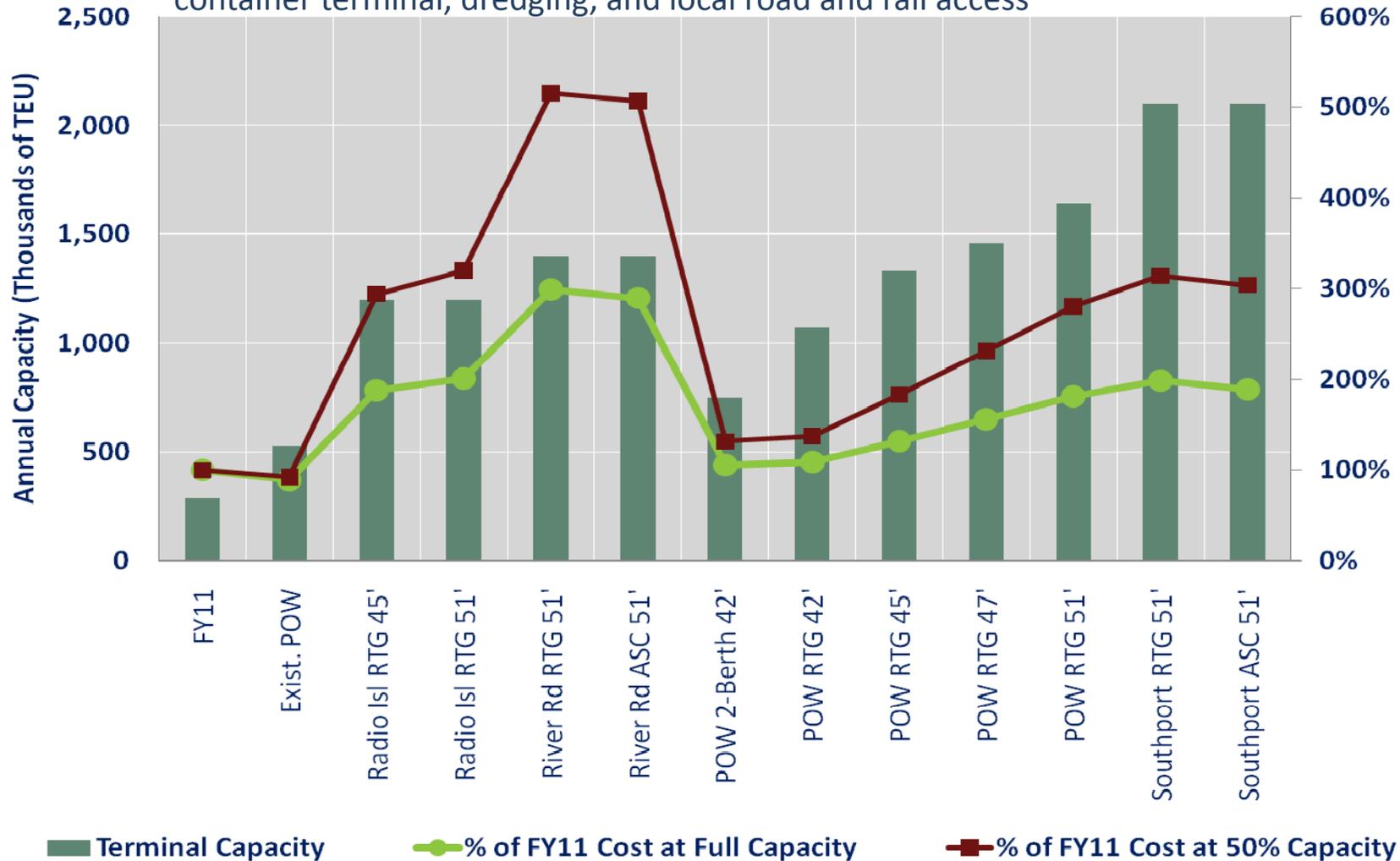
Source: AECOM/URS compiled from ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset, SeaMap SA 2001, and Moser and Taylor 1995



# Terminal Capacity vs. Cost per Move

Includes operating costs plus annualized capital investment in container terminal, dredging, and local road and rail access

Source: AECOM



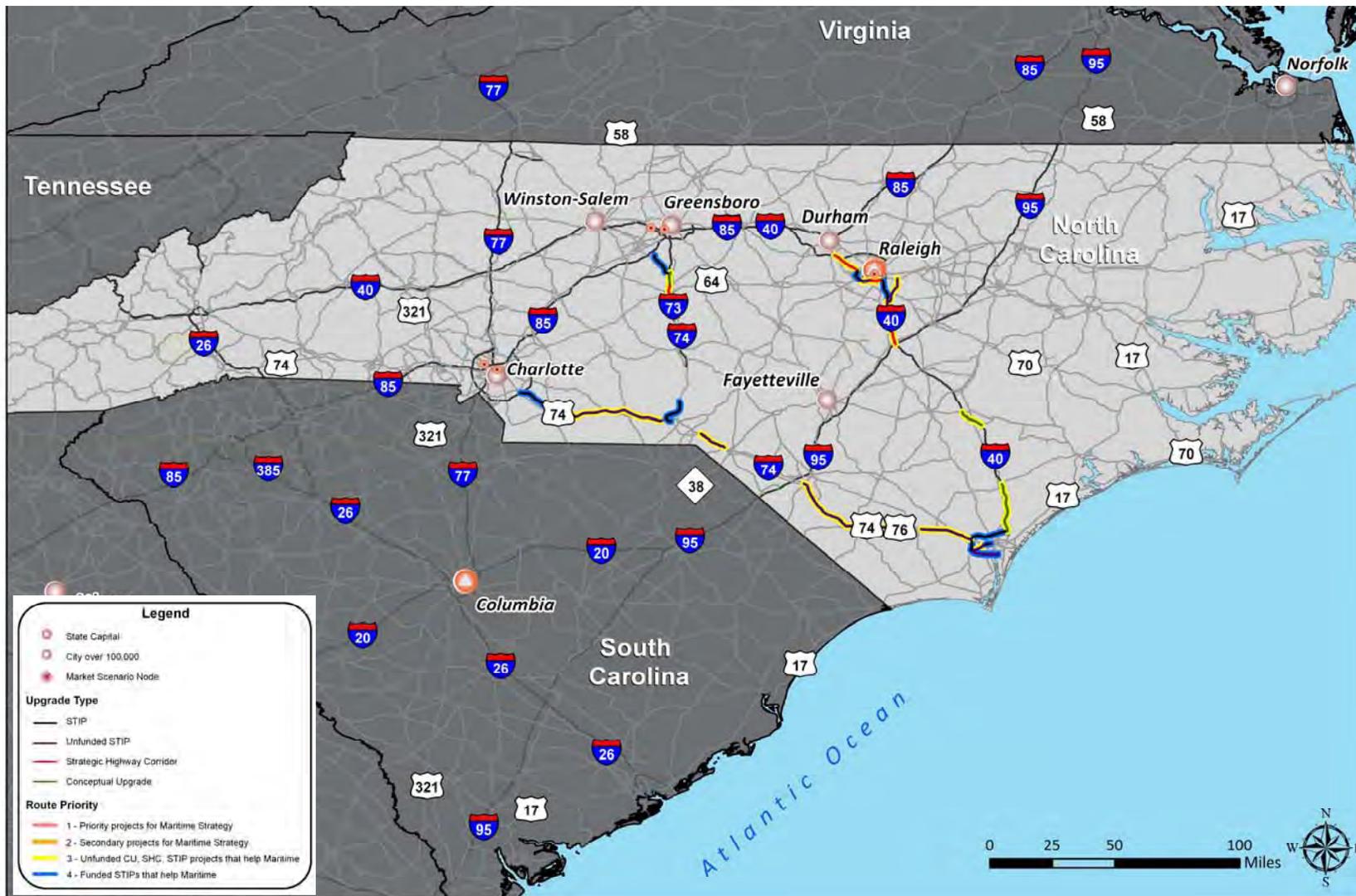
## Container Infrastructure

- Expanded and modernized terminal at Port of Wilmington
- Channel deepening (most costly 51' alternative evaluated for BCA)
- Highway improvements to enhance access to key population centers and intermodal terminals
- New intermodal terminal east of Charlotte



Source: AECOM

## Highway Improvements for Containers



Source: ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset

## Infrastructure Cost for Containers

\$ Millions

| Infrastructure    | Radio Island RTG + 45' | Radio Island RTG + 51' | POW RTG + 45'  | POW RTG + 47'  | POW RTG + 51'  | Southport ASC + 51' |
|-------------------|------------------------|------------------------|----------------|----------------|----------------|---------------------|
| Berth/dredging    | \$11                   | \$68                   | \$197          | \$315          | \$427          | \$362               |
| Port/ terminal    | \$395                  | \$395                  | \$272          | \$287          | \$301          | \$1,170             |
| Highway network   | \$2,925                | \$2,925                | \$2,611        | \$2,611        | \$2,611        | \$4,345             |
| Highway access    | \$23                   | \$23                   | \$0            | \$0            | \$0            | \$17                |
| Rail network      | \$204                  | \$204                  | \$0            | \$0            | \$0            | \$0                 |
| Rail access       | \$5                    | \$5                    | \$1            | \$1            | \$1            | \$6                 |
| Inland facilities | \$131                  | \$131                  | \$131          | \$131          | \$131          | \$131               |
| <b>Total</b>      | <b>\$3,694</b>         | <b>\$3,751</b>         | <b>\$3,212</b> | <b>\$3,345</b> | <b>\$3,471</b> | <b>\$6,091</b>      |

## Refrigerated Cargo Infrastructure

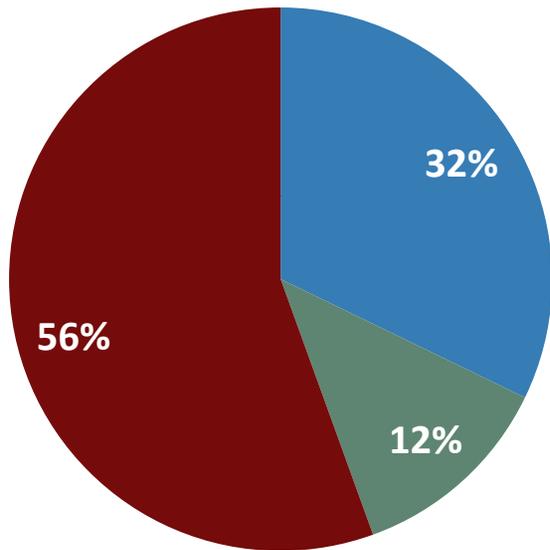
- At-port or near-port refrigerated warehouse for storage and transload (scalable to meet demand)
- Reefer plug-ins incorporated into in the container yard
- Infrastructure investment \$24 million



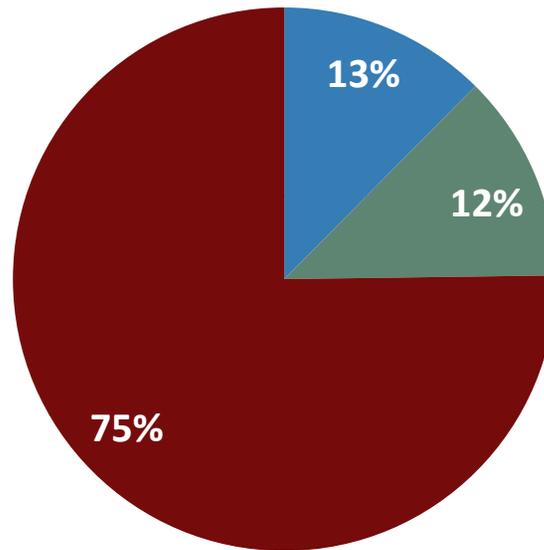
# Reduced Transport Time and Shipper Benefits

## Infrastructure Influence on Delivered Costs

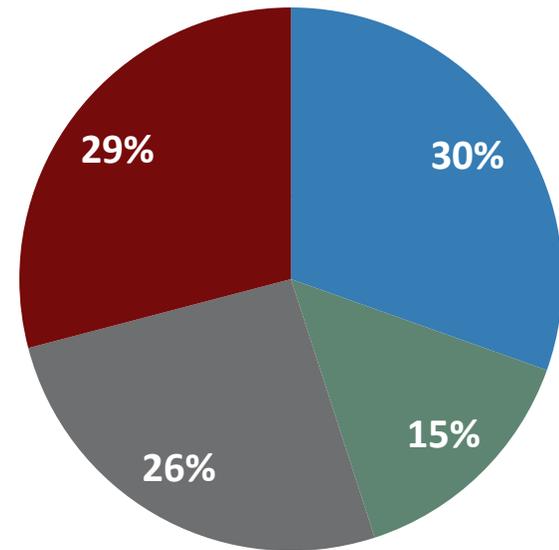
### Sample Split of Containerized Transport Costs, from Wilmington (2040)



**\$635 per TEU**  
To Greensboro intermodal terminal via truck



**\$630 per TEU**  
To existing Charlotte terminals via truck

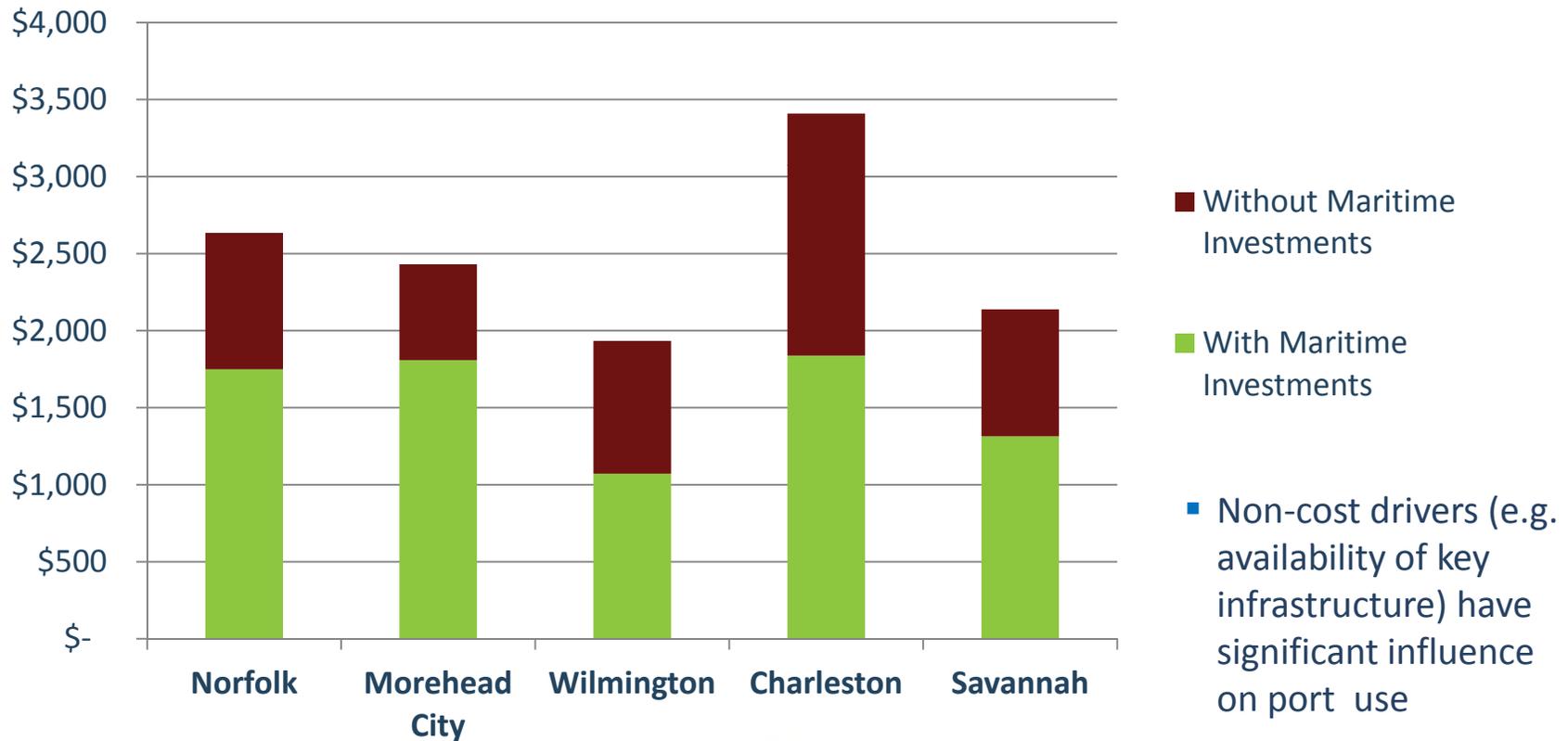


**\$535 per TEU**  
To new east Charlotte intermodal terminal via truck and rail



# Infrastructure Influence on Delivered Costs

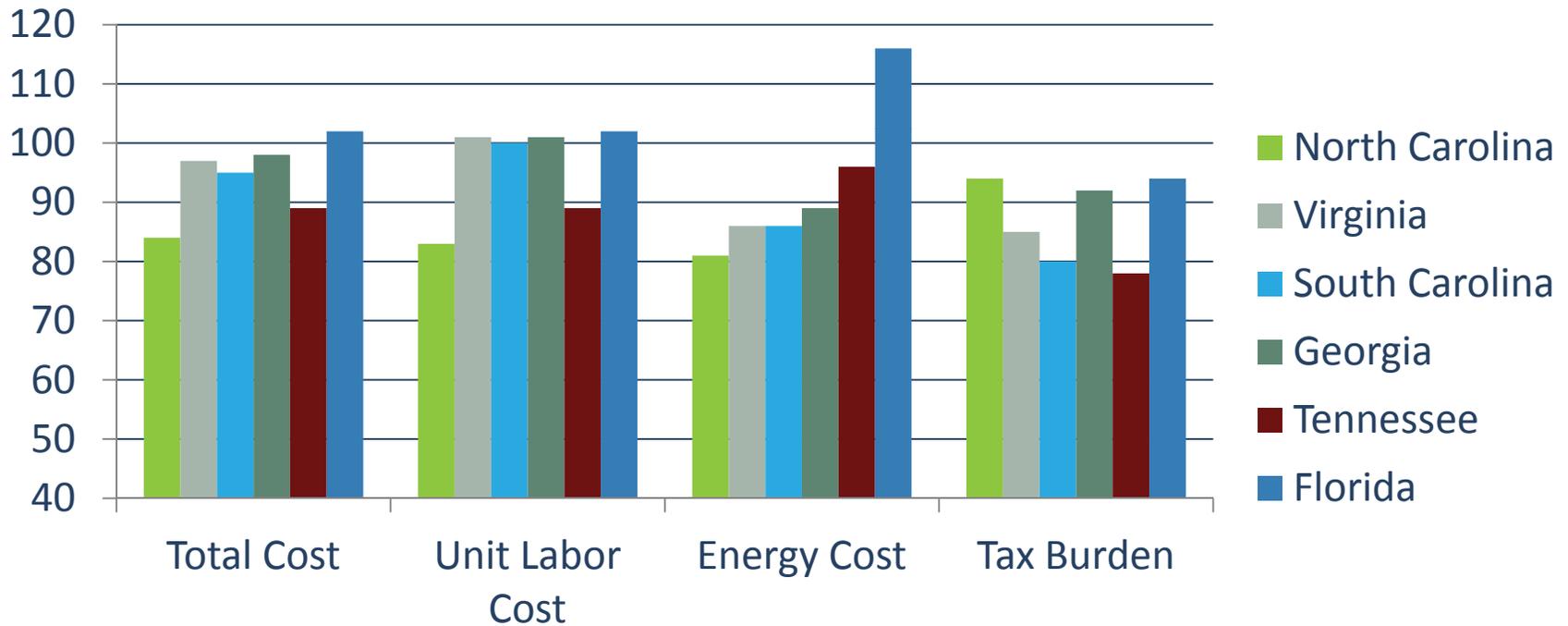
2040 Cost per FEU from Regional Ports to Charlotte intermodal terminal





# Economic Benefits

# North Carolina Has an Advantageous Cost of Doing Business

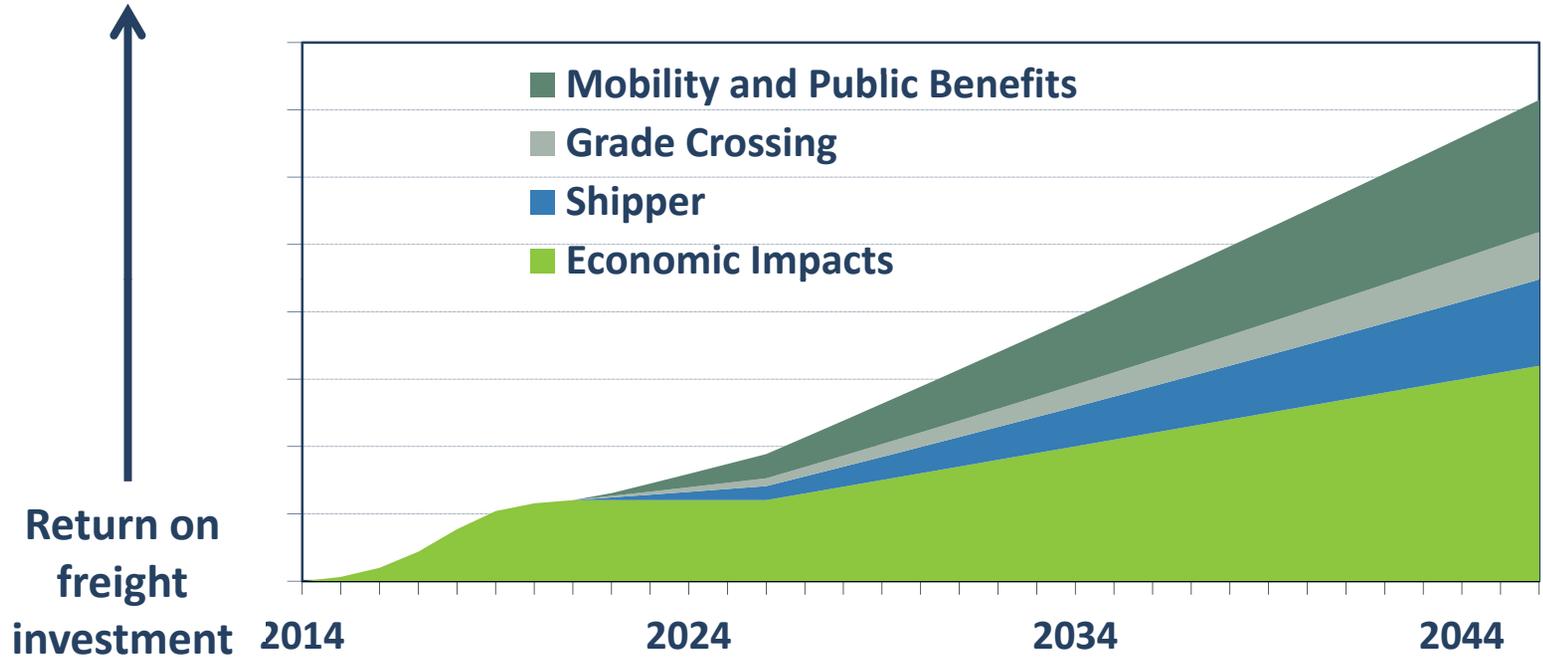


Source: Moody's Analytics, 2011

## Framework for Economic Impact and Benefit Cost Analysis

- Builds on other parts of the project
  - Capital costs
  - Delivered costs
  - Travel times
  - VMT analysis
  - Market projections
  - Stakeholder input
- Distinction between impacts and benefits
- Stream of benefits is discounted at 7% and 3%
- Federal guidance applied where it exists; industry best practice where it does not

# Illustrative Timeline of Benefits and Impacts



Economic benefits begin with construction in 2014.

Shipper and grade crossing benefits begin as soon as the project starts operation.

Economic benefits accrue as the market recognizes and responds to opportunities created by the freight investment.

## Initial Economic Impact Findings

- Construction impacts vary based on the extent physical improvements required for each scenario, up to a high of about 48,000 *job years*
- Operations impacts of various market scenarios range from a low of 43 jobs annually to a high of 2,700 jobs (averaged over the period 2017 to 2046)
- Economic development opportunities vary with scenario

## Economic Development Opportunities

| Market       | Economic benefit   |
|--------------|--|
| Grain        | Profit margins to growers  |
| Wood         | Maintain industry important to state economy<br>Opportunity to diversify                         |
| Cold Storage | Profit margins to producers<br>Makes region more attractive to grocery distribution centers      |
| Containers   | Helps diverse set of NC shippers by improving vessel calls and container accessibility           |
| Ro/Ro        | Supports existing manufacturing industry<br>Creates opportunities for wind and new manufacturers |

## Initial Economic Benefit Findings

- Significant spin-off benefits for the general public
- Preliminary BCA indicate that there are viable opportunities for each market scenario inclusive of the requisite long-term land improvements
- Significant travel time savings across most market scenarios
- Other benefit types are more balanced – including direct benefits to shippers as well as to travelers in the state
- Logistics benefits are greatest for the container scenario
- Strong support for the cold storage scenario
- Grain and wood products scenarios successfully support important sectors of the North Carolina economy

# Discussion of Draft Results

# Dredging of Cape Fear Channel

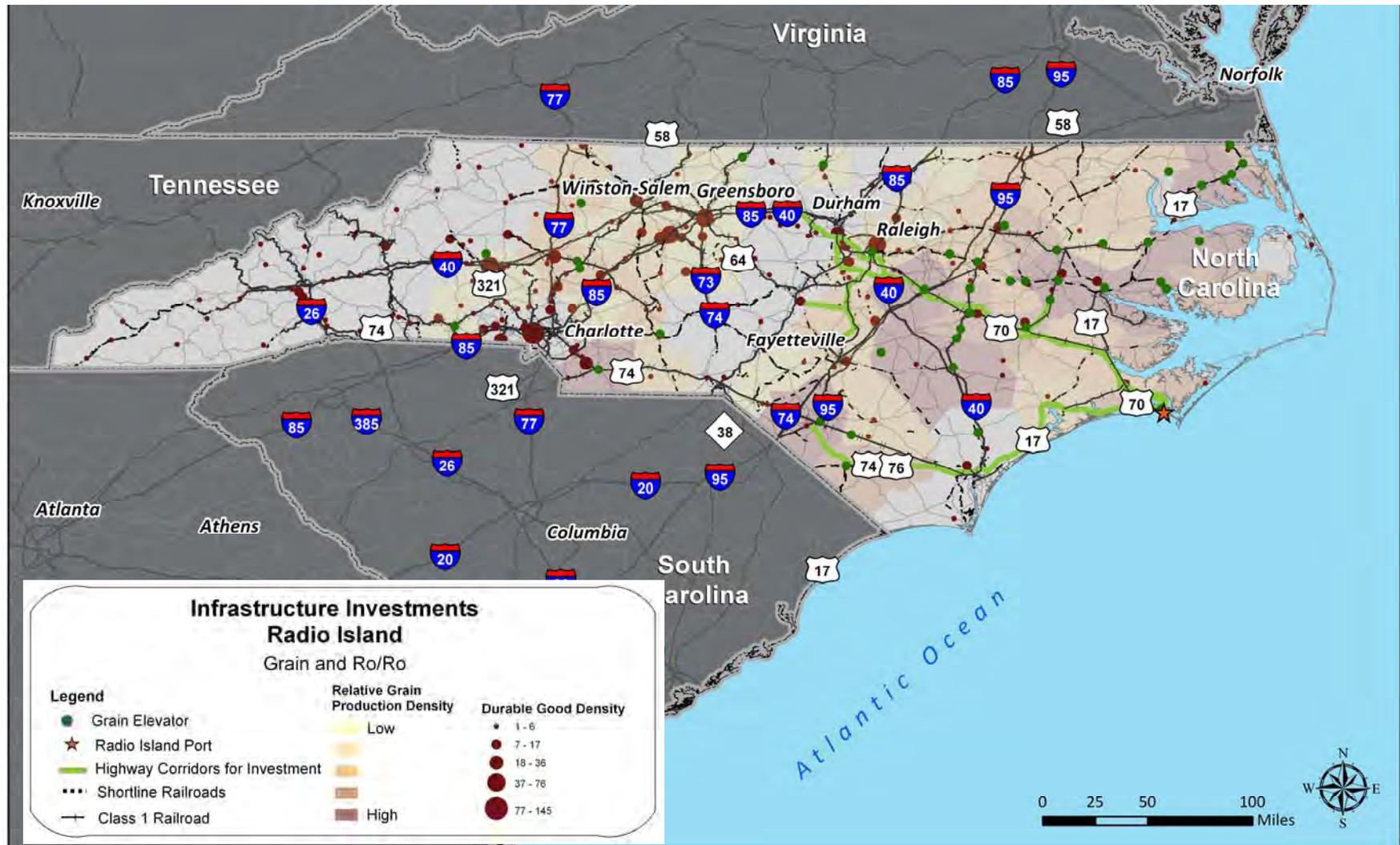
- Benefit-cost analysis for Port of Wilmington site reflects most costly dredging alternative (51')
- Feasibility and environmental impacts would require focused analysis

| Dredge Depth (ft) | Navigation Channel Extension Length (ft) |
|-------------------|--|
| 45                | 18,000                                   |
| 47                | 41,000                                   |
| 51                | 63,000                                   |



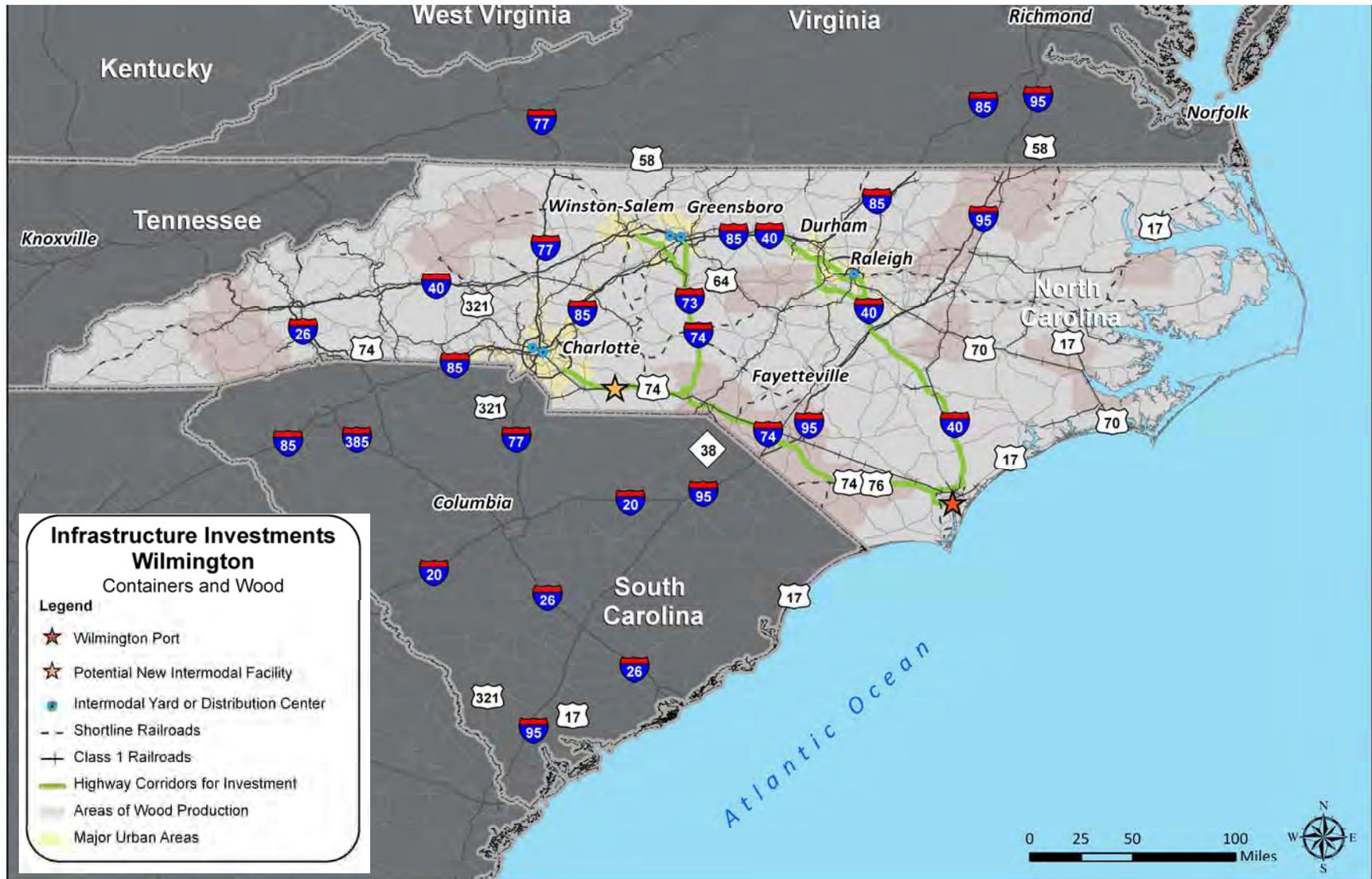
# Targeted Highway Corridors

## Targeted Highway Corridors - Radio Island



Source: ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset

## Targeted Highway Corridors - Port of Wilmington



Source: ESRI, NCDOT, USDOT Freight Analysis Framework v3.1, USGS ThematicMapping world borders dataset

## Review of Alternatives Matrix

- Truck/rail mode split
- Remote transportation network (highway) costs
- Inland facilities

# Comments

# Conclusions and Close