

# Maritime Advisory Council

November 9, 2011

Raleigh, NC

**AECOM**



**URS**

# Welcome & Introductions

## Agenda

- Goals for Today's Meeting
- NC Maritime Strategy Team Analysis Update
  - Industry and stakeholder feedback
  - Market scenarios
  - Infrastructure constraints and opportunities
- Focused Discussion
- Public Comment
- Conclusions and Close

## Goals for Today's Meeting

- Review market opportunities
- Identify infrastructure constraints and opportunities
- Discuss strategy goals and evaluation criteria
- Other items, as identified by Advisory Council

# Industry and Stakeholder Feedback

## Industry and Stakeholder Meetings

- Industry Workshops
  - *Prior:* Agriculture, Non-Ag Shippers, Shipping Lines, Railroads & Trucking
  - *Since last meeting:* **Military, Special Zones, Bulk Shippers**
- Focused discussions and interviews
  - *Prior:* Metropolitan Transportation Organizations, NC Department of Commerce, USACE, UNC Wilmington, YesPort NC, No Port Southport, Save the Cape, Southport/Oak Island Chamber of Commerce, Brunswick County Economic Development Commission
  - *Since last meeting:* **Clean Carteret County Coalition, Morehead City Port Committee, Progress Energy, Economic Development Commissions**
- Public workshops
  - *Since last meeting:* **Government Officials Briefings and Community Information Workshops**, in Morehead City and in Wilmington

## Military Workshop

- Ports of Morehead City and Wilmington support limited military use as compared to other east coast ports
  - Use driven by TRANSCOM and “commercial first” policy
  - Lack of Ro-Ro capability at Wilmington
  - Limited tugs at Morehead City
  - As Strategic Seaports, should be regularly used to assure readiness
- Improved access to both NC ports would be attractive
  - Pembroke rail turn; Wallace-Castle Hayne connection; US 70
- Commercial pressure at other ports is opportunity for NC ports
- Security related to a new container facility considered routine, but fixed cranes and dense storage (like APM Terminal at Norfolk) could limit military benefit

## Special Zones Workshop

- Today, waterborne goods handled at NC's logistics parks are primarily moved through ports at Savannah or Norfolk
- Congestion at Greensboro and at Charlotte makes NC ports less attractive to shippers west of Raleigh
- Unbalanced truck route to Morehead City: 110+ mile empty haul
- Limited cold storage available: Kernersville and Norfolk
- Lack of Ro-Ro at Port of Wilmington sent shippers elsewhere
- Business incentives to collocate industries with complementary transport needs, foreign partnerships, and deconsolidation commissions could enhance use of NC facilities
- Need coordinated marketing with NC Dept of Commerce

## Bulk and Breakbulk Workshop

- Trucking distance is the key cost differential
- Cargo handling cost differences across ports is not major driver
- Deadheading to/from Port of Morehead City limits trucking availability
- Lower tonnage limit for over-the-road dry trailer vs. container presents a disadvantage to breakbulk and bulk shippers
- Sufficient volumes needed at port to attract a break-bulk carrier
- Service at NC ports is equal or better than peer ports
- NC ports need to market themselves better

## Progress Energy

- No official position on NCIT until all issues are vetted and satisfactorily resolved
- Progress Energy concerns related to adjacent container port development that would require resolution include:
  - Potential siltation or compromise of intake canal could contaminate or affect access to cooling water
  - Plant security related to berthing and storage of containers
  - Impact to nuclear facility evacuation plans
  - Land access crossing of the discharge canal cannot restrict outflow
  - Compatibility with transmission and distribution lines

## Economic Development - Southeast Region

- 40 % of potential recruits have at-port or near-port requirement
- Active Bio-Energy (wood pellet) pursuits
- Agricultural need for cold storage, potential public-private partnership
- Potential synergy of hog spray lagoons, grasses, and bio-fuel production (military as potential fuel consumer)
- US 74 corridor has potential for economic development – parallel rail, gas, water, sewer, and two parks totaling 2,000 acres
- Highway access is improving. Additional needs: US 74 / I-74, Monroe Bypass, Murchison Road / Bragg Blvd, future NC 87 / I-74 interchange, service roads between industrial parks
- Limited rail access near port

## Economic Development - AdvantageWest

- Many port users are using Charleston and Savannah; northwest portion of region can use Wilmington
- Exports – automotive parts, wood, pulp, paper
- Imports – consumer goods
- Opportunity for value-added industries in automotive industry
- Top employers – health care, transportation / heavy equipment, aerospace industries
- Highway needs – I-26, US 19-23, US 221 from SC to I-40, Corridor K
- Frequency of rail service
- Noted Inland Port Study

## Community Stakeholder Groups

- Morehead City Port Committee:
  - Encourage activities and infrastructure investments to increase port traffic, related job growth and economic development
  - Concern about public's lack of understanding of port operations
- Clean Carteret County Coalition:
  - Perceived lack of local economic benefit – only negative environmental and traffic impact – of port operations
  - Suggested alternative uses for port-adjacent lands
  - Would like to better understand what happens at the port

## Input from Public Workshops

- Government officials
  - Interested in overall outcome of study and fact-based findings
  - Responding to constituents' concerns related to environmental impacts, jobs, economic contribution and infrastructure required to support growth at ports
- Public workshops
  - Concern about environmental impacts, true job benefits, health impacts, and adjacent land uses
  - Eager for more specific analysis and recommendations arising from Maritime Strategy effort

## Recurring Themes from Stakeholders

- Like earlier input: Jobs, economic growth, and the environment are top concerns
- Enhanced road and rail connections for cost-effective moves
- Importance of trucking costs – congestion and back haul
- Refrigerated storage
- Ro-Ro at Wilmington
- Value of integrated strategy that includes Commerce, Transportation, and US Military
- Importance of synergies in land use and transport needs
- Communication: with public, with shippers

# Market Opportunities

## Market Opportunities

Commodity	Import/ Export	Current market	Growth	Considerations
<b>Grain</b>	Both	Large	Strong	NC grain producers located near port
<b>Wood pellets</b>	Export	Emerging	Strong	Industry interest in NC ports Potential to diversify wood products
<b>Wood / paper</b>	Export	Large	Strong	Supports existing industry strength
<b>Refrigerated cargo</b>	Export	Large (across diverse goods)	Strong	Local shippers indicate an unmet need for cold storage
<b>Ro-Ro / oversize</b>	Export	Moderate	Moderate to strong	Supports local supplier industry with purchases of goods and services Supports emerging aviation/equipment industry
<b>Wind</b>	Export Import	Emerging	Moderate	Development opportunity tied to securing manufacturing within NC
<b>Containers</b>	Import	Large	Strong	Growth influenced by policies and innovations to ensure that containers available to export shippers

# Grain and Soybeans

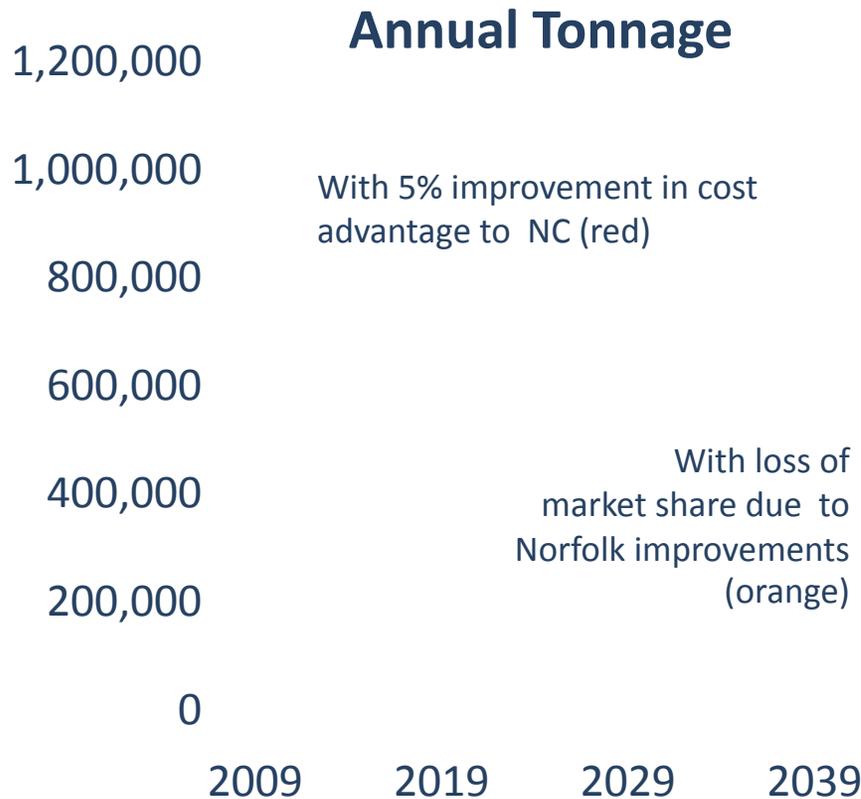
## Annual Tonnage



- Forecast extrapolates from current export volumes—in -state and out-of-state and assumes facilities to handle grain are available--unconstrained
- Potential for greater capture of in-state production (green)
- If NC ports captured half of exports via out of state ports, current volumes at NC ports would increase 2 times
- Grain producers report excess capacity and ability to ship more for export—this would increase volumes beyond that shown here
- Shippers maintain there would be price benefits to exporting, benefiting the state

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

# Wood Products



- Supports large existing NC-based industry
- Strong baseline growth projected (blue)
- Wood pellets industry accelerates growth over the next 10 years
- Shippers suggest additional capacity available for export
- Port has signed an initial deal for new pellet facility
- Strong growth and opportunity to capture greater share of NC production
- Preliminary results suggest Improvements to Norfolk access yield large cost advantages over the forecast horizon that could erode NC’s market share (truck)

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

# Refrigerated Container Goods

## Annual Tonnage



- 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
- Capture estimate based on 5% reduction in costs and improvements in non-cost factors such as availability of cold storage facilities/containers (preliminary estimate for trucks)

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

## Ro-Ro and Oversize Cargo

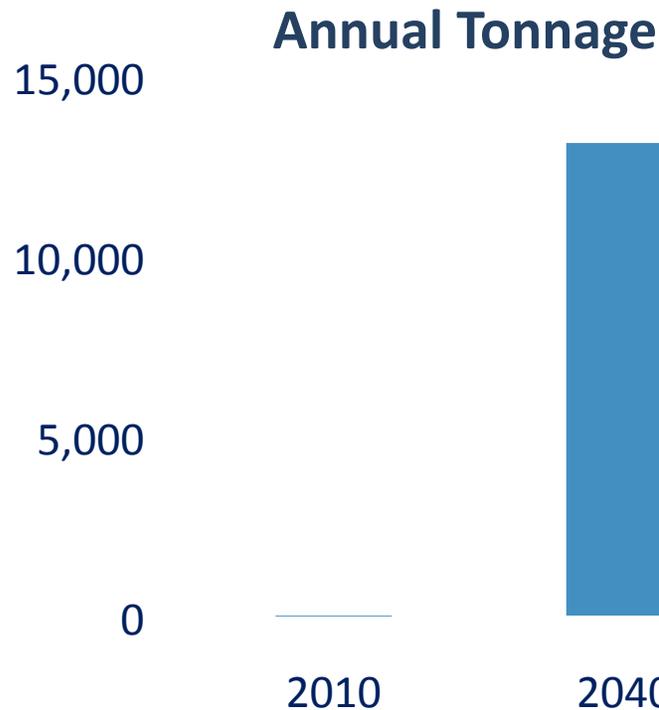
### Annual Tonnage



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

- Steady growth projected
- Desirable industry from economic development perspective because industry purchases large amounts of local goods and materials in the production process
- Estimate excludes wind power equipment
- Limited diversion potential; strategy is to support local manufacturers
- Firms consider whether port has this capability when deciding to expand within or relocate to the state

## Wind Power Cargo

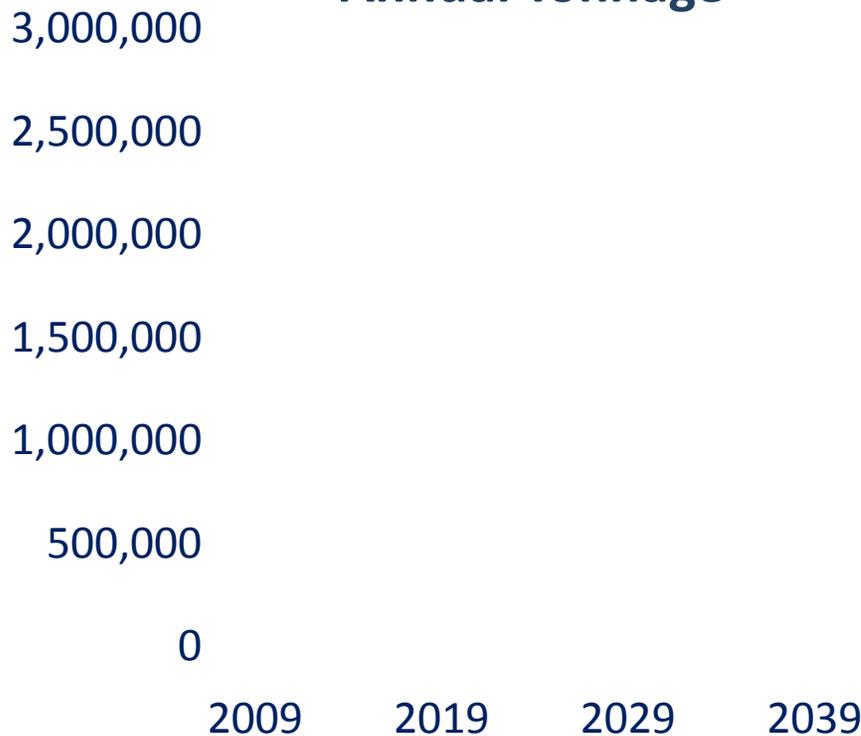


*Source: AECOM, based on current dimensions of equipment, NC policy and market maturation forecasts*

- Wind towers in 31 NC locations
- NC has goal of supplying 12.5% of electricity via wind by 2021
- Each turbine weighs 164 to 334 tons
- Market projected to mature by 2025-2030; long-term activity is maintenance unless local manufacturing industry develops
- New wind farm going into state; long term opportunity depends on whether installations go on land or offshore, and whether manufacturers follow
- Can benefit rural NC; surveys indicate general acceptance

# Chemicals and Phosphates

## Annual Tonnage



- Supports large existing industry
- Solid baseline growth projected
- Potential for diversion to NC ports but additional capture not anticipated to yield large increment in volumes (preliminary result for trucks)
- 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*

## What Affects Cargo Diversion?

- Relative Cost
  - Estimate comparable market shares
  - Calculate relative costs
  - Regression of cross-sectional data of market shares on relative costs---a 1% change in relative cost yields a x% change in market share, all else equal
- Non-Price Factors
  - Availability of requisite handling equipment
  - Weight / dimensions of cargo
  - Contracts and shipping calls
  - Availability of containers

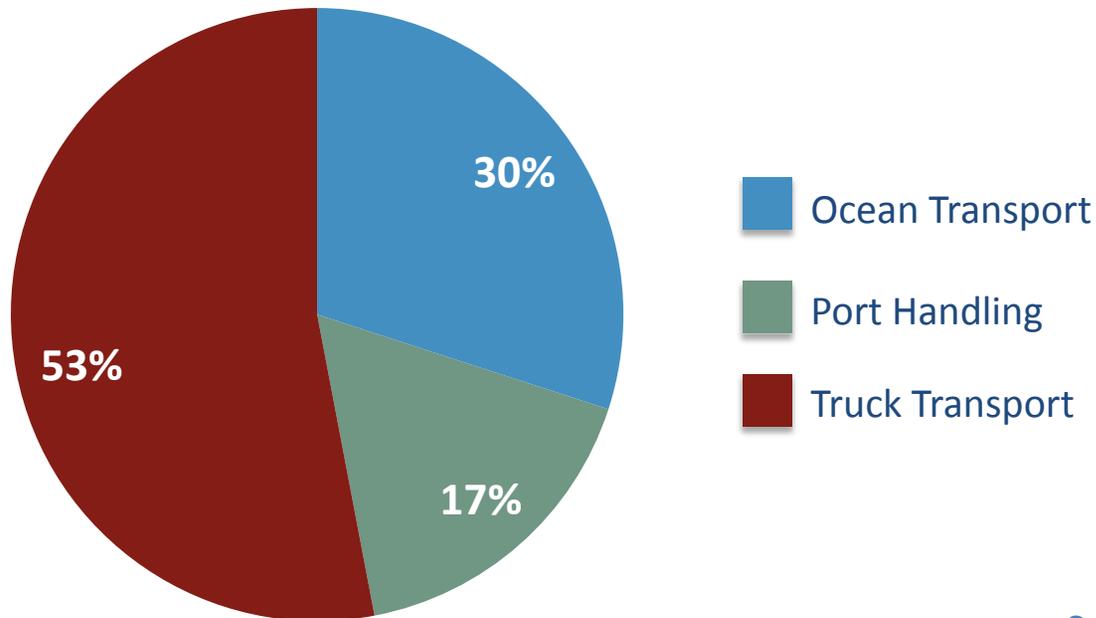
## Next Steps: Economic Benefits to NC

- Translating growth in maritime volumes into economic benefits
  - Shipping savings yield a productivity benefit, making local industry more competitive in the market
  - NC-based industries located in state and using ports to export support in-state jobs and earnings
  - Lower delivered costs result in consumer benefit
  - Reduction in truck freight saves road maintenance costs, limits road emissions, and yields safety benefits

# Infrastructure Constraints and Opportunities

# Infrastructure Influence on Delivered Costs

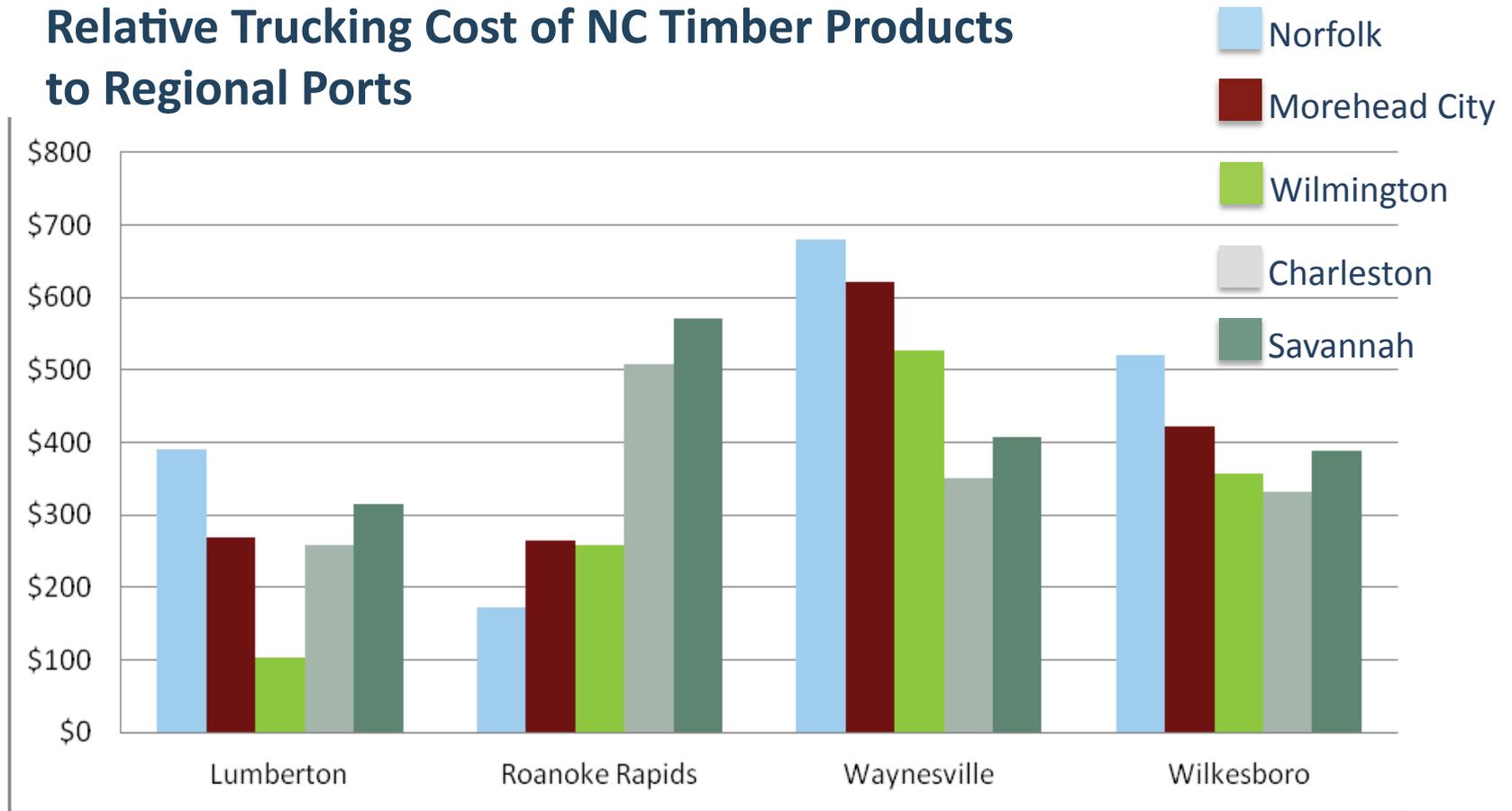
Sample Split of Containerized Transport Costs , from Wilmington



Source: AECOM/URS

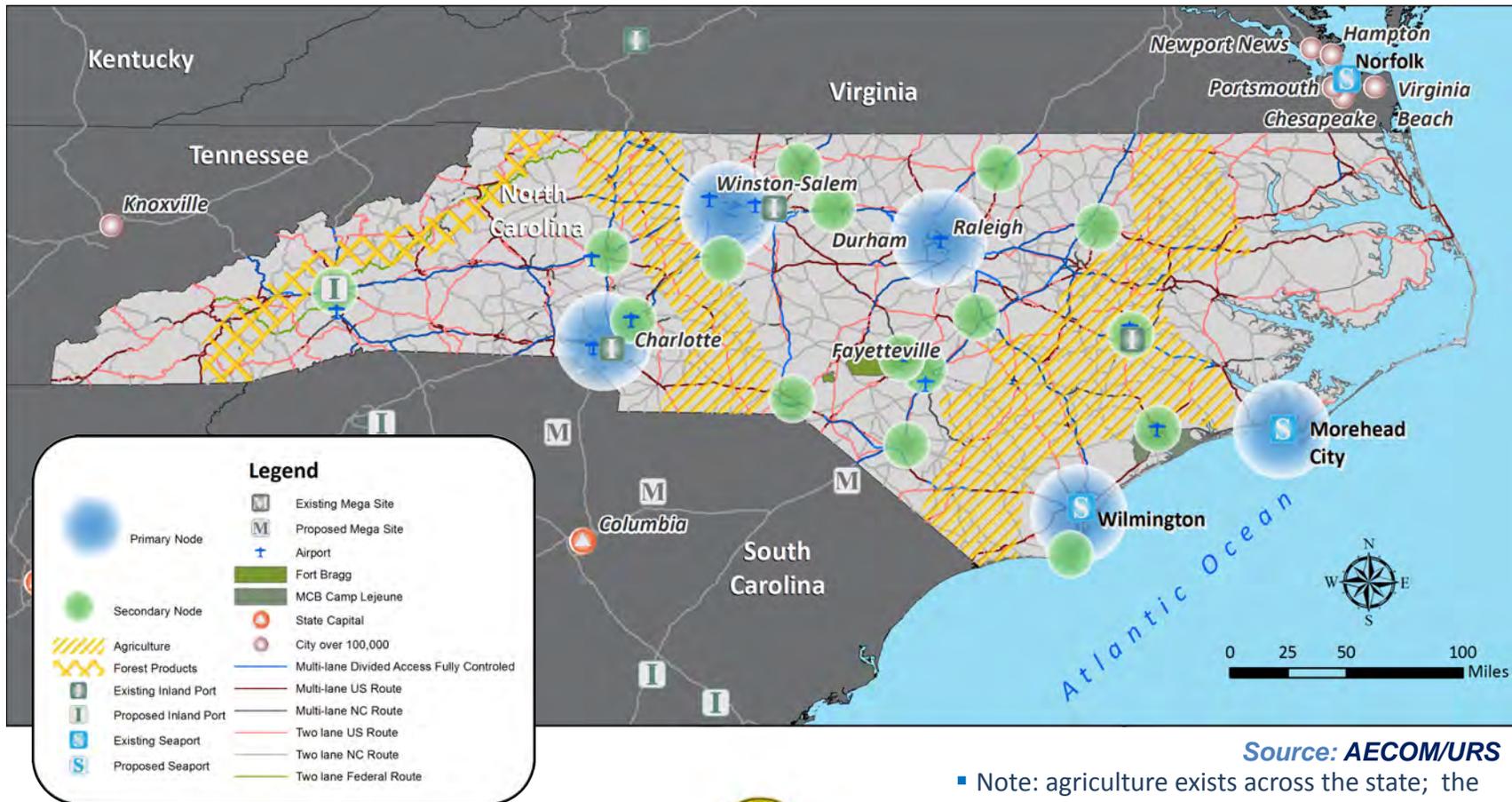
# Infrastructure Influence on Delivered Costs

**Relative Trucking Cost of NC Timber Products to Regional Ports**



Source: AECOM/URS

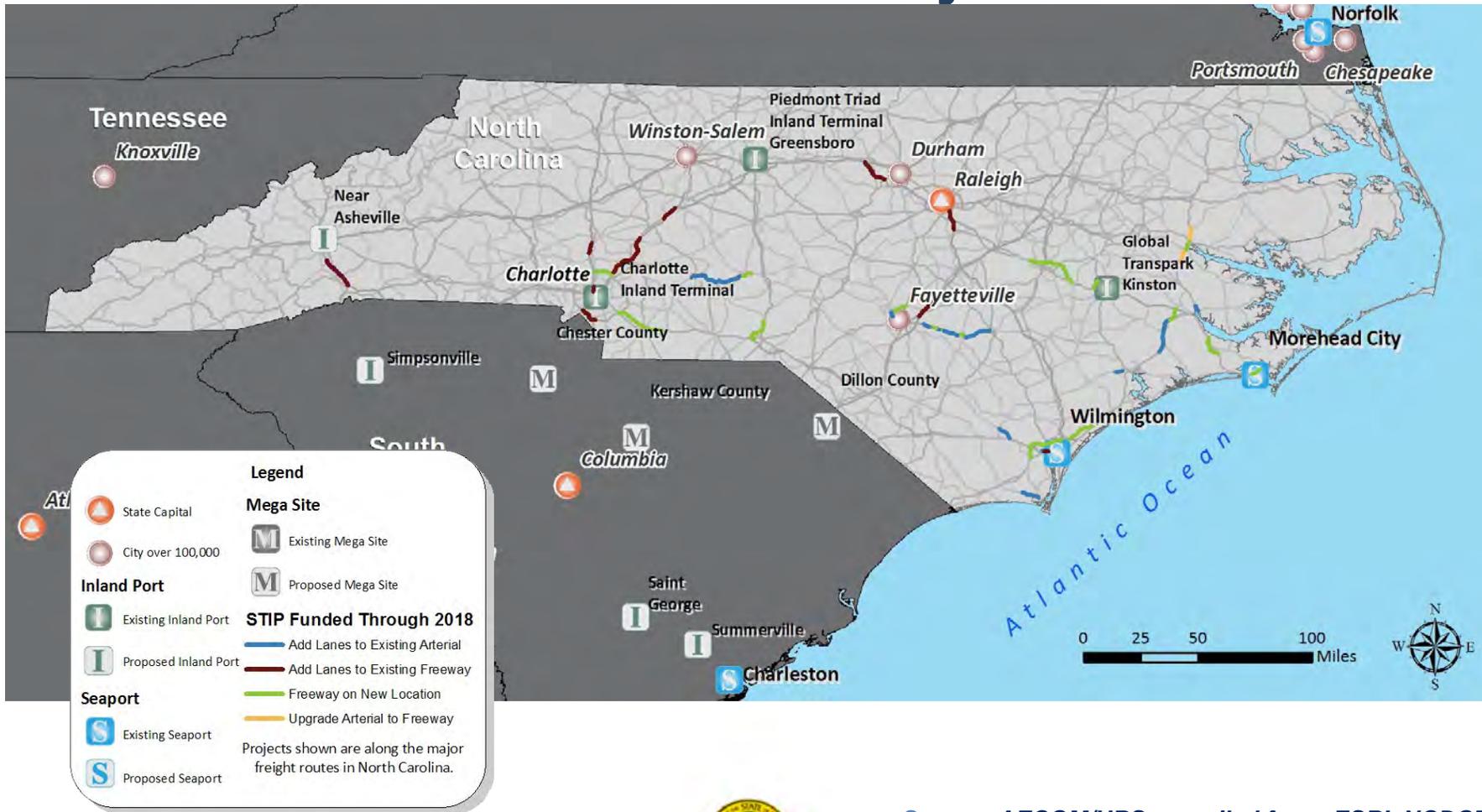
# NC Freight Nodes and Facilities



Source: AECOM/URS

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

# Funded STIP Projects



## Potential Truck Travel Time Savings (2040) Funded STIP Projects

NC Node → ↓ Regional Port	Camp Lejeune	Charlotte	Ft. Bragg	Greensboro / Winston -Salem	Global TransPark	Lumberton	Raleigh-Durham	Roanoke Rapids	Warsaw	I-95/I-40	I-40/I-26	I-40/I-77
Morehead City, NC	--	0:25	0:10	0:17	0:02	--	0:13	0:03	--	0:11	0:16	0:17
Wilmington, NC	0:03	0:12	0:04	0:07	--	0:01	0:02	--	--	--	0:20	0:08
Norfolk, VA	0:07	0:11	0:18	0:02	--	0:04	0:01	0:02	0:01	0:01	0:01	0:01
Charleston, SC	0:16	0:02	--	0:11	0:13	--	0:04	0:03	0:13	0:02	0:10	0:04
Savannah , GA	0:13	0:02	00	0:11	0:12	--	0:04	0:02	0:13	0:02	0:19	0:04

Source: AECOM/URS



- 0:15 to 0:29 reduction
- 0:30 to 0:59 reduction
- 1:00 or more reduction

# Funded STIP Projects *Plus*



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

## Potential Truck Travel Time Savings (2040) Funded STIP Projects *Plus*

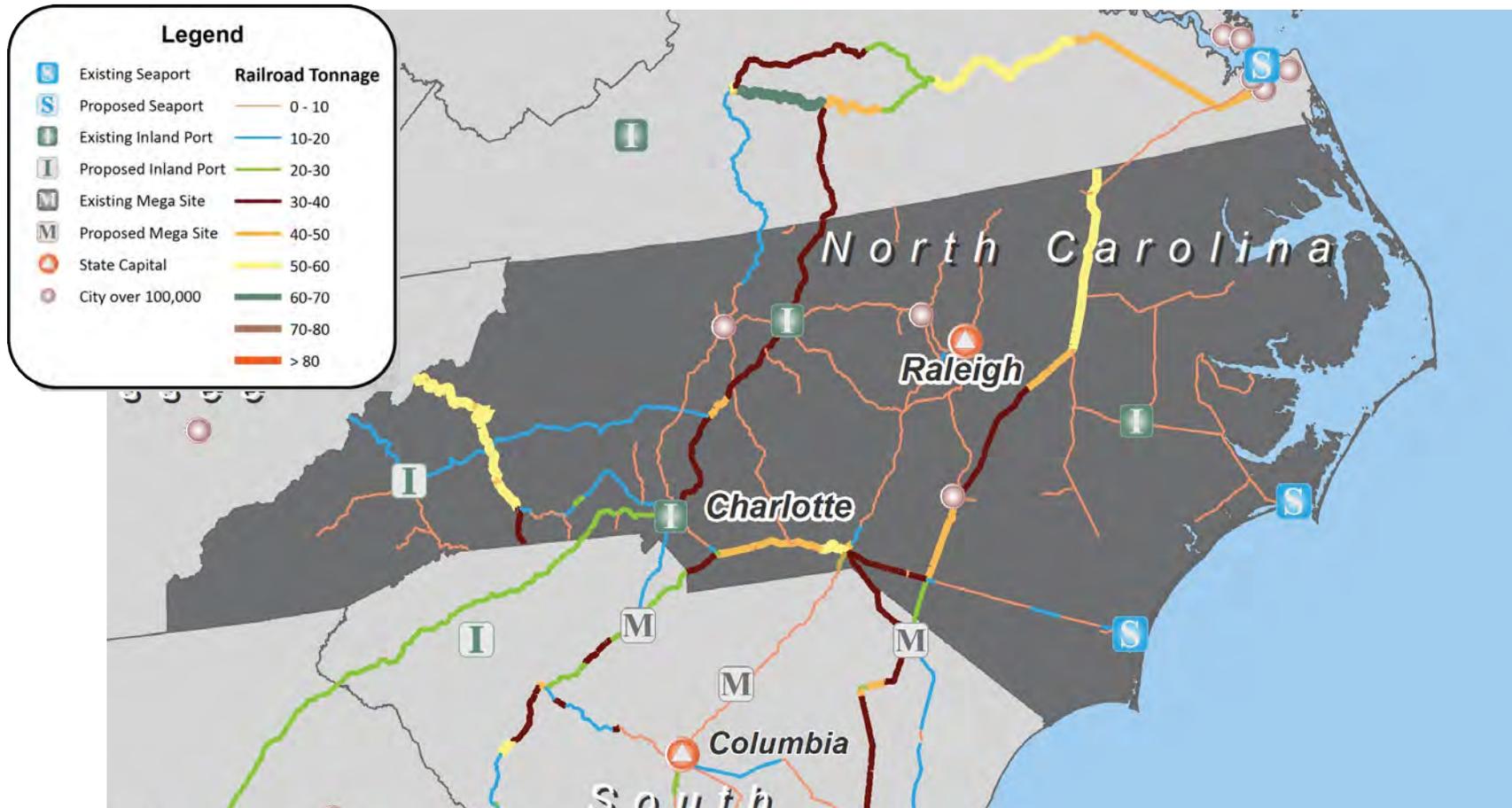
NC Node → ↓ Regional Port	Camp Lejeune	Charlotte	Ft. Bragg	Greensboro / Winston -Salem	Global TransPark	Lumberton	Raleigh-Durham	Roanoke Rapids	Warsaw	I-95/I-40	I-40/I-26	I-40/I-77
Morehead City, NC	0:13	1:32	1:22	0:47	0:59	0:50	0:42	0:20	0:33	0:18	0:46	0:46
Wilmington, NC	0:14	0:53	0:31	0:31	0:17	0:21	0:09	0:12	--	--	1:08	1:28
Norfolk, VA	1:10	0:14	0:18	0:07	1:40	0:04	0:01	0:02	0:14	0:01	0:07	0:07
Charleston, SC	0:57	0:02	0:11	0:26	1:00	--	0:16	0:08	0:43	0:07	0:11	0:23
Savannah , GA	0:53	0:02	0:11	0:26	0:30	--	0:16	0:07	0:18	0:07	0:11	0:11

Source: AECOM/URS



- 0:15 to 0:29 reduction
- 0:30 to 0:59 reduction
- 1:00 or more reduction

# North Carolina Freight Rail Network

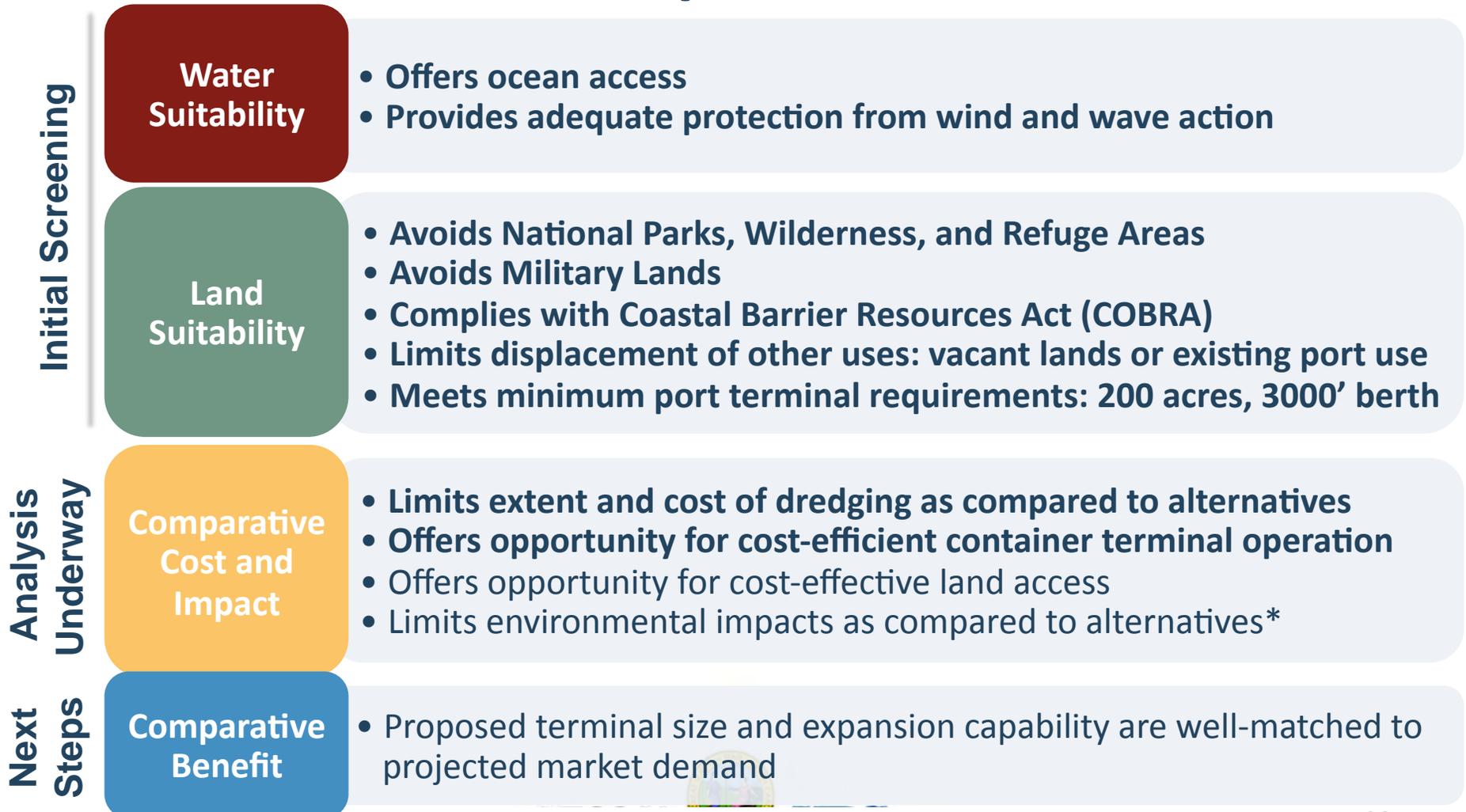


Source: AECOM/URS compiled from ESRI, NCDOT, CSX, Norfolk Southern, USGS ThematicMapping world borders dataset

## Railroad Access and Service

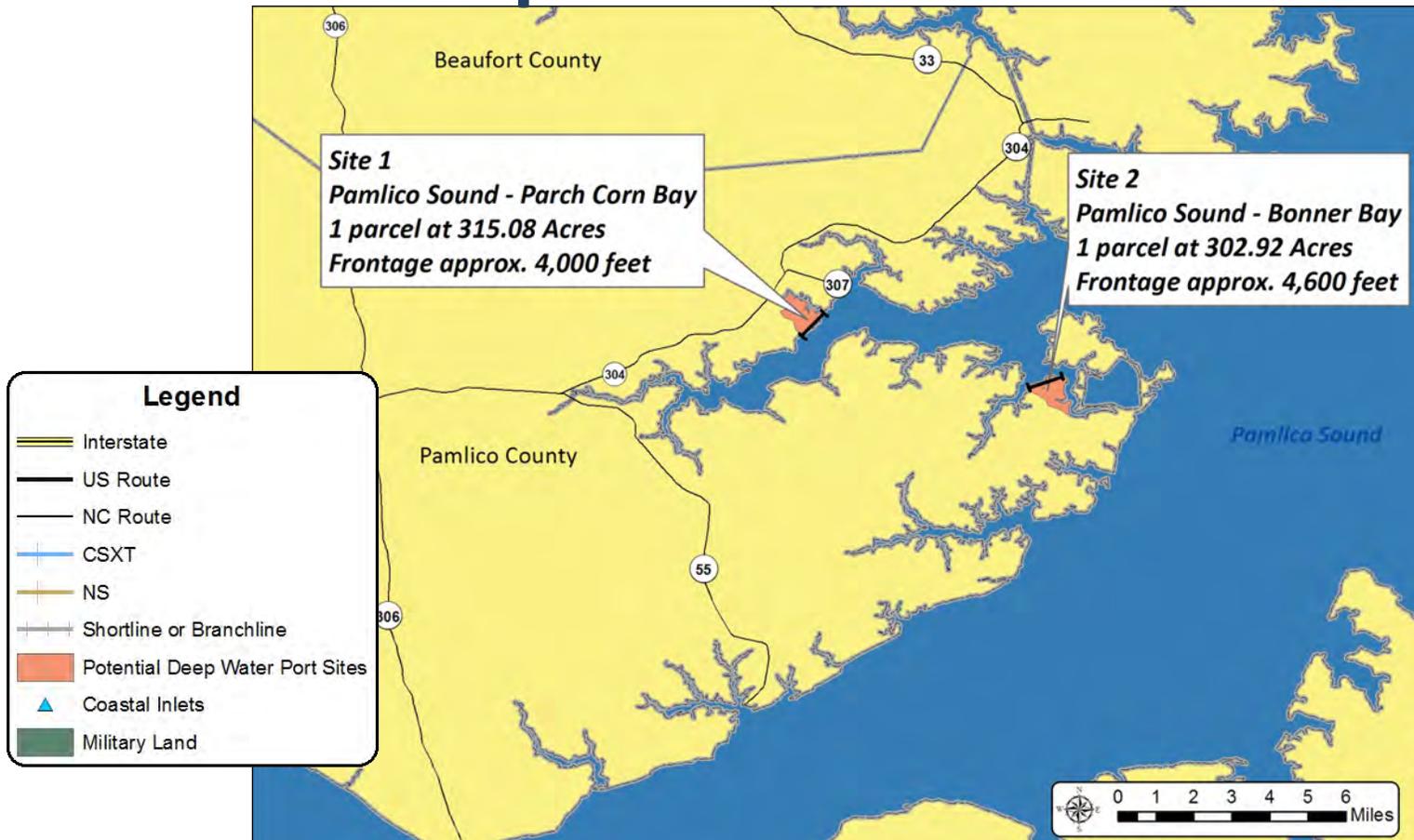
- New rail service connections to inland sites
  - Global TransPark, Fayetteville
- Improved port connections
  - Rail relocation to Morehead City
  - Wallace to Castle-Hayne
  - On-dock or near-dock rail yards
- Operational enhancements
  - Pembroke turn
  - Terminal efficiencies
- Corridor Improvements

## Potential Deepwater Port Sites



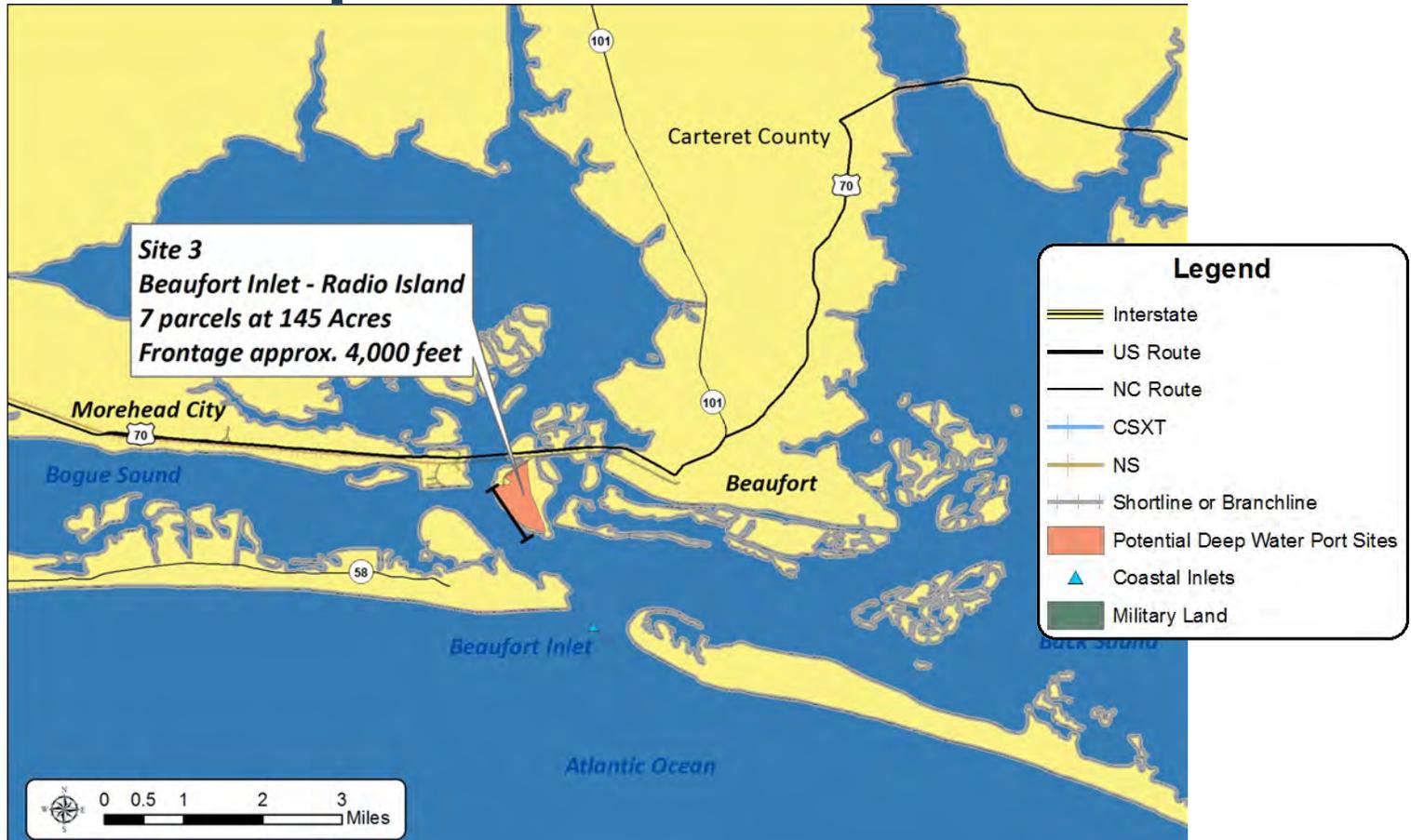
\* Environmental screening does not include full environmental impact analysis

# Deepwater Port Sites 1 & 2



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

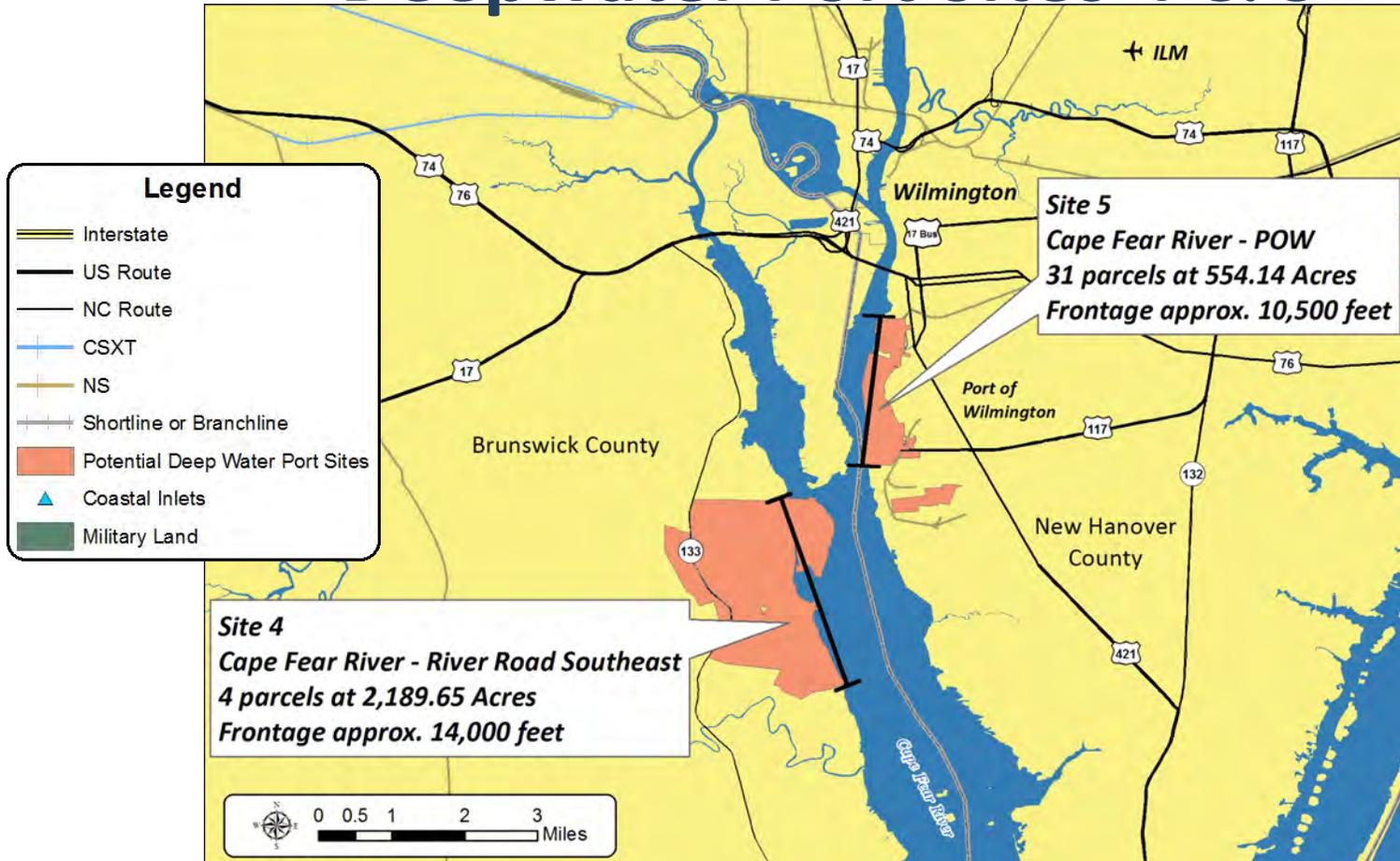
# Deepwater Port Site 3



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



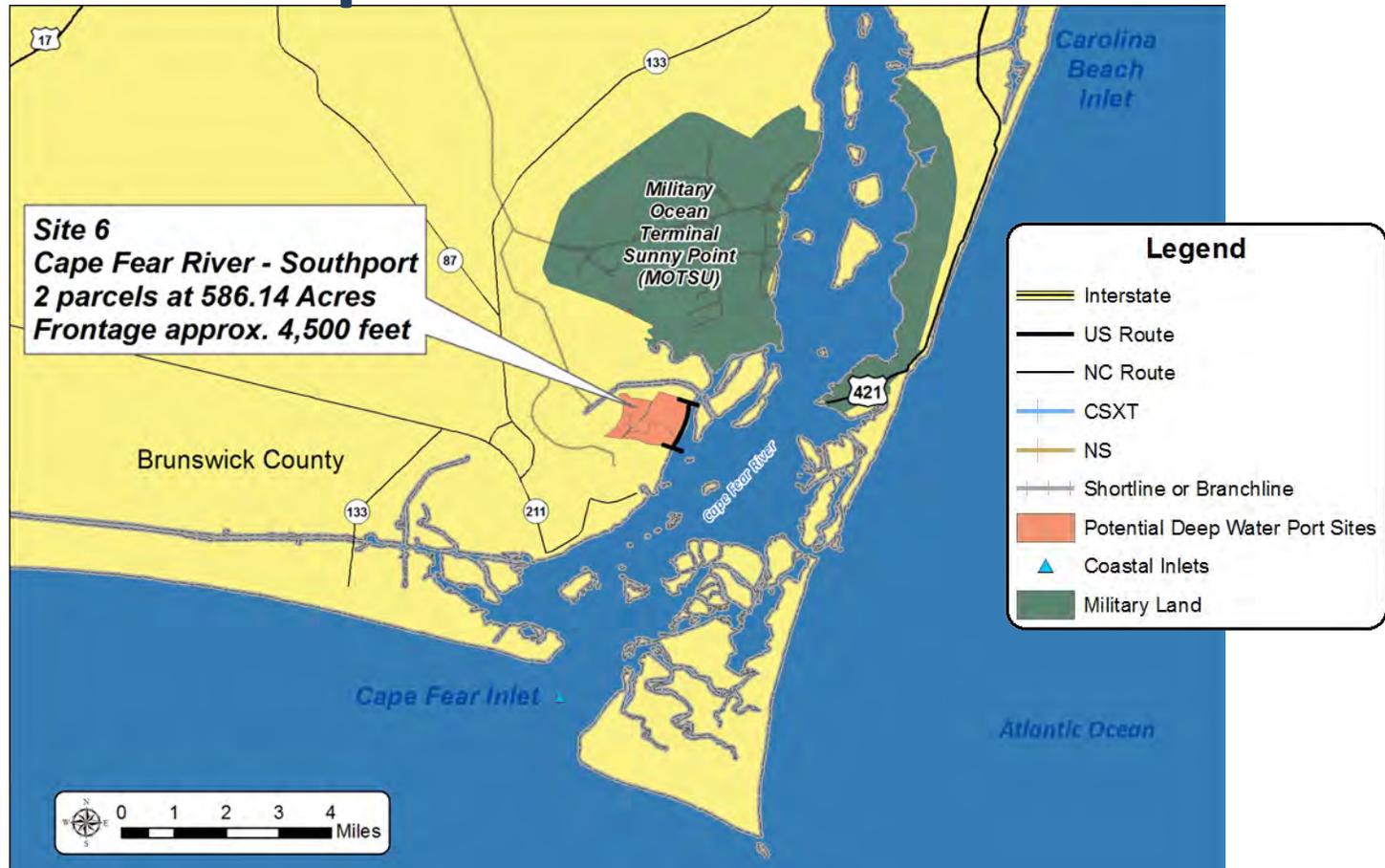
# Deepwater Port Sites 4 & 5



Source: AECOM/URS compiled from ESRI, NCDOT, Brunswick County, New Hanover County, USGS ThematicMapping world borders dataset, SeaMap SA 2001, and Moser and Taylor 1995



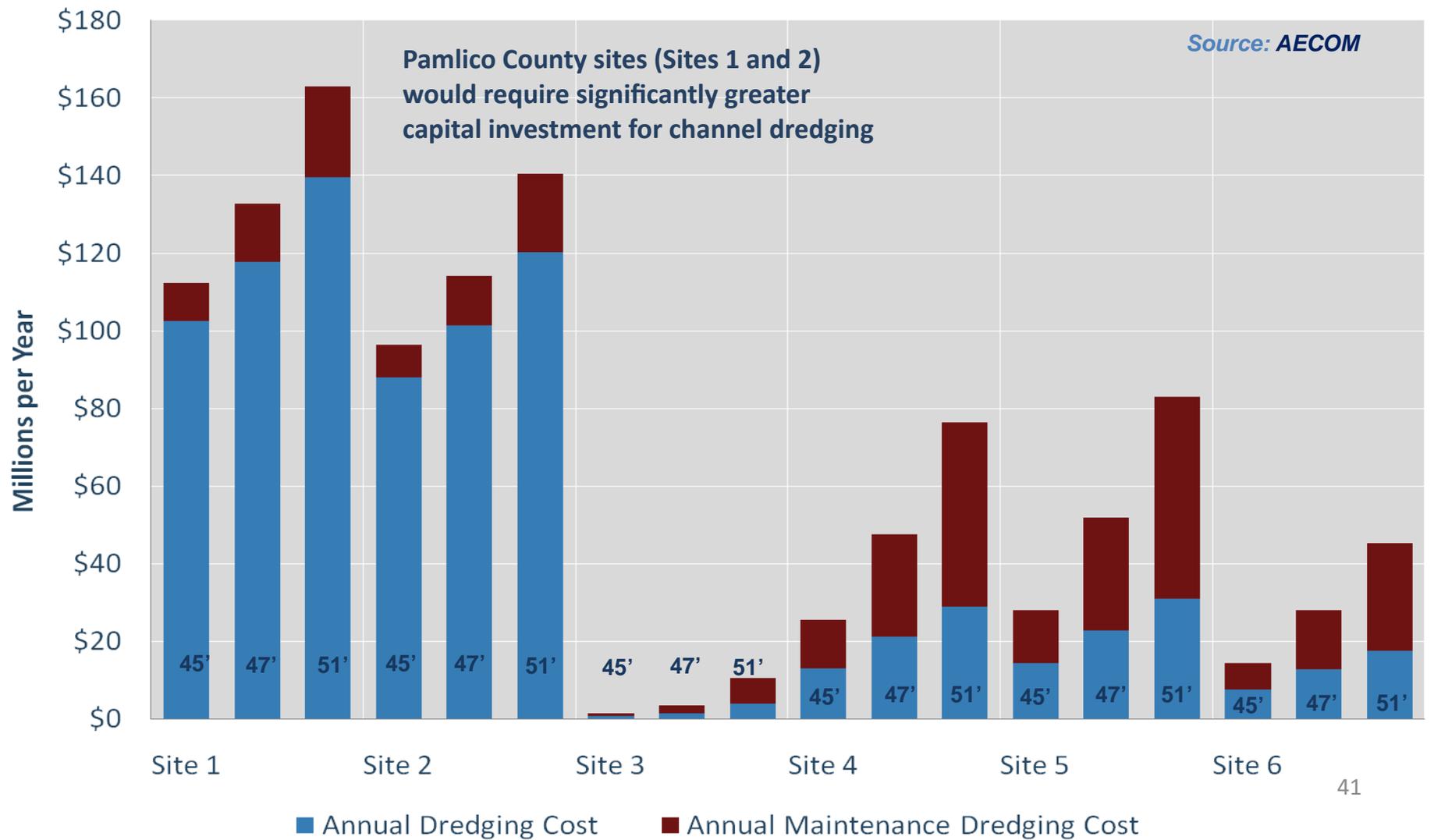
# Deepwater Port Site 6



Source: AECOM/URS compiled from ESRI, NCDOT, Brunswick County, New Hanover County, USGS ThematicMapping world borders dataset, SeaMap SA 2001, and Moser and Taylor 1995

# Annualized Dredging Costs

Site 3 and Site 6 have the minimum



# Container Capacity Expansion Alternatives

- **A:** Wilmington – 1 Berth, Reach Stacker (RS)
- **B:** Wilmington – 2 Berths, Reach Stacker (RS)
- **C:** Wilmington – 2 Berths, Rubber Tired Gantry (RTG)
  - **C1:** Opt C + Dredge to 45' + 20% Reduction in Dwell Time
  - **C2:** Opt C + Dredge to 47' + 35% Reduction in Dwell Time
  - **C3:** Opt C + Dredge to 51' + 35% Reduction in Dwell Time
- **D:** Morehead City – 2 Berths, RTG, 45' water
  - **D1:** Opt D + Dredge to 51' + 20% Reduction in Dwell Time
- **E:** Southport 3 Berths, RTG, 51' water
  - **E1:** Opt E + Automated Stacking Crane (ASC)

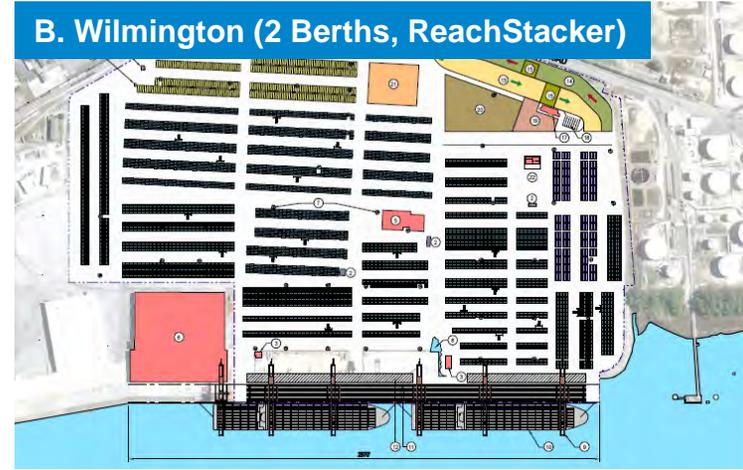


NORTH CAROLINA  
**MARITIME** Strategy

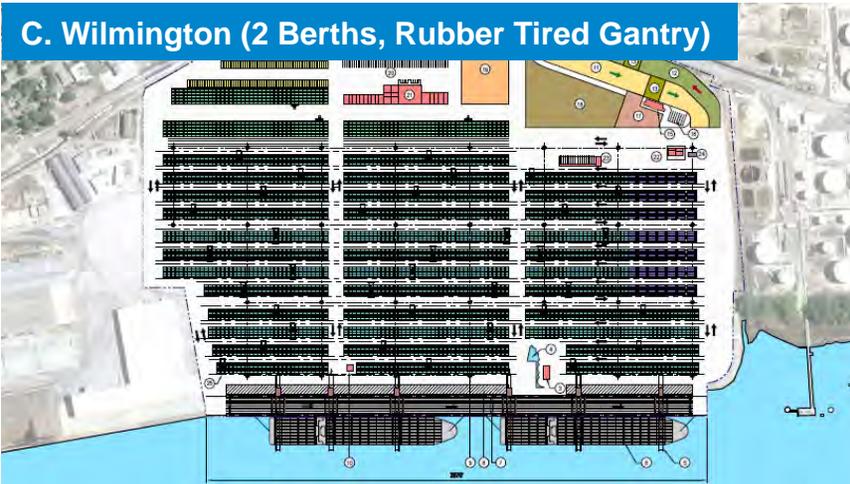
A. Wilmington (1 Berth, Reach Stacker)



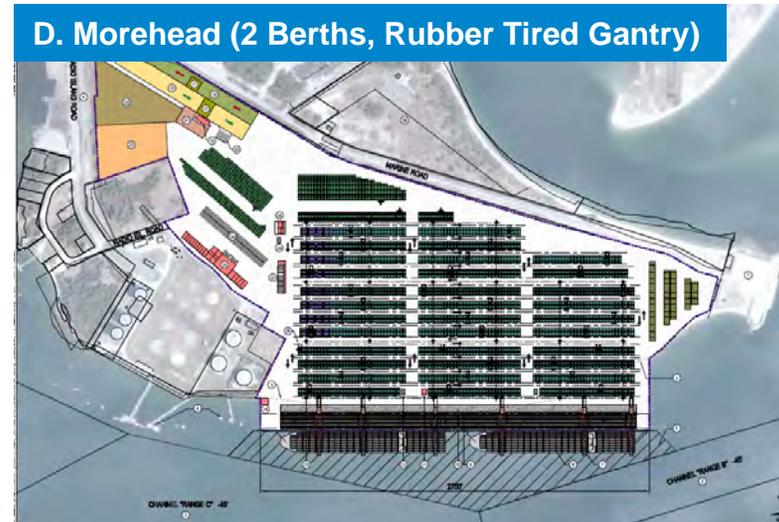
B. Wilmington (2 Berths, ReachStacker)



C. Wilmington (2 Berths, Rubber Tired Gantry)

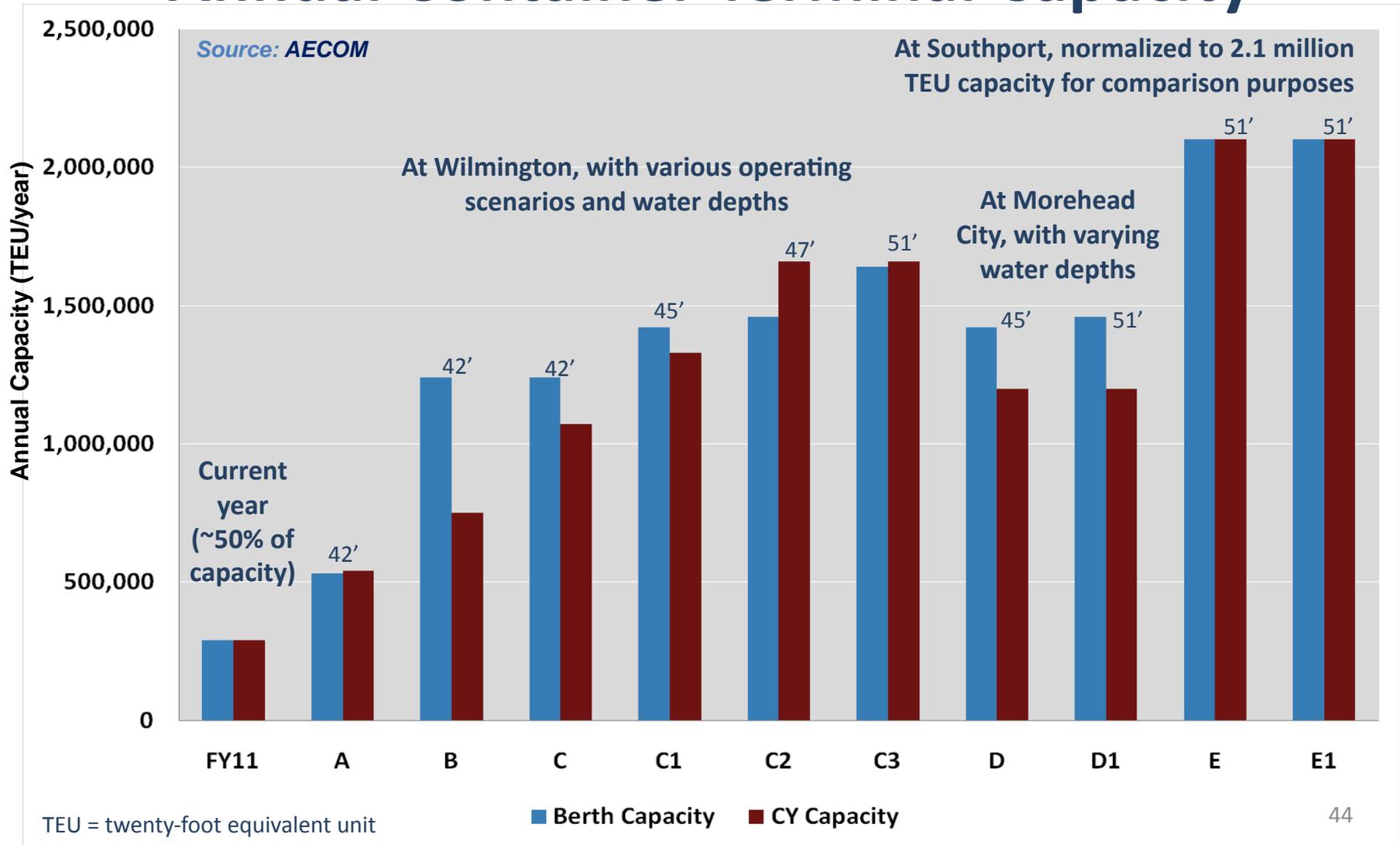


D. Morehead (2 Berths, Rubber Tired Gantry)



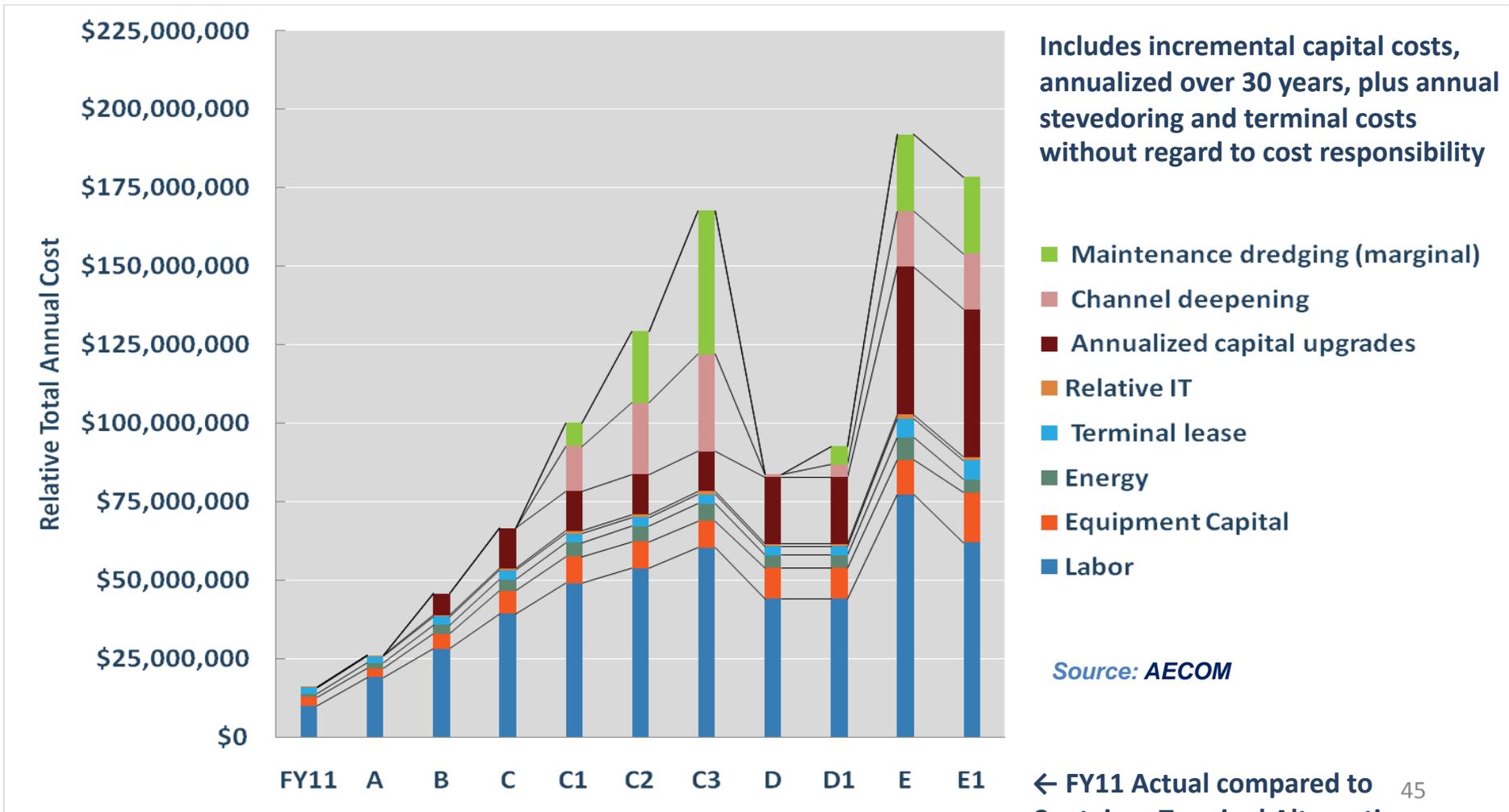
Source: AECOM

# Annual Container Terminal Capacity



# Annual Cost Comparison

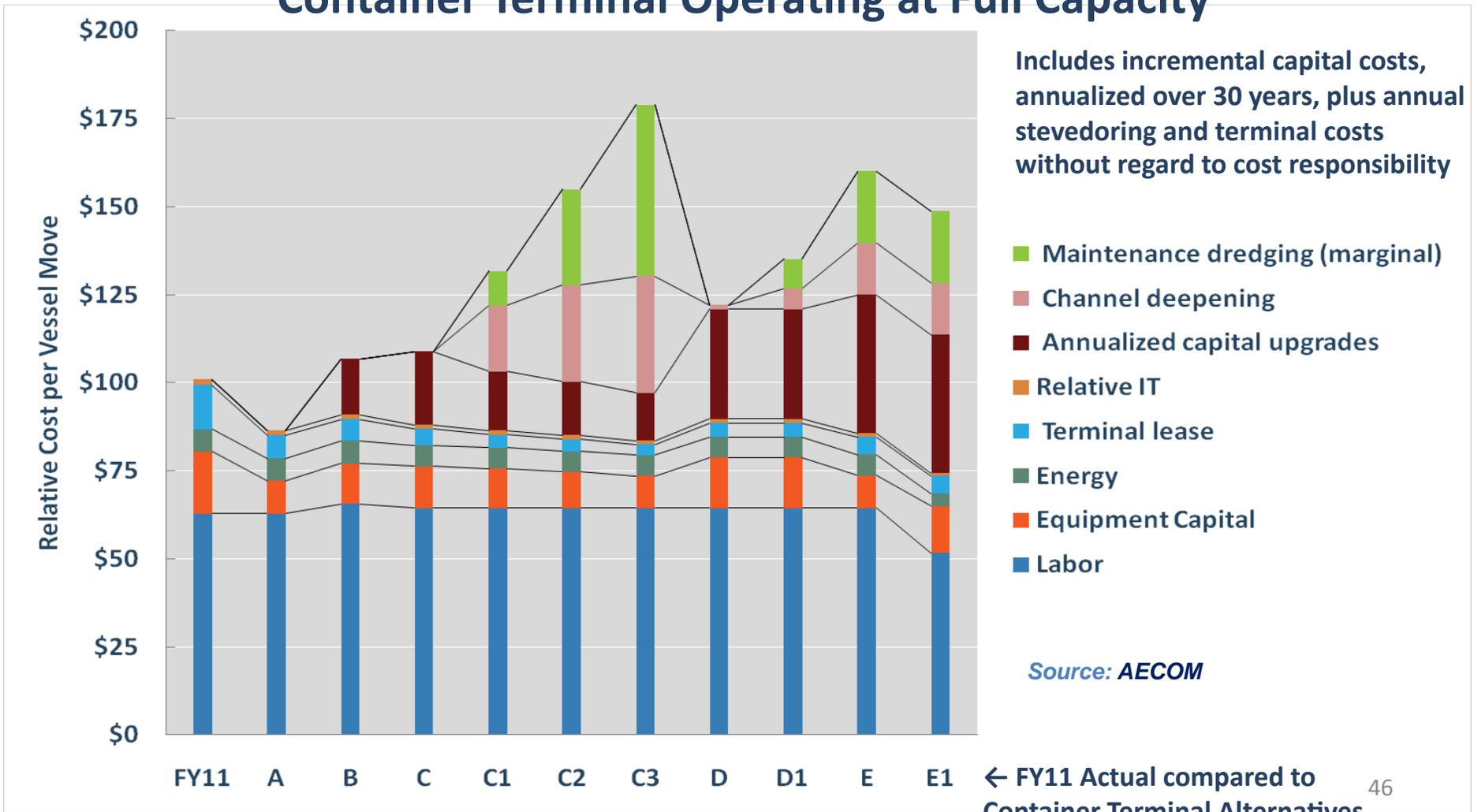
## Container Terminal Operating at Full Capacity



← FY11 Actual compared to Container Terminal Alternatives 45

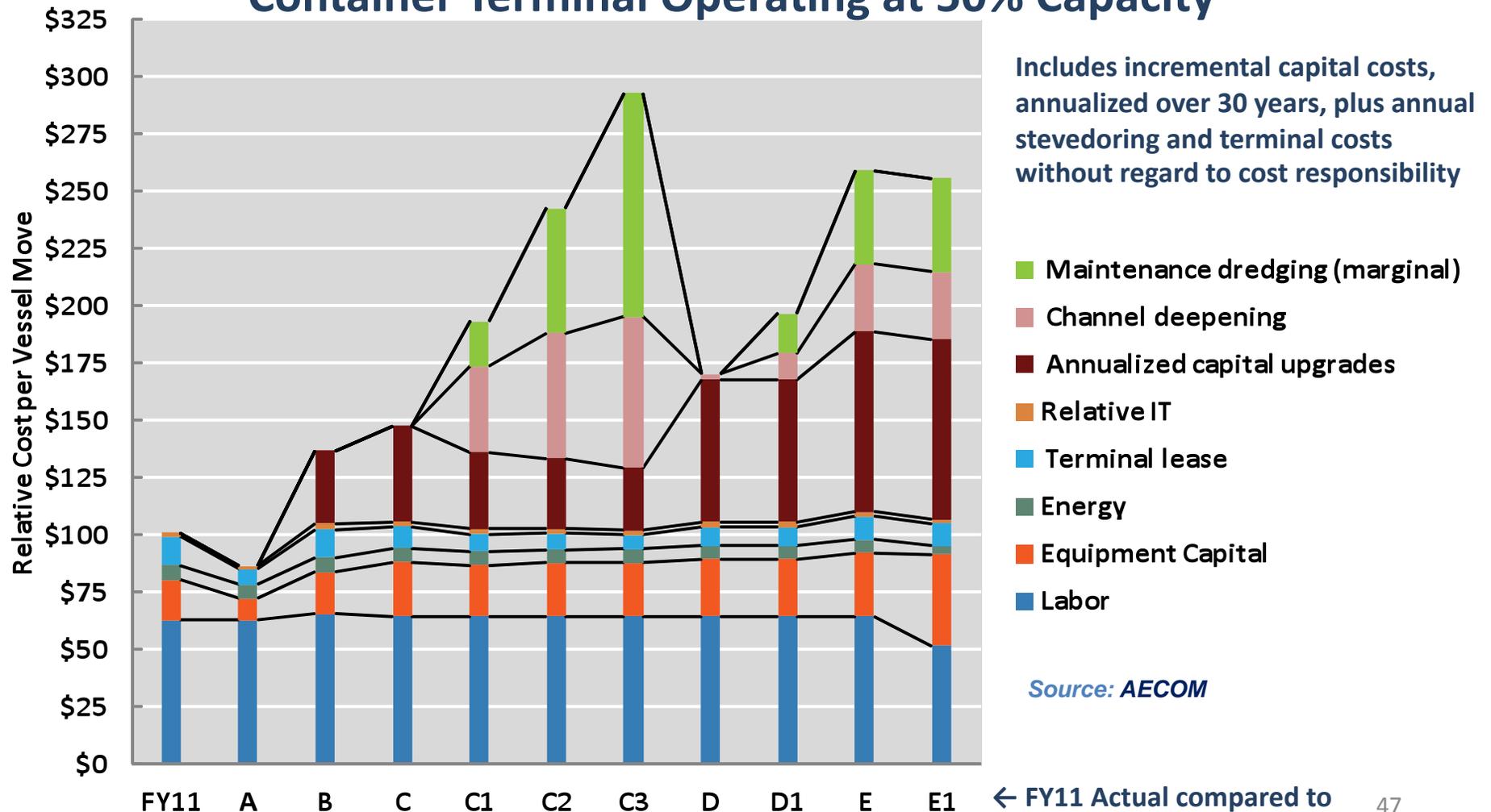
# Cost per Vessel Move

## Container Terminal Operating at Full Capacity



# Cost per Vessel Move

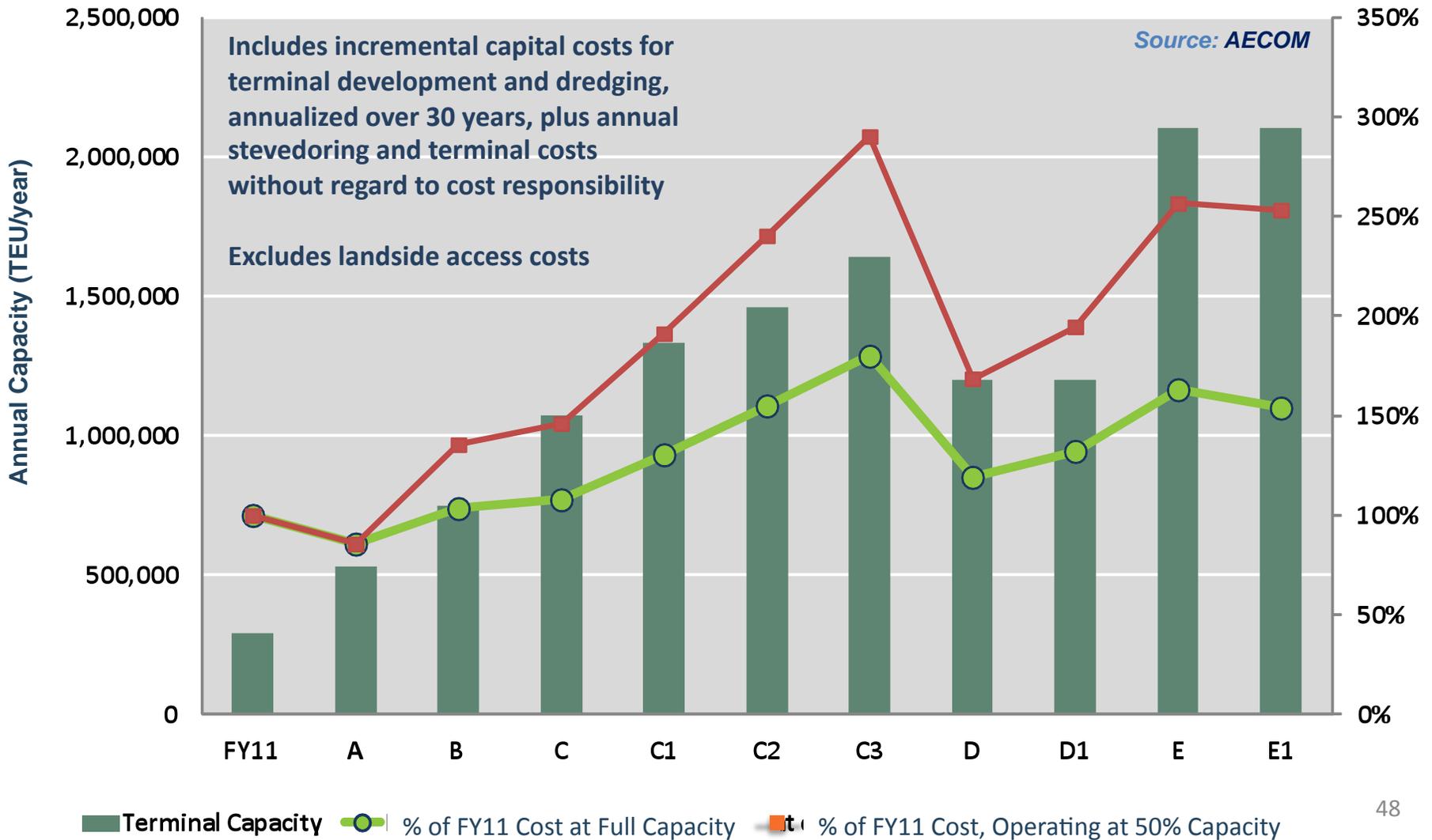
## Container Terminal Operating at 50% Capacity



Source: AECOM

← FY11 Actual compared to Container Terminal Alternatives 47

# Terminal Capacity vs. Cost per Move



## Comparison of Cost Efficiency at Candidate Deepwater Port Sites

- Economies of scale will allow cost per move to decrease as volumes increase
- To realize a total annual capacity of up to approximately 1 million TEU, it is most cost-effective to max out the existing facility at Wilmington than to build a new terminal somewhere else
- Cost efficiency of a new terminal at Morehead City at 51' depth is comparable to dredging Wilmington to 45', without considering landside access costs
- Morehead City's relative distance to population centers may make it less appealing to shippers as compared to Wilmington or other sites
- Overall, Southport sites can be more cost effective than Morehead City if landside access costs to Southport are 25% less than to Morehead City
- Cost calculations for new terminals favor Automated Stacker Cranes due to high productivity and low labor needs

# Focused Discussion

## Suggested Discussion Topics

- Market Scenario Risks and Challenges
- Infrastructure Constraints and Opportunities
- Evaluation Measures

# Public Comment

# Conclusions and Close