

Maritime Advisory Council

September 16, 2011
Asheville, NC



Welcome & Introductions



Introduce any members of the Maritime Strategy Executive Team
Allow Mayor of Asheville to welcome the Advisory Council

Agenda

- Goals for Today's Meeting
 - Timeline; Focused market scenarios
- NC Maritime Strategy Team Analysis Update
 - Industry and stakeholder feedback; Market opportunities; Infrastructure needs and constraints
- Focused Discussion Topics
 - Further stakeholder input; Market scenario risks and challenges
- Public Comment
- Conclusions and Close



Review agenda

We will highlight our goals for the meeting, recognize and add any additional goals that the AC would like to bring forward

The project team will then provide an update on our analysis and progress to date, with specific focus on input we have received from our stakeholder meetings and industry workshops, definition of market opportunities, and evaluation of infrastructure needs and constraints. As we go through our presentation, we encourage the Advisory Council to help identify topics for more specific discussion during the next portion of the agenda.

We have proposed the discussion of further stakeholder input as well as market scenario risks and challenges as topics for more focused discussion – possibly as breakout sessions – but this can be tailored to match the interests of the Advisory Council.

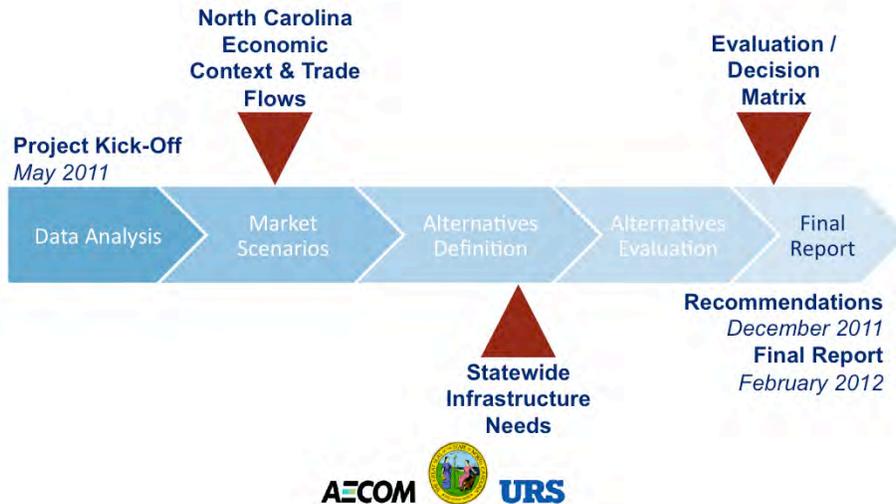
After the focused discussion by the council, we have allotted time for public comment, before our recap and close.

When we get to focused discussion

Goals for Today's Meeting



Summary Timeline



The North Carolina Maritime Strategy includes four major technical tasks – from data analysis to alternatives evaluation – leading to the preparation of a final report and underlain by input from industry and public stakeholders.

Since our last meeting in July, the study team has focused on market scenario development and identification of infrastructure needs to support these market opportunities.

With a defined milestone to provide an evaluation and decision matrix to the State by end of December, the Advisory Council's input and response to our work to date is key to ensuring we have meaningful results.

Market Scenario Framework

Upper Bound	Conservative	Lower Bound ("Do Nothing")
Advance Market Position	Maintain Market Position	Declining Market Position
Growth Outcome		
<ul style="list-style-type: none"> • Market share capture or decline • New markets 		
Necessary Conditions		
<ul style="list-style-type: none"> • Vessel calls and sizes • Port capacity and equipment • Land and water access • Industry growth 		
Risks and Opportunities		
<ul style="list-style-type: none"> • Improvements at competitor ports outpace NCSIPA investments in capacity, reliability, and efficiency • Competitor ports attract more frequent ship calls • 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		
<ul style="list-style-type: none"> • Cooperative agreements • Niche markets • Targeted infrastructure investments • Leverage strength in bulk and breakbulk 		



At our last meeting, we presented you with a framework for identifying and evaluating market scenarios.

Today, we will present opportunities that may exist to advance North Carolina's position in various market areas and we will provide information on the overall market size, the necessary conditions that must exist to allow North Carolina to capture a meaningful share of that market, identify risks and opportunities, and discuss strategies—such as infrastructure investments and policies—that would support realization of each market scenario.

We are particularly interested in your thoughts on downside risks and upside opportunities that should be considered or issues that we may have missed.

Industry and Stakeholder Feedback



Industry and stakeholder input has been an important component of the identification of market opportunities for waterborne trade in and out of North Carolina.

Since our last meeting, the study team has held several industry workshops with the support of various advisory council members in identifying stakeholder participants and moderating discussion sessions.

Industry and Stakeholder Meetings to Date

- Agriculture Workshop
- Non-Ag Shipper Workshop
- Shipping Lines Workshop
- Railroad, Trucking and Distribution Workshop
- Focused discussions and interviews with:
 - 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 June, the study team has held four industry workshops, with representatives from the agriculture, non-ag shipper, shipping lines, and railroad and trucking industries.

We have also held focused discussions and interviews with MPOs around the state, the NC Department of Commerce, USACE, and community and business interests.

Our stakeholder coordination is far from complete – we are working to set up industry workshops that will focus on military interests, special zones (such foreign trade zones and distribution centers), and are scheduling additional focused meetings with community stakeholder groups and economic development commissions. Several public meetings and public information workshops will also be held in the fall.

Many of you have participated in these meetings. In fact, Advisory Council support in this effort is a tremendous factor in getting comprehensive stakeholder input.

At this point, we would like to bring the Advisory Council up to speed on the messages we have heard—and ask your input on what additional industry and stakeholder input should be sought to fill in information gaps and resolve unanswered questions.

Agriculture Workshop

- Landside costs are 50% or more of total transportation cost—efficient highway and rail access is key to port selection
- Rail costs to NC ports are often prohibitive—perception that the railroads do not want NC agriculture business
- Availability of containers is an influential factor driving port selection—exporters use ports with good import volumes
- Perceived lack of capacity to handle bulk at NC ports
- Need for refrigeration/cold storage facilities
- Time to market is an important port selection factor for perishable goods



Our agriculture industry workshop was held in August. Some key messages and points made by the ag industry representatives are highlighted here:

Ag shippers told us that their landside – truck or rail – shipping costs represent more than half (and sometimes near 70%) of export transportation costs. Cost efficient highway and rail access is therefore a key element to selecting a port of departure.

Most NC agriculture products are transported to regional ports by truck. Rail freight rates quoted have been prohibitively high, leading ag shippers to believe that the railroads are not interested in their business in North Carolina.

For ag products shipped by containers, the availability of containers for export is an influential factor in selecting a port. Because containers are available at ports with good import volumes, ports with containerized imports are also getting the containerized export trade.

Agriculture shippers don't perceive that North Carolina ports have adequate bulk handling capacity to support the state's bulk grain exports.

There is a need for refrigeration or cold storage facilities on terminal or very near the port.

Non-frozen perishable goods have a limited shelf life –total time to market is also an important factor in choosing a port.

Non-Agriculture Shipper Workshop

- Availability of containers is important factor in port selection – exporters must use ports that have good import volumes
- Access to carriers and frequency of calls noted several times in port selection—suggestion to offer incentives to carrier to build business
- Landside costs are 50% or more of total transportation cost—perception that NC highways do not efficiently support port access
- Growing need for Ro-Ro and oversize cargo handling
- Perception that port, state, and community do not speak with one voice—other port communities welcome port business more than in North Carolina



10

For non-ag shippers, we heard many of the same messages as were relayed at the ag workshop.

For exporters, the availability of containers is key. Imports drive exports.

These shippers also seek ports that have access to multiple ocean carriers and a high frequency of vessel calls.

Landside costs represent a majority of the delivered cost of goods. The non-ag shippers perceived that NC highways do not provide adequate port access.

We heard from Caterpillar, with its new plant set to open in North Carolina in early 2012, that they have a need for handling of Ro-Ro, oversize and mixed cargo.

One interesting message delivered strongly by this group was the perception that the NC ports, state and community do not speak with one voice or share a common mission with respect to maritime trade. Other port communities are doing a better job of welcoming port business than is North Carolina. Concerns that NC's port communities are not supportive of port industry is perceived as a business risk to long-term investments in North Carolina.

Shipping Lines Workshop

- Operating water depth for vessels likely to call at NC ports: 46'-48'
- 10%+ discount may incentivize carriers to move to new port
- Interested in ports' ability to cross-dock or transload (transfer cargo from international 20'/40' boxes to 53' domestic boxes)
- Port of Wilmington:
 - Experienced workforce, good interstate access, gateway to Latin America
 - Limited by turning basin and water depth, no intermodal rail, no trans-Pacific trade
- Port of Morehead City:
 - Deeper water, good for ag cargo
 - Poor land access, limited area for expansion if used for container operations



The study team met with shipping lines in August.

With a focus on container ships, the shipping lines were consistent in defining an operating water depth of 46 to 48 feet as an important feature to accommodate the ships that would call on NC ports into the future.

Container lines seek to empty and reload their containers as quickly as possible. In order to avoid costly repositioning of containers that end up at inland destinations, these carriers are interested in calling at ports that have the ability to transfer cargo from their international 20' or 40' containers to 53'-long domestic boxes. The shipping lines' containers, therefore, would not leave the port.

Shipping lines provided the team with pros and cons for use of port facilities in Wilmington and Morehead City.

At Wilmington, the shipping lines recognized the port's experienced workforce, including the high productivity rate in lifting containers to/from the vessel. They also recognized Wilmington's good interstate access on I-40, and identified the port as an important gateway to Latin America.

On the negative side, Wilmington's capacity is limited by its turning basin and water depth. The lack of intermodal rail service is a negative to attracting containerships and Wilmington does not have any trans-Pacific service.

At the Port of Morehead City, the shipping lines identified its deeper water as an attraction, and they thought Morehead City was good for agricultural cargo. The carriers cited Morehead City's poor land access as a negative. Also the limited area for expansion would detract from potential container terminal development there.

It was noted at the meeting that the ocean carriers represented at the workshop were all container lines. A suggestion for a supplemental workshop was a follow on meeting with shipping lines specializing in bulk, breakbulk, and mixed cargo.

Railroad and Trucking Workshop

- Interest in continued collaboration to better understand and advance complementary goals of port and railroads
- Railroads respond to, rather than dictate, port development
- The market competition isn't between railroads, but actually between railroads and trucks, especially at NC ports
- Railroads have pre-established contracts with big-box retailers that can skew the true marketplace pricing— and steamship companies may have similar arrangements
- Port's need for dual rail service may be more perception than reality—possible solution in shared *haulage* rather than *dual operation* of NS and CSX to achieve threshold freight volumes



12

At the team's workshop with railroad and trucking interests, the study team heard clearly that these folks would like to maintain ongoing dialog with NC ports and the state to better understand and advance mutually beneficial goals.

The railroads communicated to the group that, while they actively seek new business opportunities, ports are the drivers of the business. Railroad service is dictated by available freight volumes. This "chicken-and-egg" issue arose in other workshops as well.

Workshop participants agreed that the primary point of competition is between railroads and truckers – rather than between the two railroads. This is particularly true for NC ports, which is largely a trucking market today.

In considering ways that the ports can attract shippers to their facilities, the railroads shared with us that the railroads have pre-established contracts with big-box retailers that can skew marketplace pricing. Shipping lines have similar arrangements so that retailers will use ports that are served by a specific steamship line and by a specific railroad.

While we have heard from the port and from the shipping lines that the availability of rail service is key to attracting container vessel calls, the railroads told us that the need for dual rail access—with competing trains operated by NS and CSX—may be more perception than reality. The railroads suggested that shared service—whereby NS boxes are carried on CSX trains and vice versa—may be a better way to achieve freight volumes to support cost-effective rail service. I hope I am not putting our railroad representatives on the spot, in sharing that they agreed to discuss this idea among themselves as a follow up action to our workshop.

Coastal Engineering and Regulatory Input

- Funding is the biggest challenge to channel dredging— priorities based on military need and national economic benefit
- Deeper channel means wider footprint – and associated environmental impacts
- USACE is examining Battery Island turn, shoaling at Bald Head Island, and expanded turning basin
- Good quality sand currently dredged from Cape Fear and Beaufort Inlet; however significant deepening will need to consider presence of rock and hard bottom features



In parallel to our group workshops, the study team has conducted conversations and interviews with entities with an interest in coastal engineering and regulatory issues. This has included discussions with the USACE, as we reported at our last meeting.

Key messages related to coastal issues are listed here.

Funding is a big challenge to channel dredging and deepening. Federal funds are prioritized based on military need and projected national economic benefit.

A deeper channel means a wider footprint. The environmental impacts associated with this wider channel need to be identified and mitigated.

USACE has been in discussions with NC ports on proposed NCIT site as well as other vessel navigation concerns to Wilmington. They are actively analyzing constraints and alternatives at the Battery Island “S” turn, concerns over shoaling at Bald Head Island, and the need for an expanded turning basin.

Experts in the geology of the North Carolina coast acknowledged that dredging at Cape Fear and Beaufort Inlets has yielded good quality sand that has supported beneficial uses and beach replenishment. Significant deepening will need to consider the presence of rock and hard bottom features, along with their associated environmental and cost implications.

Metropolitan Planning Organizations

- Most freight in NC travels by truck; some rail freight
- Highway congestion is a concern—need improved freight planning and investment in roadway and rail networks, particularly port connections
- Freight hubs identified:
 - (primary) Wilmington, Morehead City, Raleigh-Durham, Charlotte, and Winston-Salem/Greensboro/High Point
 - (secondary) Rocky Mount, Henderson, Global TransPark, Lumberton, Ft. Bragg, Fayetteville, Camp Lejeune, Southport, Military Ocean Terminal at Sunny Point, Hamlet, Burlington, Statesville, Concord, Linwood, Reidsville, and Asheville
- Some explicitly indicated the need for a deepwater port in NC



The project team contacted MPO's throughout the state and received responses and input from several, including:

Wilmington Urban Area MPO
Rocky Mount MPO
Greenville Urban Area MPO
Fayetteville MPO
Jacksonville Urban Area MPO
Greater Hickory MPO
High Point Urban Area MPO
Gaston Urban Area MPO
Cabarrus-Rowan MPO
Burlington-Graham MPO

MPOs throughout the state recognized that most freight in their regions is moved by truck with some rail freight.

Because of this reliance on trucks, highway congestion is a concern. MPOs expressed the need for improved statewide freight planning, along with funding for and investment in roadway and rail networks that promote goods movement, with particular attention needed to port connections.

MPOs identified several specific freight hubs in their regions. Those that they considered primary or secondary are listed here.

While this input was unsolicited, some MPOs explicitly indicated that there is a need for a deepwater port in NC to support commerce in their regions.

Community Stakeholder Groups

- Concerns expressed in focused meetings reflect the individual interests of stakeholder groups
- Need for jobs and viable industry vs. potential negative impacts of port development
- One common theme: environmentally-responsible port development is crucial
- Governor’s Executive Order 99



Not surprisingly, input received from various community stakeholder groups has been reflective of the mission and focus of each individual group –often juxtaposing the need for jobs and economic opportunities against the potential negative effects of port development.

One common theme that has been heard, however, is the need for an environmentally responsible approach to port-related developments.

Finally, in response to concerns expressed by port communities and issuance of the Governor’s Executive Order 99, we have scheduled meetings to allow public comment and help “identify activities and uses of the Wilmington and Morehead City ports that are not incompatible with the underlying economic base and existing predominate economic sectors supported by the surrounding community.” These meetings will be held in Morehead City and in Wilmington on September 27 and 29, respectively.

Recurring Themes from Stakeholders

- Need for economic development and jobs
- Environmental responsibility
- Railroad service and volume
- Highway connections and capacity
- Opportunities in bulk commodities
- Incentives to attract ocean carriers
- Achieving import–export balance



From the input we have received to date, some common themes have surfaced. Perhaps some of these can be explored further as part of the Advisory Council’s focused discussions:

First, there is a need for economic development and jobs. The recent unemployment figures for NC, which is 1% greater than the national rate, support this input.

Environmental responsibility is important to the definition of port-related development in North Carolina.

The need for improved railroad service—and the freight volumes to support this service—is a key factor in the success of maritime trade in NC

Highway connections and capacity is always important.

Alternatives should consider opportunities in bulk commodities

More ship calls will bring more volume that can be used to support enhanced rail service. Stakeholders suggested the use of incentives to attract ocean carriers.

Finally, we heard from shippers and shipping lines alike that achieving and import-export balance was key. Any export strategy should consider associated imports to attract vessel calls and, for containerized goods, ensure the availability of international boxes

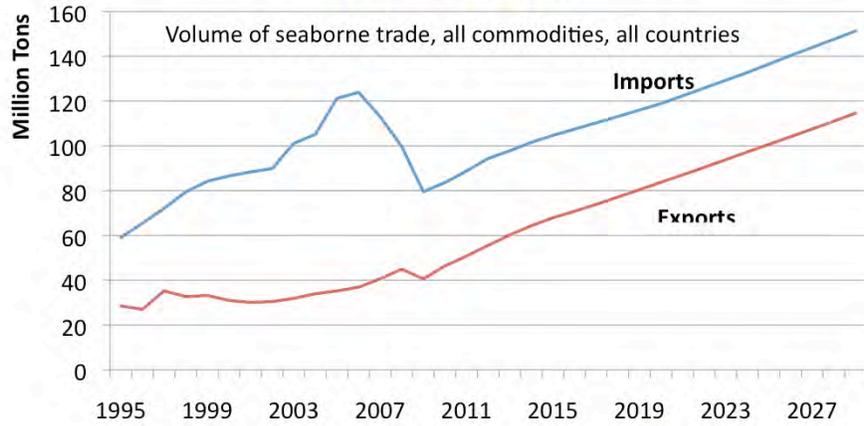
Market Opportunities



Stakeholder discussions, along with our own data collection and analysis, have provided key input to definition of market opportunities for North Carolina. We have used this information to focus market alternatives in regional waterborne trade on those areas where NC may have a unique position or that would particularly benefit the State's industries.

I'd now like to turn over the presentation to our economist, Toni Horst, who will share with you an initial set of market opportunities for North Carolina's waterborne trade.

South Atlantic Trade Imbalance Has Improved in Recent Years



Source: IHS Global Insight, 2011 Forecast



Market Opportunity: Grain

Scenario: Expand Grain Market

Growth Outcome	<ul style="list-style-type: none"> • Agricultural producers located in close proximity to port report they could produce much more than currently exported • Solid growth for very large market—55% export and 77% import (2009-2029) • Fractional increase in this market yields large increase in tonnage—1% 2009 market equals nearly 20,000 tons. Estimates of NC market share vary, but generally less than 15% of South Atlantic total.
Necessary Conditions	<ul style="list-style-type: none"> • Ability to keep grain dry when in storage • Trade agreements and marketing • Unit grain trains desirable
Risks & Opportunities	<ul style="list-style-type: none"> • Ability to flex equipment use between grain and pellets – upside opportunity to use equipment to serve two strong NC industries with different business drivers • Grain can be containerized – could strand investment in bulk facilities • Rail access to ports currently a challenge for agricultural producers
Strategies	<ul style="list-style-type: none"> • Improve rail access to port • Invest in bulk handling equipment and dry storage • Pair with pellet market and related investments

Market Opportunity: Wood Pellets

Scenario: Enter Wood Pellet Market

**Growth
Outcome**

- Exports of wood products already a strength for North Carolina, projected to more than double from South Atlantic region by 2020
- Market estimates vary widely; European biomass demand projected to grow by almost 50% between 2010 and 2020 with increased use of biomass not only in the energy sector but also in industrial and residential sectors (RISI 2011).
- Current market size small; EU cannot produce enough to meet needs.

**Necessary
Conditions**

- Carrier with UK/France calls required for wood pellets
- Efficient inland distribution network for wood pellets to serve port from Western NC and parts of Virginia
- Ability to keep pellets dry when in storage

**Risks &
Opportunities**

- Ability to flex facility use between grain and pellets – upside opportunity to use terminal to serve two strong NC industries with different business drivers
- Domestic demand for wood pellets emerges and diverts pellet exports
- Pellets can be containerized – could strand investment in bulk facilities

Strategies

- Improve rail access to port
- Invest in dry storage
- Partner with European pellet consumers who are willing to invest in NC
- Pursue VA-based coalition with interest in using NC ports for pellet distribution

Market Opportunity: Users of Cold Storage

Scenario: Enter Refrigerated Cargo Market	
Growth Outcome	<ul style="list-style-type: none"> • Exports of sweet potatoes, frozen meats support existing strong North Carolina industries • Regional market size, 1.2 million tons export; 2.6 million tons import • Import market projected to nearly double by 2029; export market slightly more than doubles
Necessary Conditions	<ul style="list-style-type: none"> • Cold/refrigeration facilities on or very near port terminal • Efficient landside distribution
Risks & Opportunities	<ul style="list-style-type: none"> • Creates opportunities beyond food products—shippers report specialized textiles and rubber imports need temperature controlled (cold) storage • Sizeable market volume allows port to attract new carriers • Food processors locate in state to have access to port facilities • Opportunity to match imports and exports of containers more closely to improve attractiveness of port and truck access to the port facilities
Strategies	<ul style="list-style-type: none"> • Improve rail access to port • Invest in temperature controlled storage • Provide plug-ins for refrigerated containers

Market Opportunity: Wood and Paper

Scenario: Expand Wood and Paper Market	
Growth Outcome	<ul style="list-style-type: none">• Industry anchored by traditional wood products industry in North Carolina• Exports of pulp, paper products, and cork/wood are projected to be among the largest and fastest growing exports from South Atlantic ports• Export market totaled 6.6 million tons in 2009; will more than double by 2029
Necessary Conditions	<ul style="list-style-type: none">• Rail access very desirable to serve market• Port facilities must be able to accommodate weight of the freight
Risks & Opportunities	<ul style="list-style-type: none">• Potential shift between containers and bulk requires flexibility on the part of the port• Portsmouth opportunity demonstrates market potential• May be difficult to match with an import opportunity to balance containers/truck/rail deliveries• Western NC is well served by Charleston• Example of South Carolina paper producer using NC port facility
Strategies	<ul style="list-style-type: none">• Improve rail access to port• Upgrade port facilities that are functionally obsolete for this market—weight/height of cargo

Market Opportunity: Users of Ro-Ro/Oversize

Scenario: Expand Ro-Ro/Oversize Cargo Market

Growth Outcome	<ul style="list-style-type: none"> • Industry anchored by military footprint in North Carolina • Supports existing strength in equipment manufacturing—Caterpillar and aviation—as well as wind power opportunity • Strong projections for exports of special industrial equipment and imports of agricultural machinery. Export growth projected over 240%. Excluding cars, market is 135K but grows 265% (2009 to 2029)
Necessary Conditions	<ul style="list-style-type: none"> • Ramps/equipment/storage capable of handling large or heavy cargo • Rail access very desirable to serve market
Risks & Opportunities	<ul style="list-style-type: none"> • Shippers worry about conflicts with military cargo and who has priority • Sizeable volume allows port to attract new carrier options to the port • OEM manufacturers locate in state to have access to port facilities—economic spillover effect to other industries is large • Supports NC metal manufacturing industry—both directly and indirectly
Strategies	<ul style="list-style-type: none"> • Improve high/wide rail access to port • Upgrade port facilities that are functionally obsolete for this market • Offer incentives for manufacturers to locate close to port—limits road/rail investment and removes rival port competition

23

Market Opportunity: Wind Power

Scenario: Enter Wind Power Market	
Growth Outcome	<ul style="list-style-type: none"> • New market is introduced to the ports • US is large importer of wind turbine equipment in 2009, with \$4.2 billion of imports (DOE, Berkeley Labs). Domestic industry growth, but other countries entering the market.
Necessary Conditions	<ul style="list-style-type: none"> • State invests in wind farms or offshore wind power • Environmental conditions permit power installation offshore • Area of port facility dedicated to serving offshore wind industry
Risks & Opportunities	<ul style="list-style-type: none"> • Wind power industry manufacturers locate to North Carolina to be close to offshore industry and distribution opportunities • Potential public opposition to wind power installation • Landside storage dedicated to serving wind power industry interferes with other types of freight • Wind installations have possible conflict with military uses
Strategies	<ul style="list-style-type: none"> • Tie investment in port facilities serving wind industry to incentives for inland manufacturing to ensure maximum return • Pair with other project cargo opportunities

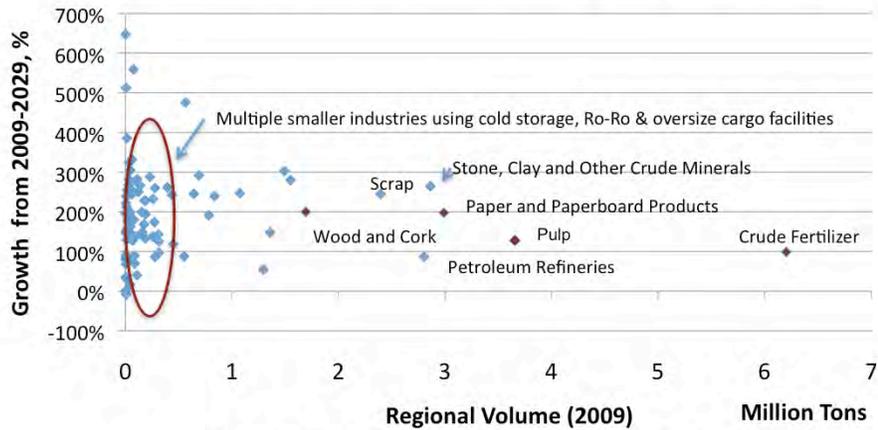
Market Opportunity: Containerized Imports

Scenario: Become a Primary East Coast Port of Call for Containerships	
Growth Outcome	<ul style="list-style-type: none"> • Annual regional market growth of about 3% to 4% • Market estimated at 6.3 million TEUs in 2009
Necessary Conditions	<ul style="list-style-type: none"> • Capture market share from Virginia, South Carolina, and Georgia ports • Provide intermodal rail service • Accommodate 8000+ TEU vessels
Risks & Opportunities	<ul style="list-style-type: none"> • NC develops as a distribution center for Southeast megaregion • Older population's spending shifts to services rather than goods • Imports volumes provide containers to match with exports and support advantageous shipping costs for NC exporters
Strategies	<ul style="list-style-type: none"> • Partner with state to incentivize retailers to locate distribution centers in close proximity to port • Invest in intermodal rail • Enhance truck access • Expand container terminal capacity (berths, storage) • Provide 46'-48' water depth

TEU = twenty-foot equivalent unit



S. Atlantic Export Market Opportunities

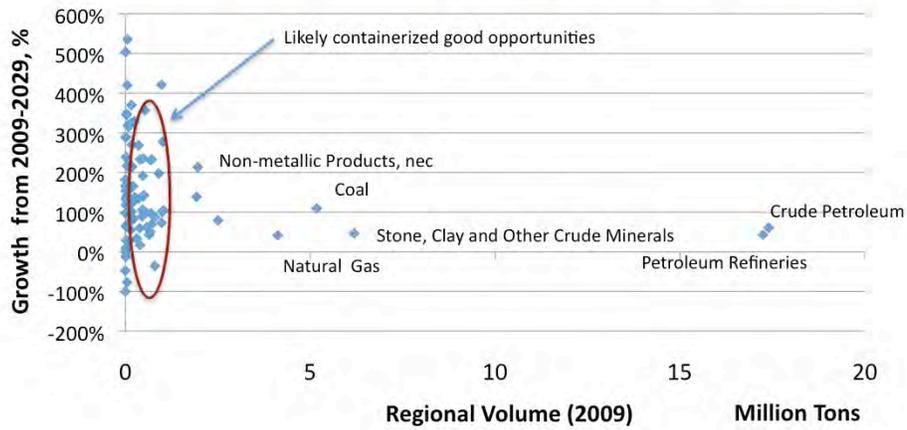


Red dots indicate industries where North Carolina has an established market position.

Source: IHS Global Insight, 2011 Forecast



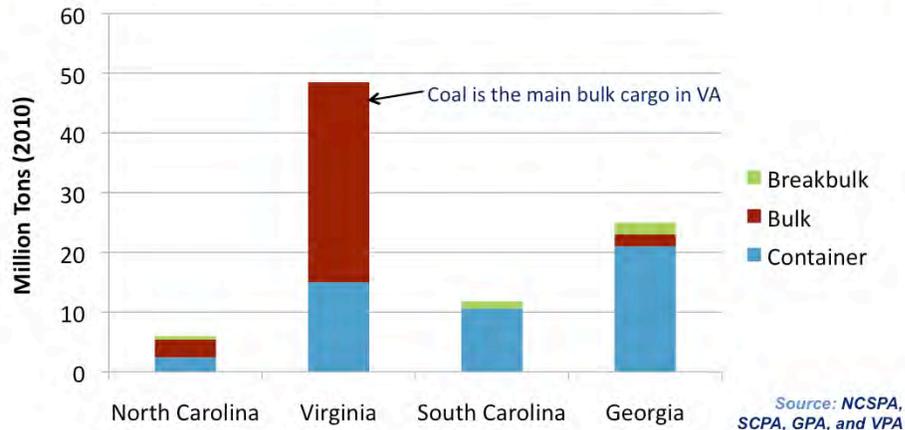
S. Atlantic Import Market Opportunities



Source: IHS Global Insight, 2011 Forecast



How do North Carolina Ports Compare to the Competition?



As we consider the risks and opportunities to these market positions, I wanted to share again a slide we presented at our earlier meeting to show the relative market share of NC ports in comparison to the regional competition. When you take out coal, NC is well-positioned to handle bulk cargoes. Breakbulk volumes through NC ports is less than that handled by Charleston and Savannah, but in the range. Today, NC container volumes represent less than ten percent of the regional market.

NC ports' competitive position in breakbulk, bulk and containerized trade will present both challenges and opportunities that we will need to consider in evaluating market scenarios.

Infrastructure Needs and Constraints



At our last meeting, we provide the Advisory Council with some information on the NC port facility infrastructure and our approach to evaluating the ability of the regional highway infrastructure to support port access.

Today, we will elaborate on the our analysis of the regional highway infrastructure, present our approach to evaluating rail and water access, and also respond to questions that were raised by Advisory Council members on regional port capacity.

Port Infrastructure – Regional Capacity

Container	<ul style="list-style-type: none"> • Drivers: berth, cranes, storage area, dwell, operations • Regional facilities now at ~50% capacity • Lots of data available >> more accurate figures
Bulk	<ul style="list-style-type: none"> • Drivers: storage area, commodities handled, dwell • Excludes coal, crude, and refined petroleum products • Limited public data >> uncertainty in figures for other ports
Breakbulk	<ul style="list-style-type: none"> • Drivers: storage area, commodities handled, dwell • Excludes project (heavy) cargo and military • Limited public data >> uncertainty in figures for other ports
Ro-Ro	<ul style="list-style-type: none"> • Drivers: storage area, dwell • Excludes project (heavy) cargo and military • Limited public data >> uncertainty in figures for other ports



30

Regional port capacity is an important element in considering how effectively NC's export trade and waterborne commerce will be served in the future.

At our last meeting, we presented the results of our detailed analysis of regional container port capacity. For containers, capacity is driven by the availability of adequately-sized berths and cranes, container storage area, container dwell times, and container yard operations. The availability of intermodal rail service is also an important factor in estimating how long a container will occupy space in the yard—ports with on-dock or near-dock rail service achieve better turnover and shorter dwell times than those with only truck service. The results of our regional analysis—which included NC ports along with existing and planned facilities in Norfolk, Charleston, Savannah, and Jacksonville FL—showed that the region's ports are operating their container terminals at roughly 50% capacity.

In the case of container ports, there is a lot of available data. While there are variables that can change over time to affect capacity estimates, we can develop a fairly accurate picture of container capacity.

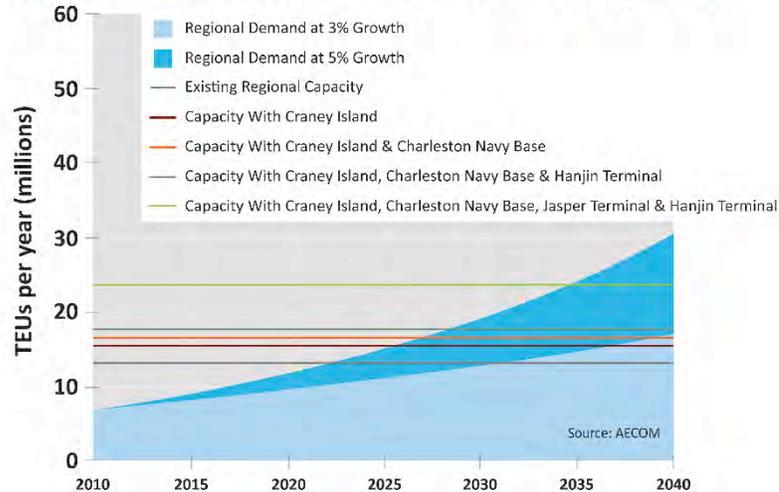
Following our last presentation, the team was asked about similar analysis of bulk, breakbulk, and Ro-Ro facilities. Certainly, where market scenarios involve these types of facilities, it is important to understand whether there is a shortage or glut of available cargo handling capacity within the region for use by NC shippers.

For NC ports themselves, our team had access to detailed operating data provided by NCSA and so we were able to provide a good estimate of existing bulk and breakbulk capacities at Wilmington and Morehead City. That information, which we presented last time, is included in two slides at the back of the presentation appendix for your reference.

Very limited operations and throughput data is publicly available for non-containerized cargo. To estimate the capacity of other regional ports to handle bulk, breakbulk, and Ro-Ro cargoes, our team had to make some assumptions since detailed operating data is not available. This leads to a greater level of uncertainty in the figures presented for regional capacity.

Annual cargo handling capacity of regional ports was calculated based on available berth and yard area. We applied commodity-specific dwell times typical to the industry to estimate the turnover of goods. Landside access capacity was assumed to be non-constraining. Finally, total regional capacity was determined by adding the terminal capacity of each terminal at each port for existing commodities being handled.

Regional Container Demand vs. Capacity



At our last meeting, we presented a figure similar to this one to compare existing and future regional container capacity against alternative growth scenarios.

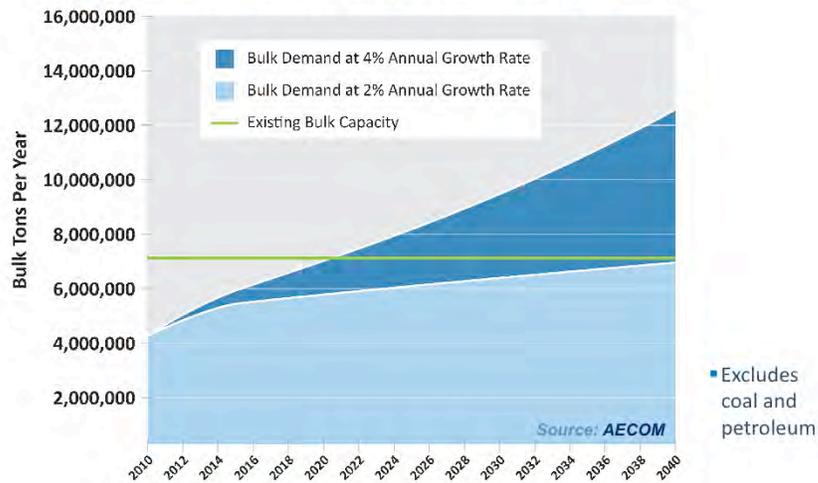
The previous figure has been updated to reflect regional container growth projections provided by IHS Global Insight. The most recent forecasts of containerized trade project within the South Atlantic region project a compound annual growth rate of 3-5%. This is somewhat higher than US GDP growth projections, reflecting a moderate additional diversion of container traffic to east coast ports along with some containerization of goods currently moved by bulk or breakbulk.

How soon the regional will need additional container capacity depends not only on this annual growth rate, but also on which of the various proposed container terminal projects will be realized in the next 30 years. As an example, Jasper Terminal represents more than half of potential additional regional container capacity but is considered to be the most speculative.

All planned container capacity improvements at peer ports, excluding Jasper, would accommodate forecasted growth at 5% through 2028 and at 3% beyond 2040. If Jasper Terminal is included, all planned container capacity improvements would accommodate forecasted growth at 5% through 2034 and at 3% well beyond 2040.

As demand regional ports near capacity overall, it is expected that measures would be taken to reduce dwell times and thereby increase throughput and capacity. This could be achieved through demurrage charges—as are charged on many west coast ports—or increased use of intermodal rail to move quickly containers off the port. These measures could increase effective capacity by 15-20% over the figures shown in this figure.

Regional Bulk Demand vs. Capacity



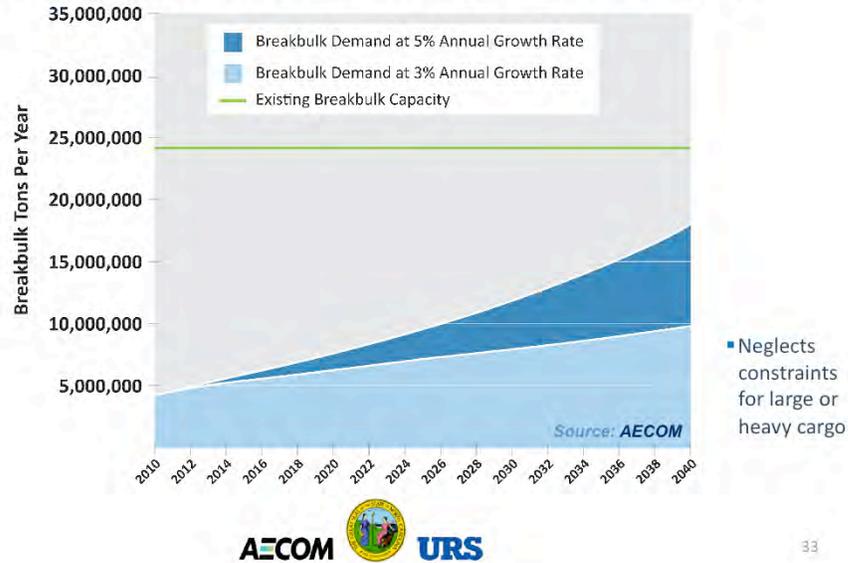
For regional bulk commodity, this graph similarly compares regional capacity to demand under high and low growth scenarios. For the purposes of this analysis, we have excluded coal and petroleum, which would skew the market.

Under a pessimistic or low growth scenario at an average 2% per year, existing bulk facilities within the four peer ports could theoretically handle forecasted bulk volumes through 2040.

A more optimistic 4% annual growth scenario would require additional capacity to handle regional demand as soon as 2020.

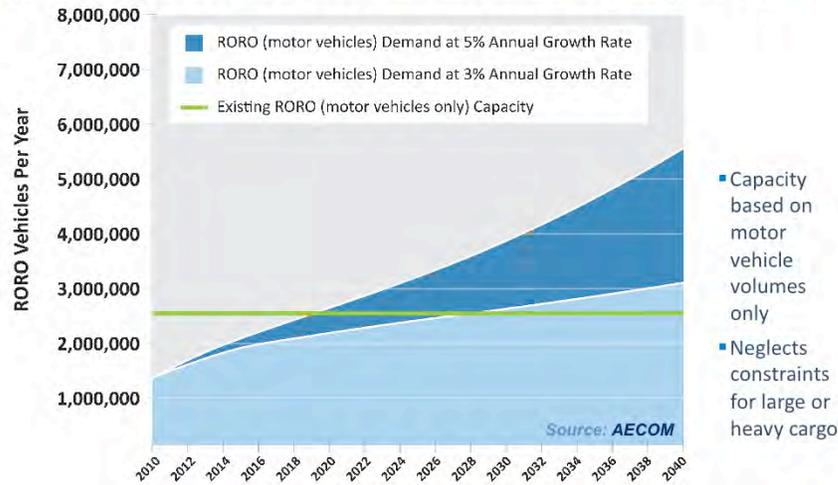
Because bulk facilities are often dedicated to a single commodity type, the imbalance between demand and capacity may be more distinct or severe for specific commodities. This would be consistent with the perception of agricultural shippers who have indicated a shortage of regional bulk facilities to handle their products.

Regional Breakbulk Demand vs. Capacity



As a generalized commodity type, breakbulk products can be handled across numerous facilities. Terminals equipment and storage facilities can be readily adapted to handle a variety of goods that do not require special handling or storage. It should be noted that, where specialized equipment or storage facilities are required, the demand/capacity ratio may be quite different. We have heard from shippers that there is a need for terminals that can handle heavy or oversize cargo and also to store commodities that require temperature or climate control.

Regional Ro-Ro Vehicle Demand vs. Capacity



A similar analysis was conducted for Ro-Ro facilities, but with some caveats. The Ro-Ro commodity for which there is the best information is autos. For the purpose of this graph, we have limited our calculation of Ro-Ro capacity to those areas that are dedicated to the auto market. Because this is the largest user of Ro-Ro capacity, it is a fairly good proxy for the Ro-Ro market overall. Areas currently used for auto storage could readily be converted to accommodate other roll on/roll off commodities.

In the low-growth or pessimistic scenario at 3% average annual growth, existing regional Ro-Ro capacity will be exceeded before 2027. For a more optimistic 5% annual growth rate, regional Ro-Ro demand will outstrip capacity by 2019.

As for breakbulk cargo, this analysis does not consider the needs of handling heavy or oversize Ro-Ro cargo, which would have more limited available capacity across NC and its peer ports.

In all, potential over- or under-capacity within the region to handle specific goods would present risks or opportunities to NC ports in pursuing that market.

Highway Infrastructure

Highway Network	Primary Freight Nodes and Facilities	Truck Travelshed
<ul style="list-style-type: none"> Existing and future network Constraints to freight movement: <ul style="list-style-type: none"> - Volume/capacity - Bottlenecks & gaps Programmed improvements – STIP Other constraints 	<ul style="list-style-type: none"> Key origins & destinations: <ul style="list-style-type: none"> - Port terminals - Industrial centers - Intermodal facilities Secondary nodes also identified 	<ul style="list-style-type: none"> Number of “truck turns” from port location Distance/travel time from Primary Nodes Relative to infrastructure constraints

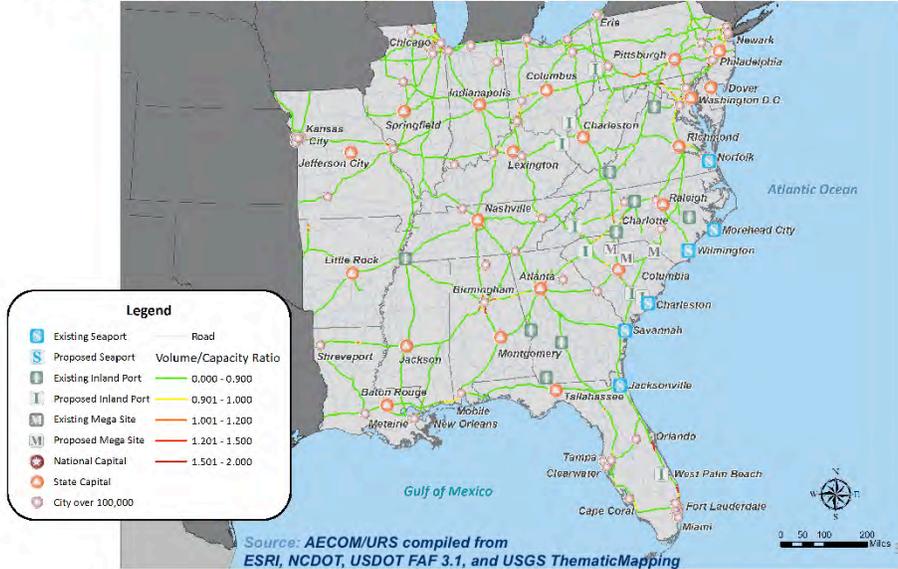


Port facilities are only one piece of the puzzle that makes for efficient goods movement. Another critical piece is the highway infrastructure. As noted by the shippers who have participated in our workshops and interviews, most goods within and through NC are moved by truck. Trucking costs may represent more than half of the total cost to transport goods to or from international markets. Shippers, therefore, are motivated to select ports that can be easily reached by truck. Jeff Weisner of URS has been leading the effort to examine the existing and future highway infrastructure and how the roadway network influences access to regional ports.

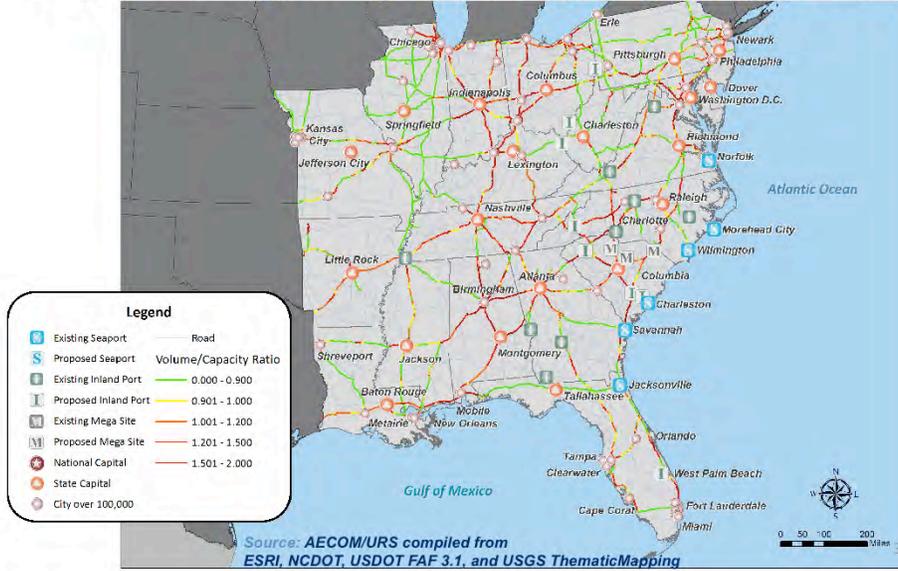
Purpose - Identify constraints to the movement of freight within the highway network relative to existing and potential North Carolina port facilities and to identify and prioritize opportunities for improvement.

Outcome: Develop a strategy to improve the state highway infrastructure to support North Carolina’s maritime industry.

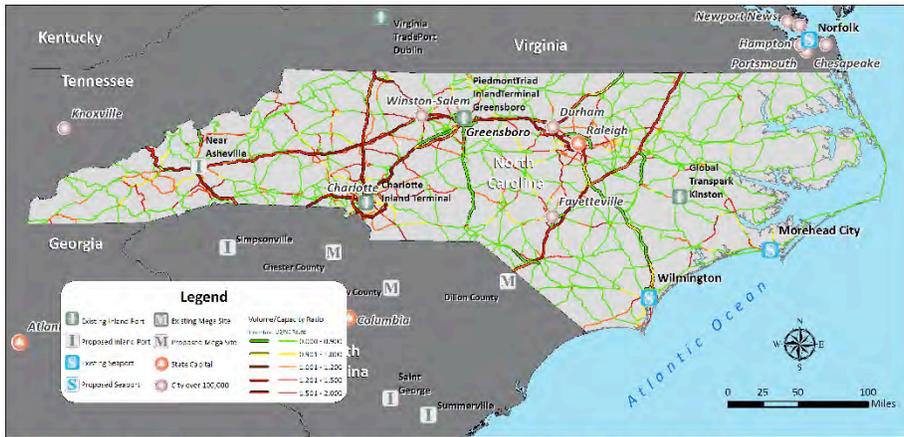
Regional Highway Volume/Capacity (2007)



Regional Highway Volume/Capacity (2040)



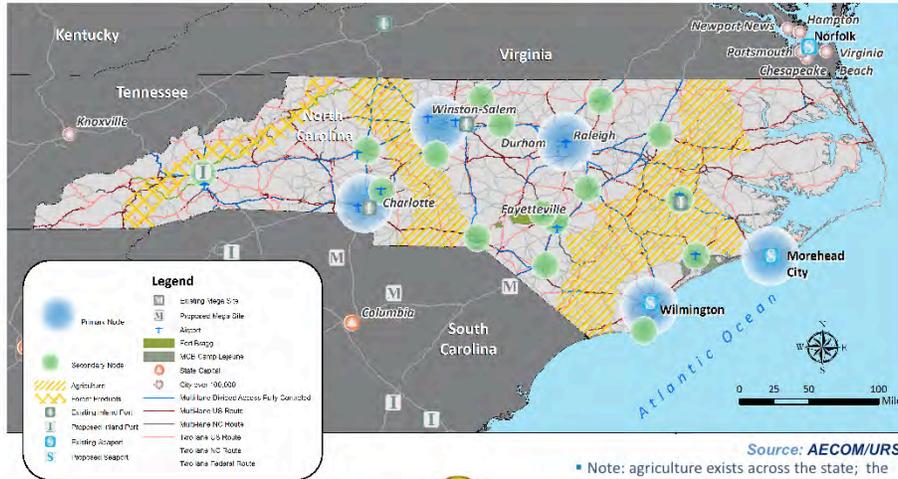
North Carolina Volume/Capacity (2040)



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



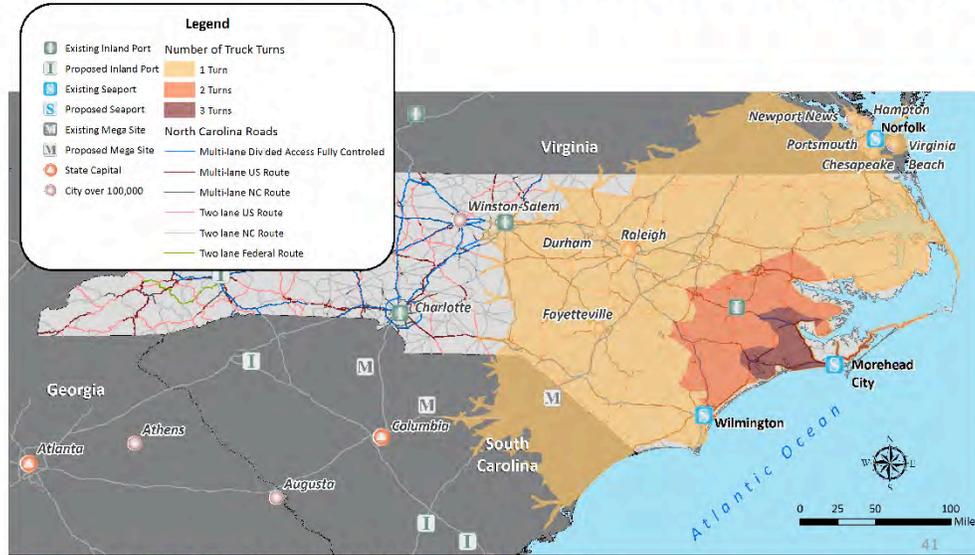
NC Freight Nodes and Facilities



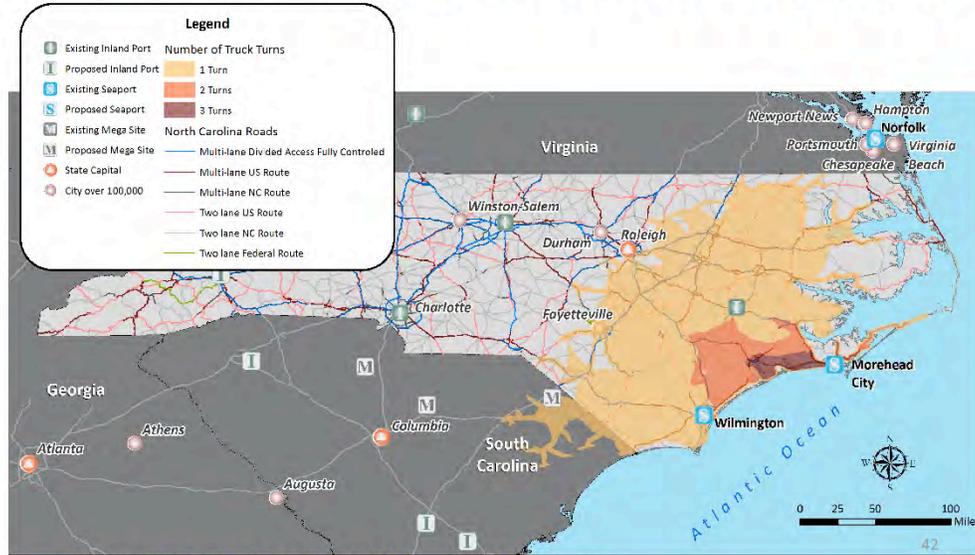
Note: agriculture exists across the state; the areas of dense agricultural production illustrated are intended to be representative



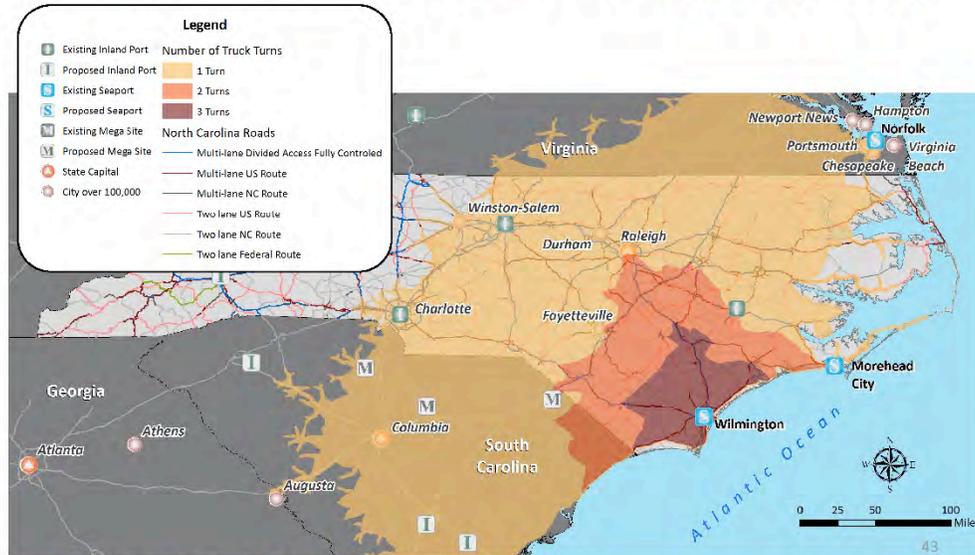
Truck Turn Distances—Morehead City (2007)



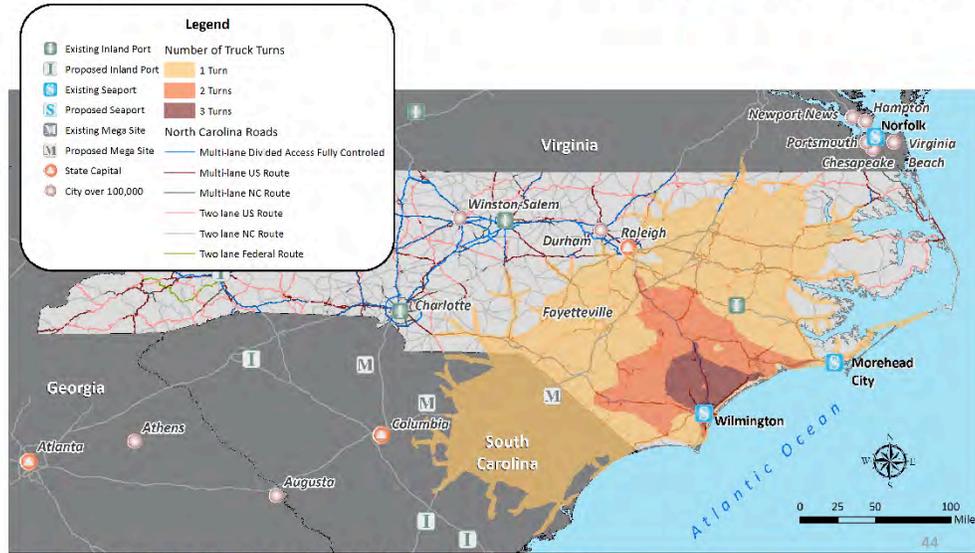
Truck Turn Distances—Morehead City (2040)



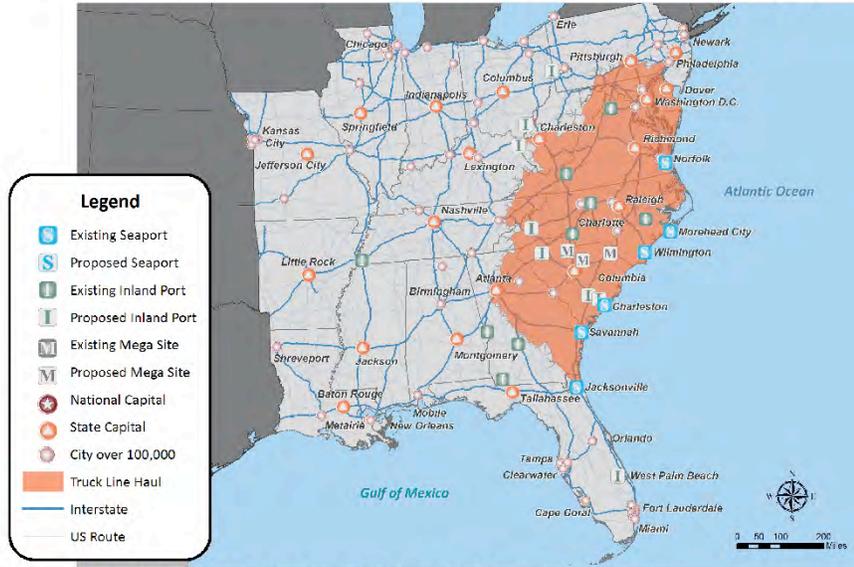
Truck Turn Distances—Wilmington (2007)



Truck Turn Distances—Wilmington (2040)



Truck Line Haul Distance—Morehead City (2007)

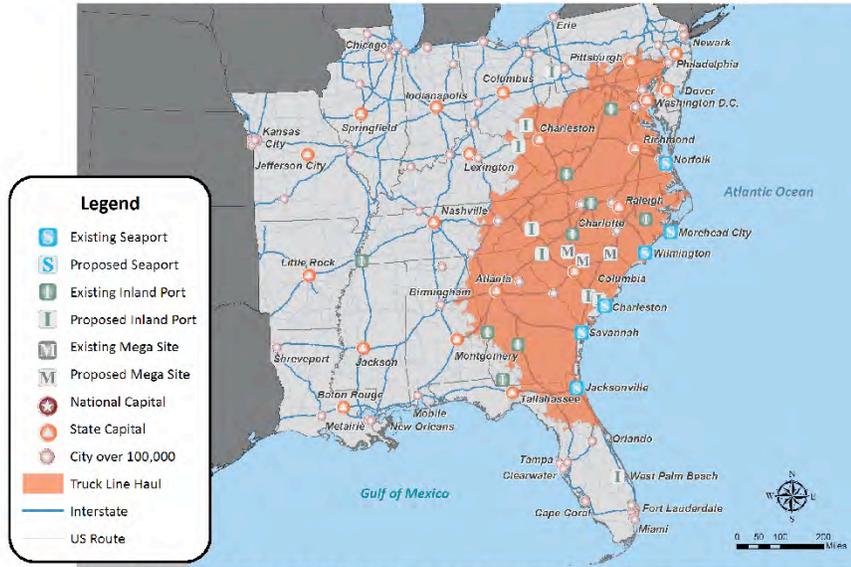


Truck Line Haul Distance—Morehead City (2040)

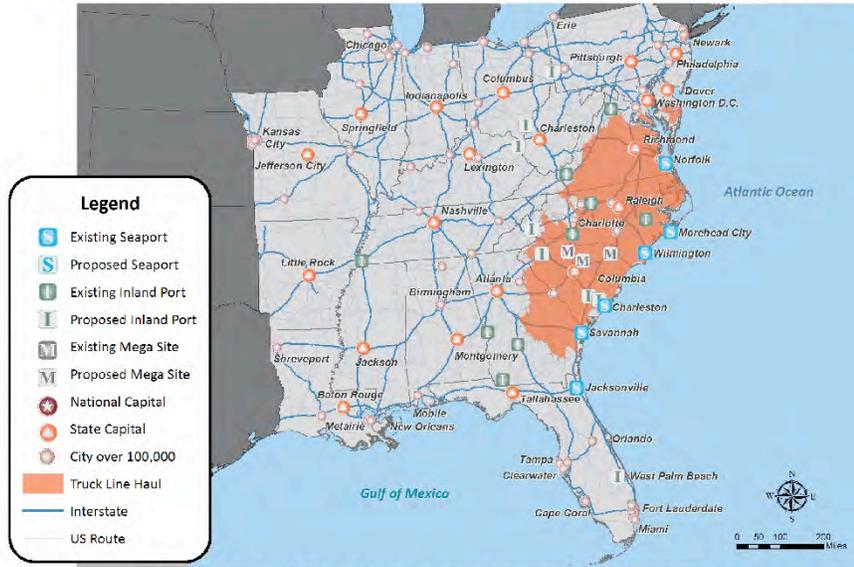


Source: AECOM/URS compiled from ESRI, NCDOT, USDOT FAF 3.1, and USGS Thematic Mapping

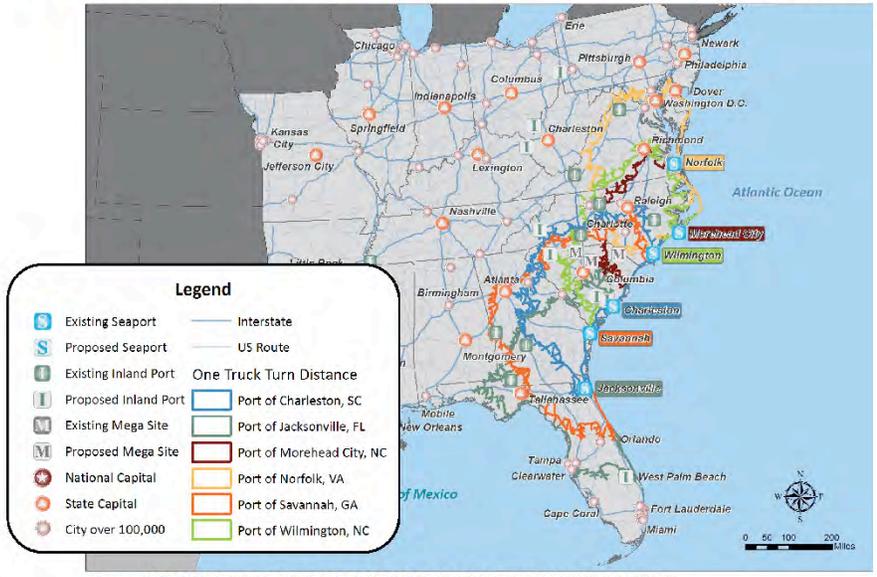
Truck Line Haul Distance—Wilmington (2007)



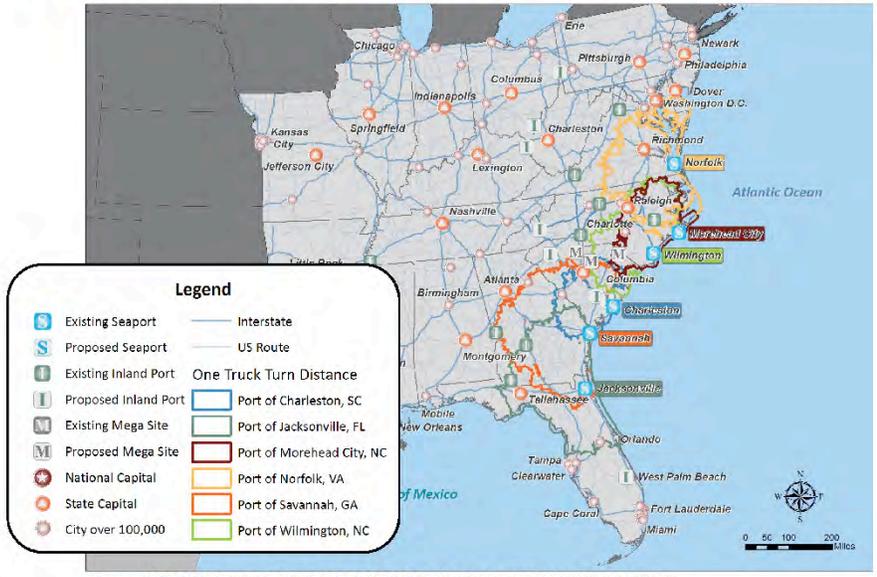
Truck Line Haul Distance—Wilmington (2040)



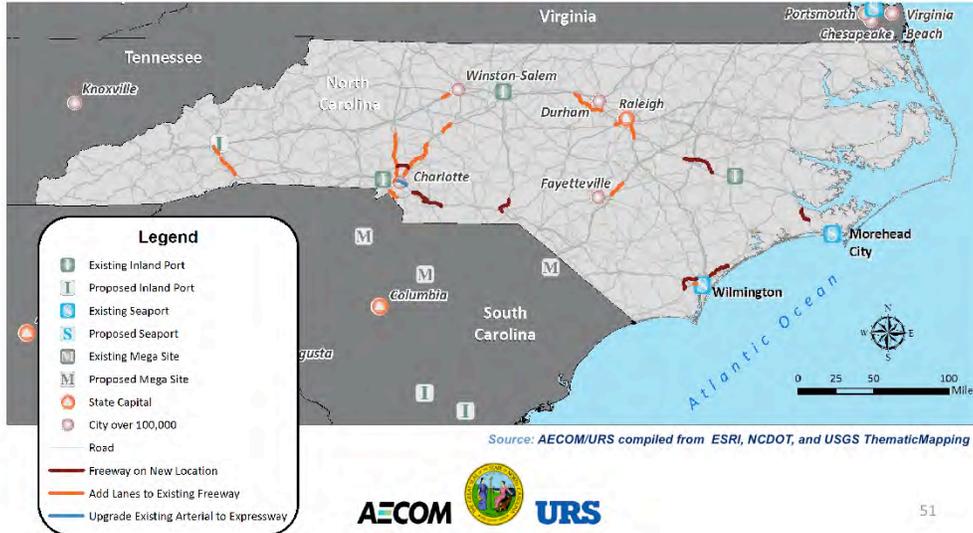
Regional Ports—One Turn Truck Distance (2007)



Regional Ports—One Turn Truck Distance (2040)



North Carolina State Transportation Improvement Program (Major Corridors Only)



North Carolina Highway Gaps and Constraints



Railroad Infrastructure

Freight Rail Network

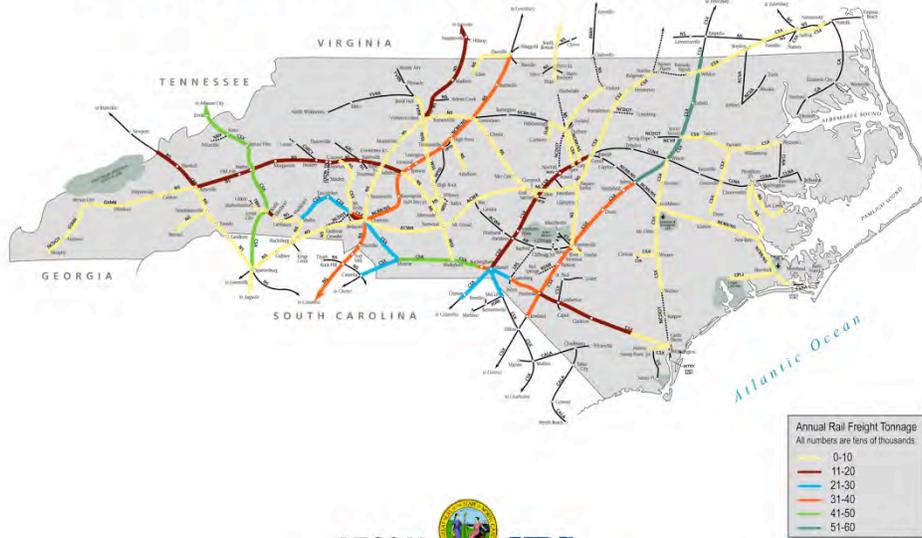
- Existing and future network
- Constraints to freight movement:
 - Tonnage carried
 - Bottlenecks & gaps
- Other constraints

Competitive Rail Distances

- Travel time and cost from primary nodes as compared to trucks
- Relative to infrastructure constraints



North Carolina Freight Rail Network



Water Access

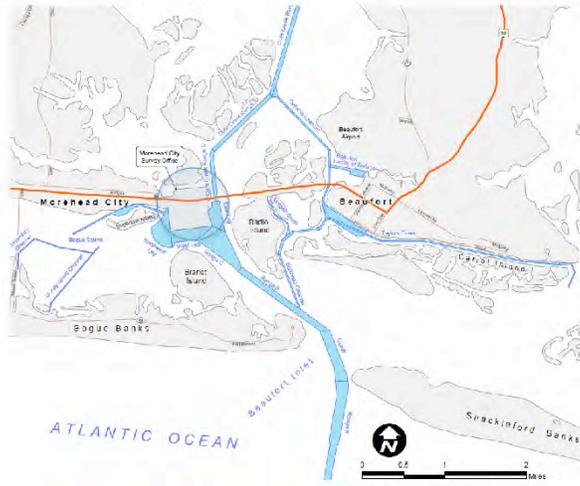
Channels and Harbors	Potential Deepwater Access
<ul style="list-style-type: none">• Existing ports and waterways• Potential and planned improvements• Vessel movement:<ul style="list-style-type: none">- Water depth- Entrance channels- Turning moves• Other constraints	<ul style="list-style-type: none">• Presence of natural inlets• Distance to deep water• Coastal Barrier Resource Act• Federal, state and county parks and protected areas• Military bases / facilities• Concentrated development / residential areas• Geology and bathymetry• Other constraints



Outcome: Develop a strategy to improve the state highway infrastructure to support North Carolina's maritime industry.

Morehead City Harbor

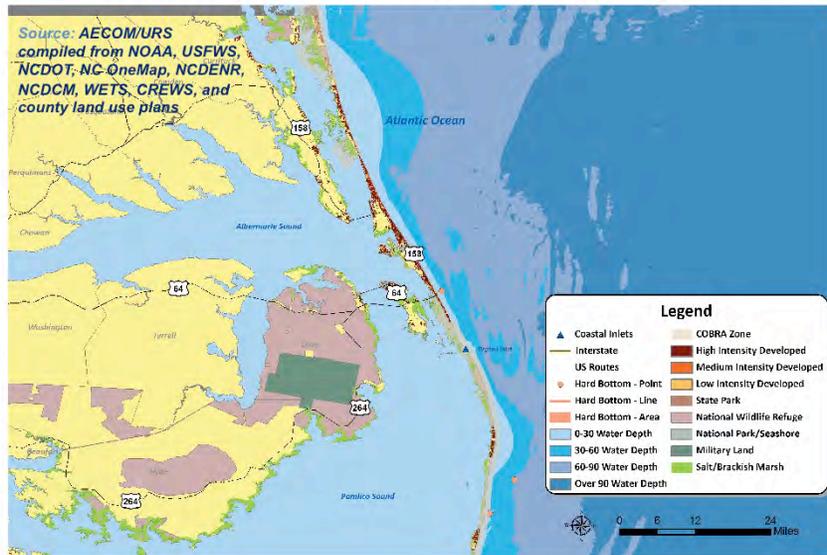
- 45' channel depth



Map: USACE



Screening for Deepwater Port Sites



58

Cape Fear Inlet
 New River Inlet
 Bogue Inlet
 Beaufort Inlet

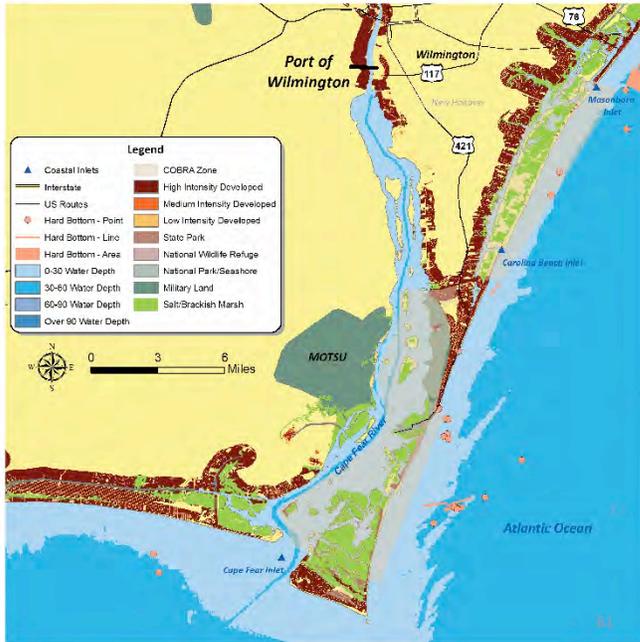
Screening for Deepwater Port Sites



59

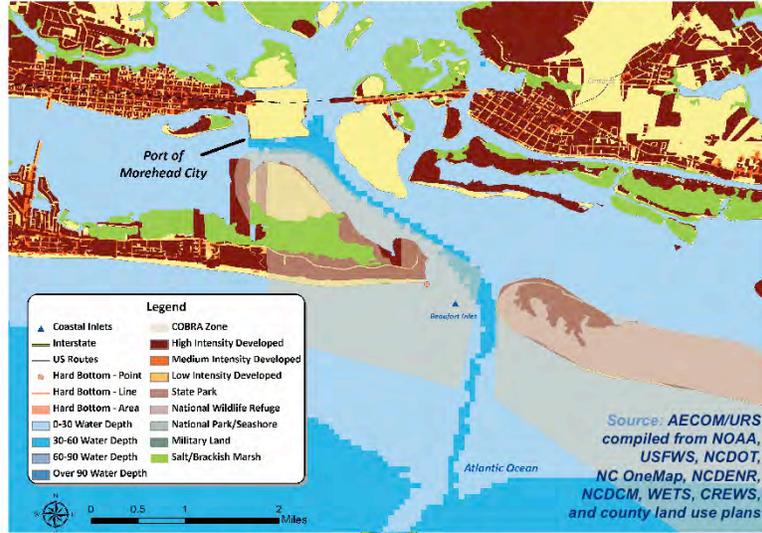
Cape Fear Inlet
 New River Inlet
 Bogue Inlet
 Beaufort Inlet

Land Use and Water Constraints at Cape Fear Channel



Source: AECOM/URS
 compiled from NOAA,
 USFWS, NCDOT,
 NC OneMap, NCDENR,
 NCDCM, WETS, CREWS,
 and county land use plans

Land Use and Water Constraints at Beaufort Inlet



Focused Discussion



Suggested Discussion Topics

- Further Stakeholder Input
- Market Scenario Risks and Challenges

Public Comment



Conclusions and Close



APPENDIX



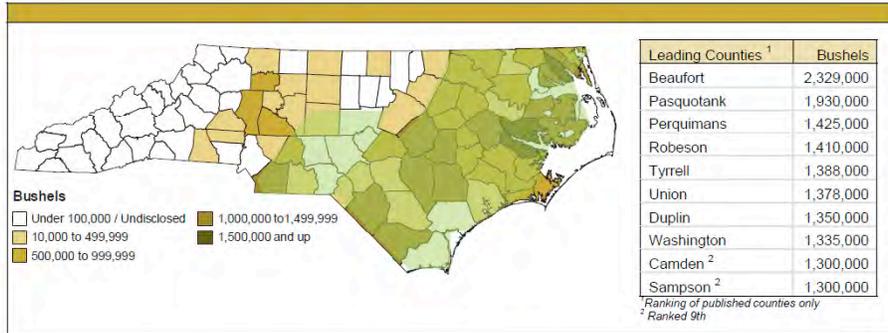
Travel Times to Regional Seaports from NC Nodes (2007)

NC Node → ↓ Regional Port	Asheville	Jacksonville	Benson	Burlington	Charlotte	Henderson	Monroe	Raleigh-Durham	Rocky Mount	Fayetteville	Global TransPark	Piedmont Triad	Statesville
Morehead City, NC	7:37	0:55	2:26	4:11	6:01	4:00	5:18	3:23	2:49	3:01	1:28	4:59	5:49
Wilmington, NC	6:09	1:13	1:31	3:16	4:18	3:11	3:35	2:28	2:22	2:04	2:06	4:04	4:54
Norfolk, VA	7:35	4:19	3:10	4:18	6:31	2:39	6:02	3:31	2:18	3:45	3:18	4:56	5:47
Charleston, SC	4:38	5:10	3:58	5:13	4:19	5:38	3:38	4:55	4:49	3:23	5:11	5:16	5:23
Savannah, GA	5:09	5:59	4:28	5:43	4:31	6:08	4:09	5:25	4:20	3:53	5:41	5:46	5:54
Jacksonville, FL	7:27	8:18	6:47	8:02	6:50	8:27	6:27	7:44	7:39	6:12	8:00	8:05	8:12

Source: AECOM/URS, from ArcMap analysis of FAF 3.1 data



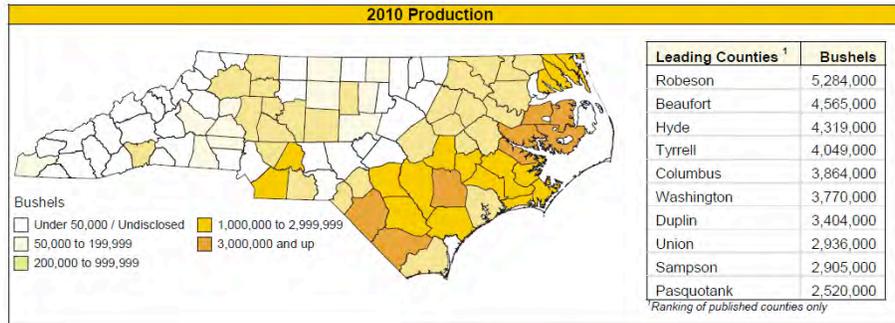
NC Soybean Production (2010)



Source: USDA National Agricultural Statistics Service



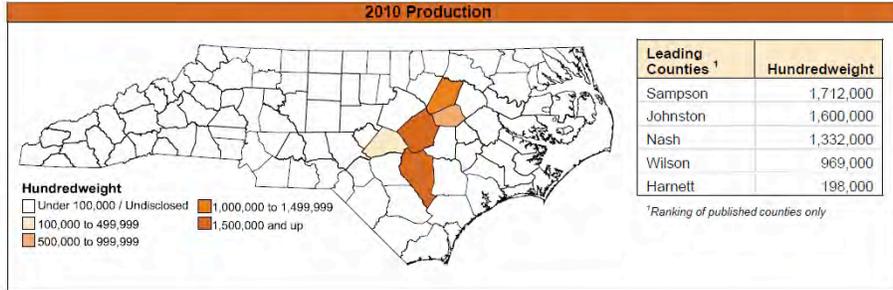
NC Corn for Grain Production (2010)



Source: USDA National Agricultural Statistics Service



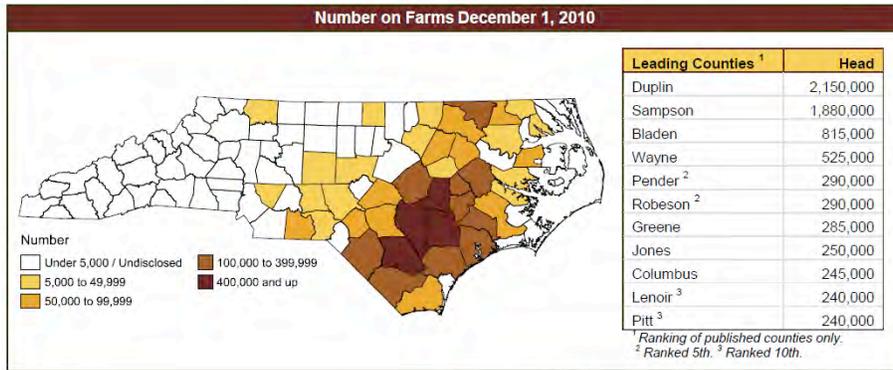
NC Sweet Potato Production (2010)



Source: USDA National Agricultural Statistics Service



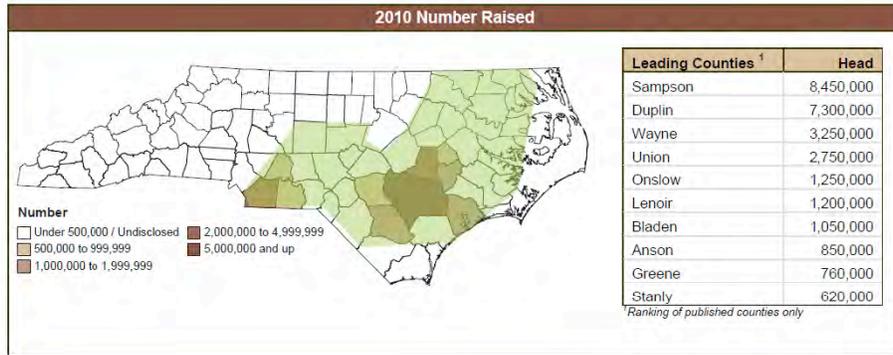
NC Hog Production (2010)



Source: USDA National Agricultural Statistics Service



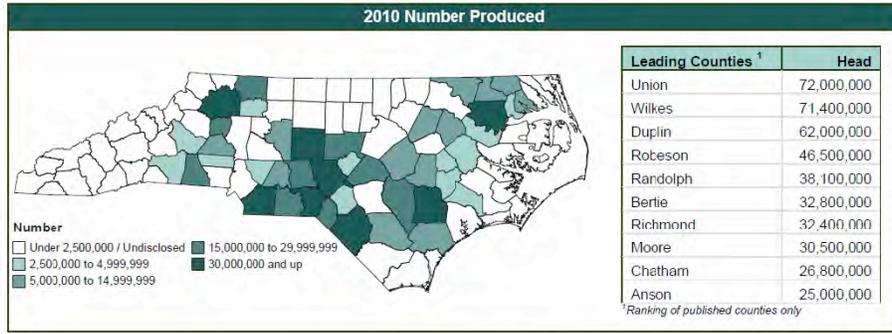
NC Turkey Production (2010)



Source: USDA National Agricultural Statistics Service



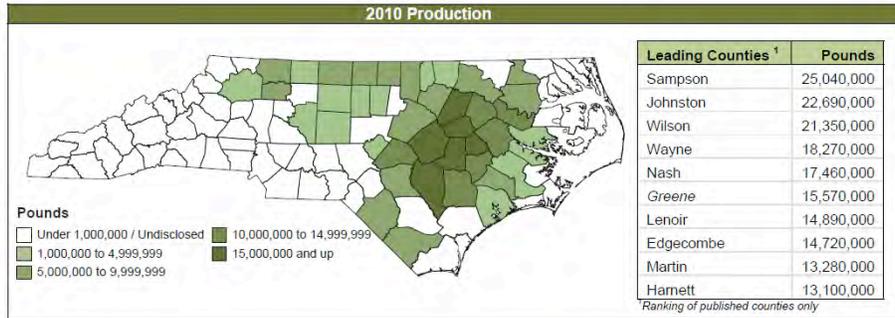
NC Poultry (Broilers) Production (2010)



Source: USDA National Agricultural Statistics Service



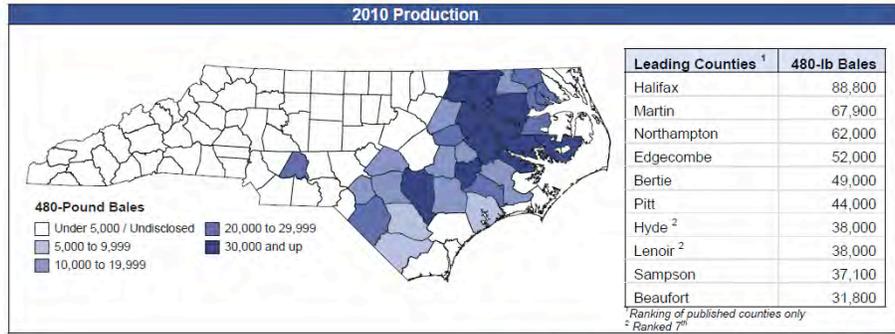
NC Flue-Cured Tobacco Production (2010)



Source: USDA National Agricultural Statistics Service



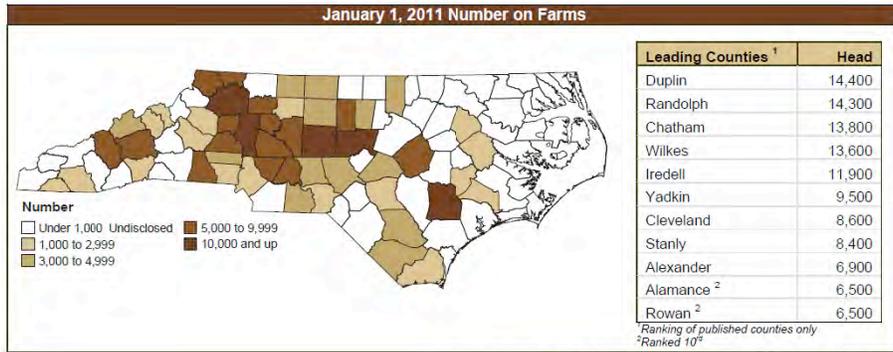
NC Cotton Production (2010)



Source: USDA National Agricultural Statistics Service



NC Beef Cow Production (2010)



Source: USDA National Agricultural Statistics Service



NC Christmas Tree Production (2007)

North Carolina Counties Reporting Christmas Tree Farming
2007 Census of Agriculture

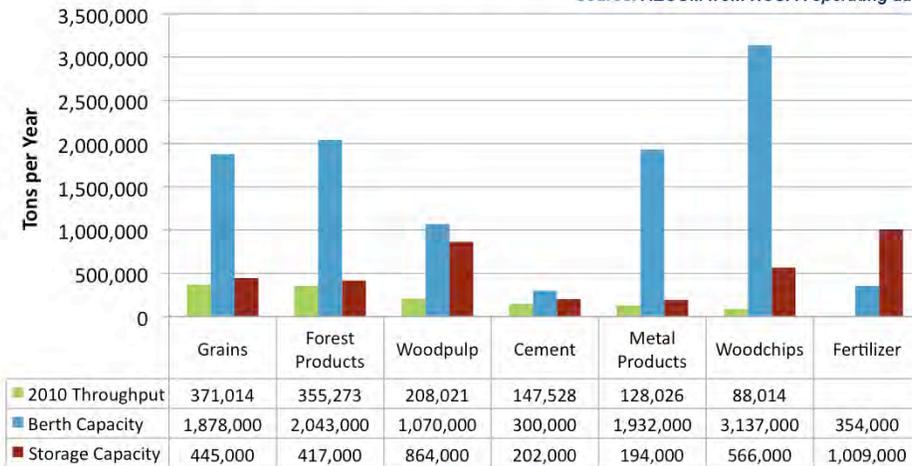


Source: USDA National Agricultural Statistics Service



Wilmington Bulk & Breakbulk Capacity

Source: AECOM from NCSPA operating data



In addition to container capacity, the team examined bulk and breakbulk capacity at each of the Ports of Wilmington and Morehead City.

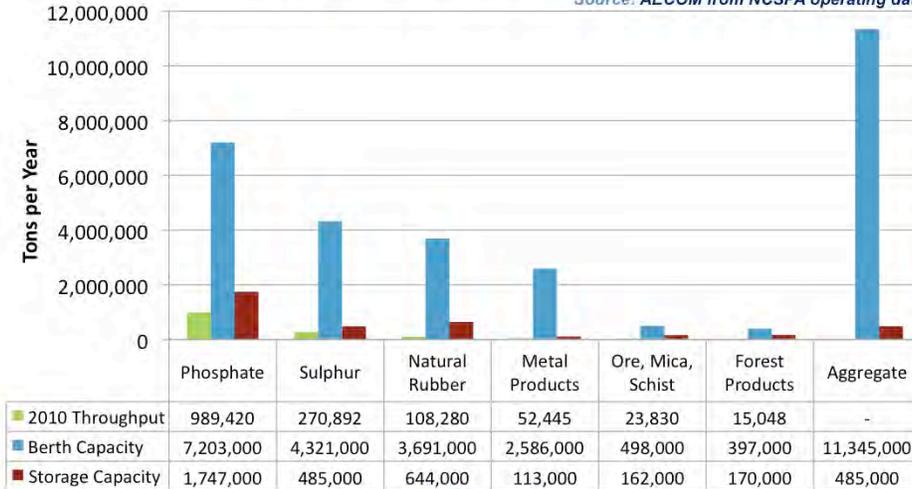
Bulk and breakbulk commodities often use designated facilities within the terminal. Some bulk products, like grain, require specialized handling equipment.

This chart shows 2010 throughput against berth capacity and storage capacity for various commodities at the Port of Wilmington (POW).

Growth of most of the bulk and breakbulk commodities at POW will be limited by their storage capacity. POW has a plenty of berth capacity overall.

Morehead City Bulk & Breakbulk Capacity

Source: AECOM from NCSPA operating data



This chart shows 2010 throughput, berth capacity and storage capacity for various commodities at the Port of Morehead City (POM).

Growth of most of the bulk and breakbulk commodities at POM will be limited by their storage capacity. POM has a plenty of berth capacity overall. Berths are often used for multiple bulk and breakbulk commodities.