

NORTH CAROLINA
MARITIME Strategy

**NC Maritime Strategy
Inland Port Opportunities for North Carolina**

**Prepared for the
North Carolina Department of Transportation**

by

**AECOM
in association with URS**

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EXECUTIVE SUMMARY

As detailed in the following comprehensive technical memorandum, while challenges clearly exist, inland port facilities hold promise for North Carolina and its transportation and logistics future.

One of the driving purposes of an inland port is to accommodate numerous functions of shipping that do not have to take place at or in close proximity to the water's edge. In addition to consolidation of cargos, inland ports may include warehousing, cross-docking (unloading goods from incoming truck or rail units and loading them directly into outbound units with little or no storage in between), light manufacturing, truck and rail servicing, and storage of chassis and containers. With the U.S. chassis provisioning model changing as ocean carriers get out of this aspect, involvement in furnishing chassis may also be considered as a separate market factor.

As pointed out at the distribution and logistics industry stakeholder meeting held Oct. 5, 2011, at Global TransPark in Kinston, NC, success of an inland port (or, for that matter, any distribution and logistics hub) requires a sufficient level of utilization – and such demand is largely contingent upon solid, sustained, well-publicized marketing strategies. Benefits of logistics infrastructure – from road connections and airport access to industrial zoning and foreign-trade zones – must be brought to full awareness on the part of potential users. Highly effective marketing may be achieved by engaging in collaborative efforts with the North Carolina Department of Commerce and other appropriate state agencies, the North Carolina Chamber of Commerce, metropolitan planning organizations and various stakeholders, including through such entities as the North Carolina League of Transportation & Logistics and the North Carolina Trucking Association.

Availability of value-added services (warehousing, distribution, handling, repackaging and consolidation) may also be seen as essential. Some of the most successful inland ports in other states, such as the Virginia Inland Port at Front Royal, VA, serve as US Customs-designated ports of entry and offer a full range of customs functions to customers. Ability to offer a wide spectrum of benefits is particularly crucial in the case of justifying development of a full-service inland port.

Among key recommendations of the technical memo is to give consideration to advancing an inland port at either Selma, NC, or Goldsboro, NC, to be able to capture the eastern North Carolina market. Selma is positioned along Interstate 95 at its intersection with US 70 (which traverses east-northeasterly to Morehead City) and approximately 15 miles northeast of the I-95 intersection with I-40 (which heads south-southeasterly to Wilmington), while Goldsboro is about 20 miles east-southeast of Selma, at the crossroads of US 70 and US 117, thus 20 or more miles closer to the two port cities of Morehead City and Wilmington. Moreover, rail lines of the region's two Class I railroads (CSX and Norfolk Southern) cross at Selma and Goldsboro. Of course, sites to be considered for inland ports in North Carolina should be vetted against recommendations from the 2007 Statewide Logistics Plan.

Highway-related recommendations for North Carolina as stated in that plan include:

- Make Interstate 95 investments to sufficiently support pass-through traffic volumes;
- Create a multimodal corridor between Charlotte and Wilmington; and
- Enhance and expand the primary highways of the National Truck Network, which comprises more than 50 segments in North Carolina.

Rail-related recommendations for North Carolina contained in the 2007 Statewide Logistics Plan include:

- Encourage and support investments in the Norfolk Southern's Crescent Corridor, including Charlotte intermodal hub;
- Retain existing rail corridors and support short-line infrastructure improvements;
- Create a multimodal corridor between Charlotte and Wilmington; and
- Provide rail access to North Carolina State Ports Authority (NCSPA) inland terminals.

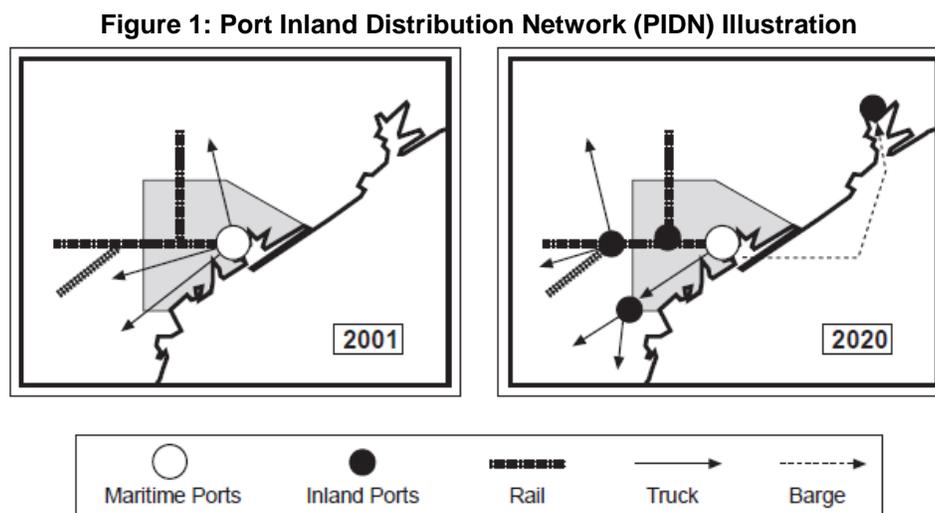
Consideration of any new inland port for North Carolina must hinge upon the facility being of adequate size in order to be of significant practical value to movers of such cargos as furniture, textiles, wood and paper products, grain, pork and poultry, and/or retail merchandise, as well as possibly military cargos. At the same time, rail connections to one of the region's Class I railroads (CSX or Norfolk Southern) are vital for facilitating full utilization of new and existing inland ports alike, and it should be noted that, while coming within a few miles, neither Class I directly serves the existing inland port facilities at Greensboro and Charlotte.

According to input received at various industry stakeholder meetings, the status of effectiveness and efficiency of freight transportation in North Carolina presents major challenges, including limited rail access, few deepwater shipping channels, and required maintenance of and upgrades to highway and rail networks. Such concerns are exacerbated by a nationwide lack of sufficient funding for transportation infrastructure. However, opportunities may exist for federal grant funding (an example being the \$12.1 million TIGER grant recently secured by Orangeburg County, SC, to help pay for roadway work to support the Jafza intermodal distribution center), as well as public-private partnerships.

At present, the vast majority of maritime-transported goods going through North Carolina logistics facilities moves in or out of seaports of other states, most notably Norfolk, VA; Savannah, GA; and Charleston, SC. Reasons cited for why North Carolina ports are not used to a greater extent include insufficient channel depth for serving larger oceangoing vessels, as well as inland congestion choke points, including in the areas of Charlotte and Greensboro. Thus, in the near term, inland port facilities in North Carolina are likely to largely handle significant cargo volumes that move through seaports of other states; however, growing volumes at North Carolina inland ports could bring about a critical mass that spurs justification of channel deepening and other infrastructure enhancements at North Carolina seaports. Combining inland port development with state export and import tax credits could enhance utilization of both the inland ports and the seaports of North Carolina.

1. INTRODUCTION

Inland ports are a growing part of the freight flow network to efficiently move cargo from origin to destination. A good definition is provided by Leitner & Harrison (2001), an inland port is “a site located away from traditional land, air, and coastal borders containing a set of transportation assets (normally multimodal) and with the ability to allow international trade to be processed and altered by value-added services at the site as goods move through the supply chain.” Provided in Figure 1 is a diagram that shows the potential for developing four inland ports with varying modal connections to a maritime port thus enabling the maritime port’s land, equipment, and manpower to be focused on cargo throughput and less so on sorting, storage, document processing, and related tasks that can be accomplished inland.



Source: Leitner & Harrison, 2001 to diagram the Port of New York/New Jersey plan for a PIDN

The Tioga Group (2006) further divides inland ports into several categories, of which four are defined here to enhance understanding. Paraphrasing from their study,

- Satellite Marine Terminals (SMT) act as extensions to specific seaports.
- Multi-modal Logistics Parks (MLP) have multi-modal infrastructure (air-rail-truck or sea-rail-truck, commonly) as the core of business/ industrial parks. They are “inland ports” without being extensions of seaports.
- Rail Intermodal Parks (RIP) almost always are built and owned by the railroads.
- Economic Development Initiatives (EDI) are designed to bring business to an area by virtue of the area’s transportation and logistics capabilities.

An additional term, *mega site*, needs defining since there is sometimes overlap between inland ports and mega sites. From the 2009 Wilbur Smith Associates study, “mega sites are large, readily developable sites with a minimum of 1,000 acres that have access to the critical infrastructure and skilled workforce that major industrial users require.” Moreover, mega sites are slated for a single tenant unlike multi-tenant industrial parks. Unlike inland ports, there is not the assumption of international trade, although this is likely for large industrial users (say, to acquire raw materials and distribute finished products).

Therefore, the discussion herein covers three topics related to inland ports and mega sites. First, where are the sites in the Southeastern United States (US), what are their characteristics, and which maritime ports (if any) do they serve. Second, based on an exploration of inland ports internationally as well as a brief literature review, characteristics of inland ports – specifically what value-added services (VAS) can be offered – are codified. Third, within this geographic context and VAS background, inland port recommendations are provided for North Carolina.

2. SITES IN THE SOUTHEASTERN US

North Carolina and most of its neighbor states have ports for ocean-going vessels as well as inland ports that further increase the reach of each sea port. Mega sites are also being promoted in some of the states (and may serve some of the functions of inland ports). Most inland ports serve as direct feeders to a single sea port as opposed to serving multiple sea ports – for example, the Virginia Inland Port at Front Royal solely serves the Norfolk International Terminal. Generally, the service between the inland and sea port is via rail, so for example, trucks haul export goods to the inland port in a market area that has an approximate radius of 400 miles (the single day haul distance of a truck) and the goods are transferred to rail for direct transit to the sea port. The trip chain is reversed for imports. To examine the flows in and out of the NC ports and NC's neighbor ports of Norfolk, Charleston, Savannah, and Jacksonville, inland ports and mega sites in seven states were researched:

- West Virginia (WV),
- Virginia (VA),
- North Carolina (NC),
- Tennessee (TN),
- South Carolina (SC),
- Georgia (GA), and
- Florida (FL).

The inland ports and mega sites associated with each state are listed in Table 1 and shown in Figure 2. Both existing and proposed sites have been included. The sites range in size from 5 acres to more than 4,000 acres with some serving only one cargo type (such as containers) and others serving multiple types (such as the Port of Memphis which serves all forms of cargo).

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Table 1: Significant Off-Port Cargo-Handling Facilities in the Southeast

State	City	Name	Status	Size (ac.)	Facility Type*	Cargo Type	Rail Access	Associated Sea Port
WV	Point Pleasant	Inland Port, Trans-load & Consolidation Center	Proposed conversion from a DOD depot	85	SMT	Bulk & breakbulk	CSX, NS	Norfolk
	Prichard	Prichard Intermodal Facility	Breaking ground in 2011	78	SMT	Containers	NS (Pocahontas Line)	Norfolk
	Weirton	Inland Port, Trans-load & Consolidation Center	Proposed conversion of former Weirton Steel plant	Up to 1,600	SMT	Bulk & breakbulk	CSX, NS	Norfolk
VA	Front Royal	Virginia Inland Port (VIP)	Existing since 1989, 39 major companies near VIP	161 (8.5M SF of buildings)	SMT	Containers	NS dedicated, 5x/day	Norfolk
	Dublin	Virginia TradePort	Existing	Data not available	MLP	Data not available	12 miles to NS yard in Radford, VA	Norfolk
	Greensville County	Mid-Atlantic Manufacturing Center (MAMaC)	Proposed	1,545	EDI, certified mega site	n/a	CSX mainline with spur, NS nearby	n/a
	Richmond	Meadowville Technology Park	Under development	1,300	mega site	n/a	None	James River access
NC	Charlotte	Charlotte Inland Terminal	Existing	16	SMT	Containers	8 miles to NS terminal, 1 mile to CSX terminal	Wilmington
	Greensboro	Piedmont Triad Inland Terminal	Existing, dormant	Data not available	SMT	n/a	CSX, NS terminals 6 miles away	Wilmington
	Kinston	Global TransPark	Existing	2,500	MLP	Air Cargo	Rail to MHC expected Nov. 2011	Morehead City
	Edgecombe County	Kingsboro-Rose Mega Site	Proposed	1,307	EDI, mega site	n/a	CSX line borders property	Norfolk or Morehead City

State	City	Name	Status	Size (ac.)	Facility Type*	Cargo Type	Rail Access	Associated Sea Port
	Leland	International Logistics Park (ILP)	Potential site: new, undeveloped	1,100	EDI, mega site	n/a	CSX at Mid-Atlantic LC is closest	Wilmington
	Leland	Mid-Atlantic Logistics Center	Potential site: new, across from ILP	1,100	EDI	n/a	CSX connection	Wilmington
	Lenoir	Lenoir Transload Facility	Existing trans-load & consolidation center	Approx. 5	RIP	Data not available	Short-line RR interchanges with NS	Data not available
	Navassa	1690 Royster Road	Potential site: new, undeveloped	53	EDI	n/a	CSX	Wilmington
	Navassa	Lincoln Industrial Site	Potential site: new, undeveloped	280	EDI	n/a	CSX	Wilmington
	Navassa	Old Mill Road Site	Potential site: new, undeveloped	256	EDI	n/a	CSX line borders property	Wilmington
	Northwest	Northwest Rail Site	Potential site: new, undeveloped	135	EDI	n/a	CSX line borders property	Wilmington
	Union County	Project Legacy	Proposed	5,000	EDI	n/a	CSX	Wilmington
	Western NC	for Advantage West	Potential inland port (concept)	Unknown	EDI	n/a	n/a	Charleston, Savannah
TN	Memphis	Port of Memphis	Existing, massive	37 freight terminals, 15 river miles	MLP	Containers, Bulk, Breakbulk	BNSF, CSX, CN, Illinois Central, NS, UP	Multiple
	Chattanooga	Enterprise South	Existing (Volkswagen automotive assembly)	1,600 (+1,400 coming)	certified mega site	Automobiles for North America	CSX & NS	n/a
	Clarksville	Commerce Park	Under development, companies include Dow Corning, Hemlock	1,187	certified mega site	Data not available	Short line access	n/a
	Rossville	Memphis Regional Intermodal Facility	Private NS facility under construction	Approx. 400	RIP	Containers	NS	Memphis

State	City	Name	Status	Size (ac.)	Facility Type*	Cargo Type	Rail Access	Associated Sea Port
	Stanton	West TN Megasite Advantage Auto Park	Potential site: for sale by TVA	1,720	certified mega site	Data not available, likely RoRo for automobiles	CSX rail access	n/a
SC	Santee	Jafza Magna Park	Being developed	1,324	EDI	Data not available	CSX branchline	Charleston, Savannah
	Saint George	n/a	Potential inland port	n/a	n/a	Data not available	n/a	Charleston
	Simpsonville	n/a	Potential inland port	n/a	n/a	Data not available	n/a	Charleston
	Summerville	n/a	Potential inland port	n/a	n/a	Data not available	n/a	Charleston
	Chester County	Carolinas I-77 Mega Site	Private	1,152	certified mega site	Data not available	On-site short line, 12 mi. to Class I	n/a
	Dillon County	n/a	Optioned	2,008	mega site	Data not available	1.5 mi. to rail access	n/a
	Kershaw County	n/a	Potential site	1,400	mega site	Data not available	Adjacent	n/a
	Orangeburg County	See text for site names and details	Multiple sites proposed	Approx. 1,100	mega site	Data not available	Varies by site	n/a
	Graniteville	Sage Mill East Site	Potential site	1,380	certified mega site	n/a	NS	n/a
GA	Bainbridge	Port Bainbridge	Existing	107	SMT	Dry & Liquid Bulk	CSX	Savannah
	Columbus	Port Columbus	Existing	14	SMT	Liquid Bulk	NS	Savannah
	Cordele	Cordele Intermodal Center	Existing. Opened on 7/1/2011.	200 in Phase 1, 800-900 at full build	SMT	Containers	Heart of Georgia RR to GA Central to CSX	Savannah
	Augusta	Augusta Corporate Park	Potential site	1,734	GRAD site	n/a	NS rail access	Savannah

State	City	Name	Status	Size (ac.)	Facility Type*	Cargo Type	Rail Access	Associated Sea Port
	Cook County	South Cook Industrial District	Potential site	2,000	GRAD site	n/a	NS rail spur	Brunswick
	Newton County	Stanton Springs	Potential site	1,618	GRAD site	n/a	None	Savannah
FL	St. Lucie County	Treasure Coast Intermodal Campus (TCIC)	Proposed	4,000+	MLP	Containers	Florida East Coast RR	Miami, Everglades, Palm Beach
	Jacksonville	Cecil Commerce Center	Existing, sites still available	17,000 total (1,500-ac. mega site)	EDI with a certified mega site included	Containers	None	JAXPORT

* This is our best estimate of which type of facility exists or is planned based on the information discovered for this task.

n/a = not applicable.

Existing = location is actively operating, some parcels may still be under development.

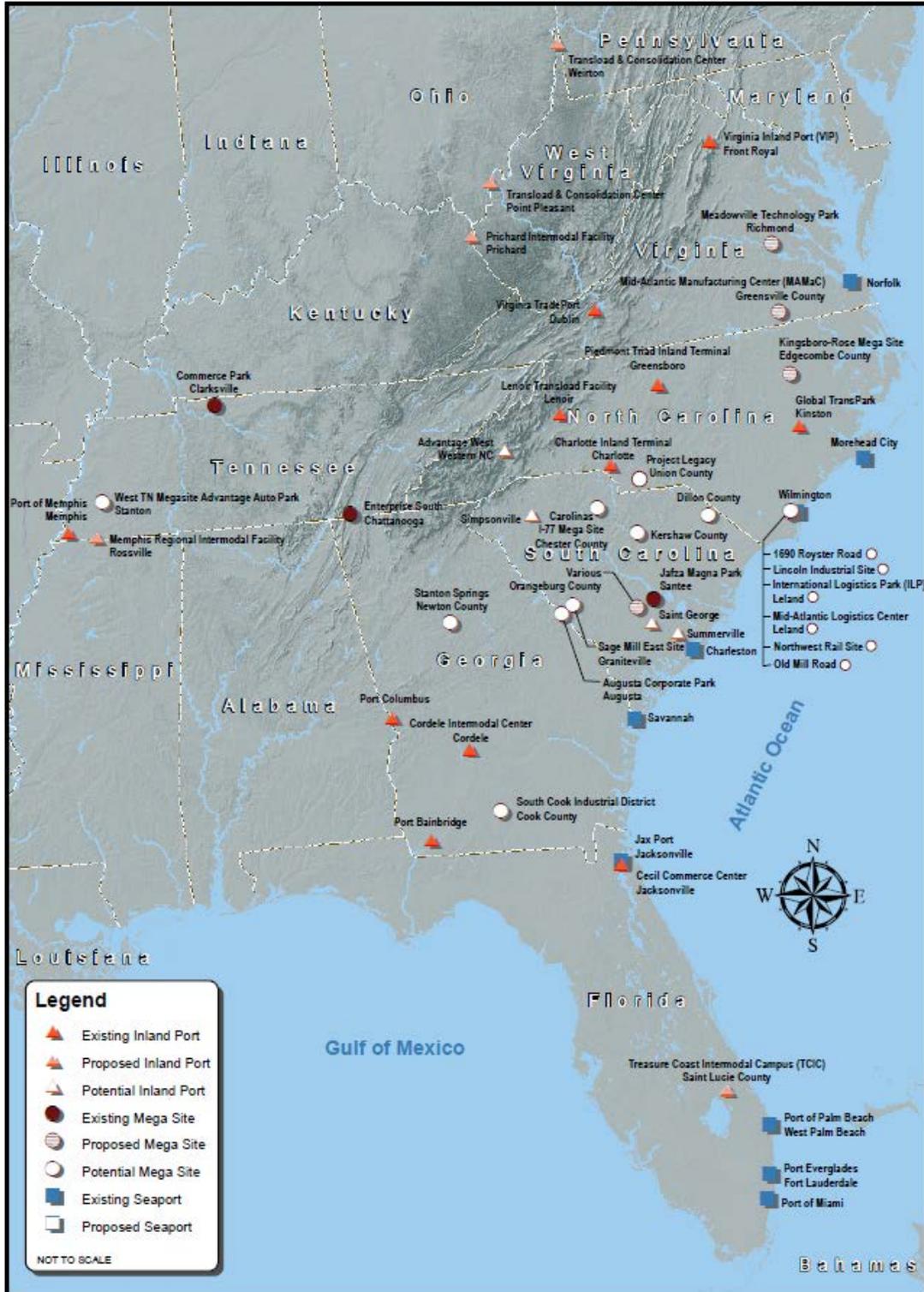
Proposed = location is looking for tenants/owners and not yet active. Services and utilities are usually in-place.

Potential = location is a concept that may or may not come to fruition in the future.

Note: intermodal terminals have been designated as inland ports for this report since their main function is transshipment.

Each inland port is now described based on size, cargo types, commodities handled, transport mode access, and sea port served.

Figure 2: Map of Inland Ports in the Southeast



Source: AECOM

West Virginia

Point Pleasant



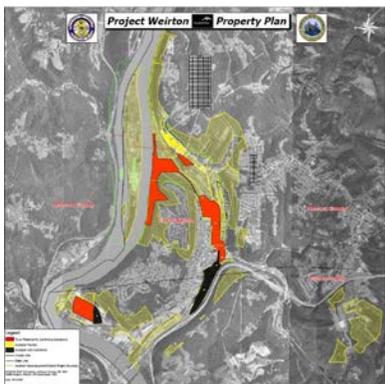
Source: GoogleMaps

Prichard



Source: GoogleMaps

Weirton



Source: WilburSmith Associates. 2009. Tech Memo: Trade and West Virginia Logistics – WVDOT’s Long-range Multi-modal Transportation Plan.

There are currently nine multimodal transfer facilities in West Virginia located in the following towns: Clarksburg, Dunbar, Huntington, Kenova, Nitro, South Charleston, and Weirton¹. All sites serve only bulk goods. There are three public (or public/private) facilities being planned: Point Pleasant, Prichard, and Weirton. Prichard is planned as an intermodal ramp on Norfolk Southern’s Heartland Corridor so it would serve container traffic between Chicago and Norfolk; it was supposed to have broke ground in 2011 and road access will be via US 52 to I-73/74. The other two proposed facilities would be dedicated bulk and breakbulk facilities.

According to West Virginia DOT’s Long-range Multi-modal Transportation Plan, Point Pleasant would be a good facility for the following commodities:

- Non-metallic minerals,
- Metallic ores,
- Stone, clay & glass products,
- Lumber & wood products, and
- Pulp, paper & allied products.

Likewise, the report authors recommended the following commodities for a Weirton facility:

- Non-metallic minerals,
- Metallic ores,
- Stone, clay & glass products,
- Lumber & wood products,
- Pulp, paper & allied products,
- Petroleum products, and
- Chemical products.

¹ This is the Weirton Ice and Supply Company facility which is separate from the proposed facility.

Virginia

Virginia Inland Port, Front Royal, VA



Source: Edwards, G. 2007. The Virginia Inland Port. Presentation to the Commonwealth Transportation Board.

The Virginia Inland Port (VIP) at Front Royal, VA was opened in 1989 to draw container business from the Ohio Valley and away from the Port of Baltimore by providing a direct Norfolk Southern rail connection to Norfolk International Terminal (NIT).² The inland port is owned and operated by Virginia Port Authority (VPA). Highway connections include I-66 (< 1 mile), I-81 (< 5 miles), and Appalachian Development Highway System (ADHS) Corridor H.³ A minimum of five trains per day travel between VIP and NIT (220 miles) with a stop also at NS's Chesapeake, VA facility. Major commodities are: auto parts, logs/lumber, paper products, poultry, retail items, and rubber/plastics. VIP is a US Customs Recognized Port of Entry and a Free Trade Zone.⁴ Additionally, this inland port has attracted at least 24 warehousing and distribution centers to the area.⁵

Virginia TradePort, Dublin, VA



Source: GoogleMaps

The Virginia TradePort in Dublin, VA is a public-private venture supervised by the New River Valley Economic Development Alliance in conjunction with US Customs and Border Protection. It is located at the New River Valley Airport and is designated as an international port of entry and a foreign trade zone. Air, highway (I-81 and I-77 interchange), and rail (NS yard in Radford, VA approximately 12 miles away) infrastructure are accessible.

Mid-Atlantic Advanced Manufacturing Center (MAMaC)



Source:
<http://www.timmons.com/projects/greensville-mega-site-evaluation/>

Located in Southside, Greensville County, VA, this 1,545-acre certified mega site has multimodal transport access with over a mile of frontage on I-95 between interchanges 13 and 17. Rail access is via the CSX mainline with a spur directly into the site.⁶ NS is also nearby.

² The Tioga Group; Railroad Industries; and Meyer, Mohaddes Associates. 2006. SCAG Inland Port Feasibility Study: Inland Port Case Studies Appendix, pp 4-9.

³ ADHS is a near-interstate quality highway system of over 3,000 miles.

⁴ Edwards, G. 2007. The Virginia Inland Port. Presentation to the Commonwealth Transportation Board.

⁵ Williams, D. 2010. 'Inland port' could cut Atlanta truck traffic. Atlanta Business Chronicle, 6/7/2010. (<http://www.bizjournals.com/atlanta/stories/2010/06/07/story7.html>)

⁶ <http://www.mamacva.com/news/item/mamac-receives-six-million-for-development>

Meadowville Technology Park



Source:
<http://www.meadowville.com/introduction.asp>

This 1,300-ac. mega site in Richmond, Chesterfield County, VA has significant James River frontage and access (so barge service is a potential). However, it does not have rail access. Additionally, it has direct access to I-295.

North Carolina

Charlotte Inland Terminal



Source: Google Maps, 2011

Managed by NCSPA, the Charlotte Inland Terminal (CIT) is a 16-acre site that is C-TPAT certified and bonded by US Customs and Border Protection. The facility provides storage space for approximately 400 stacked containers and 300 containers on chassis. There is a Sprint container service to/from the Port of Wilmington, Charlotte, and beyond; this service is via truck. CIT has access to I-77 and I-85 for trucking.⁷ The broader Charlotte area offers extensive rail and highway freight services as well as provides a Foreign Trade Zone; this FTZ offers the special feature of storage in either North or South Carolina. In terms of trucking, there are 327 trucking firms in the region for “freight, liquid or dry bulk, heavy hauling, furniture moving, and container shipping.” Moreover, both CSX and NS serve Charlotte via rail for 300 trains per week – tying it to about half of the US and Canada via 43,200 track miles. There are up to 28,000 rail cars a day that can be classified at NS’s computerized yard.⁸ However, note that CIT is not directly accessible by rail. A CSX terminal is approximately 1 mile away whereas the new NS intermodal facility will be approximately 8 miles from CIT.

⁷ http://www.ncports.com/other_facilities.htm

⁸ <http://charlottechamber.com/emerging-industry/charlotte-access-to-the-world/>

Piedmont Triad Inland Terminal



Source: Google Maps, 2011

The Piedmont Triad Inland Terminal (PTIT) is located in Greensboro, NC. It is an existing site that is currently dormant. CSX and NS have terminals approximately 6 miles from PTIT; however, there are spurs within 1 mile.

Global TransPark



Source: Google Maps, 2011

The Global TransPark (GTP) is a 2,500-acre multi-modal industrial site located in Kinston, NC with 5,775 acres of industrial-permitted land nearby. It is owned by the State of North Carolina and has a focus on aerospace, logistics, and industrial activities. GTP is designated as a Foreign Trade Zone and it has some sub-zones. The primary freight-related tenants include: Spirit AeroSystems (600K sq. ft. composites manufacturing facility on a 304-acre site), Mountain Air Cargo, and a handful of logistics and supply chain management firms (Commerce Overseas Corporation, DB Schenker, Longistics, and New Breed). The site will soon have access to four modes of transportation: air, road, rail, and sea. Air access is via the 11,500-foot runway enabling Boeing 747-400 air freighters to take off and land. Road connections include US 70, US 258, and longer distances to interstate highways (30 miles to I-795, 50 miles to I-95, and 45 miles to I-40). A rail connection to the Port of Morehead City on the North Carolina Railroad mainline is scheduled for completion in November 2011 which will give GTP tenants direct access to ocean-going vessels.⁹

Kingsboro-Rose Mega Site



Source:
<http://www.econdev.org/properties/kingsboro-rose.html>

The Carolinas Gateway Partnership of Rocky Mount, NC is promoting a 1,307-acre industrial area in Edgecombe County, NC called the Kingsboro-Rose Mega Site. Based on a 2006 study by the Center for Regional Economic Competitiveness, rubber products were identified as a potential growth market for economic development in the area.¹⁰ This site is served by rail and road. CSX Transportation traverses the southern property border as does US 64 (interstate quality). I-95 and US 301 are approximately 10 and 8 miles away, respectively.¹¹

⁹ North Carolina Global TransPark Authority's Strategic Plan, December 2010. (<http://www.ncleg.net/documentsites/committees/JointAppropriationsTransportation2011/2011-03-23%20Meeting/GTP%20Strategic%20Plan/GTP%20Strategic%20Plan.pdf>)

¹⁰ Center for Regional Economic Competitiveness. 2006. A Vision Plan for North Carolina's Eastern Region.

¹¹ <http://www.econdev.org/properties/kingsboro-rose.html>

International Logistics Park



Source:
http://www.columbusco.org/DotNetNuke_2/Portals/13/International%20Logistics%20Park%20of%20NCm%20%28web%29.pdf

International Logistics Park (ILP) in Leland, NC is a joint economic development venture of Brunswick and Columbus counties in southeastern NC. It is within 16 miles of the Port of Wilmington via US 74 and I-140. It is an undeveloped mega site that has highway access but no direct rail access.

Mid-Atlantic Logistics Center



Source:
http://www.ncse.org/site_display.php?combined_building_code=brup024

On the other side of US 74/76 across from ILP is the Mid-Atlantic Logistics Center which is a privately-owned facility. In addition to the road access noted for ILP, this site has access to a CSX rail line. It is zoned for light industrial and the economic development commission is looking for “rail-dependent logistics businesses such as plastics or furniture manufacturers.”¹²

Lenoir Transload Facility



Source: Google Maps, 2011

The Lenoir Transload Facility, also called the Caldwell County Trans-Load Facility, opened in 2008 in Lenoir, NC near US 321 and Southwest Boulevard. It has a total planned capacity of thirty-six 60-foot railcars. The Caldwell County Railroad Company, a short-line, serves the facility with 22.7 miles of track between Hickory and Valmead, NC. This rail line interchanges with the Asheville to Salisbury NS secondary mainline.^{13,14,15}

¹² Wilson, S. 2010. County logistics park receives state rail site award. The Brunswick Beacon, 5/24/2010. (<http://www.brunswickbeacon.com/content/county-logistics-park-receives-state-rail-site-award>)

¹³ <http://www.newstopic.net/articles/2007/03/25/news/26offload.txt>

¹⁴ [Trans.wpcog.org/files/Chapter%206_Freight%20Chapter.doc](http://www.wpcog.org/files/Chapter%206_Freight%20Chapter.doc)

¹⁵ <http://www.rrb.gov/pdf/bcd/bcd95-45.pdf>

1690 Royster Road, Navassa



Source: <http://www.brunswickedc.com/sites-buildings/available-sites/1690-royster-road>

In Brunswick County there are a handful of sites slated for industrial use by the economic development commission.

1. The Royster Road location is 53 waterfront acres on a bend of the Cape Fear River, north of the Brunswick River braid; the site does have water access with 110 feet of dockage. A CSX rail line runs east-west to the south of the site. Further south is the US 74/76 highway. The Port of Wilmington is just under 10 miles away by road, less than that by water.

Lincoln Industrial Site, Navassa



Source: <http://www.brunswickedc.com/sites-buildings/available-sites/cape-fear-site-b>

2. Lincoln Industrial Site is 280 acres and shares its northwest boundary with the Royster Road site. It does not have water access, but is quite close to a CSX line and US 74/76 – both are south of the site.

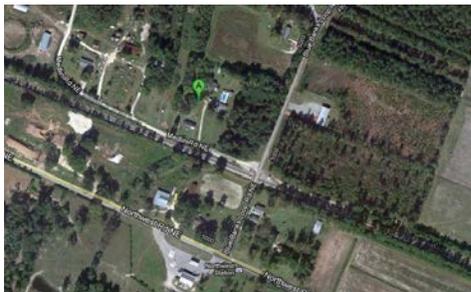
Old Mill Road Site, Navassa



Source: <http://www.brunswickedc.com/sites-buildings/available-sites/old-mill-road-site>

3. South of the CSX line in Navassa, and right near the TRANSFLO bulk transloading facility, is the Old Mill Road Site. This location is 256 acres with direct access to rail facilities. US 74/76 can be accessed south of the site. It is south and west of the other two Navassa sites.

Northwest Rail Site



Source:
<http://maps.google.com/maps?hl=en&tab=w>
|

4. In the town of Northwest, the Northwest Rail Site exists. It is 135 acres with CSX rail access along the south property boundary. The road network is accessible via Medlin Road with US 74/76 to the south of the site and the rail line.

Project Legacy



Source:
<http://www.unioncpp.com/legacy/index.html>

The Union County Partnership for Progress is promoting a 5,000-acre industrial and commercial hub in eastern Union County, NC just north of US 74 called Project Legacy. The future Monroe Bypass would also give the site reasonable access to I-485 around Charlotte. Rail access would be via the east-west CSX line that runs through Marshville and parallel to US 74 with the hope that CSX relocates a rail switching yard from Monroe to the new site. An intermodal rail yard of approximately 250 acres is also planned along with spurs to several tracts within the site. Tracts for industrial use are slated to be 150 to 250 acres, commercial/business sites without direct access may range from 15 to 50 acres.¹⁶



Source:
<http://www.unioncpp.com/legacy/legacy-phase1-site-map.html>

Potential Western NC Inland Port

Advantage West is proposing an inland port that would slowly be phased in via three tiers because freight export volumes in this western NC region of 23 counties were not high enough at the time of the study to warrant one.¹⁷ Tier 1 is the creation of a Regional Logistics Alliance. Tier 2 is a network of sub-regional freight consolidation facilities (the Lenoir Transload Facility might fit in this tier). And Tier 3 is a

¹⁶ <http://www.unioncpp.com/legacy/index.html>

¹⁷ http://www.wcu.edu/WebFiles/PDFs/WNC__Inland_Port_Feasibility_Study.pdf

large-scale intermodal facility. Three locations were identified in the study, with an existing industrial park in Rutherford County being the highest ranked and having the public-private partnership potential with local government, CSX and Duke Energy. A site in Marion, NC was also considered since on the east side is Clinchcross Crossing, where the north-south CSX and east-west NS railroads intersect.¹⁸

Tennessee

Port of Memphis, TN



Source: International Port of Memphis Brochure, 2007.

The western border of Tennessee is the Mississippi River and at the southwest corner of the state sits the Port of Memphis, a massive river port, with 37 freight terminals along 15 miles of the river. It is 400 river miles from St. Louis and 600 river miles from New Orleans. The top five commodities moved on the river in 2008 were: petroleum (37%), food and farm products (19%), coal (18%), crude materials (13%), and manufactured goods (6%).¹⁹ The Crescent Corridor of Norfolk Southern will tie the Port of Memphis to Chattanooga and includes a Memphis Regional Intermodal Facility.²⁰ The port is served by multiple railroads including: CSX, NS, BNSF, CN, Illinois Central, and UP. And, the Port of Memphis is well-situated with access to three interstates: I-22, I-40, and I-55.

(new sections shown)



Source: Port of Memphis, Frank C. Pidgeon Industrial Park Development Information Brochure. The Memphis and Shelby County Port Commission, 2008.

In the central and eastern parts of the state is the Tennessee River, forming a U-shape that extends down into northern Alabama (connecting to the Tombigbee River)²¹ and ends up in western Kentucky (connecting to the Ohio River). It connects Knoxville, TN, Chattanooga, TN, Decatur, AL, and Paducah, KY. Commodities on the Tennessee River include: petroleum fuels, coal & coke (38%), aggregates (25%), chemicals, grains, iron & steel, ores & minerals.²²

¹⁸ "Mountain port will be no joke", Business North Carolina, The Free Library, 01 August 2008. <[http://www.thefreelibrary.com/Mountain port will be no joke.-a0183033565](http://www.thefreelibrary.com/Mountain+port+will+be+no+joke.-a0183033565)>.

¹⁹ <http://www.portofmemphis.com/vitals1.asp>

²⁰ http://expandingcapacity.transportation.org/unlocking_freight/states/TN_Unlocking_Freight_0610.pdf

²¹ The Tombigbee-Tennessee Waterway System is a 39-mile freight channel that enables freight on the Tennessee River to reach the Gulf of Mexico via a water route.

²² Tennessee River Authority, 2011.

Enterprise South



Source:
<http://www.chattanooga-chamber.com/enterprisesouthsite/sitemaps.asp>

Enterprise South is an existing 1,600-ac. certified mega site in Chattanooga, TN that will be expanding by 1,400 more acres in the future. Volkswagen is the anchor business; the company built an automotive assembly plant that is producing mid-sized sedans for the North American market. The site boasts rail access by CSX and NS.

Commerce Park



Source:
<http://www.gisplanning.net/photos/tva/9817.jpg>

Located in Clarksville, TN, Commerce Park is a 1,187-ac. certified mega site. It is currently being developed and has two anchor tenants, Dow Corning and Hemlock (which produces semi-conductors). The site is accessible via a short line railroad.

Memphis Regional Intermodal Facility



Source:
<http://www.memphisdailynews.com/editorial/Article.aspx?id=42470>

Near the Port of Memphis in TN, Norfolk Southern is creating this dedicated intermodal facility for container traffic on approximately 380 acres in Rossville, Fayette County, TN as part of the Crescent Corridor. The site is south of TN 57, north of US 72, and less than five miles from Collierville. It will be the Memphis area's fourth intermodal yard.²³ It is expected to open in late 2012, construction began in late April 2011.²⁴

West TN Megasite Advantage Auto Park



Source:
<http://www.wtia.org/buildings2/sitesfeature.php?Record=97>

This certified mega site in Stanton, TN is for sale by the Tennessee Valley Authority (TVA), hopefully for an automotive-related buyer. It is adjacent to both I-40 and CSX. The closest port is the Port of Memphis.

²³ <http://www.commercialappeal.com/news/2009/jul/17/norfolk-southern-s-intermodal-yard-fayette-be-annou/>

²⁴ http://www.nscorp.com/nscportal/nscorp/Media/News%20Releases/2011/ns_memphis_groundbreaking.html

South Carolina

Potential Mega-Sites in SC



Source: WilburSmith Associates. 2009. Rail Plan Supplement: South Carolina Mega Site Feasibility Analysis.

Carolinas I-77 Mega Site



Source: SC Dept. of Commerce

Jafza Magna Park, Santee, SC

At this time, South Carolina has no public inland ports. The state has been considering inland ports since 2003 and mega sites²⁵ since 2009. The inland port locations discussed included: Summerville, the intersection of I-26 and I-95 (north of St. George), and the Upstate near the intersection of I-26, I-85, and I-385 (around Simpsonville).²⁶ Three mega sites were recommended (out of twelve) for moving forward: Chester County, Dillon County, and Kershaw County.

The Chester County site is called the Carolinas I-77 Mega Site. It is in Richburg, SC and covers 1,152 acres. It is accessible via highway (I-77) and rail (Lancaster and Chester Rail – a short line). The site has over 8,000 feet of Interstate frontage and the rail line is on-site and connects to both CSX and NS. It is 30 miles from Charlotte, NC. The nearest port is Charleston at 167 miles away.²⁷

On the 2009 WSA list of mega sites, but not strongly recommended at the time, Orangeburg County is aggressively pursuing industrial and logistics-based developments with both public and private ventures. It is being called South Carolina's Global Logistics Triangle and includes: I-95, I-26, US 301, as well as CSX and NS rail lines.²⁸

The Jafza Magna Park is a 1,324-acre site being developed by Jafza International, a Dubai company that develops economic zones and industrial parks. The site is in Orangeburg County near Santee, SC with direct access to I-95 and it is expected to serve the Ports of Charleston (65 miles) and Savannah (115 miles). The park will also have rail access via CSX. It is to be a logistics, light manufacturing, and distribution hub of approximately 4 million sq. ft. of facilities and multiple tenants. It is to be inside a proposed foreign trade zone (FTZ). The site is to be operational in 2012.^{29,30}

²⁵ Mega sites = sites slated for industrial uses that are at least 1,000 acres in size, have good infrastructure connections, available workforces, and community support.

²⁶ WilburSmith Associates. 2009. Rail Plan Supplement: South Carolina Mega Site Feasibility Analysis. (http://sccommerce.com/sites/default/files/document_directory/Rail_Plan_Supplement_-_South_Carolina_Mega_Site_Feasibility_Analysis_Wilbur_Smith_Associates_2009.pdf)

²⁷ <http://www.considerthecarolinas.com/sites-and-bldgs.asp>

²⁸ http://www.ocdc.com/pdf/Orangeburg_ED_section_2.pdf

²⁹ <http://testdomain.screnews.com/category/santee/>



Source:

http://2.bp.blogspot.com/_1ZGfzmoBuqU/TLhSuZ9ODbl/AAAAAAAAEwo/4GS7YqMw4UI/s1600/jafza+site%2520plan.jpg

Sage Mill East Site



Source: SC Dept. of Commerce

Georgia

Port Bainbridge



Smaller sites are also being developed in Orangeburg County, including, but not limited to:

- Western Orangeburg County Logistical Park
- Carolina International Industrial Park, 93 acres
- Carolina Regional Business Park, 80 acres
- Orangeburg County/City Industrial Park, 445 acres
- Matthews Industrial Park, 335 acres³¹

This is a proposed, certified mega site located in Graniteville, Aiken County, SC. It is 1,380 acres and is adjacent to the Sage Mill Industrial Park. I-20 is the nearest interstate at 5.33 miles away. Rail access is via NS at 0.1 mile away.

Georgia has three major inland ports, all linked to the Port of Savannah for deep sea service. Two, Port Bainbridge and Port Columbus, are owned by the Georgia Ports Authority (GPA). Port Bainbridge, operated by GPA, serves both dry and liquid bulk commodities on 107 acres with one transit shed and four warehouses totaling 93,000 sq. ft. of area so both short- and long-term storage is possible. There are two barge berths (liquid 421 ft, dry 529 ft) on the Apalachicola-Chattahoochee-Flint Waterway (or Tri-Rivers System), rail service by CSX, and access to two interstates (I-10 and I-85). According to the GPA, the primary commodities are: ammonium sulfate, cottonseed, cypress bark mulch, gypsum, nitrogen solution, and urea.³²

³⁰ <http://www.worldtradewt100.com/blogs/14-wt-100-blog/post/management-change-planned-for-jafza-south-carolina-project>

³¹ http://www.ocdc.com/pdf/Orangeburg_ED_section_2.pdf

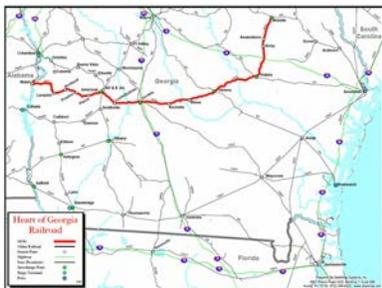
³² <http://www.gaports.com/Default.aspx?tabid=341>

Port Columbus



Port Columbus solely handles liquid bulk and is operated by S.T. Services. The port has 14 acres, 402 linear feet of berthing space, and a 27,280 sq. ft. warehouse. Like Bainbridge, it is located on the Tri-Rivers System. On land, it is served by Norfolk Southern Railroad and three interstate highways.³³

Cordele Intermodal Center



The third inland port, opened in July 2011 at a cost of approximately \$8.6M, is Cordele Intermodal Center (CIC). It is a public-private partnership of Cordele-Crisp County Industrial Development Council and Cordele Intermodal Services, Inc. (the operator). Rail is via the Heart of Georgia Railroad, Georgia Central, and lastly CSXT into the Chatham Yard at the Port of Savannah. Road access is directly via I-75. CIC is hoping to attract business from south Georgia, Alabama, and northwest Florida to the Port of Savannah, relieving metro Atlanta of some truck traffic, and potentially pulling business from the ports in Houston, TX, Mobile, AL, and New Orleans, LA. The first phase is about 200 acres with a build-out of 800 to 900 acres in 2014. The primary commodity is expected to be cotton with chemical products and heavy equipment also being moved. For example, the following could be shipped in the future based on the industries in the area: Union Compress/ cotton, Chickasha/ cottonseed oil, Marvair/ air conditioning and HVAC systems, Norbord/ OSB-oriented strand board, auto parts for Kia, Volkswagen, and/or Hyundai, pecans, kaolin, and clay. In addition, Vega Biofuels, Inc. is constructing a bio-coal manufacturing plant in Crisp County's Free Trade Zone so it can cost-effectively ship out of Savannah via CIS.³⁴ As of June 2011, commitments for 6,000 containers have been secured with a goal of 20,000 annual lifts in phase 1 and 100,000 annual lifts at full build. To keep shipper costs down, CIS operates its own chassis fleet and estimates it can save shippers 40 percent on dray costs.^{35, 36, 37, 38, 39}

Sources:

<http://www.awtransport.com/home-topmenu-36> and
<http://www.cordeleintermodal.com/>

³³ <http://www.gaports.com/Facilities/PortColumbus.aspx>

³⁴ Mayle, M.C. 2011. Cordele Port Proving Its Worth. Savannah Morning News, 7/6/2011. (accessed at: <http://www.cordeleintermodal.com/component/content/article/1-latest-news/21-idc-announces-inland-port-agreement-with-cis>)

³⁵ Williams, D. 2010. 'Inland port' could cut Atlanta truck traffic. Atlanta Business Chronicle, 6/7/2010. (<http://www.bizjournals.com/atlanta/stories/2010/06/07/story7.html>)

³⁶ Staff. 2011. Cordele Intermodal Services to open Georgia terminal next month. Progressive Railroading. (<http://www.progressiverailroading.com/news/article/Cordele-Intermodal-Services-to-open-Georgia-terminal-next-month--26568>)

Augusta Corporate Park



Source: www.ga-sites.com

In Augusta, GA, this 1,734-ac. site has been proposed. It meets the guidelines for the GRAD site designation (Georgia R Accelerated Development) which is similar to certified mega site status. Rail access is via NS. It's nearest port is Savannah, but it is not associated with any one port.

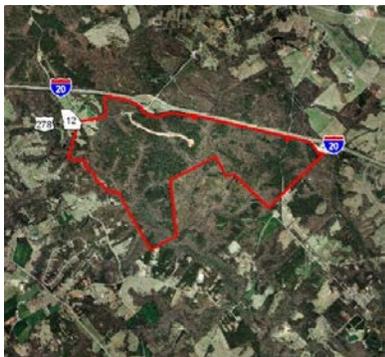
South Cook Industrial District



Source: www.ga-sites.com

Located in Cook County, GA, this 2,000-ac. location is a GRAD site. It is currently undeveloped. It has an NS rail spur. The nearest port is Brunswick, but it is not directly associated with any port.

Stanton Springs



Source: www.ga-sites.com

In Newton County, GA, Stanton Springs is a proposed site that meets GRAD standards. It is 1,618 ac. It is not near a rail line and the nearest port is Savannah.

³⁷ Staff. 2010. Heart of Georgia Railroad to Serve New Inland Port. Atlantic Western Transportation, 6/28/2010. (<http://www.awtransport.com/news-mainmenu-27/42-heart-of-georgia-railroad-to-serve-new-inland-port>)

³⁸ Young, B. 2010. Ready to Roll. Georgia Trends, 12/2010. (reprinted at: <http://www.cordeleintermodal.com/component/content/article/1-latest-news/26-ready-to-roll>)

³⁹ <http://www.cordeleintermodal.com/>

Florida

Treasure Coast Intermodal
Campus (TCIC)



Source:
<http://www.worldpropertychannel.com/news-assets/TCIC---Aerial-Property-Boundary.jpg>

Florida wants to capitalize on the Panama Canal expansion by increasing its ability to handle containerized cargo. Therefore, the state is moving forward with the proposed Treasure Coast Intermodal Campus located in the southwest corner of St. Lucie County.⁴⁰ TCIC is to serve three Florida ports: Port Everglades, Port of Miami, and the Port of Palm Beach. It will include 4,000+ acres developed over the next 30 to 35 years to create a “full service logistics environment” with manufacturing uses. The site will be served by both road and rail – Florida East Coast Railroad (FEC), tying in nicely to the recent \$22.7M TIGER II grant the Port of Miami is supposed to receive that will help fund the Port of Miami Rail Access Project restoring FEC’s access to the port and creating an intermodal yard.

⁴⁰ Editorial Staff. 2011. Jones Lang LaSalle Announces Florida’s First Dedicated Inland Port / Logistics Center Development. Cygnus Supply & Demand Chain: Solutions-based Intelligence for Supply Chain ROI, 6/28/2011.

Cecil Commerce Center



Source:
[http://www.coj.net/Departments/Jacksonville-Economic-Development-Commission/Cecil-Commerce-Center-\(1\).aspx](http://www.coj.net/Departments/Jacksonville-Economic-Development-Commission/Cecil-Commerce-Center-(1).aspx)

The Cecil Commerce Center is located in Jacksonville, FL. It is comprised of 17,000 acres of land in Duval County. It is the site of the former Navy Master Jet Base and current uses are aviation and aerospace-related (Boeing, FlightStar, Northrop Grumman). It is directly accessible via the new Cecil Commerce Center Parkway which connects to I-10 at the northern end of the site. At the southern end, the site has four runways with three approximately 8,000 feet and the fourth 12,500 feet long. Rail access is not internal to the site although two CSX lines run north of I-10. Included in this broad development is a foreign trade zone, AllianceFlorida. Also included is a 1,500-ac. certified mega site in the northern section that is ready for heavy industrial development.



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3. CHARACTERISTICS OF VIABLE INLAND PORTS

Inland ports serve as conduits for sea ports – increasing the catchment area of sea ports. For example, the Virginia Inland Port strategy is to, “intercept containers destined for rival east coast ports and deliver them by a direct rail link to ...” the port of Norfolk (Leitner & Harrison, 2001). They usually can accommodate multiple transport modes and have one or more modes seamlessly connect to associated sea ports (such as direct rail or barge service). They further offer opportunities to change and increase the value of the cargo being shipped through value-added services. Such services are not required of every shipment, but different ones are often desired by customers. Quoting from Leitner & Harrison (2001),

Today’s competitive global economy has forced businesses to focus not only on streamlining product manufacturing, but also on the inefficiency of the entire supply chain process. An inland port can remove some link inefficiencies by focusing on secondary activities not directly related to production.

The elimination of links can also be accomplished at an inland port where value-added services are provided amidst strong transportation capabilities. When distribution, warehousing, and manufacturing work together at an inland port, uncertainty related to JIT [Just-In-Time] systems will be reduced as well as other uncertainties integral to supply chain components. Other uncertainties related to customs and border delays can be eliminated at an inland port because these functions are commonly located at one site.

To give the reader a feel for the breadth of value-added services possible, Table 2 has a host of them organized under four categories: policies, facilities/ equipment, cargo handling, and documentation and processing. At the Port of Rotterdam 25 years ago, "The strategy was to add value to cargo entering or leaving the port at least three times before it went on to other destinations Adding value took different forms from partial processing of bulk cargo, manufacturing at port sites, and especially from logistics, legal and financial services for shipments farther up or down the supply chain." (Egerstrom, 2011) Combining strategies such as those used by VIP and Rotterdam could be an effective way to grow inland ports in North Carolina.

Table 2: Value-Added Services for Ports

Policies	Facilities/ Equipment	Cargo Handling	Documentation & Processing
<ul style="list-style-type: none"> • 24/7 operations or at a minimum, night access • Market chassis & container repositioning • Free Trade Zone designation • Industrial zoning around the facility with vacant land available • Promote risk diversification plans to firms importing cargo • Create alliances with other ports abroad • Have reliever facility agreements with neighbor ports • Market mode redundancy 	<ul style="list-style-type: none"> • All weather terminal • Variety of storage (open, closed, climate-controlled, reefers) • Container yard • Light manufacturing • Sorting • Grain elevator • Intermodal terminal • On-site rail with direct port connections • Cross dock • Maintenance • Truck stop • Business center (logistics, EDI, customs, etc.) • Strong & robust 	<ul style="list-style-type: none"> • JIT servicing • Storing/ warehousing • Cross dock transloading • Stuffing/ unstuffing • Debulking • Palletizing/ unitizing • LTL freight consolidating • Sorting • Packaging/ repackaging • Bagging • Kitting • Product assembly • Order assembly • Customizing & countryizing 	<ul style="list-style-type: none"> • Logistics management services • Customs bonding & clearing • International trade processing • Import-export consulting • Port handling • Door-to-door delivery • Charter services • Financial services

<p>(offer to balance cargo flows across modes)</p>	<p>information & communication technologies</p> <ul style="list-style-type: none"> • Chassis fleet 	<ul style="list-style-type: none"> • Blending • Labeling • Testing, inspecting <p>Special examples:</p> <ul style="list-style-type: none"> • Timber treating • Log chipping • Oil refining • Car painting 	<p>(freight rate negotiating, audit/ payment, invoicing)</p> <ul style="list-style-type: none"> • Legal services (claim handling, regulatory compliance review) • Insurance • Web-based services (invoicing, reporting) • Electronic processing (EDI – electronic data interchange) • Inventory management and control • Shipment scheduling
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Sources: Leitner & Harrison (2001), Transport Division-UNESCAP (2002), Szufiak (2005), AWI Logistics, Westports Malaysia, SAL Logistics, LUEBECK Business Development Corp., World Port Source.

4. OPPORTUNITIES FOR NORTH CAROLINA

North Carolina has two small sea ports bounded by multiple mega-ports (Baltimore, Norfolk, Charleston, Savannah, and more); therefore, differentiating itself from them is one key to drawing business. This section was focused on inland ports – what they are, where they are in the Southeast, and what makes them viable. Based on this discussion, inland ports could be a mechanism for North Carolina to further differentiate its ports and generate increased import/export cargo flows. To be successful, it is wise to heed Leitner & Harrison's (2001) statement of,

Inland ports preliminary critical needs: modal capabilities, existing demand, locational advantages, international trade facilitation, management plan.

Walking through these critical needs, modal capabilities may be the most difficult hurdle for North Carolina to overcome and is directly tied to the third need of locational advantages. Thinking of freight patterns and their relation to inland port activity, North Carolina may learn from Georgia and South Carolina. In Georgia, they have several inland ports that are directly connected to Savannah with a dedicated transportation infrastructure (rail). So, the port authority thought about ensuring the inland nodes had good connectivity to the sea port. In the case of South Carolina, since there are currently no inland ports the port authority has little control over freight patterns emanating from/ terminating at Charleston; hence there is potential for more unexpected delays and/or impacts. Therefore, it seems wise to coordinate both hub and link facilities for port activity. Going one step further, network redundancy should be considered when siting inland ports in case of network disruptions. Neither of the existing inland ports at Charlotte and Greensboro has direct rail service to a maritime port and nor are they well-served by a water route.⁴¹ However, both inland ports are close to one or more rail lines. Hence, there may be a few opportunities:

- Option 1: dray from the inland port to the nearest rail terminal. Issue: adds an extra step in the supply chain without a significant benefit since the original delivery could go directly to the rail terminal.
- Option 2: build a spur or access point at the existing site to the nearest rail line. Issue: obtaining Class I rail service on the spur without heavy incentives such as multiple unit trains per week.
- Option 3: obtain agreements for a short line to operate direct services between the inland ports and the maritime ports. Issue: may need to extend or build some spurs, may need to negotiate with NCR and Class I railroads for limited trackage rights.
- Option 4: move one or both of the inland ports to be adjacent to or at one of the intermodal terminals in Greensboro or Charlotte. Issue: cost of land.

Whether or not rail service can be secured at one of the existing inland ports, strong consideration should be given to establishing an inland port at either Selma, NC or Goldsboro, NC to capture the eastern NC market. In both locations, the two Class I rail lines (CSX and NS) cross – this would be a strategic advantage for the state and port customers because direct service to either port could be arranged; short line service would also be an option. For rail

⁴¹ In Greensboro, the CSX and NS terminals are approx. 6 miles from the inland port but spurs pass much closer (approx. 1 mile). In Charlotte, the CSX terminal is just down the road from the inland port (approx. 1 mile) with several spurs accessing the FedEx hub next door. The NS intermodal facility is approx 8 miles away, but a new facility is being built at the airport which is about the same driving distance to the Charlotte inland port.

service to Wilmington, both origins would benefit from the reopening of the Castle Hayne to Wallace track section. To capture the western NC market, a location such as Marion, NC can be considered; short lines access much of the Piedmont and some of the Mountain regions so these may offer the best service options.

The second critical need is existing demand, based on the market analysis, there are several commodities that the inland ports could serve. Specifically, they could serve the grain and livestock markets in eastern NC and the timber and furniture markets in western NC. Unfortunately, both existing sites are extremely small so they may not generate enough cargo to be profitable unless they offer significant value-added services. Based on the literature and stakeholder feedback, the following value-added services may bring the most benefit:

- Container and chassis repositioning. NC farmers need empty containers to export their cargo to certain countries. In addition, most ports have imbalances in their container imports and exports so NC could promote itself as an equipment repositioner and hold agreements with various shipping lines to have the NC inland ports serve as accepted drop-off points.
- Install grain elevators at the inland ports. Again to serve the NC farmers.
- Own a chassis fleet. To eliminate the worry of unavailability and the need to contract with a vendor.
- Risk diversification planning. NC should promote this to firms importing goods to use multiple ports and routes to minimize risks such as labor strikes, mode bankruptcies, and weather disruptions. Therefore, bring a percent of cargo through our ports and inland ports.
- Reliever facility agreements. NC should consider supporting the mega ports as a reliever during congested time periods. On the flip side, the NC inland ports could form agreements with neighbor state ports to move cargo through them if direct rail service can be created – in Greensboro, freight could move via rail to Norfolk; in Charlotte, freight could move via rail to Charleston or Savannah.
- Free Trade Zone designation. Consider applying for FTZ status for one of the inland ports to promote international trade activity such as packaging, assembly, and light manufacturing. This might be best pursued at a new and larger inland port that could accommodate multiple facilities.
- Maintain and augment the documentation services as offered at the Charlotte inland port. Creating a logistics management center that incorporates customs, legal, financial, and insurance document consultation and services so customers benefit from a one-stop shop for a door-to-door supply chain. The center should be supported by information technology and telecommunications.
- Cross dock transloading. If rail service is acquired, an excellent idea for NC's inland ports to pursue is cross dock transloading to transfer cargo between 53-foot domestic trailers and 20', 40' or 45' international cargo containers.

As the inland ports grow, additional services can be added – either by the state or as concessions. For example, the inland ports may expand into stuffing/ unstuffing facilities, bagging and packaging facilities, and refrigeration facilities for many of NC based agriculture and livestock products. Therefore, there is potential to foster inland port growth in North Carolina.

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