

Hampton Roads Versus Other East Coast Container Ports



SIZING UP THE COMPETITION: HAMPTON ROADS VERSUS OTHER EAST COAST CONTAINER PORTS

*To reach a port we must sail, sometimes with the wind, and sometimes against it.
But we must not drift or lie at anchor.*
– Oliver Wendell Holmes, 1809-1894

More than 90 percent of the world’s international trade flows through ports such as the Port of Hampton Roads. **Depending upon who is doing the counting, the Port of Hampton Roads is responsible for 7 percent to 12 percent of our regional economic activity. When our port prospers, Hampton Roads thrives; when it languishes, we visibly weaken.**

This strong connection to our regional welfare provokes an obvious question. How are we (and the port) situated with respect to future developments? Will we benefit from the refashioning of the Panama Canal? Can we compete capably with other East Coast ports? Are there alternate strategies we should pursue? These are the topics we address in this chapter.

A Bit of Background

In the past half-century, the nature of the commercial cargo transportation across the oceans has changed dramatically. Until the 1950s, general cargo (a term that excludes bulk cargo such as coal, liquids and grain) was handled as “break-bulk” cargo – it was placed on pallets and loaded/unloaded to and from ships by means of on-board cranes. This was a slow, expensive, item-by-item, labor-intensive process. Individual boxes containing everything from clothing to radios were unloaded, one by one.

All this changed when Malcolm McLean, believing that individual pieces of general cargo needed to be handled only twice – at their origin when stored

in a standardized container box and at their final customer destination when unloaded – purchased a small tanker company, renamed it Sealand and cleverly adapted its ships to transport truck trailers. McLean’s efforts met with great success when several major port organizations such as the U.S. Maritime Association, the Federal Maritime Board and the International Standards Organization spearheaded a worldwide compromise that standardized container sizes and characteristics. Truck trailers soon were replaced by trailers without wheels and general cargo rapidly began to be stored in standardized containers, generally 20 feet or 40 feet in length, without wheels. These became known as TEUs (20-foot equivalent units) and FEUs (40-foot equivalent units).

On April 26, 1956, the first voyage of a Sealand containership occurred when a vessel left Newark, N.J., for Puerto Rico. And in 1966, the first containerization of international trade began with the voyage of a Sealand ship from the United States to the Netherlands.

The advent of containerization demanded the redesign of ships and ports. Ships transporting containers were redesigned without cranes aboard. Below decks, cargo space was divided into cells to enhance the loading and unloading of containers. Without cranes taking up room, the deck space now could be used

to stack containers five high. This increased the container carrying capacity of these ships by approximately 30 percent.

These developments required ports to invest in dockside cranes, various types of infrastructure and mobile capital. Berths were redesigned so that containerships could dock parallel to them for easier loading and unloading by dockside cranes. Warehouses were removed and land was cleared for outdoor storage of containers. Containers were stored on truck chassis or stacked on land one upon another, several units high, depending upon available space of land and the port's style of operation.

Hampton Roads and Other U.S. Container Ports

The 10 top-ranked container ports in the United States, ranked by TEU throughput, are shown in Graph 1. Imported TEUs arrive by ship and leave a port for an American location by means of truck, rail or barge. Alternatively, exported TEUs arrive by truck, rail or barge and leave a port by ship for another destination.

The two largest U.S. container ports are the West Coast ports of Los Angeles and Long Beach (located very close to each other, but separate organizations), with 23.4 percent and 19.4 percent, respectively, of the TEU throughput of the 10 top-ranked U.S. container ports. Together, these two ports handle a whopping 42.8 percent of the total TEU throughput at the major U.S. container ports. Most of these TEUs are related to Asian trade. Many of the containerships calling at these two ports are "Post-Panamax" ships, exceeding 5,000 TEUs in size, and are too large to transit the Panama Canal as it currently is configured. Consequently, TEUs from Post-Panamax ships that dock on the American West Coast, but have cargo destined for the eastern region of the United States, are placed on double-stack railroad cars at the ports and sent across country.

The third- and fourth-largest U.S. container ports are the ports of New York/New Jersey and Savannah, with 15.6 percent and 7.8 percent, respectively, of the TEU throughput of the 10 top-ranked U.S. container ports.

The Port of Hampton Roads is the sixth-largest U.S. container port (but the third-largest East Coast container port) with 6.2 percent of the TEU throughput of the country's major U.S. container ports. The container ports of Miami, Jacksonville and Baltimore (not shown in Graph 1) were the fifth-, sixth- and seventh-largest East Coast container ports in 2008.

Relative port market shares have changed substantially over the past decade. Table 1 reports growth rates in TEUs handled at the largest American ports between 1998 and 2008. **Among East Coast ports, New York/New Jersey grew 113.5 percent over that time period, while**



Savannah grew an amazing 258.1 percent and in the process passed Hampton Roads. At the other end of the spectrum, Charleston, Port Everglades, Miami, Jacksonville and Baltimore grew much more slowly than TEU traffic nationally. They rank among the losers in the rigorous competition for TEU cargoes over the past decade. (Baltimore, however, has profitably focused its attention on automobiles and roll-on, roll-off traffic, neither of which count as TEUs.) **Hampton Roads grew (66.4 percent), but this was only slightly more than the national average (63.7 percent).**

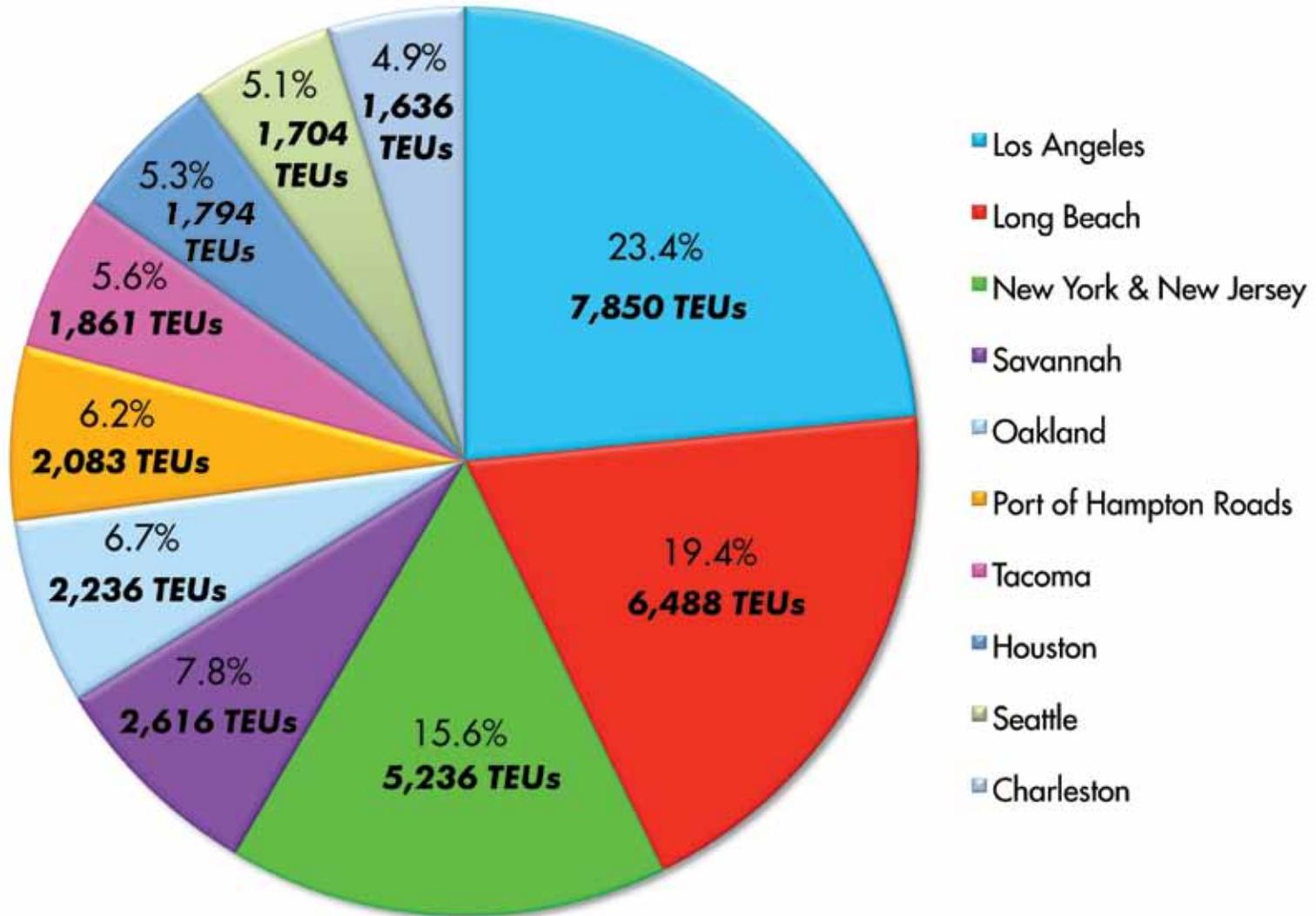
The 10 top-ranked U.S. container ports with respect to market share, (expressed as a percentage) of TEUs imported from and exported to Asia only, appear in Graph 2. The ports of Los Angeles and Long Beach are ranked first and second in market share of imports from (at 30.9 percent and 23.4 percent, respectively) and exports to Asia (at 24.7 percent and 21.1 percent, respectively) among U.S. container ports. The two largest East Coast container ports, New York/New Jersey and Savannah, are ranked third and fourth, respectively, in market share (at 12 percent and 6.7 percent, respectively) of imports from Asia. The third- and fourth-largest East Coast container ports, Hampton Roads and Charleston, are ranked eighth and ninth, respectively, among U.S. container ports for imports to (at 3.6 percent and 2.6 percent, respectively) and exports from (at 6 percent and 2.1 percent, respectively) Asia.

Port	Container TEUs 2008	Percent Growth Rate, 1998-2008
Los Angeles	7,849,985	132.4
Long Beach	6,350,125	55.0
New York/New Jersey	5,265,058	113.5
Savannah	2,616,126	258.1
Oakland	2,236,244	42.0
Hampton Roads	2,003,278	66.4
Tacoma	1,861,352	161.0
Houston	1,794,309	87.1
Seattle	1,704,492	10.4
San Juan	1,684,883	-15.4
Charleston	1,635,534	28.0
Port Everglades	985,095	39.9
Miami	828,349	1.7
Jacksonville	697,494	-8.0
Baltimore	612,887	25.9
U.S.	42,827,594	63.7

Sources: American Association of Port Authorities and the Old Dominion University Economic Forecasting Project

GRAPH 1

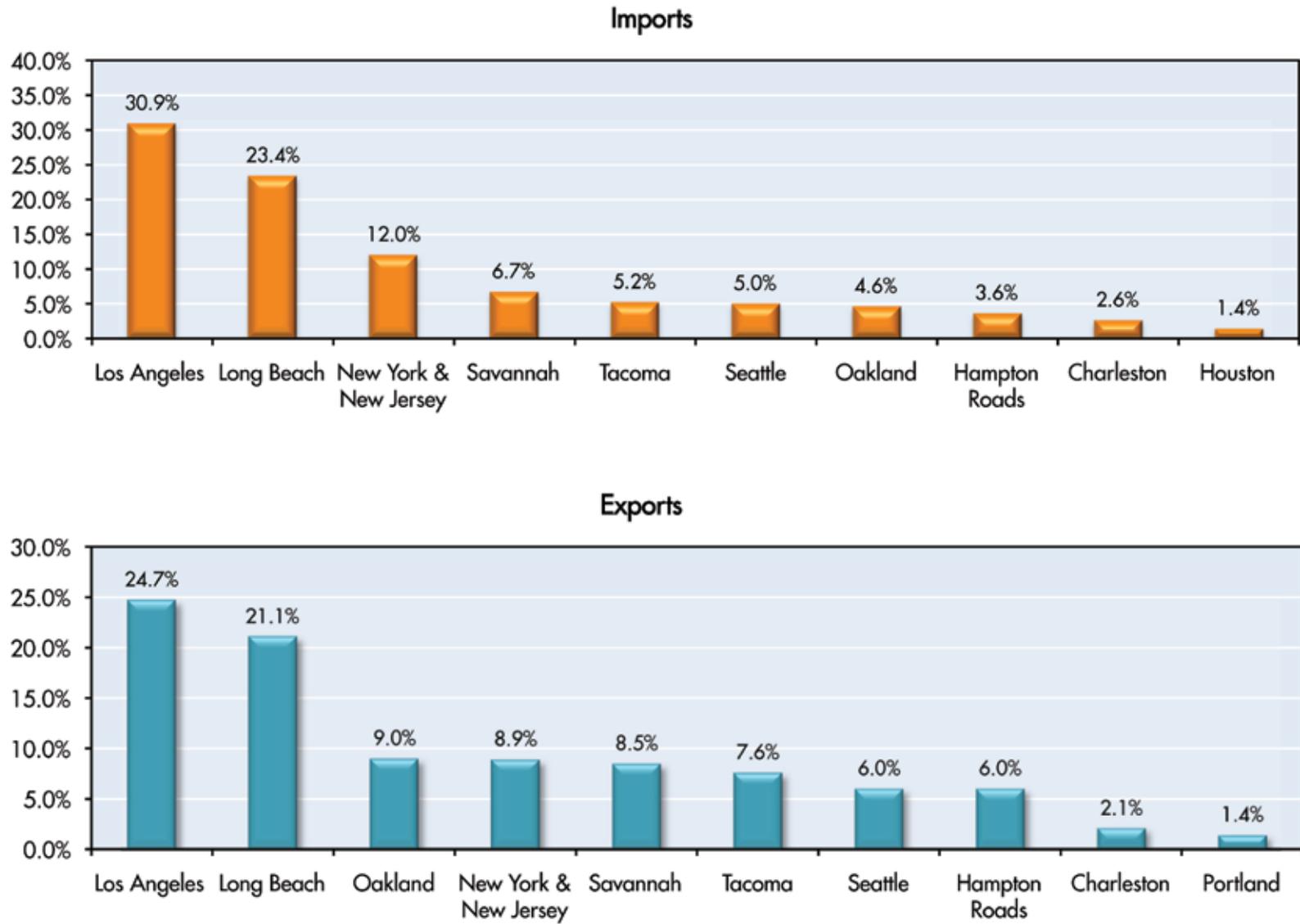
TEN TOP-RANKED U.S. CONTAINER PORTS (TEU THROUGHPUT IN 1,000s) IN 2008



Source: Containerisation International, March 2009

GRAPH 2

U.S. CONTAINER PORT MARKET SHARE OF TEUs FROM AND TO ASIA (2008)



Source: B. Mongelluzzo, "Looking Past the Downturn," Journal of Commerce, March 2, 2009

The Challenges Facing East Coast Container Ports

THE MATTER OF SIZE

Since 1996, the size of the largest containership in worldwide service has more than doubled. Fourteen years ago, the largest containership available was the Regina Maersk, with a carrying capacity of 6,000 TEUs. By 2005, Hapag-Lloyd's Colombo Express' carrying capacity was 8,750 TEUs. And by 2007, the Emma Maersk had a carrying capacity of 13,000 TEUs.

Let's provide some perspective. The Emma Maersk is 1,302 feet long and 184 feet wide, with a draft of more than 50 feet. By comparison, the U.S. Navy's largest aircraft carrier is only 1,220 feet long and 132 feet wide, with a draft of 39 feet. Today's containerships are giants and those now on order will be able to carry more than 14,000 TEUs. By 2012, only 30 percent of containerships will account for 64 percent of the TEU carrying capacity of all containerships in world service. Hence, there are tremendous economies of scale with respect to ship size, where container traffic is concerned. Simply put, it is more cost-effective to operate huge TEU-bearing ships.

The dramatically increased size of containerships in worldwide service places pressure on ports to increase: 1) water depths in entrance channels and alongside berths; 2) channel widths that provide sufficient ship turning circles; 3) the use of larger-sized dockside container cranes, with a longer outreach, loading capacity and lift height; 4) terminal storage capacity; and 5) truck and railroad facilities that service the larger ships. However, it is fair to say that the capacities of most East Coast container ports have lagged behind the increase in the size of containerships.

THE NEED TO IMPROVE OPERATIONAL EFFICIENCY

Larger containerships also place pressure on ports to become more efficient in their operations – i.e., to provide faster ship turnaround times (for example, by increasing the number of container moves per hour to and from a berthed containership by a ship-to-shore crane). While huge ships may be more cost-

effective in transporting TEUs across the oceans, the reverse often can be true once the vessels reach a port. Simply put, it is difficult for any port to handle 13,000 TEUs quickly. More cranes are required to work larger-sized ships, and there are physical and planning challenges associated with serving larger ships that are not present with smaller ships.

The goal is to minimize "in port" time so that the larger ships can spend more time at sea and take advantage of their efficiency there. Hence, there is great pressure to increase the number of containers moved per hour to reduce labor costs (usually based on hours rather than the number of TEUs moved) and equipment costs.

PANAMA CANAL EXPANSION

In 2006, the voters of Panama approved a \$5.25 billion plan to expand and modernize the Panama Canal, with an expected completion date of 2014. Two new lock facilities are being constructed, one on the Atlantic Ocean side and the other on the Pacific Ocean side of the canal. Also, navigational channels are being widened to at least 280 meters in their straight sections and 366 meters in their turns. This will allow previously impossible channel passings between Post-Panamax ships moving in opposite directions. Further, the canal is being dredged to accommodate ship drafts of up to 50 feet. The expansion will allow Post-Panamax containerships up to 12,500 TEUs in size to pass through the canal.

The Panama Canal expansion will benefit East Coast ports at the expense of West Coast ports. Post-Panamax containerships that previously called at West Coast ports (since they were too large to transit the Panama Canal) now will be able to transit the expanded canal and call at East Coast ports. Forecasts by the Panama Canal Authority predict that the percentage of containerized cargo from Northeast Asia passing through the canal destined for East Coast ports will increase with (or decrease without) the expansion from 38 percent in 2005 to 44 (36) percent, 46 (29) percent and 49 (23) percent in 2015, 2020 and 2025, respectively.

However, these forecasts do not take into account possible increases in canal tolls. Panama will have to pass on the cost of its canal expansion, and if its rate increases turn out to be significant, a large share of the cost savings from using the all-water Panama Canal service rather than the more expensive intermodal rail service from California ports to the U.S. East Coast will be lost. Currently, a Panamax ship carrying 2,000 TEUs pays a toll of \$250,000 simply to transit the canal. It remains to be seen how much this will increase.

ADAPTING TO ALL-WATER SUEZ CANAL SERVICES

An alternate way to ship cargo from North Asia to the U.S. East Coast is via the Suez Canal, which joins the Mediterranean Sea and the Gulf of Suez. However, this route takes a week longer than going through the Panama Canal. Further, because of the greater distance involved, container shipping lines that wish to exercise this option must deploy a greater number of ships to maintain weekly service through the Suez Canal. Ten containerships may be needed for a weekly service from Asia via the Suez Canal, versus only eight ships via the Panama Canal. Nevertheless, **if Panama Canal rates rise too much, shipping companies will shift to the Suez Canal route, provided political instability in the Middle East does not discourage such a development.**

Meanwhile, containership lines (especially those calling at U.S. West Coast ports) have been re-evaluating their services and have introduced “port-to-port” rate structures for their customers. This means that shippers are responsible for the inland transportation of international cargo rather than the “door-to-door” rates that apply when shipping lines such as Maersk are responsible for inland transportation of international cargo.

A Closer Look at the Competition

How do the major East Coast ports compare in terms of the terminals they have available to serve ships coming to and going from the United States? Table 2

provides that information, which we will now utilize to focus upon the competitive positions of each of these ports.

PORT OF NEW YORK AND NEW JERSEY

The Port of New York and New Jersey, which has grown much more rapidly than the U.S. average over the past decade, has six marine terminals – three that handle only containers and three that handle containers as well as other commodities (see Table 2). More than 75 percent of the cargo in the Port of New York and New Jersey emanates from, or is distributed to, locations within a 200-mile radius of the port.

Port	Containers	Containers/ Other	Other
New York & New Jersey	3	3	–
Savannah	1	–	1
Hampton Roads	3	1	–
Charleston	2	1	2
Baltimore	1	1	2

The Port of New York and New Jersey has a channel depth of 45 feet, soon to be dredged to 50 feet (see Graph 3). There is on-dock rail service at multiple piers. An express rail facility allows railroads to combine railcars from all the port’s on-dock rail facilities to form lengthy trains. The express rail service also allows the port to compete for cargo in Midwest markets, against Halifax and Montreal in Canada and East Coast container ports as far south as the Port of Savannah.

New York/New Jersey’s ability to compete with other East Coast container ports will be enhanced upon the completion of Norfolk Southern’s “Crescent Corridor” intermodal rail route, which will provide larger rail tunnels that offer more direct double-stack container rail service between New York/New Jersey and

Memphis. New York/New Jersey is fortunate to be served by three railroads – Norfolk Southern, CSX and Canadian-Pacific Railway.

One of New York/New Jersey's major advantages is its location. Of the large U.S. East Coast ports, it is the closest, in terms of distance, to Western and Northern European ports such as Hamburg, Antwerp and London. Hence, it will always have a cost advantage over other East Coast ports with respect to Western and Northern European cargoes, at least in terms of time and distance. What happens to such cargoes on land, of course, is a different matter, and some of New York/New Jersey's advantage is dissipated by the port itself.

An important disadvantage of the Port of New York and New Jersey is the Bayonne Bridge, under which nearly all traffic into the port must travel. The bridge has only a 151-foot vertical clearance above waterline. This poses an obstacle for larger-sized Post-Panamax containerships moving to and from the port. Also, labor relations within the Port of New York and New Jersey occasionally have been tense, and this port faces significant restrictions on its ability to hire new and replacement International Longshoremen's Association (ILA) dockworkers).

PORT OF SAVANNAH

The Port of Savannah boasts only one container terminal, the Garden City Terminal, but its 1,200 acres make it the largest container terminal in North America. It also has a non-container terminal, the Ocean Terminal, that handles break-bulk and roll-on, roll-off cargo. However, it has a channel depth of only 42 feet, though the channel soon will be dredged to 48 feet. It is the largest port near Atlanta. Twenty percent of its throughput is handled by rail and it has close access to Interstate highways 16 and 95.

Savannah is a relatively efficient port. One critical measure of operational efficiency is the average number of containers a port moves to and from ships per hour. Savannah's ship-to-shore cranes average 37 container moves per hour (see Graph 4). This is a rate about 20 percent higher than that of the Port of Hampton Roads.

Like Virginia, Georgia is a right-to-work state. As a result, non-unionized state employees operate ship-to-shore cranes and interchange gates (as opposed to

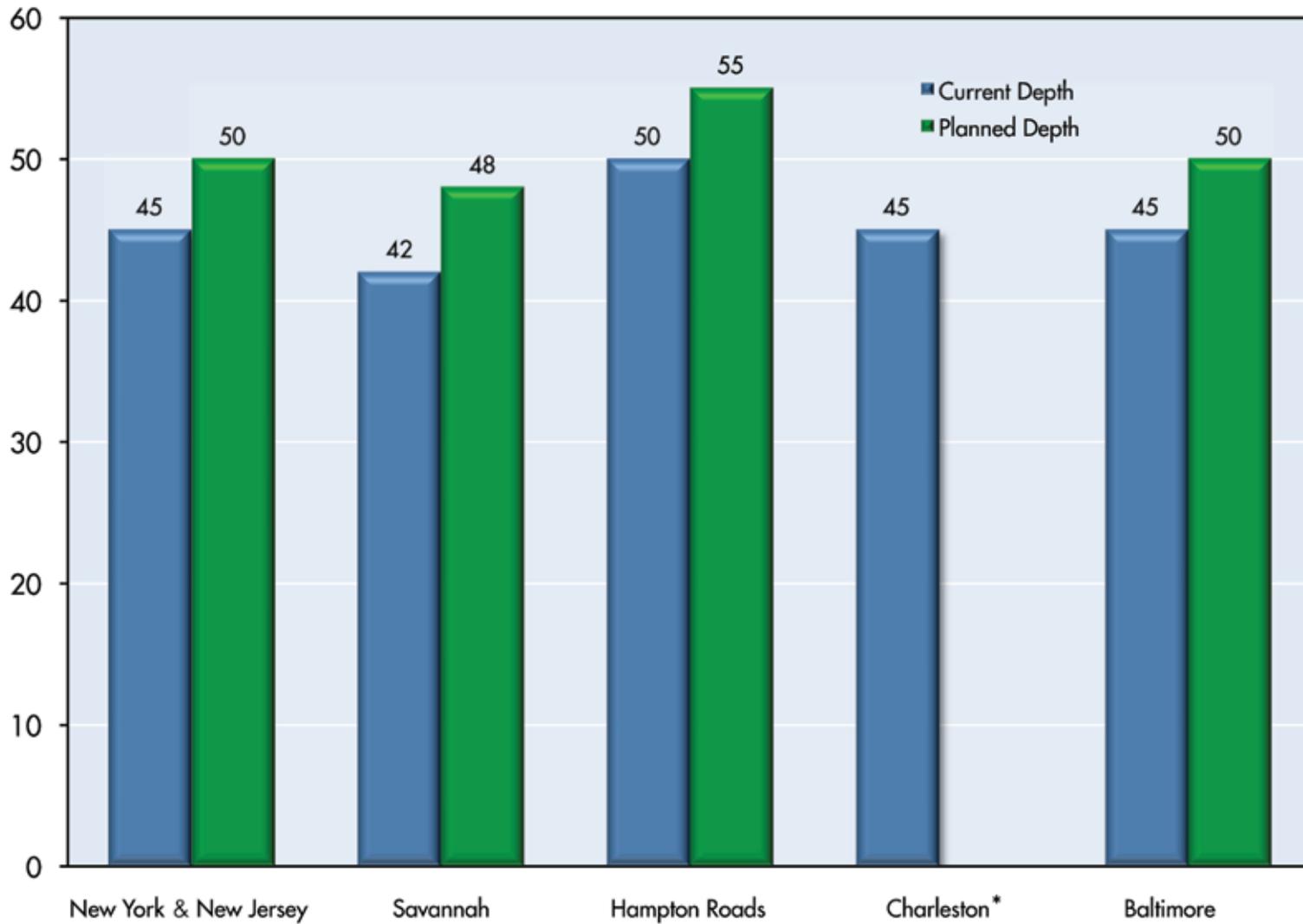
unionized ILA dockworkers). This reduces the labor costs incurred by the Port of Savannah in providing services to shipping lines and shippers.

Container marine terminals often exhibit economies of scale – that is, the average cost per container handling by a terminal declines as the number of containers increases. Thus, Savannah's large Garden City Terminal incurs lower unit costs per TEU handled than smaller-sized terminals at other East Coast ports. Presumably, this enables Savannah to underprice unionized competitors such as Hampton Roads, Baltimore and New York/New Jersey.

The Bayonne Bridge Problem: Ships seeking to call at the Port of New York and New Jersey must pass under the Bayonne Bridge, which at lowest water level is only 151 feet above the surface. Larger ships today often tower 175 feet above waterline. Hence, in order to pass under the Bayonne Bridge today, these larger ships either must fold down their antenna masts, take on ballast or wait for a low tide. Ships reaching 225 feet above waterline are on the horizon and the “new” Panama Canal, with its ability to accommodate much larger ships, is scheduled for completion in 2014. This presents the Port of New York and New Jersey with an existential challenge. If it replaces the bridge, this could take more than 10 years; if it jacks up the bridge, this could take seven or eight years; if it constructs a tunnel, this could take 15 years. Any of these remedies will cost billions. By comparison, any problems at the Port of Hampton Roads seem minor.

GRAPH 3

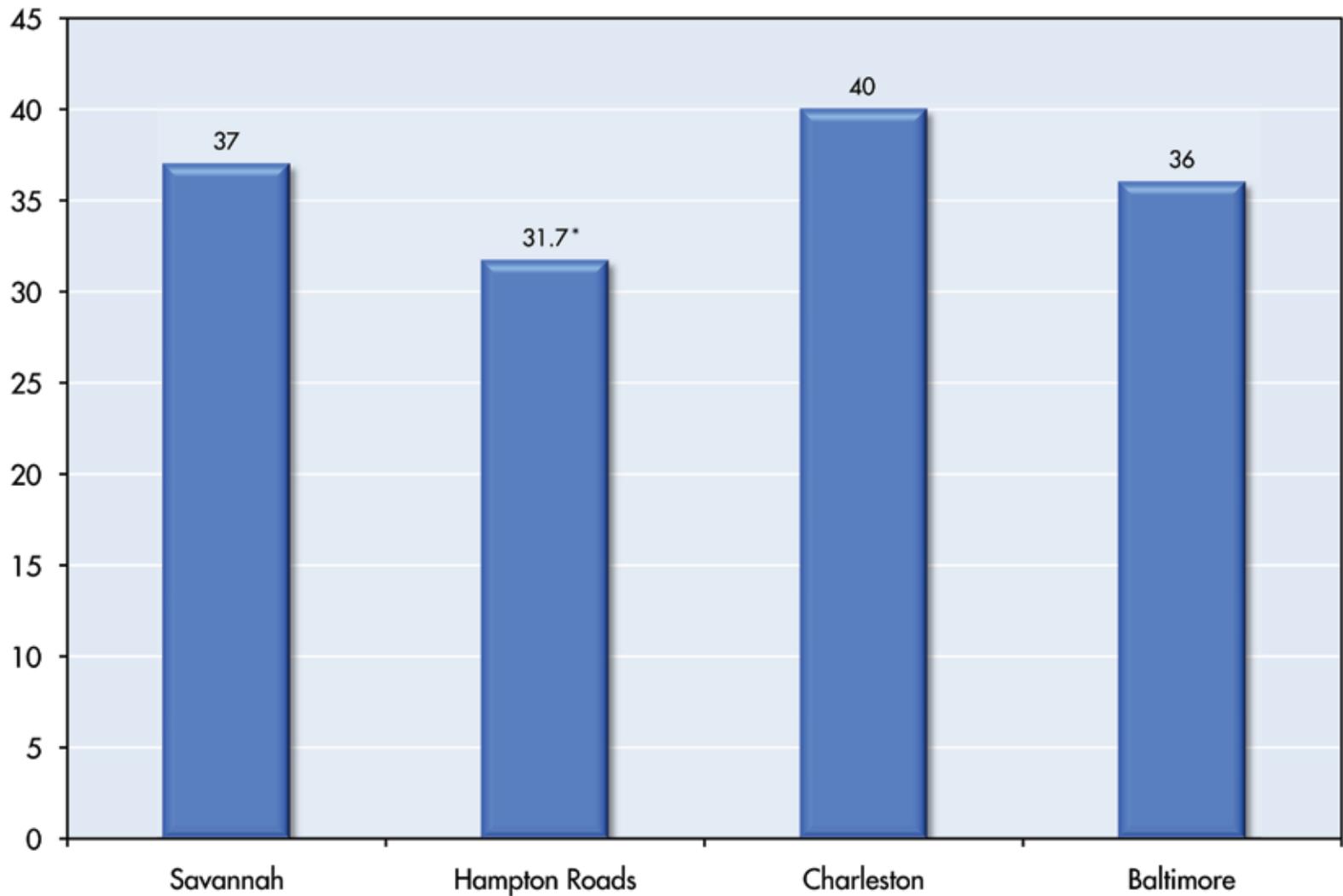
CHANNEL DEPTHS OF U.S. EAST COAST CONTAINER PORTS (IN FEET)



Source: Websites for various ports
*Planned depth for Charleston: N/A

GRAPH 4

SHIP-TO-SHORE CRANE AVERAGE CONTAINER MOVES PER HOUR



Sources: B. Mongelluzo, "Winner and Losers," Journal of Commerce, Feb. 2, 2009, and interviews

* Average of the container moves per hour of 32, 28 and 35 for Norfolk International Terminals, Portsmouth Marine Terminal and APM Terminal of Virginia, respectively

** New York & New Jersey: NA

Savannah led all U.S. ports in TEU growth between 1998 and 2008. Without question, this has been good for Savannah and the state of Georgia. However, we must note that moving TEUs is not the only way a port can prosper. On the East Coast, Baltimore has performed reasonably well despite some locational disadvantages by focusing upon non-TEU traffic such as imported automobiles. Other ports have done well by concentrating upon attracting related manufacturing and distribution facilities.

There are three reasons for Savannah's ascendancy. First, it has demonstrated its ability to attract large retail shippers that have invested in regional distribution centers (RDCs) close to the port. Frankie Lau of the Orient Overseas Container Line, quoted in *The Virginian-Pilot* on May 2, 2010, noted, "It is not a decision by the shipping line as to where we want to route this cargo. It's basically the customer's choice." And, the customers in question here are large retail shippers such as Walmart, Target and Home Depot, which Savannah has successfully courted.

Second, the unbundling of containers (loading containers with a variety of commodities from import containers for direct delivery to retail stores) in RDCs close to Savannah has provided transportation cost savings to large retail shippers. Savannah has demonstrated the ability to mix and match different types of cargo efficiently.

Third, Savannah has good rail connections from the port to the Norfolk Southern North/South Trunk Line, the Heartland Corridor and the East-West Land Bridge that carries cargo to and from Los Angeles. **Savannah has little or no cost disadvantage compared to Hampton Roads in terms of cargoes destined for Chicago, and its connections to the West Coast are superior to Hampton Roads (and most other East Coast ports).**

Looking forward, the Port of Savannah will benefit from the opening of the "new" Panama Canal in 2014. It is the closest large port to the canal and seems poised to reduce Hampton Roads to a distant third place among East Coast ports.

The Port of Savannah's "focus on retail" approach to increasing its cargo throughput began with the Savannah Economic Development Authority's development of the Crossroads Industrial Park about five miles from the port's

Garden City Terminal. The presence of Home Depot and Pier 1 Imports near the port at that time was a catalyst for other large retailers to locate RDCs near Savannah. More than 220 RDCs now exist that handle containers relating to the Port of Savannah. This reflects strong collaboration among the Georgia Port Authority (GPA), the state of Georgia, economic development agencies within the state and retailers. The state of Georgia has provided economic incentives to Interstate 16 corridor counties for the establishment of RDCs. Further, a GPA Client Relations Center that was created in 2001 offers a single contact for shippers utilizing the port; it receives 600 phone calls each day from port shippers.

It is not by accident that the Port of Savannah has grown approximately four times as fast as the Port of Hampton Roads over the past decade. Unless Hampton Roads improves its competitive position, this trend is destined to continue.

PORT OF HAMPTON ROADS

The Port of Hampton Roads consists of the three state marine terminals of the Port of Virginia – Norfolk International Terminals (NIT), Portsmouth Marine Terminal (PMT) and Newport News Marine Terminal (NNMT) – plus the privately owned APM Terminal of Virginia (APM). NIT and PMT are dedicated to handling containers, while NNMT handles break-bulk, roll-on, roll-off and bulk cargoes. APM is a modern, technologically sophisticated container terminal located in Portsmouth.

In summer 2010, the Virginia Port Authority signed an agreement to lease APM's Portsmouth terminal for 20 years at a cost that likely will approach \$1.4 billion. The terminal handled 427,000 TEUs in 2009, but is capable of much higher rates of activity.

In addition, **a new Craney Island Marine Terminal (CIMT) may be constructed in three phases over the next 20-25 years at a cost of \$2.2 billion. The first phase could begin in 2011. When all phases are completed, CIMT will have a capacity of 2.5 million TEUs. (The Port of Hampton Roads' total throughput now is slightly less than this.)**

GRAPH 5



This map is published with the kind permission of Professor Jean-Paul Rodrigue, Department of Global Studies and Geography, Hofstra University.

With a channel depth of 50 feet, our port is the deepest of any East Coast container ports and will be dredged to 55 feet. Any additional dredging beyond 55 feet is questionable because of the tunnels that transverse Hampton Roads.

Unlike the Port of New York and New Jersey, the Port of Hampton Roads is not restricted by bridge heights. Thirty percent of its throughput is handled by rail. It has on-dock rail service at the NIT and APM terminals. The port is served by two railroads, Norfolk Southern and CSX.

Hampton Roads seeks to handle discretionary cargo destined for the country's Northeast and Midwest regions and it has promoted improvements in rail service from the port to these areas. In particular, it has championed the Heartland Rail Corridor project (expected completion in 2010), a Norfolk Southern intermodal rail route that will reduce the distance to Chicago from 1,264 miles to 1,031 miles. This route, which heads west via Columbus, Ohio, requires that 28 rail tunnels in Virginia, West Virginia and Kentucky be heightened so that the route can handle double-stack container rail cars.

Some believe the Heartland Corridor will be a “game changer” for Hampton Roads. Jon DeCesare, of World Class Logistics Consulting, asserts, “If you look at the East Coast, Norfolk’s in the strongest position” (The Virginian-Pilot, May 2, 2010). If he is correct, this bodes well for Hampton Roads and the Commonwealth of Virginia. However, given Savannah’s distance advantage to the Panama Canal, its primo location at one end of the East-West Land Bridge, and its well-developed relationships with RDC customers such as Walmart, this is hardly a foregone conclusion.

The Port of Hampton Roads also may benefit from the National Gateway intermodal rail route that is being developed by CSX. This project, a public-private partnership, will develop the Interstate 81, Interstate 70 and Interstate 76 (Pennsylvania Turnpike) corridors between Virginia, Washington, D.C., Pennsylvania and northwest Ohio.

On the negative side of the ledger, ship-to-shore cranes in the Port of Hampton Roads average only between 28 and 35 container moves per hour, making it less efficient than a port such as Savannah. However, the APM Terminal facility

the Virginia Port Authority recently leased is much more efficient and might be capable of serving 40 containers per hour. Even so, this will reduce cargo going through terminals such as the PMT and currently it is doubtful that increased break-bulk and roll-on/roll-off cargo will substitute for container traffic there.

While 80 RDCs throughout Virginia are affiliated with the Port of Hampton Roads, this is many fewer than the comparable 220 for Savannah. Nevertheless, a positive note was sounded in this regard recently when CenterPoint Properties announced it will construct a warehouse in Suffolk, 20 miles from NIT.

PORT OF CHARLESTON

The Port of Charleston, whose TEU throughput stagnated and increased at less than one-half the national rate between 1998 and 2008, has five marine terminals. Two are dedicated to handling containers (North Charleston Terminal and the Wando Welch Terminal), one to handling containers and break-bulk cargoes (Columbus Street Terminal), and two (Union Pier Terminal and the Veterans Terminal) to handling cargoes other than containers. The Union Pier Terminal handles break-bulk and roll-on/roll-off cargoes, while the Veterans Terminal handles bulk, break-bulk and roll-on/roll-off cargoes. The Port of Charleston is developing a new container terminal on a former U.S. Navy base that will have a capacity of 1.4 million TEUs when completed in 2014.

The Port of Charleston has a channel depth of 45 feet and benefits from close access to Interstate 95. State employees (as in the case of Port of Savannah) operate ship-to-shore cranes and interchange gates rather than ILA dockworkers, thus reducing costs and making the port more price-competitive to users. Its ship-to-shore cranes average 40 container moves per hour, the highest rate among large East Coast ports.

Unlike the Port of Savannah, the Port of Charleston has more than one marine terminal in which containers are handled. However, like New York/ New Jersey, Charleston has a bridge under which ships must pass. Charleston's Ravenel Bridge has a 186-foot vertical clearance and this does not pose an obstacle for larger-sized Post-Panamax containerships, unlike the 151-foot clearance of the

Bayonne Bridge at the Port of New York and New Jersey. However, larger ships now on the drawing boards will not be able to pass under this span.

PORT OF BALTIMORE

The Port of Baltimore has four marine terminals – the MIT Seagirt, dedicated to handling only containers; the Dundalk Marine Terminal, handling containers, roll-on, roll-off and break-bulk cargoes; the North Locust Point Marine Terminal, handling grain cargoes; and the South Locust Point Marine Terminal, handling cruise passengers. TEU throughput via these terminals, however, expanded at only about 40 percent of the national rate between 1998 and 2008. Slowly, inexorably, the Port of Baltimore appears to be losing the competitive TEU battle against other East Coast ports. However, as noted above, it has nonetheless performed reasonably well by focusing its attention on non-TEU cargoes such as automobiles imported into the United States.

The port has a channel depth of 45 feet (as do the Port of New York and New Jersey and the Port of Charleston), but is scheduled to be dredged to 50 feet. Unlike the Port of Hampton Roads, the Port of Baltimore handles relatively little discretionary cargo. The port's ship-to-shore cranes average 36 container moves per hour. Like the Port of New York and New Jersey and the Port of Savannah, Baltimore is near large consumer markets – the third-largest U.S. consumer market when one includes the Baltimore, Philadelphia and Washington, D.C., metro areas. This is advantageous and can help overcome cost disadvantages.

Nevertheless, **the Port of Baltimore suffers from three disadvantages relative to the Port of Hampton Roads. First, the ships it serves must pass by the Port of Hampton Roads; Baltimore is an additional 250-mile, 10-hour trek up the Chesapeake Bay.** Second, even though Baltimore is served both by Norfolk Southern and CSX railroads, the rail links to the port have double-stack rail restrictions that obviate the possibility of certain shipments and cargoes being moved via rail. Third, Baltimore's labor relations and bureaucratic structure sometimes have been problematic.

Fluctuations in Port Throughput

There are three key actors connected to cargoes moving in and out of any port: (1) transportation carriers such as shipping lines and railroads; (2) shippers who want to move goods; and (3) the port itself. Let's focus on the port. Ports are vitally interested in increasing their cargo throughput and/or reducing fluctuations in their throughput. Two obvious ways to address these desires involve increasing the number of port calls made by carrier ships and vehicles (carrying cargo) and increasing the amount of cargo that shippers transport in and out of the port.

To these ends, ports can enter into long-term contracts with carriers to call at the port (the "carrier customer" approach) and/or provide incentives for large retail container shippers to build distribution centers in the vicinity of the port (the "shipper customer" approach). In the carrier customer approach, the carrier determines the ports where its ships and vehicles will call. The focus of a port here is upon influencing carriers such as Maersk. Under the shipper customer approach, the shipper determines the ports where carrier ships and vehicles transporting its cargo will call. The focus of a port here is upon shippers and retailers such as Walmart.

Virginia International Terminals (VIT), which operates the Port of Virginia's marine terminals of the Port of Hampton Roads, has focused on the carrier customer approach to increasing its TEU throughput and reducing fluctuations in its TEU throughput over time. VIT has entered into 10-year contracts with a number of shipping lines to call at the port and provide a minimum number of containers per time period. By contrast, the Port of Savannah has focused on the shipper customer approach. The Port of Savannah has 220 regional distribution centers compared to 80 RDCs for the Port of Hampton Roads.

When a port focuses on the carrier customer approach, it becomes highly sensitive to the wishes of carriers. For example, if carriers choose larger-sized ships that require ports with deeper channel drafts, such ports will be receptive

to providing deep drafts to accommodate these ships. Because the Port of Hampton Roads has the deepest channel draft (50 feet) of any port on the East Coast, it is not surprising that it has tended to focus on the carrier customer approach to business. Alternatively, it is not surprising that the Port of Savannah has focused on the shipper customer approach because it has the smallest channel draft (42 feet) of any of the East Coast ports we depicted in Graph 3.

The carrier customer approach to increasing TEU throughput and reducing fluctuations in TEU throughput over time for a port has the advantage of generating discretionary cargo that could travel via several different ports. However, this means that such a port is more dependent on efficient intermodal transportation service in moving discretionary cargo to and from distant inland markets. In the case of Hampton Roads, these inland markets range from Pittsburgh, Cleveland, Indianapolis and Chicago to Raleigh-Durham, Memphis and St. Louis.

The Heartland Corridor intermodal rail route advantageously addresses some of these concerns for the Port of Hampton Roads. However, the absence of a “third crossing,” the two-lane nature of the Midtown and Downtown tunnels, the two-lane nature of I-64 in the direction of Richmond and the failure of the Commonwealth to upgrade Route 460 south of the James River can only be recorded as disadvantages.

Alternatively, under the shipper customer approach, a port where big retailer shippers have constructed near-port RDCs (as is true for the Port of Savannah), an efficient intermodal transportation service for moving cargo to and from distant inland markets is relatively less important. Cargoes travel much shorter distances and often not via rail. Only 18 percent of the port throughput for the Port of Savannah is handled by rail versus 30 percent for the Port of Hampton Roads.

Private vs. Public Operation? The nation’s largest ports (New York/New Jersey, Los Angeles and Long Beach) largely are operated by private, profit-making concerns, an option now being considered in Virginia. Many of the smaller ports, such as Savannah, are operated by public organizations. The Port of Virginia is operated on an interesting and oft-praised hybrid basis that combines aspects of private and public operation. Which is the preferred way to go? That’s not clear, but it is a hotly debated topic in Virginia and elsewhere, as the 2005-06 controversy over Dubai Ports World revealed. Regardless, more than 80 percent of all ports in the United States currently are managed by foreign operators.

Final Thoughts

Over the past decade, it appears that two West Coast container locations have emerged from the pack and now dominate TEU activity – Los Angeles/Long Beach and Tacoma. Other West Coast ports have been left in their dust.

On the East Coast, New York/New Jersey and Savannah have begun to put significant distance between them and other ports, including Hampton Roads, at least where TEUs are concerned. While the game is far from decided, it appears that Hampton Roads will earn the bronze medal (third place) in the East Coast TEU port competition. Both New York/New Jersey and Savannah boast advantages over Hampton Roads that have led to TEU traffic moving in their directions.

It is difficult to say whether a carrier-oriented customer approach or a shipper-oriented customer approach would generate greater throughput and stability for a port. Much depends upon the size of the inland markets for carrier customer ports versus the number and size of RDCs at shipper customer ports. These in turn reflect incentives provided by states and regions, as well as investments made by them in port and transportation infrastructure. **The Port of Hampton Roads fortuitously benefits from a naturally deepwater channel, but there are very few other free lunches to be had in the competition among ports.**

Since it appears that the strong promotion of one approach will not be to the detriment of the strong promotion of the other (assuming sufficient resources are available), a container port can thus generate a great amount of throughput by being a strong promoter of both approaches. One of several avenues to stimulate this development in Virginia would be to establish a VPA Client Relations Center similar to that of the Georgia Port Authority to offer a single contact to shipper customers of the port.

Further, in order for the Port of Hampton Roads to become a strong promoter of the shipper customer approach for increasing its throughput, the Commonwealth of Virginia must be willing to provide greater economic incentives (at the levels provided by the state of Georgia to the Port of Savannah) to

attract a greater number of RDCs, especially in the vicinity of the Port of Hampton Roads. For example, state economic incentives would encourage the establishment of RDCs in cities and counties directly adjacent to the interstate highways that surround the port. And, as noted above, it is essential that the transportation infrastructure within Hampton Roads be improved.

The Port of Hampton Roads already is an important economic engine for the region. This role could become even more important if the region and the Commonwealth are willing to make critical, timely investments relating to the port. Coincidentally, these investments also would make the region more attractive to a Department of Defense that appears to be giving increasing thought to moving assets elsewhere. A variety of private businesses that are disadvantaged by the region's cul-de-sac location also would benefit. Promotion of the Port of Hampton Roads and enhancement of the regional infrastructure, then, are not the parochial ventures that some critics have attempted to argue.