



Planning — May/June 2011

## The Battle of the Ports

East Coast ports hope the Panama Canal improvements will send business their way.

*By Jeffrey Spivak*

Currently, when a new Target, Office Depot, or similar big box outlet opens in metropolitan Dallas, Atlanta, or Columbus, Ohio, much of the stock — everything from clothes to clocks, most imported from China — arrives in the U.S. at one of the Los Angeles area's busy ocean ports.

In just a few years, though, those household and business products may journey from China to the stores in a different way, on a new generation of supersized ocean vessels that bypass the West Coast. These freighters will cut across a newly widened Panama Canal before docking at a port along the East Coast or Gulf Coast. This prospect is setting off a competition among eastern and southern ports, all eager to become the go-to destination for Asian imports.

Almost every ocean and gulf port in the eastern and southeastern U.S. — from New York to Miami to Houston — has projects under way or in the planning stage to prepare for expected growth in international trade. Even some smaller ports have gotten into the act, among them, Wilmington, North Carolina; Mobile, Alabama; and Gulfport, Mississippi.

The improvements run the gamut: digging deeper channels, building new container terminals, adding cranes to handle larger ships, and enhancing highway and rail connections. The Port Authority of New York and New Jersey has approved a \$1.3 billion project to elevate a landmark bridge. Savannah is pursuing funding for a \$625 million plan to dredge its long channel. Miami has found public and private partners for a new \$1.1 billion tunnel. Even Wilmington has a \$2 billion wish list.



### A birthday present

All these plans revolve around the current expansion of the Panama Canal, the 48-mile waterway that connects the Atlantic and Pacific oceans. The \$5.25 billion project is scheduled to be completed by August 15, 2014, the centennial of its original opening. For years now, the canal locks have been unable to accommodate the ever-larger ocean carriers, some of them longer than three football fields (and the Navy's longest aircraft carrier).

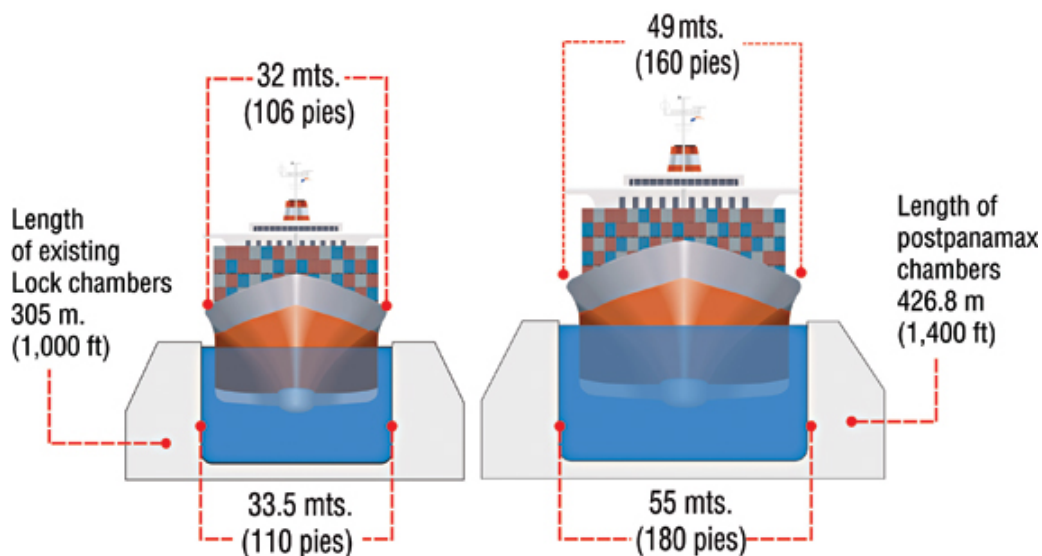
These huge vessels carry almost three times as many shipping containers as the freighters currently passing through the canal are capable of carrying. Containers unloaded from just one giant ocean vessel fill up the equivalent of more than 20 trains or 3,000 semi-trailer trucks. Seaports "touch everything in our lives, everything we eat, everything we sit on, everything we do," says Richard Barone, director of transportation programs at the tri-state Regional Plan Association in New York City.

The U.S. Maritime Administration predicts that the canal expansion "will lead to a significant increase in container traffic calling at the Gulf Coast and eastern ports." That outlook is shared by many others in the shipping industry. Drewry Supply Chain Advisors, a London-based maritime consulting firm, has estimated that with the expansion up to 25 percent of the present cargo base of the western ports could shift to eastern and southern ports in the decade to come. Even West Coast port officials acknowledge that some shift is likely to occur.

All told, East Coast and Gulf Coast port expansion plans compiled by the Maritime Administration, the Southern Legislative Conference, and other sources total almost \$20 billion, with nearly half of the projects scheduled for completion within the next five years. To put those dollars in perspective, the federal government has estimated that capital spending at all U.S. ports in the 60 years from 1946 to 2006 amounted to \$31 billion.

"I'm seeing more port activity on the East Coast right now than in the 25 years I've been involved in this industry," says Charles Clowdis, managing director of North American markets for IHS Global Insight's Global Commerce and Transport Group. "You talk to all the port directors, starting with Houston and going along the Gulf and up the East Coast, and they all say there's going to be a dramatic impact from the Panama Canal expansion, and there's a rush to take advantage of the changes."

## Locks: existing vs. postpanamax



### Game-changer

The Panama Canal, which was designed to cut shipping distances in half between the East and West coasts, was a treacherous undertaking. The construction project started by the French in 1880 and finished by the U.S. in 1914 resulted in the removal of at least two hundred million cubic yards of earth and rock — the equivalent of more than 40 Hoover Dam projects. In the process, more than 26,000 workers died from tropical diseases such as malaria and yellow fever.

The canal consists of a series of artificial lakes and channels, and three sets of thick-walled locks (almost 60 feet at their base) whose gates can be closed to regulate water level. Ships are raised or lowered more than 80 feet during a day-long passage through the locks. For more than half a century, virtually every commercial ship could fit through the locks. But in the past few decades, shipping companies have been building progressively larger tankers and cargo freighters, spawning the term "Post-Panamax" to describe vessels too large to go through the canal.

"If the canal didn't do something, it would have been at capacity and verging on obsolete," says Theodore Prince, a port consultant and board member of the Intermodal Transportation Institute at the University of Denver.

The expansion project, funded by private financing and higher canal tolls, involves building two new sets of locks adjacent to existing ones on the Pacific and Atlantic edges, plus deepening and widening miles of channel between the locks. The new locks are 40 percent longer, 60 percent wider, and 43 percent deeper than the existing (original) locks. They will be able to accommodate ships with 12,000 TEU (20-foot-equivalent unit) containers, almost triple the 4,500 TEU containers that ships are now limited to in the canal.

Kurt Nagle, president of the American Association of Port Authorities, has called the Panama expansion a "game-changer" for seaports in the U.S. So has David Matsuda, maritime administrator for the U.S. Department of Transportation. And Rodolfo Sabonge, vice president of research and analysis for the Panama Canal Authority, last year told a conference of the Council of Supply Chain Management Professionals that the authority anticipates container volume through the canal to double by 2015.

Ports on the East and Gulf coasts expect to receive a major share of that growth. The Port of Virginia anticipates an immediate 20 percent boost in cargo once the canal expansion is completed. A study for the Port of Savannah predicted Asian import tonnage through the canal would jump 80 percent at the port between 2010 and 2020.

Not all experts foresee such a dramatic jump. They note that travel from Asia to the East Coast through the canal will always be slower than the direct route to West Coast ports. Asaf Ashar, codirector of the National Ports and Waterways Institute at the University of New Orleans, describes the canal expansion as "a change but not a game-changer."

Still, it's a shift that will play out across the interior of the country, in midwestern markets such as Columbus, Cincinnati, and Indianapolis; in southeastern markets such as Memphis and Atlanta; in Florida's booming metro areas; and in Dallas and Houston. In all these metropolitan areas, retail stores and industrial plants are mostly served by railroads and trucks that deliver freight from West Coast ports. The question now is whether the advantages of East Coast ports will win the day.



### **It's the money!**

The main advantage is cost. Water transportation is almost always less than rail and truck transportation, and ever-larger ships offer great economies of scale by spreading costs over more units of freight moved per ship. The cost of transporting a 20-foot-long container from Hong Kong to the eastern U.S. through a Los Angeles port and then by rail and truck is roughly \$3,500, according to Drewry Supply Chain Advisors. The firm estimates that shipping a container would cost \$250 to \$1,000 less if it were loaded on an 8,000-TEU ship, sent through the Panama Canal, unloaded at an East Coast port, and then hauled by rail and truck to a midwestern or southern destination.

Other estimates are less definitive, with some figuring savings of as little as \$60 per container. And of course, there's a trade-off in travel time. Shipping to the East Coast can take up to a week longer in ship and rail time than going through the West Coast, according to industry experts. Still, ProLogis, a developer of distribution facilities, wrote in a report last fall: "Given a choice, many shippers today are leaning toward a delivery service that costs less and is more reliable, even if the delivery time were slightly longer."

Another attraction of eastern ports is the emerging distribution network. Several eastern railroads and private developers have been building giant intermodal logistics centers in the east-central U.S., in locations ranging from Columbus, Ohio, to Dallas and Kansas City, to Memphis. These logistics centers act as centralized hubs, where containers arrive by rail from East Coast ports and are then sorted and transferred again to trucks, which take them to warehouses, stores, or manufacturing plants.

Two railroads, the Norfolk Southern and CSX, each recently upgraded their rail lines — the Heartland Corridor and the National Gateway, respectively — so they can move double-stacked containers on flatbed cars between the East Coast and the Midwest. Referring to Norfolk Southern's project, Russell Held, deputy executive director of development at the Virginia Port Authority, says, "One of our advantages is that we can reach the entire region east of the Mississippi. The Heartland Corridor gives us a direct shot at Columbus and Chicago."

One other factor working in favor of eastern ports is a history of instability and congestion at the Los Angeles and Long Beach facilities, which handle more than a third of the total U.S. container trade. Truck traffic in and around the ports is worsening, and the lack of available land has limited the

construction of new warehouses. In addition, labor disputes have led to shutdowns and threats of strikes over the last decade, and there have been some complaints about rising shipping costs.

"The upward trajectory of port and rail costs from West Coast ports to the Midwest makes this transportation unsustainable at today's shipping rates," Craig Mygatt, senior director of trade and marketing in the U.S. for the Maersk Line shipping company, said at a meeting of the American Association of Port Authorities earlier this year. "If nothing changes, this international intermodal cargo will continue to shift to the East Coast," and other places. "Widening of the Panama Canal will accelerate the trend."

Recognizing the eastern advantages, some retailers are already diversifying their shipping supply chains, at least for products that aren't needed in stores immediately. "You don't want to rely entirely on Los Angeles-Long Beach. You don't want to have all your eggs in one basket," says Jonathan Gold, vice president of supply chain and customs policy for the National Retail Federation in Washington, D.C.

#### **Catch-up needed**

But are the East Coast ports ready for an influx of new business?

Consider the Port of New York and New Jersey. To reach New Jersey's marine terminals, container ships round Staten Island, then turn south into the Kill Van Kull channel and cruise under the landmark Bayonne Bridge, named for the New Jersey city it serves. The bridge is known for its long, gracefully arching steel truss, but its most distinguishing feature for shippers is its 155-foot clearance from the waterline. That's no longer high enough for some of the largest container ships, which tower 175 feet above the water. In 2009, the NYK shipping line's 4,886-TEU Nebula was riding too high to pass under the bridge and had to divert to Norfolk, Virginia. Another time, the 6,400-TEU Regina Maersk had to have its communications mast detached to fit under the bridge.

At the Port of Jacksonville, an Asian shipping company pushed back the opening of a \$300 million container terminal by at least two years, waiting for the St. Johns River to handle larger ships. Across the U.S., inadequate channel depths constrain almost 30 percent of port vessel calls, a U.S. Army Corps of Engineers study determined in 2009. "The changeover in fleets [to larger freighters] is happening at a faster rate than people expected," says Richard Barone, the transportation director at the Regional Plan Association in New York.

This issue is becoming increasingly important as the Panama Canal expansion looms. Ports today need only 40 feet of channel depth to handle the largest ships coming through the canal. But a loaded 8,000-TEU ship sits 46 to 47 feet deep in saltwater and a foot deeper in freshwater. This draft requires a channel depth of close to 50 feet, and only one top East Coast container port is at that level now — the Port of Virginia in Norfolk. "Depth is absolutely critical," says John Martin, an international maritime market consultant who has done hundreds of port studies in the U.S. "A port's viability increasingly depends on the ability to attract a major carrier. You don't want a constraint."

Eighteen ports along the East and Gulf coasts are already deepening their channels or pursuing plans to do so, according to the U.S. Army Corps of Engineers. Numerous ports are also building or planning new terminals and wharfs, and some are adding highway connections to interstates and installing new overhead cranes that are longer than a football field.

In New Jersey, for instance, the New York-New Jersey port authority is dredging its channel to 50 feet, and it recently approved raising the Bayonne Bridge 65 feet rather than demolish and rebuild the structure. In Georgia, the Port of Savannah is midway through an eight-year, \$500 million expansion that will nearly double its container capacity, and it is pushing ahead with a dredging project that will deepen its channel from 42 feet to 48 feet. In South Carolina, the Port of Charleston is building a \$525 million container terminal on a former U.S. Navy base that, when completed in 2016, will increase the port's handling capacity by almost half. And as part of a \$600 million upgrade plan, Alabama's Port of Mobile has opened a \$300 million container terminal and completed a turning basin enlargement for Post-Panamax ships.

Then there's the \$2 billion in new projects planned for the port of Wilmington, North Carolina, according to a Southern Legislative Conference survey of ports. "The expansion of the Panama Canal is the tool to help us build on our port," says Stephanie Ayers, director of planning and development for the North Carolina State Ports Authority.

These projects illustrate the ports' high hopes. It's unclear, however, whether they will be completed in time for the opening of the Panama Canal's new locks. The governmental reviews required for Savannah's dredging project stretched over more than a decade, involving interests ranging from the commercial fishing industry to environmental groups in neighboring South Carolina. "It's been a political logistics nightmare," says Tom Thomson, executive director of the Chatham County-Savannah Metropolitan Planning Commission, "but it was necessary to ensure that all the issues were addressed to the community's satisfaction."

#### **Who will pay?**

Major port projects typically require congressional approval and federal funding, and several port authorities were counting on the federal government's proposed fiscal year 2012 budget to kick-start their expansion plans. The ports of Savannah and Miami requested \$105 million and \$75 million, respectively. The two received a total of \$600,000. The Port of Charleston couldn't even get \$400,000 for a dredging feasibility study.

The fact is, with the federal deficit-cutting climate in Washington D.C., getting funding for port



projects could become more difficult. For one thing, the Harbor Maintenance Trust Fund is tapped every year to help offset the federal deficit. For another, Congress has sworn off the earmarks, or individual projects requested by lawmakers, that were a major source of port funding. "There is too much competition for scarce federal dollars," says Russell Held of the Virginia Port Authority.

In response, port authorities are turning to the private sector, with some success. New terminals are being developed as public-private partnerships, with public agencies contracting with shipping companies to build and then manage the operations. Some infrastructure improvements also involve private investors. The \$1.1 billion Port of Miami tunnel, a road intended to bypass downtown congestion by linking the port to an interstate highway, is being financed through the state of Florida, Miami-Dade County, a federal government loan program, and a consortium of banks organized by Meridiam Infrastructure, an international private infrastructure fund.

But as eastern ports vie for funding and a greater share of business, their West Coast competitors aren't exactly standing pat. Western ports and railroads will fight to keep or regain their Asian trade market share, a panel of port executives and consultants declared at an East Coast maritime conference last fall. The Port of Long Beach intends to spend \$4 billion over the next decade to modernize and expand its container handling facilities. "Our best way to compete against the Panama Canal and the all-water route is to invest in our infrastructure projects," Alex Cherin, then the managing director of trade relations and port operations at the Port of Long Beach, told a U.S. Maritime Administration conference last year.

Ultimately, many observers foresee West Coast port business as continuing to grow, although not as fast as the East Coast's. "The West Coast will no longer be the gorilla," says John Vickerman, a port strategic planning consultant in Virginia. With an increasing volume of Asian imports and limited capacity for growth at the Los Angeles and Long Beach ports, "converging economic and trade forces now favor growth on the East Coast."

### Beautiful Bridges

While the Panama Canal expansion will accommodate a new era in cargo ship design, the canal's Centennial Bridge is already part of a new era in bridge design. The design involves cables fanning out in diagonal lines from either single I-shaped or A-shaped columns.

In the U.S., the new Mississippi River Bridge under construction in St. Louis has this design. So does the Christopher S. Bond Bridge over the Missouri River in Kansas City, Missouri, and the Arthur Ravenel, Jr., Bridge over the Cooper River in Charleston, South Carolina. They're part of a family of structures known as cable-stayed bridges, in which the towers support the load of the road deck, unlike a suspension bridge, whose arching cables hold the primary load. Engineers and architects have used the I- or A-shaped cable-stayed design for pedestrian bridges. Now it's increasingly being deployed for river bridges.



This represents a departure from the tradition of U.S. bridge design involving H-shaped columns with suspended arching cables. Think of the Golden Gate Bridge. Some cable-stayed bridges are still designed with H-shaped columns, and no bridge or engineering association has statistics on how many newer diamond designed bridges now exist. But the I- or A-shape — commonly seen in countries such as China, South Korea, and Thailand — offers the advantage of greater resistance against winds and is typically easier to construct than the average suspension bridge.

**Image:** The Centennial Bridge crosses the Panama Canal's Pacific Access Channel. The 1,050-foot-long, six-lane main span has a deck height of 262 feet, allowing large vessels to pass under it. The bridge's west tower was located 165 feet inland to allow for future widening of the canal. Photo courtesy Panama Canal Authority.

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### Resources

**Images:** Top — The Maersk Line, the world's largest container shipping company, has been calling at North Carolina's Port of Wilmington since early 2009. The Tangier is 528 feet long and can accommodate over 1,300 TEU (20-foot-equivalent unit) containers. Photo by Susan Northam Pridgen, courtesy North Carolina Ports. Middle — The Panama Canal's newly enlarged lock chambers have motivated many East Coast and Gulf ports to plan for widening and deepening their channels. (Mts. is the Spanish abbreviation for meters; pies means feet.) Image courtesy Panama Canal Authority. Bottom — A Chinese container ship is being guided into the Port of Los Angeles. Photo courtesy Port of Los Angeles.