Select U.S. Ports Prepare For Panama Canal Expansion

Port of New York and New Jersey

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"The biggest challenge faced by the port is reaching maximum efficiency in port operations by the time the larger container vessels arrive."

– Richard Larrabee, director of port commerce, Port Authority of New York and New Jersey[1]

Port of New York and New Jersey

Formed in April 1921, the Port Authority of New York and New Jersey became "the first bi-state agency ever created under a clause of the constitution permitting compacts between states with congressional consent."[2] The Port Authority manages and owns bridges, roads, airports, tunnels, commuter rail lines, the World Trade Center and port terminals. It differs greatly from other port authorities, whose primary responsibility is marine cargo and port activities. An approximate 25-mile radius from the Statue of Liberty, known as the "Port District," represents the geographic area in which the agency typically functions. A self-supporting entity, the Port Authority does not receive tax revenue. Instead, its revenue is derived from fees charged for bridge tolls, user fees at airports and bus terminals, rail transit system fares, rent, consumer services and retail stores.[3]

Location, Size and Terminals

Located on the Northeast coast of the U.S., the Port of New York and New Jersey is a perfect shipping origin/destination for imports and exports to and from Europe and Canada. The port has 10 terminals. Six terminals handle container cargo, three are reserved for cruise ships and one handles bulk and break bulk cargo.

Operating Status

Director of Port Commence Richard Larabee provided an update regarding the expected growth in TEUs after the Panama Canal expansion: "The average volume growth for the Port of New York and New Jersey has been approximately 4 percent since 2000. The port should see the same average growth after the canal's opening, with the cargo being transported on fewer but larger vessels. The biggest challenge faced by the port is reaching maximum efficiency in port operations by the time the larger container vessels arrive. Port stakeholders and the Port Authority have begun to address this issue with the creation of the Port Performance Task Force. The task force issued a report on June 24, 2014 with recommendations to improve all aspects of port productivity. The next step is implementation of those recommendations."[4]

Cargo

Total TEUs have increased year after year following the end of the Great Recession, with the exception of 2013. Hurricane Sandy made landfall in October 2012, causing significant infrastructure damage across New York and, especially, New Jersey. It is surprising that the total number of TEUs in 2013 was not affected more adversely, considering the amount of damage caused by the storm.

Figure 1

Operating Status

Year	Operating Revenue (in thousands of dollars)	Operating Expenses (in thousands of dollars)	Operating Income (in thousands of dollars)
2014 (Forecast)*	$243,778	$174,476	$69,302
2013	262,526	176,459	86,067
2012	249,609	190,043	59,566
2011	236,461	185,053	51,408
2010	223,095	163,424	59,671
2009	205,861	127,240	78,621
2008	201,269	143,523	57,746
2007	236,002	112,607	123,395
2006	170,617	109,371	61,246
Average Growth Rate (2006 to 2013)**	5.53%	6.16%	4.34%

*Updated by the Port Commerce Department

**Based on authors' calculation

Source: Port of New York and New Jersey website (2006 to 2013); data set compiled by authors

Facilities: Cargo Terminals

The Port of New York and New Jersey can handle almost any type of cargo at one of its six terminals. Primary cargo at the New York Container Terminal consists of containers, general cargo and break bulk cargo. The APM, Maher and Port Newark terminals load and unload containers only. The Global Marine Terminal handles containers, roll-on/roll-off (Ro/Ro) and heavy lift cargo. Equally versatile is the Red Hook Terminal, which primarily handles containers, Ro/Ro and break bulk cargo. One of the biggest advantages the port has is the existing depth of up to 50 feet at three of its terminals.

Figure 2

Cargo Summary

Year	Container Volume (in thousands of TEUs)	Outbound Tonnage (in thousands of tons)	Inbound Tonnage (in thousands of tons)	Total Tonnage (in thousands of tons)
2013	5,467	19,446	52,009	71,454
2012	5,530	23,194	57,608	80,802
2011	5,504	24,455	61,897	86,352
2010	5,292	20,333	61,058	81,391
2009	4,562	19,277	58,626	77,903
2008	5,265	21,520	67,387	88,906
2007	5,299	18,070	69,161	87,231
2006	5,142	14,868	71,294	86,163
Average Growth Rate (2006 to 2012)	1.04% 1.20%*	6.56% 4.95%*	-3.00% -4.24%*	-0.91% -2.38%*

* Updated by the Port Commerce Department via author interview

Source: Port of New York and New Jersey website; data set compiled by authors

Facilities: Cranes

Unlike many other ports, every terminal at the Port of New York and New Jersey has the capacity to handle containerized freight. The port has 32 Post-Panamax cranes spread across its six terminals. The APM and Maher container terminals have Super Post-Panamax cranes already installed; these cranes have the ability to serve the largest vessels afloat, with a reach of 22 containers across. According to Richard Larrabee, "each container terminal within the port will have different capacities regarding maximum vessel size; however, the majority of the port's terminals should be able to handle, at a minimum, 12,000 TEU vessels."[5]

Facilities: Passenger Terminals

There are three major passenger ship cruise terminals in the Port of New York and New Jersey district. The Manhattan Cruise Terminal (MCT) is owned by the city of New York and operated by Ports America. MCT provides three deep-water and two shallower 1,000-foot-long berths suitable for servicing the world's largest cruise vessels on the Hudson River, only a few blocks west of Times Square in the heart of Manhattan. The terminal occupies the west side of 12th Avenue between 46th and 54th streets on Piers 88 and 90. A $200 million renovation of Piers 88 and 90 was recently completed.

Figure 3

Facilities: Cargo Terminals

Terminal	Existing Channel Depth at Mean Low Water (in feet)	Existing Ship Berth (in linear feet)
New York Container Terminal	37–45	3,012
APM Terminal	45–50	6,000
Maher Terminal	45–50	10,128
Port Newark Container Terminal	40–50	4,800
Global Marine Terminal	47	1,800
Red Hook Container Terminal	42	2,080 container/ 3,140 break bulk

Source: Port of New York and New Jersey website, author interview

The Brooklyn Cruise Terminal (BCT) is located in the borough's Red Hook section. The 182,000-square-foot, full-service cruise terminal represents a $52 million investment in the city's booming cruise sector. Metro Cruise Services LLC (Metro) entered into a four-year agreement with the New York City Economic Development Corp. (NYCEDC) in 2013 to be the sole and exclusive operator of the BCT.[6]

The Cape Liberty Cruise Port, situated in Bayonne, New Jersey, on the former Military Ocean Terminal at Bayonne (MOTBY), is operated and managed by the Cape Liberty Cruise Port LLC. Royal Caribbean International is investing $50 million into the property to build a new terminal and two parking facilities in coordination with its debut of the new Quantum of the Seas cruise ship.[7]

Figure 4

Type and Number of Cranes

Type	Number	Tons/Description
New York Container Terminal		
IHI	3	40 long tons; height, 75 ft.; outreach, 115 ft.
Paceco	2	45 long tons; height, 120 ft.; outreach, 135 ft.
Liebherr Post-Panamax	4	50 long tons; height, 120 ft.; outreach, 164 ft.
APM Terminal		
ZPMC Super Post-Panamax	4	50 long tons; height, 131 ft.; outreach, 206 ft.
ZPMC Post- Panamax	6	50 long tons; height, 120 ft.; outreach, 140 ft.
Paceco-Mitsui Post-Panamax	2	50 long tons; height, 120 ft.; outreach, 140 ft.
Paceo	3	50 long tons; height, 85+ ft.; outreach, 110 ft.
Maher Terminal		
Fantuzzi Super Post-Panamax	5	65 long tons; height, 120 ft.; outreach, 200 ft.
ZPMC Super Post-Panamax	4	65 long tons; height, 120 ft.; outreach, 200 ft.
Liebherr Super Post-Panamax	2	65 long tons; height, 120 ft.; outreach, 200 ft.
Paceco Post-Panamax	6	50 long tons; height, 100 ft.; outreach, 135 ft.
Paceco Panamax	1	40 long tons; height, 100 ft.; outreach, 115 ft.
Port Newark Container Terminal		
Paceco	3	46 tons; height, 169 ft.; outreach, 118 ft.
ZPMC Post-Panamax	2	50 long tons with spreader, 60 long tons without; height, 219 ft.; outreach, 167 ft.
Fantuzzi Post-Panamax	4	50 long tons with spreader, 60 long tons without; height, 219 ft.; outreach, 167 ft.
Global Marine Terminal		
ZPMC Post-Panamax	2	65 long tons; height, 131 ft.; outreach, 185 ft.
ZPMC Post-Panamax	4	50 long tons; height, 110 ft.; outreach, 180 ft.
Red Hook Container Terminal		
Liebherr Post-Panamax	2	60 long tons; height, 100 ft.; outreach, 150 ft.
Star	1	50 long tons; height, 82 ft.; outreach, 133 ft.
Kone	1	60 long tons; height, 89 ft.; outreach, 133 ft.
Paceco	2	40 long tons; height, 80 ft.; outreach, 120 ft.
Liebherr (Port Newark Terminal)	2	Mobile Harbor Stick Cranes

Source: Port of New York and New Jersey website and author interview

Foreign Trade Zone

The Port Authority of New York and New Jersey is the grantee of Foreign Trade Zone No. 49. The FTZ's general purpose zone comprises a total of 4,536 acres, with 2,502 acres located within Port Newark, the Elizabeth-Port Authority Marine Terminal and the Port Jersey-Port Authority Marine Terminal, and 2,034 acres of privately owned and operated industrial parks located in Elizabeth, Kearny, Carteret, Perth Amboy, Port Reading, Edison, North Bergen, South Brunswick and Woodbridge, New Jersey.

According to the Port Authority, "in addition to the general purpose zone sites, FTZ No. 49 sponsors nine subzones in New Jersey that include Bristol-Myers Squibb Co. in New Brunswick; AZ Electronic Materials USA Corp. in Somerville and Somerset; Phillips 66 in Linden; Firmenich in Newark and Plainsboro; Merck & Co. in Rahway; Movado Group Inc. in Moonachie; Swatch Group in Secaucus; In Mocean Group LLC in North Brunswick; and LVMH Möet Hennessy-Louis Vuitton in Springfield."[8]

The total value of merchandise received and forwarded through FTZ No. 49's general purpose and subzone sites in 2012 was $30.3 billion. Everything from auto parts to orange juice moves through this FTZ.

Transportation and Access

The Port Authority of New York and New Jersey owns, operates or manages most of the infrastructure needed to move goods from cargo terminals to end users. Railroad service to terminals includes, according to the Port Authority, the "ExpressRail System, a comprehensive $600 million rail program at the Port of New York and New Jersey. The program has created dedicated rail facilities — and additional support track and rail yards — for each of the port's major container terminals."[9] These terminals include Elizabeth, Newark and Staten Island. Moving goods by roadway enables 100 million consumers to be reached within a day from the port.

In addition, three international airports and one airport specializing in short to medium domestic routes are located nearby and owned and operated by the Port Authority. John F. Kennedy International Airport is the busiest in the region, while Newark Liberty International Airport serves as a logistics center for overnight packages. Stewart International Airport, the newest of these airports, handles some of the largest aircraft in service, while La Guardia Airport is the region's short to medium route airport.

Figure 5

Employment (2012)

	Cargo	Cruise	Total
Direct	161,601	3,752	165,353
Related Use	129,112	1,599	130,711
Total	290,713	5,351	296,064

Source: Updated by the Port Commerce Department through author interview

Employment

Figure 5 shows the total number of jobs for the port/maritime industry, not for the Port Authority, including direct, indirect and induced jobs, according to the "Economic Impact Study of the New York-New Jersey Port Industry, 2012" conducted by A. Strauss-Wieder Inc. The study also states that 251,730 jobs were created in New Jersey, 45,730 in the state of New York and 34,830 in New York City, creating $7.2 billion in tax revenues.[10]

Current and Future Port Projects

Director of Port Commence Richard Larabee and his team described current and future capital expenditure plans: "The port's $1.6 billion dredging project to bring the port to 50 feet will be completed in the first quarter of 2015. The $1.3 billion Bayonne Bridge Navigational Clearance Program will result in a raising of the roadway to create an air draft clearance of 215 feet by 2016. These two projects will allow the port to handle the larger vessels anticipated to be coming through the expanded Panama Canal.

The 50-foot channel and berth deepening project and the Bayonne Bridge Navigational Clearance Program are the two high-profile projects for the port; however, the Greenville Yards Rail Facility, which will serve the Global Container Terminal, is also a project that will have a major impact on the port. Rail expansion at PNCT [Port Newark Container Terminal] and NYCT [New York Container Terminal] are also progressing at this time."[11]

Figure 6

Improvement

Project	Completion Date (Estimated)	Estimated Investment (in millions of dollars)	Description
Bayonne Bridge	By 2016	N/A	"'Raise the Roadway' of the Bayonne Bridge to 215 ft. The 64 ft. of additional air draft will accommodate larger, more efficient vessels."
Goethals Bridge	Late 2018	$ 1,500	"Design, build, finance and maintain a replacement bridge directly south of the existing one. The new bridge will feature three 12-ft.-wide travel lanes in each direction."
Harbor Deepening	Q1 to 2015	$ 1,600	Will allow the next generation of "larger, longer and wider ships to access the nautical corridor leading from the Ambrose Channel into the Upper Bay and Newark Bay."
Roads	2014 to 2018	$113,300	Create additional lanes "in some locations; widening and realigning certain critical thoroughfares; installing central barriers and retaining walls; replacing/renewing critical stretches of pavement; updating/synchronizing traffic signals; relocating signage and lighting to promote maximum visibility; regrading critical turns to allow freight vehicles to use them at higher speeds and with greater safety."
APM Terminals	Complete	N/A	"Added four new 22-row reach cranes"; added refrigerated container racks that tripled the terminals' processing capacity to 1,964 reefer containers at a time; expanded its terminal area from 266 to 350 acres; added two low-emission, rubber-tired gantry cranes, reducing emissions by 40 percent.
Maher Terminals	Complete	N/A	"Improved infrastructure, acquired equipment, and upgraded pivotal technology; features one of the world's largest straddle carrier fleets, speeding the flow of containers between ships and rail connections"; currently operating 11 Super Post-Panamax cranes with a reach of 22 across; two Super Post-Panamax Liebherr cranes with a reach of 25 across delivered in November 2014; four Super Post-Panamax cranes with a reach of 25 across will be delivered at the end of 2015.
New York Container Terminal	Complete	N/A	"Increased length of berth from 2,500 to 3,000 ft. and constructed an intermodal rail facility; linked to transcontinental rail routes by the terminal's own on-dock rail operation, ExpressRail Staten Island, which is capable of producing mile-long trains."
Port Newark Container Terminal	2015	N/A	"Building out ExpressRail Port Newark to double PNCT's intermodal capacity from 125,000 lifts per year to 250,000 by the end of 2014; converting 33 acres of its on-dock container terminal transfer facility to serve as a high-density container yard; adding three new cranes rated to support Super Post-Panamax vessels."
Global Terminal	2015	N/A	"Augmenting Port Jersey Boulevard to increase access to Global Terminal; on track to become the port's first terminal operator to deploy automated rail-mounted gantry cranes, maximizing efficiency on the Port Jersey Channel." Twenty rail-mounted gantry cranes were delivered in 2014 and some are already operational. In addition, the terminal will take delivery of two Super Post-Panamax cranes, which should be operational in 2015.

Source: Quotes from "The Port of New York and New Jersey: Setting the Pace for a Stronger Future."[12] Additional information from author interview with Richard Larrabee.[13]

Outlook

With current equipment such as 32 Post-Panamax cranes and 15 Super Post-Panamax cranes, in addition to the six Super Post-Panamax cranes currently on order for delivery in 2014 and 2015, and port-related services such as FTZ No. 49 with 15 sites and nine subzones over a total of 4,536 acres, the Port of New York and New Jersey is one of the most competitive container ports in the U.S. Given the importance of its geographic location and key role in inbound and outbound trade from Europe, Asia and Canada, we foresee a sustainable growth in container traffic after the Panama Canal expansion. The average volume growth for the port has been approximately 4 percent since 2000. Each container terminal within the port will have different capacities regarding maximum vessel size; however, the majority of the port's terminals should be able to handle, at a minimum, 12,000 TEU vessels.[13]

The port faces two big challenges. First, although the Bayonne Bridge is expected to be raised to 215 feet by 2016, it currently is too low for many large ships to pass beneath it. As reported by the Journal of Commerce on April 25, 2014, "Vessel operators are being warned by the Coast Guard to make sure their vessels can fit under the 151-foot vertical clearance of the Port of New York and New Jersey's Bayonne Bridge, which two ships have struck during the last four months."[14]

The second challenge comes from possible port congestion and delays due to labor shortages and computer equipment failures. Shortages of dockworkers and drayage drivers may cause intermittent port delays. With traffic volume spikes and shortages of longshore workers, chronic truck backups at the port are inevitable.

Endnotes

[1] "Author interview with Richard Larrabee, director of port commence, and Amanda Valdes, maritime cargo sales manager, Port Authority of New York and New Jersey, July 2, 2014.

[2] Port of New York and New Jersey website, "Origins," www.panynj.gov/about/facilities-services.html, retrieved July 11, 2014.

[3] Port of New York and New Jersey website, "Finances," www.panynj.gov/about/facilities-services.html, retrieved July 11, 2014.

[4] Author interview with Richard Larrabee, July 3, 2014.

[5] Ibid.

[6] Ibid.

[7] Ibid.

[8] "The Port Authority of New York and New Jersey (Grantee), Foreign-Trade Zone No. 49 Grantee Schedule: Rates, Rules and Regulations," www.panynj.gov/port/pdf/Zone-Schedule.pdf, retrieved Oct. 14, 2014.

[9] Port of New York and New Jersey website, www.panynj.gov/port/express-rail.html, retrieved July 11, 2014.

[10] "The Economic Impact of the New York-New Jersey Industry, 2012" A. Strauss-Wieder Inc., February 2014, http://nysanet.org/wp-content/uploads/Economic_Impact_Study_FINAL_2012, retrieved July 11, 2014.

[11] Author interview with Richard Larrabee.

[12] "The Port of New York and New Jersey: Setting the Pace for a Stronger Future," The Port Authority of New York and New Jersey, www.panynj.gov/port/pdf/digital_capital%20improvements_final.pdf, retrieved Oct. 14, 2014.

[13] Author interview with Richard Larrabee.

[14] "Warning to Ships: Don't Hit Bayonne Bridge," Joseph Bonney, Journal of Commerce, April 25, 2014, http://www.joc.com/port-news/us-ports/port-new-york-and-new-jersey/warning-ships-don%E2%80%99t-hit-bayonne-bridge_20140425.html, retrieved Dec. 2, 2014.