

# Select U.S. Ports Prepare For Panama Canal Expansion

## Port of Houston



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***“We’re on the front end of this no matter what transpires.”***

*– Roger Guenther, executive director, Port of Houston Authority<sup>1</sup>*

***“The current challenge is to stay one step ahead of the market’s need for build-out of our container facilities.”***

*– Ricky Kunz, vice president of trade development and marketing, Port of Houston Authority<sup>1</sup>*

## Port of Houston

The Port of Houston has been ranked No. 1 in the U.S. for foreign waterborne freight for 17 consecutive years, U.S. imports for 21 consecutive years and U.S. export tonnage for four consecutive years. It has been ranked second in total tonnage for 21 consecutive years.<sup>2</sup> With a track record like this, it is no wonder that Colliers International has named Houston “Most Irreplaceable Port.”<sup>3</sup> The port is known as one of the economic engines for the state of Texas, creating more than 1 million port-related jobs throughout the state and generating millions of dollars in state and local tax revenue.<sup>4</sup>

### Location, Size and Terminals

Centrally located in the southern U.S., the Port of Houston offers great distribution to both the East and West coasts. Customers and terminal operators enjoy efficient distribution by railroad, multiple highways and air freight. The 25-mile-long port is located just east of downtown Houston. There are only 52 miles of ship channel between the port and the Gulf of Mexico. Due to its location, diversity of terminals and overall size, the port has been able to increase its trade volumes of imports and exports through container, dry bulk and liquid bulk cargo.

### Operating Status

The Texas Comptroller Leadership Circle Program was launched in 2009 to encourage high levels of financial transparency of local governments in the state. In both 2012 and 2013, the Port of Houston applied for and was granted Gold Leadership Circle awards, scoring

20 out of 20, underscoring the port’s viability. The port’s operating financial report shows the substantial amount of income generated by the port.

The port’s 2012 operating revenue and cargo tonnage were the highest ever recorded. In 2013, the port set a new record with a \$7.23 million increase in operating revenue. This trend is expected to continue since the market forecast for total TEUs, based on previous years of growth, is expected to increase by 2.8 percent. The actual number of TEUs imported and exported in 2013 was 1,950,071, compared with 1,934,845 in 2012. Total tonnage handled increased by 3 percent from 2011 to 2012; general cargo also increased, by 18 percent (excluding containers). Total tonnage for 2012 was 35,825,450.

### Cargo

Total tonnage for the port decreased significantly from 2008 to 2009 because of the Great Recession. Since 2009, however, total tonnage has steadily increased. Container traffic does not show the same trend; instead, it has increased steadily since 2006. The upward trend is continuing. In its comparative statistics for January and February 2013 and 2014, the port shows that total exported tonnage is up by 4.6 percent, an increase of 182,484 tons. Import tonnage has decreased slightly, by 1.0 percent or 30,065 tons. At the same time, the total number of TEUs imported and exported has increased by 31.4 percent, the equivalent of 72,539 more TEUs.<sup>5</sup> The port’s cargo consists of raw materials such as grain and petroleum products as well as containerized cargo.

## Facilities: Cargo Terminals

The Port of Houston is able to handle these volumes of cargo because of its sufficient land space, berth lengths, port depth and intermodal efficiency. The port has six general cargo terminals, as summarized in Figure 3, plus two container terminals, the Barbour's Cut Container Terminal and the Bayport Container Terminal. Although the port's current listed depth is 45 feet, this is not consistent throughout the port. The Bulk Material Handling Plant and Public Elevator No. 2 have 40-foot depths at mean low tide, Jacintoport Terminal is 38 feet deep at mean low tide, and the Turning Basin and Woodhouse are 36 feet deep.

Figure 1

### Operating Status

Year	Operating Revenue (in thousands of dollars)	Operating Expenses (in thousands of dollars)	Operating Income (in thousands of dollars)
2013 (Estimate)	\$237,329	\$162,078	\$83,057
2012	223,214	156,977	66,237
2011	198,452	149,929	48,523
2010	184,824	146,695	38,129
2009	198,452	151,000	6,000
2008	197,993	186,493	11,500
2007	190,858	172,567	18,291
2006	168,090	139,110	28,980
2005	155,264	128,664	26,600
2004	136,569	121,299	15,270
2003	120,902	114,010	6,892
Average Growth Rate (2003 to 2012)	6.32%	3.25%	25.39%

Source: Port of Houston website; data set compiled by authors

Figure 2

**Container Volume**

Year	Container Volume	Container Ship Calls	Outbound Tonnage	Total Tonnage
2013 (Estimate)	1,991,455		1,016,217	35,825,450
2012	1,934,845	8,395		35,059,363
2011	1,866,439			33,549,358
2010	1,812,268			31,328,281
2009	1,809,866			28,814,376
2008	1,794,312			35,244,262
2007	1,753,210			
2006	1,581,163			
Average Growth Rate (2006 to 2012)	3%			

Source: Port of Houston website; data set compiled by authors

Figure 3

**Facilities: Cargo Terminals**

	Channel Depth (in feet)	Quay Length (in linear feet)	Berth Length (in linear feet)	Size (in acres)
Bulk Materials Handling Plant	40		1,310	
Care Terminal	36		1,100	32
Jacintoport Terminal	38	1,836		125
Public Elevator No. 2	40		600	
Turning Basin Terminal	38		806	20
Woodhouse Terminal	39		1,800	10
Barbours Cut Container Terminal	40	2,000		235
Bayport Container Terminal	40	3,300		193

Source: Port of Houston website

Figure 4

### General Cargo Terminal Operators

Terminal	Operator
Bulk Materials Handling Plant	Kinder Morgan
Care Terminal	Coastal Cargo of Texas
Jacintoport Terminal	Jacintoport International
Public Elevator No. 2	Louis Dreyfus
Turning Basin Terminal	Port of Houston
Woodhouse	GP Terminals

Source: Port of Houston website; data set compiled by authors

Figure 5

### Type and Number of Cranes

Type	Number	Tons/Description
<b>Turning Basin Terminal</b>		
Container Crane	1	40.6 metric tons
Mobile Truck Crane	2	300 tons
<b>Barbours Cut</b>		
Impsa Post-Panamax Gantry Crane	2	N/A
Morris Post-Panamax Gantry Crane	2	N/A
Paceco Gantry Crane	5	N/A
Kone Gantry Crane	22	N/A
Bardella Gantry Crane	8	N/A
Noel Gantry Crane	6	N/A
<b>Bayport Container Terminal</b>		
ZPMC Post-Panamax Gantry Crane	6	N/A
ZPMC Super Post-Panamax Gantry Crane	3	N/A
Kone Gantry Crane	27	N/A

Source: Port of Houston website

## Facilities: Cranes

The Port of Houston has 84 cranes available at the Turning Basin Terminal, Barbours Cut and the Bayport Container Terminal. Barbours Cut and Bayport are the only terminals with Post-Panamax ship-to-shore cranes. Barbours Cut has 36 rubber-tired gantry cranes, including 22 Kone brand, eight Bardella brand and six Noel brand, while Bayport has 27 Kone brand rubber-tired cranes. These cranes are used in loading and unloading containers off of and onto trucks and rail cars. They straddle the trailer of the truck or rail car to accomplish this and can be driven throughout the terminal. Ship-to-shore cranes generally are on tracks and only move laterally along the quay. Other cranes are available, but are privately owned and require special arrangements with the owners.

## Facilities: Passenger Terminals

The Port of Houston has a 96,000-square-foot state-of-the-art cruise terminal at Bayport. The Bayport Cruise Terminal serves two cruise lines, Princess Cruises and Norwegian Cruise Line. The Norwegian Jewel, a 2,374-passenger ship, began cruising from the port in October 2014, as did the Emerald Princess, which has a passenger capacity of 3,082. The port of Houston competes with the Port of Galveston for cruise business, and recently won a bidding war to attract these two ships.

## Vessels Accommodated

The Port of Houston's versatility enables it to accommodate a wide range of ship sizes and styles. The Bulk Materials Handling Plant, which is operated by Kinder Morgan under a long-term lease, handles dry bulk exports and imports. Its vessel loading system has the ability to load 1,800 short tons per hour. Dry bulk carriers up to 750 feet in length are standard at this terminal; longer vessels can be accommodated with approval from the Houston Pilots. The industry names for ships of this length are "Handy Size" (maximum 672 feet long, 10,000–30,000 DWT) and "Aframax" (maximum 803 feet long, 80,000–119,999 DWT).

The Care Terminal handles heavy-lift (odd-shaped) cargo; because of the technical demands of loading and unloading heavy-lift cargo, accommodations vary

depending on the specific cargo. Bagged cargo is handled at the Jacintoport Terminal, which uses the "Spiralveyor" handling system. According to the port, this system has the ability to load ships "at a very high rate of speed."

Public Elevator No. 2, located within the Woodhouse Terminal, is noteworthy as an efficient elevator for exporting large amounts of grain. Ships up to 750 feet in length (Handy Size or Aframax) are the maximum listed; longer ships can be accommodated with approval. Vessels can be loaded at an average speed of 70,000 bushels per hour, with a maximum speed of 120,000 bushels per hour.

The Turning Basin is a 37-wharf complex designed to handle break bulk (dry and liquid), containerized, and heavy-lift cargo. Vessels at this terminal vary dramatically. Ro/Ro vessels, ships that handle equipment on wheels that can be rolled on and off the ship, are accommodated at the Woodhouse Terminal.

## Foreign Trade Zones

Foreign trade zones are an important part of the Port of Houston. The port has 700 acres dedicated to foreign trade zones. In its 2012 report to Congress, the U.S. Foreign-Trade Zones Board ranked Houston's FTZ No. 84, which the port operates, as No. 2 in the U.S. for merchandise received.<sup>7</sup> Total foreign trade through the port in 2012 was 21.7 million tons. The leading countries for container import trading by tonnage that year included:

- China, 1,190,187 tons.
- Brazil, 919,193 tons.
- India, 875,570 tons.
- Russia, 855,577 tons.
- Germany, 632,971 tons.

The leading container export leaders included:

- Brazil, 893,148 tons.
- Chile, 612,567 tons.
- China, 609,528 tons.
- Belgium, 589,009 tons.
- India, 567,523 tons.

(Tonnage moved does not always translate into the largest trading partner by dollar amount.)

The port contains 14 foreign trade subzones:

- 84E, Gulf Coast Maritime.
- 84F, Valero Refining.
- 84H, Shaffer Inc.
- 84I, Tuboscope Vetco International.
- 84J, Shell Oil Co.
- 84K, Dril-Quip.
- 84L, Tadiran Microwave Networks.
- 84M, HydriL USA Manufacturing LLC.
- 84N, Pasadena Refining System Inc.
- 84O, Exxon Mobil Corp.
- 84P, Houston Refining LP.
- 84Q, Equistar Chemicals.
- 84R, Michelin North America Inc.
- 84T, Toshiba International Corp.

In 2012, the foreign trade zone imported 9.7 million tons of cargo with a total value of \$26.2 billion. Export tonnage and value were slightly higher; 12 million tons were forwarded, with a value of \$27.3 billion.

### Transportation and Access

The Port of Houston is easily accessed by all modes of transportation, including railroads, motor carriers and airlines. According to World Class Logistics Consulting

Inc., 14 major freeways and 3,200 freeway lane miles are available to move cargo through Houston. Over 7 million people can be reached within a day's drive time; over 28 million can be reached for next-day delivery. Motor carriers can reach anywhere in the U.S. within three or four days. Four intermodal rail terminals nearby are served by BNSF Railway Co., Union Pacific Railroad and The Kansas City Southern Railway Co.<sup>8</sup>

### Employment

A 2012 economic impact study conducted by Martin Associates Inc. concluded that the Port of Houston generated \$178.5 billion in economic impact activities that year. It also generated \$1.1 billion in direct, indirect and induced taxes (\$549.4 million in state taxes and \$524.4 million in local tax receipts). The port's employment impact is equally impressive, as shown in Figure 6.<sup>9</sup>

### Current and Future Port Projects

In 2012, the Port of Houston spent \$200 million on capital investment projects; its budget for 2014 was \$325 million. The bulk of the 2014 budget, \$283 million, was spent on developing the Bayport and Barbours Cut container terminals, including modernization of Barbours Cut, railroad improvements at Barbours Cut and channel development at both terminals.<sup>10</sup> The port also currently has on order a total of \$60 million in Super Post-Panamax gantry cranes.<sup>11</sup>

Figure 6

### Employment

	Cargo	Cruise	Total
Direct	19,767	200	19,967
Induced	25,468		
Indirect	13,548		
Related Users	592,501		
Total Jobs	651,284		

Source: "The Local and Regional Economic Impacts of the Port of Houston, 2011"

An additional \$26 million will be spent on projects that involve concrete work, wharf rehabilitation and additional improvements to bulk and general cargo terminals in the Turning Basin area. The remaining funds will be spent on small projects such as building maintenance. A variety of improvement projects ranging in cost from \$500,000 to \$5 million are in the procurement stages. These projects will include items such as Americans with Disabilities Act (ADA) improvements, security cameras, parking lot repairs and oyster mitigation.

## Outlook

The Port of Houston has positioned itself as a financially sound port that can handle diverse cargo needs. Because of its 1) waterside features, including berth lengths, port depth, terminal facilities with advanced technology (such as heavy lifting equipment

for break bulk shipping and high-speed loading equipment for dry bulk shipping) and port investment in wharfs, cranes, and channel development, as well as 2) landside features, including 14 developed foreign trade subzones, 14 major freeways and four intermodal railroads, the port is ready to accommodate the increase in traffic expected after the expansion of the Panama Canal.

However, with expected increases in the volume of container shipping, implicit challenges exist in the broader Houston Ship Channel. Maritime traffic congestion may occur due to unexpected accidents. Negative impacts on the normal flow of traffic in the 52-mile key waterway that links the port to the open sea could generate huge economic losses. With 11 percent of the nation's refining capacity coming from the Houston Ship Channel, any increase in the number of accidents and closures of the channel could shake the competitiveness of the port.

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## Endnotes

<sup>1</sup> International Association of Maritime Economists Conference, Plenary Session 1, Panama Canal Expansion Response, Norfolk, July 16, 2014, and author interview with Roger Guenther, executive director of the Port of Houston Authority and Ricky Kunz, vice president of trade development and marketing, July 24, 2014.

<sup>2</sup> Port of Houston website, [www.portofhouston.com/about-us/overview](http://www.portofhouston.com/about-us/overview), retrieved May 20, 2014.

<sup>3</sup> "North American Port Analysis," K.C. Conway, Colliers International, April 2013, [www.colliers.com/-/media/Files/MarketResearch/UnitedStates/MARKETS/2013Q1/Colliers\\_NA\\_Port\\_20131H\\_FINAL.pdf?campaign=Port-1H2013](http://www.colliers.com/-/media/Files/MarketResearch/UnitedStates/MARKETS/2013Q1/Colliers_NA_Port_20131H_FINAL.pdf?campaign=Port-1H2013), retrieved April 14, 2014.

<sup>4</sup> Port of Houston website.

<sup>5</sup> "Port of Houston Comparative Statistics," February 2014, [www.portofhouston.com/static/gen/business-development/Origination/1-February\\_14\\_PHA\\_Comparative\\_Stats.pdf](http://www.portofhouston.com/static/gen/business-development/Origination/1-February_14_PHA_Comparative_Stats.pdf), retrieved April 14, 2014.

<sup>6</sup> Port of Houston website, [www.portofhouston.com/general-terminals/terminals/jacintoport-terminal/](http://www.portofhouston.com/general-terminals/terminals/jacintoport-terminal/), retrieved May 20, 2014.

<sup>7</sup> "74th Annual Report of the Foreign-Trade Zones Board to the Congress of the United States," August 2013, <http://enforcement.trade.gov/ftzpage/annualreport/ar-2012.pdf>, retrieved May 20, 2014.

<sup>8</sup> "Port of Houston Gateway Fact Sheet, Executive Summary," WCL Consulting, [www.portofhouston.com/static/gen/business-development/Origination/WCL\\_POH\\_Gateway\\_Fact\\_Sheet\\_2012.pdf](http://www.portofhouston.com/static/gen/business-development/Origination/WCL_POH_Gateway_Fact_Sheet_2012.pdf), retrieved May 20, 2014.

<sup>9</sup> "The Local and Regional Economic Impacts of the Port of Houston, 2011," Martin Associates Inc., May 22, 2012, [/www.portofhouston.com/static/gen/about-us/Misc/PHA-EconomicImpact-2012.pdf](http://www.portofhouston.com/static/gen/about-us/Misc/PHA-EconomicImpact-2012.pdf), retrieved May 20, 2014.

<sup>10</sup> Port of Houston website, <http://www.portofhouston.com/business-development/capital-improvement-projects/>, retrieved May 20, 2014.

<sup>11</sup> "North American Port Analysis," K.C. Conway, Colliers International, December 2013, [www.colliers.com/-/media/Files/MarketResearch/UnitedStates/Colliers\\_NA\\_Port\\_20132H\\_FINAL?campaign=port-2H](http://www.colliers.com/-/media/Files/MarketResearch/UnitedStates/Colliers_NA_Port_20132H_FINAL?campaign=port-2H), retrieved April 23, 2014.