Port Profiles

Draft Report

Houston-Galveston Area Council

October 20, 2017

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Acronyms and Abbreviations

Air draft	Vertical distance between the highest structure on a vessel and the underside of a bridge or crane structure measured in feet from mean higher high water.
Berth	The area alongside a dock or pier structure that vessels occupy when moored.
CAGR	Compound Annual Growth Rate
CEU	Car equivalent unit
Class (Vessel)	Type of vessel all built according to the same design.
Container	Generally referring to an intermodal container transported by vessel, rail or truck. A container may be 20, 40, 45, 48 or 53 feet in length, 8 feet 0 inches or 8 feet 6 inches in width, and 8 feet 6 inches or 9 feet 6 inches in height, with 1,100 to 3,000 internal cubic feet of volume. Container types include dry cargo container, reefer (refrigerator-temperature controlled), half high container, tank container, and flat rack (collapsible steel flat rack, bin with removable sides, or platform) container.
Crude oil	Unrefined petroleum as removed from the earth.
Domestic cargo	Cargo moved within the boundaries of the United States or moved by vessel between US ports.
Draft	The depth of the vessel below the waterline in any loaded or empty condition measured to the keel of the vessel.
Dray	The movement of cargo by truck between a terminal or other type of transportation or manufacturing facility.
Dwell time	The amount of time cargo remains at a terminal before being picked up.
Dwt	Dead-weight tons
EIA	Energy Information Administration
Gross Ton	The total weight of a vessel expressed in short, long or metric tons.
H-GAC	Houston-Galveston Area Council
Hinterland	The area around a port facility either incorporated into the port area or the immediate region around the port.
IAPH	International Association of Ports and Harbours.
IAMPE	International Association of Maritime and Port Executives.
Intermodal	The conveyance of cargo or persons from one mode of transportation to another.
In-transit	Cargo passing through a port or terminal not intended to be destined for the port or its immediate region.
LNG	Liquefied natural gas, generally handled at -250 degrees Fahrenheit.
MARAD	U.S. Federal Maritime Administration, Department of Transportation.
Net Ton	The cargo carrying capacity of a vessel measured in short, long or metric tons.

PCC	Pure Car Carrier
PCTC	Pure Car and Truck Carrier
PTRA	Port Terminal Railroad Association
Reefer	Refrigerated cargo such as perishable agricultural or seafood commodities or temperature controlled vessels or containers.
Ro-Ro	Roll on/Roll off cargo such as automobiles, trucks or other wheeled vehicles carried aboard specialized vessels such as pure truck/car carriers (auto ships).
TEU	Twenty-foot equivalent unit, the base standard for intermodal sea containers.
Throughput	The amount of cargo moving through a port or terminal measured during a specific period in tons, barrels or TEU's (loaded, empty or combined volume).
Tonnage	Carrying or throughput capacity or volume measured as a Short Ton= 2000 pounds (lbs.), Long Ton= 2240 lbs. or Metric Ton = 1000 Kilograms (2204.6 lbs.)
Trans-shipment	Point of interchanged between modes of transportation.
ULCS	Ultra large container ship, generally in excess of 14,000 TEU carrying capacity.

1 Introduction

This report provides an overview of the four ports located within the Houston-Galveston Area Council's (H-GAC) region; Port Freeport, the Port of Galveston, the Port of Houston, and the Port of Texas City (Figure 1-1). It also identifies the commodities and the facilities and surface transportation infrastructure associated with each port, as well as proposed growth amount and investments relevant to each port. Data and information have been gathered from varying sources, including interviews with port management teams as well as publicly available data (e.g., U.S. Army Corps of Engineers Waterborne Commerce data).

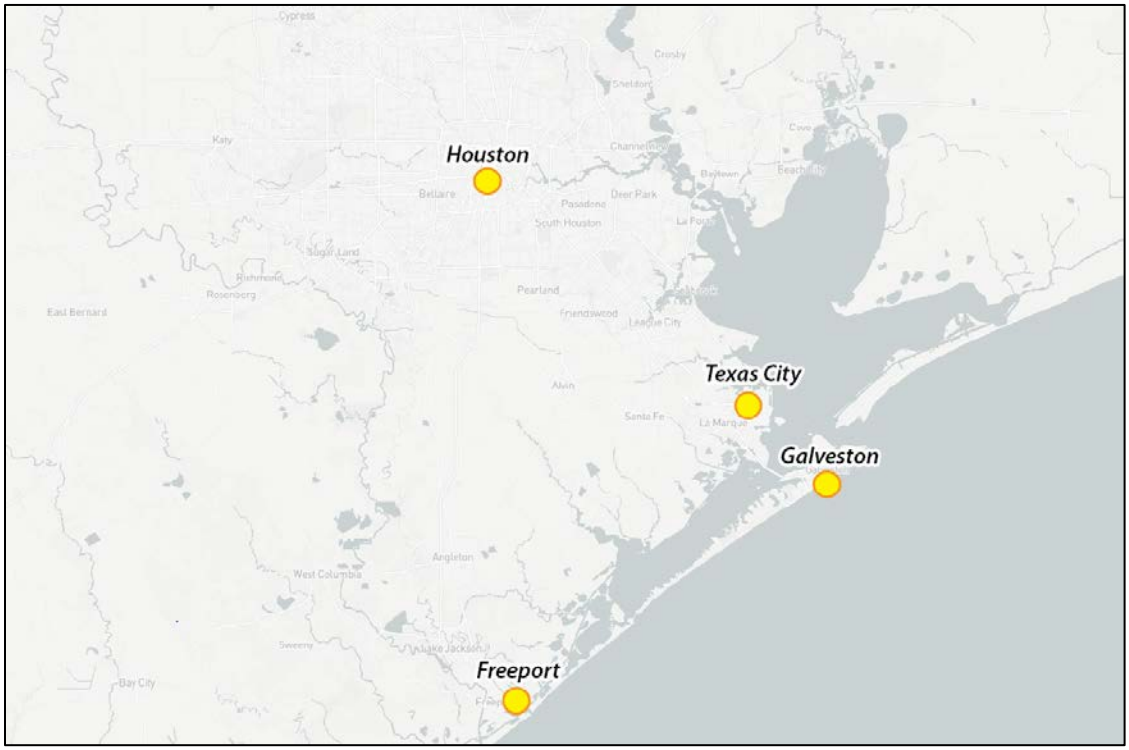


Figure 1-1. H-GAC Regional Ports

2 Port Industry Background

Ports are transition points between various modes of transportation in both domestic and international trade. Ports themselves comprise not only what a public port agency may control but also the connecting land and waterway corridors which include harbors, rivers, channels, collector roadways, highways, short line railroads, and intercontinental railways. Intermodal marine facilities, more commonly known as terminals, were previously considered the end of a transportation corridor whereas, today, they have become part of a worldwide system.

Ports are fundamental parts of the international transportation system, as around 95 percent of all worldwide international cargo is moved via water transport (Figure 2-1). In addition to handling domestic cargo, ports and terminals also serve as national borders and regulatory checkpoints for international trade. Terminals provide vetting locations for customs and immigration, security and cargo screening, agricultural inspection, environmental monitoring, vessel safety, port state control inspections, local fire department requirements, and law enforcement activities. There are approximately 8,000 ports in 200 countries worldwide, most engaged in some form of international trade and handling a variety of commodities.[1]

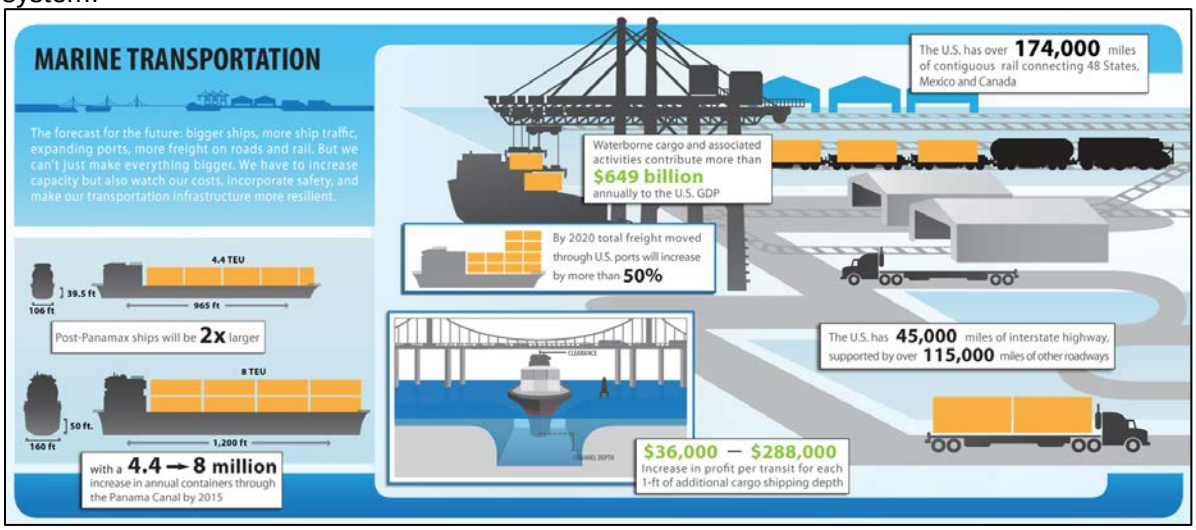
Ports are generally linked to various trade routes where they connect land and sea. Pacific Coast ports generally serve North American-Asian trade, while Atlantic Coast ports provide primary connections to Europe, Africa, South America and Asia via the Suez Canal. Gulf of Mexico ports are connected to the Caribbean, South America and to Asia via the Panama Canal.

Source: International Association of Maritime and Port Executives (IAMPE)

Figure 2-1. Worldwide Shipping Routes

[1] International Association of Ports and Harbours (IAPH) 2016 data.

The intermodal system encompasses transportation facilities of all types including trucking and rail facilities, many integrated within warehousing, and industrial and distribution complexes (see Figure 2-2). While trucking and rail also compete with maritime transportation, they are also critical of the connectivity between port facilities and the markets they serve, some many hundreds or thousands of miles away. Anything that compromises part of the network generally impacts a large portion of the entire system.



Source: U.S. Federal maritime Administration, Department of Transportation (MARAD)

Figure 2-2. The Marine and Landside Transportation System

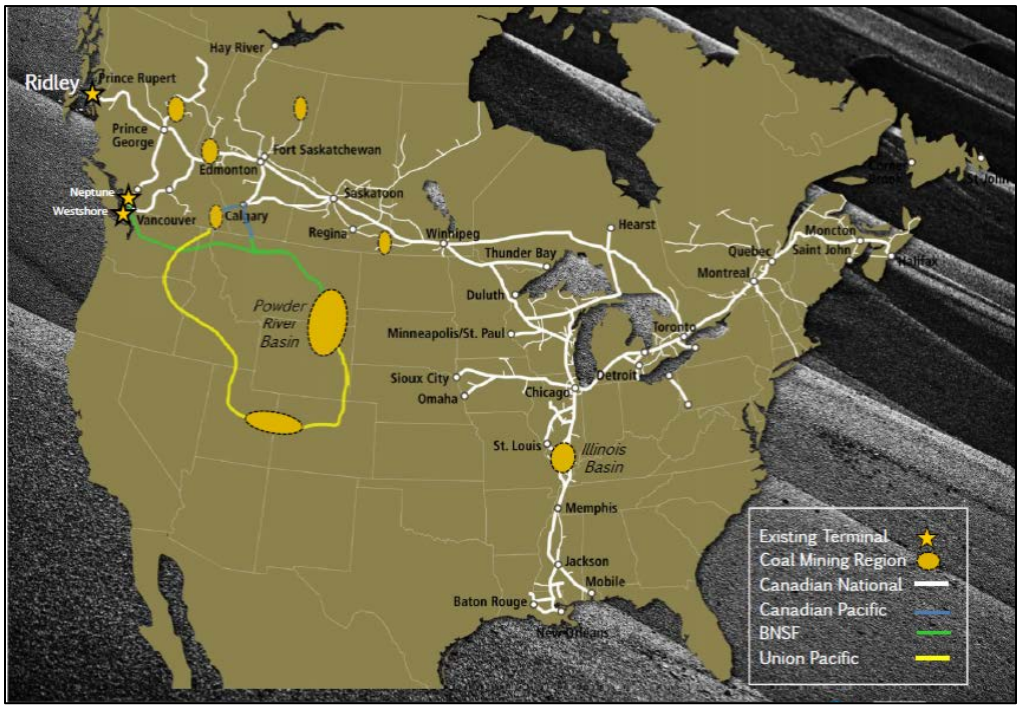
In North America, blue water, brown water, and coastal river ports are part of a comprehensive intermodal network that spans the U.S., Canada and Mexico. The entire network is physically linked by various modes of transportation and their interdependent means of conveyance; roads, rail corridors, and waterways to move goods between markets and ports.

Ports typically have a market that reaches beyond the local hinterland of the port. For example, the Port of Prince Rupert, located in British Columbia, can serve customers as far away as New Orleans, Louisiana, because of its intercontinental rail connections (Figure 2-3). The impact of the intermodal network fundamentally controlled by the Canadian National Railroad has changed the directional flow of cargo moving into U.S. southern markets.

Cargo transit times and costs can be lowered when the system operates effectively. Congestion or interruption in any part of the system may cause ripples throughout the entire network. Cost is often the most significant factor in determining which mode of transportation services and ports will be utilized to move products from producer to receiver.[2] Shippers and cargo owners consider all costs in the selection and movement of cargo including the cost of transportation, handling services, and other related

[2] NASSTRAC Freight Transportation State of the Industry Report 2016

expenses. Cargo movement is planned and determined fundamentally by cost and the reliability of delivery times, not necessarily the amount of time in transit. [3]

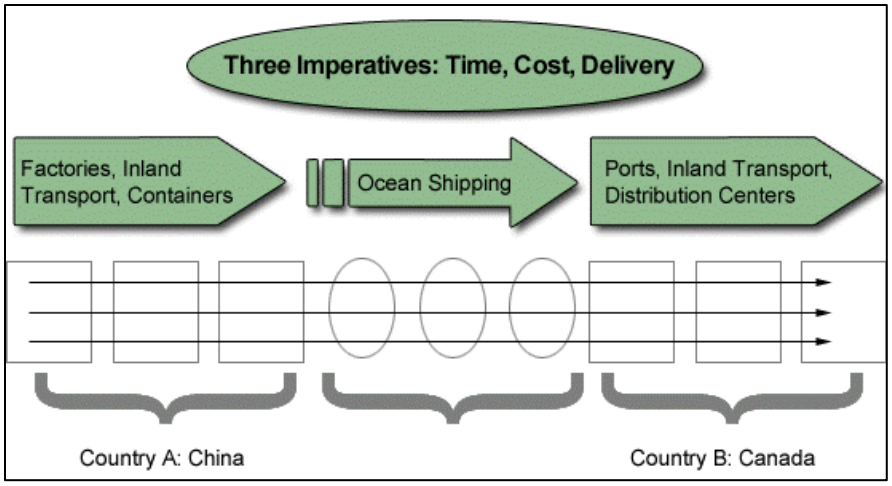


Source: Ridley Terminal

Figure 2-3. Port of Prince Rupert Systematic Market Reach

The systematic nature of the global transportation network as shown in Figure 2-4, as well as the management of the global supply chain, puts a high demand on ports to be efficient regarding intermodal connectivity. This applies equally to domestic and international cargoes. While terminals may operate efficiently, port delays and congestion may result from issues associated with road, rail, and waterways.

[3] Ibid



Source: U.S. Department of Transportation (USDOT)

Figure 2-4. Managing the Global Supply Chain

Many ports today focus on resolving delays within the facilities they control, while also looking to work with local and state agencies to correct issues in areas where port activities impact local surface networks. Secondary truck traffic is often generated in port areas because of the industrial nature of port districts, even when those activities do not directly access or use marine facilities.

2.1 Cargo Movement

All cargo follows a path between the point of origin and a destination. The point of origin may be a manufacturing plant, the source of the raw materials, or an assembly point. A containerized intermodal move may involve multiple transfers with different transport modes. A scenario such as this may include an initial move by truck (i.e., dray) to an off-dock intermodal rail yard, a rail movement to an inland rail yard, followed by another move via truck to the final destination. In the case of containerized cargo, once the commodity is delivered, the empty container is returned to an intermodal facility for reuse or storage. This equates to two moves for each container, which may include a repositioning move to the delivery intermodal facility or another location. These moves increase traffic volumes because of the limited capacity of trucks within local port areas, or increased movement of containers by rail in specific corridors. The transfer of 1,000 40-foot containers could generate 2,000 truck moves in total. Truck schedules are typically flexible for pickup and delivery but are generally limited by truck weight regulations; however, some municipalities in port areas allow dispensation for higher weights for trucks involved in port cargo movement.

Bulk cargos such as minerals, agricultural crops and petroleum products are typically moved by rail directly to and from marine facilities. In the case of many bulk cargoes, rail facilities are usually located on or near marine facilities to minimize any secondary or intermediate move connecting rail and water.

Gross truck weights are generally limited on roadways to 80,000 pounds. A dry bulk ship carrying 80,000 tons of cargo could equate to 2,000 round-trip truck moves. Railcars,

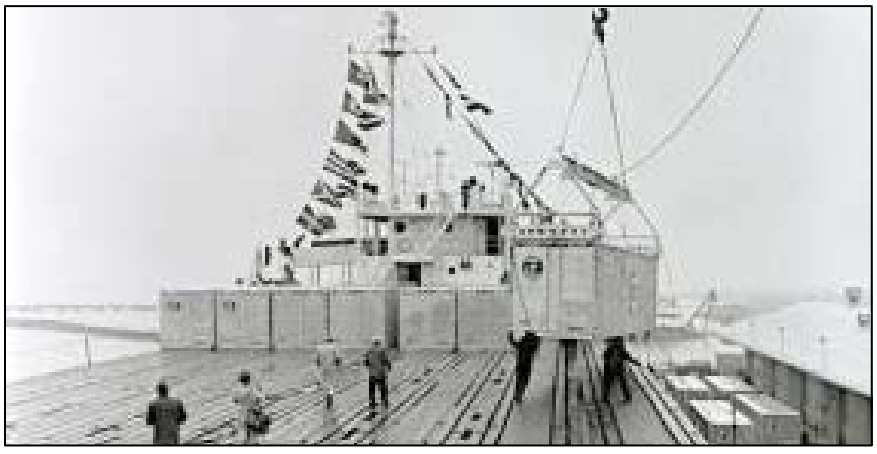
which can transport an average of 110 tons each, could generate in excess of 700 railcar moves in each direction from that railhead. This is similar for liquid bulk cargo as well, where a standard tank railcar may average 35,000 gallons. A small feeder ship or barge is equal to 15 railcars or 70 trucks.

2.2 Vessel Sizes

Modern-day vessels have become increasingly larger to keep up with the increased scale of transported goods. This has been a trend since the 1960's when the generation of World War II vessels became outdated and were placed with larger vessels. This trend has also resulted in the need to decrease infrastructure limitations at ports by deepening and widening harbor channels, raising bridges, expanding rail corridors, expanding road and highway access, and increasing the amount of property dedicated to cargo handling at marine intermodal facilities. These efforts have put a strain on the existing port networks because most North American ports were constructed in downtown areas and were designed to accommodate a generation of vessels that has been replaced by much larger vessels. Subsequently, the size of port equipment (cranes, railcars, truck capacity, shoreside transportation corridors) has also needed to increase.

Texas ports have evolved to serve the needs of most of the state. However, they are limited in their ability to accommodate the largest bulk or container vessels now in service or projected over the next decade. Currently, the ports can handle vessels slightly above the average medium ship size in the industry.

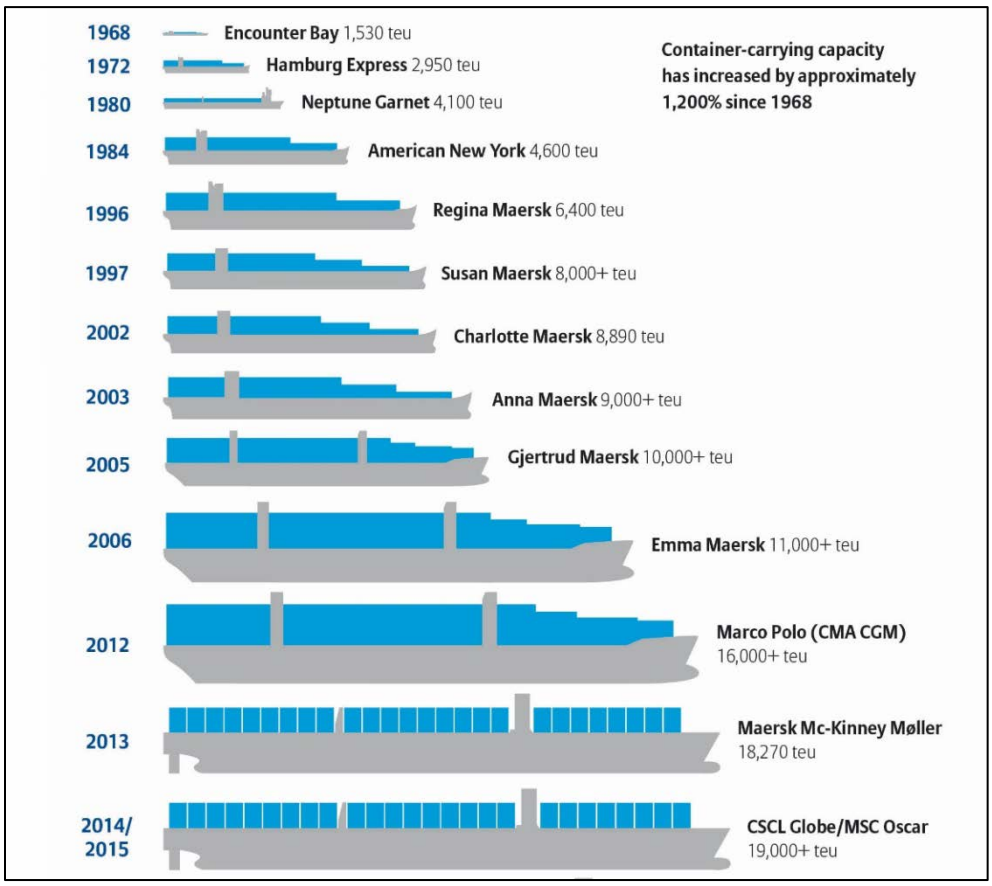
Dry and liquid bulk ships (tankers) have also increased substantially in size over the last 40 years. The latest trend is the rapid development of larger ships associated with the container trade. Containerization dates back to the 19th century but the first successful container shipping company was launched on April 26, 1956 when trucking company owner Malcom McLean loaded 58 20-foot-long trainer vans aboard a refitted T-2 tanker renamed the IDEAL-X which sailed from Newark, NJ to Houston, TX (Figure 2-5).



Source: IAMPE

Figure 2-5. The IDEAL-X and handling the first containers aboard in 1956

The 524-foot long, 30-foot wide, 28-foot draft IDEAL-X would later be eclipsed by some of the largest ships in service (see Figure 2-6). The MSC OSCAR, for example, is 1,297 feet long, 194 feet wide, with a draft of 55 feet and carries 19,224 20-foot long containers.



Source: World Shipping Council

Figure 2-6. Growth of Container Ship Size through Time

The biggest container ships in the world are not primarily designed for the North American trade market. The largest container ships currently being built are the OOCL HONG KONG class capable of carrying 21,000 twenty-foot equivalent units (TEU's). These vessels have an overall length of 1,312 feet, a beam (width) of 194 feet and a draft of 58 feet and are to be deployed in the Asia-European market.

Most U.S. ports now undertaking infrastructure improvements, such as dredging channels and lifting bridges, will have the capacity to handle up to a maximum of 14,000 TEU's. U.S. east coast ports have already had container ships with capacities of 14,000 TEU's calling on major port areas including Savannah and New York. A list of some of the containerships calling on select U.S. Ports is provided in Table 2-1.

Table 2-1. US Department of Transportation (USDOT)/MARAD Capacities of Containerships Calling on Selected US Ports by TEU Per Vessel, 2015

Port Name	Minimum TEU Vessel	Maximum TEU Vessel	Average TEU Vessel	Count of Vessels
ANCHORAGE, AK	1,732	5,510	4,023	82
BALTIMORE, MD	1,728	9,400	5,039	394
BOSTON, MA	2,556	8,204	5,136	164
CHARLESTON, SC	340	9,592	5,278	1,614
FREEPORT, TX	1,150	2,758	1,932	106
GULFPORT, MS	962	982	975	107
HOUSTON, TX	966	6,732	3,902	1,015
JACKSONVILLE, FL	1,102	8,814	4,028	454
LONG BEACH, CA	1,102	13,798	6,345	966
LOS ANGELES, CA	1,713	17,859	6,330	1,156
MIAMI, FL	340	9,400	3,198	1,081
MOBILE, AL	974	6,732	4,775	166
NEW ORLEANS, LA	957	6,732	4,082	536
NEW YORK, NY	957	6,732	3,790	73
NEWARK, NJ	362	10,062	5,116	2,306
NORFOLK-NEWPORT NEWS, VA	1,296	9,592	5,501	1,973
OAKLAND, CA	1,102	17,859	6,510	1,338
PHILADELPHIA, PA	340	6,572	3,323	454
PORT EVERGLADES, FL	340	9,178	2,120	1,306
PORT MANATEE, FL	660	862	853	48
PORTLAND, ME	698	724	710	21
PORTLAND, OR	2,118	5,752	3,533	20
RICHMOND-PETERSBURG, VA	523	523	523	2
SAN DIEGO, CA	957	2,442	1,110	93
SAN JUAN, PR	660	2,578	1,622	285
SAVANNAH, GA	1,118	10,062	5,203	1,972
TAMPA, FL	862	5,762	2,866	57
WEST PALM BEACH, FL	515	1,147	764	194
WILMINGTON, DE	340	2,524	1,720	169
WILMINGTON, NC	1,296	4,738	3,033	251

Source: U.S. Customs and Border Protection Entrance Data, CBP Form 1300 & IHS Maritime

3 Industry Trends

3.1 Infrastructure

Over the last several years, ports have been challenged to meet the perceived changing demands of ever increasing ship size and cargo volumes. Port improvements have included terminal expansion, new container cranes, harbor and channel dredging, increased rail corridor height clearances, and roadway improvements. In addition, terminals have adjusted to the new requirements for port security under the Marine Transportation Security Act of 2002. Billions of dollars have been spent on projects funded by the ports and the states in which they reside, as well as the federal government through various grant and loan programs. Port improvements have also included a number of public-private partnerships to improve port facilities.

A recent survey conducted by the American Association of Port Authorities in regard to planned port and infrastructure identified $154.8 billion in planned infrastructure investment between the current year (2017) and 2020. Land and waterside connection investment was estimated to be $24.825 billion by the federal government. This was triple the $46 billion that was expected to be spent in a survey conducted five years ago.[4]

3.2 Panama and Suez Canals

International canals located on major shipping routes that connect two significant bodies of water were built to reduce sea passage time on trade routes. While there are numerous canals throughout the world, most built decades ago, two major canals impact access to North American markets related to substantive international trade. These are the Panama Canal and Suez Canal.

Both the Panama Canal's new expanded lock development and the expansion of the Suez Canal waterway to permit two way traffic will have major impacts on trade route selection and utilization of vessels on those routes. Both of these canal projects have been undertaken to accommodate larger vessels typically used in modern bulk and container trading.

The canals are not without competition. The Chinese have built the 8,000-mile-long "Silk Railway" which connects China and Northern Europe. Construction was undertaken to ensure Chinese markets were not forced to use just one type of transportation mode in spite of the fact that over 50 percent of the world's container trade is controlled by Chinese companies. Panama Canal traffic faces competition from North American railroads, which have pledged to keep costs controlled to match or better those of the Panama Canal tolls. In both cases, the systematic approach to transportation has benefitted shippers who now have choices for all or part of their shipping requirements.[5]

[4] AAPA Member Survey on Port Infrastructure Investment, 2016
[5] Ports Prepare for Expanded Canal, Maritime Executive, June 2016

3.2.1 Panama Canal

The Panama Canal lock expansion project was concluded in 2016 (Figure 3-1). Prior to the completion of the improvements, the Panama Canal handled approximately 3 percent of the world's total maritime trade. Due to the size of the original locks, vessels sizes were limited to 965 feet in overall length, 106 feet in breadth, 40 feet in draft, and had a 190-foot air draft restriction. These Panamax Class ships, carrying up to 10-12,000 TEU's, were outsized by larger ships proposed by ocean carriers at that time.[6]

Source: Panama Canal Authority

Figure 3-1. The Panama Canal

The new locks completed in 2016 can accommodate vessels up to 1,201 feet in length, 161 feet in breadth and 50 feet in draft, accommodating vessels of nearly 16,000 TEU's, known as Neopanamax vessels (formerly called post-Panamax).

Based upon the Canal's projections in 2012, the Panama Canal Authority expected an increase of 4,750 ships per year which would accommodate 4-5 percent of the world's total international commerce. In 2014 the Panama Canal handled 13,481 vessels and in 2016, the year the new locks opened, the canal posted 13,114 vessels for the year. In fiscal year 2017 (October through June) the Panama Canal accommodated 10,365 oceangoing commercial vessels alone.[7](Table 3-1).

[6] Panama Canal Authority
[7] Panama Canal Authority

Table 3-1. Oceangoing Commercial Vessels Transiting the Panama Canal FY 2017 (October through June)

Vessel Type	Panamax	Neopanamax	Panamax % Total	Neopanamax % Total	TOTAL
Dry Bulk	2,073	94	23.0%	7.0%	2,167
Liquid Natural Gas	4	126	0.04%	9.3%	130
Liquid Petroleum Gas	235	441	2.6%	32.7%	676
Container	1,204	651	13.4%	48.3%	1,855
Reefer	694	0	7.7%	0	694
General Cargo	490	0	5.4%	0	490
Cruise	237	1	2.6%	0.1%	238
Chemical Tankers	1,441	2	16.0%	0.1%	1,443
Crude Product Tankers	444	11	4.9%	0.8%	455
Vehicle Carriers/RORO	575	20	6.4%	1.5%	595
Other	1,619	3	18%	0.2%	1,622
TOTAL	**9,016**	**1,349**			**10,365**

Source: Panama Canal Authority

The Panama Canal Authority is currently considering additional and larger locks and has been assessing the development of transload facilities within the Panama Canal and on the east and west coasts of Panama. These areas would be connected by the 47.6-mile Panama Railroad, which is partly owned by Kansas City Southern. A second canal has also been proposed for construction in Nicaragua by Chinese and Russian interests; however, aside from government approvals, little actual construction has taken place to date.

In 2016, 67 percent of the cargo moving through the Panama Canal either originated or had a final destination in the United States.[8] (Table 3-2). Dry and liquid bulk ships accounted for a significant number of transits, carrying mostly minerals, grains, fertilizers, ores, metals, petroleum products, and liquefied gases and chemicals. Container vessels were the fourth largest vessel type transiting the Panama Canal.[9]

[8] Panama Canal Authority
[9] Ibid

Table 3-2. Top 15 Countries by Origin and Destination of Cargo Transiting the Panama Canal FY 2016

Rank	Country	Origin	Destination	Intercoastal	Total	Total Excluding Intercoastal	Percent of Total
1	United States	90,601,908	48,425,590	1,872,249	139,027,498	137,155,249	67.0
2	China	14,309,907	24,346,444	-	38,656,351	38,656,351	18.9
3	Chile	11,690,237	13,625,533	-	25,315,770	25,315,770	12.4
4	Peru	7,083,524	12,363,533	-	19,447,057	19,447,057	9.5
5	Japan	5,672,413	13,361,308	-	19,033,721	19,033,721	9.3
6	Korea, Republic of	9,365,172	6,864,052	-	16,229,224	16,229,224	7.9
7	Mexico	6,601,069	9,457,746	651,353	16,058,815	15,407,462	7.5
8	Colombia	8,639,924	7,260,834	402,702	15,900,758	15,498,056	7.6
9	Ecuador	5,054,404	7,315,911	-	12,370,315	12,370,315	6.0
10	Canada	8,453,316	2,678,470	61,585	11,131,786	11,070,201	5.4
11	Guatemala	2,021,304	5,669,781	24,699	7,691,085	7,666,386	3.7
12	Panama	851,136	4,835,022	78,266	5,686,158	5,607,892	2.7
13	Trinidad and Tobago	3,521,850	270,024	-	3,791,874	3,791,874	1.9
14	Spain	1,231,179	2,396,811	-	3,627,990	3,627,990	1.8
15	Belgium	1,448,507	2,091,516	-	3,540,023	3,540,023	1.7

Source: Panama Canal Authority

3.2.2 Suez Canal

One of the most frequently used waterways in the world is the Suez Canal. The Suez Canal is a man-made sea level waterway extending north to south across the Isthmus of Suez in Egypt. The canal, which runs between Port Said Harbor and the Gulf of Suez, connects the Mediterranean Sea and the Red Sea and provides the shortest waterway route between Europe and the Indian and western Pacific ocean nations. It also allows for the fastest ocean crossing from the Atlantic Ocean to the Indian Ocean.

The Suez Canal is 120 miles long, 79 feet deep, and 673 feet wide. In 2015, the single direction flow of traffic was changed when the canal was widened to allow room for vessels to transit in both directions at the same time. In 2016, the canal handled an average of 46 ships per day and a total of 16,833 ships during the year. The canal can accommodate ships up to 240,000 DWT with unlimited length and proportional beam that are up to 66 feet in draft. The air draft clearance is 223 feet and, except for the very largest crude carriers, the Suez Canal can handle most of the world's largest ships,

including the largest container ships now in service. The transit history of the Suez Canal from 2000 to 2016 is provided in Table 3-4 and is depicted graphically on Figure 3-2.

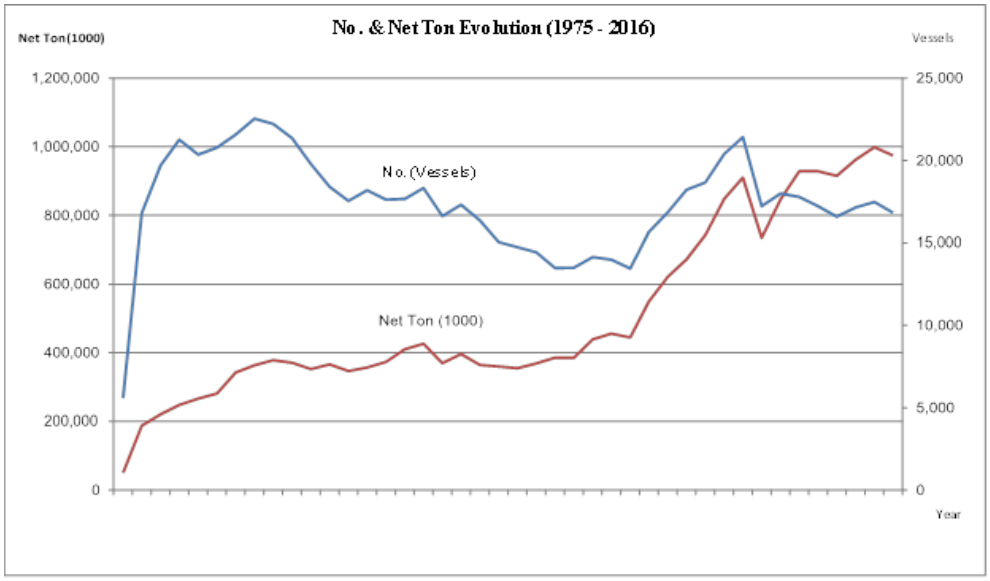
Table 3-3. Vessel Transits by Type 2015-2016

Ship Type	Number of Vessels			Net Ton (1000)		
	2015	2016	% change	2015	2016	% change
Tankers	4,316	4,292	-0.6	177,782	174,044	-2.1
LNG	670	575	-14.2	72,996	61,242	-16.1
Bulk Carriers	2,878	2,801	-2.7	102,156	96,543	-5.5
General Cargo	1,527	1,662	8.8	16,060	16,530	2.9
Container Ships	5,941	5,414	-8.9	555,579	552,439	-0.6
Roll on/roll off (Ro-Ro) Ships	387	461	19.1	9,046	10,028	10.9
Car Carriers	939	875	-6.8	56,927	54,350	-4.5
Passenger Ships	68	70	2.9	3,292	3,753	14.0
Others	757	683	-9.8	4,814	5,256	9.2
Total	**17,483**	**16,833**	**-3.7**	**998,652**	**974,185**	**-2.5**

Source: Suez Canal Authority

Table 3-4. Suez Canal Transit History 2000-2016

Year	Number of Vessels		Net Ton (1000)	
	Total	Daily Avg.	Total	Daily Avg.
2000	14,142	38.6	439,041	1,199.6
2001	13,986	38.3	456,113	1,249.6
2002	13,447	36.8	444,786	1,218.6
2003	15,667	42.9	549,381	1,505.2
2004	16,850	46.0	621,253	1,697.4
2005	18,224	49.9	671,951	1,841.0
2006	18,664	51.1	742,708	2,034.8
2007	20,384	55.8	848,162	2,323.7
2008	21,415	58.5	910,059	2,486.5
2009	17,228	47.2	734,453	2,012.2
2010	17,993	49.3	846,389	2,318.9
2011	17,799	48.8	928,880	2,544.9
2012	17,224	47.2	928,472	2,543.8
2013	16,596	45.5	915,468	2,508.1
2014	17,148	47.0	962,747	2,637.7
2015	17,483	47.9	998,652	2,736.0
2016	16,833	46.0	974,185	2,661.7



Source: Suez Canal Authority

Figure 3-2. New Suez Canal Vessel and Tonnage Trends

Overall, given the larger size of the Suez Canal, Asia sourced or bound bulk commodities that either originate or are destined for Gulf of Mexico ports may most likely use the Suez Canal. This is particularly true of commodities related to the Middle East or India. Many of the larger ships that are able to transit the Suez Canal are too large for U.S. Gulf Coast ports; however, the overall number, capacity, and size of vessels transiting both the Suez Canal and the Panama canals continue to increase.

3.3 Trends

In 2008, the U.S. economic downturn reduced the volume of containers moving in and out of North America; however, liquid and dry bulk commodity transport remained relatively steady. This included crude oil, petroleum products and chemicals, liquefied gases and agricultural products such as grains. While North America is a significant consumer market, Europe remains the focus of commodity shipment, partly because North America also produces and consumes its own commodities such as crude oil, natural gas, and coal. Slow recovery in Europe has caused growth to lag behind North American recovery. Overall, Asia and Europe dominate the international commodity market (see Table 3-5).[10]

In 2015-2016, estimated world seaborne trade volumes surpassed 10 billion tons. The number of shipments grew by 2.1 percent, a pace notably slower than the historical average. The tanker trade segment recorded its best performance since 2008, while

[10] UNCTAD Review of Maritime Trade, 2016

growth in the dry cargo sector, including bulk commodities and containerized trade in commodities, were lower than expected. Of note was an economic slowdown in China and reduction of trade. Additionally, other trades have continued slow growth, particularly between the southern and northern hemispheres.[11]

Table 3-5. World Trade Origin and Destination Region by Category

Category	Dry Cargo	Crude Oil	Oil Products
Origin			
#1Region	Asia	Asia	Asia
#2 Region	Europe	Africa	Europe
Destination			
#1 Region	Asia	Asia	Asia
#2 Region	Europe	North America	Europe

Source: UNCTAD

In addition, bulk dry and liquid bulk cargo movement remains strong or is increasing. This includes the shipment of liquefied gas products. Of note is the shift for the United States from a net importer of liquefied natural gas (LNG) and crude oil to an increasing exporter due to shale oil and gas production.

The world fleet grew by 3.5 percent in the 12 months prior to 1 January 2016 (in terms of dead-weight tons (dwt)). This was the lowest growth rate since 2003, yet still higher than the 2.1 percent growth in demand, which has led to a continued situation of global overcapacity. Most shipping segments, except for tankers, suffered historic low levels of freight rates and weak earnings, triggered by weak demand and oversupply of new tonnage. The tanker market remained strong, mainly because of the continuing and exceptional fall in oil prices. In the container segment, freight rates declined steadily, reaching record low prices as the market continued to deal with weakening demand and the presence of ever-larger container vessels that had entered the market during the year. This was one of the reasons for the failure of the South Korean container line Hanjin in 2015, which removed from service 600,000 containers with little impact on existing low container rates. In an effort to deal with low freight rate levels and reduce losses, carriers continue to consider measures to improve efficiency and optimize operations. Efforts include cascading, idling, slow steaming, consolidation and integration and restructuring of new alliances.[12]

Of note is the trend in perishable transportation which is currently under going a change from refrigerated (reefer) ships to specialized reefer containers (reefer boxes) (Figure 3-3). Perishable cargo mostly includes agricultural and seafood products but temperature sensitive commodities also include wine and beer, consumable oils and temperature sensitive chemicals. The number of containerships equipped to carry reefer boxes

[11] UNCTAD Review of Maritime Trade, 2016
[12] Drewry Annual Review of the Reefer Market, 2016.

increased by 6 percent in 2015.[13] By 2018, that number is expected to increase by 20 percent. Due to the increased availability of container slots worldwide and containerized capacity, cargo has begun to shift from conventional break bulk reefer ships to containers.

Figure 3-3. Reefer Boxes (white) Stowed on a Container Vessel

The leading container carriers are expanding reefer carriage capacity on vessels and adding reefer box connections and monitoring equipment. As of 2015, over 72 percent of reefer transport capacity was containerized. As a result, the reefer sector is reporting continued cargo growth which is filling empty units and available slots on ships.[14] This trend is impacting containerized marine terminals, which are handling more reefer containers and are required to provide power units for connection of the boxes to shore plugs.

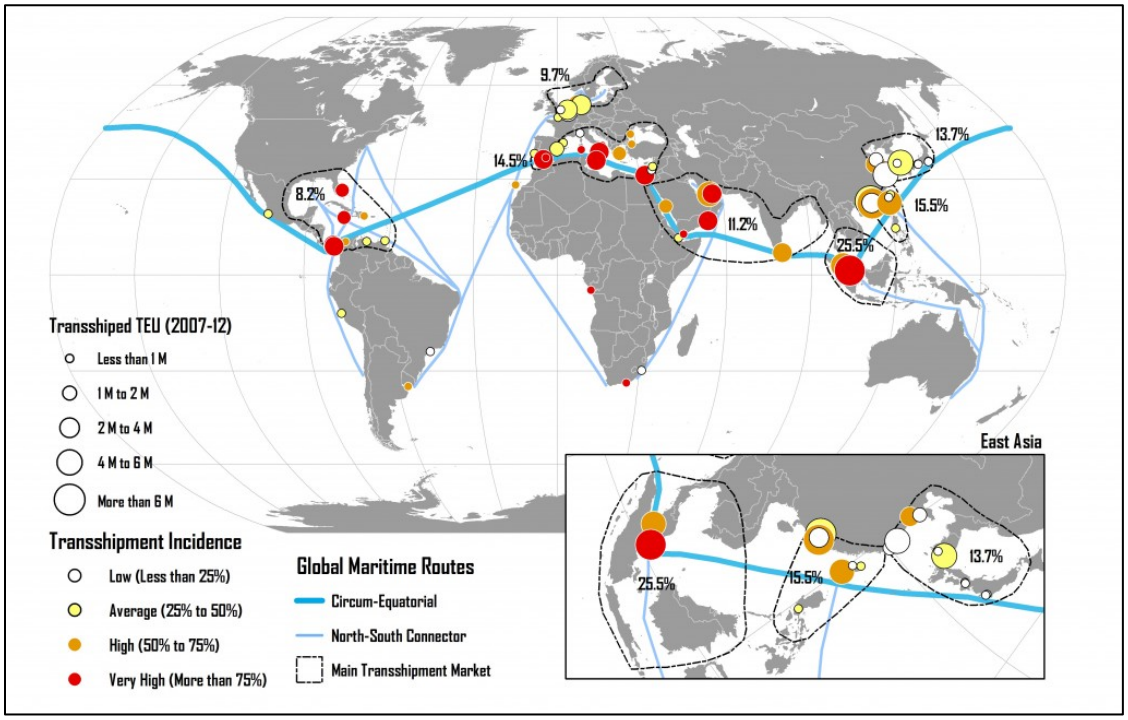
It is widely recognized that many ports cannot handle the largest ships and that marine transportation networks must include small to mid-size ports as well In a 2016 study, it was found that using larger ships (>18,000 TEU's) did not return a significant cost benefit to shippers because of the decreased service frequency and the higher supply chain risks associated with ships carrying larger volumes that are concentrated on fewer vessels. Ports face a challenge in keeping up with continual growth of vessel sizes.

Additionally, there are environmental issues associated with required harbor dredging and terminal expansion. Ports and terminals must make significant investment in

[13] Global Trade Report on Reefer Cargo Trends, January 2016.
[14] Drewry Annual Review of the Reefer Market, 2016.

infrastructure to accommodate those larger vessels. This results in higher port costs that are passed onto shippers.[15] The study echoes an earlier concept advanced by the International Association of Maritime Economists in 1998.

The industry is also seeing the emergence of the hub and spoke system in containerized marine transportation that was anticipated 25 years ago, whereby ultra-large container ships (ULCS) serve fewer ports and transload to mid-size and smaller ships. Similar to the system used in aviation for aircraft deployment, the hub and spoke system has provided new opportunities for small to mid-size ports that did not previously handle containers. As Figure 3-4 shows, these transload ports are predominately located along key shipping routes.



Source: porteconomics.eu

Figure 3-4. Worldwide Container Transload Ports

Some companies like the Mediterranean Shipping Company (MSC) are widening existing vessels to increase their capacity by up to 30 percent without resulting in a substantial change in draft (Figure 3-5). MSC is also planning building a total of eight 9,500-TEU ships, Maersk is planning seven 3,000-TEU ships and CMA CGM has built and deployed the first of 28 ships that are designed to handle between 9,400 and 10,900 TEU's. These ships are ideal for U.S. Gulf Coast ports that have channel depth/width and air draft restrictions and limited shoreside infrastructure such as adequate land, cranes and ground equipment and restricted rail and road connectivity.

[15] Drewry Study on the Impacts of Ultra Large Container Ships on Shipper Costs, 2016.

Source: MSC Source: CMA CGM

Figure 3-5. (Left) MSC's Widened Ship – before and after; (Right) CMA-CGM 10,000 TEU Danube Class Vessel

Channel size and depth of water are not the only issues for ports. The terminals must be equipped with the proper equipment including cranes and ground equipment. Modern container ships require large gantry cranes that exceed 25 rows in reach from the edge of the pier to the outside edge of the ship (Figure 3-6).

Source: Port of Savannah

Figure 3-6. Gantry Cranes

Currently, existing gantry cranes at ports around the world are being replaced by taller cranes with extended reach to meet the demands of larger ships. Ports in the cities of New York, Norfolk, Charleston, Savannah, Jacksonville, Port Canaveral, Miami, Tampa and Houston have ordered new gantry cranes within the last several years for their container terminals. The newer container cranes are faster, more technologically advanced, and can load and unload vessels at a much faster pace than the last generation of Panamax gantry cranes. Gantry crane dimensions are provided in Table 3-6. Recently in the Port of Savannah, port productivity reached 200 container moves per hour using six cranes on a single vessel.[16]

[16] Port of Savannah Georgia.

Table 3-6. Gantry Crane Dimensions

Dimensions	Panamax	Neo-Panamax	Megamax
Outreach	30-40 Meters	40-46 Meters	46-69 Meters
Lift Height	24-30 Meters	30-35 Meters	35-49 Meters
Capacity (Safe Working Load)	40-65 Metric Tons (MT)	40-65 MT	65-80 MT
Hoisting Speed	50-125 M/min	60-150 M/min	70-175 M/min
Trolley Speed	150-180 M/min	180-210 M/min	210-240 M/min
Travel Speed	45 M/min	45 M/min	45 M/min
Wheel Load	30-45 MT/m	40-55 MT/m	60-80 MT/m

Source: IAMPE 1 Meter=3.28 Feet

3.4 Trends and Impacts of Trade on Texas Ports

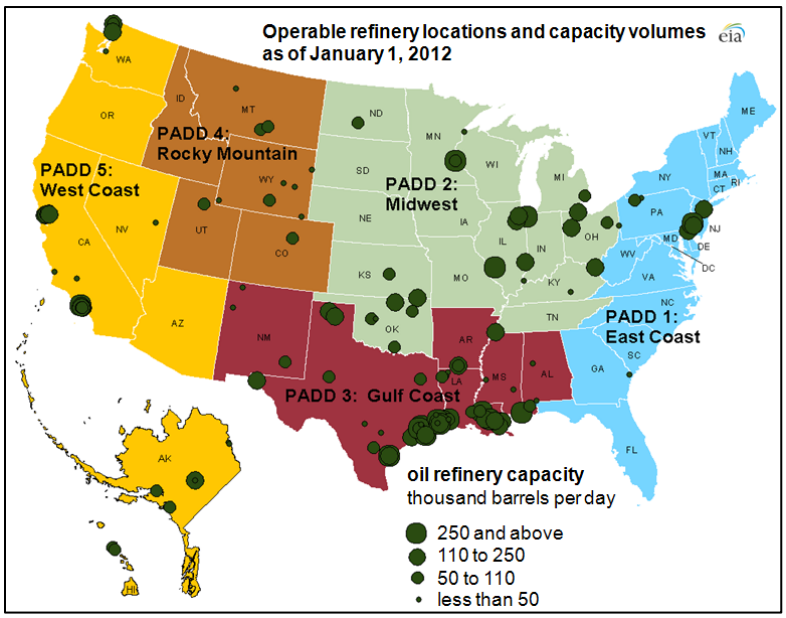
The Texas ports handle a large and diverse mix of commodities, particularly fossil fuels and their related refined products, and are strong contenders for continued growth and increased throughput. This is mostly a result of an increased consumer base in and around key Texas communities. In addition, increased energy production in the U.S. has resulted in a shift to export rather than import petroleum and gas. The most significant factors that impact handling capacity for all commodities include harbor infrastructure, road and rail connections, and expandability of port property.

The flow of commodities into and out of the region is not just tied to Texas ports. Due to the extent of the intermodal transportation network, Texas ports compete with ports throughout North America to attract and retain shippers. Texas has a strong petrochemical and gas production capability which provides the state with a solid industrial base to meet domestic and international demand. Container capacity and throughput, while increasing in the region, are very competitive in regard to handling among ports in the US. The need to accommodate larger containerships has evolved as the strategic focus for numerous coastal ports including those in Texas and the Gulf. This has created new investment requirements and has increased capital and operating costs at those ports. To remain competitive, ports are focused equally on expanding throughput volumes in both the local and in-transit markets to keep the per unit or per ton costs low. In-transit volumes have created the capacity to expand volumes when local regional market needs have been met. While the resulting advantage is lower costs to shippers, the disadvantage is higher traffic volumes and related congestion in associated port areas.

3.4.1 Crude Oil and Refined Products

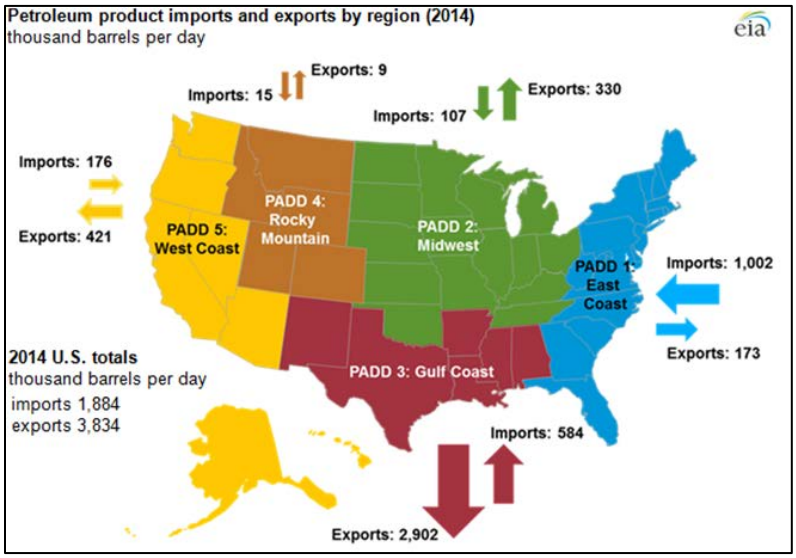
Over 45 percent of total U.S. petroleum refining capacity and 51 percent of total U.S. natural gas processing plant capacity is located along the Gulf coast. Many of these facilities are concentrated within the Houston region (Figure 3-7 and Figure 3-8). This geographic concentration results in multiple product flows to and from these refineries,

using multiple modes of transportation.



Source: Energy Information Administration (EIA)

Figure 3-7. U.S. Refinery Locations and Capacity Volumes

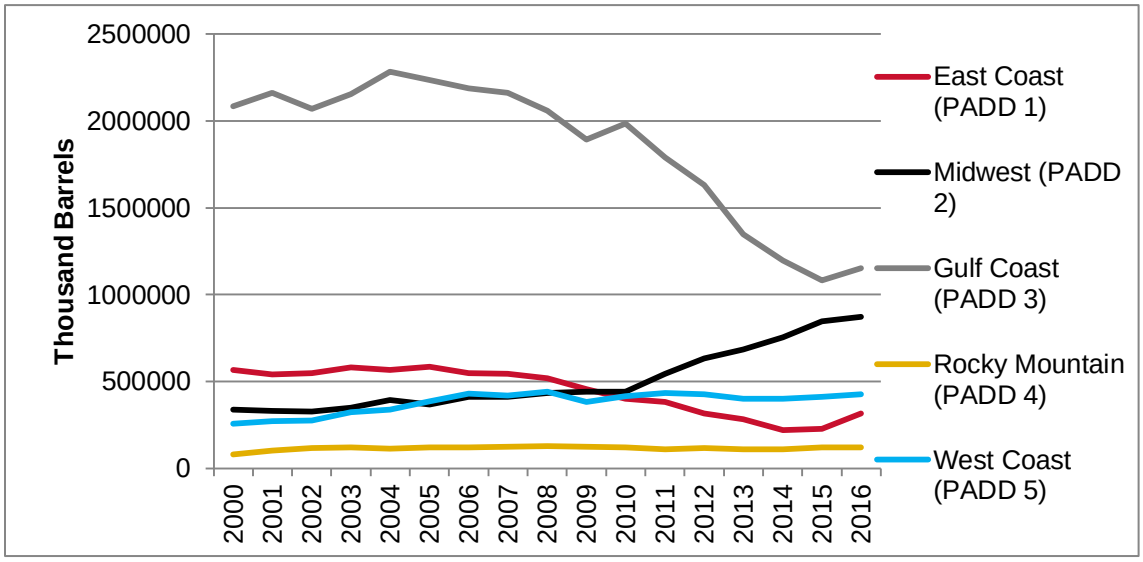


Source: EIA

Figure 3-8. U.S. Petroleum Import and Exports by Region

In 2016, two commodities, crude oil and oil (not crude) from petrol and bituminous minerals, accounted for nearly 80 percent of the Houston region's ports of non-containerized imports. Petroleum products, crude oil and chemicals comprise over 85 percent of all trade flows in the region's ports.

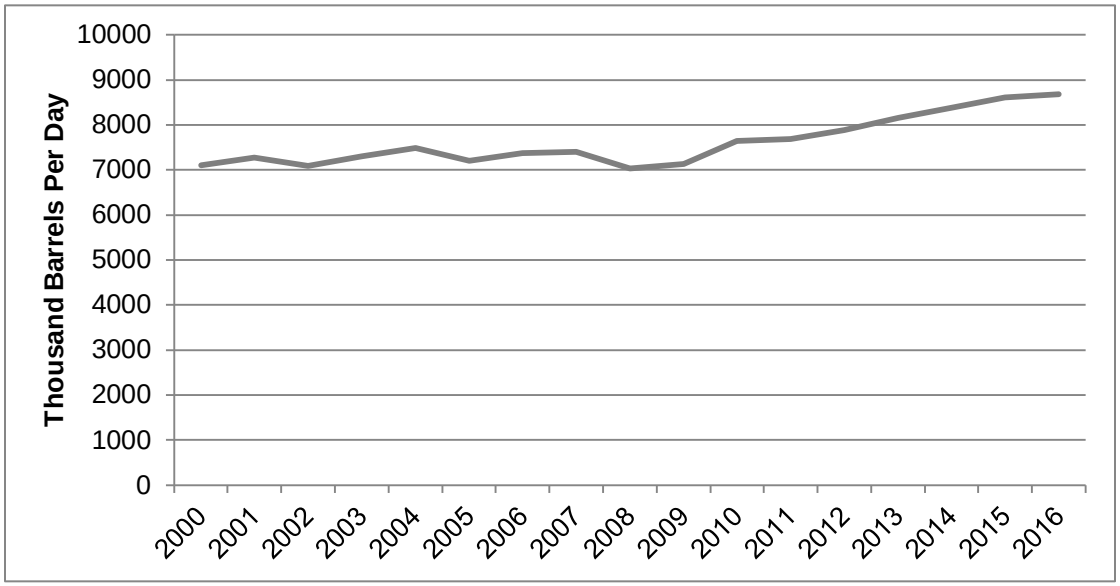
Increasing U.S. domestically produced crude oil has resulted in the displacement of imports. This has significantly impacted import tonnage through the Gulf Coast ports as shown on Figure 3-9.



Source: EIA

Figure 3-9. U.S. Crude Oil Import Tonnage

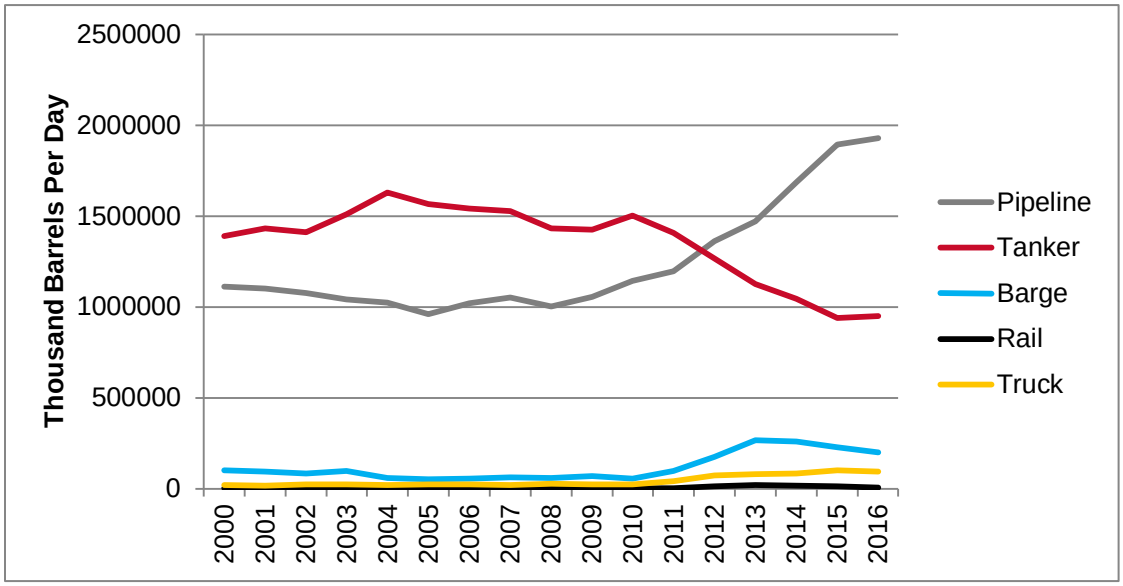
Despite the drop in import volume, the gross inputs to the Gulf Coast refineries (PADD 3 area) have been increasing as shown on Figure 3-10.



Source: EIA

Figure 3-10. Gulf Coast Refineries – Gross Inputs

The displacement of crude oil imports to domestic production has also resulted in significant shifts in the mode of transportation supplying crude oil to the Gulf Coast refineries as shown on Figure 3-11.



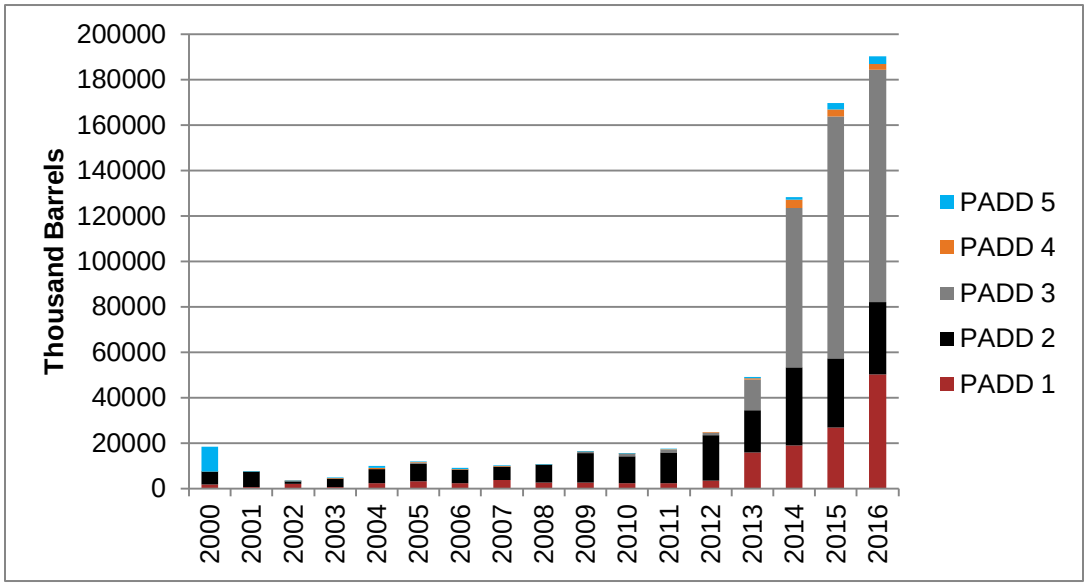
Source: EIA

Figure 3-11. PADD 3 Refinery Receipts of Crude Oil by Mode of Transportation

Greater on-shore production from across North America has resulted in the increased use of rail and barges to move oil from the wellhead to refineries and terminals for distribution to the final consumer. Although pipelines continue to be the predominant mode for moving both crude oil and refined products, rail shipments have increased substantially in recent years, especially in the north eastern region of the U.S. U.S. regional oil shipments by rail increased from less than 1 percent in the first 6 months of 2010 to 22.6 percent in the first 6 months of 2015.Tankers and barges move crude oil on U.S. inland waterways, from port to port along the coast, or on the Great Lakes. The use of tankers and barges for oil transport has risen as well, from 2.1 percent in the first 6 months of 2010 to 3.2 percent in the first 6 months of 2015.[17] Total oil shipments by rail, increased from 20 million barrels in 2010 to 384 million barrels, or more than 1 million barrels/day, in 2014/15.[18]

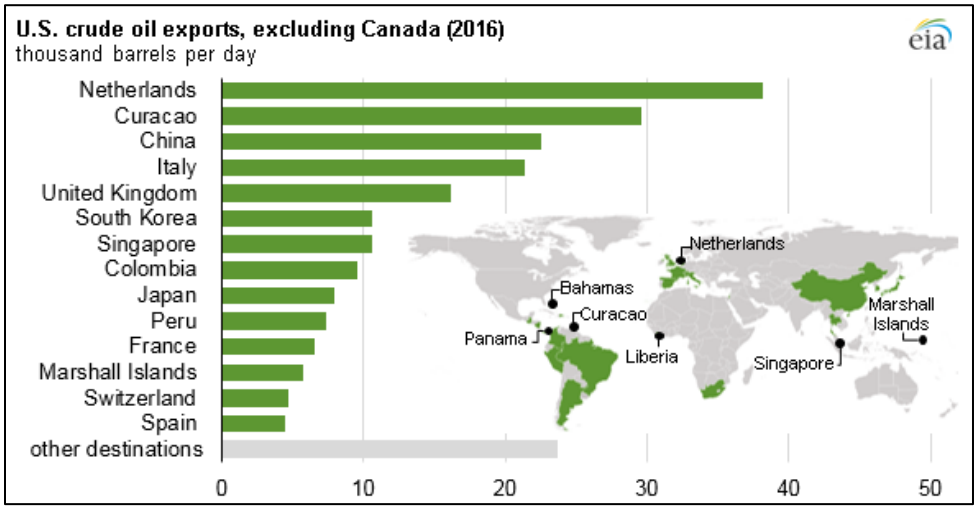
Prior to December 2015, crude oil exports were restricted to exports from Alaska, certain domestically produced crude oil destined for Canada, shipments to U.S. territories, and California crude oil to Pacific Rim countries. Since the growth in domestic crude oil production and the enacted legislation authorizing the export of U.S. crude oil without a license, exports through the Gulf Coast ports have grown rapidly (Figure 3-12). Export destinations of U.S. crude are shown on Figure 3-13.

[17] Ibid
[18] Energy Information Administration, 2015



Source: EIA

Figure 3-12. Exports of Crude Oil By PADD Region



Source: EIA

Figure 3-13. U.S. Crude Oil Exports

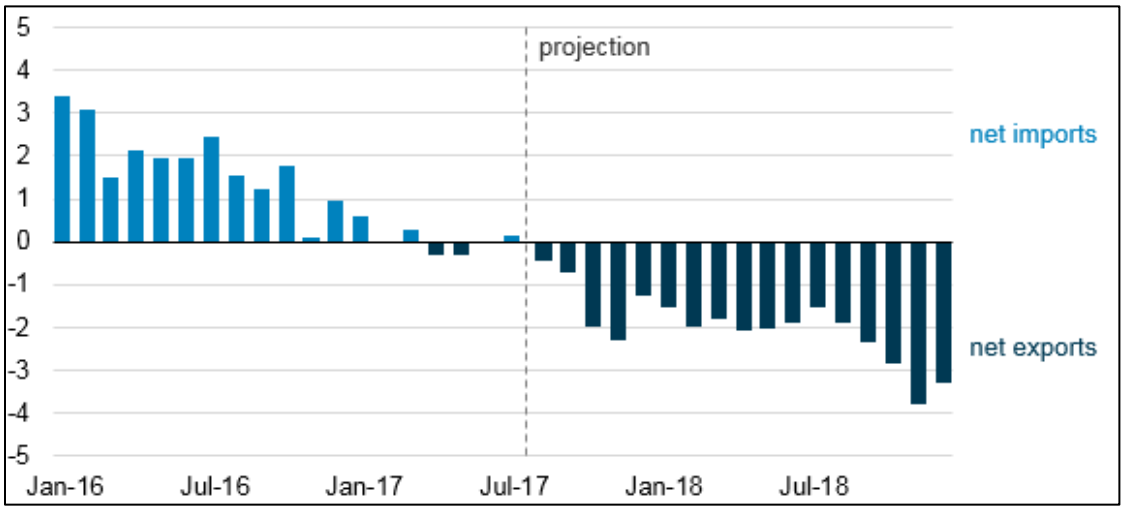
3.4.2 Liquefied Gases

The U.S. is currently the world's largest natural gas producer, having surpassed Russia in 2009. Natural gas production in the U.S. increased from 55 billion cubic feet per day

(Bcf/d) in 2008 to 72.5 Bcf/d in 2016. Most of this natural gas, about 96 percent in 2016, is consumed domestically.[19]

Liquefying natural gas serves as a way to transport natural gas long distances when pipeline transport isn't feasible. Stranded markets that are geographically isolated and too far from producing regions to be connected directly to pipelines have access to natural gas because of LNG. In its liquid form, natural gas can be shipped in special tankers to and from terminals in the U.S. and in other countries. At these terminals, the LNG is stored and returned to its gaseous state prior to transport by pipeline to residential and industrial consumers, as well as directly to thermal power plants. The volume of natural gas in its liquid state is about 600 times smaller than its volume in its gaseous state.

In 2017, the U.S. will export more natural gas than it imports. The U.S. has been a net exporter for three of the last four months in the first quarter of 2017 and is expected to continue to export more natural gas than it imports for the rest of 2017 and throughout 2018. The trend (Figure 3-14) is expected to continue past 2018 because of growing U.S. natural gas exports to Mexico, declining pipeline imports from Canada, and increasing exports of LNG.[20]



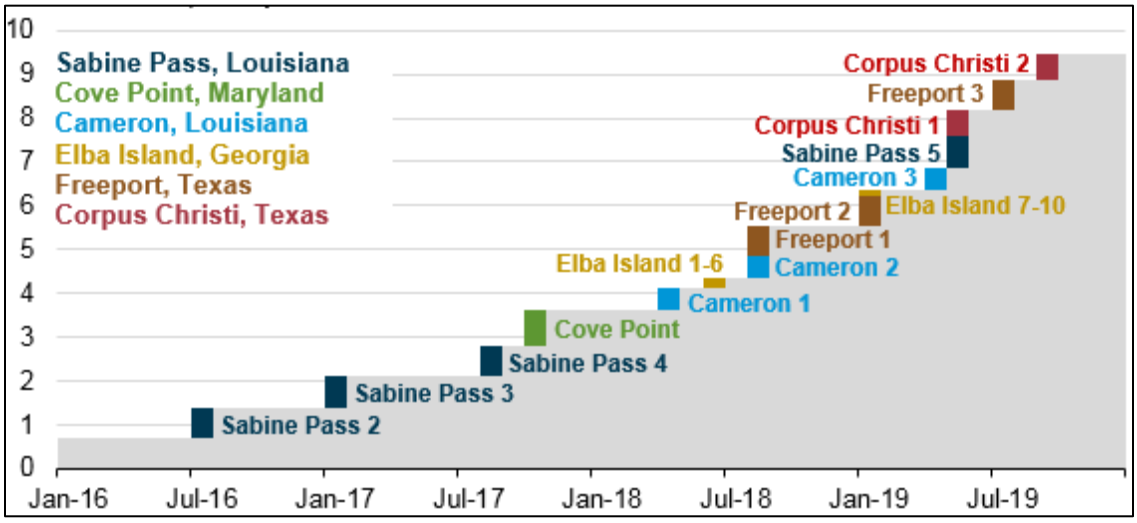
Source: EIA

Figure 3-14. U.S. Natural Gas Net Trade 2016-2018 projected

U.S. exports of LNG are expected to increase as U.S. liquefaction capacity continues to expand. Five new projects currently under construction, Cove Point, Cameron, Elba Island, Freeport, and Corpus Christi and will come online in the next three years (Figure

[19] Ibid
[20] U.S. Energy Information Administration's Short-Term Energy Outlook, 2017.

3-15). This will increase total U.S. liquefaction capacity from 1.4 Bcf/d at the end of 2016 to 9.5 Bcf/d by the end of 2019.[21]



Source: EIA

Figure 3-15. U.S. LNG Capacity 2016-projected to 2019 Billion Cubic Feet per Day

Three liquefaction and purification facilities are currently operating at Sabine Pass, Texas (Figure 3-16) and in Louisiana. They are currently the only operational liquefaction facilities in the U.S. An additional facility at Sabine Pass is currently undergoing commissioning and a fifth facility is expected to come online in 2019. By 2020 it is anticipated that the U.S. will have the third largest LNG export capacity in the world (after Australia and Qatar). However, actual use of U.S. LNG export terminals will be affected by the rate of global LNG demand growth and competition from other global LNG suppliers.[22]

[21] U.S. Energy Information Administration's Short-Term Energy Outlook, 2017.
[22] U.S. Energy Information Administration's Short-Term Energy Outlook 2017.

Source: IAMPE

Figure 3-16. Sabine Pass Texas LNG Facility

3.4.3 Container Trade

IMPORTS

Houston ranks fourth in overall containerized import tonnage, as shown in Table 3-7. The U.S. South Atlantic port region has shown the strongest growth in containerized imports over the recent years with a 7.4 percent Compound Annual Growth Rate (CAGR), compared to all the Gulf Coast ports at 0.9 percent. The overall CAGR across all regions was 3.4 percent. For all U.S. containerized imports, the Gulf Coast ports accounted for 11.1 percent. Imports into the South Atlantic and North Atlantic Ports displayed significant growth between 2014 and 2015 (Table 3-8, Table 3-9). The growth in Asian cargo at Atlantic and Gulf Coast ports reflects increased use of all water services as beneficial cargo owners diverted from west coast ports due to reliability and congestion issues on the west coast during labor contract negotiations. Overall, Gulf Coast ports have shown sustained growth with Asian trade (Table 3-10).

Table 3-7. Leading U.S. Ports Import Container Tonnage

	2011	2012	2013	2014	2015	2016	'11-'16 CAGR %
Los Angeles/Long Beach	45,957,823	46,690,127	47,932,867	51,029,012	51,381,823	51,702,665	2.4
New York/New Jersey	26,411,127	27,053,672	27,049,235	28,501,213	31,111,135	29,491,940	2.2
Savannah, GA	8,518,753	8,876,485	9,378,331	10,936,153	12,522,571	13,120,850	9.0
Houston, TX	**8,592,516**	**9,690,197**	**9,164,241**	**10,871,750**	**11,106,971**	**10,063,169**	**3.2**
Norfolk-Newport News, VA	6,345,509	7,271,162	7,782,339	8,452,593	9,151,189	9,840,910	9.2
Charleston, SC	5,730,279	5,908,368	5,788,518	6,808,932	7,860,249	7,791,446	6.3
Oakland, CA	5,878,017	6,202,085	6,435,992	6,909,218	6,901,979	7,068,215	3.8
Seattle, WA	5,928,510	5,906,188	4,614,508	3,850,138	3,707,356	3,775,605	-8.6
Tacoma, WA	3,126,163	4,201,815	4,898,992	5,668,682	5,894,051	6,199,011	14.7
Baltimore, MD	4,025,612	4,236,450	4,039,852	4,426,493	4,987,755	5,019,547	4.5
Miami, FL	2,641,251	2,674,973	2,767,898	2,931,658	3,575,891	3,606,890	6.4
New Orleans, LA	3,047,693	2,936,219	3,049,175	4,063,590	3,745,658	3,168,154	0.8
Port Everglades, FL	2,243,583	2,384,384	2,692,631	3,143,495	3,197,989	3,458,950	9.0
Philadelphia, PA	2,100,657	2,238,930	2,443,601	2,845,488	3,305,134	3,371,097	9.9
Mobile, AL	1,540,076	1,875,989	1,569,416	1,100,686	1,384,428	1,417,035	-1.7
Jacksonville, FL	1,119,016	1,477,021	1,317,076	1,466,637	1,768,542	1,890,498	11.1
Wilmington, DE	1,110,450	1,362,947	1,290,712	1,275,751	1,449,238	1,473,583	5.8
Boston, MA	1,480,419	1,622,043	918,708	1,118,249	1,225,362	1,091,974	-5.9
Gulfport, MS	888,285	897,274	850,155	1,141,598	1,013,090	1,083,713	4.1
All Other	9,681,359	10,217,432	9,595,193	9,338,500	8,749,241	8,203,455	-3.3
Grand Total	**146,367,097**	**153,723,759**	**153,579,441**	**165,879,836**	**174,039,654**	**172,838,705**	**3.4**

Table 3-8. U.S. Port Region Import Tonnage

Region	2011	2012	2013	2014	2015	2016	CAGR 11-16 (%)
Gulf Coast	18,339,061	19,914,280	18,693,394	21,028,480	20,985,893	19,171,388	0.9
NOCAL	6,691,477	7,164,282	7,280,445	7,508,348	7,693,355	7,725,385	2.9
North Atlantic	42,535,300	44,871,086	44,509,661	47,734,520	52,341,480	51,602,577	3.9
Pacific NW	10,137,274	11,274,995	10,816,781	10,713,447	9,880,038	10,157,890	0.0
Pacific SW	46,731,794	47,587,218	48,714,301	52,019,921	52,523,790	52,907,791	2.5
South Atlantic	21,932,190	22,911,898	23,564,860	26,875,120	30,615,098	31,273,674	7.4
Grand Total	**146,367,097**	**153,723,759**	**153,579,441**	**165,879,836**	**174,039,654**	**172,838,705**	**3.4**

Table 3-9. U.S. Port Regions by Share of Import Tonnage

Region	2011	2012	2013	2014	2015	2016
Gulf Coast	12.5%	13.0%	12.2%	12.7%	12.1%	11.1%
NOCAL	4.6%	4.7%	4.7%	4.5%	4.4%	4.5%
North Atlantic	29.1%	29.2%	29.0%	28.8%	30.1%	29.9%
PNW	6.9%	7.3%	7.0%	6.5%	5.7%	5.9%
PSW	31.9%	31.0%	31.7%	31.4%	30.2%	30.6%
South Atlantic	**15.0%**	**14.9%**	**15.3%**	**16.2%**	**17.6%**	**18.1%**

Table 3-10. U.S. Port Region Containerized Imports from Asia (China, SE and SW Asia, Japan, Korea) Short Tons

Port Region	2011	2012	2013	2014	2015	CAGR (%)
Gulf	6,928,262	8,530,207	8,652,564	10,094,849	10,226,497	10.22
NOCAL	5,074,197	5,237,965	5,351,752	5,667,767	5,788,297	3.35
North Atlantic	22,692,973	23,070,991	21,948,941	23,547,303	25,740,712	3.20
PNW	9,384,828	10,647,877	10,078,701	9,847,962	8,944,516	-1.19
PSW	42,704,348	43,018,779	44,530,188	47,000,710	47,524,631	2.71
South Atlantic	19,763,424	21,130,337	21,785,302	24,573,390	25,488,546	6.57
Grand Total	**106,952,711**	**111,942,430**	**112,740,009**	**121,273,326**	**126,529,366**	**4.29**

All-water services via the Panama Canal and the Suez Canal have increased in response to beneficial cargo owners desire to minimize future U.S. west coast reliability issues. All-water service growth also reflects growth in distribution centers and warehousing at Atlantic and Gulf Coast ports.

Beneficial cargo owners located in close proximity to Atlantic and Gulf Coast ports are most likely to use all-water services for Asian cargo as this minimization of transit time differentials is critical and the farther west from the port the import location, the greater the competition with landbridge via the west coast ports, especially Los Angeles and Long Beach, California.

China dominates the source of all U.S imports, followed by Northern Europe and Southeast Asia. Southwestern Asia, Middle East and SE Asia appear to be growing trading partner regions, though the Southeast Asia trade sources favor Suez routings.

Northern Europe is the key source of containerized imports into Houston, followed by China and the Mediterranean. Imports from China have shown growth, along with imports from the Med and Middle East. Trade with Central America has also been strong and growing. Houston has lost market share on the South American East Coast import sourcing (Table 3-11; Table 3-12).

Table 3-11. Containerized Imports (Short Tons) into Houston by Trade Lane

Trade Lane	2011	2012	2013	2014	2015	2016
China	930,594	1,257,184	1,438,353	1,599,305	2,053,971	2,435,317
North Europe	2,568,167	2,925,399	2,392,503	2,637,390	2,465,614	2,058,931
Mediterranean	1,141,614	1,282,519	1,311,025	1,563,827	1,639,011	1,369,276
SAEC	1,125,720	1,166,457	1,260,722	1,683,024	1,429,639	1,128,908
SW Asia	706,634	927,640	768,490	975,968	916,907	725,099
Central America	407,636	359,788	332,056	462,972	733,173	714,447
SE Asia	222,844	228,958	310,474	212,100	388,595	392,227
Middle East	187,906	221,896	264,829	299,500	334,272	367,933
Japan/Korea	488,656	484,487	512,537	815,280	469,802	310,566
SAWC	200,769	191,829	206,849	266,684	279,071	272,821
Africa	219,027	241,240	164,327	158,889	176,760	119,275
Australia/NZ	136,080	158,270	114,765	146,866	163,712	110,885
Caribbean	199,673	232,818	85,819	43,953	55,464	53,244
Canada	57,196	11,390	1,442	5,988	886	4,052
All Other		323	52	6	95	189
Grand Total	**8,592,516**	**9,690,197**	**9,164,241**	**10,871,750**	**11,106,971**	**10,063,169**

Table 3-12. Containerized Imports into Houston by Commodity (Short Tons)

Commodity	2011	2012	2013	2014	2015	CAGR (%)	SHARE U.S. (%)
22 Beverages, Spirits And Vinegar	520,213	532,919	524,974	537,916	908,324	14.95	8.75
73 Articles Of Iron Or Steel	766,587	1,035,558	880,606	1,012,520	959,779	5.78	9.25
29 Organic Chemicals	734,695	786,667	698,856	811,627	712,957	-0.75	6.87
68 Art Of Stone, Plaster, Cement, Asbestos, Mica etc.	418,092	543,335	548,244	587,996	692,894	13.46	6.68
84 Nuclear Reactors, Boilers, Machinery etc.; Parts	332,385	413,076	449,413	523,721	647,960	18.16	6.24
44 Wood And Articles Of Wood; Wood Charcoal	304,707	332,977	381,371	450,471	529,878	14.83	5.11
69 Ceramic Products	507,342	463,820	485,706	489,882	470,908	-1.85	4.54
39 Plastics And Articles Thereof	304,047	338,848	414,055	483,048	459,258	10.86	4.43
38 Miscellaneous Chemical Products	272,504	245,830	248,192	282,204	378,814	8.58	3.65
85 Electric Machinery etc; Sound Equip; Tv Equip; Pts	114,549	150,041	127,295	166,555	306,756	27.92	2.96
08 Edible Fruit & Nuts; Citrus Fruit Or Melon Peel	197,826	191,252	155,292	239,485	290,110	10.04	2.80
40 Rubber And Articles Thereof	162,036	181,199	183,611	242,394	278,914	14.54	2.69
94 Furniture; Bedding etc; Lamps Nesoi etc; Prefab Bd	96,477	133,406	175,003	193,161	245,178	26.26	2.36
27 Mineral Fuel, Oil Etc.; Bitumin Subst; Mineral Wax	252,838	201,794	276,094	241,006	169,821	-9.47	1.64
Other	2,307,956	2,678,144	2,754,240	3,275,469	3,325,455	9.56	32.05
Grand Total	**7,292,255**	**8,228,867**	**8,302,950**	**9,537,455**	**10,377,006**	**9.22**	**100.00**

The Port of Houston currently underperforms in terms of retail imports and containerized perishables. This is surprising given recent data that in 2017, container imports are expected to set a new annual high for ports tracked by the National Retail Federation (NRF). The ports tracked by the NRF handled 1.69 million TEUs in June, down two percent from May but up 7.5 percent from June 2016. July was estimated at 1.72 million

TEU, up 5.6 percent from the same time last year.[23] Container tracking included the U.S. ports of Los Angeles/Long Beach, Oakland, Seattle and Tacoma on the West Coast; New York/New Jersey, Hampton Roads, Charleston, Savannah, Port Everglades and Miami on the East Coast, and Houston on the Gulf Coast.

August was forecast at 1.75 million TEU, up 2.1 percent from 2016. That would be the highest monthly volume recorded since tracking imports began in 2000 by the NRF, exceeding the 1.73 million TEU volume in March 2015. The 1.7 million-plus numbers seen in May and July and now expected for August and October would represent four of the six busiest months since 2000.[24] If projections are accurate, 2017 would see a total of 19.7 million TEU, exceeding the 2016 record of 18.8 million TEU by 4.9 percent (Table 3-17). That compares with 2016's 3.1 percent increase over 2015. The first half of 2017 tentatively totaled 9.7 million TEU, up 7.4 percent from the same period in 2016.[25]

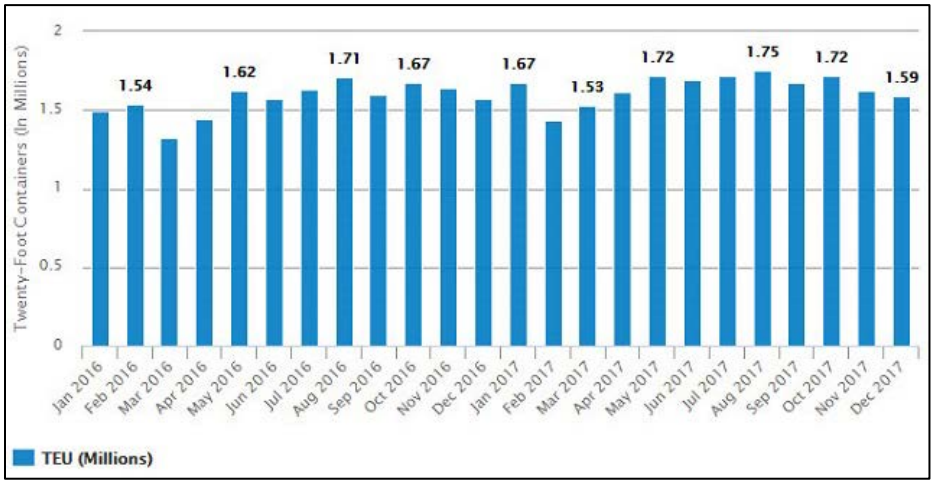
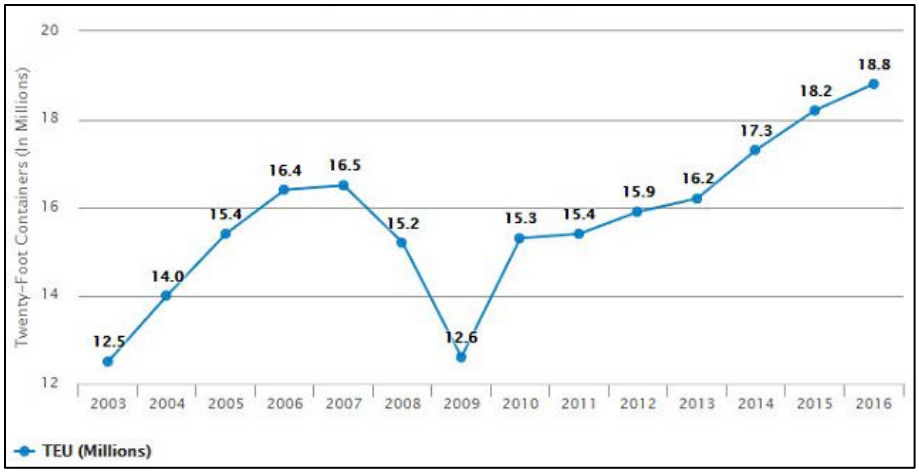


Figure 3-17. Monthly Retail Imports 2016-2017

Retail sales and import numbers though ports have a direct correlation and have continued to show a long-term pattern of increase. Total retail sales have grown year-over-year every month since November 2009, and retail sales, excluding automobiles, gasoline stations and restaurants, have increased year-over-year in all but three months since the beginning of 2010. Forecasts show that 2017 retail sales will increase between 3.7 and 4.2 percent over 2016, driven by job and income growth coupled with low debt. In the forecasts, cargo volume does not correlate directly with sales because only containers volume is recorded. The numbers provide indications of retail expectations. U.S. gross domestic product grew 2.6 percent in the second quarter of this year, more than double the 1.2 percent seen in the first quarter (Figure 3-18).[26]

[23] Global Port Tracker, National Retail Federation and Hackett Associates, Aug 2017
[24] Ibid
[25] Global Port Tracker, National Retail Federation and Hackett Associates, Aug 2017
[26] Global Port Tracker, National Retail Federation and Hackett Associates, Aug 2017



Source: Global Port Tracker

Figure 3-18. Retail Imports and Trend 2003-2016

Exports

Houston is the second largest U.S. port for containerized exports, as shown in Table 3-13). Since 2011, Gulf coast ports have increased market share significantly in containerized exports, narrowing the gap with the Pacific South West and South Atlantic ports (Table 3-14; Table 3-15).

Table 3-13. Leading U.S. Ports Export Container Tonnage

	2011	2012	2013	2014	2015	2016	'11-'16 CAGR %
Los Angeles/Long Beach	29,973,261	27,059,059	27,886,875	28,071,297	23,672,299	28,929,355	-0.7
Houston, TX	**10,926,561**	**12,047,628**	**13,799,281**	**16,801,238**	**17,787,418**	**14,221,518**	**5.4**
Savannah, GA	14,351,476	12,518,824	11,939,780	12,463,801	11,769,924	12,062,782	-3.4
New York/New Jersey	11,402,486	10,309,642	9,639,822	9,224,426	9,439,392	10,449,107	-1.7
Oakland, CA	7,793,629	7,278,709	7,260,225	7,075,258	6,540,280	7,834,400	0.1
Norfolk-Newport News, VA	6,127,265	6,721,925	7,600,061	8,011,856	7,953,921	8,499,078	6.8
Charleston, SC	5,348,421	5,150,078	5,124,394	5,581,703	6,013,841	6,346,060	3.5
Seattle, WA	6,538,265	5,386,412	4,913,356	4,273,950	3,950,148	4,267,256	-8.2
Tacoma, WA	4,226,873	4,749,114	5,430,166	5,639,318	5,424,161	7,081,149	10.9
New Orleans, LA	2,948,063	2,848,152	2,693,355	2,974,305	3,620,303	3,892,179	5.7
Miami, FL	2,394,375	2,283,075	2,025,425	1,989,173	1,974,690	2,319,659	-0.6
Port Everglades, FL	1,746,174	1,773,955	1,755,151	1,831,947	2,257,655	1,941,407	2.1
Baltimore, MD	1,613,721	1,584,914	1,657,023	1,588,339	1,586,823	2,180,731	6.2
Portland, OR	985,217	783,312	789,345	600,845	200,565	284,681	-22.0
Mobile, AL	976,021	1,169,871	1,556,305	1,652,413	1,400,896	1,538,888	9.5
Jacksonville, FL	1,415,264	1,241,872	1,192,288	1,170,310	965,133	1,112,103	-4.7
Wilmington, NC	1,134,950	874,196	1,090,421	1,052,956	978,803	1,040,254	-1.7
Corpus Christi, TX	666,161	1,407,818	1,529,889	1,892,786	1,539,594	654,574	-0.4
All Other	4,784,999	4,185,656	4,722,215	5,550,292	6,526,371	7,914,858	10.6

Table 3-14. U.S. Port Region Export Tonnage

Region	2011	2012	2013	2014	2015	2016	11-16 CAGR (%)
Gulf	17,276,880	19,014,935	21,344,737	25,659,194	27,702,331	24,675,840	7.4
NOCAL	8,413,855	7,601,061	7,560,165	7,552,635	6,889,660	8,077,103	-0.8
North Atlantic	20,656,473	20,156,354	20,527,959	20,546,313	20,735,723	23,107,959	2.3
PNW	12,069,742	11,099,732	11,475,900	10,721,911	9,818,949	12,112,323	0.1
PSW	30,019,969	27,114,334	27,944,110	28,157,716	23,785,264	29,036,717	-0.7
South Atlantic	26,916,261	24,387,797	23,752,505	24,808,444	24,670,290	25,560,097	-1.0
Grand Total	**115,353,180**	**109,374,212**	**112,605,377**	**117,446,213**	**113,602,218**	**122,570,039**	**1.2**

Table 3-15. U.S. Port Regions by Share of Import Tonnage

Region	2011	2012	2013	2014	2015	2016
Gulf	15%	17%	19%	22%	24%	20%
NOCAL	7%	7%	7%	6%	6%	7%
North Atlantic	18%	18%	18%	17%	18%	19%
PNW	10%	10%	10%	9%	9%	10%
PSW	26%	25%	25%	24%	21%	24%
South Atlantic	23%	22%	21%	21%	22%	21%

The year 2015 indicates an overall decline in U.S. exports due to strength of the U.S. dollar and international economic troubles. Exports to the east coast of South America grew between 2014 and 2015. Overall, Central America, the Mediterranean and South American west and east coasts appear to be growth markets, despite lower economic conditions in 2015. Exports to northern Europe have also shown overall growth (Table 3-16).

Table 3-16. U.S. Containerized Exports by Trade Lane

Trade Lane	2011	2012	2013	2014	2015	CAGR (%)
China	27,965,609	26,636,999	29,342,534	27,761,746	26,271,860	-1.55
SE Asia	19,345,413	16,934,811	16,431,930	17,419,054	16,202,184	-4.34
Japan/Korea	17,275,943	15,125,732	14,070,985	14,584,800	13,912,732	-5.27
North Europe	12,204,605	11,695,820	11,598,179	12,305,764	12,194,343	-0.02
SAEC	7,636,674	7,425,162	7,432,570	7,497,386	7,894,074	0.83
Central America	4,388,675	4,520,830	4,881,125	5,347,480	5,539,486	5.99
Mediterranean	7,510,153	6,790,174	7,085,040	6,867,029	6,228,506	-4.57
SW Asia	5,065,717	4,896,188	4,543,978	4,743,022	4,942,790	-0.61
SAWC	3,281,967	3,482,219	3,601,145	3,706,077	3,608,679	2.40
Caribbean	2,702,435	2,651,212	2,654,221	2,828,933	2,974,291	2.43
Middle East	3,098,823	3,290,331	3,464,856	3,623,399	3,672,751	4.34
Africa	2,280,207	2,353,463	2,700,046	2,655,305	2,528,425	2.62
Australia/NZ	2,301,126	2,433,375	2,436,283	2,480,792	2,265,725	-0.39
Canada	207	103	71	153	213	0.72
All Other	148,015	130,483	124,046	120,813	120,303	-5.05
Total	**115,205,569**	**108,366,903**	**110,367,008**	**111,941,755**	**108,356,362**	**-1.52**

Compared to the overall U.S. containerized exports, Houston underserves China, Southeastern Asia and Japan/Korea (Table 3-17).

Table 3-17. Containerized Export Short Tons through Houston

Region	2011	2012	2013	2014	2015	2016
SAEC	2,033,943	1,875,568	2,306,066	2,573,956	2,597,505	2,064,914
North Europe	2,013,032	2,119,839	2,410,652	2,802,187	2,395,525	2,039,991
China	483,241	752,401	791,934	1,030,756	1,774,134	1,641,226
Mediterranean	1,534,415	1,380,762	1,549,422	1,381,113	1,451,617	1,343,720
Central America	889,133	1,394,674	1,687,338	2,617,452	2,087,560	1,313,448
SAWC	1,089,141	1,320,878	1,349,292	1,772,040	1,743,341	1,287,058
Africa	659,912	852,295	1,181,756	1,478,030	1,539,681	1,277,385
Middle East	549,252	679,146	725,163	701,432	710,356	770,758
SW Asia	686,399	610,481	464,900	375,839	478,174	701,084
SE Asia	390,624	281,643	234,333	383,814	554,909	697,262
Caribbean	332,363	393,727	531,946	814,850	1,354,544	519,808
Japan/Korea	184,164	232,056	343,300	690,010	957,782	493,942
Australia/NZ	79,052	151,519	221,473	178,272	138,795	68,688
All Other	1,891	2,640	1,707	1,487	3,498	2,236
Grand Total	**10,926,561**	**12,047,628**	**13,799,281**	**16,801,238**	**17,787,418**	**14,221,518**

Houston's containerized exports are highly concentrated in plastics and organic chemicals, as indicated in Table 3-18.

Table 3-18. Containerized Exports from Houston by Commodity (Short Tons)

Commodity	2011	2012	2013	2014	2015	CAGR (%)	Commodity Share (%)
39 Plastics And Articles Thereof	4,109,951	4,169,243	4,258,801	3,714,024	4,572,676	2.70	36.83
29 Organic Chemicals	1,238,774	1,309,606	1,160,821	1,427,560	1,737,217	8.82	13.99
27 Mineral Fuel, Oil Etc.; Bitumin Subst; Mineral Wax	561,005	589,439	619,491	588,723	764,021	8.03	6.15
28 Inorg Chem; Precious & Rare-earth Met & Radioact Compd	444,700	568,634	894,112	743,389	685,020	11.41	5.52
38 Miscellaneous Chemical Products	528,217	638,612	583,081	649,865	672,548	6.23	5.42
40 Rubber And Articles Thereof	402,635	386,426	382,041	375,545	406,450	0.24	3.27
10 Cereals	103,558	222,654	451,407	394,410	347,640	35.36	2.80
52 Cotton, Including Yarn And Woven Fabric Thereof	400,474	143,633	220,580	275,961	326,157	-5.00	2.63
84 Nuclear Reactors, Boilers, Machinery Etc.; Parts	345,492	339,426	358,497	366,635	313,194	-2.42	2.52
02 Meat And Edible Meat Offal	310,485	290,155	257,217	255,069	227,677	-7.46	1.83
72 Iron And Steel	344,671	385,866	250,030	178,825	215,744	-11.05	1.74
25 Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	188,774	153,342	126,022	176,050	175,278	-1.84	1.41
34 Soap etc; Waxes, Polish etc; Candles; Dental Preps	102,033	125,692	135,933	151,672	174,210	14.31	1.40
73 Articles Of Iron Or Steel	157,214	171,300	162,149	164,323	140,955	-2.69	1.14
Other	1,540,967	1,546,290	1,738,624	1,789,356	1,658,029	1.85	13.35
Grand Total	**10,778,950**	**11,040,319**	**11,598,806**	**11,251,406**	**12,416,815**	**3.60**	**100.00**

Expanded plastics and resin capacity from Houston area producers is expected to drive future growth in exports. This will require supply of empty equipment, carrier capacity, chassis and aggressive rates to compete with railing of boxcars to Dallas for stuffing and use of intermodal to the west coast ports of Los Angeles and Long Beach and then to China/Northeast Asia/Asia.

3.4.4 Cruise Trade

The Port of Galveston has established itself as a premier cruise ship port and this, similar to freight requirements, has driven the rapid increase of ship size, which also requires new and expanded infrastructure at the port. Cruise ships, which at one time, would handle only hundreds of passengers a decade ago, have grown to handle nearly 6,000 passengers on a single trip. Mid-size cruise ships, common to Texas, can generate 3,000 or more private vehicle or bus moves on a single vessel turnaround every week. In 2016, a record 24.2 million passengers cruised globally. The industry estimates that 25.3 million people will cruise (globally) in 2017. Since 1980, the industry has experienced an average annual passenger growth rate of approximately 7 percent per annum.[27] In the United States, 11.2 million people cruised in 2016. A total of 27 new ocean and specialty ships were deployed into worldwide markets in 2016. Nearly 34 percent of cruises serve the Caribbean market from ports from the U.S. Gulf and east coasts. Worldwide, cruising is expected to exceed 26 million passengers in 2017.[28]

Cruise ships are either "Homeported", where complete passenger exchanges and servicing is handled or do "Port of Calls" where stays are just long enough for passengers to enjoy shoreside attractions. Homeport vessels generate the highest level of economic impact and fees and also generate the highest level of traffic. Galveston is situated near the Houston metro area and airports for cruise ship homeport operations in addition to handling cargo traffic. Houston, Freeport, and Port of Texas City are better suited and planned for domestic and international cargo operations. While cruise ships and their operations are outside the context of this particular freight study, it should be noted that a key enabler of cruise ship operations is the efficient supply and on-time replenishment of consumables to the ship, including food and beverages which are typically delivered by truck.

3.4.5 Automotive

Automotive production and distribution requires a global transportation network, with the main car manufacturers having production plants across the globe that produce cars for different national and regional markets. Cars are shipped in roll-on roll-off vessels called Pure Car Carriers (PCC) or Pure Car Truck Carrier (PCTC). An average vessel is designed to carry a wide range of vehicles including automobiles, trucks, buses, agricultural and plant equipment. An average 50,000 Gross Ton PCTC, capable of carrying 6,000 car equivalent units (ceu), measures approximately 600 to 625 feet in length with a beam of 95 to 100 feet. These vessels tend to operate on a fixed schedule and may be chartered by one car manufacturer or the vessel owners sell space to different manufacturers. Post-Panamax PCTC's will have a capacity of 8,500 ceu.

[27] Cruise Line International State of the Cruise Industry Report 2016.
[28] Ibid

In 2016, 8.1 million new passenger vehicles were imported to the U.S. United States passenger vehicle sales for 2016 amounted to 17.5 million vehicles. Table 3-19 identifies the top car importing countries to the U.S.

Table 3-19. Origin and Volume of Top Automotive Importing Countries to U.S.

Origin Country	Number of Vehicles Imported to U.S. in 2016
Mexico	2,176,536
Canada	1,985,970
Japan	1,707,268
Korea	1,000,872
Germany	543,907
United Kingdom	194,158
Italy	130,148

Source: U.S. Department of Commerce

In 2016, the U.S. exported 2,054,906 new passenger vehicles (Table 3-20).

Table 3-20. Top Destinations and Volumes of U.S. Car Exports

Destination Country	Number of Vehicles Exported from the U.S. in 2016
Canada	919,341
China	236,718
Germany	185,519
Mexico	174,811
Saudi Arabia	91,436
United Kingdom	61,451
Korea	56,715

Source: U.S. Department of Commerce

There is also a market for exporting used cars from the U.S. In 2016, 566,604 used cars were exported, with the majority of cars destined for Mexico, United Arab Emirates, Dominican Republic, Nigeria, and Cambodia.

The vast majority of vehicle imports arrive by ship into a network of ports across the U.S. Rail is used to transport most vehicles from Canada and Mexico to the U.S., but short sea shipping routes are also used between Mexico and the U.S. due to limited rail capacity and congestion issues within Mexico. According to Kansas City Southern, short

sea shipping vehicle exports account for 10 percent of Mexico's vehicle exports to the U.S. while rail accounts for 90 percent[29].

Table 3-21 contains import and export vehicle data for U.S. ports that contributed to the Automotive Logistics' annual survey.

Table 3-21. 2016 U.S. Import and Export Vehicle Ports and Volumes

Port	2016 Import Vehicle Volume	2016 Export Vehicle Volume
Baltimore, MD	561,069	170, 681
Jacksonville, FL	485,657	166,608
Brunswick (including Savannah), GA	440,473	191,240
New York/New Jersey	447,329	57,822
San Diego, CA	352,846	38,108
Portland, OR	240,686	50,556
Charleston, SC	19,348	245,579
Long Beach, CA	253,437	10,557
Davisville, RI	214,189	0
Los Angeles, CA	176,422	22,605
Tacoma, WA	165,687	0
Philadelphia, PA	138,872	0
Richmond, CA	123,457	0
Vancouver, WA	87,600	0
Houston, TX	83,324	2,175
Freeport, TX	19,200	33,800
Grays Harbor, WA	15,126	33,555
Wilmington, DE	0	41,849
Galveston, TX	15,933	0

Source: Automotive Logistics

[29] https://automotivelogistics.media/data/north-american-ports-slowdown-growth-tests-capacity-cope

The Automotive Logistics survey also identified that despite the overall import market to the U.S. may be slowing (volumes were down by 2 percent from 2015), the Houston area market increased by 23 percent, with a 33 percent increase associated with imports. Particular automotive flows in the Houston region's ports include:

- Freeport – Imports from South Korea, General Motor exports to the Middle East
- Galveston – BMW and Minis from Germany and the UK, Hyundai-Kei vehicles from Mexico.
- Houston – Major import center for Volkswagen Audi Group which receives vehicles by sea from Europe and Mexico and rail imports from Mexico. Fiat Chrysler vehicles are also imported.

Ports not only serve as entry points for import cars, they are increasingly being used as short term storage facilities by the car companies and for undertaking a range of services before the car is received by the dealership. Services include pre-delivery inspections, minor repairs such as paint chips, and fitting accessories.

To facilitate car imports and exports and to provide the necessary storage and processing capacity requires a significant amount of hard standing in close proximity to vessel berths. The use of larger post-Panamax vessels is also likely to have an impact on storage capacity as these larger vessels will discharge more cars in a shorter period of time. For land constrained ports looking to expand auto-handling, this presents a challenge, though other measures such as reducing the dwell time of vehicles, increasing the amount of rail movement rather than trucks, reconfiguring terminals, repurposing redundant space, and employing multi-level car storage facilities are options to increase capacity.

3.5 Regional Historical Trends

The recent history of overall cargo tonnage moving through H-GAC regional ports indicates that the overall volume is relatively static and the respective port's regional market share is also fairly constant (Figure 3-19).

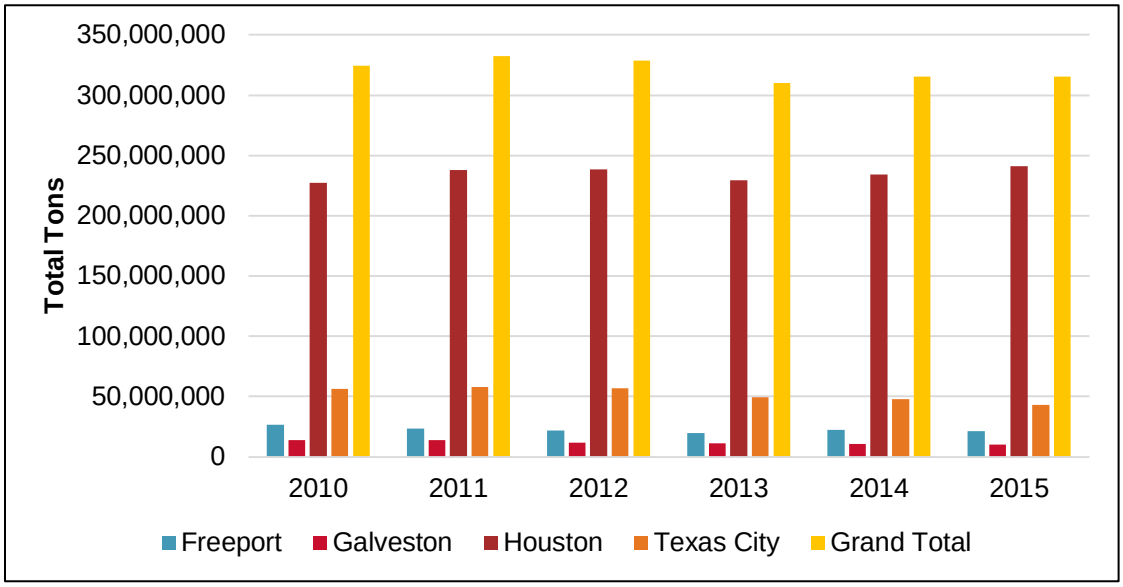


Figure 3-19. Port Tons (Domestic & Foreign)

The various terminals, wharves and piers in the Port of Houston handle 70-75 percent of the total H-GAC region's tonnage (Figure 3-20). Shipments have been increasing as a share of the total as shown on Figure 3-21.

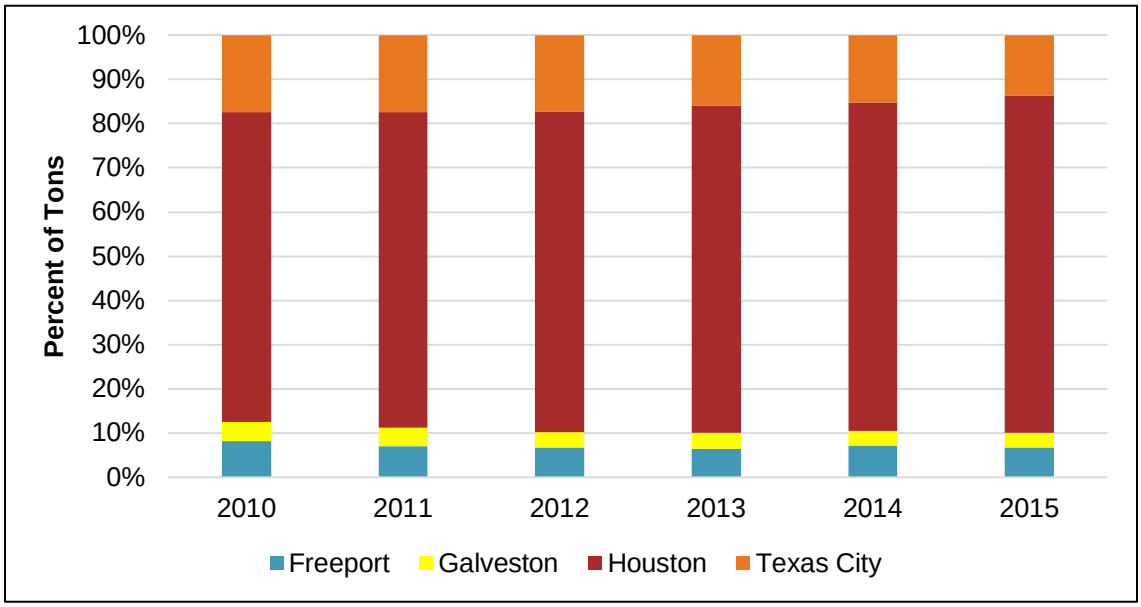


Figure 3-20. Port regional share – All commodities, all types, all directions

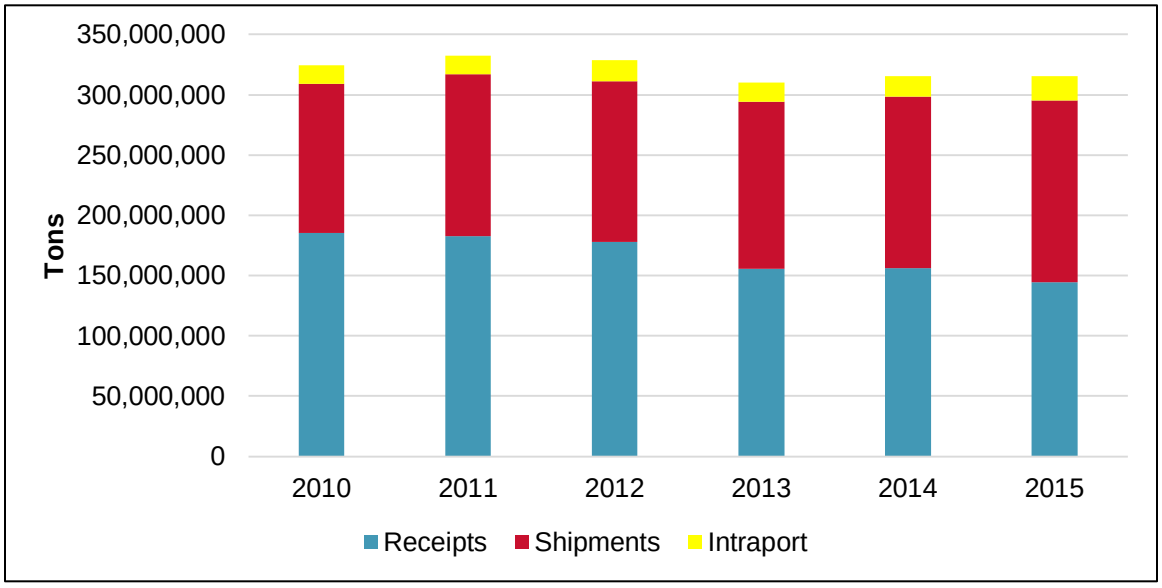


Figure 3-21. All ports, all commodities all directions

Foreign trade across the region's ports accounts for nearly 70% of total tonnage. Ninety five percent of the domestic waterborne trade flows through the region's ports are associated with petroleum products, chemicals and crude oil, whereas these products constitute 74.5% of the foreign trade flows (Figure 3-22; Figure 3-23; Figure 3-24). Detailed commodity data associated with foreign, domestic receipt and shipment flows for the region's ports are contained in Appendix A.

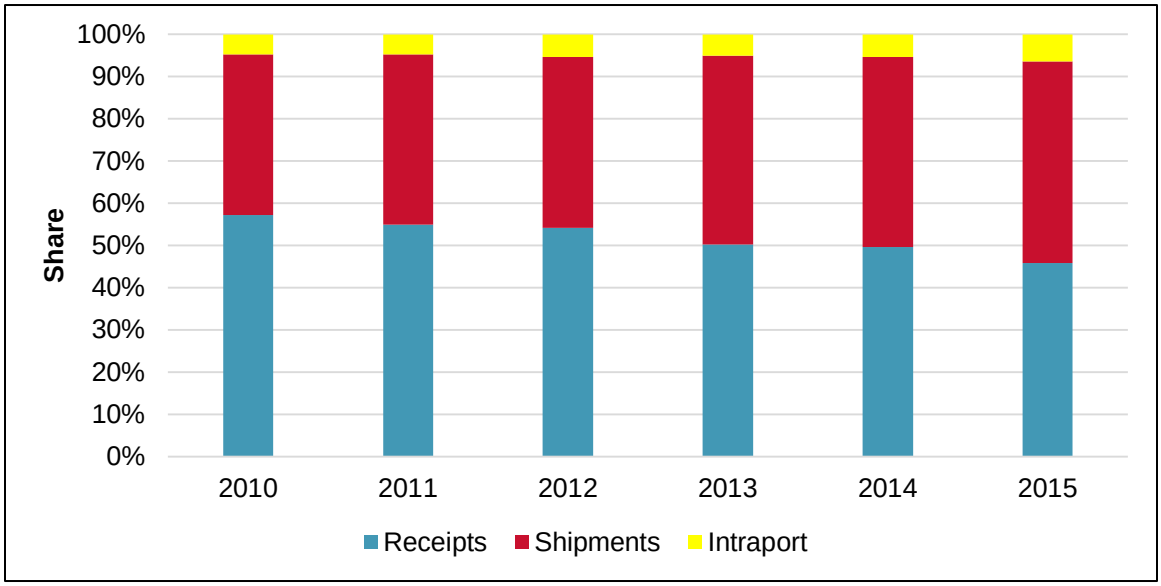


Figure 3-22. Share of Tonnage

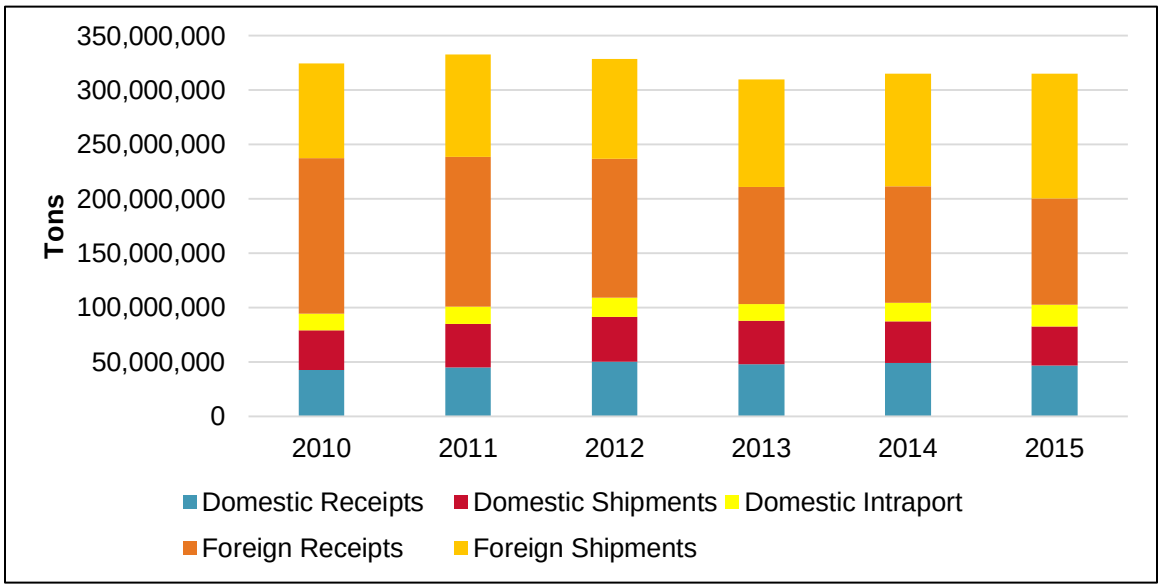


Figure 3-23. All ports, all commodities all directions

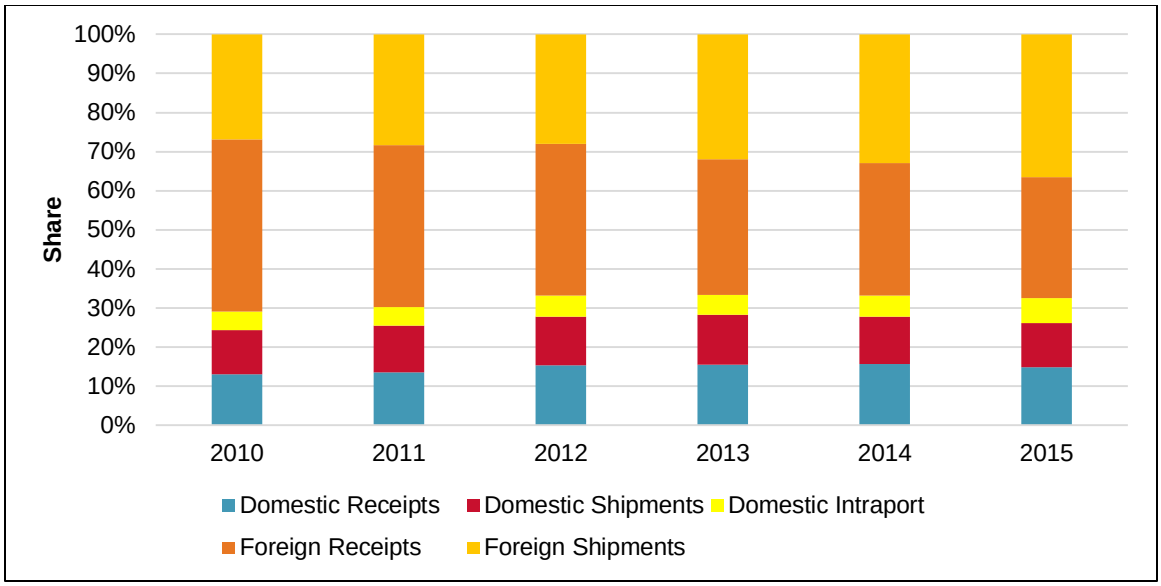


Figure 3-24. Share of Tonnage

4 Port of Houston Profile

4.1 Description

The Port of Houston is a river port on the Gulf of Mexico in Harris County, Texas and is one of 10 sea ports along Texas' 367 mile-long coastline along the Gulf of Mexico.[30] It is accessed via the Gulf Intercostal Waterway and the Houston Ship Channel, connecting through Galveston Bay. The Port of Houston is located about 290 nautical miles northeast of the Texas/Mexican border and about 470 nautical miles from the mouth of the Mississippi River. Houston is the largest city in the state, and the fourth most populous city in the United States.

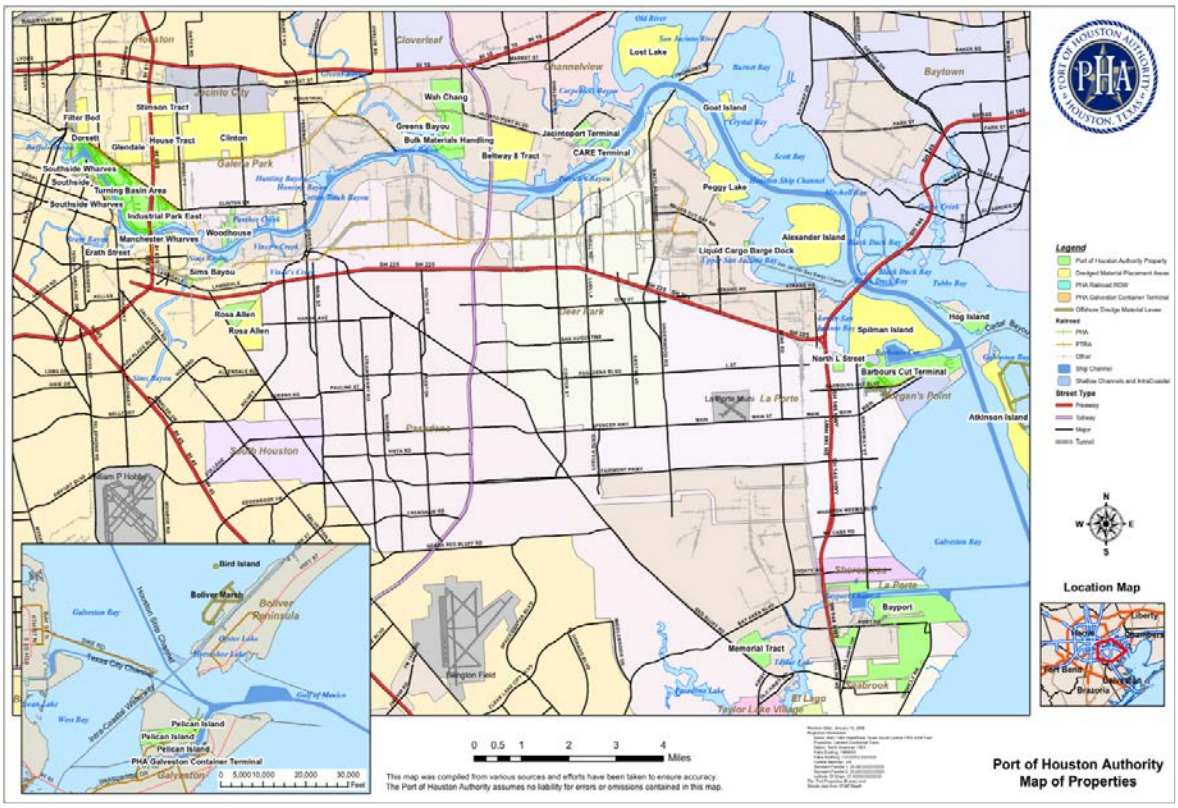


Figure 4-1. Map of Port of Houston

Officially opening in 1914, the Houston Ship Channel is 52 miles in length from the Galveston Sea Buoy to Turning Basin. Since its inception, the Port of Houston has grown to be one of the busiest waterways in the U.S. There are 270 port facilities on the Houston Shipping Channels and 190 manufacturing companies in the port district.[31] The

[30] https://comptroller.texas.gov/economy/economic-data/text-only/houston.php
[31] Houston Port Bureau Interview

initial channel width is 350 feet and has a depth of 45 feet. From mile 0 at the Galveston Channel entrance to mile 40, the authorized channel depth is 45 feet with width of 530 feet. The remaining channel depth from mile 40 to 52 varies from 36 to 40 feet with a width of 300 feet.[32] The 52 miles from the Galveston Sea Buoy to the Turning Basin requires an 8-hour transit to navigate from the sea buoy to the channel end. The Channel is broken into 2 sections: 26 miles in Galveston Bay, and 26 miles through the Bayou. Geographically, the Port consists of three districts. The upper third handles break bulk project cargo and Ro-Ro cargo, the middle third handles petroleum, and the lower third handles container ships.

The Port of Houston also manages Foreign Trade Zone #84, which includes many privately owned and port-owned sites located throughout Houston and Harris County.

4.2 Facilities

The Port of Houston hosts eight public terminals which are owned, operated, managed, or leased by the Port of Houston Authority and include the general cargo terminals at the Turning Basin, Care, Jacintoport, Woodhouse, and the Barbour's Cut and Bayport container terminals. The remainder of the facilities are private.

Storage assets for the Port of Houston include 359 paved outdoor storage facilities. In addition, there is 6,200,000 bushels of elevator storage, 200,000 square feet of cold storage, and 2,872,900 square feet of transit sheds and warehouses.

4.3 Statistics

The Port of Houston is consistently ranked 1st in the U.S. in foreign waterborne tonnage; 1st in U.S. imports; 1st in U.S. export tonnage and 2nd in the U.S. in total tonnage behind the Port of South Louisiana, north of New Orleans. It is also the nation's leading break-bulk port, accounting for 41 percent of project cargo, break bulk and neo-bulk at Gulf Coast ports. The port is the 6th largest container port in the country with a total twenty foot equivalent unit (TEU) capacity, handling over 2 million TEUs in 2015[33], amounting to over 230 million tons of cargo. In 2016, the port averaged over 180,000 TEUs per month. Each year, more than 8,300 vessels and 223,000 barges carry cargo through the Port of Houston. In comparison, New York handles 4,600 ships, Los Angeles-Long handles 4,300 ships, and the Port of New Orleans handles 6,700 ships. Thirty-eight percent of all ships received enter the port after passing through the Panama Canal.[34]

[32] http://www.swd.usace.army.mil/Portals/42/docks/civilworks/Fact%20Sheets/Galveston/FY13%20Houston%20Ship%20Channel,%20TX.pdf

[33] Texas Department of Transportation, "Overview of Texas Ports and Waterways," presentation to the Texas Senate Select Committee on Texas Ports, May 4, 2016; and interview with Spencer Chambers, Government Relations director, Port of Houston Authority, November 30, 2016

[34] Texas Office of the Governor, "2015 Texas: The Logistical Heart of North America," https://texaswideopenforbusiness.com/sites/default/files/12/03/15/logistics_report.pdf; and Dug Begley, "Port Freeport States Its Claim on Cargo Boom," Houston Chronicle, May 9, 2016.

The Port of Houston's 23 million tons of total trade is valued at $53.5 billion and has an annual statewide economic impact of $178.5 billion. The Port of Houston is responsible for 53,952 direct jobs, 71,065 inducted jobs, and 49,835 indirect jobs. In 2017, Port of Houston's trade was up 16.89 percent from the same point last year, from $45.85 billion to $53.6 billion.[35]

A summary of the Foreign Trade Zone activities for 2015 is shown on Figure 4-2, which is extracted from the 77th Annual Report of the Foreign-Trade Zones Board to the Congress of the United States.

FTZ 84, Harris County
Grantee: Port of Houston Authority

All Activity:

Merchandise Received	Exports	Employees
$25,000-50,000 mil	$1,000-5,000 mil	13,001-14,000

Warehouse/Distribution Activity:

Number of Companies	Merchandise Received	Exports	Total Shipments
103	$1,000-5,000 mil	$250-500 mil	$1,000-5,000 mil

Production Activity:

	Company	Merchandise Received	Exports	Total Shipments
84	Mitsubishi Caterpillar Forklift America Inc.	$100-250 mil	$0	$100-250 mil
84	MHI Compressor International Corporation	$25-50 mil	$0	$25-50 mil
84H	Varco Shaffer, Inc.	$500-750 mil	$750-1,000 mil	$750-1,000 mil
84I	Tuboscope Vetco International	$0-.5 mil	$0-.5 mil	$0-.5 mil
84J	Shell Oil Company	$5,000-10,000 mil	$0	$5,000-10,000 mil
84K	Dril-Quip, Inc.	$50-75 mil	$10-25 mil	$75-100 mil
84M	Hydril Company	$100-250 mil	$500-750 mil	$750-1,000 mil
84O	ExxonMobil Corporation	$10,000-25,000 mil	$750-1,000 mil	$10,000-25,000 mil
84P	Houston Refining LP	$1,000-5,000 mil	$0	$1,000-5,000 mil
84R	Michelin North America, Inc.	$1,000-5,000 mil	$5-10 mil	$1,000-5,000 mil
84T	Toshiba International Corporation	$25-50 mil	$0	$25-50 mil

Figure 4-2. FTZ# 84 activities

4.4 Commodities and Trade Flows

Houston's overall tonnage has been relatively stable since 2010 (Figure 4-3), though in recent years, shipments have been gaining slightly more percentage of share (Figure

[35] https://www.ustradenumbers.com/ports/port/port-of-houston/

4-4).

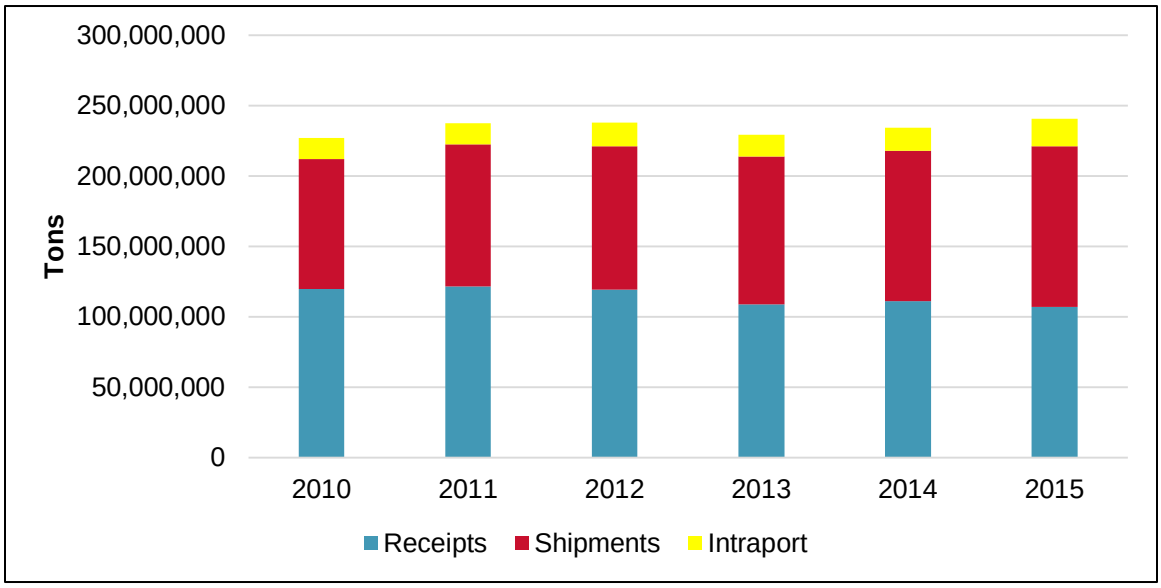


Figure 4-3. Port of Houston - Tonnage 2010-2015

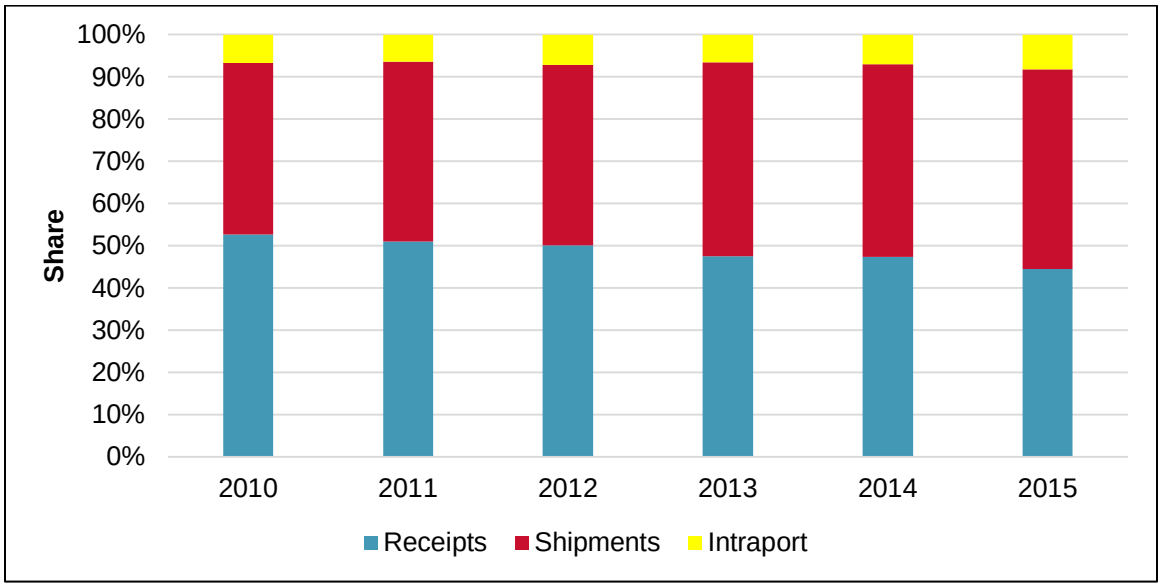


Figure 4-4. Port of Houston - Share of Tonnage

Foreign tonnage accounts for nearly 70 percent of the port's volume. Petrol, crude and chemicals comprise 85 percent of all cargoes. These products account for 76.6 percent of foreign traded cargoes and 94.4 percent of domestic receipts and shipments. Steel and manufactured products account for 6 percent of all flow (Figure 4-5; Figure 4-6). Further details of the Port of Houston commodity flows are contained at Appendix B.

Container commodities passing through the Port of Houston are identified in Table 4-1.

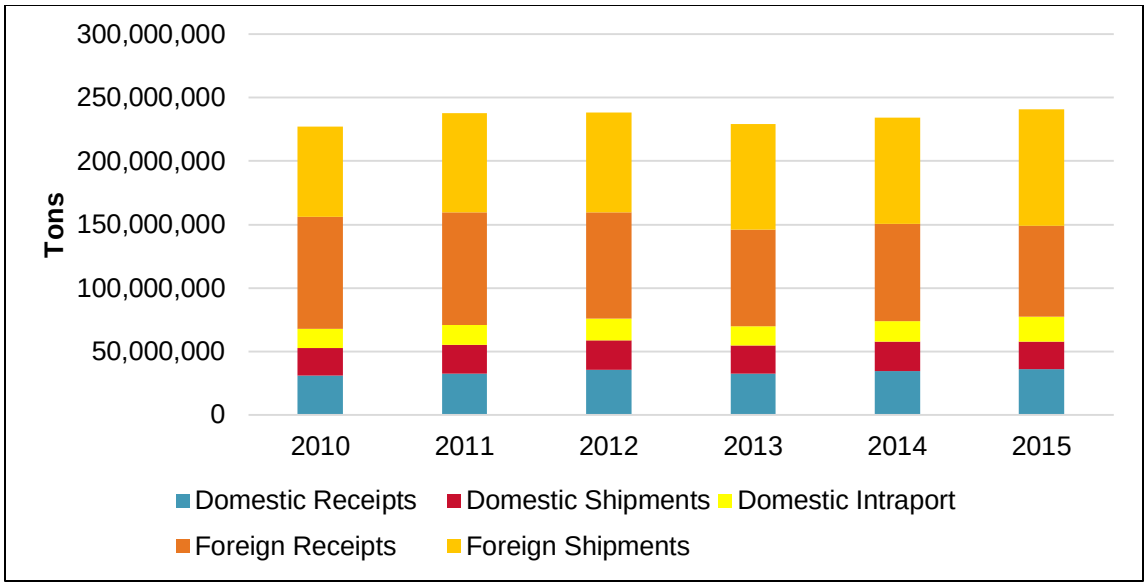


Figure 4-5. Port of Houston Tonnage - All Commodities, All Types, All Directions

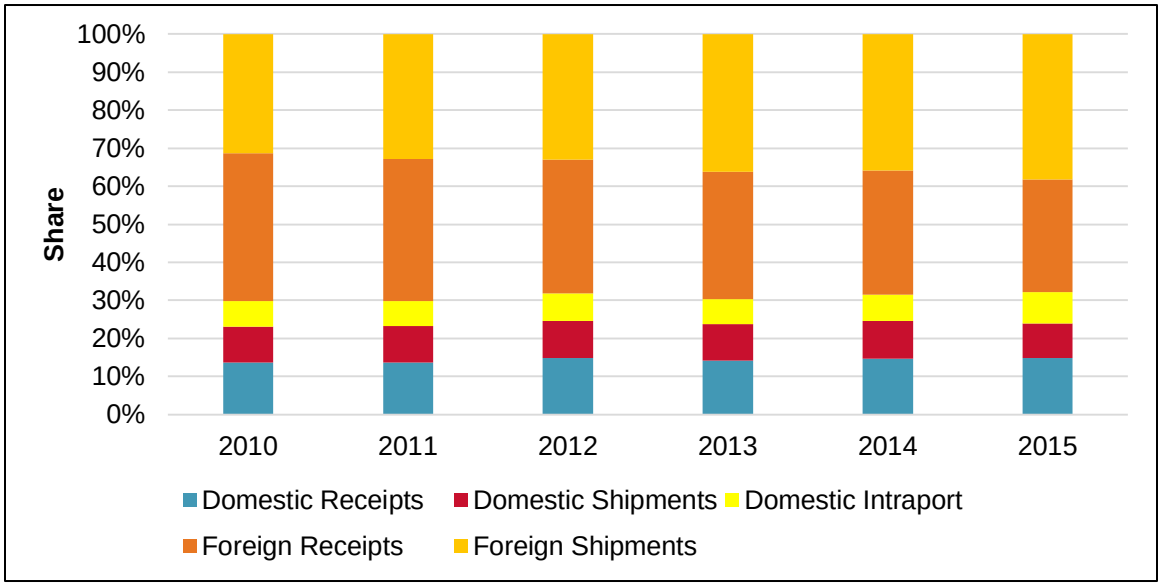


Figure 4-6. Port of Houston – Share of Tonnage

Table 4-1. 2016 Top Containerized Commodities (Total TEUs)

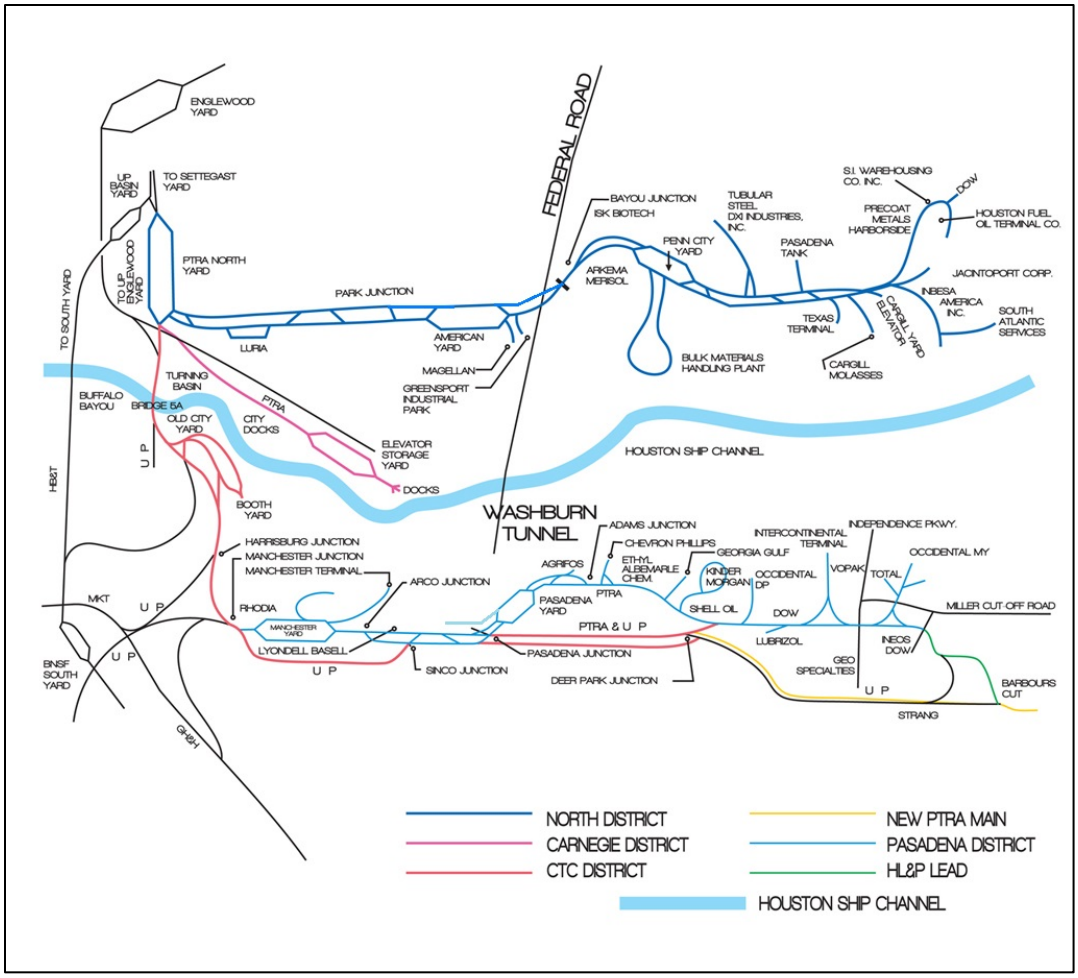
Exports		Imports	
Resins & Plastics	275,779	Food & Drink	136,433
Chemicals & Minerals	149,384	Hardware & Construction Materials	113,186
Food & Drink	78,317	Machinery, Appliances & Electronics	101,568
Machinery, Appliances & Electronics	65,367	Retail Consumer Goods	89,082
Automotive	60,311	Steel & Metals	76,853
Fabrics (incl. raw cotton)	37,830	Furniture	62,342
Steel & Metals	27,127	Resins & Plastics	53,346
Retail Consumer Goods	23,275	Chemicals & Minerals	53,002
Apparel & Accessories	19,632	Automotive	49,947
Hardware & Construction Materials	18,338	Apparel & Accessories	15,867
Furniture	3,925	Fabrics (incl. raw cotton)	15,139
Other	150,147	Other	125,370
Total	**909,433**	**Total**	**892,134,433**

4.5 Surface Transportation

4.5.1 Railroads

The port terminals contain access to three Class I railroads and direct pipeline network access. Formed in 1924, the Port Terminal Railroad Association (PTRA) is made up of the Port of Houston Authority of Harris County, Houston Belt & Terminal Railway Co. and three Class I railroads: Union Pacific Railroad, BNSF Railway, and Kansas City Southern Railway Company (Figure 4-7). Operating on both sides of the Ship Channel, the PTRA has as total Yard Capacity of 5,000 railcars and pulls an average of 2,500 cars per day. The PTRA services 226 local customers from 7 serving yards and maintains 154 miles of track and 20 bridges. They are able to service the entire U.S., Canada, and Mexico through its interchange connections.[36]

[36] http://www.ptra.com/index.php/about-us/ptra-operationsinfrastructure.html



Source: PTRA

Figure 4-7. PTRA Rail Network Map

The Barbour's Cut container terminal is adjacent to a rail ramp (Figure 4-8). This consists of 42.1 acres with four working tracks (each approximately 2,700 feet in length), five storage tracks (each approximately 2,250 feet in length) and 730 wheeled container spaces. The entire facility is paved with concrete and sustains wheeled operations only. The container handling method is three Mi-Jack 1000R series overhead cranes and each capable of 30 moves per hour.

Figure 4-8. Rail Ramp at Barbour's Cut

4.5.2 Highways

The Port of Houston is accessed by multiple major highways including four interstates: I-10, I-45, I-69 and the I-610 Loop. In 2010, there were about 10,000 trucks per day serving the port. By 2015, according to the Economic Alliance Houston Port Regions, that number had grown to 25,000-30,000 trucks per day using the same roads. With increasing trade and tonnage passing through the port, especially with commodities that move predominantly by road such as containers, the number of trucks could significantly increase.

The Panama Canal expansion project, completed in 2016, supports larger vessels which are expected to discharge greater volumes at the port. To help with this issue, efforts have been underway to create a new route from the Port of Freeport via Texas State Highway 36. Phase One is scheduled to start in 2018 and involves widening a 55-mile stretch between Freeport and Rosenberg from two to four lanes.

One key to long term planning on the state level is determining the best way to allocate funds. For example, consideration should be given to whether $10 billion is better spent on a single project, like the I-45 corridor, or on 27 smaller projects which enhance overall Houston freight movement.[37] The state has recently approved funding for port projects in the forms of Legislative Rider 45 and Rider 48, which included the expansion of Peninsula Street to four lanes, an expansion of Jacintoport Boulevard to five lanes with

[37] Houston Port Authority Interviews, July 2017

associated curb, gutter and storm sewer improvements, and the installation of rail gate arms at six rail crossings.

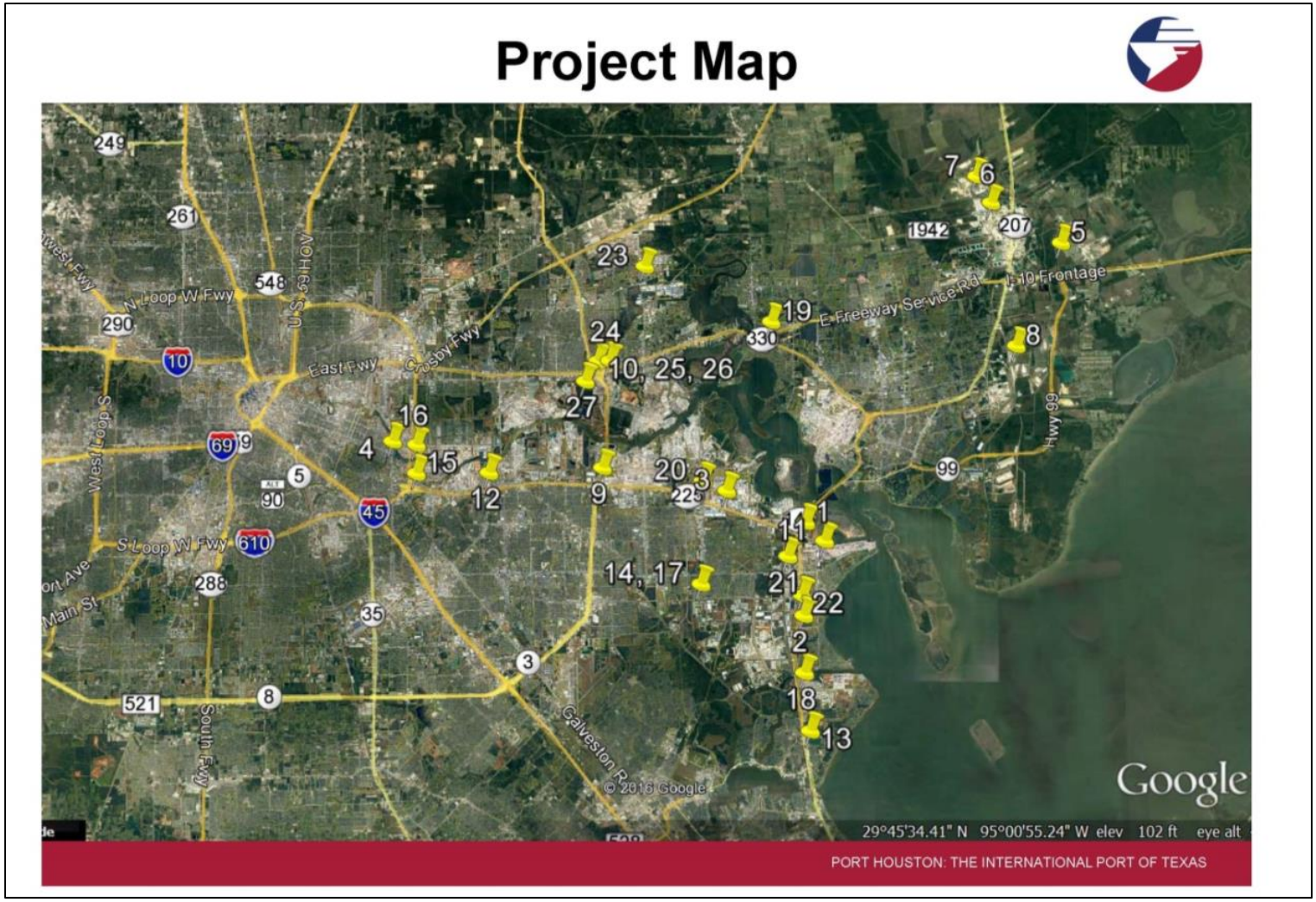
There is significant competition for road space between commuter and freight journeys in the Port area. This has led to traffic congestion during peak commuter periods that coincide with port traffic. Even though Houston is a diversified port handling mostly petroleum based tonnage, a great deal of the port related traffic however is related to containerized cargo. While Houston's container terminals typically have a 25-minute truck turnaround, overall journey time for trucks serving the container terminals can be much longer due to traffic and highway congestion

Figure 4-9 and Figure 4-10 provide information and updates regarding critical priorities along the Houston Shipping Channel for the Houston Port Region Freight Improvement Strategic Plan.

Houston Port Region Freight Improvement Strategic Plan

#	Project	Priority	Info & Updates
1	Barbours Cut Direct Connectors	H/S	• Attempting to get in call for projects in September 2017 • TxDOT is working with Texas A&M Transportation Institute to study Origin/Destinations between the Barbour's Cut Terminal and the SH 146/SH 225 interchange to determine the impacts of a direct connector
2	SH-146 Widening - Spencer Highway to Port Road	H/S	• TxDOT is currently preparing detailed design plans for the project • Anticipated letting for construction in FY 2023 scheduled for 2018
3	SH-225 expansion/improvement (8-East 146)	H/S	• TxDOT is working on a feasibility study for SH 225 from I-610 to SH 146. completion Q3 2018
4	Broadway Double Track Project	H/S	
5	Grand Parkway NE Segments	H/S	
6	FM-1942 from Hatcherville Road to SH-146 – road improvement	H/S	
7	Hatcherville Rd from FM-1942 to Liberty/Chambers Co.Line – road widening	H/S	• No improvements are currently planned
8	FM 565 from SH-146 to SH-99 – widening and addition of turning lanes	H/S	• Project from FM 1409 to SH 99: Reconstruct and realign roadway is anticipated to let for construction in FY 2018
9	BW-8 Direct Connectors @ SH-225: Westbound on 225 to 8 N, Northbound on 8 to E/W 225, Eastbound on 225 to 8S	H/M	• TxDOT is working with the Harris County Tollroad Authority to advance the construction of an interchange
	SH146 from I10 to Business 146 (Alexander Drive)		The grade separation/freeway starts at Alexander and continues all the way to Red Bluff. There probably needs to be some work on SH146 North of 110 through Mont Belvieu also
10	Penn City Connector	H/M	
11	Barbours Cut Blvd expansion to 6 lanes	H/M	No discussions yet of who champions this effort
12	SH-225 expansion/improvement (8-West 610)	H/M	
13	I-69 Bypass	H/M	• TxDOT is procuring a design –build contract for SH 99 Seg. H and I from I-69 to SH 146 which would make up the northern section of an I-69 Bypass with conditional award anticipated Spring 2017 • Southern Section of an I-69 Bypass is being discussed through H-GAC
14	Fairmont Parkway (Turning improvements)	H/M	County and La Porte funded through TxDOT Grant
15	SH-225 and I-610 Interchange	H/L	• TxDOT is working with H-GAC to begin a feasibility study for SH 225 from I-610 to SH 146
16	I-610 bridge at HSC	H/L	• Additional meetings with the Economic Alliance are requested to identify the needs and project scope at this location
17	Fairmont Parkway (Widening)	H/L	
18	Port Road Phase 3 & Drainage	M/M	County roadway / POHA Drainage
19	SH-330 (improve northbound connectivity to I-10 - 2 lanes or direct connect)	M/M	• TxDOT has prepared the Preliminary Engineering and Environmental for additional ramp access to I-10 and is working to secure construction funding
20	Independence Parkway (improve Northbound connectivity to SH-225)	M/M	• Additional meetings with the Economic Alliance are requested to identify the needs and project scope at this location
21	Spencer Highway Bridge (Bayport Rail Mainline)	M/L	
22	Bayport Mainline Rail Track	M/L	
23	Sheldon Road expansion	M/L	
24	Applet Road (Sheldon to Market)	M/L	
25	Jacintoport Road Improvement	L/L	
26	Jacintoport Direct Connectors	L/L	Direct Connect makes it a TxDOT/HCTRA discussion
27	Haden Rd (extension to Penn City Rd)	L/L	County roadway/POHA
	TxDOT Projects shaded		Priority Level: / Time Frame Required:
	Harris County Projects		H - HIGH Priority / S - SHORT Term 0-5 yrs
			M - MEDIUM Priority / M - MID Term 5-10 yrs
			L - LOW Priority / L - LONG Term 10+ yrs

Figure 4-9. Houston Port Region Freight Improvement Strategic Plan

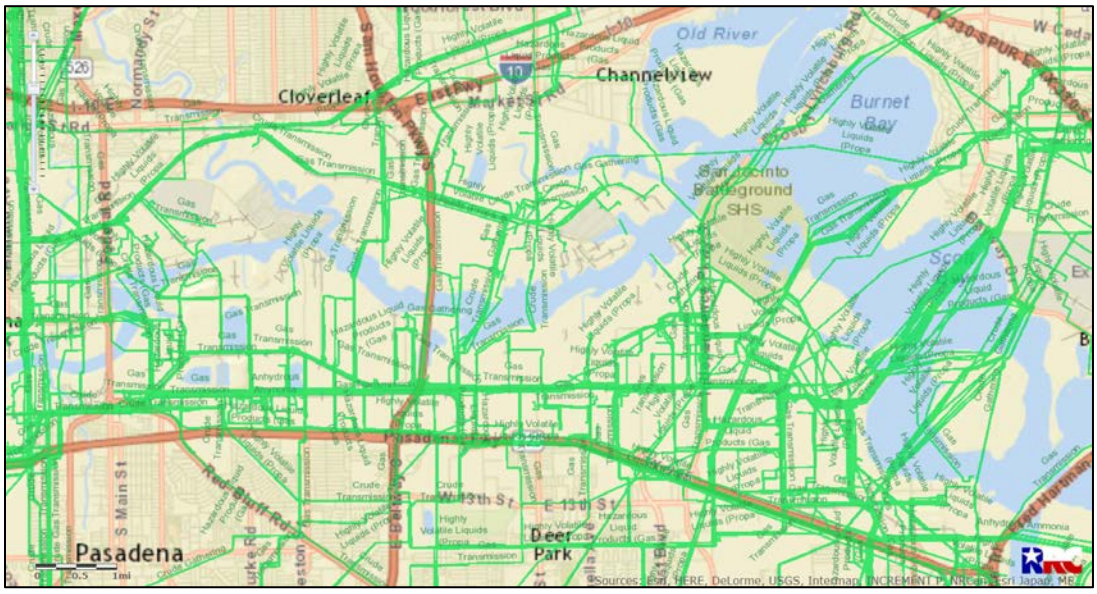


Source: Table and Map-Port of Houston Authority

Figure 4-10. Port Houston Prioritized Project List

4.5.3 Pipelines

The Port of Houston is served by an extensive network of pipelines, which carry a wide range of products including crude oil, natural gas, highly volatile liquids and hazardous liquids (Figure 4-11). These pipelines serve to move various products to, from, and within the region and also within the port and city of Houston. Many of these pipelines directly link ship berths and terminals with bulk liquid storage and processing facilities and are enabled to handle both import and export flows.

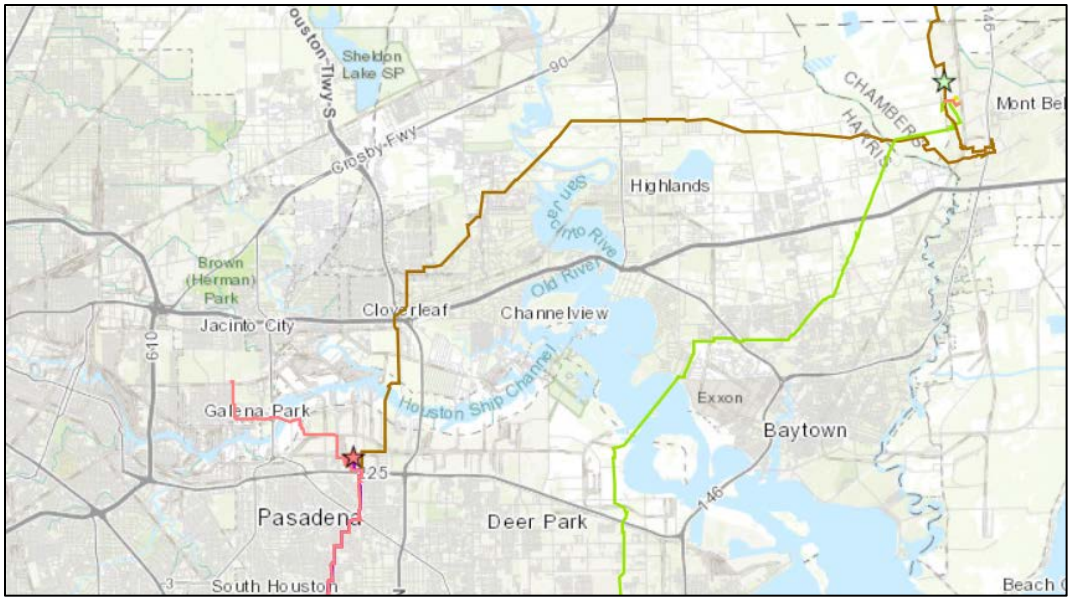


Source. Texas Rail Road Commission

Figure 4-11. Pipelines in the Port of Houston

Examples of pipeline networks in the Port of Houston include:

- **Houston Ship Channel Pipeline System**. A 288 mile system connecting Enterprise's Mont Belvieu, Texas facility with Houston Ship Channel import/export terminals and various other petrochemical plants, refineries and other pipelines located along the Houston Ship Channel.
- **Kinder Morgan Crude & Condensate Pipeline**. This 250 mile pipeline delivers crude and condensate products to multiple terminals, refineries and docks including those on the Houston Ship Channel.
- **Phillips 66 pipeline network**, including the 5 mile long Cross Channel Connector (Figure 4-12).



Source: Phillips66pipeline.com

Figure 4-12. Phillips 66 Pipeline Network

- **Houston Fuel Oil Terminal Company**. Two large diameter 16-inch and 24-inch diameter pipelines serve terminals and refineries in the Houston area (Figure 4-13).

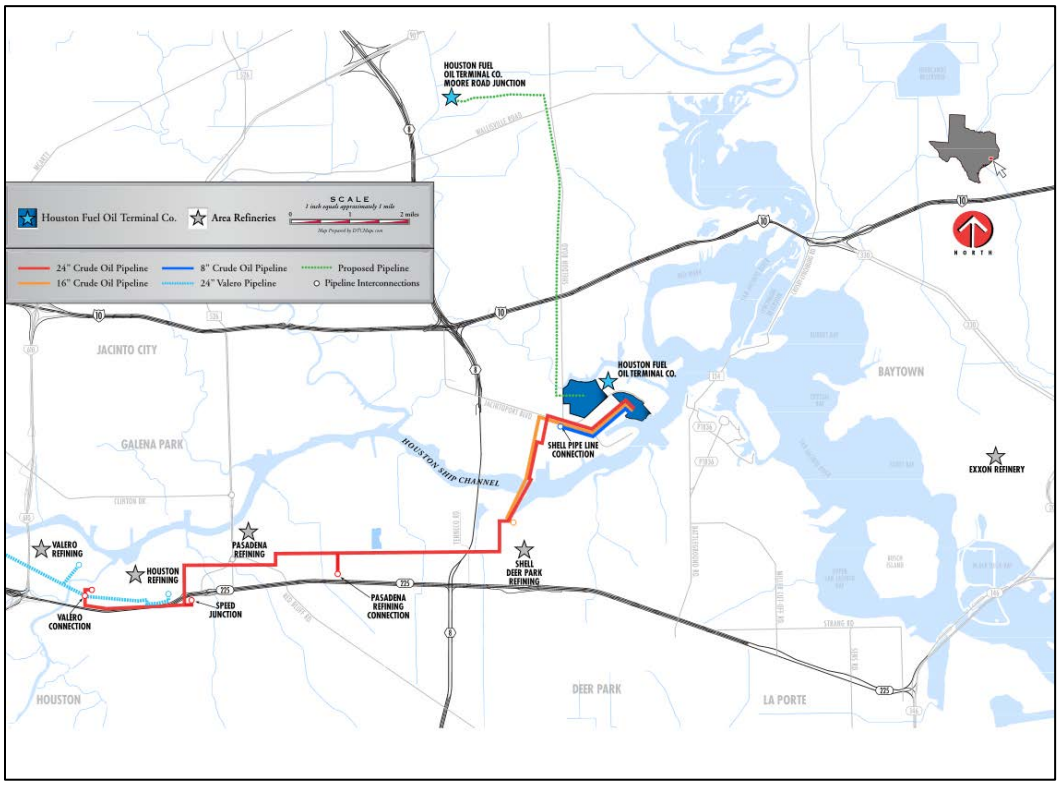


Figure 4-13. Houston Fuel Oil Terminal Company

4.6 Growth and Development

There are several projects planned or under development in the Port of Houston. The Port of Houston will be investing in its own projects and plans to spend $1.6 billion over the next 5 years on the expansion of its Barbour's Cut and Bayport container terminals.[38] The plan includes upgrading to three Super (Post) Neopanamax cranes which are capable of reaching across 22 containers with 160 feet under the spreader (Figure 4-14). They are replacing older units at Barbour's Cut and this investment paves the way to boost the terminal's annual capacity from 1.2 million TEUs to over 2 million TEUs.[39]

In addition, there are many private projects planned along the port. Recently, Magellan Midstream announced plans for a $335 million marine terminal on 200 acres along the Houston Ship Channel in Pasadena which will include 1 million barrels of storage for refined petroleum products, as well as a new marine dock.

Source: Houston Port Authority

Figure 4-14. Super Post-Panamax cranes en route to Houston

Texas Deepwater Partners, a joint venture of USDG and Pinto Realty, is developing 998-acres capable of supporting a rail terminal for liquid hydrocarbons and tank storage for up to 10 million barrels.[40] The development will include numerous pipeline rights-of-way and could potentially provide connectivity to nearly all major liquid hydrocarbon inbound pipelines throughout the U.S. and Canada.

Also, Enterprise Products Partners and Navigator Holdings have announced plans to develop an ethylene marine export terminal. The facility will have a 45-foot draft berth and capacity to handle approximately 600 million pounds of ethylene with an

[38] "Houston Ready for Port-Panamax Vessels," The Maritime Executive (October 1, 2015), http://www.maritime-executive.com/article/houston-ready-for-p "Houston Ready for Port-Panamax Vessels," The Maritime Executive (October 1, 2015), http://www.maritime-executive.com/article/houston-ready-for-post-panamax-vessels; and Texas Department of Transportation, "Overview of Texas Ports and Waterways."post-panamax-vessels; and Texas Department of Transportation, "Overview of Texas Ports and Waterways."

[39] http://www.joc.com/port-news/us-ports/port-houston/houston-container-volumes-soar-result-new-petrochemical-plants_20160220.html

[40] http://usdg.com/terminal/houston-ship-channel/

injection/withdrawal rate of 210,000 pounds per hour expandable to 420,000 pounds per hour. The facility will be connected to multiple producers and consumers via the Kinder Morgan Crude & Condensate Pipeline, which transports products from the Eagle Ford shale area, which is currently under construction.[41]

[41] https://www.bizjournals.com/houston/news/2017/07/13/enterprise-products-partners-london-co-plan-new.html

5 Port of Galveston Profile

5.1 Description

The Port of Galveston is located at the mouth of Galveston Bay along the Upper Texas Coast in Galveston County. It occupies the east end of Galveston Island as well as the south shore of Pelican Island. The Port of Galveston is about 9.3 miles from the open Gulf and about 50 miles south of Houston (Figure 5-1).

The Port of Galveston has a channel width of 1,200 feet and channel depth of 45 feet. The Port is municipally owned by the City of Galveston and is managed by the Board of Trustees of the Galveston Wharves which is the formal corporate title of the Port of Galveston. The Port also hosts a Foreign Trade Zone.

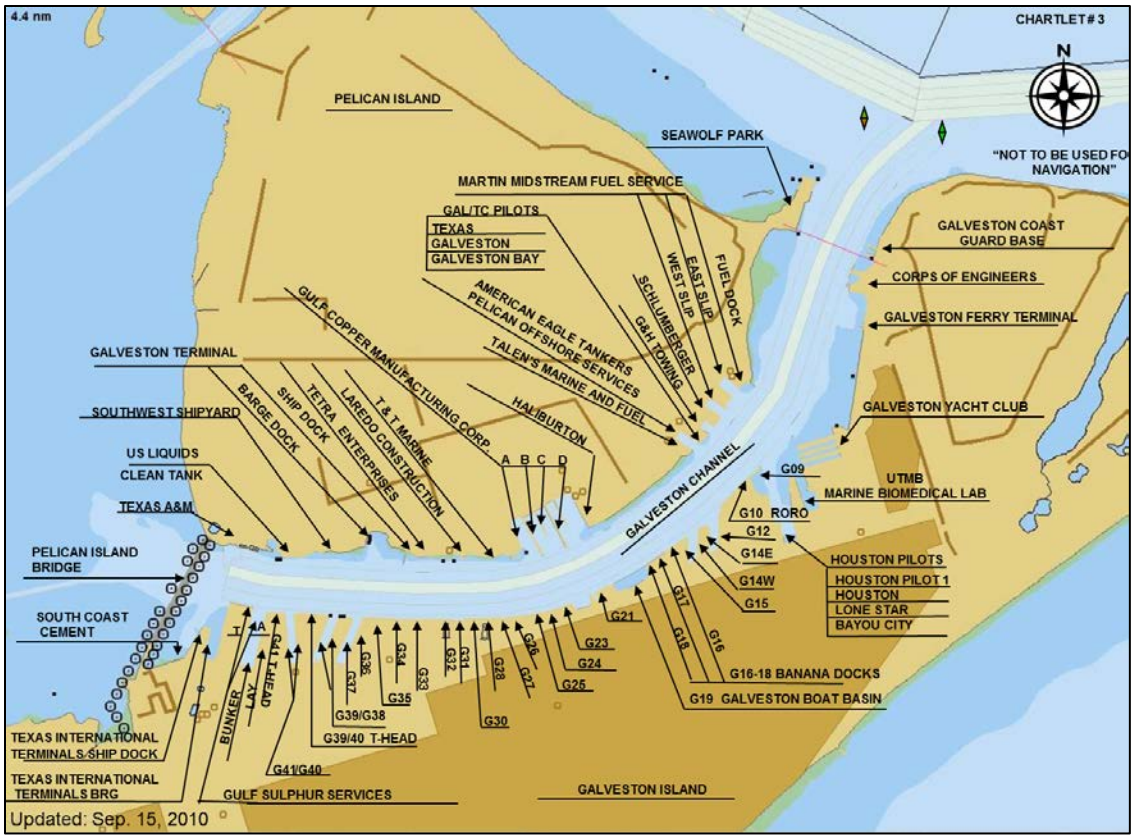


Figure 5-1. Map of Port of Galveston

5.2 Facilities

Wharves exist along the north side of Galveston Island and along the Harborside shoreline of Pelican Island near the entrance to Galveston Bay. The Port of Galveston consists of 850 acres of facilities and property, 300 acres are on Pelican Island and 550

acres are on Galveston Island[42]. The south side faces the Gulf and is protected by a 17-foot- high concrete seawall. Some additional port properties and facilities are located on Pelican Island including a large greenfield site held by the Port of Houston Authority for the potential future development of port facilities.

To help service the 60 wharves and piers in the Port of Galveston, facilities include a 300-ton capacity crane and a 200-floating crane. Port of Galveston's 12 berthing spaces can house vessels to a maximum length of 1,509 feet and berthing depth of 40 feet. The Port contains 11 dry cargo docks, one liquid bulk dock, one container dock, and three cruise ship docks. Port of Galveston also includes a dredging and disposal facility, which is a feature unique to Texas ports.

Storage assets for the Port of Galveston includes 23 paved outdoor storage facilities. In addition, there are 3,000,000 bushels of elevator storage, 65,000 square feet of cold storage, and 199,530 square feet of transit sheds and warehouses. The port has a reefer warehouse for fruit, mobile harbor crane, military cargo storage, automobile and Ro-Ro handling facility and 2 shipyards. There are no container cranes in the port.[43]

In 2016, Port of Galveston held a ribbon-cutting for its $13 million Terminal 2 cruise terminal expansion project. The project expanded the terminal by about 60,000 square feet (for a total of 150,000 square feet), quadrupled the number of seats from 500 to 2,000, and added more than 16 check-in booths.

5.3 Statistics

5.3.1 Cruise Ship Industry

The Port of Galveston is the fourth busiest passenger cruise port in the nation, and seventh busiest in the world[44]. Cruise lines include three homeported Carnival vessels including the CARNIVAL FREEDOM, CARNIVAL BREEZE and CARNIVAL VALOR. In addition the DISNEY WONDER, and Royal Caribbean's LIBERTY OF THE SEAS are homeported in Galveston. On-shore spending generated from cruise activity was $56 million, and another $18.1 million was spent on cruise-related services provided at the port[45]. Cruise ships count for half of the Port's revenue. According to a Galveston Parks Board study on the Economic Impact of Tourism on Galveston, it is estimated that Galveston's cruise industry has an estimated impact to Texas in excess of 22,600 jobs contributing $1.42 billion to the Texas economy.[46] The cruise-related passenger and vehicle count data from 2007 through 2016 are provided in Table 5-1. An example of the

[42] Houston Galveston Area Council, Port of Galveston, Galveston, Texas, November 20, 2015, p. 2, https://www.hgac.com/taq/transportation-committees/TAC/2015/11-nov/docks/ITEM-11B-HGAC-TPA-111815.pdf.

8 Texas Department of Transportation, 2014 Texas Port Report, June 2014, p. 25, https://ftp.dot.state.t

[43] Port of Galveston Port Authority interviews.

[44] Port of Galveston, 2015 Comprehensive Annual Financial Report, Galveston, Texas, pp. ix and xi, http://www.portofgalveston.com/DockumentCenter/View/1503.

[45] Tourism Economics, The Economic Impact of Tourism on Galveston Island, Texas: 2015 Analysis, p.9, http://www.galvestonparkboard.org/ArchiveCenter/ViewFile/Item/53.

[46] The Economic Impact of Tourism on Galveston Island, Texas. 2015 Analysis. http://www.galvestonparkboard.org/ArchiveCenter/ViewFile/Item/53

cruise call schedule for 2017 is provided on Figure 5-2 and terminal map is shown on Figure 5-3.

Table 5-1. Port of Galveston Cruise-Traffic related data (2007-2016)

Year	Cruise Ship Calls	Cruise Passengers	Vehicles Parked
2007	207	523,303	68,230
2008	133	376,815	53,162
2009	139	394,640	56,786
2010	152	434,524	58,378
2011	152	459,448	59,466
2012	174	604,272	77,624
2013	179	604,994	73,395
2014	181	641,650	87,422
2015	232	834,616	112,363
2016	235	868,923	105,108

Source: Port of Galveston Records

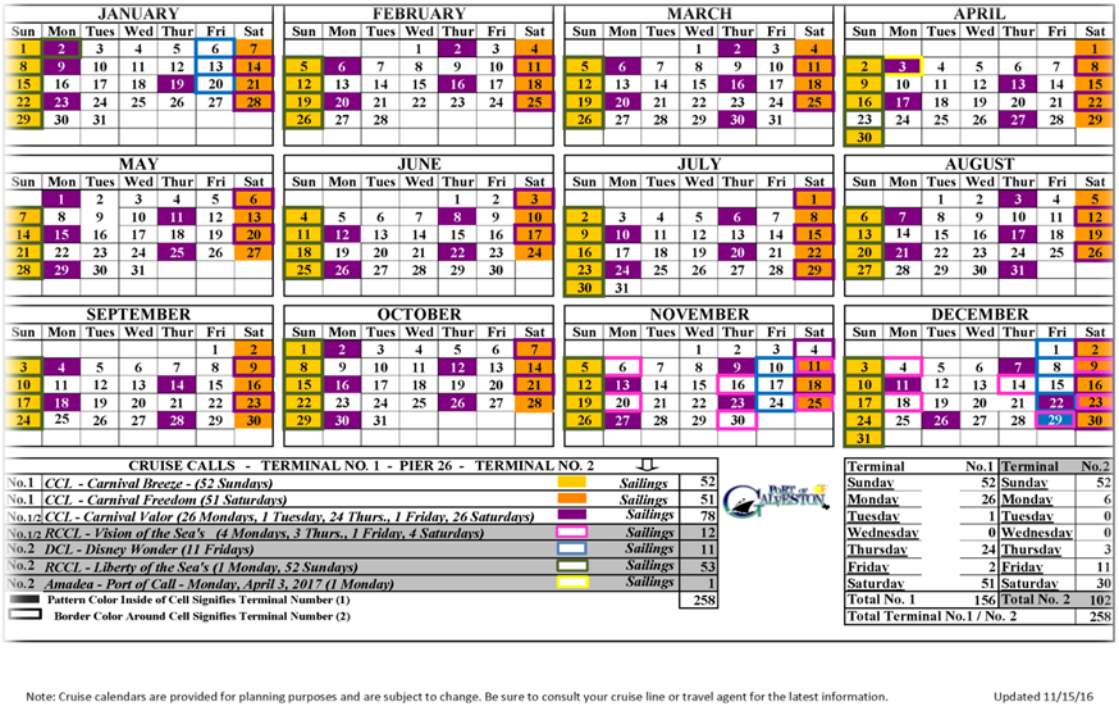


Figure 5-2. Port of Galveston Cruise Call Schedule - 2017

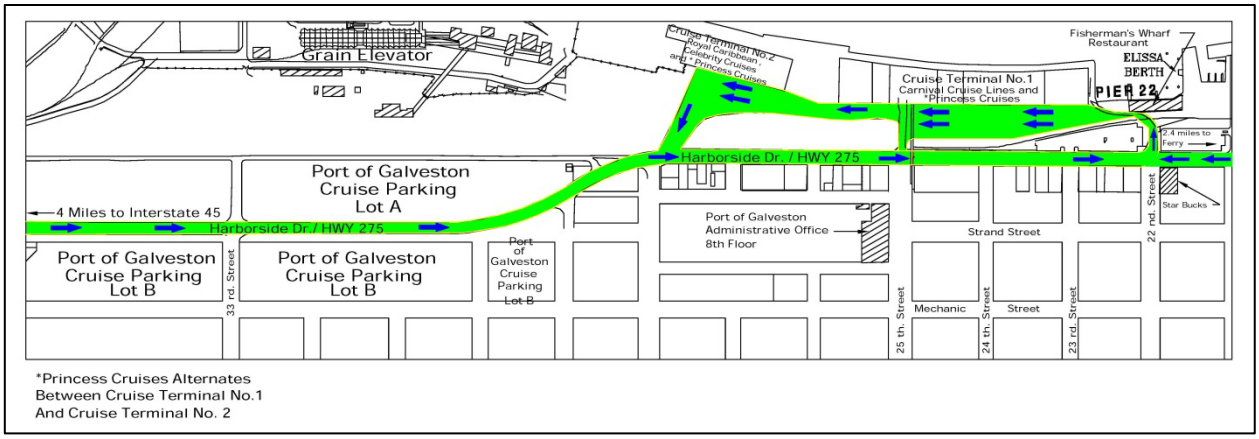


Figure 5-3. Cruise Terminal Map

5.4 Cargo Industry

The Port of Galveston ranks 52nd in the nation in cargo tonnage; 5.6 million tons of cargo were moved in 2015[47]. In 2013, the Port of Galveston serviced 317 cargo ships, 179 cruise ships, 96 lays and rigs, six cargo barges, 229 lay barges, and 85 research vessels. Principal industries for the port include shipping, boat building and repairing, grain elevators, machine shops, cotton compresses, meat packing, fishing, dairying and agriculture. The port is equipped to handle nearly all types of cargo including containers, dry and liquid bulk, break-bulk, RO-RO, refrigerated, and project cargoes.

The Port's Foreign-Trade Zone activities are typically focused on imported products, though some export related activity is identified in Figure 5-4.

FTZ 36, GALVESTON
GRANTEE: BOARD OF TRUSTEES OF THE GALVESTON WHARVES

All Activity:

MERCHANDISE RECEIVED	EXPORTS	EMPLOYEES
$100-250 mil	$1-5 mil	1-25

Warehouse/Distribution Activity:

NUMBER OF COMPANIES	MERCHANDISE RECEIVED	EXPORTS	TOTAL SHIPMENTS
5	$100-250 mil	$1-5 mil	$50-75 mil

Production Activity:

	COMPANY	MERCHANDISE RECEIVED	EXPORTS	TOTAL SHIPMENTS
36B	M-I LLC	$10-25 mil	$0	$10-25 mil

Figure 5-4. FTZ #36 Activities

[47] Senate of Texas, Senate Select Committee of Texas Ports, Interim Report to the 85th Legislature, Austin, Texas, November 2016, p. 7, http://www.senate.state.tx.us/75r/senate/commit/c638/c638.InterimReport2016.pdf.

5.5 Commodities and Trade Flows

Petrol, crude and chemicals comprise nearly 60 percent of total cargo while grain and fertilizer account for 25 percent. Nearly 3 million tons of grain were exported through the port in 2015. Overall total tonnage has decreased since 2010 (see Figure 5-5 through Figure 5-8). Further details associated with the Port of Galveston's commodity flows are contained in Appendix C.

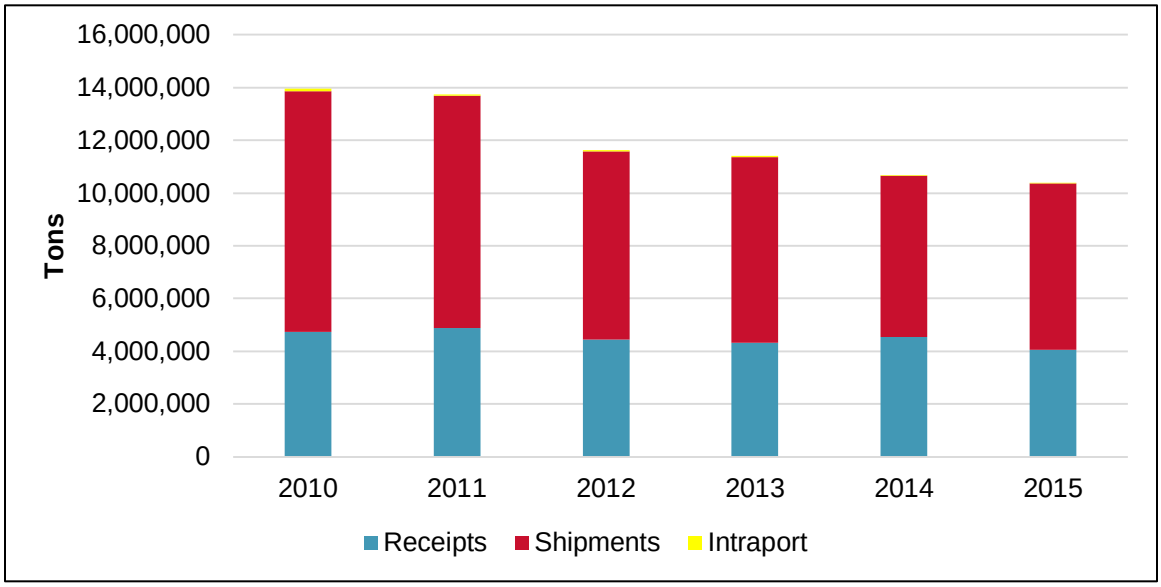


Figure 5-5. Port of Galveston - Tonnage 2010-2015

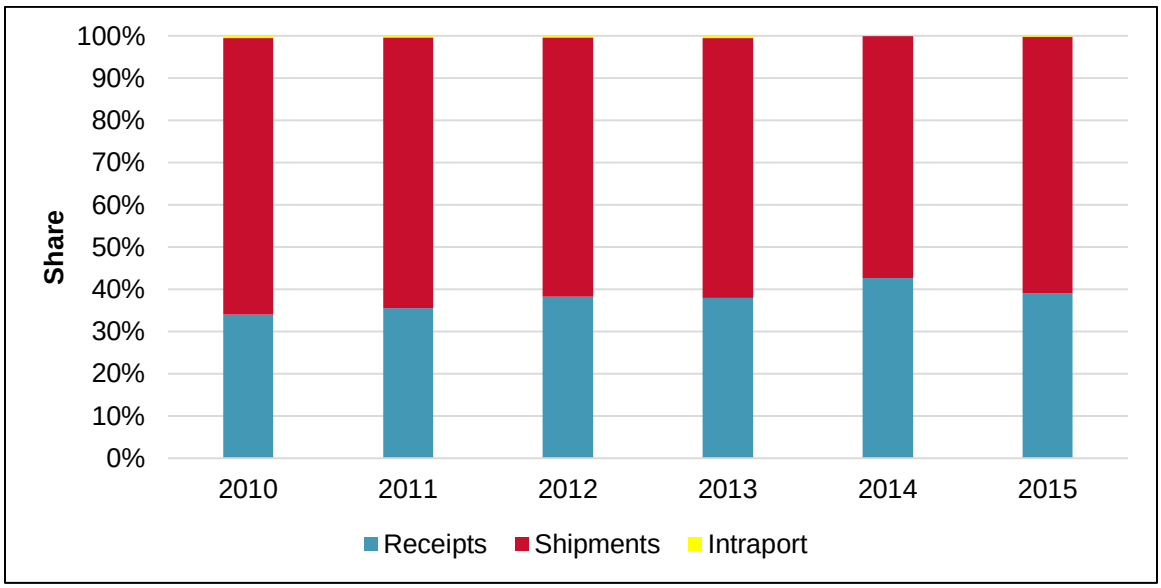


Figure 5-6. Port of Galveston – Share of Tonnage

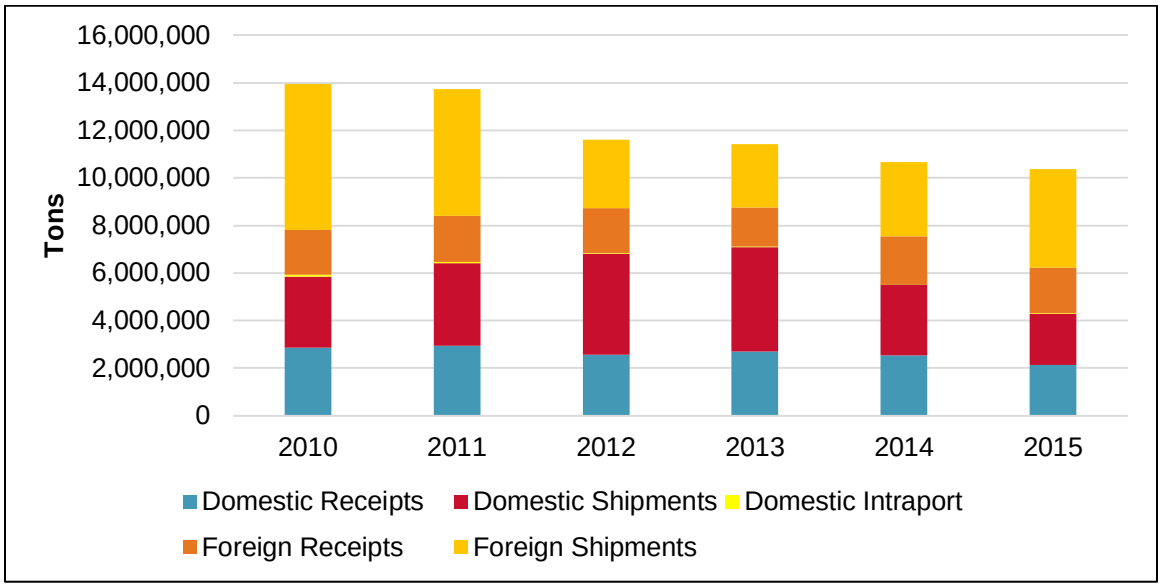


Figure 5-7. Port of Galveston - Tonnage All Commodities, All Types, All Directions

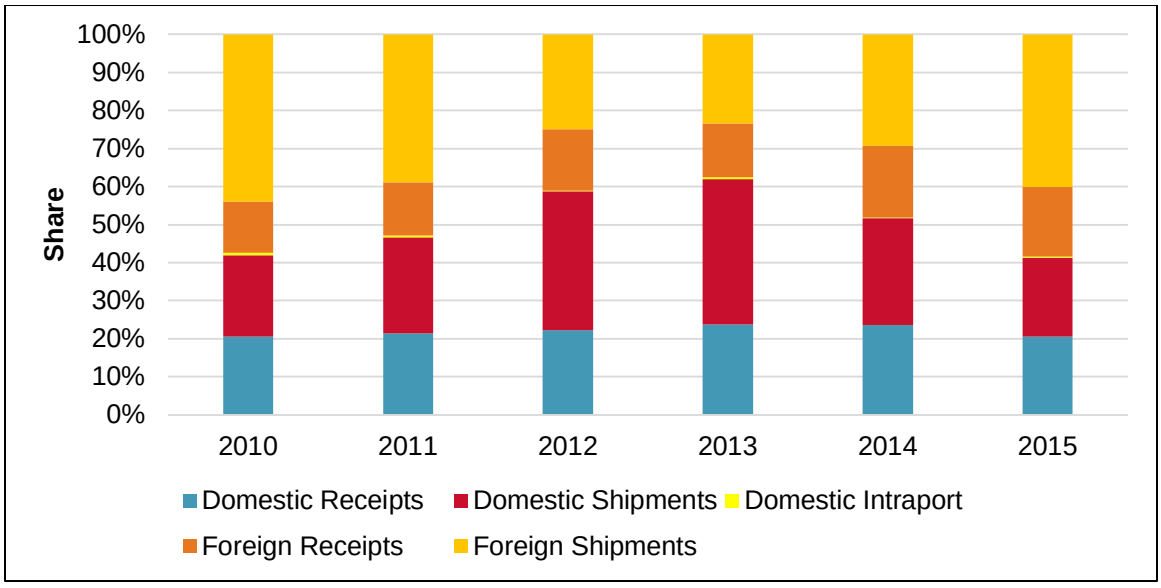


Figure 5-8. Port of Galveston –Share of Tonnage

5.6 Surface Transportation

5.6.1 Railroads

The Port of Galveston is served by the port based Galveston Railroad, L.P. which serves the port facilities on Galveston Island. There is no rail access to Pelican Island. The Galveston Railroad provides rail connections to two Class I railroads which include the Union Pacific Railroad and the Burlington Northern Santa Fe Railroad (Figure 5-9).

These railroads have the capability to directly service the western half of the U.S. and Canada and can facilitate service to the rest of the U.S. and Mexico. The Port owns the rail line, but leases it to the Galveston Railroad company, a subsidiary of the Genesee & Wyoming Railroad. Revenue from rail cargo movement tonnage provides income to the Port.

Source: Galveston Railroad

Figure 5-9. Galveston Railroad

5.6.2 Highways

In 2014, the Port of Galveston experienced 135,000 vehicles in public and private truck traffic volume[48]. Access to the port through Interstate 45 is considered good. The main roadways are sufficient; however, there is consistent flooding on the main waterfront route off I-45 along Harborside Drive as well as congestion within 1 mile of cruise terminals during periods when cruise ships are undergoing turnarounds. A separate

[48] Texas DOT

study is currently underway to address these issues. In addition, the Pelican Island Bridge needs to be replaced with 4-lane bridge and railroad corridor which would allow the north side of the port to fully develop.

There are several other highway projects underway, and an estimated billion dollars or more will be spent on Galveston County transportation infrastructure over the next decade.[49]

The state funding for port projects contained within Legislative Rider 45 and Rider 48 identified improvements to Old Port Industrial Road, 33rd Street, and the intersection of 28th Street and Harborside Drive to improve traffic flow.

There will also be major improvements to the two main roadways heading through the county, I-45 and SH146. The I-45 project will expand I-45 from 6 lanes to 8 lanes between NASA 1 in southern Harris County and FM1764 in Texas City. This work should be completed in fall of 2018. Once this phase is completed, the expansion will continue from Texas City to Galveston, slated to take place between 2019 and 2021.

SH146 work includes expansion from 2 lanes to 6 lanes, which will facilitate access from Port of Houston and southern Galveston County via a limited access highway. Construction is slated to take place in two phases, with estimated completion in 2022.

5.6.3 Pipeline

The Port of Galveston is not served by any product pipeline with the exception of natural gas for local consumption.

5.7 Growth and Development

At the port itself, pier work needs to be completed, which will include in-filling of several berths at the cargo piers as well as the redevelopment of a portion of the cargo terminals into an additional cruise terminal. To accommodate the cargo and passenger trade additional parking and near waterfront storage will be required. The Port is addressing pier damage from hurricane Ike (September 2008) and are awaiting Federal Emergency Management Agency (FEMA) funds from the state.

In 2015, Port of Galveston entered into a revised agreement with grain exporter Archer Daniel Midland to increase minimum annual guaranteed revenue and to invest $10 million in capital improvements at the ADM facility within the Port.. The Port expects growth in its refrigerated fruit/bananas business, in part to a $12 million facility investment, and $10 million wharf improvement and expansion, made by Del Monte Fresh Produce, N.A.[50]

In 2016, Wallenius Wilhelmsen Logistics opened a vehicle distribution center to handle BMW imports. This facility can import and process 32,500 vehicles annually. It serves 45 BMW and Mini dealers across Texas, Oklahoma, Louisiana and Arkansas. This already

[49] http://www.developgalvestoncounty.com/road-improvements

[50] Port of Galveston 2015 Comprehensive Annual Financial Report. http://www.portofgalveston.com/DockumentCenter/View/1503

complements a facility already operated by Wallenius Wilhemsen Logistics that can provide storage for 7,000 units of construction, agricultural and mining equipment

The Port of Galveston's 10 largest revenue generating customers in 2015 are listed in Table 5-2 and operating revenue from 2007 through 2016 is depicted on Figure 5-10)

Table 5-2. 2015 Schedule of Ten Largest Revenue Generating Customers

Customer name	Amount
Carnival Cruise Lines	$7,343,314
Royal Caribbean, Int'l	$4,959,418
ADM Grain Co.	$2,219,254
Galveston Railroad	$1,371,311
Del Monte Fresh Fruit	$1,300,454
Wallenius Wilhelmsen	$964,918
Gulf Copper	$958,238
Argilliance/CHS	$784,729
Malin Int'l	$720,769
Norton Lilly Int'l	$650,181

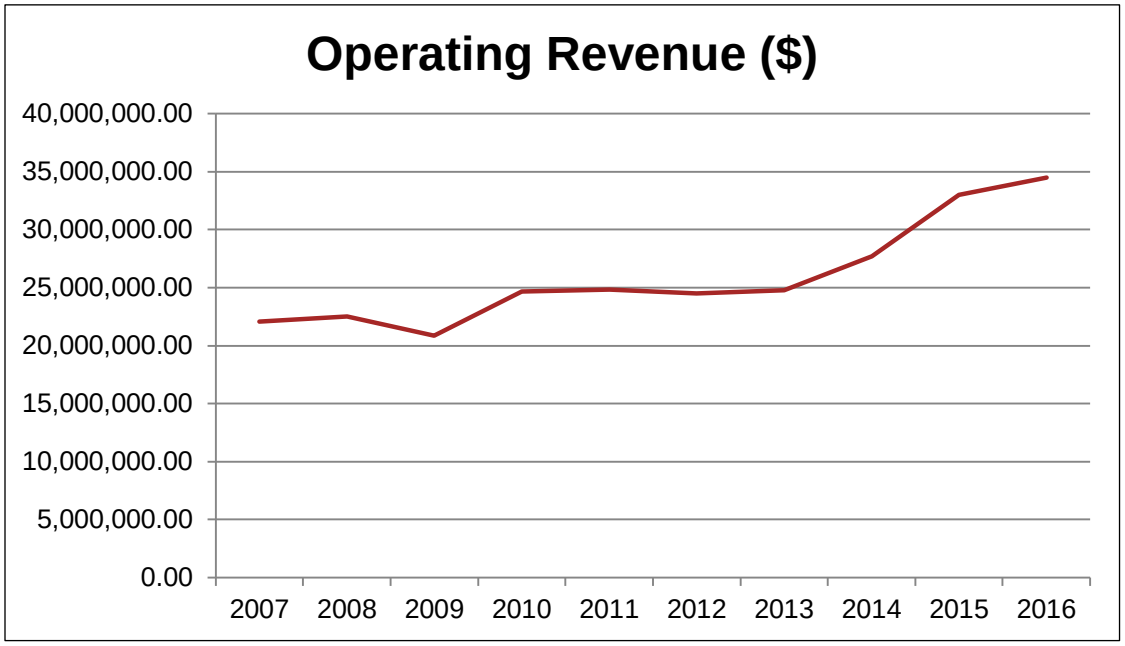


Figure 5-10. Port of Galveston Operating Revenue

6 Port of Texas City Profile

6.1 Description

The Port of Texas City is located on the southwest shore of Galveston Bay with access to the Gulf Intercostal Waterway Gulf of Mexico, and the Houston Ship Channel. The Port of Houston lies approximately 42 nautical miles to the north and the Port of Galveston about 6.5 nautical miles to the southeast (Figure 6-1). The Port has a channel depth of 45 feet, channel width of 1,200 feet and a 1,000-foot turning basin. The Port of Texas City is private and jointly owned by the Union Pacific Railroad and the BNSF Railroad. The Texas City Port Authority owns most of the Port's property and it is Texas' only privately-owned port.

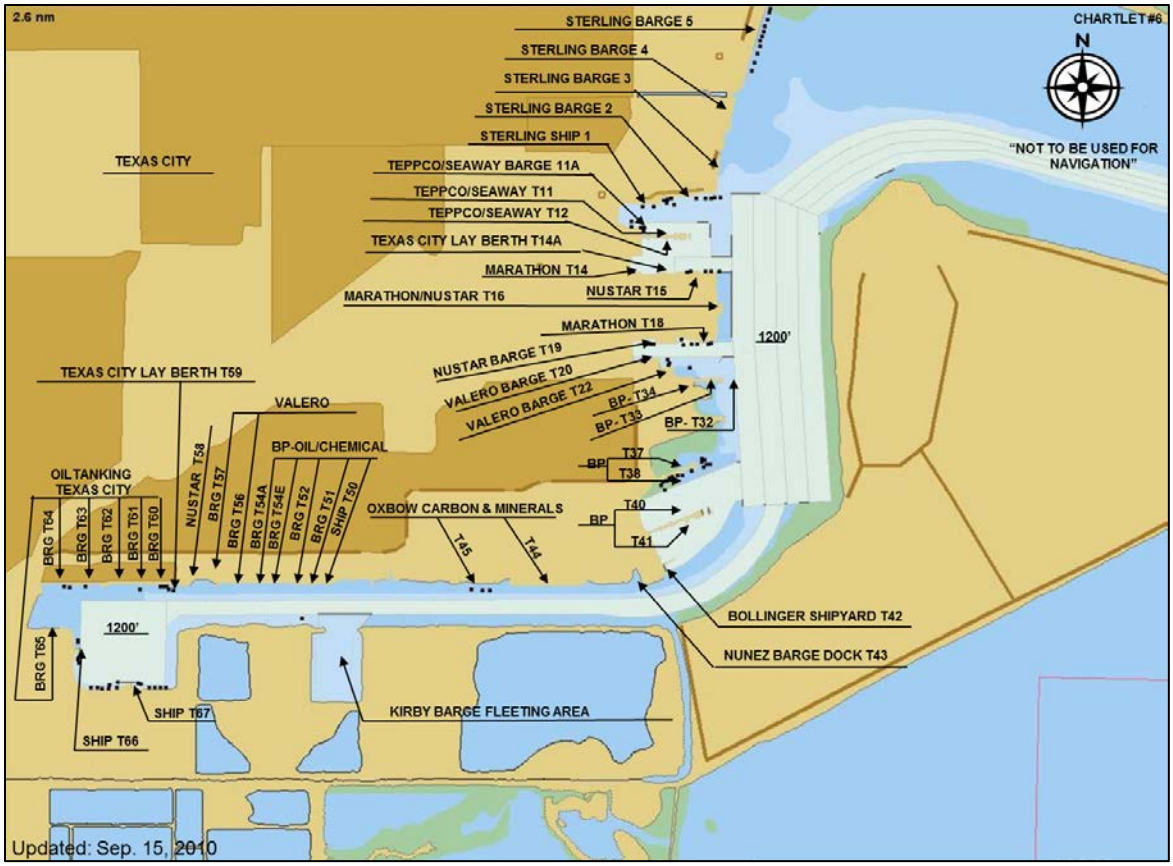


Figure 6-1. Port of Texas City Map

6.2 Facilities

The Port of Texas City almost exclusively handles very large volumes of liquid bulk cargoes. Subsequently, the port contains just one dry cargo dock and 21 liquid bulk docks. There is also a former shipyard in the Port of Texas City. There are 11 primary port users that utilize the port's 1000 acres.

The Port of Texas City is also home to Foreign-Trade Zone #199 (Figure 6-2).

6.3 Statistics

In 2015, the Port of Texas City had 6,723 total vessel calls. Of those, 1,148 were ships and less than 1 percent of those were dry bulk vessels. In 2016, the port handled 4,318 barges and 1,109 ships.

The Port of Texas City is the 15th largest port in the U.S. and the 4th largest port in Texas, with over 50 million tons of waterborne tonnage.

FTZ 199, TEXAS CITY
GRANTEE: TEXAS CITY FOREIGN-TRADE ZONE CORPORATION

All Activity:

MERCHANDISE RECEIVED	EXPORTS	EMPLOYEES
$10,000-25,000 mil	$1,000-5,000 mil	6,001-7,000

Warehouse/Distribution Activity:

NUMBER OF COMPANIES	MERCHANDISE RECEIVED	EXPORTS	TOTAL SHIPMENTS
0	$0	$0	$0

Production Activity:

	COMPANY	MERCHANDISE RECEIVED	EXPORTS	TOTAL SHIPMENTS
199A	Marathon Petroleum Corporation	$10,000-25,000 mil	$1,000-5,000 mil	$10,000-25,000 mil
199C	Valero Refining - Texas, LP	$1,000-5,000 mil	$1,000-5,000 mil	$1,000-5,000 mil

Figure 6-2. FTZ#199 Activities

6.4 Commodities and Trade Flows

Key commodities passing through the Port of Texas City include the import of crude petroleum oil and exporting of refined petroleum products, including gasoline, diesel, jet fuel and intermediate chemicals.[51] The sole dry cargo, controlled by Oxbow, provides receipt, storage, and vessel loading of coal and petroleum coke, which is sold for export and domestic consumption. The facility is permitted for one million tons of storage, and seven million tons of coal and petroleum coke throughput. Exports, which include outbound cargo such as chemicals, liquid plastics, styrene, ethanol and acid are handled by ship, barge and domestically pipeline. In 2015, 86.3 percent of commodities were petroleum and related products and 13.2 percent were chemicals and related products. [52]

A majority of the port's cargo movement has shifted to domestic product handling, mostly by pipeline resulting in reduced ship traffic. Where foreign crude import was the basis for processing and handling of petroleum cargo, most crude now comes in from domestic sources by pipeline and rail and in turn moves out in the same manner which also includes truck. The import of foreign crude has decreased from 70 million tons to 45

[51] Guide to the Economic Value of Texas Ports
[52] https://www.bts.gov/archive/publications/port_performance_freight_statistics_annual_report/2016/ch5/TexasCity

million tons in the last several years. In the first half of 2017, export of cargo through the Port was a mere 760,000 metric tons (Figure 6-3 through Figure 6-6).

Further detail of the Port of Texas City commodity flows are contained in Appendix D.

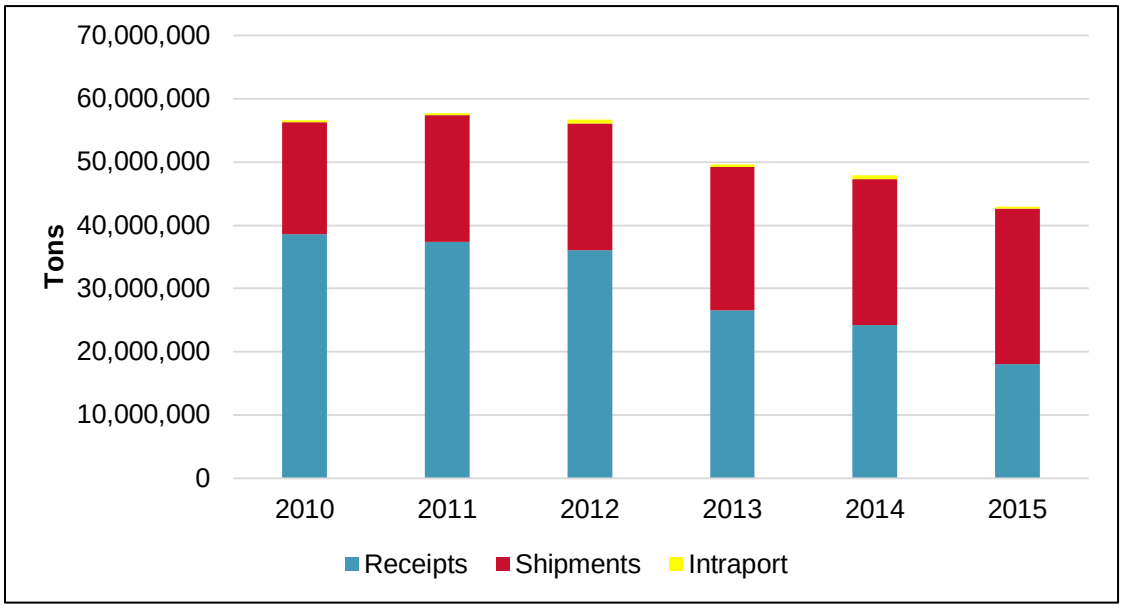


Figure 6-3. Port of Texas City – Tonnage 2010-2015

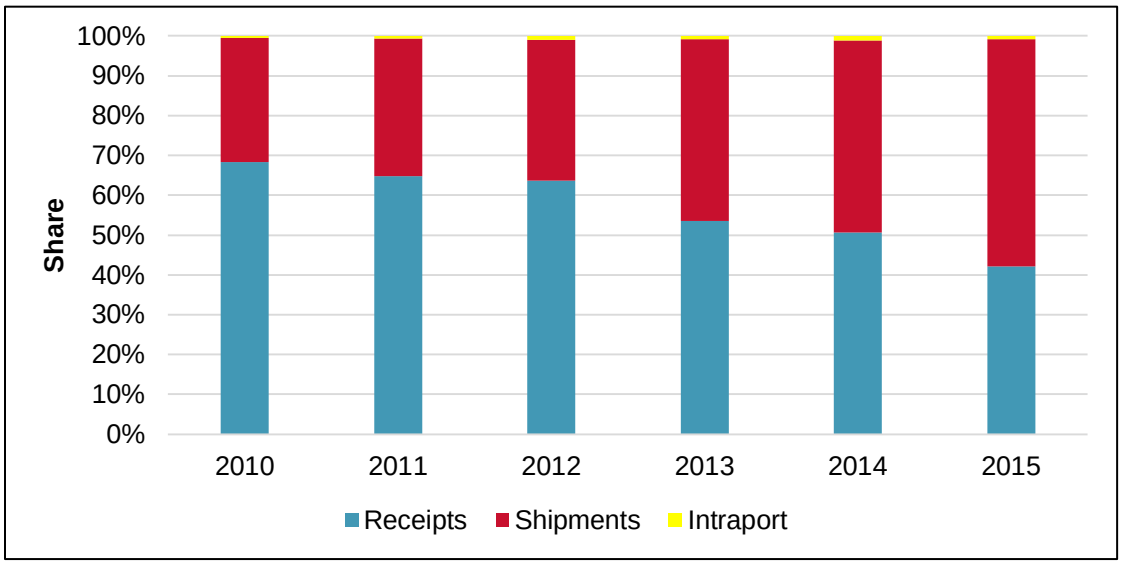


Figure 6-4. Port of Texas City – Share of Tonnage

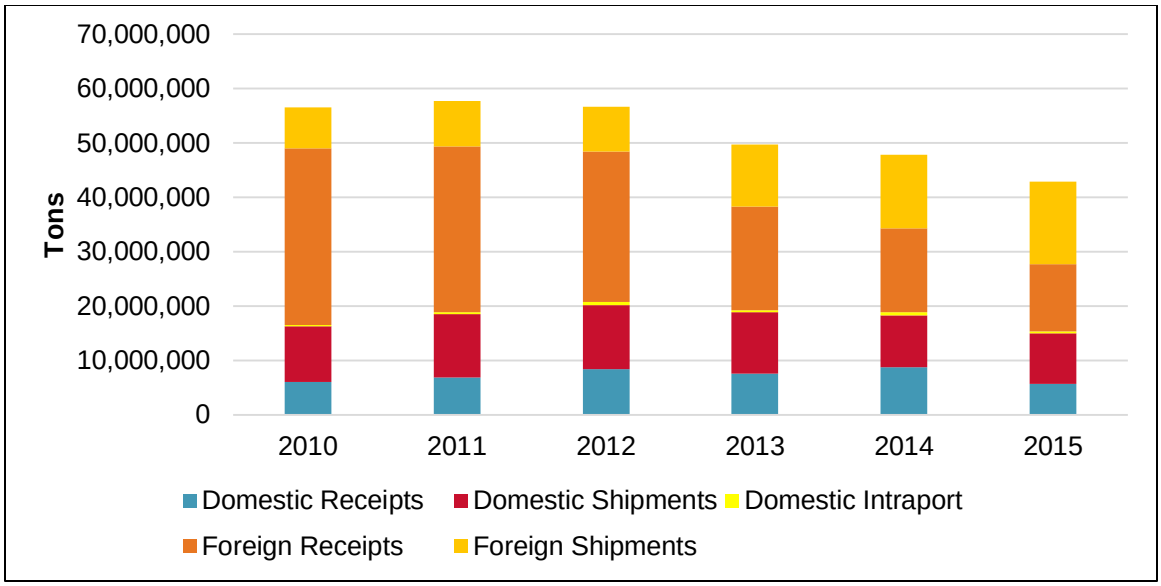


Figure 6-5. Port of Texas City – Tonnage All Commodities, All Types, All Directions

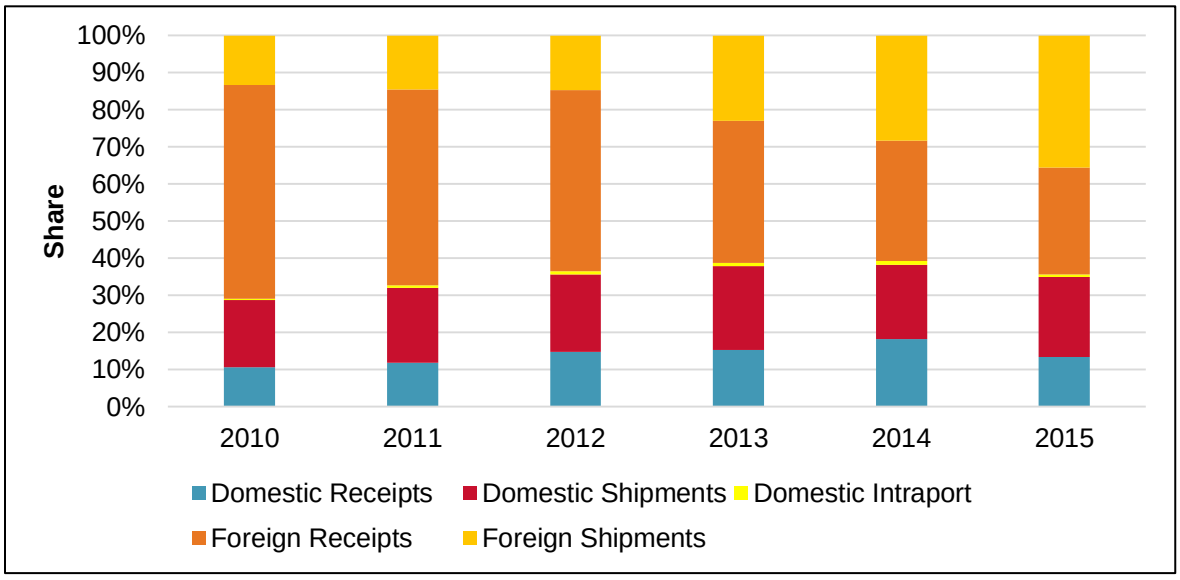


Figure 6-6. Port of Texas City – Share of Tonnage

6.5 Surface Transportation

6.5.1 Rail

The Port of Texas City operates three MP1500 horsepower locomotives and 31 miles of tracks to serve its customers. The Texas City Terminal Railway Company handles over 25,000 car loads per year with about 46 rail cars per unit train.[53] Rail line haul volume is flat, having only 0.5 percent growth from 2015 to 2016. Loaded cars between those years were down 5.5 percent; however, they are currently up 3 percent year to date in 2017.

6.5.2 Highways

The Port of Texas City has excellent highway connections including very good access to Interstate 45.

6.5.3 Pipeline

The Port of Texas City hosts a number of pipelines networks, which carry a range of bulk liquid and gas products including crude oil, naphtha, as well as diesel, fuel oil, kerosene and gasoline to and from terminals within the port complex (Figure 6-7).

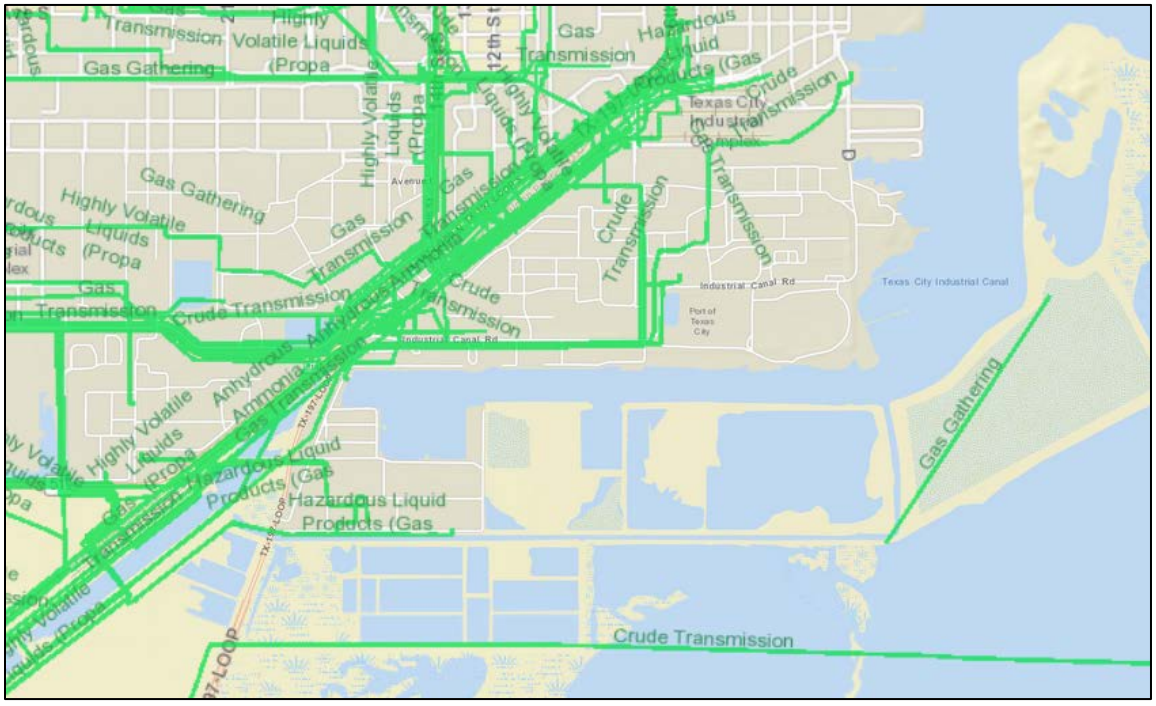


Figure 6-7. Pipelines at Port of Texas City

[53] http://tctrr.com/

6.6 Growth and Development

There are several projects underway including an expansion of the Valero/Nustar facility capacity and export of thermal oxidizer. The Port needs more property for expansion, rail corridors and pipelines. There is extensive privately owned land surrounding the Port though there are several environmental issues which limit growth. In 2015, the Port/Texas City Railway Company supported the efforts of the City to remove any navigational impediments to a new development site at Shoal Point on Snake Island, on the southeast side of the Port. While supportive of expanded port growth and commerce, the Port expressed concerns that no agency should undertake planning that limits current access to existing facilities within the Port. The preference for a separate and designated route to Shoal Point would be the best possible scenario from the Port of Texas City's perspective.

In January 2017, an LNG company signed lease agreements with the City of Texas City and the State of Texas for the potential development of an export LNG facility on nearly 1,000 acres at Shoal Point.

7 Port Freeport Profile

7.1 Description

Port Freeport is a deep water port located in Brazoria County, TX, about 40 nautical miles southwest of Galveston and about 65 miles south of downtown Houston. The port has direct access to the Gulf Intracoastal Waterway and Brazos River Diversion Channel (Figure 7-1).

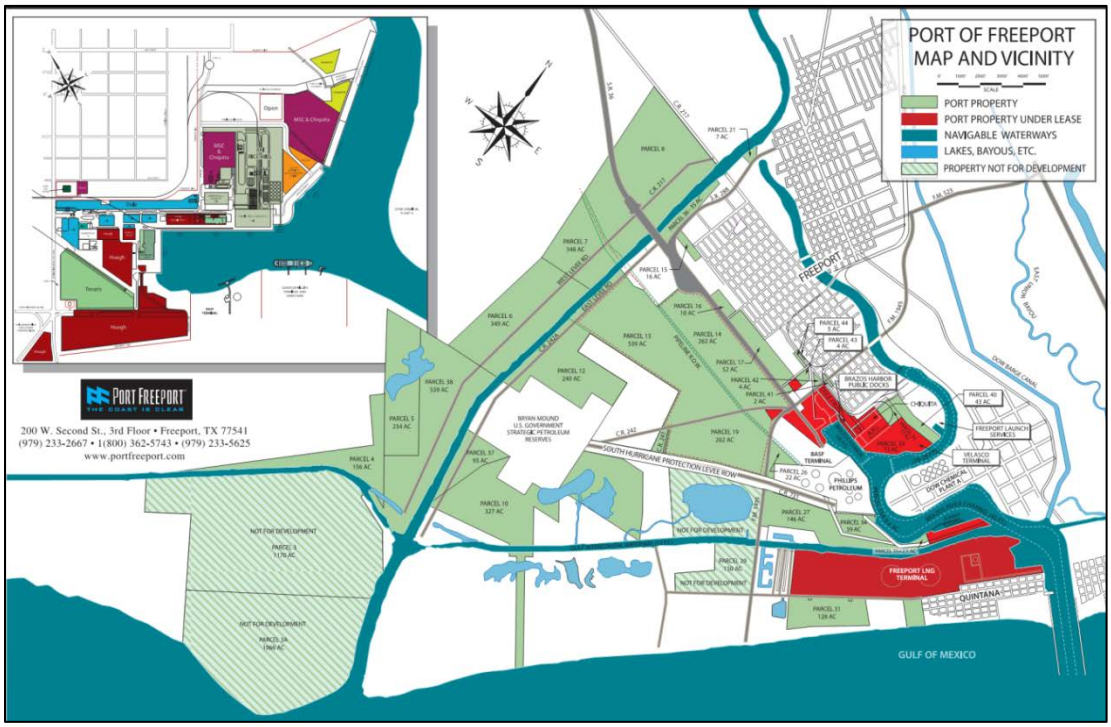


Figure 7-1. Port Freeport

7.2 Facilities

Surrounded by a Category 4 Hurricane Protection Levee, Port Freeport's land and operations includes about 540 acres of developed land and approximately 7,000 acres of undeveloped land. Port Freeport contains 18 berths accessed via a 45-foot deep channel via the Freeport Harbor Channel. The large tracts of undeveloped land are available to support future growth and development. Port Freeport also has the deepest berths on the Gulf Coast at 52 feet deep. Plans call for 2,400 feet of new berth to be added to the existing 1500 linear feet of berth.

The public terminal handles containers with calls from MSC and Ro-Ro cargo with Hoegh Autoliners. The terminal is equipped with two state of the art ZPMC container cranes that are capable of handling Panamax class container ships

7.3 Statistics

From 2012 to 2016 tonnage steadily grew from 1,706,283 to 3,060,745, making 2016 a record year. The port is ranked 26th in the U.S. in foreign tonnage and 31st in the U.S. in total tonnage. The Port has over 800 vessel calls/year (including barge/tug calls) and had a TEU volume of 125,000 in 2015, which was up 25 percent from the previous year.[54]

The annual economic impact for Port Freeport is $46.2 billion. The Port is responsible for 16,400 direct jobs, and 69,500 local indirect and induced jobs, and 41,100 jobs elsewhere in Texas.

Of all of the vessels that called on the port in 2016, 62 passed through the Panama Canal. The port's cargo is comprised of 85-90 percent liquid bulk.

The Foreign-Trade zone activities for 2015 are identified in Figure 7-2.

FTZ 149, FREEPORT
GRANTEE: PORT FREEPORT

All Activity:

MERCHANDISE RECEIVED	EXPORTS	EMPLOYEES
$5,000-10,000 mil	$100-250 mil	2,501-3,000

Warehouse/Distribution Activity:

NUMBER OF COMPANIES	MERCHANDISE RECEIVED	EXPORTS	TOTAL SHIPMENTS
5	$100-250 mil	$10-25 mil	$10-25 mil

Production Activity:

	COMPANY	MERCHANDISE RECEIVED	EXPORTS	TOTAL SHIPMENTS
149B	DSM Nutritional Products, Inc.	$5-10 mil	$5-10 mil	$5-10 mil
149C	Phillips 66 Company	$5,000-10,000 mil	$100-250 mil	$5,000-10,000 mil

Figure 7-2. FTZ #149 Activities

7.4 Commodities and Trade Flows

The oil and gas industry is a major client of Port Freeport. Other important commodities handled by the port are clothing, fresh fruits and vegetables, rice, paper goods, project cargo, plastic resins, aggregate, autos, and windmill components[55]. Tenants include Dole Fresh Fruit Company, Riviana, and Chiquita. In addition, there are also private terminal owners present at the port such as Dow Chemical Company and BASF.[56] The Dow Chemical Company's Freeport site is the largest integrated chemical facility in the Western Hemisphere. It employs 7,000 staff across 65 manufacturing units.

[54] Port Freeport interview, July 2017.

[55] 23 Port Freeport. (July 17, 2015). Welcome to Port Freeport. Presentation. Available at http://www.portfreeport.com/about_files/State%20of%20the%20Port%207.17.15.pdf.

[56] Port Freeport (February 2016). Port Freeport Economic Impact Analysis.

Top import commodities include aggregate, chemicals, clothing, crude oil, foods, LNG, paper goods, resins, wind turbines, automobiles, machines, steel pipe and project cargo. Port Freeport's top import countries are Brazil, Colombia, Costa Rica, Guatemala, Honduras, India, Mexico, Korea and Japan. Top export commodities include automobiles, chemicals, clothing, foods, paper goods, resins, and rice. Port Freeport's top export countries are Brazil, Columbia, Costa Rica, Cuba, Dominican Republic, Honduras, Nigeria, and Saudi Arabia.[57]

Total tonnage at Port Freeport has been declining, largely as a result of domestic crude oil production replacing foreign imports. Receipts accounted for 70 percent of volume in 2015, but it has recently lost shares. Domestic receipts increased share through 2013, but has declined since 2014 (Figure 7-3 through Figure 7-6).

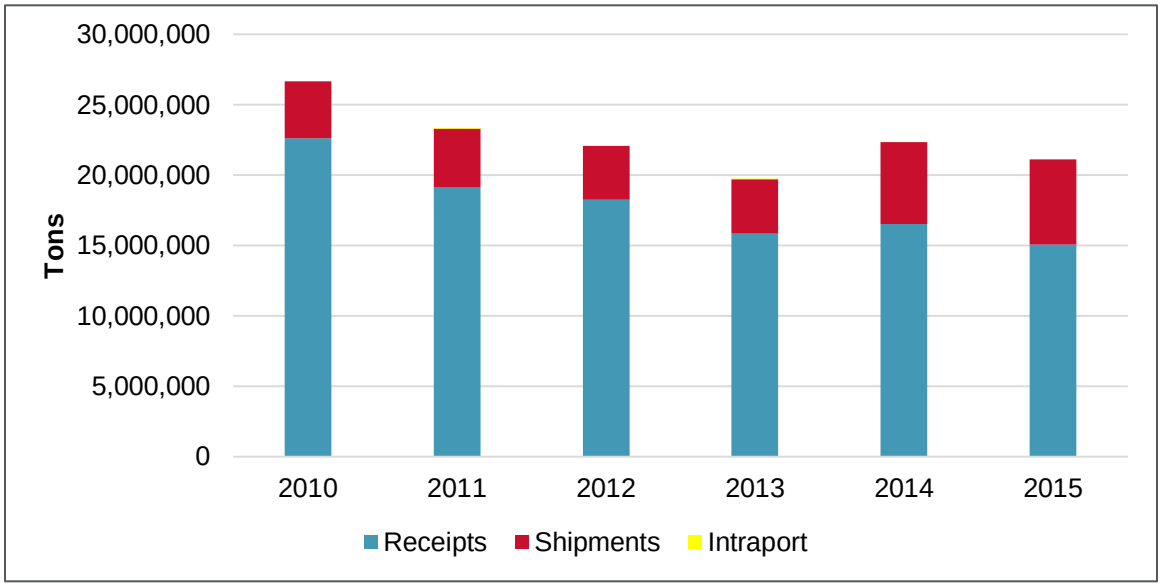


Figure 7-3. Port Freeport –Tonnage 2010-2015

[57] Port Freeport (February 2016). Port Freeport Economic Impact Analysis.

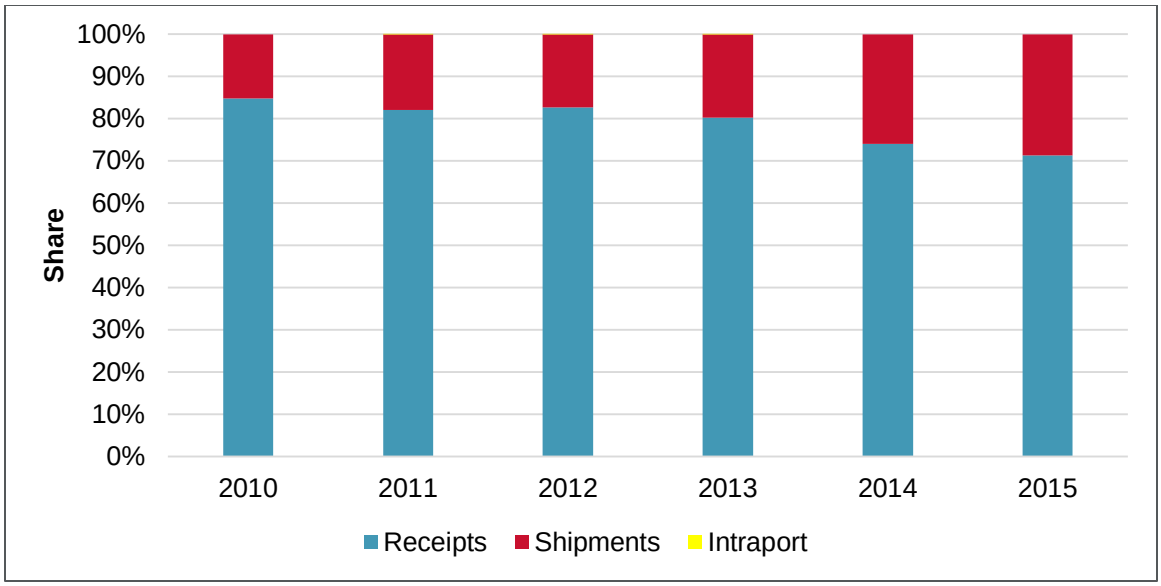


Figure 7-4. Port Freeport – Share of Tonnage

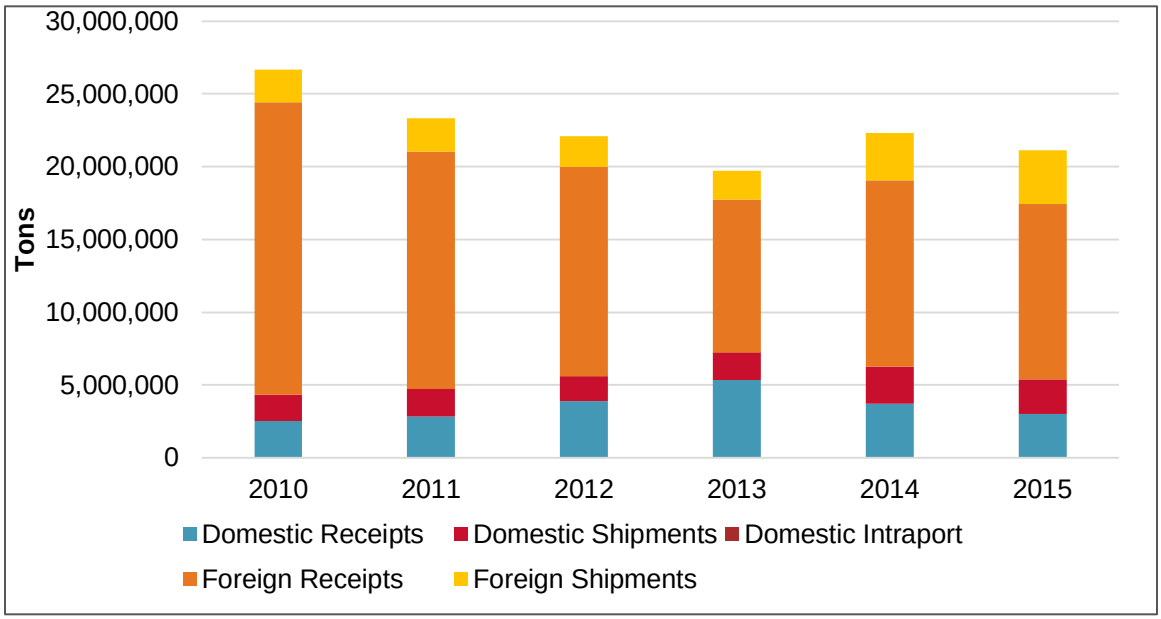


Figure 7-5. Port Freeport – Tonnage All Commodities, All Types, All Directions

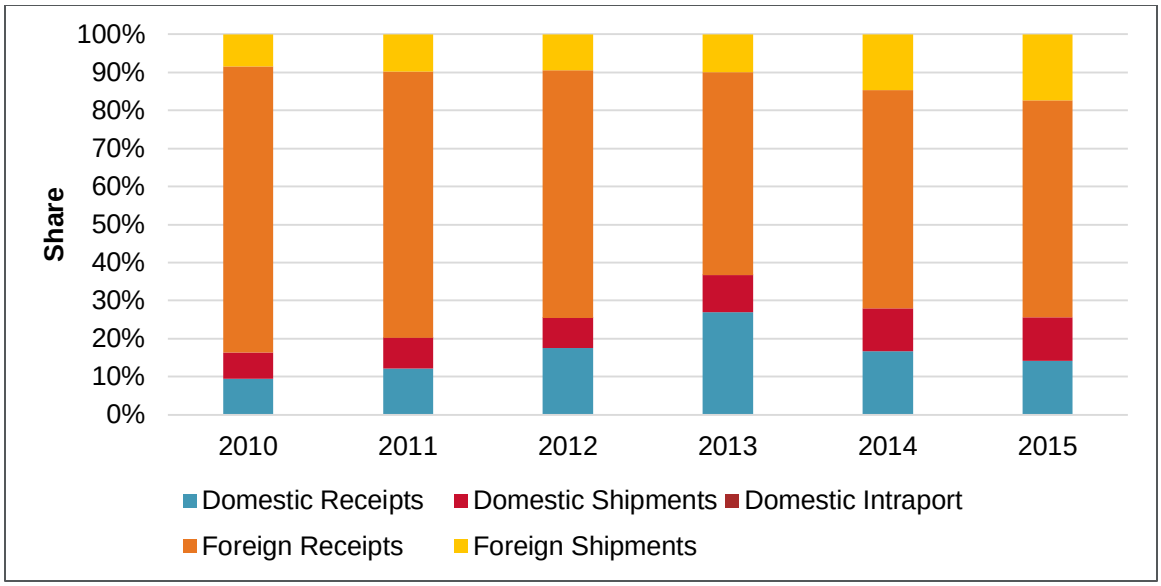


Figure 7-6. Port Freeport – Share of Tonnage

7.5 Surface Transportation

7.5.1 Rail

The port is served by the Freeport subdivision of the Union Pacific Railroad. In August of 2017, a groundbreaking ceremony was performed to mark the commencement of construction associated with a 250-acre site that will be developed into a multimodal park with new warehousing facilities for plastic resins packaging, cross-docking activities and distribution centers. Additional areas of the site have been earmarked for new vehicle processing and storage. Union Pacific Railroad will offer manifest train service on the new rail infrastructure. The $21 million project consists of approximately 21,000 linear feet of new rail track that includes a 6,000-foot lead track spurring from the Union Pacific main line at Cherry Street, crosses SH 36, and then connects to three ladder tracks of approximately 5,000 feet each.

7.5.2 Highways

Freeport is served by SH 288, SH 36 with connections to I10, I45, and Beltway 8 (Figure 7-7).

Port Freeport sees the movement of 400,000 truckloads per year, and that number is expected to increase to 500,000 in 2 years. There is around 350-400 POV and trucks per day.

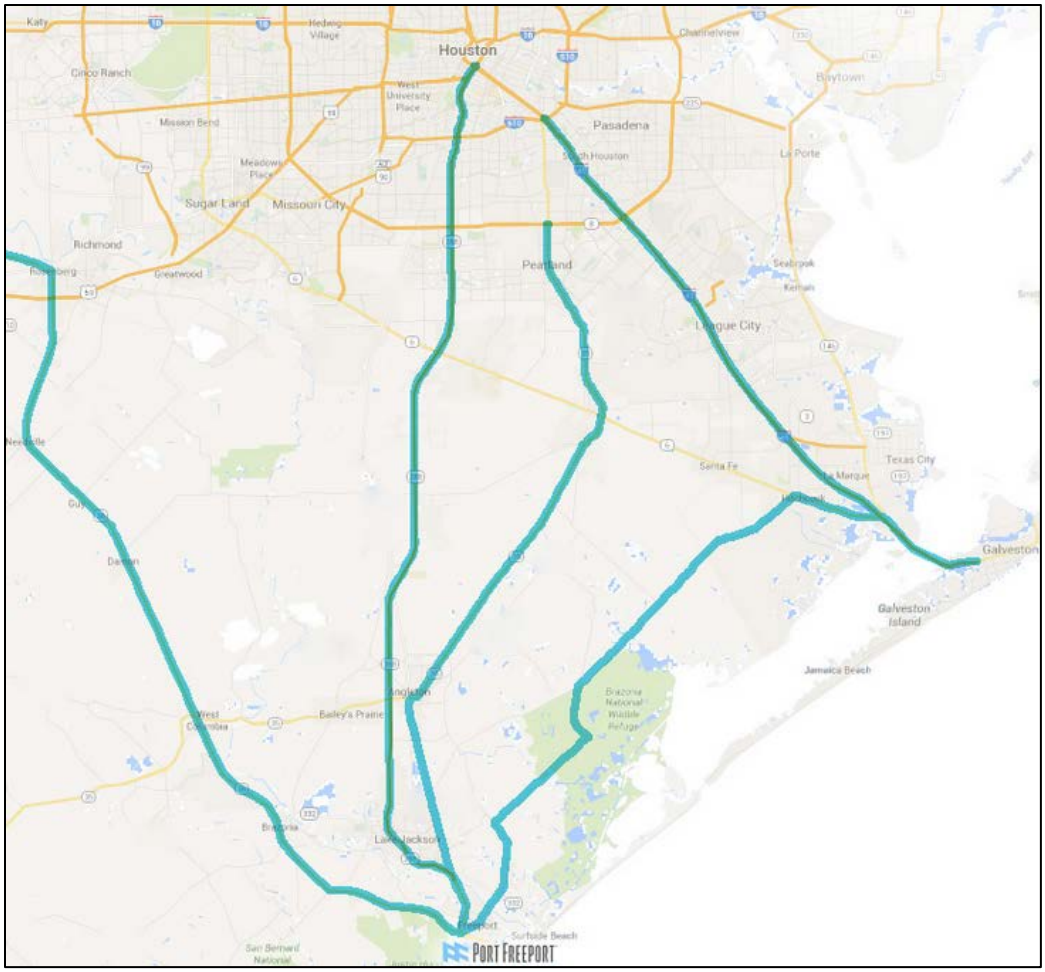
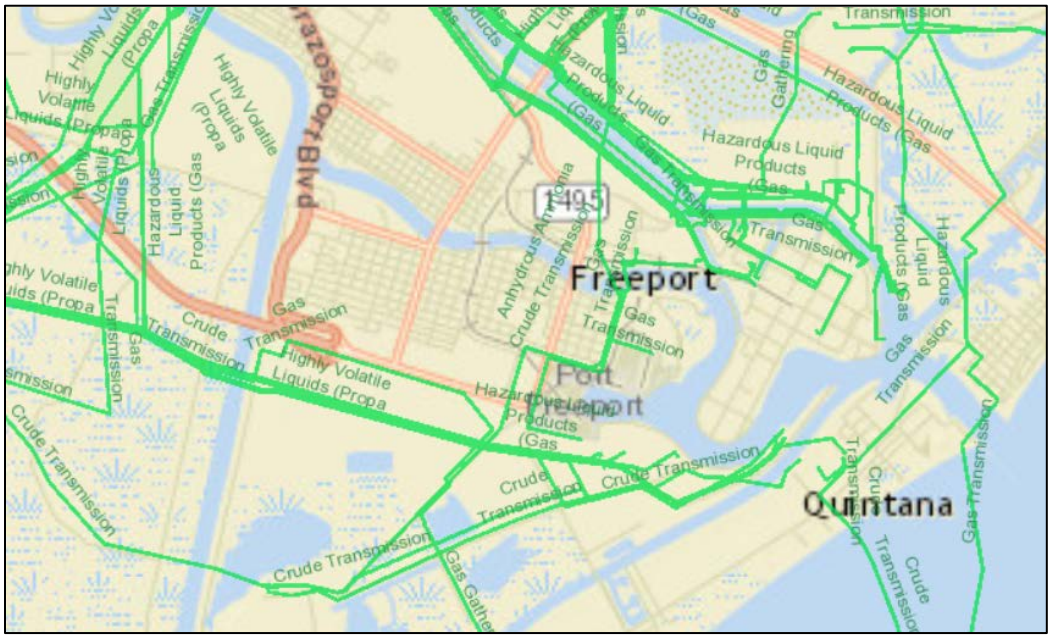


Figure 7-7. Highways serving Port of Freeport

The state approved funding for port projects within Legislative Rider 45 and Rider 48 which included for the Port Freeport, the construction of the railroad crossing on SH 36, just west of FM 1495 and SH 36 intersection.

7.5.3 Pipelines

A number of pipelines serve various terminals and facilities in the port and are operated by Phillips 66, Dow Chemicals, and Enterprise Products Partners L.P. Products transported by pipeline include natural gas liquids, crude oil and other industrial gases. A pipeline also links the port with the Bryan Mound Strategic Petroleum Reserve Site, located just to the west of Freeport (Figure 7-8).



Source. Texas Rail Road Commission

Figure 7-8. Pipelines in the Port of Freeport

7.6 Growth and Development

Overall, Port Freeport has determined that the State and H-GAC has done a good job of meeting the port's expectations. Future planning needs to focus on future capacity needs as the port grows.[58]

Port Freeport is Brazoria County's fastest growing port, growing at a rate of 15% per annum. In 2016 the Port was responsible for 126,000 total jobs representing a total income of 7.6 billion and total economic impact of 46.2 billion, more than doubling since 2012. As of 2016, $18.5 billion worth of oil and gas related projects are being constructed along Port Freeport's Harbor Channel. There are over 500 acres that have been environmentally mitigated and are ready for development, and an additional 1,800 acres identified for industrial development. New infrastructure includes a new container terminal, an OEM vehicle processing and storage facility and a break-bulk terminal. A private LNG processing and export facility is currently under construction in the Port.

Port Freeport has been authorized to deepen the port's channel to 55 feet with the passage of the Water Resources Reform and Development Act of 2014. This will make Port Freeport the deepest port on the Gulf of Mexico. Future enhancements will also include widening of the turning basin. Freeport LNG is funding a project to widen the entrance of the channel from 400 feet to 600 feet in order to accommodate larger ships and increase efficiency for ships traveling in and out of the channel.

[58] Ibid

A significant project includes expansion of the Velasco Container Terminal. This will allow the terminal to receive post-Panamax Container Vessels and will have 3 berths of 3,600 total feet. In addition, the terminal would host 9 post-Panamax Cranes and include a high density terminal with on-dock rail and 1,500,000 TEU lift capacity. Phase 1 is currently taking place (as of 2017), and this is estimated to have an annual capacity of 800,000 TEUs.

Other tenants have also been spending money to enhance their facilities at Port Freeport. Phillips 66 has a $2.06 billion project to expand its terminal. BASF recently built a $90 million emulsion polymers manufacturing plant. Dow Chemical recently completed the construction of an ethane cracker plant. This facility is expected to produce 1.5 million metric tons of ethylene per year, which is derived from natural gas liquids and is used to form plastics. The construction of a new polyethylene plant is also expected to be completed in 2018.

8 Port Interview and Contact List

Interviews and H-GAC Meeting List July 18-20, 2017
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Appendix A

H-GAC Regional Port Commodities

All Trades (Shipments and Receipts, Domestic and Foreign)

All Traffic Types (Domestic & Foreign), All Traffic Directions (Tons) All Ports						
Commodity Group	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	121,606,864	136,581,710	129,583,864	126,106,858	128,906,942	139,899,000
21 Crude Petroleum	107,176,555	96,668,803	101,554,470	84,238,490	81,647,574	70,394,000
32 Other Chemicals and Related Products	55,520,255	57,317,334	56,064,495	54,093,417	51,948,738	54,340,000
53 Primary Iron and Steel Products	5,504,063	7,320,780	8,729,409	8,389,375	9,974,205	8,707,000
71-79 Manufactured Equipment, Machinery and Products	5,261,898	5,746,627	6,096,801	6,369,385	7,192,337	7,715,000
62-64 Grain	10,924,911	9,925,263	4,903,289	6,988,001	8,094,637	7,582,000
43 Soil, Sand, Gravel, Rock and Stone	3,114,814	2,174,842	1,981,851	2,598,947	4,523,729	4,991,000
52 Lime, Cement and Glass	1,835,286	1,808,596	2,135,132	2,420,371	3,006,390	3,976,000
68 Other Agricultural Products	3,712,796	3,921,018	3,495,058	3,721,343	3,409,111	3,728,000
99 Unknown or Not Elsewhere Clsfd	997,488	936,859	1,158,400	1,928,927	4,060,248	3,256,000
54 Primary Non-Ferrous Metal Products	1,275,479	1,546,423	2,083,636	1,871,837	1,780,774	1,914,000
31 Fertilizers	1,173,108	1,305,965	2,018,507	1,848,604	1,964,195	1,745,000
44 Iron Ore and Scrap	1,548,032	2,159,002	2,179,904	1,915,089	1,842,633	1,570,000
65 Oilseeds	966,318	351,808	182,011	336,678	603,829	927,000
11-12 Coal	44,790	649,776	2,401,760	3,058,533	2,202,449	878,000
41 Forest Products, Wood and Chips	324,260	455,022	509,539	500,202	667,783	631,000
46 Non-Ferrous Ores and Scrap	350,748	331,669	295,662	492,895	397,614	561,000
49 Other Non-Metal. Min.	824,190	1,102,815	1,124,137	736,805	671,445	554,000
66 Vegetable Products	519,399	633,085	478,800	720,702	442,855	462,000
51 Paper Products	452,868	499,904	417,922	343,842	357,112	383,000
55 Primary Wood Products; Veneer	214,304	177,941	182,614	170,973	222,060	238,000
47 Sulphur, Clay and Salt	562,940	465,168	382,754	319,056	295,718	224,000
48 Slag	111,990	139,076	235,127	262,365	299,544	222,000
67 Processed Grain and Animal Feed	238,208	275,177	164,361	244,177	279,446	187,000
42 Pulp and Waste Paper	30,999	63,048	176,384	243,340	282,972	171,000
61 Fish	53,227	51,750	73,269	122,931	111,096	114,000
89 Waste and Scrap NEC	2,628	1,314	0	1	0	2,000
45 Marine Shells	407	935	972	528	373	0
Grand Total	324,348,825	332,611,710	328,610,128	310,043,672	315,185,809	315,371,000

Foreign Trade Receipts and Shipments Combined

All Ports Foreign Trade Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	61,842,326	73,088,221	65,928,323	71,593,073	72,491,801	82,660,414
21 Crude Petroleum	105,605,903	93,219,517	88,833,232	66,618,420	64,680,763	56,287,084
32 Other Chemicals and Related Products	26,826,729	28,034,006	28,421,610	27,827,917	25,834,477	28,094,031
53 Primary Iron and Steel Products	4,929,153	6,603,303	7,882,413	7,239,452	9,119,474	7,998,952
71-79 Manufactured Equipment, Machinery	4,793,886	5,427,574	5,705,080	5,974,970	6,845,010	7,573,302
62-64 Grain	10,715,571	9,797,362	4,794,838	6,873,974	7,782,273	7,197,679
43 Soil, Sand, Gravel, Rock and Stone	2,350,013	1,425,292	1,346,142	2,255,036	4,245,509	4,370,218
68 Other Agricultural Products	3,590,028	3,802,814	3,428,906	3,640,553	3,319,639	3,639,446
52 Lime, Cement and Glass	1,471,548	1,495,376	1,719,230	1,982,141	2,436,909	3,410,678
99 Unknown or Not Elsewhere Clsfd	993,023	934,307	1,157,582	1,928,927	4,060,246	3,256,265
54 Primary Non-Ferrous Metal Products	1,015,000	1,168,513	1,586,805	1,523,273	1,549,379	1,752,183
31 Fertilizers	778,408	852,039	1,443,962	1,343,518	1,536,215	1,260,516
65 Oilseeds	948,134	350,022	177,901	295,457	394,665	707,090
41 Forest Products, Wood and Chips	324,260	455,022	509,539	500,202	666,158	630,958
44 Iron Ore and Scrap	742,554	1,250,870	1,218,154	939,315	679,365	607,202
11-12 Coal	4,749	605,417	2,375,313	3,019,519	2,125,061	518,741
49 Other Non-Metal. Min.	788,871	1,005,239	1,052,625	630,339	626,085	512,754
46 Non-Ferrous Ores and Scrap	295,602	298,328	195,209	447,972	337,452	487,950
66 Vegetable Products	420,949	417,958	340,103	505,881	374,546	424,353
51 Paper Products	452,868	499,904	417,922	343,841	357,103	382,815
55 Primary Wood Products; Veneer	214,304	177,941	182,614	170,973	220,849	237,954
47 Sulphur, Clay and Salt	536,269	446,183	358,064	296,741	281,592	221,189
42 Pulp and Waste Paper	30,999	63,048	176,384	243,340	282,972	171,273
67 Processed Grain and Animal Feed	211,561	253,886	160,666	226,441	253,662	146,390
48 Slag	42,949	91,538	160,017	169,451	188,635	141,726
61 Fish	53,227	51,750	73,269	122,931	111,096	114,435
45 Marine Shells	407	935	972	528	373	176
89 Waste and Scrap NEC	0	0	0	0	0	0
Grand Total	229,979,291	231,816,365	219,646,875	206,714,185	210,801,309	212,805,774

Source: USACE Waterborne Commerce Statistics

Foreign Trade Receipts

All Ports
Foreign Receipts

Commodity	2010	2011	2012	2013	2014	2015
21 Crude Petroleum	105,605,903	93,130,882	88,752,823	66,367,519	61,927,755	50,353,623
22-29 Petroleum Products	14,356,173	19,310,761	11,346,542	12,586,988	10,082,357	11,286,304
32 Other Chemicals and Related Products	7,338,372	7,650,018	7,880,799	8,004,459	7,289,985	7,790,756
53 Primary Iron and Steel Products	4,462,681	6,142,974	7,437,254	6,785,986	8,722,750	7,782,978
71-79 Manufactured Equipment, Machinery	1,919,877	2,213,555	2,476,940	2,792,723	3,633,206	4,406,551
43 Soil, Sand, Gravel, Rock and Stone	2,293,687	1,365,757	1,296,888	2,173,217	4,083,529	4,230,297
52 Lime, Cement and Glass	1,338,795	1,406,871	1,607,821	1,868,416	2,372,871	3,340,727
68 Other Agricultural Products	1,737,685	1,898,155	1,912,646	2,010,154	2,086,376	2,338,064
54 Primary Non-Ferrous Metal Products	665,455	868,026	1,117,772	1,156,419	1,172,017	1,388,021
99 Unknown or Not Elsewhere Clsfd	294,708	363,549	425,326	716,665	1,954,039	1,246,054
31 Fertilizers	536,372	479,077	895,409	705,693	1,075,520	933,639
41 Forest Products, Wood and Chips	255,691	395,484	441,503	427,895	576,183	529,080
49 Other Non-Metal. Min.	734,153	959,179	995,062	587,037	606,196	483,355
46 Non-Ferrous Ores and Scrap	226,884	184,400	136,304	196,809	72,035	289,439
55 Primary Wood Products; Veneer	199,078	170,906	175,812	166,340	214,584	234,600
51 Paper Products	155,198	208,906	164,377	147,876	174,508	217,968
66 Vegetable Products	175,293	175,664	138,001	304,003	151,136	190,354
48 Slag	42,616	91,270	159,709	169,346	188,512	141,390
62-64 Grain	50,397	28,437	106,039	153,384	183,054	113,884
47 Sulphur, Clay and Salt	404,437	314,934	27,252	4,679	93,693	106,808
44 Iron Ore and Scrap	87,428	93,453	61,974	51,867	94,833	104,256
61 Fish	46,041	46,749	60,068	89,894	84,302	80,976
67 Processed Grain and Animal Feed	80,331	104,491	89,229	61,755	61,436	63,920
65 Oilseeds	9,869	8,183	10,193	17,759	47,749	33,377
42 Pulp and Waste Paper	3,836	4,947	5,833	8,827	12,839	11,765
11-12 Coal	1,008	494	930	1,851	1,041	1,328
45 Marine Shells	378	910	963	450	373	97
89 Waste and Scrap NEC	0	0	0	0	0	0
Grand Total	143,022,346	137,618,032	127,723,469	107,558,011	106,962,879	97,699,611

Source: USACE Waterborne Commerce Statistics

Foreign Trade Shipments

All Ports Foreign Shipments Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	47,486,153	53,777,460	54,581,781	59,006,085	62,409,444	71,374,110
32 Other Chemicals and Related Products	19,488,357	20,383,988	20,540,811	19,823,458	18,544,492	20,303,275
62-64 Grain	10,665,174	9,768,925	4,688,799	6,720,590	7,599,219	7,083,795
21 Crude Petroleum	0	88,635	80,409	250,901	2,753,008	5,933,461
71-79 Manufactured Equipment, Machinery	2,874,009	3,214,019	3,228,140	3,182,247	3,211,804	3,166,751
99 Unknown or Not Elsewhere Clsfd	698,315	570,758	732,256	1,212,262	2,106,207	2,010,211
68 Other Agricultural Products	1,852,343	1,904,659	1,516,260	1,630,399	1,233,263	1,301,382
65 Oilseeds	938,265	341,839	167,708	277,698	346,916	673,713
11-12 Coal	3,741	604,923	2,374,383	3,017,668	2,124,020	517,413
44 Iron Ore and Scrap	655,126	1,157,417	1,156,180	887,448	584,532	502,946
54 Primary Non-Ferrous Metal Products	349,545	300,487	469,033	366,854	377,362	364,162
31 Fertilizers	242,036	372,962	548,553	637,825	460,695	326,877
66 Vegetable Products	245,656	242,294	202,102	201,878	223,410	233,999
53 Primary Iron and Steel Products	466,472	460,329	445,159	453,466	396,724	215,974
46 Non-Ferrous Ores and Scrap	68,718	113,928	58,905	251,163	265,417	198,511
51 Paper Products	297,670	290,998	253,545	195,965	182,595	164,847
42 Pulp and Waste Paper	27,163	58,101	170,551	234,513	270,133	159,508
43 Soil, Sand, Gravel, Rock and Stone	56,326	59,535	49,254	81,819	161,980	139,921
47 Sulphur, Clay and Salt	131,832	131,249	330,812	292,062	187,899	114,381
41 Forest Products, Wood and Chips	68,569	59,538	68,036	72,307	89,975	101,878
67 Processed Grain and Animal Feed	131,230	149,395	71,437	164,686	192,226	82,470
52 Lime, Cement and Glass	132,753	88,505	111,409	113,725	64,038	69,951
61 Fish	7,186	5,001	13,201	33,037	26,794	33,459
49 Other Non-Metal. Min.	54,718	46,060	57,563	43,302	19,889	29,399
55 Primary Wood Products; Veneer	15,226	7,035	6,802	4,633	6,265	3,354
48 Slag	333	268	308	105	123	336
45 Marine Shells	29	25	9	78	0	79
89 Waste and Scrap NEC	0	0	0	0	0	0
Grand Total	86,956,945	94,198,333	91,923,406	99,156,174	103,838,430	115,106,163

Source: USACE Waterborne Commerce Statistics

Domestic Trade Receipts and Shipments Combined

All Ports Domestic Trade Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	49,315,489	52,962,099	52,154,509	44,524,622	45,633,154	43,949,914
32 Other Chemicals and Related Products	23,890,430	24,567,109	22,661,763	21,515,392	21,340,817	21,307,936
21 Crude Petroleum	1,554,844	3,419,320	12,192,724	17,109,444	15,834,789	12,371,601
44 Iron Ore and Scrap	799,072	855,536	918,861	970,805	1,163,268	951,219
53 Primary Iron and Steel Products	574,910	715,318	801,149	1,137,394	847,074	703,759
43 Soil, Sand, Gravel, Rock and Stone	764,801	749,550	635,509	343,911	278,220	620,873
52 Lime, Cement and Glass	363,738	313,220	415,902	438,230	569,481	566,559
31 Fertilizers	367,369	453,926	573,445	505,086	426,880	483,646
62-64 Grain	209,340	127,901	108,451	114,027	312,364	383,973
11-12 Coal	40,041	44,359	26,447	39,014	77,388	358,673
65 Oilseeds	18,184	1,786	4,110	41,221	209,164	219,673
71-79 Manufactured Equipment, Machinery	442,646	278,108	325,609	320,105	264,011	141,513
54 Primary Non-Ferrous Metal Products	208,366	94,618	54,270	150,038	194,607	91,085
48 Slag	69,041	47,538	75,110	92,914	110,909	80,969
68 Other Agricultural Products	116,467	86,851	65,052	73,377	84,569	79,017
46 Non-Ferrous Ores and Scrap	55,146	33,341	100,453	44,923	60,162	73,001
67 Processed Grain and Animal Feed	26,647	21,291	3,695	17,736	25,784	40,171
49 Other Non-Metal. Min.	35,319	90,466	68,812	96,326	44,760	39,383
66 Vegetable Products	54,475	151,835	99,352	150,601	42,149	33,737
47 Sulphur, Clay and Salt	26,671	18,985	24,690	22,015	14,126	3,446
89 Waste and Scrap NEC	2,628	1,314	0	1	0	1,973
99 Unknown or Not Elsewhere Clsfd	4,465	2,552	818	0	2	4
41 Forest Products, Wood and Chips	0	0	0	0	1,625	0
42 Pulp and Waste Paper	0	0	0	0	0	0
45 Marine Shells	0	0	0	0	0	0
51 Paper Products	0	0	0	1	9	0
55 Primary Wood Products; Veneer	0	0	0	0	1,211	0
61 Fish	0	0	0	0	0	0
Grand Total	78,940,089	85,037,023	91,310,731	87,707,183	87,536,523	82,505,125

Source: USACE Waterborne Commerce Statistics

Domestic Trade Receipts

All Ports Domestic Receipts Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	28,004,001	28,414,166	28,912,814	25,400,838	26,723,677	27,055,166
32 Other Chemicals and Related Products	10,775,357	11,572,126	10,549,374	9,720,197	9,554,916	9,570,276
21 Crude Petroleum	1,147,383	2,249,658	7,917,856	10,397,774	10,270,122	7,068,257
43 Soil, Sand, Gravel, Rock and Stone	764,801	749,550	635,509	343,911	278,220	620,873
52 Lime, Cement and Glass	362,576	313,220	414,202	438,182	569,481	564,238
62-64 Grain	182,461	126,363	100,044	90,835	306,335	383,973
53 Primary Iron and Steel Products	488,596	663,332	702,675	672,464	553,850	381,749
31 Fertilizers	183,231	299,519	344,177	273,103	185,474	230,582
65 Oilseeds	11,472	0	0	36,012	203,709	219,326
48 Slag	69,041	34,734	59,958	80,096	101,162	77,596
46 Non-Ferrous Ores and Scrap	39,856	31,886	78,168	40,344	60,162	73,001
68 Other Agricultural Products	104,176	82,708	51,146	66,555	80,545	72,896
71-79 Manufactured Equipment, Machinery	209,994	199,639	188,260	179,324	151,771	60,211
11-12 Coal	40,041	42,694	23,189	37,285	62,616	55,995
67 Processed Grain and Animal Feed	25,003	21,291	3,695	17,736	25,239	37,046
54 Primary Non-Ferrous Metal Products	23,865	16,409	20,915	27,521	21,409	24,541
49 Other Non-Metal. Min.	29,498	66,304	41,561	57,146	24,692	22,860
44 Iron Ore and Scrap	27,960	68,469	51,071	72,862	49,089	17,855
66 Vegetable Products	44,042	151,835	92,352	82,301	35,105	16,851
47 Sulphur, Clay and Salt	24,875	16,580	22,691	15,441	14,126	1,157
99 Unknown or Not Elsewhere Clsfd	4,465	2,552	818	0	2	4
41 Forest Products, Wood and Chips	0	0	0	0	1,625	0
42 Pulp and Waste Paper	0	0	0	0	0	0
45 Marine Shells	0	0	0	0	0	0
51 Paper Products	0	0	0	0	0	0
55 Primary Wood Products; Veneer	0	0	0	0	1,211	0
61 Fish	0	0	0	0	0	0
89 Waste and Scrap NEC	1,314	1,314	0	1	0	0
Grand Total	42,564,008	45,124,349	50,210,475	48,049,928	49,274,538	46,544,453

Source: USACE Waterborne Commerce Statistics

Domestic Trade Shipments

All Ports Domestic Shipments Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	21,311,488	24,547,933	23,241,695	19,123,784	18,909,477	16,894,748
32 Other Chemicals and Related Products	13,115,073	12,994,983	12,112,389	11,795,195	11,785,901	11,737,660
21 Crude Petroleum	407,461	1,169,662	4,274,868	6,711,670	5,564,667	5,303,344
44 Iron Ore and Scrap	771,112	787,067	867,790	897,943	1,114,179	933,364
53 Primary Iron and Steel Products	86,314	51,986	98,474	464,930	293,224	322,010
11-12 Coal	0	1,665	3,258	1,729	14,772	302,678
31 Fertilizers	184,138	154,407	229,268	231,983	241,406	253,064
71-79 Manufactured Equipment, Machinery	232,652	78,469	137,349	140,781	112,240	81,302
54 Primary Non-Ferrous Metal Products	184,501	78,209	33,355	122,517	173,198	66,544
66 Vegetable Products	10,433	0	7,000	68,300	7,044	16,886
49 Other Non-Metal. Min.	5,821	24,162	27,251	39,180	20,068	16,523
68 Other Agricultural Products	12,291	4,143	13,906	6,822	4,024	6,121
48 Slag	0	12,804	15,152	12,818	9,747	3,373
67 Processed Grain and Animal Feed	1,644	0	0	0	545	3,125
52 Lime, Cement and Glass	1,162	0	1,700	48	0	2,321
47 Sulphur, Clay and Salt	1,796	2,405	1,999	6,574	0	2,289
89 Waste and Scrap NEC	1,314	0	0	0	0	1,973
65 Oilseeds	6,712	1,786	4,110	5,209	5,455	347
41 Forest Products, Wood and Chips	0	0	0	0	0	0
42 Pulp and Waste Paper	0	0	0	0	0	0
43 Soil, Sand, Gravel, Rock and Stone	0	0	0	0	0	0
45 Marine Shells	0	0	0	0	0	0
46 Non-Ferrous Ores and Scrap	15,290	1,455	22,285	4,579	0	0
51 Paper Products	0	0	0	1	9	0
55 Primary Wood Products; Veneer	0	0	0	0	0	0
61 Fish	0	0	0	0	0	0
62-64 Grain	26,879	1,538	8,407	23,192	6,029	0
99 Unknown or Not Elsewhere Clsfd	0	0	0	0	0	0
Grand Total	36,376,081	39,912,674	41,100,256	39,657,255	38,261,985	35,947,672

Source: USACE Waterborne Commerce Statistics

Non-Containerized Imports

	Trade	Imports						
	Port	(All)						
	World Region	(All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2709 Crude Oil From Petroleum And Bituminou	107,456,723	97,240,577	88,960,867	66,901,322	61,948,894	50,169,948	53,759,198
2	2710 Oil (not Crude) From Petrol & Bitum Mine	11,362,501	13,857,246	9,190,000	11,605,562	9,036,949	11,269,207	12,651,872
3	2517 Pebbles, Gravel Etc; Macadam Of Slag, Dr	1,320,411	925,038	995,126	1,988,663	3,718,212	4,052,652	2,632,338
4	2523 Portland Cement, Aluminous Cement, Sla	642,928	732,205	903,930	1,191,237	1,639,094	2,394,113	1,968,753
5	2902 Cyclic Hydrocarbons	1,473,858	1,265,688	1,400,530	2,203,733	2,419,916	2,379,378	1,615,350
6	7304 Tubes, Pipes Etc, Seamless, Iron Nesoi & S	1,464,175	1,952,270	2,271,261	1,882,279	2,257,797	1,625,025	838,031
7	2814 Ammonia, Anhydrous Or In Aqueous Solu	932,438	884,148	828,234	817,645	810,898	804,235	754,535
8	7306 Tubes, Pipes & Hollow Profiles Nesoi, Iror	1,117,652	1,662,969	2,224,779	2,192,773	2,566,882	1,525,945	746,156
9	7214 Bars & Rods, Iron & Na Steel Nesoi, H-r Et	91,230	145,152	252,430	297,437	451,857	785,684	735,002
10	3102 Mineral Or Chemical Fertilizers, Nitrogenc	479,305	435,851	733,714	613,417	933,198	899,667	725,165
11	3826 Biodiesel And Mixes Contain Lt 70% Petrol Oils Etc			17,483	384,354	126,167	234,217	646,647
12	7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad	237,865	251,337	366,844	313,738	622,067	669,992	596,561
13	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	2,298,081	2,291,919	2,292,507	2,441,509	1,910,122	1,439,026	588,237
14	2909 Ethers, Ether-alcohols, Alcohol Peroxides	57,429	70,016	67,372	48,153	56,841	146,764	549,481
15	2207 Ethyl Alcohol, Undenat, Nun80% Alc; Alco	45,291	4,292	91,759	39,850	437,223	560,356	519,104
16	7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-r	221,762	488,737	700,882	425,736	1,450,671	804,988	346,128
17	2707 Oils Etc From High Temp Coal Tar; Sim Ar	395,429	596,670	376,270	464,751	353,740	368,094	321,487
18	8703 Motor Cars & Vehicles For Transporting P	105,001	114,955	164,783	130,539	144,805	197,259	240,523
19	7305 Tubes & Pipes Nesoi, Ext Dia Ov406-4mm	191,963	248,033	379,499	381,264	353,656	491,484	239,654
20	0803 Bananas, Including Plantains, Fresh Or Dr	147,732	158,139	174,501	135,364	259,809	244,601	238,218
21	7207 Semifinished Products Of Iron Or Nonallo	170,970	319,400	424,802	429,787	476,951	264,565	182,135
22	2901 Acyclic Hydrocarbons	108,271	156,251	143,686	162,274	203,549	139,870	170,543
23	1703 Molasses From The Extraction Or Refining	90,168	151,780	166,244	125,684	163,951	172,374	167,548
24	7225 Fl-rl Alloy Steel Nesoi Nun 600mm Wide	103,730	189,730	142,443	152,481	189,809	165,295	127,872
25	7216 Angles, Shapes & Sections Of Iron & Nona	97,449	116,009	103,930	118,846	171,278	117,121	127,636
	Grand Total	134,426,320	127,970,862	116,430,384	98,367,579	96,092,010	84,887,081	83,597,713

Non-Containerized Exports

	Trade	Exports						
	Port	(All)						
	World Region	(All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2710 Oil (not Crude) From Petrol & Bitum Mine	34,412,703	38,027,729	42,073,858	42,618,369	39,949,220	49,186,222	44,027,097
2	2711 Petroleum Gases & Other Gaseous Hydro	3,620,187	3,734,062	4,503,957	7,393,668	13,890,710	15,804,542	20,010,269
3	2713 Petroleum Coke, Petroleum Bitumen & O	7,914,676	8,753,045	7,168,189	7,143,720	8,419,844	8,320,012	8,454,888
4	2709 Crude Oil From Petroleum And Bituminou	325,772	147,433	276,409	980,491	5,016,294	6,316,841	4,787,450
5	1001 Wheat And Meslin	6,741,706	7,568,198	3,335,673	5,637,017	4,476,646	2,091,390	4,130,082
6	1007 Grain Sorghum	1,710,737	1,175,670	490,982	580,473	3,112,858	4,645,502	2,881,165
7	2909 Ethers, Ether-alcohols, Alcohol Peroxides	2,439,938	2,242,861	2,248,229	2,451,416	2,233,534	2,492,958	2,819,642
8	2902 Cyclic Hydrocarbons	2,711,881	2,675,523	2,921,651	3,575,565	2,675,344	2,381,424	2,574,192
9	2815 Sodium Hydrox; Potass Hydrox; Sod Or P	907,529	1,013,442	1,062,791	1,157,588	1,194,001	910,168	1,710,159
10	2207 Ethyl Alcohol, Undenat, Nun80% Alc; Alco	461,626	1,839,101	1,111,224	793,238	1,251,401	1,237,917	1,424,273
11	2901 Acyclic Hydrocarbons	684,119	723,182	676,205	739,939	523,890	976,883	1,420,045
12	2915 Sat Acyclic Nonocarbox Acid & Anhyd, Ha	1,751,740	1,578,430	1,812,631	1,844,874	1,681,869	1,509,606	1,403,019
13	2707 Oils Etc From High Temp Coal Tar; Sim Ar	2,401,550	2,478,137	1,400,453	1,334,871	949,596	1,207,261	1,275,557
14	1201 Soybeans, Whether Or Not Broken	843,108	236,437	202,931	222,516	190,097	635,575	1,050,351
15	1005 Corn (maize)	1,872,284	1,022,796	386,897	261,654	660,026	640,359	1,028,883
16	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	841,389	929,646	895,354	899,125	694,732	785,181	819,948
17	2903 Halogenated Derivatives Of Hydrocarbon	87,128	107,040	114,792	174,466	621,640	541,858	536,236
18	2836 Carbonates; Peroxocarbonates; Comm Ar	11,516	78,230	166,183	233,750	347,280	518,153	365,084
19	3102 Mineral Or Chemical Fertilizers, Nitrogenc	71,254	273,336	324,075	368,904	405,113	227,602	288,717
20	2926 Nitrile-function Compounds	649,902	652,713	210,125	271,083	255,812	257,869	274,982
21	2907 Phenols; Phenol-alcohols	243,582	266,820	284,877	206,694	185,431	228,638	198,823
22	3104 Mineral Or Chemical Fertilizers, Potassic	11,414	136,597	370,998	439,954	207,103	250,965	185,969
23	1502 Fats Of Bovines, Sheep/goats Other Than	490,082	353,011	296,529	209,509	205,757	155,323	170,559
24	7204 Ferrous Waste & Scrap; Remelt Scr Iron/s	746,964	1,020,448	1,070,856	789,246	409,449	469,850	148,186
25	2910 Epoxides With A 3-memb Ring & Halog, Si	273,208	261,175	173,375	198,101	201,252	126,521	142,844
	Grand Total	77,926,813	83,246,649	81,390,458	88,627,535	96,203,000	105,856,197	104,919,184

Appendix B

Port of Houston Commodities

All Trades (Shipments and Receipts, Domestic and Foreign)

All Traffic Types (Domestic & Foreign), All Traffic Directions (Tons) Houston						
Commodity Group	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	96,309,055	109,246,338	102,268,714	98,764,913	99,829,526	113,205,000
21 Crude Petroleum	56,961,811	50,892,083	57,079,809	48,999,430	49,735,310	45,338,000
32 Other Chemicals and Related Products	41,902,726	42,979,588	42,618,641	41,002,381	38,607,234	39,923,000
53 Primary Iron and Steel Products	5,452,837	7,278,901	8,696,719	8,340,734	9,934,670	8,643,000
71-79 Manufactured Equipment, Machinery and Products	4,454,226	5,206,914	5,603,988	5,732,998	6,619,117	6,917,000
62-64 Grain	6,643,951	6,072,978	3,657,477	6,212,579	6,566,689	5,346,000
52 Lime, Cement and Glass	1,830,174	1,808,424	2,133,604	2,414,967	3,000,945	3,972,000
43 Soil, Sand, Gravel, Rock and Stone	2,755,663	1,884,109	1,505,135	1,886,602	3,213,783	3,031,000
68 Other Agricultural Products	2,914,566	3,155,169	2,729,427	2,795,084	2,544,066	2,909,000
99 Unknown or Not Elsewhere Clsfd	889,721	827,122	1,020,924	1,729,691	3,651,426	2,876,000
54 Primary Non-Ferrous Metal Products	1,256,128	1,519,550	2,056,124	1,816,812	1,736,765	1,888,000
44 Iron Ore and Scrap	1,544,978	2,139,157	2,168,881	1,913,508	1,842,005	1,570,000
11-12 Coal	44,790	594,657	2,401,760	3,056,804	2,202,449	878,000
31 Fertilizers	552,628	584,886	696,190	829,149	777,450	724,000
41 Forest Products, Wood and Chips	323,795	454,756	509,109	493,787	665,739	615,000
46 Non-Ferrous Ores and Scrap	350,503	318,113	292,598	492,637	395,947	525,000
66 Vegetable Products	499,015	612,196	464,907	691,234	431,639	451,000
49 Other Non-Metal. Min.	679,642	733,056	865,595	493,087	510,121	424,000
65 Oilseeds	754,078	325,114	182,011	156,083	485,441	403,000
51 Paper Products	359,058	430,369	344,186	279,080	299,059	337,000
55 Primary Wood Products; Veneer	211,777	176,114	182,344	170,092	220,266	235,000
48 Slag	80,674	94,871	180,161	189,730	268,262	193,000
67 Processed Grain and Animal Feed	212,900	257,982	162,464	243,070	276,755	184,000
42 Pulp and Waste Paper	30,827	62,932	175,118	242,790	277,674	166,000
61 Fish	52,999	51,717	72,661	122,015	110,295	114,000
47 Sulphur, Clay and Salt	62,989	89,296	116,063	177,048	101,387	67,000
45 Marine Shells	406	933	972	527	371	0
89 Waste and Scrap NEC	1,314	1,314	0	1	0	0
Grand Total	227,133,231	237,798,639	238,185,582	229,246,833	234,304,391	240,934,000

Source: USACE Waterborne Commerce Statistics

Foreign Trade Receipts and Shipments Combined

Houston Foregin Trade Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	51,815,290	63,257,950	56,931,025	59,773,556	58,792,142	68,903,000
21 Crude Petroleum	56,498,748	49,829,206	49,589,932	40,053,323	39,585,524	34,380,000
32 Other Chemicals and Related Products	22,877,844	23,305,968	24,032,613	23,459,240	20,635,520	21,993,000
53 Primary Iron and Steel Products	4,879,575	6,561,424	7,849,723	7,192,423	9,079,939	7,935,000
71-79 Manufactured Equipment, Machinery	4,306,468	4,992,249	5,262,647	5,522,671	6,313,156	6,909,000
62-64 Grain	6,537,401	6,014,254	3,638,068	6,172,220	6,268,413	4,994,000
52 Lime, Cement and Glass	1,468,756	1,495,204	1,717,702	1,976,785	2,431,464	3,408,000
99 Unknown or Not Elsewhere Clsfd	889,260	827,122	1,020,924	1,729,691	3,651,424	2,876,000
68 Other Agricultural Products	2,828,243	3,052,214	2,680,286	2,722,203	2,458,456	2,827,000
43 Soil, Sand, Gravel, Rock and Stone	2,126,442	1,331,121	1,125,447	1,786,596	3,033,790	2,751,000
54 Primary Non-Ferrous Metal Products	1,000,368	1,142,840	1,563,554	1,468,248	1,506,937	1,728,000
41 Forest Products, Wood and Chips	323,795	454,756	509,109	493,787	664,114	615,000
44 Iron Ore and Scrap	742,554	1,231,025	1,207,131	939,270	678,737	607,000
11-12 Coal	4,749	550,298	2,375,313	3,019,519	2,125,061	519,000
46 Non-Ferrous Ores and Scrap	295,357	284,772	195,178	447,714	335,785	452,000
66 Vegetable Products	400,565	400,704	333,210	487,313	363,330	416,000
49 Other Non-Metal. Min.	657,483	692,299	826,654	461,051	484,111	410,000
51 Paper Products	359,058	430,369	344,186	279,080	299,050	337,000
31 Fertilizers	236,793	207,978	245,609	401,774	415,766	300,000
55 Primary Wood Products; Veneer	211,777	176,114	182,344	170,092	219,055	235,000
65 Oilseeds	735,894	323,328	177,901	114,862	276,277	183,000
42 Pulp and Waste Paper	30,827	62,932	175,118	242,790	277,674	166,000
67 Processed Grain and Animal Feed	186,253	236,691	158,769	225,334	252,360	144,000
48 Slag	42,949	91,538	133,473	122,493	188,635	142,000
61 Fish	52,999	51,717	72,661	122,015	110,295	114,000
47 Sulphur, Clay and Salt	50,739	72,361	93,773	166,414	89,411	67,000
45 Marine Shells	406	933	972	527	371	0
89 Waste and Scrap NEC	0	0	0	0	0	0
Grand Total	159,560,593	167,077,367	162,443,322	159,550,991	160,536,797	163,411,000

Source: USACE Waterborne Commerce Statistics

Domestic Trade Receipts and Shipments Combined

Houston Domestic Trade Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	34,352,327	35,822,608	34,360,501	29,362,338	30,722,657	44,302,000
32 Other Chemicals and Related Products	14,251,138	14,975,469	13,626,572	12,818,461	13,227,788	17,930,000
21 Crude Petroleum	447,255	1,045,764	7,011,072	8,524,191	9,062,798	10,958,000
44 Iron Ore and Scrap	796,018	855,536	918,861	969,269	1,163,268	963,000
53 Primary Iron and Steel Products	573,262	715,318	801,149	1,135,782	847,074	708,000
52 Lime, Cement and Glass	361,418	313,220	415,902	438,182	569,481	564,000
31 Fertilizers	288,504	376,908	449,481	427,375	360,584	424,000
11-12 Coal	40,041	44,359	26,447	37,285	77,388	359,000
62-64 Grain	106,550	58,724	19,409	40,359	298,276	352,000
43 Soil, Sand, Gravel, Rock and Stone	629,221	552,988	379,488	100,006	179,993	280,000
65 Oilseeds	18,184	1,786	4,110	41,221	209,164	220,000
54 Primary Non-Ferrous Metal Products	203,647	93,418	50,009	150,038	193,040	160,000
68 Other Agricultural Products	80,022	71,602	48,041	65,468	80,707	82,000
46 Non-Ferrous Ores and Scrap	55,146	33,341	97,420	44,923	60,162	73,000
48 Slag	37,725	3,333	46,688	67,237	79,627	51,000
67 Processed Grain and Animal Feed	26,647	21,291	3,695	17,736	24,395	40,000
66 Vegetable Products	54,475	148,200	92,352	139,701	42,149	35,000
49 Other Non-Metal. Min.	22,159	40,757	38,941	32,036	26,010	14,000
71-79 Manufactured Equipment, Machinery	122,392	173,720	275,229	136,317	222,645	8,000
47 Sulphur, Clay and Salt	12,250	16,935	22,290	10,634	11,976	0
41 Forest Products, Wood and Chips	0	0	0	0	1,625	0
55 Primary Wood Products; Veneer	0	0	0	0	1,211	0
51 Paper Products	0	0	0	0	9	0
99 Unknown or Not Elsewhere Clsfd	461	0	0	0	2	0
42 Pulp and Waste Paper	0	0	0	0	0	0
45 Marine Shells	0	0	0	0	0	0
61 Fish	0	0	0	0	0	0
89 Waste and Scrap NEC	1,314	1,314	0	1	0	0
Grand Total	52,480,156	55,366,591	58,687,657	54,558,560	57,462,029	77,523,000

Source: USACE Waterborne Commerce Statistics; 2015 tons include intraport movements

Domestic Trade Receipts

	Houston Domestic Receipts Commodity	2010	2011	2012	2013	2014	2015
1	2211 Gasoline	4,309,915	4,106,848	4,538,036	3,398,679	3,571,142	5,184,066
2	2100 Crude Petroleum	72,066	345,375	4,468,780	4,931,136	6,051,113	4,985,661
3	2429 Naphtha & Solvents	2,017,586	2,564,198	2,952,665	3,583,100	3,707,646	4,281,281
4	2330 Distillate Fuel Oil	5,052,581	4,723,706	4,339,587	3,689,831	4,206,810	4,062,802
5	2340 Residual Fuel Oil	6,421,636	6,300,169	5,863,006	4,632,743	3,933,466	3,773,191
6	2430 Asphalt, Tar & Pitch	1,294,059	1,404,998	1,830,266	1,655,862	1,592,645	1,852,528
7	2350 Lube Oil & Greases	1,390,976	1,528,217	1,351,174	1,159,045	1,423,312	1,691,201
8	3212 Benzene & Toluene	2,067,436	2,243,675	1,640,144	1,302,327	1,184,213	1,463,740
9	3220 Alcohols	1,740,141	1,944,551	1,317,660	1,270,579	1,298,050	1,268,324
10	3219 Other Hydrocarbons	852,654	962,291	983,479	938,213	908,511	810,005
11	2990 Petro. Products NEC	419,620	523,267	444,475	641,047	656,505	716,722
12	5220 Cement & Concrete	361,418	313,220	414,202	438,182	569,481	564,238
13	3211 Acyclic Hydrocarbons	673,918	809,943	634,701	571,199	628,770	540,079
14	3274 Sodium Hydroxide	363,978	345,592	388,254	365,782	380,257	432,987
15	3240 Nitrogen Func. Comp.	656,183	526,868	486,619	548,309	422,380	407,191
16	3260 Organic Comp. NEC	367,408	447,586	321,565	344,054	333,765	403,059
17	2640 Hydrocarbon & Petrol Gases, Liquefiec	356,523	294,126	393,717	405,924	398,251	354,497
18	6344 Corn	8,041	1,634	1,601	3,063	214,471	298,219
19	3272 Sulphuric Acid	100,731	139,882	146,500	142,610	204,480	273,328
20	3230 Carboxylic Acids	171,123	212,478	239,721	194,516	199,385	229,687
21	6522 Soybeans	11,472	0	0	36,012	201,972	219,326
22	5330 I&S Plates & Sheets	338,265	337,552	308,630	300,574	244,124	190,533
23	5390 Primary I&S NEC	100,446	269,571	322,855	308,120	264,183	157,437
24	3275 Inorg. Elem., Oxides, & Halogen Salts	143,984	157,828	169,003	170,518	148,546	148,419
25	3273 Ammonia	27,300	25,200	127,009	126,652	150,259	144,249

Domestic Trade Shipments

	Houston Domestic Shipments Commodity	2010	2011	2012	2013	2014	2015
1	2100 Crude Petroleum	375,189	700,389	2,542,292	3,593,055	3,011,685	4,241,016
2	2330 Distillate Fuel Oil	3,129,723	4,473,919	3,456,346	2,690,230	3,566,689	2,740,867
3	2340 Residual Fuel Oil	2,600,001	3,074,467	2,811,080	2,178,868	2,253,046	1,723,249
4	2429 Naphtha & Solvents	2,820,373	2,651,493	2,340,639	2,312,546	1,887,109	1,650,682
5	3212 Benzene & Toluene	1,730,507	1,419,651	1,311,498	1,495,104	1,514,337	1,498,433
6	3219 Other Hydrocarbons	1,721,733	1,705,772	1,723,143	1,190,887	1,331,351	1,267,808
7	3220 Alcohols	673,987	854,387	901,146	880,396	986,474	1,087,071
8	2211 Gasoline	2,083,621	1,967,085	1,477,213	1,000,320	1,306,609	974,986
9	2350 Lube Oil & Greases	510,380	531,670	678,489	711,806	785,628	960,077
10	4420 Iron & Steel Scrap	768,058	781,959	867,790	896,407	1,114,179	933,364
11	3272 Sulphuric Acid	792,192	812,851	873,385	884,315	961,417	815,331
12	3271 Sulphur (Liquid)	728,561	811,140	837,815	838,054	878,622	600,476
13	2990 Petro. Products NEC	727,064	451,903	588,965	372,261	292,172	511,143
14	3230 Carboxylic Acids	400,596	408,806	414,242	469,190	491,153	496,977
15	3260 Organic Comp. NEC	289,005	321,605	337,778	306,109	402,802	402,438
16	2430 Asphalt, Tar & Pitch	111,040	309,295	441,228	169,813	255,335	385,735
17	3211 Acyclic Hydrocarbons	442,650	457,246	411,317	371,487	373,551	382,804
18	5320 I&S Primary Forms	60,000	8,655	2,854	397,755	227,177	264,855
19	2540 Petroleum Coke	252,158	430,382	379,090	360,042	341,005	208,112
20	3110 Nitrogenous Fert.	29,685	72,877	157,406	170,419	187,269	182,281
21	2640 Hydrocarbon & Petrol Gases, Liquefiec	641,275	293,286	384,785	333,361	476,845	125,925
22	5480 Fab. Metal Products	174,881	77,850	29,094	122,517	171,631	64,954
23	3240 Nitrogen Func. Comp.	15,598	47,974	22,769	44,700	46,601	20,000
24	5370 I&S Pipe & Tube	10,972	22,216	62,632	46,583	29,041	14,204
25	2410 Petro. Jelly & Waxes	62,642	63,296	32,319	22,122	30,424	9,073

Non-Containerized Imports

	Trade Port World Region	Imports Houston (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2709 Crude Oil From Petroleum And Bituminou	58,209,556	54,310,256	49,232,735	40,740,769	37,608,648	30,189,959	33,933,005
2	2710 Oil (not Crude) From Petrol & Bitum Mine	10,001,206	12,541,256	8,402,699	10,791,378	8,271,481	10,691,604	12,243,786
3	2523 Portland Cement, Aluminous Cement, Sla	642,928	732,205	903,930	1,191,237	1,639,094	2,394,113	1,968,753
4	2902 Cyclic Hydrocarbons	1,409,157	1,182,504	1,324,045	2,005,417	2,272,822	2,097,172	1,527,385
5	2517 Pebbles, Gravel Etc; Macadam Of Slag, Dr	1,055,979	827,266	764,763	1,459,985	2,428,250	2,388,234	1,424,566
6	7304 Tubes, Pipes Etc, Seamless, Iron Nesoi & S	1,463,845	1,951,556	2,271,033	1,877,881	2,246,116	1,595,515	788,169
7	7306 Tubes, Pipes & Hollow Profiles Nesoi, Iror	1,117,648	1,662,969	2,224,779	2,192,749	2,566,840	1,525,929	746,104
8	7214 Bars & Rods, Iron & Na Steel Nesoi, H-r Et	91,230	145,152	252,430	297,437	451,857	785,684	735,002
9	3826 Biodiesel And Mixes Contain Lt 70% Petrol Oils Etc			17,483	384,354	126,167	234,217	646,647
10	7210 Fl-rl Iron & Na Steel Nun600mm Wd, Clad	237,865	251,337	366,844	313,738	622,067	669,992	596,291
11	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	2,125,019	2,034,659	2,021,636	2,132,710	1,608,707	1,288,037	559,757
12	2909 Ethers, Ether-alcohols, Alcohol Peroxides	50,579	63,343	64,079	44,856	53,852	145,661	549,481
13	2207 Ethyl Alcohol, Undenat, Nun80% Alc; Alco	45,291	4,292	91,759	29,230	422,690	550,567	512,431
14	7208 Fl-rl Iron & Na Steel Nun600mm Wd Hot-r	221,762	488,737	692,069	425,736	1,450,671	804,988	346,128
15	2707 Oils Etc From High Temp Coal Tar; Sim Ar	395,429	596,670	373,101	435,779	353,740	365,965	312,985
16	2814 Ammonia, Anhydrous Or In Aqueous Solu	332,250	317,455	291,133	266,095	291,860	293,108	264,868
17	7305 Tubes & Pipes Nesoi, Ext Dia Ov406-4mm	191,963	248,033	379,499	381,264	353,396	491,002	239,654
18	8703 Motor Cars & Vehicles For Transporting P	104,978	114,926	164,737	130,477	144,630	190,710	183,533
19	7207 Semifinished Products Of Iron Or Nonallo	170,970	308,143	424,802	429,787	476,951	264,565	182,135
20	1703 Molasses From The Extraction Or Refining	90,168	151,780	166,244	125,684	163,951	172,374	167,548
21	2901 Acyclic Hydrocarbons	104,985	147,861	126,465	134,875	180,305	109,108	148,982
22	7225 Fl-rl Alloy Steel Nesoi Nun 600mm Wide	103,730	188,861	142,443	152,481	189,807	165,294	127,872
23	7216 Angles, Shapes & Sections Of Iron & Nona	97,448	116,009	103,930	118,846	171,278	117,121	127,627
24	7209 Fl-rl Iron & Na Steel Nun600mm Wd Cold	43,336	76,078	64,520	52,796	156,750	141,861	126,257
25	7213 Bars & Rods, Iron & Na Steel, H-r Irreg Co	21,576	10,487	75,078	34,924	75,552	85,389	125,733
	Grand Total	81,114,544	81,039,096	73,291,989	68,317,995	66,945,200	59,900,154	60,185,236

Non-Containerized Exports

	Trade	Exports						
	Port	Houston						
	World Region	(All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2710 Oil (not Crude) From Petrol & Bitum Mine	27,564,812	32,176,494	35,216,075	32,909,279	29,439,601	37,566,768	35,226,961
2	2711 Petroleum Gases & Other Gaseous Hydro	3,348,691	3,528,231	4,255,275	7,374,130	13,829,184	15,544,878	19,646,522
3	2713 Petroleum Coke, Petroleum Bitumen & O	6,894,524	7,306,935	6,036,982	5,918,212	7,224,840	6,373,826	7,131,617
4	1001 Wheat And Meslin	4,830,916	4,748,180	2,493,854	4,968,089	4,048,972	1,719,503	3,646,746
5	2709 Crude Oil From Petroleum And Bituminou	325,772	147,433	176,775	712,901	1,883,516	4,380,830	3,427,292
6	2909 Ethers, Ether-alcohols, Alcohol Peroxides	2,317,270	2,099,880	2,110,784	2,304,472	2,150,687	2,479,585	2,817,213
7	2902 Cyclic Hydrocarbons	2,199,919	1,905,929	2,340,543	2,701,313	2,175,985	2,125,519	2,335,951
8	1007 Grain Sorghum	1,353,099	1,155,854	490,982	580,473	2,183,437	2,685,408	2,270,247
9	2901 Acyclic Hydrocarbons	684,119	722,025	673,615	739,254	520,848	971,354	1,385,072
10	2915 Sat Acyclic Nonocarbox Acid & Anhyd, Ha	1,607,947	1,404,915	1,593,576	1,581,325	1,532,227	1,435,202	1,336,317
11	2707 Oils Etc From High Temp Coal Tar; Sim Ar	2,228,941	2,185,822	1,374,112	1,334,871	937,425	1,031,890	1,032,462
12	2815 Sodium Hydrox; Potass Hydrox; Sod Or P	539,686	493,952	348,647	321,432	336,844	386,416	790,081
13	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	673,175	761,268	701,240	717,679	621,323	758,587	783,398
14	1005 Corn (maize)	310,533	346,667	226,148	228,814	606,891	527,928	748,493
15	2207 Ethyl Alcohol, Undenat, Nun80% Alc; Alco	213,769	1,017,246	442,950	231,542	463,443	531,865	430,430
16	1201 Soybeans, Whether Or Not Broken	634,779	210,057	202,931	42,427	72,167	111,536	304,144
17	2926 Nitrile-function Compounds	649,902	651,104	210,125	271,083	255,812	257,869	274,982
18	3102 Mineral Or Chemical Fertilizers, Nitrogenc	9,703	110,618	188,881	194,762	294,413	152,811	245,045
19	2907 Phenols; Phenol-alcohols	177,927	193,528	206,005	162,561	173,238	214,581	175,948
20	1502 Fats Of Bovines, Sheep/goats Other Than	488,980	351,909	296,529	209,509	205,757	155,323	170,559
21	7204 Ferrous Waste & Scrap; Remelt Scr Iron/s	746,964	1,020,448	1,070,856	789,246	409,449	469,850	148,186
22	2910 Epoxides With A 3-memb Ring & Halog, S	117,099	131,317	114,804	151,884	162,812	120,968	137,510
23	2921 Amine-function Compounds	109,736	224,532	141,359	185,104	207,438	130,982	135,433
24	2309 Preparations Used In Animal Feeding	6,502	7,727	12,206	30,022	23,299	28,934	114,843
25	1515 Fixed Veg Fats & Oils Nesoi Etc, Not Chem	100,704	113,771	76,390	78,536	36,529	66,629	108,082
	Grand Total	62,933,933	68,001,551	67,020,562	71,844,112	75,406,564	83,524,457	86,917,748

Appendix C

Port of Galveston Commodities

All Trades (Shipments and Receipts, Domestic and Foreign)

All Traffic Types (Domestic & Foreign), All Traffic Directions (Tons) Galveston Commodity Group	2010	2011	2012	2013	2014	2015
32 Other Chemicals and Related Products	2,269,028	2,364,263	2,080,549	2,414,847	2,514,657	2,775,000
62-64 Grain	4,120,493	3,731,367	1,081,754	635,118	1,463,109	2,120,000
22-29 Petroleum Products	4,836,840	4,532,571	3,685,793	3,216,036	2,751,004	1,976,000
31 Fertilizers	585,574	719,624	1,307,357	1,018,353	1,183,117	1,021,000
71-79 Manufactured Equipment, Machinery and Products	612,342	447,062	442,860	556,218	451,441	609,000
65 Oilseeds	210,982	26,389	0	180,593	117,963	524,000
68 Other Agricultural Products	324,782	325,419	308,295	436,137	438,871	452,000
21 Crude Petroleum	13,654	406,363	1,690,651	2,070,777	1,023,170	283,000
47 Sulphur, Clay and Salt	497,818	374,876	265,490	127,736	193,753	155,000
49 Other Non-Metal. Min.	144,004	368,681	258,233	242,135	160,612	130,000
43 Soil, Sand, Gravel, Rock and Stone	135,878	196,747	256,393	244,353	98,227	102,000
89-99 Unknown or Not Elsewhere Clsfd	78,539	94,349	125,823	107,168	137,044	87,000
51 Paper Products	29,206	29,869	28,991	47,436	47,004	37,000
46 Non-Ferrous Ores and Scrap	50	13,403	31	27	8	36,000
48 Slag	31,316	32,958	25,160	19,621	31,282	26,000
53 Primary Iron and Steel Products	14,860	11,126	15,215	26,714	21,511	19,000
54 Primary Non-Ferrous Metal Products	12,524	19,930	23,909	43,748	26,590	14,000
42 Pulp and Waste Paper	0	12	11	1	4,731	5,000
55 Primary Wood Products; Veneer	1,100	1,827	85	48	464	3,000
66 Vegetable Products	12,047	10,828	7,952	14,555	2,006	2,000
52 Lime, Cement and Glass	2,481	57	1,458	2,101	187	2,000
67 Processed Grain and Animal Feed	12,241	15,849	1,136	783	2,091	1,000
41 Forest Products, Wood and Chips	82	251	86	2,097	524	0
61 Fish	0	0	113	125	69	0
45 Marine Shells	1	2	0	1	2	0
11-12 Coal	0	3	0	0	0	0
44 Iron Ore and Scrap	3,054	19,845	11,023	22	0	0
Grand Total	13,948,896	13,743,671	11,618,368	11,406,750	10,669,437	10,379,000

Source: USACE Waterborne Commerce Statistics

Foreign Trade Receipts and Shipments Combined

Galveston Foreign Trade Commodity	2010	2011	2012	2013	2014	2015
62-64 Grain	4,093,614	3,731,367	1,081,754	635,118	1,463,109	2,120,000
31 Fertilizers	508,288	642,606	1,198,353	940,642	1,116,821	961,000
22-29 Petroleum Products	1,630,159	1,080,770	895,109	962,579	658,249	559,000
32 Other Chemicals and Related Products	190,008	224,881	212,518	245,781	369,280	530,000
65 Oilseeds	210,982	26,389	0	180,593	117,963	524,000
71-79 Manufactured Equipment, Machinery	305,708	348,114	392,566	373,179	410,168	474,000
68 Other Agricultural Products	307,773	321,802	293,795	430,412	435,401	446,000
47 Sulphur, Clay and Salt	483,397	372,826	263,090	116,055	191,603	152,000
49 Other Non-Metal. Min.	130,844	311,862	225,662	167,705	141,262	102,000
99 Unknown or Not Elsewhere Clsfd	75,868	91,797	125,019	107,168	137,044	87,000
51 Paper Products	29,206	29,869	28,991	47,435	47,004	37,000
46 Non-Ferrous Ores and Scrap	50	13,403	31	27	8	36,000
53 Primary Iron and Steel Products	13,212	11,126	15,215	25,102	21,511	19,000
54 Primary Non-Ferrous Metal Products	9,430	18,730	19,648	43,748	26,590	12,000
42 Pulp and Waste Paper	0	12	11	1	4,731	5,000
55 Primary Wood Products; Veneer	1,100	1,827	85	48	464	3,000
66 Vegetable Products	12,047	7,193	952	4,755	2,006	2,000
67 Processed Grain and Animal Feed	12,241	15,849	1,136	783	702	1,000
41 Forest Products, Wood and Chips	82	251	86	2,097	524	0
52 Lime, Cement and Glass	161	57	1,458	2,053	187	0
61 Fish	0	0	113	125	69	0
45 Marine Shells	1	2	0	1	2	0
11-12 Coal	0	3	0	0	0	0
21 Crude Petroleum	0	0	0	0	0	0
43 Soil, Sand, Gravel, Rock and Stone	298	185	372	448	0	0
44 Iron Ore and Scrap	0	19,845	11,023	22	0	0
48 Slag	0	0	33	0	0	0
Grand Total	8,014,469	7,270,766	4,767,020	4,285,877	5,144,698	6,070,000

Source: USACE Waterborne Commerce Statistics

Domestic Trade Receipts and Shipments Combined

Galveston Domestic Trade Commodity	2010	2011	2012	2013	2014	2015
32 Other Chemicals and Related Products	2,079,020	2,139,382	1,868,031	2,169,066	2,145,377	2,245,000
22-29 Petroleum Products	3,129,470	3,407,805	2,762,201	2,216,147	2,087,087	1,417,000
21 Crude Petroleum	13,654	406,363	1,690,651	2,070,777	1,023,170	283,000
71-79 Manufactured Equipment, Machinery	306,634	98,948	50,294	182,739	41,273	135,000
43 Soil, Sand, Gravel, Rock and Stone	135,580	196,562	256,021	243,905	98,227	102,000
31 Fertilizers	77,286	77,018	109,004	77,711	66,296	60,000
49 Other Non-Metal. Min.	13,160	49,709	29,871	64,290	18,750	28,000
48 Slag	31,316	32,958	25,127	19,621	31,282	26,000
68 Other Agricultural Products	17,009	3,617	14,500	5,725	3,470	6,000
47 Sulphur, Clay and Salt	14,421	2,050	2,400	11,381	2,150	3,000
52 Lime, Cement and Glass	2,320	0	0	48	0	2,000
54 Primary Non-Ferrous Metal Products	3,094	1,200	4,261	0	0	2,000
67 Processed Grain and Animal Feed	0	0	0	0	1,389	0
11-12 Coal	0	0	0	0	0	0
41 Forest Products, Wood and Chips	0	0	0	0	0	0
42 Pulp and Waste Paper	0	0	0	0	0	0
44 Iron Ore and Scrap	3,054	0	0	0	0	0
45 Marine Shells	0	0	0	0	0	0
46 Non-Ferrous Ores and Scrap	0	0	0	0	0	0
51 Paper Products	0	0	0	1	0	0
53 Primary Iron and Steel Products	1,648	0	0	1,612	0	0
55 Primary Wood Products; Veneer	0	0	0	0	0	0
61 Fish	0	0	0	0	0	0
62-64 Grain	26,879	0	0	0	0	0
65 Oilseeds	0	0	0	0	0	0
66 Vegetable Products	0	3,635	7,000	9,800	0	0
99 Unknown or Not Elsewhere Clsfd	2,671	2,552	804	0	0	0
Grand Total	5,857,216	6,421,799	6,820,165	7,072,823	5,518,471	4,309,000

Source: USACE Waterborne Commerce Statistics; 2015 tonnage includes intraport movements

Domestic Trade Receipts

	Galveston Domestic Receipts Commodity	2010	2011	2012	2013	2014	2015
1	2340 Residual Fuel Oil	1,808,459	1,805,187	1,359,854	1,453,402	1,338,818	790,588
2	3271 Sulphur (Liquid)	422,161	436,757	545,135	593,019	599,754	559,030
3	2100 Crude Petroleum	13,320	0	7,177	14,270	62,425	253,039
4	2330 Distillate Fuel Oil	181,954	262,852	172,675	96,289	211,148	178,472
5	4331 Sand & Gravel	135,580	187,146	203,702	229,978	98,227	102,000
6	7110 Machinery (Not Elec)	119,890	31,441	15,681	73,808	15,174	54,629
7	3272 Sulphuric Acid	0	0	0	0	0	51,841
8	2430 Asphalt, Tar & Pitch	23,259	49,193	44,197	83,347	103,304	50,483
9	2350 Lube Oil & Greases	11,069	8,861	22,583	12,686	1,948	33,733
10	4860 Slag	31,316	32,958	25,127	19,621	31,282	26,308
11	3276 Metallic Salts	25,926	21,888	20,674	18,451	15,376	12,820
12	4900 Non-Metal. Min. NEC	8,904	37,167	13,731	28,470	1,800	8,675
13	2990 Petro. Products NEC	0	91	0	0	0	5,723
14	3275 Inorg. Elem., Oxides, & Halogen Salts	2,450	4,659	5,916	16,969	4,693	4,716
15	2211 Gasoline	29,352	16,569	4,947	5,305	13,838	3,086
16	3274 Sodium Hydroxide	0	0	0	0	0	2,276
17	4782 Clay & Refrac. Mat.	1,536	1,250	2,100	4,807	2,150	1,157
18	6888 Water & Ice	7,718	0	1,534	0	0	909
19	5480 Fab. Metal Products	1,694	841	0	0	0	288
20	3190 Fert. & Mixes NEC	21,799	19,040	27,819	1,601	10,929	0
21	3110 Nitrogenous Fert.	2,882	1,628	28,882	14,546	6,330	0
22	2429 Naphtha & Solvents	0	2,800	8,400	5,545	3,797	0
23	6838 Tallow, Animal Oils	0	0	0	4,732	3,470	0
24	6782 Animal Feed, Prep.	0	0	0	0	1,389	0

Domestic Trade Shipments

	Galveston Domestic Shipments Commodity	2010	2011	2012	2013	2014	2015
1	3271 Sulphur (Liquid)	1,597,411	1,676,078	1,295,686	1,539,735	1,523,474	1,609,175
2	2340 Residual Fuel Oil	948,279	1,145,096	1,061,785	548,459	350,554	231,845
3	2330 Distillate Fuel Oil	97,696	96,125	81,369	10,539	53,102	81,101
4	7110 Machinery (Not Elec)	185,991	59,500	28,863	106,774	26,099	79,848
5	3110 Nitrogenous Fert.	42,913	38,594	37,593	41,885	17,182	58,446
6	2100 Crude Petroleum	334	406,363	1,683,474	2,056,507	960,745	26,403
7	4900 Non-Metal. Min. NEC	4,256	12,542	16,140	35,820	16,950	16,523
8	2430 Asphalt, Tar & Pitch	29,402	0	0	0	3,324	10,323
9	2429 Naphtha & Solvents	0	0	0	0	5,854	8,336
10	2350 Lube Oil & Greases	0	0	0	0	1,400	6,061
11	6888 Water & Ice	8,921	3,617	12,966	993	0	5,245
12	3272 Sulphuric Acid	13,288	0	0	0	0	4,623
13	5220 Cement & Concrete	1,162	0	0	48	0	2,321
14	4782 Clay & Refrac. Mat.	1,796	800	300	6,574	0	2,289
15	8900-9900 Unknown or NEC	0	0	0	0	0	1,973
16	5480 Fab. Metal Products	1,400	359	4,261	0	0	1,546
17	3130 Potassic Fert.	0	0	0	0	17,900	1,368
18	3276 Metallic Salts	0	0	0	734	700	769
19	7900 Manufac. Prod. NEC	603	7,400	0	1,400	0	91
20	3275 Inorg. Elem., Oxides, & Halogen Salts	15,116	0	0	158	1,380	35
21	3190 Fert. & Mixes NEC	9,692	17,756	14,710	19,679	13,955	0

Non-Containerized Imports

	Trade Port World Region	Imports Galveston (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	3102 Mineral Or Chemical Fertilizers, Nitrogenc	418,209	435,851	733,693	595,184	840,209	816,935	635,312
2	0803 Bananas, Including Plantains, Fresh Or Dr	8,814	16,105	58,153	86,095	234,907	244,141	226,125
3	2916 Unsat Acyclic & Cyclic Monocarbox Acid & Anhyd Etc						38,591	57,726
4	2709 Crude Oil From Petroleum And Bituminou	1,963,606	2,650,079	3,368,201	3,528,533	1,459,706	158	53,448
5	8429 Self-propelled Bulldozers, Graders, Scrapi	29,921	71,235	116,168	91,796	105,130	105,165	52,562
6	2710 Oil (not Crude) From Petrol & Bitum Mine	350,820	260,378	192,656	78,747	99,220	112,269	33,581
7	8703 Motor Cars & Vehicles For Transporting P	23	29	47	63	175	410	30,577
8	8701 Tractors (other Than Works Trucks Of He	16,819	27,398	38,173	20,246	31,274	29,865	28,529
9	3815 Reaction Initiators & Acceler & Catalyt Prep Nesoi			20		1,102	13,667	14,947
10	8426 Ship's Derricks; Cranes; Mobile Lifting Fra	10,299	14,140	28,098	25,467	18,079	14,184	14,709
11	8704 Motor Vehicles For Transport Of Goods	1,792	4,701	12,791	7,619	15,206	18,798	12,038
12	8705 Special Purpose Motor Vehicles Nesoi	8,264	12,861	22,531	22,421	23,633	14,287	9,871
13	2917 Polycarboxylic Acids & Anhyd Etc, Halog, Sulf Etc						4,409	9,259
14	9801 Expts Of Repaired Impts; Impts Of Return	1,249	1,905	7,364	2,480	4,230	10,389	7,994
15	8427 Fork-lift Trucks; Oth Works Trucks With Li	2,211	5,432	11,089	12,701	16,278	11,979	5,969
	Grand Total	3,333,001	3,822,337	4,672,343	4,693,288	3,040,232	1,612,961	1,232,101

Non-Containerized Exports

	Trade Port World Region	Exports Galveston (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	1201 Soybeans, Whether Or Not Broken	208,330	26,380		180,089	117,930	524,040	746,207
2	1007 Grain Sorghum	357,638	19,816			929,421	1,960,094	610,919
3	1001 Wheat And Meslin	1,854,096	2,820,019	841,819	668,928	427,674	371,887	483,336
4	2836 Carbonates; Peroxocarbonates; Comm Amm Carbonate		67,794	161,265	227,834	341,439	516,500	363,929
5	1005 Corn (maize)	1,561,750	676,129	160,750	32,840	53,136	112,431	280,390
6	2707 Oils Etc From High Temp Coal Tar; Sim Ar	167,098	268,625			6,671	175,371	243,095
7	3104 Mineral Or Chemical Fertilizers, Potassic	8,711	134,523	369,421	439,930	204,872	250,534	185,925
8	2710 Oil (not Crude) From Petrol & Bitum Mine	1,015,352	912,635	770,905	810,951	1,880,961	515,169	116,386
9	2709 Crude Oil From Petroleum And Bituminous Minerals					1,215,354	183,720	90,791
10	2503 Sulfur Of All Kinds Nesoi	45,733	30,747	147,746	81,673	107,974	47,411	74,572
11	3102 Mineral Or Chemical Fertilizers, Nitrogenc	61,551	162,717	135,194	174,143	110,700	74,791	43,672
12	8429 Self-propelled Bulldozers, Graders, Scrapi	40,304	39,373	32,654	28,471	22,109	11,718	12,462
13	8703 Motor Cars & Vehicles For Transporting P	32,888	27,801	22,841	23,077	26,199	16,148	10,992
14	4804 Kraft Paper & Paperboard, Uncoat Nesoi,	7,473	13,075	0	1,471	2,869	15,543	8,510
15	8708 Parts & Access For Motor Vehicles (head	6,561	5,984	7,762	8,789	10,307	8,869	6,119
	Grand Total	5,473,289	5,322,439	3,583,043	2,764,134	5,572,075	4,953,855	3,309,185

Appendix D

Port of Texas City Commodities

All Trades (Shipments and Receipts, Domestic and Foreign)

All Traffic Types (Domestic & Foreign), All Traffic Directions (Tons) Texas City Commodity Group	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	18,778,599	20,335,789	22,282,978	22,804,108	24,324,048	23,102,000
21 Crude Petroleum	31,994,094	30,953,558	28,596,225	21,404,145	17,864,941	13,928,000
32 Other Chemicals and Related Products	5,658,746	6,328,695	5,802,698	5,367,713	5,445,347	5,653,000
99 Unknown or Not Elsewhere Clsfd	1,685	2,517	3,571	42,228	191,588	149,000
43 Soil, Sand, Gravel, Rock and Stone	0	0	0	0	0	49,000
71-79 Manufactured Equipment, Machinery and Products	50,100	25,414	429	6,344	21,726	25,000
68 Other Agricultural Products	22,052	27,464	2,511	11,988	22,913	16,000
66 Vegetable Products	2,756	4,408	882	3,854	2,206	2,000
53 Primary Iron and Steel Products	34,683	22,155	17,305	17,649	6,205	0
31 Fertilizers	33,250	1,455	14,960	0	3,628	0
46 Non-Ferrous Ores and Scrap	0	153	0	0	1,615	0
54 Primary Non-Ferrous Metal Products	1,144	808	47	1	732	0
11-12 Coal	0	55,116	0	1,729	0	0
44 Iron Ore and Scrap	0	0	0	1,536	0	0
47 Sulphur, Clay and Salt	0	0	0	12,245	0	0
52 Lime, Cement and Glass	0	0	21	0	0	0
55 Primary Wood Products; Veneer	0	0	0	496	0	0
67 Processed Grain and Animal Feed	12,433	0	0	0	0	0
89 Waste and Scrap NEC	1,314	0	0	0	0	0
Grand Total	56,590,856	57,757,532	56,721,627	49,674,036	47,884,949	42,924,000

Foreign Trade Receipts and Shipments Combined

Texas City Foreign Trade Commodity	2010	2011	2012	2013	2014	2015
21 Crude Petroleum	30,930,199	29,179,138	26,493,182	18,096,566	14,052,143	12,453,000
22-29 Petroleum Products	7,616,630	7,382,881	7,497,711	10,419,912	12,312,355	12,442,000
32 Other Chemicals and Related Products	1,387,302	2,200,623	1,946,709	1,784,076	2,431,426	2,512,000
99 Unknown or Not Elsewhere Clsfd	1,685	2,517	3,571	42,228	191,588	149,000
71-79 Manufactured Equipment, Machinery	50,084	25,414	429	6,344	21,726	25,000
68 Other Agricultural Products	5,616	15,832	0	9,804	22,521	15,000
53 Primary Iron and Steel Products	34,683	22,155	17,305	17,649	6,205	0
31 Fertilizers	33,250	1,455	0	0	3,628	0
66 Vegetable Products	2,756	4,408	882	2,754	2,206	0
46 Non-Ferrous Ores and Scrap	0	153	0	0	1,615	0
54 Primary Non-Ferrous Metal Products	1,144	808	47	1	732	0
11-12 Coal	0	55,116	0	0	0	0
44 Iron Ore and Scrap	0	0	0	0	0	0
47 Sulphur, Clay and Salt	0	0	0	12,245	0	0
52 Lime, Cement and Glass	0	0	21	0	0	0
55 Primary Wood Products; Veneer	0	0	0	496	0	0
67 Processed Grain and Animal Feed	12,433	0	0	0	0	0
89 Waste and Scrap NEC	0	0	0	0	0	0
Grand Total	40,075,782	38,890,500	35,959,857	30,392,075	29,046,145	27,596,000

Source: USACE Waterborne Commerce Statistics

Domestic Trade Receipts and Shipments Combined

Texas City Domestic Trade Commodity	2010	2011	2012	2013	2014	2015
22-29 Petroleum Products	10,931,569	12,634,983	14,290,201	12,061,912	11,550,101	10,660,000
32 Other Chemicals and Related Products	4,242,092	4,110,004	3,837,064	3,561,941	2,984,403	3,141,000
21 Crude Petroleum	1,063,895	1,761,567	2,053,334	3,218,869	3,767,764	1,475,000
66 Vegetable Products	0	0	0	1,100	0	2,000
68 Other Agricultural Products	16,436	11,632	2,511	2,184	392	1,000
11-12 Coal	0	0	0	1,729	0	0
31 Fertilizers	0	0	14,960	0	0	0
44 Iron Ore and Scrap	0	0	0	1,536	0	0
46 Non-Ferrous Ores and Scrap	0	0	0	0	0	0
47 Sulphur, Clay and Salt	0	0	0	0	0	0
52 Lime, Cement and Glass	0	0	0	0	0	0
53 Primary Iron and Steel Products	0	0	0	0	0	0
54 Primary Non-Ferrous Metal Products	0	0	0	0	0	0
55 Primary Wood Products; Veneer	0	0	0	0	0	0
67 Processed Grain and Animal Feed	0	0	0	0	0	0
71-79 Manufactured Equipment, Machinery	16	0	0	0	0	0
89 Waste and Scrap NEC	1,314	0	0	0	0	0
99 Unknown or Not Elsewhere Clsfd	0	0	0	0	0	0
Grand Total	16,255,322	18,518,186	20,198,070	18,849,271	18,302,660	15,279,000

Source: USACE Waterborne Commerce Statistics; 2015 tons include intraport movements

Domestic Trade Receipts

	Texas City Domestic Receipts Commodity	2010	2011	2012	2013	2014	2015
1	2100 Crude Petroleum	1,031,957	1,700,162	2,004,232	2,469,827	2,892,682	1,232,897
2	2330 Distillate Fuel Oil	1,248,586	1,022,316	1,156,752	1,204,067	1,962,590	1,096,624
3	2340 Residual Fuel Oil	691,475	1,069,361	1,605,732	1,034,980	1,091,770	864,130
4	2429 Naphtha & Solvents	1,132,197	1,013,035	1,203,196	850,240	833,728	747,869
5	3220 Alcohols	387,048	242,305	350,047	367,252	297,805	476,295
6	2211 Gasoline	328,674	232,602	337,635	393,095	385,528	262,591
7	2430 Asphalt, Tar & Pitch	130,391	322,456	472,398	186,379	148,557	231,599
8	3219 Other Hydrocarbons	335,544	638,505	631,089	558,655	375,426	201,504
9	3230 Carboxylic Acids	118,405	108,455	185,323	118,615	112,168	108,807
10	2990 Petro. Products NEC	122,597	64,151	99,482	36,303	78,112	107,349
11	3212 Benzene & Toluene	232,781	219,686	79,655	95,419	155,683	90,802
12	2640 Hydrocarbon & Petrol Gases, Liquefiec	75,690	70,671	63,396	52,088	241,373	84,928
13	3240 Nitrogen Func. Comp.	69,510	52,046	60,194	54,471	65,703	61,906
14	4335 Waterway Improv. Mat.	0	0	0	0	0	49,466
15	3260 Organic Comp. NEC	40,460	50,644	73,466	57,787	67,887	49,315
16	2350 Lube Oil & Greases	27,024	18,102	3,938	9,261	0	16,472
17	3250 Organo - Inorg. Comp.	1,276	4,688	5,526	15,367	12,955	13,049
18	3211 Acyclic Hydrocarbons	7,326	0	0	1,841	0	8,066
19	3299 Chem. Products NEC	14,784	8,174	4,854	1,113	3,146	6,956
20	3274 Sodium Hydroxide	8,865	6,963	6,606	5,202	4,609	5,180
21	3285 Perfumes & Cleansers	4,420	4,402	7,595	5,492	6,512	5,015
22	2540 Petroleum Coke	15,614	21,639	29,011	2,799	0	3,066
23	6653 Vegetable Oils	0	0	0	0	0	1,676
24	6888 Water & Ice	0	526	874	703	392	876
25	2221 Kerosene	12,546	7,575	24,373	62,621	19,911	0

Domestic Trade Shipments

	Texas City Domestic Shipments Commodity	2010	2011	2012	2013	2014	2015
1	2330 Distillate Fuel Oil	1,478,645	1,945,142	1,525,303	1,509,358	2,022,716	2,237,042
2	2211 Gasoline	3,066,816	3,476,679	3,692,326	2,411,055	1,333,903	1,432,356
3	2429 Naphtha & Solvents	904,291	1,121,639	1,234,099	1,807,435	1,238,378	1,280,011
4	2340 Residual Fuel Oil	1,145,235	1,669,984	2,424,400	1,857,387	1,418,626	1,228,563
5	3219 Other Hydrocarbons	1,011,033	919,282	1,048,617	1,108,114	750,751	940,500
6	2990 Petro. Products NEC	66,942	188,483	200,236	292,987	463,089	696,768
7	3212 Benzene & Toluene	731,250	652,844	654,191	577,630	491,903	568,766
8	3220 Alcohols	1,065,472	946,865	511,707	407,100	434,064	350,161
9	2100 Crude Petroleum	31,938	61,405	49,102	749,042	875,082	241,912
10	3230 Carboxylic Acids	165,202	203,754	171,880	143,844	155,650	161,903
11	2350 Lube Oil & Greases	29,347	35,700	34,800	43,500	42,586	56,382
12	3211 Acyclic Hydrocarbons	26,340	24,261	2,400	0	1,419	18,825
13	3260 Organic Comp. NEC	5,809	5,525	14,707	39,972	29,225	18,595
14	3250 Organo - Inorg. Comp.	0	9,775	2,800	2,799	2,370	12,482
15	3274 Sodium Hydroxide	0	0	0	0	0	12,217
16	2640 Hydrocarbon & Petrol Gases, Liquefiec	0	9,820	10,877	12,991	32,669	10,015
17	3299 Chem. Products NEC	1,346	2,519	22,436	0	8,659	9,925
18	3272 Sulphuric Acid	0	0	2,444	1,268	522	460
19	3240 Nitrogen Func. Comp.	400	2,640	1,527	0	3,925	329
20	2540 Petroleum Coke	425,190	273,653	154,115	293,945	217,788	0
21	2410 Petro. Jelly & Waxes	0	0	0	1,421	9,790	0
22	2221 Kerosene	7,145	33,279	0	0	7,632	0
23	3276 Metallic Salts	0	0	0	0	2,421	0
24	3286 Plastics	0	0	0	0	1,600	0
25	2430 Asphalt, Tar & Pitch	23,164	36,920	14,630	0	1,355	0

Non-Containerized Imports

	Trade Port World Region	Imports Texas City (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2709 Crude Oil From Petroleum And Bituminou	29,455,357	26,518,351	23,556,985	14,246,431	12,724,060	11,087,427	11,905,042
2	2710 Oil (not Crude) From Petrol & Bitum Mine	851,337	652,318	559,630	638,489	617,712	421,351	339,847
3	2902 Cyclic Hydrocarbons	47,847	16,564	28,275	144,042	106,726	204,847	37,914
4	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	173,062	257,260	270,871	297,823	295,556	128,538	28,479
5	2707 Oils Etc From High Temp Coal Tar; Sim Aromatic Etc			3,169	28,972	0	2,130	8,502
6	9801 Expts Of Repaired Impts; Impts Of Return	0		3,612	481	14,721	53,985	8,378
7	2207 Ethyl Alcohol, Undenat, Nun80% Alc; Alcohol, Denat				10,620	14,533	9,790	6,673
	Grand Total	30,539,896	27,467,667	24,443,670	15,425,920	13,787,596	11,950,626	12,334,840

Non-Containerized Exports

	Trade Port World Region	Exports Texas City (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2710 Oil (not Crude) From Petrol & Bitum Mine	5,760,087	4,877,219	5,938,564	8,700,875	8,211,453	10,756,808	8,571,680
2	2713 Petroleum Coke, Petroleum Bitumen & O	1,020,152	1,446,110	1,131,206	1,225,508	1,195,004	1,833,119	1,323,270
3	2207 Ethyl Alcohol, Undenat, Nun80% Alc; Alco	247,857	821,856	668,274	561,696	784,632	706,051	993,843
4	2902 Cyclic Hydrocarbons	419,426	740,747	500,011	872,551	479,743	253,593	234,522
5	2915 Sat Acyclic Nonocarbox Acid & Anhyd, Ha	143,792	172,603	219,055	262,998	149,642	74,404	66,702
6	2917 Polycarboxylic Acids & Anhyd Etc, Halog, Sulf Etc			8,603	34,943	21,735	30,934	32,731
7	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	102,165	84,689	109,629	147,636	50,280	11,691	29,204
8	2909 Ethers, Ether-alcohols, Alcohol Peroxides	100,795	108,850	113,845	131,796	72,473	2,003	1,878
	Grand Total	7,981,907	8,387,652	8,864,596	12,098,040	11,250,748	13,884,541	11,255,674

Appendix E

Port of Freeport Commodities

All Trades (Shipments and Receipts, Domestic and Foreign)

All Traffic Types (Domestic & Foreign), All Traffic Directions (Tons) Freeport						
Commodity Group	2010	2011	2012	2013	2014	2015
21 Crude Petroleum	18,206,996	14,416,799	14,187,785	11,764,138	13,024,153	10,845,000
32 Other Chemicals and Related Products	5,689,755	5,644,788	5,562,607	5,308,476	5,381,500	5,989,000
43 Soil, Sand, Gravel, Rock and Stone	223,273	93,986	220,323	467,992	1,211,719	1,809,000
22-29 Petroleum Products	1,682,370	2,467,012	1,346,379	1,321,801	2,002,364	1,616,000
68 Other Agricultural Products	451,396	412,966	454,825	478,134	403,261	351,000
71-79 Manufactured Equipment, Machinery and Products	145,230	67,237	49,524	73,825	100,053	164,000
99 Unknown or Not Elsewhere Clsfd	27,543	12,871	8,082	49,840	80,190	146,000
62-64 Grain	160,467	120,918	164,058	140,304	64,839	116,000
53 Primary Iron and Steel Products	1,683	8,598	170	4,278	11,819	45,000
41 Forest Products, Wood and Chips	383	15	344	4,318	1,520	16,000
54 Primary Non-Ferrous Metal Products	5,683	6,135	3,556	11,276	16,687	12,000
51 Paper Products	64,604	39,666	44,745	17,326	11,049	9,000
66 Vegetable Products	5,581	5,653	5,059	11,059	7,004	7,000
48 Slag	0	11,247	29,806	53,014	0	3,000
47 Sulphur, Clay and Salt	2,133	996	1,201	2,027	578	2,000
52 Lime, Cement and Glass	2,631	115	49	3,303	5,258	2,000
67 Processed Grain and Animal Feed	634	1,346	761	324	600	2,000
31 Fertilizers	1,656	0	0	1,102	0	0
42 Pulp and Waste Paper	172	104	1,255	549	567	0
44 Iron Ore and Scrap	0	0	0	23	628	0
46 Non-Ferrous Ores and Scrap	195	0	3,033	231	44	0
49 Other Non-Metal. Min.	544	1,078	309	1,583	712	0
55 Primary Wood Products; Veneer	1,427	0	185	337	1,330	0
61 Fish	228	33	495	791	732	0
65 Oilseeds	1,258	305	0	2	425	0
Grand Total	26,675,842	23,311,868	22,084,551	19,716,053	22,327,032	21,134,000

Source: USACE Waterborne Commerce Statistics

Foreign Trade Receipts and Shipments Combined

Freeport Foreign Trade Commodity	2010	2011	2012	2013	2014	2015
21 Crude Petroleum	18,176,956	14,211,173	12,750,118	8,468,531	11,043,096	9,454,000
32 Other Chemicals and Related Products	2,371,575	2,302,534	2,229,770	2,338,820	2,398,251	3,060,000
43 Soil, Sand, Gravel, Rock and Stone	223,273	93,986	220,323	467,992	1,211,719	1,619,000
22-29 Petroleum Products	780,247	1,366,620	604,478	437,026	729,055	757,000
68 Other Agricultural Products	448,396	412,966	454,825	478,134	403,261	351,000
71-79 Manufactured Equipment, Machinery	131,626	61,797	49,438	72,776	99,960	164,000
99 Unknown or Not Elsewhere Clsfd	26,210	12,871	8,068	49,840	80,190	146,000
62-64 Grain	84,556	51,741	75,016	66,636	50,751	84,000
53 Primary Iron and Steel Products	1,683	8,598	170	4,278	11,819	45,000
41 Forest Products, Wood and Chips	383	15	344	4,318	1,520	16,000
54 Primary Non-Ferrous Metal Products	4,058	6,135	3,556	11,276	15,120	12,000
51 Paper Products	64,604	39,666	44,745	17,326	11,049	9,000
66 Vegetable Products	5,581	5,653	5,059	11,059	7,004	7,000
52 Lime, Cement and Glass	2,631	115	49	3,303	5,258	2,000
67 Processed Grain and Animal Feed	634	1,346	761	324	600	2,000
47 Sulphur, Clay and Salt	2,133	996	1,201	2,027	578	2,000
55 Primary Wood Products; Veneer	1,427	0	185	337	1,330	0
61 Fish	228	33	495	791	732	0
49 Other Non-Metal. Min.	544	1,078	309	1,583	712	0
44 Iron Ore and Scrap	0	0	0	23	628	0
42 Pulp and Waste Paper	172	104	1,255	549	567	0
65 Oilseeds	1,258	305	0	2	425	0
46 Non-Ferrous Ores and Scrap	195	0	0	231	44	0
31 Fertilizers	77	0	0	1,102	0	0
48 Slag	0	0	26,511	46,958	0	0
Grand Total	22,328,447	18,577,732	16,476,676	12,485,242	16,073,669	15,730,000

Source: USACE Waterborne Commerce Statistics

Domestic Trade Receipts and Shipments Combined

Freeport Domestic Trade Commodity	2010	2011	2012	2013	2014	2015
32 Other Chemicals and Related Products	3,318,180	3,342,254	3,330,096	2,965,924	2,983,249	2,929,000
21 Crude Petroleum	30,040	205,626	1,437,667	3,295,607	1,981,057	1,391,000
22-29 Petroleum Products	902,123	1,096,703	741,606	884,225	1,273,309	859,000
43 Soil, Sand, Gravel, Rock and Stone	0	0	0	0	0	190,000
62-64 Grain	75,911	69,177	89,042	73,668	14,088	32,000
48 Slag	0	11,247	3,295	6,056	0	3,000
54 Primary Non-Ferrous Metal Products	1,625	0	0	0	1,567	0
71-79 Manufactured Equipment, Machinery	13,604	5,440	86	1,049	93	0
31 Fertilizers	1,579	0	0	0	0	0
41 Forest Products, Wood and Chips	0	0	0	0	0	0
42 Pulp and Waste Paper	0	0	0	0	0	0
44 Iron Ore and Scrap	0	0	0	0	0	0
46 Non-Ferrous Ores and Scrap	0	0	3,033	0	0	0
47 Sulphur, Clay and Salt	0	0	0	0	0	0
49 Other Non-Metal. Min.	0	0	0	0	0	0
51 Paper Products	0	0	0	0	0	0
52 Lime, Cement and Glass	0	0	0	0	0	0
53 Primary Iron and Steel Products	0	0	0	0	0	0
55 Primary Wood Products; Veneer	0	0	0	0	0	0
61 Fish	0	0	0	0	0	0
65 Oilseeds	0	0	0	0	0	0
66 Vegetable Products	0	0	0	0	0	0
67 Processed Grain and Animal Feed	0	0	0	0	0	0
68 Other Agricultural Products	3,000	0	0	0	0	0
99 Unknown or Not Elsewhere Clsfd	1,333	0	14	0	0	0
Grand Total	4,347,395	4,730,447	5,604,839	7,226,529	6,253,363	5,404,000

Source: USACE Waterborne Commerce Statistics; 2015 tonnage includes intraport movements

Domestic Trade Receipts

	Freeport Domestic Receipts Commodity	2010	2011	2012	2013	2014	2015
1	2100 Crude Petroleum	30,040	204,121	1,437,667	2,982,541	1,263,902	596,660
2	3219 Other Hydrocarbons	718,473	695,704	775,707	472,321	519,850	520,473
3	2429 Naphtha & Solvents	515,195	615,352	352,867	546,881	594,966	466,510
4	3272 Sulphuric Acid	494,602	474,768	512,918	520,115	523,393	466,390
5	3240 Nitrogen Func. Comp.	211,050	262,500	282,000	327,400	204,793	235,000
6	4331 Sand & Gravel	0	0	0	0	0	189,746
7	3212 Benzene & Toluene	115,070	84,161	98,952	109,565	184,306	122,815
8	3220 Alcohols	92,849	115,114	123,366	80,772	136,406	105,904
9	3211 Acyclic Hydrocarbons	13,496	11,983	5,350	9,405	56,610	62,234
10	6442 Rice	75,911	69,177	85,524	72,238	14,088	32,273
11	3230 Carboxylic Acids	6,177	7,842	936	19,447	20,479	28,106
12	2640 Hydrocarbon & Petrol Gases, Liquefie	6,304	19,182	19,258	0	7,437	25,707
13	2211 Gasoline	7,670	24,208	52,196	7,401	36,405	24,156
14	2990 Petro. Products NEC	20,322	16,020	29,567	94,204	61,104	20,582
15	2330 Distillate Fuel Oil	0	22,083	6,266	0	3,576	16,522
16	3250 Organo - Inorg. Comp.	0	9,775	2,800	4,199	1,403	12,482
17	2350 Lube Oil & Greases	18,000	48,000	0	0	0	7,376
18	3260 Organic Comp. NEC	1,526	7,443	3,377	2,354	2,918	5,481
19	2340 Residual Fuel Oil	183,573	111,847	70,242	46,535	64,546	4,728
20	3275 Inorg. Elem., Oxides, & Halogen Salts	1,315	10,823	0	0	7,414	4,277
21	3274 Sodium Hydroxide	18,137	33,184	14,276	16,577	17,832	3,746
22	7110 Machinery (Not Elec)	151	140	86	359	58	1
23	3297 Chemical Additives	0	0	0	0	3,296	0

Domestic Trade Shipments

	Freeport Domestic Shipments Commodity	2010	2011	2012	2013	2014	2015
1	2100 Crude Petroleum	0	1,505	0	313,066	717,155	794,013
2	3212 Benzene & Toluene	326,285	397,770	276,868	272,661	275,778	282,836
3	3219 Other Hydrocarbons	246,700	330,379	218,666	197,654	296,762	204,070
4	2211 Gasoline	57,761	83,834	123,056	117,458	222,452	174,252
5	3220 Alcohols	134,867	142,710	194,453	223,153	118,655	162,553
6	3274 Sodium Hydroxide	297,573	172,376	106,031	118,918	135,183	159,811
7	3211 Acyclic Hydrocarbons	171,243	219,664	191,807	167,426	169,155	159,608
8	3260 Organic Comp. NEC	143,886	92,291	156,860	131,071	125,776	122,568
9	3286 Plastics	74,551	63,365	81,483	64,315	75,769	87,388
10	3230 Carboxylic Acids	97,352	106,001	180,796	99,221	72,883	81,960
11	3275 Inorg. Elem., Oxides, & Halogen Salts	66,738	67,535	75,573	96,721	13,193	72,231
12	2429 Naphtha & Solvents	33,361	81,796	19,918	7,450	13,972	51,848
13	2340 Residual Fuel Oil	48,586	33,727	32,689	33,653	63,955	38,630
14	2430 Asphalt, Tar & Pitch	9,135	22,954	35,547	10,428	36,916	14,638
15	3240 Nitrogen Func. Comp.	54,279	6,366	4,643	4,054	3,611	13,187
16	3250 Organo - Inorg. Comp.	1,276	4,688	5,526	16,767	12,955	13,049
17	2350 Lube Oil & Greases	0	1,487	0	10,771	0	7,936
18	2330 Distillate Fuel Oil	2,216	9,016	0	2,224	162,730	6,258
19	4860 Slag	0	11,247	3,295	6,056	0	3,373
20	3276 Metallic Salts	0	0	0	0	0	1,320
21	3272 Sulphuric Acid	1,200	0	2,315	0	0	1,200
22	7110 Machinery (Not Elec)	10,253	3,700	0	0	35	60
23	5480 Fab. Metal Products	0	0	0	0	0	44

Non-Containerized Imports

	Trade Port World Region	Imports Freeport (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2709 Crude Oil From Petroleum And Bituminou	17,828,204	13,761,891	12,802,947	8,385,588	10,156,481	8,892,404	7,867,703
2	2517 Pebbles, Gravel Etc; Macadam Of Slag, Dr	264,432	97,772	230,363	528,678	1,289,962	1,664,418	1,207,772
3	2814 Ammonia, Anhydrous Or In Aqueous Solu	600,188	566,693	537,102	551,550	519,037	511,128	489,667
4	7304 Tubes, Pipes Etc, Seamless, Iron Nesoi & Steel				1,896	11,593	29,201	49,481
5	2902 Cyclic Hydrocarbons	15,729	59,918	48,210	54,274	40,368	59,896	46,537
6	2710 Oil (not Crude) From Petrol & Bitum Mine	159,137	403,293	35,016	96,949	48,537	43,982	34,658
7	2903 Halogenated Derivatives Of Hydrocarbon	87,719	78,607	58,971	42,606	56,629	25,443	28,001
8	8703 Motor Cars & Vehicles For Transporting Persons						6,139	26,412
9	8429 Self-propelled Bulldozers, Graders, Scrapers Etc						8,499	23,894
10	2901 Acyclic Hydrocarbons	3,287	6,698	16,665	25,191	23,244	30,763	21,561
11	8426 Ship's Derricks; Cranes; Mobile Lifting Frames Etc				0	3,068	5,029	10,382
12	0803 Bananas, Including Plantains, Fresh Or Dr	138,918	142,027	116,348	49,269	24,271	0	9,400
13	8419 Machinery Etc For Temp Chang Treat Mat; W Heat, Pt				575	254	651	8,200
14	2910 Epoxides With A 3-memb Ring & Halog, Sulfon Etc						3,466	3,306
15	8418 Refrigerators, Freezers Etc; Heat Pumps Nesoi, Pts							2,926
	Grand Total	19,438,880	15,641,762	14,022,382	9,930,376	12,318,981	11,423,341	9,845,536

Non-Containerized Exports

	Trade Port World Region	Exports Freeport (All)						
	Commodity	2010	2011	2012	2013	2014	2015	2016
1	2709 Crude Oil From Petroleum And Bituminous Minerals			99,634	267,590	1,720,144	1,544,565	1,269,368
2	2815 Sodium Hydrox; Potass Hydrox; Sod Or P	360,870	519,490	691,711	831,916	857,156	523,752	920,078
3	2903 Halogenated Derivatives Of Hydrocarbon	66,072	99,978	110,522	139,265	531,277	530,643	496,927
4	2711 Petroleum Gases & Other Gaseous Hydro	271,496	205,807	248,682	19,464	61,527	259,665	363,747
5	2710 Oil (not Crude) From Petrol & Bitum Mine	72,453	61,381	148,314	197,264	417,205	347,476	112,070
6	8703 Motor Cars & Vehicles For Transporting P	4	197	50	1	0	71,493	95,742
7	1006 Rice	80,931	47,915	59,693	63,072	67,482	76,827	47,865
8	2901 Acyclic Hydrocarbons				685			34,973
9	2907 Phenols; Phenol-alcohols	65,655	73,292	78,530	44,133	12,193	14,058	22,875
10	3901 Polymers Of Ethylene, In Primary Forms	5,484	6,491	30,008	42,417	58,118	64,029	16,459
11	2905 Acyclic Alcohols & Halogenat, Sulfonatd E	66,049	83,688	84,485	33,810	23,128	14,903	7,346
12	8704 Motor Vehicles For Transport Of Goods	0	0		41		5,877	6,399
13	2910 Epoxides With A 3-memb Ring & Halog, S	156,109	129,858	58,567	46,216	38,440	5,553	5,233
14	6309 Worn Clothing And Other Worn Textile A	984	597	831	654	494	2,703	4,948
15	8429 Self-propelled Bulldozers, Graders, Scrap	117	120	171	25		2,439	4,055
	Grand Total	1,537,684	1,535,007	1,922,256	1,921,248	3,973,613	3,493,344	3,436,577