

The Economic Impact of Galveston County's Maritime Industry Cluster



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I. INTRODUCTION AND OVERVIEW

Martin Associates was retained by the City of Galveston/4B Industrial Development Corp., in Partnership with the Galveston County Commissioners Court to develop a county-wide economic impact study of the maritime industry cluster in Galveston County. The maritime industry cluster includes the economic impacts generated by the marine cargo activity at the Port of Galveston and the marine terminals at Texas City, as well as the impacts generated by firms located in Galveston County providing maritime services to the Ports of Galveston and Texas City as well as to other ports throughout Texas; firms involved in marine equipment sales; the impacts of the cruise operations at the Port of Galveston; firms providing marine equipment servicing and sales; ship repair yards; recreational boating; commercial fishing and related seafood processing; and maritime education institutions.

1. GALVESTON COUNTY

Galveston County is a coastal county in Texas located on the Gulf of Mexico that is abundant in leisure and recreational activities along its 400 miles of beaches. Total area of the county is 874 mi², of which 495 mi² is water (57%), making maritime activity in the county very important. Galveston County consists of a mainland, Galveston Bay, Galveston Island, Pelican Island and Bolivar Peninsula. The county is home to two seaports, the Port of Galveston and the Port of Texas City. These ports handle a variety of commodities including crude petroleum, petrochemicals, RoRo, chilled breakbulk, miscellaneous breakbulk, general cargo and various liquid and dry bulks. The Port of Galveston is also a cruise port that offers cruises by Carnival Cruise Lines, Royal Caribbean Cruise Lines and Disney Cruises. Significant investment in port infrastructure has been made at these two port complexes, including public investment at the Port of Galveston by the City and state of Texas, and private sector investment at the Port of Texas City by the nation's largest chemical and petroleum companies.

The importance of the maritime cluster in Galveston County is further underscored by the role of maritime education in the county's economy. For example, Texas A&M – Galveston campus is located on Galveston Island and serves as the “ocean-oriented campus” of Texas A&M University. The campus provides several marine and maritime education programs, and is home to the Texas A&M Maritime Academy. In addition, Galveston College has several maritime related programs. Furthermore, the Sea Star Base Galveston, formerly Sea Scout Base Galveston, offers several marine training courses focusing on sailing and piloting. The programs focus on hands-on activities engaging the students in the marine environment and industries. The Galveston Independent School District provides maritime education classes through their school curriculum.

Galveston County is also home to several marinas, recreational fishing operations/charters, commercial fishing and seafood processors, and recreational and commercial boat builders/maintenance operations that support the county's maritime orientation.

The 2015 population estimate for Galveston County is 322,225¹. Galveston County population is forecasted to grow to 427,059² by 2040. Galveston ranks 17th in the state of Texas in total population. In 2010, per capita income for the county is \$29,936 and the median household income is \$59,645³. The median household income in Galveston County is above the regional, state and national median household income and ranks 5th out of the region's 13 counties in terms of median household income. In terms of per capita income, Galveston County is above the regional, state and national per capita income. In addition, Galveston County ranks 3rd out of the 13-county region in per capita income.

Exhibit 1 identifies the county lines of Galveston County and shows the mainland, Galveston Island, Galveston Bay and Bolivar Peninsula.

Exhibit 1
Map of Galveston County



¹ U.S. Census Bureau

² Houston-Galveston Area Council "County Profile – Galveston County" as part of our great region 2040

³ Houston-Galveston Area Council "County Profile – Galveston County" as part of our great region 2040

The economic impact assessment defines the Galveston County's maritime industry cluster as including, but not limited to, the following eight sectors:

- **Maritime Logistics and Shipping** – this includes all activity related to waterborne cargo that moves through a public or private facility within Galveston County, to include the Galveston Ship Channel, Texas City Ship Channel and the Intracoastal waterway. This sector includes ship pilots, harbor tugs, offshore supply boats, storage/warehousing of cargo, along with facility/terminal operations, longshoreman and security. It also includes crew members of “blue or brown water vessels” and offshore oil and gas rigs that reside in Galveston County.
- **Ship and Boat Building, Maintenance and Repair** – this includes activities related to the building of commercial and recreational vessels, along with the maintenance and repair of existing vessels. Commercial vessels include ships, offshore oil rigs, survey vessels, supply boats, tugs, barges, crew boats, launches, fishing boats and any vessel that is operated with documented crew. Recreational vessels include all yachts, sailboats, and privately operated vessels.
- **Maritime Support Services** – this includes all maritime related professional and technical services, such as facility/terminal/infrastructure design, construction and maintenance; channel dredging; ship agencies; legal and financial services; ship supplies/chandlers; bunkering and fueling operations from barge or dock; crew launches to anchorages and offshore rigs; maritime salvage; marine environmental and firefighting response.
- **Federal Maritime Activities** – this includes all activities related to DHS's Customs Border Protection's (CBP) operations; U.S. Coast Guard's Station Galveston, Marine Safety Unit, and Maritime Safety and Security Team; Army Corp of Engineers; and the National Oceanic and Atmospheric Administration (NOAA). It also includes activities related to the federal funding for the dredging and maintenance of the navigation channels, port security grants, and land-based (highway, rail) transportation infrastructure.
- **Waterborne Passenger Activity** – this includes all cruise ship business activity (parking, ship stores, security, law enforcement, etc.), harbor cruises, and Bolivar Peninsular ferry operations. This sector includes the impacts of cruise passengers on the local tourism industry.
- **Commercial Fishing and Seafood Processing** – this includes all activities related to commercial shrimp and oyster operations. It also includes all related dockside and offsite seafood processing facilities with operations in Galveston County.
- **Marina and Recreational Boating and Fishing** – this includes all activities related to Galveston County marinas, the vessels moored and/or stored at these marinas and transient recreational boating activities. This sector also includes charter boats that operate out of any marina, all recreational boat/watercraft dealerships, and “deep sea” party boat operations that operate from Galveston County.
- **Maritime Education and Training** – this includes all maritime related undergraduate/graduate education, research and training conducted by Texas A&M University at Galveston, the Texas Maritime Academy, Texas A&M Center for Marine Training and Safety,

Galveston Independent School District, the Sea Scout facility, the maritime related programs at Galveston College, and the Doolin Maritime Training Partnership.

This assessment provides economic impact data for each sector to include but not limited to: employment impacts, business revenue impacts, personal earnings impacts, and tax impacts. The data, results, conclusion, and recommendations in this assessment are provided in a manner that can support policy decisions, master planning, feasibility analysis and economic development efforts.

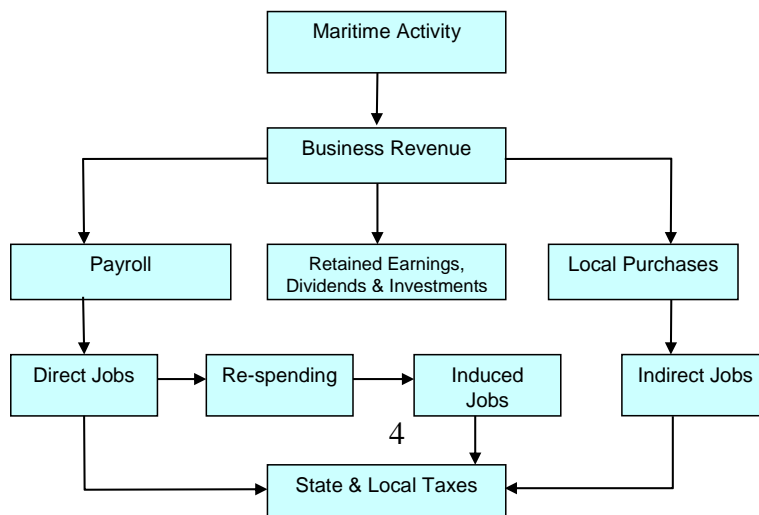
The remainder of this chapter presents an overview of the economic impact analysis and consists of the following sections:

- Flow of economic impacts of the maritime industry cluster;
- Summary of the methodology; and
- Summary of results.

2. FLOW OF ECONOMIC IMPACTS OF THE MARITIME INDUSTRY CLUSTER

The maritime industry cluster generates economic impacts and business revenue within Galveston County by providing services and selling goods to support maritime activity. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit 2 shows how the impacts flow through the maritime industry cluster. As this exhibit indicates, the economic impact of the maritime industry cluster in Galveston County is measured in terms of the *revenue impact*, *employment impact*, *personal income impact*, and *tax impact*. These impacts are non-additive. For example, the income impact is a part of the revenue impact, and adding these impacts together would result in double counting. Exhibit 2 shows graphically how the maritime industry cluster creates economic impact within Galveston County.

Exhibit 2
Flow of Economic Impacts Generated by
Maritime Industry Cluster



2.1 Business Revenue Impact

At the outset, the sales of goods and services within the maritime industry cluster generates *business revenue* for these firms. This business revenue impact is dispersed throughout the county economy in several ways. It is used to hire people to provide the services, to purchase goods and services, and to make federal, state and local tax payments. The remainder is used to pay stockholders, retire debt, make investments, or is held as retained earnings.

2.2 Employment Impact

The *employment impact* consists of three levels of job impacts:

- Direct employment impact -- jobs directly generated by the firms included in the maritime industry cluster of Galveston County. Direct jobs generated by firms supporting marine cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations and the marine terminals, longshoremen and dockworkers, steamship agents, freight forwarders, stevedores, government agencies, ship repair, etc. Direct jobs are also generated by cruise activity, ferry operations, marinas, education facilities, chartering operations, fish processing, etc.
- Induced employment impact -- jobs created in Galveston County by the purchases of goods and services by those *individuals* directly employed by each of the firms in the maritime industry sector. These jobs are held by residents located throughout the county, since they are estimated based on county purchases. The induced jobs are jobs with grocery stores, restaurants, health care providers, retail stores, local housing/construction industry, and transportation services, as well as with wholesalers providing the goods to the retailers.
- Indirect employment impact -- jobs created within the county due to purchases of goods and services by the firms located within the maritime industry cluster, not individuals. These jobs are estimated directly from local purchases data supplied to Martin Associates by the companies interviewed as part of this study, and include jobs with local office supply firms, maintenance and repair firms, parts and equipment suppliers, etc. It is to be emphasized that special care was taken to avoid double counting, since the current study counts certain jobs as direct (i.e., trucking jobs, jobs with railroads, jobs with insurance companies and admiralty law firms, etc.) which are often classified as indirect by other approaches, notably the input/output model approach.

2.3 Personal Earnings Impact

The *personal earnings impact* is the measure of employee wages and salaries (excluding benefits) received by individuals directly employed by the maritime industry cluster. Re-spending of these earnings throughout the county economy for purchases of goods and services is also estimated. This, in turn, generates additional jobs -- the induced employment impact. This re-spending throughout the

region is estimated using a regional personal earnings multiplier, which reflects the percentage of purchases by individuals that are made within the Galveston County region. The re-spending effect varies by county -- a larger re-spending effect occurs in counties that produce a relatively large proportion of the goods and services consumed by residents, while lower re-spending effects are associated with counties that import a relatively large share of consumer goods and services (since personal earnings "leak out" of the region for these out-of-regional purchases). The direct earnings are a measure of the local impact since they are received by those directly employed by maritime activity.

2.4 Tax Impact

Tax impacts are tax payments to the state and local governments by firms and by individuals whose jobs are directly dependent upon and supported (induced and indirect jobs) by maritime activity in Galveston County. These tax impacts are based on tax indices for the state of Texas, developed by the Tax Foundation. Based on the U.S. Census, of the total state and local taxes generated by activity in Galveston County, 51% is received by the State, while 49% is received at the local and county level.

3. METHODOLOGY

This section provides a summary of the methodology used to estimate the economic impacts of the maritime industry cluster in Galveston County. The methodology used in this analysis has been developed by Martin Associates and has been used to estimate the economic impacts of seaport activity at public and private marine terminals of more than 500 United States and Canadian ports. The methodology has been used in studies that have been presented before the International Trade Commission, the Council of Economic Advisors, the Federal Reserve Board, the Canadian Justice Department, and several U.S. Presidents.

3.1 Data Collection

The impact of Galveston County's maritime industry, as presented in this report, represents approximately 500 companies as categorized by the NAICS (North American Industry Classification System) code pertaining to the maritime sector. These firms were identified from Dun & Bradstreet directories and U.S. Census Data, as well as marine directories of services published for the Port of Galveston and the Port of Texas City. A partial listing of primary NAICS codes is displayed in Exhibit 3. Institutions included for the federal maritime and maritime education and training sectors were provided to Martin Associates by the Galveston Economic Development Partnership.

Exhibit 3
NAICS Codes by Individual Sector of the Maritime Industry Cluster

Subsector	NAICS	Description
Maritime Logistics and Shipping	483113	Coastal and Great Lakes freight transportation
	483211	Inland water freight transport
	488310	Port and harbor operations
	488320	Marine cargo handling
	488330	Navigational services to shipping
Waterborne Passenger Activity	483112	Deep sea passenger transportation
	483212	Inland water passenger transportation
	487210	Scenic and sightseeing water transportation, tours
Ship & Boat Building, Maint and Repair	336611	Ship building and repairing
	336612	Boat building
Maritime Support Services	237990	Marine construction, dredging contractor, dock construction, pier construction
	334511	Nautical systems and instruments
	423860	Marine supplies, navigation equipment and supplies, marine propulsion machinery
	488390	Other support activities for water transportation
	488510	Freight transportation arrangement
	541330	Engineering services
Commercial Fishing & Seafood Processing	562910	Remediation services
	112511	Finfish farming and fish hatcheries
	114111	Finfish fishing
	114112	Shellfish fishing
	311710	Seafood product preparation and packaging
	424460	Fish and seafood merchant wholesalers
Marina and Recreational Boating & Fishing	445220	Fish and seafood markets
	339920	Fishing equipment
	441222	Boat dealer
	451110	Bait and tackle
	493110	Boat storage
	532292	Boat rental
	532411	Boat rental
	541990	Yacht brokers
	713930	Marinas
713990	Fishing party boat	

3.2 Direct Jobs, Income and Revenue Impacts

Interviews were conducted with approximately 200 firms, including the interviews with the Ports of Galveston and Texas City’s maritime service providers and terminal operators⁴. The results of the interviews were combined with data obtained from Hoover’s, the U.S. Census Center for Economic Studies, Bureau of Labor Statistics and the Galveston Economic Development Partnership. In addition, a cruise passenger survey was conducted at the Port of Galveston to determine passenger and crew expenditure profiles (400 passengers and 200 crew were interviewed). Using these data sets, baseline direct job, revenue and income impacts for each of the Galveston County maritime sectors were developed. A listing of the firms contacted and included in the analysis is provided in the Appendix.

⁴ The interviews with the maritime service providers and terminal operators at the Ports of Galveston and Texas City were conducted as part of “The Economic Impacts of the State of Texas Ports and Maritime Industry, 2015”, prepared by Martin Associates for the Texas Ports Association, August 3, 2016. The results of the impact of these two ports on Galveston County is addressed in Section 10 of this report.

Through interviews with these companies and a review of published data for each of the companies as presented in Hoovers, a publication of Dun & Bradstreet, the direct jobs were derived. Essentially, the direct jobs identified for each sector represent an actual count of the full time equivalent jobs (based on 40 hours per week) as collected through interviews and the published data for each firm. The direct income impact is the average annual salary as reported in the interviews as well as from the published data specific to each firm, multiplied by the number of direct jobs. Business revenue was developed directly from the interviews. For companies not reporting revenue, a revenue per job estimate was developed for categories within each of the maritime sectors. These revenue per job metrics were developed from the interviews with the more than 200 firms. It is to be emphasized that no published data base is available that provides revenue per firm.

Taxes are estimated based on tax indices per personal income in the state of Texas, as provided by the Tax Foundation. It is to be noted that the tax index against personal income is not a personal tax, but includes all taxes from all sources collected at the state and local levels in the state of Texas, and indexed against total personal income in the state. These indexes are developed by the Tax Foundation for all states. The state of Texas index, 0.095, is multiplied by the total direct, indirect and re-spending income impact for each of the sectors to estimate total state and local taxes generated by each sector of the maritime industry cluster. The US Bureau of Census, State and Local Government Finances, 2014, publication provides a breakdown of taxes collected in Texas by source of tax, and the share of each tax received at the state or local/county level⁵. The data provided by this Census publication is then used to allocate the total tax impact into state and local shares.

3.3 Induced Impacts

Induced impacts are those generated by the purchases of the individuals employed as a result of maritime activity. For example, a portion of the personal earnings received by those directly employed due to maritime activity is used for purchases of goods and services in Galveston County. These purchases, in turn, create additional jobs in Galveston County, which are classified as induced. To estimate these induced jobs, personal earnings multipliers for Galveston County were developed for each sector, using data provided by the Bureau of Economic Analysis, Regional Input-Output Modeling System (RIMS II). These personal earnings multipliers differ by each sector of the maritime cluster. The personal income multiplier describes the total change in income in a specific sector of the maritime industry cluster as the result of a dollar of income earned by a direct employee. This is known as the multiplier effect in economics. The personal income multiplier for each sector is then used to solve for the marginal propensity to consume, which defines the share of each dollar earned by a direct employee in each sector that is used for purchases within Galveston County. The share is applied to the total personal earnings impact within the county for each of the maritime industry sectors, and the value of the county purchases is then allocated to specific local purchases categories (as determined from consumption data for Galveston area residents, as developed from the U.S. Bureau of Labor Statistics,

⁵“State and Local Government Finances by Level of Government and by State: 2014,” U.S. Census Bureau, *2014 Annual Surveys of State and Local Government Finances*.

Consumer Expenditure Survey). These local purchases are next converted into retail and wholesale induced jobs in the regional economy, using jobs to revenue coefficients developed for Galveston County from the U.S. Economic Census 2012, for the Houston/Galveston metropolitan area. The Appendix shows the allocation of the in-county purchases by the direct employees to the specific purchase categories, and the estimate of the induced jobs. It is to be noted that both induced retail and wholesale level jobs within the County are estimated. In addition, non-consumption induced jobs are also estimated. These are jobs with service sectors such as finance and real estate, schools, and county and state governments such as schools, police and infrastructure needs. These non-consumption induced jobs are estimated by developing the ratio of state-wide jobs in these non-consumption categories to total employment (as developed from the Economic Census, 2012), and then this ratio is multiplied by the direct Galveston County jobs in each of the sectors in the maritime industry cluster.

3.4 Indirect Impacts

Indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon maritime activity in Galveston County. These purchases are for goods such as office supplies and equipment, maintenance and repair services, raw materials, communications and utilities, transportation services and other professional services. To estimate the indirect economic impact, local purchases, by type of purchase, were collected from the firms interviewed. Firms provided local purchases for office supplies, maintenance and repair, business services, insurance, utilities, transportation, etc. These local purchases were then combined with employment to sales ratios in local supplying industries associated with the purchase categories, developed from the Bureau of Economic Analysis, RIMS II for Galveston County. These jobs to sales ratios capture the numerous spending rounds associated with the supply of goods and services. Special care has been exercised to avoid double counting the indirect impacts, and to specifically include only the expenditures by the directly dependent firms that are, in fact, local. The Appendix summarizes the local purchases by the firms in the maritime industry cluster, and presents the jobs to revenue multipliers used to translate the purchases into indirect jobs, by supplying industry.

4. SUMMARY OF RESULTS

The economic impacts generated by the overall maritime industry cluster in Galveston County are summarized in Exhibit 4. This is a summation of the individual impacts at the sector level.

Exhibit 4
Economic Impacts of the Maritime Industry Cluster
Galveston County

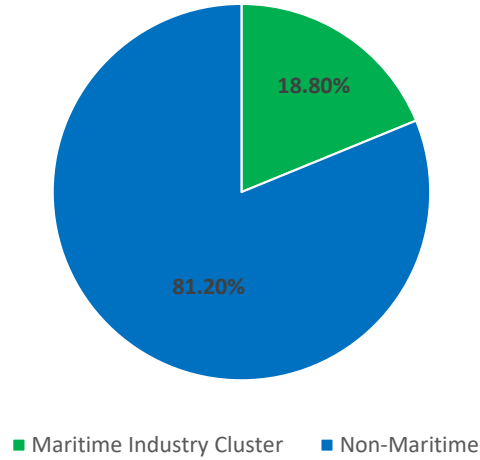
TOTAL IMPACTS	
JOBS	
Direct	15,016
Induced	12,468
Indirect	<u>5,086</u>
Total	32,569
PERSONAL INCOME (\$1,000)	
Direct	\$995,316.7
Re-spending/Local Consumption	\$1,351,585.2
Indirect	<u>\$236,165.6</u>
Total	\$2,583,067.5
DIRECT BUSINESS REVENUE (\$1,000)	\$7,692,141.7
LOCAL PURCHASES (\$1,000)	\$705,231.8
STATE AND LOCAL TAXES (\$1,000)	\$195,625.3

Specifically, the maritime industry cluster generated the following impacts in Galveston County in 2015.

- **32,569 jobs** were generated in the maritime industry cluster in Galveston County. This is essentially a census of the firms employment included in the maritime industry cluster.
- Of the 32,569 jobs generated, **15,016 direct jobs** are directly held by the firms in each of the sectors of the maritime industry cluster in Galveston County. These jobs are directly generated by marine and cargo activity at the Ports of Galveston and Texas City; cruise activity at the Port of Galveston; harbor cruises and ferry operations; marina activity and recreational boating and fishing; commercial fishing and seafood processing; and maritime education and training.

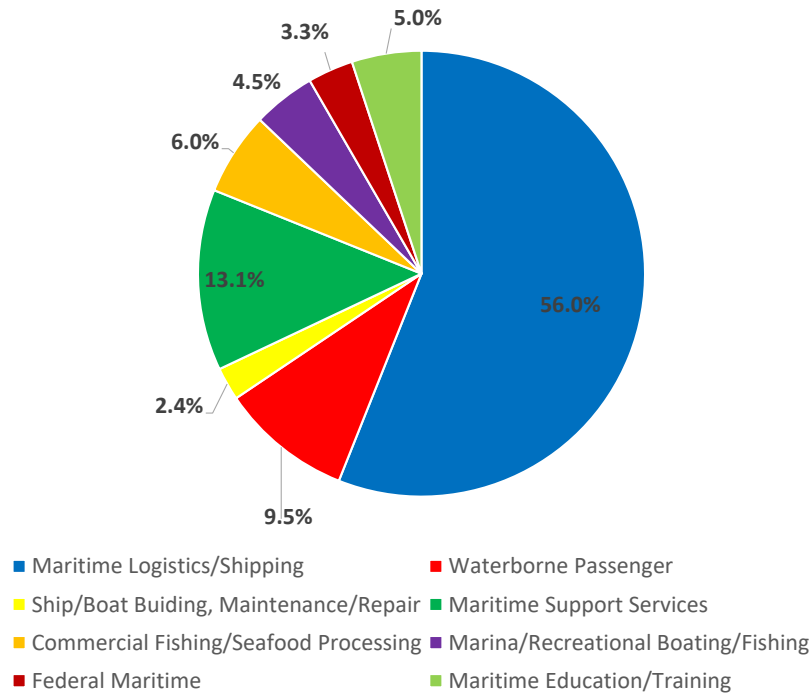
Exhibit 5 identifies the share of the maritime industry direct jobs, 15,016 jobs, of the total jobs held in Galveston County. As this exhibit shows, the maritime industry cluster represents almost 20% of the total employment in Galveston County.

Exhibit 5
Share of the Maritime Industry Cluster Direct Jobs
To Total Galveston County Employment



Furthermore, Exhibit 6 identifies the breakdown of these 15,016 direct jobs by the economic sectors within the maritime industry cluster of Galveston County. As this exhibit highlights, the Maritime Logistics and Shipping sector generates the majority of the direct jobs (56.0%), followed by the Maritime Support Services sector (13.1%) and the Waterborne Passenger Activity sector (9.5%). The petrochemical firms located at the Port of Texas City are counted in the Maritime Logistics and Shipping sector.

Exhibit 6
Share of the Maritime Industry Cluster Direct Jobs

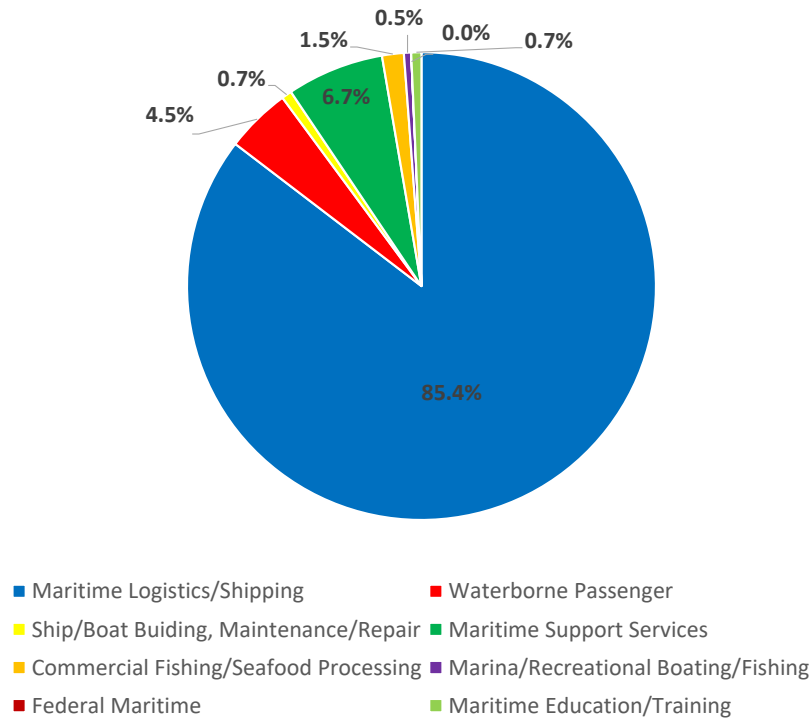


- As the result of local and regional purchases by those 15,016 individuals holding the direct jobs, an additional **12,468 induced jobs** are supported in Galveston County.
- **5,086 indirect jobs** are generated by \$705.2 million of local purchases by businesses included in the maritime industry cluster.

The businesses included in the Galveston County maritime industry cluster generated \$7.7 billion of sales revenue. As noted, the business revenue is developed from the proprietary interviews conducted with over 200 firms in Galveston County’s Maritime Industry Cluster.

Exhibit 7 presents the distribution of the business revenue by economic sector. As this exhibit shows, the majority of the revenue is generated by the Maritime Logistics and Shipping sector (85.4%). This revenue reflects to a large extent the revenue generated by the cargo activity and petroleum and chemical operations located at the Port of Texas City Industrial Refinery and Petrochemical Complex.

Exhibit 7
Share of the Maritime Industry Cluster Business Revenue



The 15,016 direct jobs received \$995.3 million of direct wage and salary income, for average earnings of \$66,283 per direct employee. This compares to an average wage throughout the state of Texas of \$46,560 in 2015⁶ and for Galveston County of \$43,598 in 2013⁷. As the result of the purchases made locally with this income, (which supported the 12,468 induced jobs in Galveston County) an additional \$1.4 billion of local income and consumption expenditures were created in Galveston County. The 5,086 indirectly employed workers were paid \$236.2 million. In total, \$2.6 billion of personal income was supported by the Galveston County maritime industry cluster.

The Galveston County maritime industry cluster generated \$195.6 million of state and local tax revenue, of which \$99.8 million was received at the state level, while \$95.8 million was received at the county and local level.

The balance of the report describes the impacts created by each sector of the Galveston County maritime industry cluster.

⁶ U.S. Bureau of Labor Statistics, May, 2015 State Occupational Employment and Wage Estimates, Texas.

⁷ U.S. Bureau of Economic Analysis, Galveston County Profile compiled by The County Information Program, Texas Association of Counties.

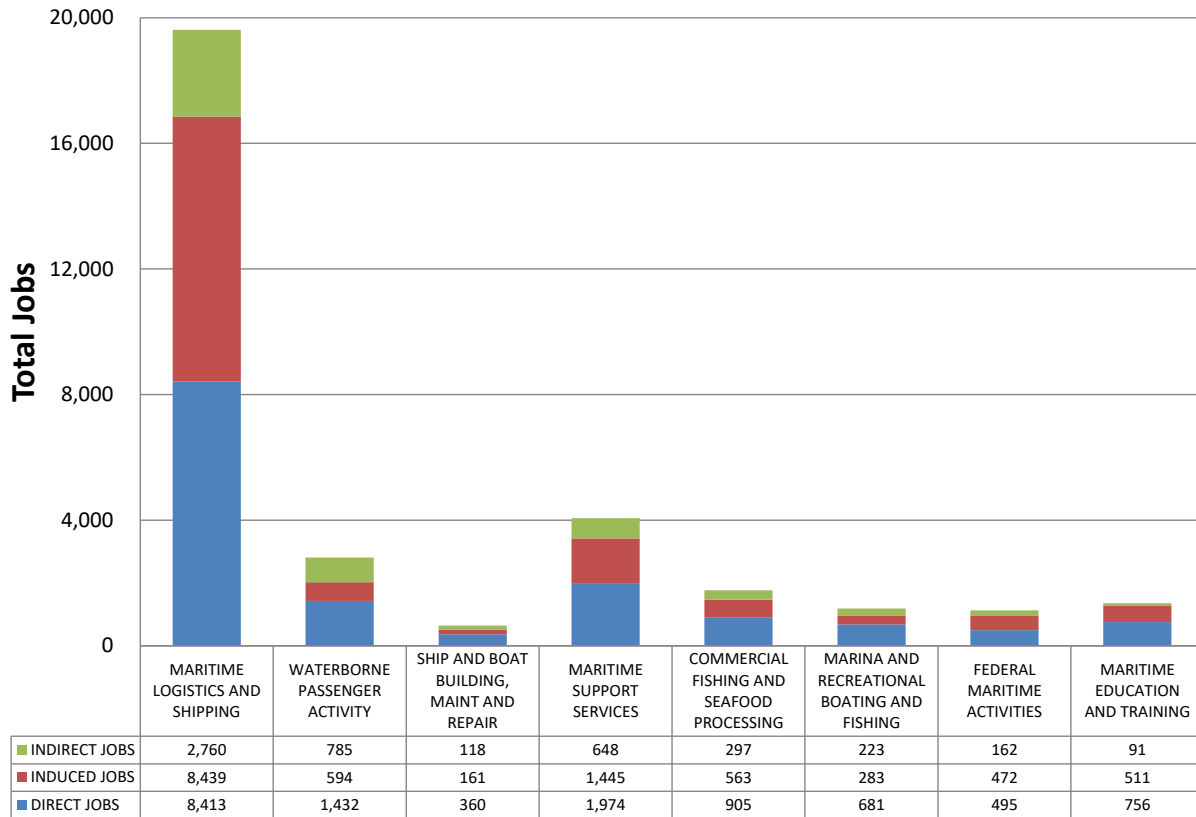
II. ECONOMIC IMPACTS OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

The Galveston County maritime industry cluster consists of business activity in the following sectors:

- Maritime Logistics and Shipping
- Ship and Boat Building, Maintenance and Repair
- Maritime Support Services
- Federal Maritime
- Waterborne Passenger Activity
- Commercial Fishing and Seafood Processing
- Marina and Recreational Boating and Fishing
- Maritime Education and Training

Exhibit 8 presents the economic impacts of the maritime industry cluster by individual sectors. The maritime industry cluster in Galveston County created 32,569 total jobs (direct, induced and indirect jobs) in 2015. As this exhibit indicates, the Maritime Logistics and Shipping sector created the largest job impact, 19,612 total jobs. This sector includes terminal operators, longshoremen, pilots, tugs, warehousemen, security and offshore supply boats. The Maritime Support Services sector generated 4,067 total jobs, followed by the Waterborne Passenger Activity sector with 2,811 total jobs.

Exhibit 8
Summary of Economic Impacts by Economic Sector



A description of the economic impacts of each of these sectors follows. In addition, the importance of the Ports of Galveston and Texas City on the Galveston County economy is discussed in the final section of this chapter, as the activity generated by the cargo and cruise activity at these two ports account for about 75% of the total direct, induced and indirect jobs created in the county’s maritime industry cluster. This finding underscores the importance in the investment in cargo and cruise infrastructure at these two port complexes within the county.

1. MARITIME LOGISTICS AND SHIPPING SECTOR

The Maritime Logistics and Shipping sector includes the following categories:

- Surface transportation – This category includes firms such as railroad and trucking companies that are responsible for moving the various cargoes between the marine terminals and the inland origins and destinations;

- Towing firms - provide the tug service to guide the vessel to and from port;
- Pilots - assist in navigating the vessels into the Port of Galveston and Port of Texas City terminals;
- Security – provide security assistance at the marine terminals;
- Cargo Handling - this category involves the physical handling of the cargo at the terminals between the land and the vessel. Included in this category are the following participants:
 - Longshoremen - include members of the International Longshoremen's Association (ILA), as well as non-ILA dockworkers that are involved in the loading and unloading of cargo from the vessels, as well as handling the cargo prior to loading and after unloading.
 - Stevedoring firms - manage the longshoremen and cargo-handling activities or provide own stevedoring services.
 - Terminal operators - are often stevedoring firms who operate the maritime terminals where cargo is loaded and off-loaded.
 - Warehouse operators - store cargo after discharge or prior to loading and consolidate cargo units into shipment lots.
- Port Authority - includes those individuals employed by the Port of Galveston and the Port of Texas City whose purpose is to oversee Port activity at the Port-owned marine terminals.

Terminal operators/stevedoring firms employ the largest number of jobs in this sector. Examples of interviews with public marine terminals leased from the Port of Galveston include the ADM Grain Company, Del Monte Fresh Produce and Pelican Island Storage Terminal, Inc/ Galveston Terminals, Inc. as well as interviews with private terminals including Texas International Terminal, Martin Midstream, Gulf Sulphur and MiSwaco. Additionally, the marine terminals and private terminals located in the Texas City Industrial Refinery and Petrochemical Complex were contacted, including Galveston Bay Refinery, Dow Chemical, BP Chemicals, Eastman Chemicals, Valero and Marathon Ashland, etc. These interview results indicate approximately 97% of the direct jobs included in the Maritime Logistics and Shipping sector is created by marine cargo activity at the Ports of Galveston and Texas City. The balance of direct jobs in this sector are identified using the Hoover's database for total job impacts of these firms located in Galveston County.

Exhibit 9 summarizes the economic impacts generated by the Maritime Logistics and Shipping sector of Galveston County.

Exhibit 9
 Summary of Economic Impacts Generated by
 Maritime Logistics and Shipping Activity

MARITIME LOGISTICS AND SHIPPING IMPACTS	
JOBS	
Direct	8,413
Induced	8,439
Indirect	<u>2,760</u>
Total	19,613
PERSONAL INCOME (\$1,000)	
Direct	\$645,993.8
Re-spending/Local Consumption	\$1,007,750.3
Indirect	<u>\$135,186.0</u>
Total	\$1,788,930.0
DIRECT BUSINESS REVENUE (\$1,000)	\$6,572,850.6
LOCAL PURCHASES (\$1,000)	\$421,543.2
STATE AND LOCAL TAXES (\$1,000)	\$134,169.7

3. SHIP AND BOAT BUILDING, MAINTENANCE AND REPAIR SECTOR

The Ship and Boat Building, Maintenance and Repair sector includes all activities associated with the building of commercial and recreational vessels as well as maintenance and repair of existing vessels. Shipyards provide repairs to vessels, either emergency or scheduled service. Commercial vessels include cargo and cruise ships, off-shore oil rigs, survey vessels, supply boats, tugs, barges, crew boats, launches, fishing boats and any other vessel that is operated with a documented crew. Recreational vessels include all yachts, sailboats and privately operated vessels.

Interviews with companies such as Gulf Copper Drydock and Rig Repair; and Malin International Ship Repair and Drydock were conducted. Exhibit 10 presents the results of the Ship and Boat Building, Maintenance and Repair sector.

Exhibit 10
 Summary of Economic Impacts Generated by
 Ship and Boat Building, Maintenance and Repair Activity

SHIP AND BOAT BUILDING, MAINTENANCE AND REPAIR IMPACTS	
JOBS	
Direct	360
Induced	161
Indirect	<u>118</u>
Total	640
PERSONAL INCOME (\$1,000)	
Direct	\$20,160.0
Re-spending/Local Consumption	\$10,761.4
Indirect	<u>\$5,784.4</u>
Total	\$36,705.8
DIRECT BUSINESS REVENUE (\$1,000)	\$53,627.7
LOCAL PURCHASES (\$1,000)	\$18,037.3
STATE AND LOCAL TAXES (\$1,000)	\$2,752.9

4. MARITIME SUPPORT SERVICES SECTOR

The Maritime Support Services sector includes the following categories:

- Cargo Marine Transportation - Participants in this category are involved in arranging for inland and water transportation for export or import freight. The freight forwarder/customhouse broker is the major participant in this category. The freight forwarder/customhouse broker arranges for the freight to be delivered between the terminals and inland destinations, as well as the ocean transportation. This function performed by freight forwarders and customhouse brokers is most prevalent for general cargo commodities.
- Vessel Operations - This category consists of several participants:
 - Steamship agents - provide a number of services for the vessel as soon as it enters the port; the agents arrange for pilot services and towing, for medical and dental care of the crew, for crew transport as well as escorts and repatriation services and for ship supplies. The agents are also responsible for vessel documentation;

- Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.);
- Bunkering firms - provide fuel to the vessels;
- Marine surveyors - inspect the vessels and the cargo.
- Marine construction firms - provide facility terminal infrastructure and design, marine construction and channel dredging.

Although these firms are located in Galveston County, the majority of firms included in this sector provide maritime services to other ports in the state of Texas, not just the Ports of Galveston and Texas City. In addition, these firms provide services to many recreational and commercial fishing vessels. Exhibit 11 presents the economic impacts generated by the Maritime Support Services sector.

Exhibit 11
Summary of Economic Impacts Generated by
Maritime Support Services Activity

MARITIME SUPPORT SERVICES IMPACTS	
JOBS	
Direct	1,974
Induced	1,445
Indirect	<u>648</u>
Total	4,067
PERSONAL INCOME (\$1,000)	
Direct	\$95,981.5
Re-spending/Local Consumption	\$149,731.1
Indirect	<u>\$31,723.6</u>
Total	\$277,436.2
DIRECT BUSINESS REVENUE (\$1,000)	\$513,654.7
LOCAL PURCHASES (\$1,000)	\$98,922.1
STATE AND LOCAL TAXES (\$1,000)	\$20,807.7

5. FEDERAL MARITIME ACTIVITIES SECTOR

The Federal Maritime Activities sector includes federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Ports of Galveston and Texas City. U.S. Customs and Border Protection, Immigration and Customs Enforcement, U.S. Department of Labor, U.S. Department of Agriculture, NOAA, U.S. Coast Guard, the Army Corps of Engineers, and U.S. Department of Commerce employees are involved. District offices for the Army Corps of Engineers is located in Galveston County, covering the entire Texas coast ranging from Louisiana to Mexico, which is approximately 50,000 mi².

A majority of these jobs were identified through the Hoover's database as well as direct interviews with agencies in this sector. These jobs include the Army Corps of Engineers District Offices located in Galveston County.

Exhibit 12 details the economic impacts generated by the Federal Maritime Activities sector in Galveston County.

Exhibit 12
Summary of Economic Impacts Generated by
Federal Maritime Activity

FEDERAL MARITIME ACTIVITIES IMPACTS	
JOBS	
Direct	495
Induced	472
Indirect	<u>162</u>
Total	1,129
PERSONAL INCOME (\$1,000)	
Direct	\$35,449.9
Re-spending/Local Consumption	\$55,301.8
Indirect	<u>\$7,947.0</u>
Total	\$98,698.7
DIRECT BUSINESS REVENUE (\$1,000)	
LOCAL PURCHASES (\$1,000)	\$24,780.7
STATE AND LOCAL TAXES (\$1,000)	\$7,402.4

6. THE WATERBORNE PASSENGER ACTIVITY SECTOR

This sector includes all cruise ship business activity (parking, ship stores, security, law enforcement, etc.) at the Port of Galveston, harbor cruises, and the Galveston-Port Bolivar Peninsular ferry operations (a free ferry service provided by the Texas Department of Transportation to carry motorists between the Bolivar Peninsula and Galveston Island). In addition, this economic sector includes the impacts of cruise passengers at the Port of Galveston on the local tourism industry.

The major participant in this economic sector is the cruise activity at the Port of Galveston. In 2015, 232 cruise vessel calls were recorded at the Port of Galveston, carrying 834,616 embarking passengers. It is important to note that these are all cruise calls by homeported vessels in contrast to in-transit calls. The key difference between an in-transit call and a homeport call is the fact that a vessel homeporting will take on passengers and supplies at the Port of Galveston, while a vessel making an intermediate in-transit call typically does not take on or discharge passengers and neither does the vessel take on supplies from local chandlers and caterers, or use local services such as advertising, maintenance and repair, linen services, etc. Hence, a call by a homeported vessel will generate a greater economic impact than an in-transit call.

To measure the economic impact of the cruise service, Martin Associates developed a cruise impact model. The model can be used to test the sensitivity of the impacts to changes in the percent of passengers flying into Galveston (air/sea passengers) versus the percent of passengers driving to the Port, the local expenditures by air/sea passengers staying in hotels either before or after the cruise, and the local purchases by the cruise lines for food, liquor, and other supplies and services. The impact of changes in the mix of the size of vessels and the number of cruises by size of vessel and itinerary can also be evaluated using the model.

To develop an accurate profile of the expenditure patterns of cruise passengers, Martin Associates conducted surveys of cruise passengers and ship crew at the Port of Galveston. The surveys were designed to reflect the composition of the cruise services calling the Port in terms of length of cruises as well as size of vessel. The surveys were conducted during the weekend of September 10th-11th, 2016. This particular weekend had four cruise vessels in port. The results of these passenger and crew surveys were used to develop passenger profiles for cruises of different lengths – 3-5 day cruises and 7 day cruises. Of particular interest is the total number of passengers per vessel call, the percent of those passengers arriving by air as well as the percent that stay in local hotels prior to or after the homeport cruise, as well as the purchases made by the passengers in the local economy. These purchases include expenditures on hotels for embarking and disembarking passengers, as well as local purchases for retail items, food and local landside tours. The average expenditures on hotel lodging and nights stayed pre- and post-cruise, as well as food and in-town cabs are calculated to generate the visitor industry impacts.

To estimate impacts generated by the cruise lines themselves while in port, the cruise lines currently calling the Port of Galveston were interviewed, including Disney Cruise Lines, Carnival Cruise Lines and Royal Caribbean Cruise Lines. The purpose of these interviews was to determine the amount of purchases, by type of service, made by each vessel call and type of service.

6.1 Port of Galveston Cruise Impact

Homeport cruise activity at the Port of Galveston affects two sectors of the local and regional economy. These sectors are the:

- Maritime Service Sector; and
- Visitor Industry/Tourism Sector.

The maritime service sector includes those firms that provide services to the cruise vessels while in port, such as:

- Chandlers/local retailers and wholesalers - provide ship stores and provisions to be used by passengers and crew;
- Towing services - assist vessels in docking and undocking (a majority of the new cruise vessels are equipped with bow and stern thrusters and the need for tug assistance is minimized);
- Pilots - assist the vessels navigating the channels from the open sea to the docks;
- Stevedoring services - performed by members of the International Longshoreman's Association (ILA) and includes handling baggage and ship supplies;
- Line handling - required when a vessel enters port;
- Bunkering firms - provides fuel to the vessels;
- Landside tours and other charters;
- Parking services - for the passengers driving to the cruise terminal; and
- Ground transfers - from the airport and hotels to the ship prior to and after the cruise.

The visitor industry/tourism sector consists of firms providing services to the passengers and crew of the current cruises prior to and after the cruise. Included in this category are:

- Hotels and motels;
- Restaurants/bars;
- Retail goods; and
- Entertainment establishments such as ground tours, movies, amusements, etc.

6.1.1 *Cruise Impacts Generated by Vessel Expenditures*

To estimate these impacts, the cruise lines currently calling the Port of Galveston were interviewed, including Disney Cruise Lines, Carnival Cruise Lines and Royal Caribbean Cruise Lines. The purpose of these interviews was to determine the amount of purchases, by type of service, made by each vessel call and type of service. Types of purchases include vessel purchases for:

- Ship stores
- Bunkers
- Water
- Liquor
- Flowers
- Pilots
- Tugs
- Local advertising
- Local travel agents
- Line handling
- Tendering services
- Stevedoring
- Retail items
- Maintenance and repair
- Trash disposal
- Laundry
- Crew allowance
- Wharfage and dockage

The results of these interviews were used to develop a typical ship disbursement account profile. Associated with each vessel expenditure category are jobs to sales ratios with the types of firms providing the goods and services to a homeported vessel. These jobs to sales ratios as well as personal income levels for the supplying industry sectors were developed from the U.S. Bureau of Census, 2012 Economic Census for Galveston County. The total annual expenditures, by type of service, is multiplied by the corresponding jobs to sales ratios to estimate the total direct job impacts in the maritime service sector, by type of service.

The revenue impacts are estimated directly from the expenditure profiles provided by the carriers. Direct income is estimated from the average annual salaries developed by type of firm, from the interviews.

6.1.2 *Cruise Impacts Generated by Cruise Passenger Expenditures*

The jobs generated in the *Visitor Industry/Tourism Sector* (for example, hotels, restaurants, etc.) are estimated based on a survey of cruise passengers and crew. These surveys were conducted during the weekend of September 10th- 11th, 2016. A total of 400 passengers and 200 crew were surveyed by graduate students at the Texas A&M University Galveston campus. The results of these passenger and crew surveys were used to develop passenger profiles for cruises of different lengths – 3-5 day cruises and 7 day cruises. Of particular interest is the total number of passengers per vessel call, the percent of those passengers arriving by air as well as the percent that stay in local hotels prior to or after the homeport cruise, as well as the purchases made by the passengers in the local economy. These purchases include expenditures on hotels for embarking and disembarking passengers, as well as local

purchases for retail items, food/beverage and local landside tours. The average expenditures on hotel lodging and nights stayed pre- and post-cruise, as well as food and in-town cabs are entered into the visitor industry model. The key findings indicate that, on average, 11.3% of the passengers on the larger cruise ships and about 5.7% of the passengers on a medium-sized cruise ship arrive in the Galveston area via air. Approximately 20% of the cruise passengers spend at least a night before or after the cruise in the Galveston area. For those spending a night before or after the cruise, the majority (97.2% for large cruise ship passengers and 92.9% of the medium-sized cruise ship passengers) stay in area hotels, while the balance stays with friends or relatives. Typically, those spending a night either before the cruise or after the cruise will spend, on average, 1.6 nights in the Galveston area. On average, the cruise passengers on the large cruise ship spends about \$90 in the Galveston area and the cruise passengers on the medium-sized cruise ship spends approximately \$87 while in the Galveston area.

Also, included in the visitor industry impacts are the impacts created by crew spending. On average, about 5% of the crew is rotated on and off the homeported vessel call at the Port of Galveston. Each crewmember spends an average of about \$230 per call at the Port of Galveston, the majority of which is spent on retail purchases, primarily electronics and clothing. The survey instrument and results from the passenger and crew surveys are included in the Appendix.

Martin Associates also developed a visitor's industry economic impact model for the Port of Galveston, and this model is used to translate the local purchases by the passengers and crew into impacts with hotels, restaurants, retail outlets and amusements in the local and regional economy. Using these purchase patterns, and the appropriate jobs to sales ratios and personal income measures for the supplying firms, the visitor industry model calculates the direct jobs, induced and indirect impacts that are generated by the homeport cruise service at the Port of Galveston. The jobs to sales ratios are developed for each type of passenger and crew purchase including the hotel/lodging sector, retail purchases, restaurant purchases, transportation, and tours. The jobs to sales ratios are developed from the U.S. Economic Census, 2012, for the Houston Galveston metropolitan area. Induced jobs are estimated based on the induced income model described previously, with the income multiplier for the Galveston County developed based on an average multiplier for lodging/restaurants, as developed by the US Bureau of Economic Analysis, RIMS II. Similarly, the RIMS II coefficients were used to estimate the indirect impacts associated with visitor spending. State and local taxes were estimated using the indices developed for Texas by the Tax Foundation.

6.2 Waterborne Passenger Activity Sector Impacts

The major participant in the Waterborne Passenger Activity sector is the cruise activity at the Port of Galveston. Harbor cruises and ferry operations in Galveston County are also included in this sector. Exhibit 13 presents the economic impact results of the Waterborne Passenger Activity sector. The importance of the cruise passenger infrastructure investment at the Port of Galveston is reflected by the fact that of the 2,811 direct, induced and indirect jobs supported by the waterborne passenger activity in Galveston County, 2,517 jobs are generated by the cruise services calling at the Port of Galveston.

Exhibit 13
 Summary of Economic Impacts Generated by
 Waterborne Passenger Activity

WATERBORNE PASSENGER ACTIVITY IMPACTS	
JOBS	
Direct	1,432
Induced	594
Indirect	<u>785</u>
Total	2,811
PERSONAL INCOME (\$1,000)	
Direct	\$47,419.6
Re-spending/Local Consumption	\$38,144.4
Indirect	<u>\$25,919.7</u>
Total	\$111,483.7
DIRECT BUSINESS REVENUE (\$1,000)	\$347,201.4
LOCAL PURCHASES (\$1,000)	\$39,349.2
STATE AND LOCAL TAXES (\$1,000)	\$10,256.5

7. THE COMMERCIAL FISHING AND SEAFOOD PROCESSING SECTOR

This sector includes all activities related to the commercial shrimp and oyster operations. It also includes all related dockside and offsite seafood processing facilities with operations in Galveston County. Commercial fishing is a significant economic generator in the county, including shrimp fishing and oyster farming. For example, shrimp in the Galveston Bay, even though the Bay does extend past Galveston County lines, accounts for nearly half the total Bay seafood harvest. In addition, Galveston Bay produces more oysters than any other single body of water in the United States⁸. Severe flooding the past two years has harmed the oyster industry, however, and has prompted local officials to request disaster assistance.

Approximately 16.4 million pounds of commercial fishery landings were reported in the Galveston Port District in 2015, accounting for a value of \$42.4 million⁹. Key processors in Galveston County include Hillman’s Seafood, Seabrook Seafood and Galveston Shrimp Company. Commonly, many of the seafood markets and wholesalers are family businesses, emphasizing the strong tradition of

⁸ Galveston Bay Estuary Program

⁹ NOAA, Commercial Fisheries Statistics, 2015

multi-generational fishing in the Gulf. National Geographic even produced a series about one local market, Katie’s Seafood, to depict the current state of sustainable fishing in the Gulf.

Exhibit 14 presents the economic impact results of the commercial fishing and seafood processing activity in Galveston County.

Exhibit 14
Summary of Economic Impacts Generated by
Commercial Fishing and Seafood Processing Activity

COMMERCIAL FISHING AND SEAFOOD PROCESSING IMPACTS	
JOBS	
Direct	905
Induced	563
Indirect	<u>297</u>
Total	1,765
PERSONAL INCOME (\$1,000)	
Direct	\$66,300.8
Re-spending/Local Consumption	\$52,477.1
Indirect	<u>\$14,541.4</u>
Total	\$133,319.3
DIRECT BUSINESS REVENUE (\$1,000)	\$111,570.4
LOCAL PURCHASES (\$1,000)	\$45,343.7
STATE AND LOCAL TAXES (\$1,000)	\$9,998.9

8. THE MARINA AND RECREATIONAL BOATING AND FISHING SECTOR

This sector includes all activities related to Galveston County marinas, the vessels moored and/or stored at these marinas and transient recreational boating activities. This sector also includes charter boats that operate out of any marina, all recreational boat/watercraft dealerships, and “deep sea” party boat operations.

Marinas provide a variety of amenities including fueling, boat launch, bait and tackle, storage, restaurant/bar facilities, maintenance and concierge services. Some examples of marinas located in Galveston County include Waterman’s Marina, Galveston Yacht Basin, Texas Corinthian Yacht Club

and Pelican Rest Marina. The City of Kemah, South Shore Harbour Marina in League City and Galveston Island are popular marina resort locations in Galveston County. Recreational water activities such as kayaking, surfing, paddle boarding and jet skis are included in this sector.

The Pelican Rest Marina was recently granted federal funds from the Texas Department of Parks and Wildlife to construct an additional 36 slips designated for transient recreational boaters. The Texas Corinthian Yacht Club was destroyed by Hurricane Ike in 2008 but has since been rebuilt and is operating normally.

Also, included in this sector are the deep-sea party boats such as Galveston Party Boats and Williams Party Boats, as well as the numerous chartering operations that provide recreational fishing trips and sightseeing tours.

Exhibit 15 presents the economic impact results of the marina and recreational boating/fishing activity in Galveston County.

Exhibit 15
Summary of Economic Impacts Generated by
Marina and Recreational Boating/Fishing Activity

MARINA AND RECREATIONAL BOATING AND FISHING IMPACTS	
JOBS	
Direct	681
Induced	283
Indirect	<u>223</u>
Total	1,187
PERSONAL INCOME (\$1,000)	
Direct	\$30,713.1
Re-spending/Local Consumption	\$16,744.8
Indirect	<u>\$10,942.2</u>
Total	\$58,400.1
DIRECT BUSINESS REVENUE (\$1,000)	\$41,457.0
LOCAL PURCHASES (\$1,000)	\$34,120.5
STATE AND LOCAL TAXES (\$1,000)	\$4,380.0

9. THE MARITIME EDUCATION AND TRAINING SECTOR

The county is home to numerous educational programs focusing on the maritime industry. Texas A&M University at Galveston offers several marine and maritime education courses such as marine biology, marine engineering, marine sciences, maritime administration, ocean engineering, maritime transportation and liberal studies. The Texas Maritime Academy offers the ability to operate and maintain ocean-going vessels. The Galveston Independent School District offers a magnet school focusing on coastal studies. The Sea Star Base Galveston, formerly Sea Scout Base Galveston, offers several marine training courses focusing on sailing and piloting. Galveston College also offers several maritime related programs, as does the Doolin Maritime Training partnership, including the Odyssey Academy.

Texas A&M University at Galveston is the largest employer in this category. Interviews with university personnel provided employment and enrollment data. University and student expenditures were also captured. A student expenditure profile was created based on average student expenses for housing, transportation, and other miscellaneous expenses such as entertainment, clothing, etc.

Exhibit 16 presents the economic impact results of the maritime education and training activity in Galveston County.

Exhibit 16
 Summary of Economic Impacts Generated by
 Maritime Education and Training Activity

MARITIME EDUCATION AND TRAINING IMPACTS	
JOBS	
Direct	756
Induced	511
Indirect	<u>91</u>
Total	1,358
PERSONAL INCOME (\$1,000)	
Direct	\$53,298.0
Re-spending/Local Consumption	\$20,674.3
Indirect	<u>\$4,121.3</u>
Total	\$78,093.6
DIRECT BUSINESS REVENUE (\$1,000)	\$51,779.9
LOCAL PURCHASES (\$1,000)	\$23,135.0
STATE AND LOCAL TAXES (\$1,000)	\$5,857.0

10. PORT INFRASTRUCTURE INVESTMENT

Martin Associates was retained by the Texas Ports Association (TPA) to estimate the 2015 economic impacts on the state of Texas' economy generated by marine cargo at the State's marine terminals, including marine terminals owned by the 12 public port authorities within the state, as well as the private terminals owned by petroleum and petrochemical companies, and the privately owned barge facilities and breakbulk facilities located within the defined port districts of the 12 public port authorities¹⁰. It is to be emphasized that the scope of the TPA study was to quantify the economic benefits of the maritime cargo terminals located within the State and did not estimate county-specific impacts. The port-specific TPA reports for the economic impacts of the Ports of Galveston and Texas City on the State of Texas are included in the Appendix. These reports provide the economic impacts of the two ports on the *Texas State economy*, not only on the Galveston County economy. The impacts of the marine cargo and cruise operations at the Ports of Galveston and Texas City on the Galveston County economy were estimated separately as part of this current maritime industry cluster impact study and discussed in the following paragraphs.

The marine cargo operations at the Port of Galveston and the Port of Texas City, and the cruise passenger activity at the Port of Galveston are significant generators of the total economic impact of the maritime industry cluster in Galveston County, and underscore the economic return to the county generated by the investment in marine cargo and cruise infrastructure investments at both port complexes. Port of Texas City Industrial Refinery and Petrochemical Complex consists of private companies and marine terminals that handled 55.3 million tons of crude oil, petroleum/chemical products and dry bulk cargo. These companies, including Galveston Bay Refinery, Valero and BP Chemicals, etc., manufacture and transport the 55.3 million tons of cargo and generate 6,758 direct jobs in the county.

Similarly, 12.2 million tons of marine cargo activity was handled at the publicly owned and privately owned marine terminals located at the Port of Galveston and along the Galveston Ship Channel. The publicly owned marine terminals leased from the Port of Galveston include the ADM Grain Company, Del Monte Fresh Produce, CHS, Inc., Gulf Copper Drydock and Rig Repair, Pelican Island Storage Terminal, Inc./Galveston Terminals, Inc. and Malin International Ship Repair and Drydock. In addition to the 12.2 million tons of cargo handled at the Port of Galveston, 232 cruise vessels operated by Disney Cruise Lines, Carnival Cruise Lines and Royal Caribbean Cruise Lines called the Port of Galveston's cruise terminals, carrying 834,616 embarking passengers. The cargo and cruise activity at the Port of Galveston generated 3,912 direct jobs.

Together, these two ports and the marine cargo and cruise infrastructure generated 10,670 direct jobs in Galveston County, or about 71% of the total direct job impacts created in the maritime industry

¹⁰ Economic Impact of the Texas Ports on the State of Texas, 2015, prepared by Martin Associates for the Texas Ports Association, August 3, 2016.

cluster in Galveston County, and about 74% of total direct, induced and indirect jobs. As a result of the higher average annual salary per direct employee generated by the cargo and cruise activity at the ports of Texas City and Galveston, the two county ports accounted for about 78% of the total direct income, re-spending/local consumption impact, and indirect income impact. The ports also accounted for 95% of the total business revenue generated by the maritime industry cluster in the county, which reflects to a large extent the revenue generated by the cargo activity and petroleum and chemical operations located at the Port of Texas City Industrial Refinery and Petrochemical Complex.

Exhibit 17 demonstrates the economic engine created to Galveston County by the cargo and cruise activity at the Ports of Galveston and Texas City, and underscores the importance of port infrastructure development to the county. Such infrastructure investments include the development and maintenance of the shipping channels serving the Ports of Galveston and Texas City both at the federal level and by the port authorities; investment in the public marine terminals by the Port of Galveston that are leased to private terminal operators; the annual maintenance and repair expenditures by the Port of Galveston to maintain the marine terminals and wharfs owned by the Port; the expenditures by the terminal operators at the two ports in equipment to handle the cargo moving over the marine terminals leased to the operators by the Port of Galveston and the private terminals at Texas City; the private sector investment in the petroleum and chemical facilities at the Port of Texas City Industrial Refinery and Petrochemical Complex; the investments by the state, county and city in roadway access to the marine terminals and to serve the shippers using the ports located throughout the region; and the investments by railroads to serve the ports' marine terminals. It is important to note that two Class I Rail operators, UPRR and BNSF, serve both the Ports of Galveston and Texas City, while the Port of Texas City Terminal Railway also serves the Port of Texas City Industrial Refinery and Petrochemical Complex. Rail service is key in moving petrochemical products, grain, and general cargo to and from the two ports within the County.

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

Exhibit 17
 Economic Impact to Galveston County of the Cargo and Cruise Activity
 At the Ports of Galveston and Texas City

	PORT OF GALVESTON CARGO	PORT OF GALVESTON CRUISE	PORT OF TEXAS CITY	PORT GENERATED	TOTAL MARITIME INDUSTRY CLUSTER	PORT SHARE
JOBS						
Direct	2,680	1,232	6,758	10,670	15,061	70.84%
Induced	2,085	500	7,063	9,647	12,468	77.38%
Indirect	<u>663</u>	<u>785</u>	<u>2,434</u>	<u>3,882</u>	5,086	76.32%
TOTAL JOBS	5,428	2,517	16,255	24,200	32,569	74.30%
PERSONAL INCOME (\$ Millions)						
Direct	\$143.1	\$38.4	\$548.4	\$729.9	\$995.3	73.33%
Re-Spending/Local Consumption	\$223.2	\$30.9	\$855.5	\$1,109.6	\$1,351.6	82.10%
Indirect	<u>\$33.8</u>	<u>\$25.9</u>	<u>\$117.9</u>	<u>\$177.6</u>	\$236.2	75.17%
TOTAL PERSONAL INCOME	\$400.1	\$95.2	\$1,521.7	\$2,017.0	\$2,583.1	78.09%
DIRECT BUSINESS REVENUE (\$ Millions)	\$584.8	\$347.2	\$6,403.4	\$7,335.4	\$7,692.0	95.36%
LOCAL PURCHASES (\$ Millions)	\$115.5	\$39.3	\$357.4	\$512.2	\$705.2	72.63%
STATE AND LOCAL TAXES (\$ Millions)	\$30.0	\$8.8	\$114.1	\$152.9	\$195.6	78.17%

Totals may not add due to rounding

A breakdown of the direct jobs generated by each of the two ports by job category is presented in Exhibit 18.

Exhibit 18
Direct Jobs Generated at the Ports of Galveston and Texas City

PORT CATEGORIES	PORT OF GALVESTON	PORT OF TEXAS CITY	TOTAL
SURFACE TRANSPORTATION			
Rail	71	43	114
Truck	491	542	1,033
MARITIME SERVICES			
Terminal	259	5,569	5,828
ILA	440	0	440
Tug Assist	33	22	55
Pilots	12	18	30
Agents	50	22	72
Maritime Services/Construction	555	244	799
Government	25	21	46
Barge/Bunkers	322	109	431
Chandler/Surveyors	34	138	172
CRUISE	1,232	NA	1,232
TENANTS*	292	NA	292
PORT AUTHORITIES	<u>96</u>	<u>30</u>	<u>126</u>
TOTAL	3,912	6,758	10,670

Totals may not add due to rounding

* Tenants at the Port of Texas City are included in Terminal Operations and include employees of the petrochemical facilities located at the Port of Texas City Complex

As this exhibit demonstrates, the development of the petrochemical infrastructure at the Port of Texas City has resulted in the direct employment of 5,569 employees with the petrochemical facilities located at the Port and using the marine terminal infrastructure and shipping channel for the shipment and receipt of raw materials and finished products. Furthermore, the cruise operations at the Port of Galveston generate 1,232 direct jobs in the county, while the cargo operations at the Port of Galveston support 440 members of the International Longshoremen’s Association.

It is important to further discuss the economic value of the direct jobs generated by the cargo and cruise activity at the two ports located within Galveston County. The marine cargo-generated jobs at the Port of Galveston generate an annual salary of \$53,396, while the marine cargo-generated jobs at the Port of Texas City generate an annual salary of \$81,144, reflecting the concentration of employment

with the higher paying petrochemical manufacturers located at the Port of Texas City. The cruise activity at the Port of Galveston supported an annual salary of \$25,081, which reflects the impact of the cruise industry on the local tourism sector, which is characterized by hotel and restaurant employees.

The direct jobs generated by the specific cargo handled at the Ports of Galveston and Texas City are summarized in Exhibits 19 and 20. Non-allocated jobs are those jobs that cannot be allocated to a specific type of cargo, such as jobs with marine construction, federal government agencies, port authorities, and local governmental agencies such as police and fire support.

Exhibit 19
Direct Jobs Generated by Cargo Type at the Port of Galveston

PORT OF GALVESTON	TOTAL DIRECT JOBS
Containers	164
RoRo Cargo	349
Steel	9
General Cargo	38
Grain	122
Fertilizer	73
Misc. Breakbulk	284
Chilled Breakbulk	269
Ores	48
Petroleum Products	320
Other Liquid Bulk	160
Not Allocated	<u>845</u>
TOTAL	2,680

Totals may not add due to rounding

Roll-on/roll-off cargo generates the largest direct jobs, and reflect jobs associated with the export and import of automobiles, heavy construction and mining equipment activity. Petroleum products handled at the Port of Galveston support the next largest number of direct jobs followed by the handling of miscellaneous breakbulk and chilled breakbulk such as fresh produce and perishable products.

Exhibit 20
Direct Jobs Generated by Cargo Type at the Port of Texas City

	TOTAL DIRECT JOBS
Dry Bulk	225
Chemicals	1,711
Crude Oil	2,159
Petroleum Products	2,362
Not Allocated	<u>301</u>
TOTAL	6,758

Totals may not add due to rounding

The handling of petroleum products, crude oil and chemicals are responsible for the majority of the direct jobs generated at the Port of Texas City.

The state-wide economic impact reports for the Ports of Galveston and Texas City, prepared by Martin Associates, as part of the TPA state-wide economic impact study are included in the Appendix. These reports provide more detail as to the methodology underlying the port economic impact analysis, and reflect the impacts at the *state-wide* level. While the direct impacts at the county and state level are the same, the induced and indirect impacts are greater at the state level as shown in the attached reports, reflecting larger impacts of induced and indirect impacts at the state level compared to the county impacts.

III. CONCLUSIONS AND RECOMMENDATIONS

The maritime industry cluster in Galveston County, as shown in this report, generates a significant economic impact to the local region. A total of 32,569 jobs (direct, induced and indirect jobs) are generated as a result of the maritime industry cluster in Galveston County. As a comparison, total employment in 2014, in Galveston County, was 79,740 jobs. Jobs directly generated as a result of the maritime activity in the county is 15,016 jobs, or 18.8% of total Galveston County employment¹¹. Total jobs, combining the induced and indirect jobs to the direct jobs, comprise approximately 41% of total county employment, and provide an average annual salary of \$66,283, compared to a county-wide average wage of \$43,598 in 2013¹².

As demonstrated by the economic impacts generated by the marine cargo and cruise activity at the Ports of Galveston and the Port of Texas City Industrial Refinery and Petrochemical Complex, the port infrastructure drives the economic impacts created by the county's maritime industry cluster. Without this marine cargo and cruise infrastructure in place within the county, the maritime industry cluster would play a much-reduced role in the county-wide economy. This suggests that the growth in the marine cargo and cruise activity will drive the economic contribution of the maritime industry cluster in Galveston. As noted, the cargo, and to a lesser extent cruise activity, support the numerous sectors of the maritime industry cluster within the county, including five of the eight sectors identified as the maritime industry cluster in Galveston County. Those sectors driven by the cargo and cruise activity at the Ports of Galveston and Texas City are the:

- Maritime Logistics and Shipping
- Ship and Boat Building, Maintenance and Repair
- Maritime Support Services
- Federal Maritime Activities
- Waterborne Passenger Activity

With this understanding of the importance of cargo and cruise activity as the key economic catalyst to the Galveston County maritime industry cluster, and the fact that the maritime industry cluster accounts for nearly 19% of the county's total employment, it is important that future efforts to grow the county's economy include the strategies to grow cargo and cruise activity at the Ports of Galveston and Texas City and to grow industries that support the cargo and cruise activity.

These strategies should include the development of new marine terminals based on market needs, as well as supporting infrastructure which will enhance the growth of cargo and cruise activity at both current and future marine terminals. From a public investment perspective in marine terminals, the Port of Galveston is responsible for the development and lease of the cargo and cruise terminals,

¹¹ U.S. Census Bureau, QuickFacts, Galveston County, TX

¹² U.S. Bureau of Economic Analysis, Galveston County Profile compiled by The County Information Program, Texas Association of Counties.

and it is critical that the Port have in place a long-term master development plan to guide future port growth. Such a plan is critical to ensure optimal use of existing and future port assets, and to also have the flexibility to adjust to changing market conditions in the longer term. Such a plan should focus on financial sustainability in the sense that the investments made by the Port be financially sound, but yet promote and stimulate economic impact in the county. Terminal investments should be market driven, and the leases developed with the terminal operators to support new and growing market opportunities be financially sound, with minimal reliance on public subsidy. Such a master development plan should also focus on optimal use of land, with a strategy for future port development and maximization of asset utilization.

A key in future marine cargo development on Pelican Island focuses on the construction of an auto and/or rail bridge. It is recommended that prior to such an investment to access Pelican Island, a detailed market and feasibility study be conducted to identify market opportunities for the development of new marine terminal operations on Pelican Island. Such a market and feasibility study needs to be coordinated with, or be part of, a master development plan to guide future growth of the Port of Galveston. If such markets are identified that require development on Pelican Island, with the construction of a new auto/rail bridge for access, then the economic impact of not developing the bridge access can be evaluated, and a return on investment of the bridge can be evaluated. However, the feasibility study and master plan formulation is critical before decisions on bridge construction can be evaluated.

In addition to the potential development on Pelican Island, the proposed Harborside Drive/IH-45 Direct Connector would enhance truck and passenger vehicle movements along this corridor, and decongest the current morning and afternoon traffic peak impacts of mixed port-generated and UTMB employee traffic along this corridor. Improvements to truck access to the Port of Galveston could be an important consideration in future development of new and expanded port operations.

The potential development of a multi-billion energy related development at Shoal Point could also add to the economic impact of the maritime industry cluster in Galveston County. Such a facility has the potential to export large quantities of energy product such as LNG, in turn supporting state-wide energy reserves.

With respect to public and private sector investment to support marine cargo activity, another strategy should focus on the development of distribution center and warehouse complexes to support growth in marine cargo activity not only within Galveston County, but also at the neighboring ports of Houston and Freeport. The \$500 million expansion of State Highway (SH) 146 in the eastern part of Galveston County will provide a limited access highway to the Port of Houston's Bayport Container Terminal. Potential development of logistics centers along this corridor to serve the future growth of container operations at the Port of Houston could generate employment opportunities within Galveston County. Similarly, land directly along FM2004 could provide areas for development of logistics and distribution centers in support of Port Freeport and the projected increase in the expansion of the plastic resins industry in the Freeport and Houston areas. Based on current distribution center

development throughout the U.S. and recent studies by Martin Associates, a 1 million square foot distribution center could generate about 1,000 to 1,500 direct jobs¹³. Therefore, potential marketing opportunities with the Port of Houston and Port Freeport are recommended and these marketing efforts should be directed to the beneficial cargo owners interested in distribution center development to support increased cargo flows via the Ports of Houston, Freeport, as well as the Ports of Galveston and Texas City.

In conclusion, continued investment in the Galveston County maritime industry cluster should be a key strategy in overall economic development for the county. Because of the importance of the marine cargo and cruise activity in the maritime industry cluster, focus should initially be on the development of a maritime strategy for future marine terminal development. This long-term strategy must include a market driven strategy, and should be developed from both a financial sustainability perspective to the city and county, as well as from an economic impact perspective. The plan should provide a blueprint for future maritime development that will avoid the potential of short term decisions impacting longer term developments. In some cases, financial sustainability and economic impact of a specific development may be in direct conflict, but by understanding both the financial impact as well as the potential county side economic impact, the City and County managers can make informed decisions.

¹³ Florida Logistics Center Market Analysis Update, prepared for the Florida Department of Transportation, by Martin Associates, January, 2012

APPENDIX

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

Sector	Company	NAICS
Commercial Fishing & Seafood Processing	Alf Ventures, LLC	424460
	Allex S Seafood & Bait, Inc.	424460
	Allex Seafood Market West End	445220
	Atlantis Aquaculture Group	112511
	Bay Area Seafood, Inc.	424460
	Best Choice Seafood Inc	445220
	Blue Dolphin Fishing Inc	114111
	Blue Gulf Seafood	722513
	Boyd's One Stop Inc	445220
	Boyds Seafood	424460
	Bubba Gump Shrimp Co.	311710
	Bull & Son Inc	114111
	Captain Bobby's	445220
	Captain Henrys Seafood	445220
	D & R Shrimp & Fish Co LLC	114112
	D & S Seafood	424460
	Discount Seafood Market Inc	445220
	Dolphins Seaport	445220
	Fabian Seafood	445220
	Fish Place	445220
	Fish Stix	311710
	Galveston Shrimp Company, Inc.	424460
	Gulf Coast Oysters	114112
	Gulf of Mexico Reef Fish Shareholder's Alliance	114111
	Harbor Seafood	424460
	Hillman Shrimp & Oyster Co	311710
	Hillman's Original Fish House	445220
	Ichibon	445220
	Island Seafood	445220
	J B'S Seafoods	424460
	JB's Seafood	445220
	Joe's Seafood	424460
	Justin's Seafood	445220
	Katie's Seafood Market	424460
	Landry's Seafood House	424460
	Lilly Seafood	424460
	Milt's Seafood	311710
	Milt's Seafood Plant, Inc.	424460
	Misho's Seafood Inc	424460
	Pod Zq's Crawfish	445220
	Prestige Oysters	424460
	Pvn Seafood, LLC	424460
	R.H. Seafood, Inc.	424460
	Rite Services International, Inc.	424460
	Run Wild Seafood	445220
	Sampson & Son	424460
	Santa Fes Seafood and Grill	424460
	Seabrook Seafood, Inc.	311710
	Seafood Sandwich Shop	424460
	Shearn's Seafood & Prime Steaks	445220
Sophie's Seafood	424460	
Southern Seafood, LLC	445220	
Star Seafood LLC	424460	
Texas Gulf Seafood, Inc.	424460	
US Sea Products, Inc	424460	
Van, Y Dinh	114112	
Federal Maritime Activities	* Galveston Fire Department	
	* Galveston Police	
	Immigration and Customs Enforcement	
	Marine Safety and Security Team	
	Marine Safety Unit	
	* NOAA	
	* US Army Corps of Engineers	
	* US Coast Guard	
	* US Customs & Border Patrol	
	* US Dept of Agriculture	
	US Dept of Commerce	
	US Dept of Labor	

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Maritime Education & Training	Doolin Maritime Training Partnership	
	Galveston College	
	Grand Banks Yachts	
	Marine Education Associates	
	Ocean Star Offshore Rig Museum	
	* Oppe Elementary Magnet School of Coastal Studies (GISD)	
	* Sea Scout Facility	
	Texas A&M Center for Marine Training and Safety	
	* Texas A&M University of Galveston	
	Texas Maritime Academy	
	Texas Seaport Museum	
The Artist Boat Inc		
Marina & Recreational Boating & Fishing	3g Fishing Charters, LLC	713990
	A Zinn Storage Center	713930
	Acie's Outboards	713930
	All Power Services, Inc.	441222
	Al's Marine	441222
	Anchors Aweigh Yachts	541990
	Ancon Marine Inc	713930
	Angel's Marine	713930
	Aquatic Attractor Inc	713990
	Bay Products Inc	423910
	Bay Street Store & Lock	713930
	Bayou Boat Rv Storage	493110
	Bayou Boat RV Storage	713930
	Beach & Bay Charters	487210
	Blackburn Marine, LLC	441222
	Blue Water Storage	713930
	Boat City Storage	713930
	Boatown Storage, Inc	493110
	Boats and Yachts, L.L.C.	541990
	* Bolivar Yacht Basin	713930
	BRINKWATER L.L.C.	339920
	Bulldogs Bait Shop	424990
	Burdsall Rv Storage	713930
	Bvance Custom Rods	424990
	C Level	339920
	Cantu Fishing Charters	532411
	Caribbean Breeze Boat Rental	532411
	Clear Creek Boat & R V Storage	713930
	Clear Lake Charter Boats	713990
	Coastal Backwater Marine	441222
	Corp Houston	441222
	Cosmetic Boat Repair	713930
	D&H Water Rentals	532292
	Deep South Coastal Corporation	487210
	DMS Boat & Trailer Service, LLC	336214
	Dockside Marine Inc	441222
	Dorsey Tramel Inc	441222
	Eagle Maritime Service	713930
	Eco-Mmode	441222
	Electric Boats of Clearlake	532411
	Evan's Marine	713930
	Fat Boys Bait and Tackle	451110
	Finish Line Marine	441222
	Finsanity Charters, Inc.	713990
	Fish Spot	713930
	Fisher's Yacht Service	541990
	Five Ds Yacht Service	541990
	Flounder Pounder	713990
	Galati Yacht Sales, LLC	441222
	Gale Force Charters	488390
	Galveston Marine Center	713930
	Galveston Party Boats Inc	713990
	Galveston Sea Ventures, LLC	713990
	* Galveston Yacht Club, Inc.	713930
	Garrett Rv & Boat Storage	713930
	Gateway Charter & Sailing School	713990

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Marina & Recreational Boating & Fishing (Cont'd)	Green Fields Boat Barn No 1	713930
	Gulf Coast Aquatics	611699
	Gulf Coast Reels Repair	339920
	Gulf Coast Yacht Broker	532411
	Harold Benson Enterprises	713930
	Harvey Browning	451110
	Helm Logistics, LLC	713930
	Higgins, Smythe & Hood Yachts, L.L.C.	541990
	Hillman Marine	441222
	Houston Big Game Fishing Club	713990
	Houston Marine Moms	441222
	Island Style	339920
	Jarman Marine Yacht	541990
	Jim Vratil	451110
	Joes Bait & Crabs	451110
	Joe's Crab Shack	713930
	John's Yachts, LLC	541990
	Johnston & Mayer Oasis Yachts, L.L.C.	541990
	Josh Johnson Inc	441222
	Kemah Boardwalk	713930
	Kemah Boat Club	713990
	Lake Clear Boat Storage	713930
	Landcasters Custom Rod & Tackle	451110
	Lanes At Your Service	713930
	Laser Marine	713930
	Ledgen Point of Clear Lake	713930
	Little Yacht Sales	541990
	Little Yacht Sales	541990
	Louis' Bait Camp Bar & Grill	451110
	Lure Boat & Rv Storage LLC	339920
	Macaluso Offshore Adventures	532411
	Majestic Ventures Inc.	532411
	Malina International Ship	713930
	Margies Aunt Bait Camp	451110
	Marina at Teichman Point	713930
	* Marina Del Sol	713930
	Marina Lakeview Inc	713930
	Marina Office	713930
	Marina Starship	713930
	Marine Safety Services	713930
	Marine Tech	713930
	Maverick Marine Inc	532411
	Mc Saltwater Tackle	451110
	Mike S Tackle	451110
	Miller Surfboards	339920
	National Aquatic Safety Company, L.L.C.	611699
	Neitzel Yacht Service	541990
	Nielsen, Jacalyn	424990
	Oceanic & Gulf Tactical Products, LLC	423910
	Original Smittys Bait House L	451110
	Pamela House	441222
	Payco Marine Inc	713930
	Payco, Incorporated	713930
	Pelican Rest Marina, LP	713930
	Pier 77 Marine Svcs	713930
	Port of Galveston Authority	713930
	* Portofino Harbour Dockominium Owners Association Inc	531120
	Prime Support Services, Inc	423910
	Primesource Sports LLC	339920
	Redfish Island Marine	441222
	Rise Surf Co	532292
	Rusty Hook	451110
	Sacketts Sailing Center	532292
	Sail Galveston Bay Charters	532411
	Sailaway Clear Lake Charters LLC	532292
	Sailtime Houston	713930
	Saltwater Sales	441222
	San Leon Marine Supply	441222

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Marina & Recreational Boating & Fishing (Cont'd)	Serious Tackle Equities	451110
	Shetler Marine, Inc	487210
	Snapper Slapper Lures Inc	451110
	* South Shore Harbour Marina	713930
	Star Fleet LP	487210
	Starship Marina	713930
	* Stingaree Marina	713930
	Sullivan Newport, Ltd	531120
	Sun Coast Marine Works	713930
	Taylor Boats	713930
	Tejas Investments	713930
	Tex Glass	713930
	Texas Boat Storage	713930
	Texas Corinthian Yacht Club	713930
	Texas Hookers Big Game Tackle	451110
	Texas Inshore Tackle.com	451110
	Texas Yamaha	441222
	The Boat Bam	493110
	The Marina At Teichman Point	713930
	The Nautic Group Inc	713930
	The Yacht Service Company	541990
	Tommy Tipton	541990
	Twin City Boat Storage	713930
	United Yacht Sales	541990
	Waterford Harbor Yacht Club	713930
	Waterman Restaurant	713930
	Waterman's Harbor	713930
	Waterworks Beach Service	532202
	West End Marina Inc	713930
	West Marine, Inc.	441222
	West Marine, Inc.	441222
	* Williams Party Boats	
Yacht Quality Marine, LLC	541990	
Maritime Logistics & Shipping	* ACBL	483211
	* ADM Farmland	
	Air Ocean Int'l Shipping to TX	483211
	* Ascend Performance Materials	
	* Ashland Specialty Ingredients (ex ISP)	
	* Bay Houston Towing	488330
	Boat Service of Galveston	483211
	Bolivar Offshore Services, LLC	483211
	* Bouchard Transportation	483211
	* BNSF	
	* BP Chemicals	
	* BP Refinery	
	* Buffalo Marine	483211
	* C H S Launch Services Inc (Terminal)	483113
	* Canal Barge	483211
	* Ceres Gulf	
	* Chem Carriers	483211
	* CHS Inc.	
	* Cooper T Smith	488320
	* Dallas Group	
	* Del Monte Fresh Produce	
	* Delaware Marine	483211
	* Dow Chemical	
	* Eastman Chemical	
	* Enterprise	
	* Enterprise Marine Services	483211
	Equinox Shipping & Trading	483211
	* G & H Towing	488330
	* Galveston Bay BioDiesel	
	* Galveston Bay Refinery	
Galveston County Navigation District	334511	
Galveston Pack & Ship	483211	
* Galveston Railroad		
* Galveston Terminals, Inc (PISTI)	493190	
* Galveston TX City Pilots	488330	

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Maritime Logistics & Shipping (Cont'd)	Galveston Wharves Information	926120
	* GBT - Associated Terminals	
	* Genesis Energy	483211
	* Gulf Stevedoring Services	488320
	* Gulf Sulfur	
	* Hard's Marine Service	483211
	* Higman's Barge Lines	483211
	* Hoegh Autoliners	
	* INEOS Nova	
	* James Flanagan Stevedores	488320
	* Kirby Inland Marine	483211
	* Le Beouf Bros Towing	483211
	* Legero International Group	
	* Marathon Ashland	
	* Martin Gas Marine	483211
	* Martin Midstream	
	* McDonough Marine	483211
	* Metropolitan Stevedore Company	488320
	* MiSWACO	
	* Moran Towing	483211
	* NuStar Energy	
	* OBC Shipping	
	* Offshore Towing/Doucet & Adams	483211
	* Oiltanking	
	* Oxbow Carbon & Minerals	
	* PISTI (Galveston Terminal)	
	Port Bolivar Marine Service Inc.	488310
	* Port of Galveston	926120
	* Port of TX City	488310
	* Ports America	488320
	* Praxair	
	Probulk Agency, L.L.C.	488320
	Ron Hoover Marine Inc	483113
	* SCF Liquids	483211
	* Sea Lion Technology	
	* Shippers Stevedoring	488320
	* SSA Gulf	
	* Suderman & Young Company	488320
	* Superior Stevedoring Services	
	* Texas City Terminal Railway Co	488310
	* Texas Int'l Terminal	488320
	The Board of Trustees of Galveston Wharves	488320
	Tug Josephine	488330
	* Union Boatman & Linehandlers	488320
	* Union Pacific Railroad	
	* Valero (Kaneb)	
	* Wallenius Wilhelmson	488320
Maritime Support Services	Aalmar Surveys Inc.	488330
	* Accutrans	488390
	Advanced Marine Service , LLC	541990
	* Agility Project Logistics (was Seagull Marine)	488510
	Alfred Conhagen, Inc of Texas	423860
	* Amato Linehandlers	488320
	* American Bureau of Shipping	488330
	* American Cargo Assurance	488390
	Amerifreight Services Inc.	488510
	* Amspec	488390
	* Armstrong, RW Surveyors	488390
	Assurance Marine Surveyors LLC	488330
	B&J Logistics, Inc.	488510
	* Barwil Agencies/Wilhelm Agencies	488510
	* BBC Chartering	488510
	* BDS Port Services	
	* Best Bet Line Handlers	488330
	* Biehl & Co.	488510
	* Blue Water Shipping	488510
	* Blumar Waterside Services	488510
Boat Lift Systems	333923	

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Maritime Support Services (Cont'd)	Bob Evans Lift Masters Inc	333923
	Bolivar Barge Cleaning Service, Inc	488390
	* Boumans & Associates	488390
	Bulkhead & Pier Construction, LLC	237990
	Callan Marine Ltd	237990
	* Camin Cargo Control Inc.	488390
	* Central Dispatch Inc	488510
	* CHS Launch Service	488390
	Coastal Boat Lifts	333923
	* Coastal Gulf & Int'l (CGI)	488390
	* Coastal Survey	488390
	Collins Marine	237990
	* Cranes & Forklifts	
	* Crawford & Co.	488390
	Custom House	488510
	* Davis Maritime	488330
	* Davis Ship Agency	488510
	* Delesco Inc.	
	Dutka Marine Services	423860
	* EBB COSA	488510
	Ecdiving, LLC	488390
	Eddie R Fisher	237990
	EIMC	488330
	* Enjet	424720
	Evolution Marine LLC	488330
	* Fillette Green Shipping Services	488510
	Flo Logistics LLC	488510
	* G&G Marine	488390
	* GAC - Rice Unruh (Freeport)	488510
	* GAC - Rice Unruh (Galveston)	488510
	* GAC - Rice Unruh (Houston)	488510
	Gallagher TJ & Co	488330
	Galtex Pilots Service	488330
	* Galveston Linehandlers	488320
	Gamer Environmental Services	562910
	* General Maritime Agency (Houston)	488510
	* General Maritime Agency (Port Arthur)	488510
	* General Steamship Corp	488510
	* GET Energy Solutions	
	* GI Environmental Vacuum Svcs	562910
	Gilkes, Inc.	423860
	* Global Environ & Marine Sales	562910
	* Global Steamship Agency Inc	488510
	Gulf Coast Marine Construction	237990
	* Gulf Coast Renewable Resources	
	Gulf Coast TPA Inc	423860
	* Gulf Harbor Shipping	488510
	Hans Rasch	488330
	Herbert E Schmidt Causeway	488330
	* Holman Shipping	488510
	* Houston Marine Services	
	Houston Pilots	488330
	* Houston Transfer & Warehouse	
	* Incheape Shipping Service/ISS	488510
	Independent Maritime Consulting	488330
	* Inspectorate (Bureau Veritas)	488390
	* Intermarine Inc.	488510
	* International Divers Co	488390
	* Intertek (Caleb Brett)	488390
	Island Marine Pile Drivers	237990
	Island Rock Logistics LLC	488510
	* ISS Shipping	488510
	* JAM Marine Services/Distributing	424720
	Jerry Talley Marine Surveyor LLC	488330
	* JF Moore	488390
	Johnny Baulch	237990
	* Josef Braun	488390
	* K Line America	488510

THE ECONOMIC IMPACT OF GALVESTON COUNTY’S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Maritime Support Services (Cont'd)	* Keen Transport	
	* Keystone Shipping	488510
	Kingdom Solutions Storehouse	488510
	* L-3 Communications (L3 Stratus)	
	Lake Clear Diving Services	488390
	* Leeward Agency	488510
	* Lighthouse Shipping Agency	488510
	* Lloyd Engineering	
	* Lloyd's Register North America	488390
	* Logisco	
	* London Offshore Consultants	488390
	Marine Descaling, LLC	424990
	Marine Incorporated	237990
	* Marine Spill Response Corp	562910
	* Maritime Endeavors Shipping	488510
	Matlock Marine Construction, Inc.	237990
	* Matthew Daniels Co.	488390
	* Maxim Crane Works	
	Mid Bay Marine	488330
	* Mihovil Photography	
	* Moran Gulf Shipping Agency	483211
	* National Cargo Bureau	488390
	Nautilus Marine	488330
	Nimbo, LLC	423860
	* Nord Sud Shipping Inc.	488510
	Nordic Tankers USA	423860
	* Norton Lilly	488510
	Norwegian Marine Services Inc	488330
	Ocean Technical Services, LLC	488330
	P & C Marine Engineering Inc	541330
	Padgett Shoreline Const Inc	237990
	* Prime Maritime Agency	488510
	Princeton Sovereign Maritime	237990
	* Promar Agency	483211
	* Quay Cruise Agencies	488510
	* R.H. John Chart Agency	488390
	Rafferty Global Logistics, LLC	488510
	Rands Yacht Service, LLC	488330
	* Rickmers Line	488510
	Rigging Solutions	336611
	Riley-Sherman Shipping Agency	488510
	* Riomar Agencies	488510
	* Riverway Barge Company	
	Rolbar Logistics Company	488510
	* Sabine Surveyors	488390
	* Schneider Logistics	
	Sea Tow Galveston Bay	488330
	* Seafarer's Center	488390
	* Seagull Marine	488510
	Solmar Logistics	488510
	* Southport	488510
	Stone Forwarding Company Inc	488510
	Streamline Transportation Inc	488510
	STS Supply & Training Inc	237990
	* Suderman & Young Company	488320
	* T&T Marine Salvage	
	* T&T Offshore	488330
	* T. Parker Host	488510
	* Talens Marine & Fuel	
	Tex Tow Marine Towing and Salvage LLC	488330
	* Texana Waste Services	562910
	Texas Commercial Diving, Inc.	423910
	Texas Gulf Construction Company, Inc.	237990
	* Texas Marine Agency	488510
	* Texas Marine Mammal Stranding Network	114210
	* Texas Ship Services	488390
* The Rowland Group		
* TNT Crane & Rigging	237990	

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

<i>Sector</i>	<i>Company</i>	<i>NAICS</i>
Maritime Support Services (Cont'd)	Tpa Bulkhead Inc	237990
	* Transmarine Navigation	488510
	* Transoceanic Shipping	488510
	Triad Marine & Industrial Supply Inc	423860
	* Trinity Shipping	488510
	Union Tank Car Co	423860
	* Valls Shipping	488510
	* Wallenius Wilhelmsen Lines	488510
	* Warren Transport Inc.	
	* Will Duett	562910
	Ship & Boat Building, Maintenance & Repair	Arends Yacht Service
A-Tech Marine		336612
Bay Area Enterprises Inc		336612
* Bludworth Marine		336611
Boat Biz Etc		336612
* Bollinger Texas City - they are closing in may 2016		336611
Breathwit Marine Shipyard		336611
Can Do Canvas & Upholstery		423910
Captain Larry's Boat Service		336612
Coastal Hydro Svc		336611
D & S Marine		336612
Davis Marine & Electronics		336612
Four Brothers Boat Works Inc		336612
Galveston Yacht Service, Inc		336612
Gulf Coast Trawl		336611
* Gulf Copper Ship Repair		336611
Land & Sea Services		336612
* Malin International		336611
Meeks Outboard Service		336612
Open Ocean Svc		336611
* Orion Construction		336611
* Piling Inc.		237990
Ramtec Marine Systems LLC		334513
* Russell Marine		336611
Salvador S Oyster Company		336612
Sand and Sun Inc		336612
Seawinds International Inc		423860
Sewart Supply, Inc.		423910
Ship Stephenson Building		423860
Simmons Custom		336612
Southwest Shipyard		336611
Stix N'Rig'n Inc		423910
Texas Marine Shipyard, LLC	336611	
Third Ocean Vessel and Rig	336611	
Tide Associates, Inc	336612	
West Gulf Marine, Ltd	336611	
Yacht Service Co	336612	
Waterborne Passenger Activity	61st Fishing Pier	487210
	Aquarium at Moody Gardens	487210
	Baywatch Dolphin Tours	561520
	Boardwalk Beast	487210
	Capt Kidd Charters	487210
	* Carnival Cruise Lines Terminal	926120
	Clear Lake Texas Fishing Trips	487210
	Colonel Paddlewheel Boat	713990
	Cruise Connection	561520
	Danner's Inc	483212
	* Disney Cruise Lines	926120
	E Squared Marine Svc	483212
	EZ Cruise Parking	561510
	* Galveston - Port Bolivar Ferry	483212
	Galveston Duck Tour	561520
	Get Hooked Charters	561520
	Harbor Offshore Marine	487210
	* Marine Express Launch Svc	483212
	Paradigm	483112
	Ryan Marine Services Inc	483212
	Santa Fe Discount Cruise Parking	453998
	Seminar At Sea	611699
	Sun Time Watersports	454390
Texas Tease Yacht Charters	487210	

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

INDUCED IMPACT			
	Distribution	Expenditures (\$1,000)	Induced Jobs
Food at Home	6.59%	\$92,682	465
Food at Restaurant	6.40%	\$90,026	1,832
Housing	19.30%	\$271,671	1,122
Furnishings	7.36%	\$103,624	552
Apparel	3.44%	\$48,359	387
Transportation	17.93%	\$252,272	479
Health Care	7.23%	\$102,829	950
Entertainment	4.90%	\$68,991	796
Non-Consumption	26.39%	<u>NA</u>	<u>5,884</u>
Total		\$1,029,379	12,468

Income Multipliers:

Fishing	1.7915
Maritime Logistics, Support and Government	2.56
Marinas	1.5452
Shipbuilding/Marine Construction	1.5338
Education	1.3879
Waterborne Passenger Activity	1.8044

INDIRECT IMPACT				
	Jobs/Sales	Income Multiplier	Purchases (\$1,000)	Indirect Jobs
Office Supplies	3.47	0.3507	\$3,428	11
Communication	3.552	0.1916	\$3,332	11
Goods/Parts	3.47	0.3507	\$72,707	242
Rent/Utilities	3.6005	0.236	\$20,762	72
Contracted Services	9.739	0.5305	\$125,668	1,173
Fuel	4.9917	0.3455	\$7,656	37
Transportation	8.1892	0.3804	\$232,772	1,827
Maintenance/Repair	6.9853	0.3417	\$64,466	432
Insurance	5.7119	0.2854	\$22,558	124
Other	3.47	0.3507	\$111,770	372
Capital			\$763	<u>5</u>
Total			\$665,883	4,300

Note: Waterborne Passenger Activity is not included in the Indirect Impact Table

WATERBORNE PASSENGER ACTIVITY INDIRECT IMPACT			
	Job Multiplier	Purchases (\$1,000)	Indirect Jobs
Food	1.792	\$11,460	158
Liquor	1.792	\$3,445	47
Logo Items (Excl Transportation)	1.792	\$73	1
Flowers	1.792	\$729	11
Linen Supply	0.7154	\$1,810	37
Maintenance/Repair	1.1813	\$1,556	28
Security	0.3932	\$2,197	80
Parking	1.0483	\$4,542	105
Garbage	1.9055	\$791	<u>12</u>
SUBTOTALS		\$26,603	477
Visitor		\$12,746	308
TOTALS		\$39,349	785

\$705,232

5,086

THE ECONOMIC IMPACT OF GALVESTON COUNTY'S MARITIME INDUSTRY CLUSTER

PASSENGER SURVEY
PORT OF GALVESTON CRUISE ECONOMIC IMPACT STUDY 2016

CRUISE SHIP _____ DATE _____

Dear Cruise Passenger:

This survey is part of a Cruise Economic Impact Study being conducted by the Port of Galveston. Would you please allow us to take a few minutes of your time to ask you questions concerning your cruise from Port of Galveston. All answers will be kept confidential, and your help is greatly appreciated. If you are being accompanied by other persons for whom you are paying, please answer for the entire travel party.

1. Where is your permanent place of residence?
If U.S. City: _____ State: _____ Zipcode: _____ If not U.S. Foreign Country: _____

2. How did you arrive in the Galveston area to take this cruise?
 21% Resident (if a resident please skip to question #10)
 68% Personal Car
 8% Airplane
 0% Train
 0% Motorcoach
 1% Rental Car
 2% Other (specify): _____

3. How many people are in your party? (Enter a "1" if only for yourself.)

4. How many nights did you spend in the Galveston area **before** the cruise? 0.51 average for non-residents

5. What kind of overnight accommodations did you stay in **prior** to your cruise and in what city were they located?*

94% Hotel/Motel/B&B (or paid lodging)
 5% Private Home (or free lodging)
 0% Campground
 2% Other (specify): _____

In what city were the accommodations: Galveston 78.0%, Houston 7.3%, Texas City 4.9%, Sea Beach 2.4%, Webster 2.4%, Gaidos 2.4%, Numole 2.4%

**Percentages listed in question 5 reflect the 44% of Non-Residents who reported spending at least one night in the Greater Galveston Area.*

6. How much did you spend (per day) on each item below while visiting the Galveston area **prior to** this cruise and how many people in your party were covered by each of these expenditures? (Enter a "1" if only for yourself)

	Per Day	# of People		Per Day	# of People		Per Day	# of People
Lodging	\$ 39.28	_____	Land side tour	\$ 0.03	_____	Tel./Postage/Etc.	\$ 0.17	_____
Food/Beverage	\$ 21.46	_____	Entertainment/Recreation	\$ 1.02	_____	In-town cabs	\$ 0.11	_____
Rental Car	\$ 0.64	_____	Gifts/Souvenirs/Retail Purchases	\$ 3.22	_____	Other (specify):	\$ 9.88	_____

**These figures represent per-person, per-day averages over all Non-Resident passengers.*

7. How many nights do you plan to spend in the Galveston area **after** the cruise? .04 average for all non-residents

8. What kind of overnight accommodations will you stay in **after** your cruise and in what city will they be located?

100% Hotel/Motel/B&B (or paid lodging)
 0% Private Home (or free lodging)
 0% Campground
 0% Other (specify): _____

In what city are the accommodations: Galveston 75.0%, Sea Beach 25.0%

**Percentages listed in question 8 reflect the 3% of Non-Residents who reported spending at least one night in the Greater Galveston Area.*

9. How much do you plan to spend (per day) on each item below while visiting the Galveston area **after** your cruise and how many people in your party will be covered by these expenditures? (Enter a "1" if only for yourself)

	Per Day	# of People		Per Day	# of People		Per Day	# of People
Lodging	\$ 39.61	_____	Land side tour	\$ 0.00	_____	Tel./Postage/Etc.	\$ 0.00	_____
Food/Beverage	\$ 19.91	_____	Entertainment/Recreation	\$ 2.27	_____	In-town cabs	\$ 0.00	_____
Rental Car	\$ 0.91	_____	Gifts/Souvenirs/Retail Purchases	\$ 5.64	_____	Other (specify):	\$ 9.22	_____

**These figures represent per-person, per-day averages over all Non-Resident passengers.*

10. How did you travel to the Port of Galveston Cruise Terminal today?
 73% Private Car
 3% Rental Car
 2% Taxi Cab
 0% Limo
 8% Hotel Shuttle
 0% Motorcoach/RV
 14% Other (specify): _____

11. How did you hear about cruising from Galveston?
 0% Newspaper
 0% Radio
 7% Travel Agent
 93% Other (specify): _____
 Family/Friends; Repeat Customers

12. Is there a service that would have made your travel easier today? _____

13. How did you book your trip?
 28% Travel Agent
 33% Online
 35% Cruise Line Directly
 4% Other (specify): _____

**PORT OF GALVESTON
CREW EXPENDITURE SURVEY
CRUISE ECONOMIC IMPACT STUDY 2016**

CRUISE SHIP _____

SAILING DATE _____

Dear Cruise Ship Crew Member:

Thank you for participating in the Port of Galveston Cruise Economic Impact Study. You were selected at random for this crew expenditure survey. We would like to know about your spending in the Galveston area while your ship is in port. Please take a few moments to fill out this short survey. The information you will provide will be kept confidential and will be combined with information from other crew members from several ships for analysis.

1. When did this current contract start? _____

2. What is the length of your contract?
 0% 2 months 4% 4 months 31% 6 months 51% 8 months 14% 10 months 1% 12 months

3. In what department do you work aboard the ship? _____

4. What is your job title? _____

5. During this current contract, how frequently have you or will you get off the ship in Galveston to shop, sightsee, visit friends, etc.?
 65% Every Week 19% Every 2 Weeks 5% Every 3 Weeks 11% Every 4 Weeks

6. While you are off the ship in Galveston, what is the average length of time you spend off the ship?
 6% Less than 1 Hour 49% 1 to 2 Hours 40% 3 to 5 Hours 3% 5 to 7 Hours 2% More than 7 Hours

7. While you are off the ship in Galveston, what types of things do you do? (Check all that apply)
 80% Shopping 8% Entertainment/Recreation 4% Visit Friends/Relatives 13% Personal Business
 61% Free Internet 10% Other (specify): _____

8. While you are off the ship in Galveston, where do you visit? (Check all that apply)
 74% Galveston Island 18% Mainland 23% Shopping Mall 9% Other (specify): _____

9. How much did you spend in Galveston, in total, and in each of the following categories (U.S. dollars)?

Transportation (Taxi, Rental Car, Bus, etc.)	\$ 8.23	Food/Beverage (Restaurant, Bars, etc.)	\$ 21.18
Electronics	\$ 82.87	Clothing	\$ 65.59
Personal Hygiene/Sundries	\$ 30.35	Other Retail	\$ 3.65
Personal Services (Postage, Internet, etc.)	\$ 1.95	Entertainment/Recreation/Museums	\$ 1.05
Other (specify): _____	\$ 4.25	TOTAL SPENDING	\$ 219.11