

THE ECONOMIC IMPACT OF THE PORT OF HARLINGEN



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EXECUTIVE SUMMARY

Martin Associates was retained by the Port of Harlingen Authority to measure the local and regional economic impacts supported by maritime cargo and real estate activity at the Port of Harlingen. In fiscal year 2014, these terminals handled 615,174 tons of waterborne commodities such as sand/cement, liquid fertilizer, sugar and liquid bulk products (gasoline/diesel). An additional 40,000 tons of cotton and grain were handled via terminals on-site but are transported by land (truck) and not by water.

In addition to the baseline impact estimates, a computer model specific to the Port of Harlingen's marine terminals has been generated, which can be used in evaluating the sensitivity of impacts to changes in tonnage, labor productivity, commodity mix, and inland origins/destinations of commodities. The model can also be used to evaluate the impacts of new terminal development and for annual updates, as well as changes in the Port's non-maritime tenant base. The methodology used in this analysis has been used by Martin Associates to estimate the economic impacts of seaport activity at more than 500 United States and Canadian ports.

This study focuses on impacts generated by marine cargo activity in fiscal year 2014 at the Port of Harlingen. Impacts are estimated in terms of jobs, personal earnings, business revenue, and state and local taxes.

The Port of Harlingen is located in southernmost Texas (Cameron County) in the heart of the Rio Grande Valley. The port is located 25 miles west of mile marker 646 on the Gulf Intracoastal Waterway and is connected via the Harlingen Channel, which is maintained at a depth of 12 feet. The port also has direct rail access serviced by the UP Railroad. The port handles export sugar and import liquid fertilizer, liquid bulk (gasoline/diesel) and sand/cement via barge.

The Rio Grande Valley has a subtropical climate, fertile soil and a great irrigation system that is perfect for the growth of sugar cane. As a result, Southern Texas is home to about 35,000-40,000 acres of sugar cane within a three county area. Once the sugar cane is harvested (typically within a 25-30 mile radius of the Port) it is then trucked to the port where raw sugar is processed in a mill. The raw sugar is loaded onto a barge via a conveyor system and transported to a sugar refining plant in New Orleans.

Since the Rio Grande Valley is a rich agriculture producing region for such products as sugar cane, grain, cotton and corn, the need for fertilizers becomes apparent. The liquid fertilizer usually arrives at the Port of Harlingen via barge from Corpus Christi or the Mississippi River for local consumption within the 3-county area and about a 50 mile radius of the Port.

Furthermore, the rich agricultural industry in Southern Texas and the Rio Grande Valley is very important to sustaining the operations at the Port of Harlingen and creating local economic impacts. As a result of the port activity at the Port of Harlingen, the following economic impacts were generated at the port in FY 2014.

3,628 total direct, induced, indirect and related user jobs are supported by port activity. Of the total jobs supported by port activity, 525 are direct jobs, while 573 are jobs supported in the local economy due to the purchases of goods and services by the directly employed individuals. As the result of \$15.2 million of purchases of local supplies and services by the firms providing the direct services to the port or that are directly dependent upon the port for the movement of cargo, an additional 133

indirect jobs are supported. An additional 2,396 related user jobs are supported by activity at the Port of Harlingen for the shipment and receipt of cargo. These related user jobs are not as directly impacted by the port activity as are the direct, indirect and induced jobs, in that the jobs with importers and exporters using the port could and do use other ports for the shipment and receipt of cargo.

A total of \$169.9 million of total wages and salaries and local consumption expenditures are created in the local and regional economy by the activity at the Port of Harlingen. The direct job holders received nearly \$21 million of direct wages and salaries, for an average salary of \$39,300. As the result of local purchases made by the directly employed individuals, an additional \$58.4 million of local consumption expenditures and induced wages and salaries were created. The 133 indirect job holders received \$7.0 million of wages and salaries. Related user jobs generated \$83.8 million of personal income impact.

Local businesses received \$96.5 million of revenue. This revenue is supported from providing services at the Port of Harlingen to the marine cargo activity, as well as the activity supported with the non-maritime real estate tenants. An additional ***\$613.4 million*** represents the value of the output to the state of Texas that is created due to the cargo moving via the Port of Harlingen. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using imported raw materials and intermediate products that flow via the marine terminals and are consumed within the state. The majority of these user impacts are associated with the liquid bulk industry.

A total of \$15.2 million of local purchases were made due to port activity, which supported the indirect jobs.

The Port of Harlingen cargo and real estate tenant activity supported nearly \$6.5 million of state and local tax revenue. In addition, ***\$6.3 million*** of state and local taxes were created due to the economic activity of the *related users* of the cargo moving via the marine terminals. The total tax impact, including the impact of the related port users, is \$12.7 million.

In addition to generating the economic impact results of the Port of Harlingen on the state of Texas, Martin Associates also developed a measure of the economic impacts of the Port on the U.S. economy. To estimate the economic impacts on the national economy, Martin Associates developed national induced and indirect models, as well as national impact models for the related users sector. This sector includes the importers and exporters using the Port of Harlingen's marine terminals, as well as the support industries that are involved in providing goods and services to produce a specific export item moving via the Port or that support manufacturers and retailers using imported cargo that moves through the Port. It is important to emphasize that these related impacts are not necessarily generated by the Port of Harlingen, as the employment levels are based on the demand for the goods exported and imported via the Port, but at this given point in time, these jobs with importers and exporters and the industries supporting these importers and exporters are related to the Port, and underscore the far reaching geographical sphere of influence of the Port of Harlingen in FY2014.

Exhibit E-1 shows the impacts of the Port of Harlingen cargo operations on the state of Texas as well as on the United States. The biggest difference between the economic impacts on the state of Texas vs. on the United States is the related economic impacts, as these impacts are with the importers and exporters using the Port of Harlingen facilities, and underscores the national economic significance of the Port's terminals. In addition, the induced and indirect impacts are larger for the nation than for

the State, as these induced and indirect impacts and local purchases by individuals and firms reflect the total national impacts, rather than those just for the State. Also, Federal, state and local taxes are estimated for the total United States impact of the Port of Harlingen.

Exhibit E-1
Summary of Economic Impacts at the Port of Harlingen
State of Texas vs. United States

	STATE TOTAL	U.S. TOTAL
JOBS		
Direct	525	525
Induced	573	732
Indirect	<u>133</u>	<u>170</u>
TOTAL	1,232	1,427
PERSONAL INCOME (\$ Millions)		
Direct	\$20.65	\$20.65
Re-spending/Local Consumption	\$58.38	\$70.90
Indirect	<u>\$6.99</u>	<u>\$8.29</u>
TOTAL	\$86.01	\$99.84
BUSINESS REVENUE (\$ Millions)	\$96.47	\$96.47
LOCAL PURCHASES (\$ Millions)	\$15.20	\$15.20
STATE AND LOCAL TAXES (\$ Millions)	\$6.45	\$27.96
RELATED USER IMPACTS	-	-
Jobs	2,396	2,675
Personal Income (\$ Millions)	\$83.84	\$93.62
Output (\$ Millions)	\$613.44	\$836.54
Taxes (\$ Millions)	\$6.29	\$26.21

Note: Totals may not add due to rounding

I. OVERVIEW OF THE ANALYSIS AND SUMMARY OF RESULTS

Martin Associates was retained by the Port of Harlingen Authority to measure the local and regional economic impacts supported by maritime cargo activity at the Port of Harlingen. Also included are the impacts of the Port of Harlingen's non-cargo related tenants such as offices and professional services that are tenants of the Port of Harlingen.

In addition to the baseline impact estimates, a computer model specific to the Port of Harlingen marine terminals has been generated, which can be used in evaluating the sensitivity of impacts to changes in tonnage, labor productivity, commodity mix and inland origins/destinations of commodities. The model can also be used to evaluate the impacts of new terminal development and for annual updates, as well as changes in the port's non-maritime tenant base. The methodology used in this analysis has been used by Martin Associates to estimate the economic impacts of seaport activity at more than 500 United States and Canadian ports.

This chapter presents an overview of the economic impact analysis by defining the following:

- The types of economic impacts estimated
- The economic sectors for which impacts have been estimated
- The commodities/commodity types for which impacts have been estimated

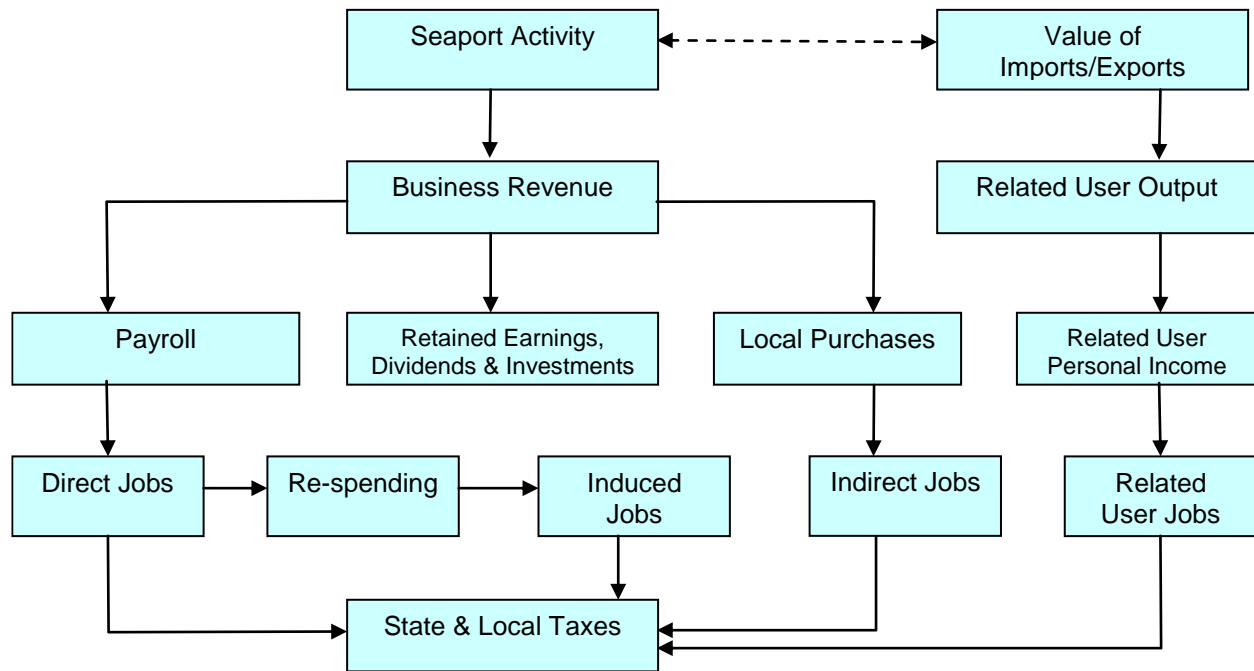
In addition, a summary of the data sources used in the analysis is presented.

1. *ECONOMIC IMPACT STRUCTURE*

Waterborne activity at a seaport contributes to the local, regional, and national economies by generating business revenue to local and national firms providing barge and cargo handling services at the marine terminals. These firms, in turn, provide employment and income to individuals and pay taxes to local and state governments. Exhibit 1 illustrates the flows of economic impacts throughout the economy. As this exhibit shows, the activity at a seaport (i.e., the handling of cargo) initially creates business revenue to firms supplying the marine services. This revenue is in turn used for several purposes:

- To hire employees to provide the services
- To pay stockholders dividends, retire debt, retained earnings and invest
- To buy goods from other firms
- To pay federal, state, and local taxes

Exhibit 1
Flows of Economic Activity through the Economy



The hiring of employees supports personal income. This personal income is spent throughout the state, local and national economy to purchase goods and services such as food, housing, clothing, health care, etc. These purchases create a re-spending impact throughout the economy, known as the multiplier effect, which in turn creates induced jobs throughout the economy. Finally, state and local taxes are paid by those directly employed due to port activity and those employed as a result of the in-state purchases of goods and services by those individuals directly employed.

As can be seen from Exhibit 1, and the previous discussion, the flow of economic impacts throughout an economy creates four separate types of impacts. 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. The four types of impacts are:

- *Employment Impact* - the number of full-time equivalent jobs supported by activity at the marine cargo terminals at the Port of Harlingen, as well as the port's non-maritime real estate tenants. This impact consists of four levels of job impacts. **Direct jobs** are directly supported by port activity. These jobs include jobs with the railroads and trucking companies moving cargo between inland origins and destinations and the marine terminals, terminal operators, tug and barge operators, government employees and the Port of Harlingen Authority. These jobs would experience near term dislocation if the cargo and barge activity at the Port of Harlingen were to be discontinued. **Induced jobs** are jobs created in-state due to the purchase of goods and services by those individuals directly dependent upon port activity. In addition, **indirect jobs** are those jobs supported in the local economy due to the local purchases of goods and services by firms directly dependent upon maritime activity at the port. Lastly, **related jobs** are estimated for marine cargo activity only, and are mostly users of the liquid bulk industry moving over the

marine terminals. Related jobs are not dependent upon the seaport marine terminals to the same extent as are the direct, induced and indirect jobs. For example, these firms can and do use other ports. It is the demand for the final product not the use of a particular seaport or marine terminal. It is to be emphasized that the employment with firms counted as directly dependent upon the port activities are excluded from the related jobs to avoid double counting.

- *Income Impact* - the level of earnings associated with the jobs created by port activity, and adjusted to reflect re-spending throughout the economy. In addition, the personal income impact generated by the related users is also identified.
- *Revenue Impact* - the sales supported by firms engaged in handling and transporting cargo through the Port of Harlingen, the non-maritime real estate tenants and the Port of Harlingen Authority. It is to be emphasized that the only portions of the revenue impact that can be definitely identified as remaining in the local economy are those portions paid out in salaries to local employees, for local purchases by individuals and businesses directly dependent on the seaport, and in contributions to state and local taxes. The value of shipments through the port is included as a revenue output for the related user impact.
- *Tax Impacts* - the state and local tax revenues supported by port activity. These are taxes paid by individuals and firms directly dependent upon and supported (induced jobs) by activity at the marine terminals.

Shipments and receipts of cargo through the marine terminals at the Port of Harlingen support economic activity in various business sectors of the state and local economy. Specifically, the following economic sectors are involved in providing cargo and barge handling services at the Port of Harlingen. These are the:

- Surface Transportation Sector
- Maritime Service Sector
- Non-Maritime Tenants
- Port of Harlingen Authority

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the economic impact sectors is provided below, including a description of the major participants in each sector.

1.1 The Surface Transportation Sector

The surface transportation sector consists of both the railroad and trucking industries. These sectors are responsible for moving the various cargoes between the port and their inland origins and destinations.

Many local and national trucking firms serve the marine terminals at the Port of Harlingen, as do numerous individual owner-operators. The trucking industry's major involvement is in moving liquid bulk (gasoline/diesel), liquid fertilizer and sand/cement cargo for local distribution. Although grain and

cotton are not waterborne commodities at the Port of Harlingen, they are transported in and out of the port via trucks. Sugar is a major commodity being moved inland via truck. The truck jobs associated with the movement of sugar is calculated as direct terminal jobs not as truck jobs for this analysis. Rail is used to move some liquid fertilizer into the Port of Harlingen.

1.2 The Maritime Service Sector

This sector consists of numerous firms and participants performing functions related to the following maritime services:

- Cargo Handling
- Federal, State, and Local Government Agencies
- Consultants/Construction

A brief description of the major participants in each of these categories is provided below:

- Cargo Handling - This category involves the physical handling of the cargo at the port between the land and the barge. Included in this category are the following participants:
 - Terminal Operators - operate the maritime terminals where cargo is loaded and off-loaded and are involved in the loading and unloading of the cargo from the barges, as well as handling the cargo prior to loading and after unloading;
 - Barge Operators - move dry and liquid bulk cargo such as sand/cement, sugar, fertilizer, and gasoline/diesel.
- Government Agencies - This service category involves federal, state and local government agencies that perform services related to cargo handling and barge operations at the Port. Texas Department of Agriculture, TCEQ and U.S. Department of Agriculture employees are involved.
- Consultants/Construction – This category includes engineers, architects and consultants who provide a wide spectrum of services to the maritime industry, including terminal design, naval architect services, and planning services.

1.3 Non-Maritime Real Estate Tenants

The Port also leases land to tenants not directly engaged in cargo activity. These tenants do not export and import via the marine terminals but in some cases these tenants provide services to the maritime community. These non-marine cargo tenants include a compost operation, heavy machinery operation and a construction equipment storage lot. In addition, two cotton gin operations and a grain buyer/seller are located on the port's property. These three operations are moving cotton and grain into and out of the port via trucks but are not utilizing the water for transport. Jobs associated with these commodities are included as marine dependent operations and are allocated specifically to each of the commodities.

1.4 Port of Harlingen Authority

The Port of Harlingen includes those individuals employed by the port whose purpose is to oversee port activity, including cargo and real estate tenants.

2. *SUMMARY OF METHODOLOGY*

The purpose of this section is to provide a summary of the methodological approach used to estimate the economic impacts of the barge and cargo activity at the Port of Harlingen marine terminals.

2.1 Data Collection

The cornerstone of the Martin Associates' approach is the collection of detailed baseline impact data from firms providing services in support of operations at the Port of Harlingen. To ensure accuracy and defensibility, the baseline impact data was collected from interviews with maritime firms in the Harlingen maritime community as well as the non-maritime real estate tenants.

The study is based on a telephone survey of each of the port tenants, identified by the Port of Harlingen Authority. Also, through the port tenant interviews, Martin Associates was able to identify tug/barge operators, rail operations, government agencies, etc. that are involved in the cargo movement of the marine commodities. In total, approximately 25 firms in Harlingen were interviewed as part of the 2015 impact study, used to develop the baseline economic impacts and were involved with the resulting economic impact models. In addition to data collected from the interviews, published data was collected from several sources. These publications include:

- Census of Wholesale Trade
- Census of Retail Trade
- Census of Construction
- Census of Service Industries
- Annual Survey of Manufacturers

Other published data was obtained from the U.S. Bureau of Census, County Business Patterns; U.S. Bureau of Economic Analysis, Regional Income Division; and U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey, 2013".

The economic relationships and methodology developed in 2015 have been used to develop an economic impact model that is designed to update the port impact assessment on an annual basis, as well as to test sensitivities of impacts to changes in commodity tonnage, labor productivity and tug assist assumptions. Also, the model is designed to test the impacts of new facilities development.

2.2 Direct Jobs, Income, Revenue, and Tax Impacts

The results of these interviews were then used to develop the baseline direct job, revenue and income impacts for the economic sectors and job categories associated with Port of Harlingen.

The direct tax impacts are estimated at a state and local level based on state and local per capita tax burdens as developed by the Tax Foundation.

This baseline survey data was also used to develop an operational model which can be used to update the impacts of the Port of Harlingen's marine terminals on an annual basis and to evaluate the impacts of changes in:

- Marine cargo tonnage, by commodity
- Modal distribution of seaport cargo (what percent of the inland transportation of a commodity is truck versus rail), as well as the geographical distribution of each commodity
- Number of barge calls and size of tows

Also, the operational model can be used to evaluate alternative facilities expansion projects and new marine terminal construction, as well as the impacts associated with channel dredging and widening.

2.3 Induced Impacts

Induced impacts are those generated by the purchases of the individuals employed as a result of seaport activity. For example, a portion of the personal earnings received by those directly employed due to activity at the marine terminals is used for purchases of goods and services, both regionally, as well as out-of-the region. These purchases, in turn, create additional jobs in the region which are classified as induced. To estimate these induced jobs, a regional personal earnings multiplier was developed from data provided by the Bureau of Economic Analysis, Regional Income Division. This personal earnings multiplier is used to estimate the total personal earnings generated in the region as a result of the activity at the Port of Harlingen. A portion of this total personal earnings impact is next allocated to specific local purchases (as determined from consumption data for Harlingen area residents, as developed from the U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2013). These purchases are next converted into retail and wholesale induced jobs in the regional economy.

Induced jobs are not estimated at lower levels of purchasing rounds (after the wholesale round) since it is not possible to trace with a sufficient degree of accuracy, geographically, where purchases at the remaining levels occur. However, about 80 percent of the consumption will likely occur at the first two rounds of purchases, which are most likely local retail and wholesale purchases.

2.4 Indirect Jobs

Indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon cargo and vessel activity at the marine terminals, including the dependent shippers/consignees. These purchases are for goods and services such as office supplies and equipment, maintenance and repair services, communications and utilities, transportation services and other

professional services. To estimate the indirect economic impact, local purchases, by type of purchase, were collected from each of the firms interviewed. These local purchases were then combined with employment to sales ratios in local supplying industries, developed from the U.S. Bureau of Economic Analysis Regional Input-Output Modeling System for the state of Texas. The indirect job ratios also account for the in-state spin-off effects from multiple rounds of supply chains that are required to provide the locally purchased goods and services.

2.5 Related Impacts

Related impacts measure the jobs with shippers and consignees moving cargo through the port's marine terminals. These impacts are classified as related jobs, since the shippers/consignees using the marine terminals for the movement of cargo can and do use other seaports and marine terminals. Because of the proximity of other ports and the associated service at these ports, the exporters and importers have some flexibility in port choice. As a result, impacts with the importers and exporters cannot be counted as dependent upon the marine terminals at the Port of Harlingen.

These related impacts are estimated based on the value per ton of each cargo exported and imported via the Port and the associated job to value of output ratio for the associated producing or consuming sector in Texas, as developed from the Bureau of Economic Analysis Regional Input-Output Modeling System (RIMS II) for the State.

3. *COMMODITIES INCLUDED IN THE ANALYSIS*

A major use of an economic impact analysis is to provide a tool for port development planning. As a port grows, available land and other resources for port facilities become scarce, and decisions must be made as how to develop the land and utilize resources in the most efficient manner. Various types of facility configurations are associated with different commodities. For example, liquid fertilizer requires tankage for storage, while dry bulk cargo requires covered storage, as well as conveyor systems.

An understanding of the commodity's relative economic value in terms of employment and income to the local community, the cost of providing the facilities, and the relative demand for the different commodities is essential in making future port development plans. Because of this need for understanding relative commodity impacts, economic impacts are estimated for the following commodities handled via the facilities at the Port of Harlingen:

- Sugar
- Fertilizer
- Sand/Cement
- Liquid Bulk (Gasoline/Diesel)
- Grain
- Cotton

It should be emphasized that commodity-specific impacts are not estimated for each of the economic sectors. Specific impacts by commodity could not be allocated to individual commodities with any degree of accuracy for the marine construction and the government category. In addition,

taxes have not been displayed by specific commodity since these tax impacts will reflect the same distribution over commodities as the employment impact.

4. IMPACT SUMMARY

The resulting economic impacts are presented in Table 1. The impacts for marine cargo and non-maritime real estate activity at the Port of Harlingen are detailed, in the following table.

**Table 1
Summary of Economic Impacts Supported by
Port Activity in FY2014 (State)**

	STATE TOTAL
JOBS	
Direct	525
Induced	573
Indirect	<u>133</u>
TOTAL	1,232
PERSONAL INCOME (\$ Millions)	
Direct	\$20.65
Re-spending/Local Consumption	\$58.38
Indirect	<u>\$6.99</u>
TOTAL	\$86.01
BUSINESS REVENUE (\$ Millions)	\$96.47
LOCAL PURCHASES (\$ Millions)	\$15.20
STATE AND LOCAL TAXES (\$ Millions)	\$6.45
RELATED USER IMPACTS	
Jobs	2,396
Personal Income (\$ Millions)	\$83.84
Output (\$ Millions)	\$613.44
Taxes (\$ Millions)	\$6.29

Note: Totals may not add due to rounding

II. ECONOMIC IMPACTS OF MARINE CARGO ACTIVITY

In this chapter, the economic impacts supported by maritime cargo activity and real estate tenants at the Port of Harlingen are documented. The chapter discusses the employment impacts first followed by the revenue, income and tax impacts.

1. *EMPLOYMENT IMPACTS*

First, the total employment that is in some way related to the cargo activity at the Port of Harlingen is estimated. Second, the subset of total employment that is judged to be totally dependent on maritime cargo activity is analyzed in the following ways: direct jobs are estimated in terms of key job categories (e.g., rail and trucking jobs, terminal operators, etc.); direct jobs are estimated for each key commodity group; and direct jobs are estimated based on the residency of those directly employed. Induced and indirect jobs supported by local purchases made by those directly employed as a result of cargo activity and the purchases made by businesses directly dependent on cargo and vessel activity are then described. Lastly, the related user jobs are estimated.

1.1 Total Cargo Related Jobs

It is estimated that **3,628** jobs in the Harlingen regional economy are influenced by cargo and barge activity at the Port of Harlingen: Of the 3,628 jobs:

- **525** jobs are directly supported by cargo activity at the Port of Harlingen. These jobs are classified as direct jobs and if activity at the Port of Harlingen were to cease, these jobs would be discontinued over the short term.
- **573** jobs (induced jobs) are supported by the local purchases of the 525 individuals directly generated by port activity at the marine terminals. Consequently, employment in this group is as directly dependent upon port activity as the first group.
- An additional **133** indirect jobs were supported by \$15.2 million of purchases in the local and regional economy by firms providing direct cargo handling and barge services, as well as the dependent terminal operations. These local purchases include purchases for office supplies, parts and equipment, maintenance and repair services, business services, utilities, communications services and fuel.
- **2,396** jobs were with related users of the port and these users are not as directly impacted by the port activity as are the direct, indirect and induced jobs, in that the jobs with the importers and exporters using the port could and do use other ports for the shipment and receipt of cargo. These users were primarily related to the liquid bulk handled at the terminals, as well as harvesting cotton.

The next section of this chapter is dedicated to the direct impact category of the **525** jobs.

1.2 Direct Job Impacts

In fiscal year 2014, 615,174 tons of domestic waterborne cargo moved via the Port of Harlingen. An additional 40,000 tons (non-waterborne) were handled via trucks at facilities located on port property. As a result of activity at the Port of Harlingen, **525** full-time jobs were directly created by operations at the Port of Harlingen.¹ In this section the jobs are analyzed in terms of:

- Distribution by job category;
- Distribution by commodity group; and
- Distribution by county and state of residency.

Table 2 presents the distribution of the 525 direct jobs by type of job. As this table shows, a large impact is employment with dependent terminal operators, followed by the barge and trucking jobs moving the cargo to and from the Port of Harlingen.

Table 2
Direct Employment Impacts by Job Category

	TOTAL DIRECT JOBS
SURFACE TRANSPORTATION	
Rail	2
Truck	50
MARITIME SERVICES	
Terminal Operators	360
Tug/Barge	56
Construction	2
Warehouse	29
Government	2
PORT AUTHORITY	3
REAL ESTATE TENANTS (NON-MARITIME)	<u>21</u>
TOTAL	525

Note: Totals may not add due to rounding

Most of the 525 jobs considered to be generated by port activity can be associated with the handling of specific commodities or commodity groups. Certain employment categories such as government employees, non-maritime real estate tenants, Port Authority employees and employees with marine construction cannot be identified with a specific commodity. As a result, employment in these groups (which totaled 28 jobs) was not allocated to specific commodity groups.

¹ Jobs are measured in terms of full-time equivalent workers working 2,080 hours per year. If a worker is employed only 50% of the year, the job is reported as 0.5 direct jobs.

Table 3 presents the relative employment impacts in terms of commodity groups. As the table indicates, sugar created the largest number of direct jobs, 363 jobs, followed by the movement of liquid bulk and the harvesting of cotton at the gins.

Table 3
Distribution of Direct Job Impact by Commodity

	DIRECT JOBS
Sand/Cement	14
Cotton	28
Grain	17
Sugar	363
Fertilizer	17
Liquid Bulk	59
Not Allocated	<u>28</u>
TOTAL	525

Note: Totals may not add due to rounding

To underscore the geographic scope of the impacts generated by the marine terminals, Table 4 presents the distribution of the 525 direct jobs by place of residency. The residency analysis is based on the results of the interviews. Other Texas counties make up the majority of the direct job residences.

Table 4
Distribution of Direct Job Impact by Place of Residency

JURISDICTION	SHARE	DIRECT JOBS
Harlingen	10.15%	53
Cameron County	23.05%	121
Other Texas	66.80%	351
Other U.S.	<u>0.00%</u>	<u>0</u>
TOTAL	100%	525

1.3 Induced Jobs

The purchases by the 525 direct job holders with the direct income earned from port activity create additional jobs throughout the regional economy. In fiscal year 2014, \$20.7 million was received by those 525 directly employed by cargo activity at the Port of Harlingen. As the result of the re-spending of a portion of this income for purchases in the state of Texas, an additional 573 induced jobs in the regional economy were supported. The majority of the induced jobs are with local and regional private sector social services, business services and educational services, followed by induced jobs in the food and restaurant sector, and by jobs in the construction and home furnishings sector of the local economy.

These induced jobs are estimated based on the current expenditure profile of residents in the Houston metropolitan region as estimated by the U.S. Bureau of Labor Statistics, "Consumer Expenditure Survey", 2013. This survey indicates the distribution of consumer expenditures over key consumption categories for residents of the Houston metropolitan area. The consumption categories are:

- Housing
- Food at Restaurants
- Food at Home
- Entertainment
- Health Care
- Home Furnishings
- Transportation Equipment and Services

The estimated consumption expenditures supported as a result of the re-spending impact is distributed across these consumption categories. Associated with each consumption category is the relevant retail and wholesale industry. Jobs to sales ratios in each industry are then computed for the Harlingen area and for the state of Texas, and induced jobs are estimated for the relevant consumption categories. It is to be emphasized that induced jobs are only estimated at the retail and wholesale level, since these jobs are most likely supported initially in the Harlingen area and subsequently in the state of Texas. Further levels of induced jobs are not estimated since it is not possible to defensibly identify geographically where the subsequent rounds of purchasing occur.

"The Consumer Expenditure Survey" does not include information to estimate the job impact with supporting business services, legal, social services and educational services. To estimate this induced impact, a ratio of state of Texas employment in these key service industries to total state of Texas employment was developed. This ratio is then used with the direct and induced jobs to estimate induced jobs with business/financial services, legal, educational and other social services.

1.4 Indirect Jobs

The firms directly dependent upon barge and cargo activity at the Port of Harlingen made \$15.2 million of purchases from local (in-state) suppliers of parts and equipment, business services, maintenance and repair services, communications and utilities, office equipment, and fuel. These purchases supported 133 local indirect jobs.

If maritime activity at the Port of Harlingen were to cease, these indirect jobs would also be lost. To estimate these indirect jobs, actual local expenditures by port-dependent firms were estimated from the telephone surveys. These expenditures were then used as inputs into a regional input-output model developed for Texas State for Martin Associates by the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System.

1.5 Related User Jobs

It is estimated that about 2,396 jobs with Texas shippers and consignees are related to liquid bulk movements, cotton harvesting operations, as well as grain, sugar and fertilizer activity in the Rio Grande Valley. To estimate these related jobs, Martin Associates developed ratios of jobs to the value of tonnage for the relevant export and import commodities. The jobs per value of output data for the relevant industries in Texas were developed from the U.S. Bureau of Economic Analysis, RIMS II. The jobs per output value coefficients were multiplied by value per ton and tonnage of each cargo shipped or received via the marine terminals to estimate the related jobs. Care was taken to avoid double counting of the direct, induced and indirect jobs created by moving the cargo over the marine terminals.

It is to be emphasized that these are related jobs, and would not likely disappear if the marine terminals were to close to marine cargo and barge activity. Given a level of demand for the specific cargo, other ports would be used to move the cargo.

2. REVENUE, INCOME AND TAX IMPACTS

The maritime activity at the Port of Harlingen marine terminals supports revenue for the directly dependent firms providing services to the barges calling the port and the cargo being handled at the port. For example, revenue is received by surface transportation firms (both railroads and trucks) as a result of moving export cargo to the marine terminals and distributing the imported commodities inland after receipt at the terminals. The firms in the maritime service sector receive revenue from arranging for transportation services, cargo handling, and providing services to barges in port. Marine construction firms receive revenue by providing repair services to barges and new construction/repair work at the marine terminals. The Port of Harlingen receives revenue from leases on port property.

The revenue supported by port activity consists of many components. For example, gross revenue is used to pay employee salaries and taxes, it is distributed to stockholders, and it is used for the purchases of equipment and maintenance services. Of these components, only three can be isolated geographically with any degree of accuracy. The personal income component of revenue can be traced to geographic locations based on the residence of those receiving the income. The local purchases by firms dependent upon maritime activity at the Port of Harlingen terminals are identified through the interviews and used to estimate the indirect job impacts. Finally, state and local taxes paid by individuals

and businesses can be traced to a geographic location based on the residency of the individuals directly employed and the location of the firms dependent on maritime activity. The balance of the revenue is distributed in the form of non-local payments to firms providing goods and services, for the distribution of company profits to shareholders and to payment of federal taxes. Many of these firms and owners are located outside of the state of Texas and, thus, it is difficult to trace the ultimate location of the distributed revenue (other than personal income, taxes and local purchases). It is more accurate to trace the distribution of personal income (which is a subset of revenue) through the geographic locations of individuals receiving the income, as well as the local purchases by port-dependent firms.

2.1 Revenue Impact

In fiscal year 2014, maritime activity and real estate properties at the Port of Harlingen supported **\$96.5 million** of total revenue from the provision of business services in the state of Texas. This total revenue is the direct business revenue received by the firms directly dependent upon the port and providing maritime services and inland transportation services to the cargo handled at the marine terminals.

An additional \$613.4 million represents the value of the output to the state of Texas that is created due to the cargo moving via the Port of Harlingen. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using imported raw materials and intermediate products that flow via the marine terminals and are consumed within the state. The majority of these user impacts are associated with the liquid bulk industry.

Table 5 presents the \$96.5 million of direct total revenue estimated to have been generated by port and barge activity in fiscal year 2014. This revenue includes the revenue received by firms providing services to the commodity and barge activity at the marine terminals, and includes revenue received by the trucking firms, railroads, terminal operators, real estate tenants, barge operators and towing companies, Port of Harlingen Authority, marine construction and maritime services support firms.

Terminal operators receive the greatest revenue impact, followed by the trucking companies, non-maritime real estate tenants and tug/barge operators.

Table 5
Total Revenue Generated by Port Activity

	REVENUE (\$MILLIONS)
SURFACE TRANSPORTATION	
Rail	\$0.21
Truck	\$8.24
MARITIME SERVICES	
Terminal	\$80.16
Tug/Barge	\$2.44
Miscellaneous	\$0.24
PORT AUTHORITY	\$1.42
REAL ESTATE TENANTS (NON-MARITIME)	\$3.75
TOTAL	\$96.47

Note: Totals may not add due to rounding

2.2 Personal Income Impact

As described earlier, the personal income received by those directly dependent upon port activity is one of the components of revenue that can be traced to the Harlingen area. The income impact is estimated by multiplying the average annual earnings of each port participant, i.e., railroad employees, truckers, barge operators, terminal operators, etc., by the corresponding number of jobs in each category. The individual annual earnings in each category multiplied by the corresponding job impact resulted in \$20.7 million in personal income. This equates to an average annual salary of about \$39,300 for direct jobs supported by Port of Harlingen cargo and real estate activity.

The impact of the re-spending of this direct income for local purchases is estimated using a personal earnings multiplier. The personal earnings multiplier is based on data developed by the U.S. Bureau of Economic Analysis (BEA), Regional Input-Output Modeling System (RIMS II). The BEA estimates that for every one dollar earned by Harlingen area residents as a result of jobs directly supported by cargo activity, an additional \$2.83 of personal income and consumption expenditures would be created as a result of re-spending the direct income for purchases of goods and services produced in the state of Texas. Hence, a personal earnings multiplier of 3.83 was used to estimate the total income and consumption impact of \$58.4 million, inclusive of the re-spending effect. This additional re-spending of the direct income supports the induced job impact (573 induced jobs), described in the previous chapter.²

²The re-spending impact of \$58.4 million does not represent the earnings of the 573 induced jobs. The \$58.4 million re-spending impact does include the direct earnings received by the employees holding the induced jobs, but the re-spending impact also includes the revenue received by the firms providing the goods and services to those directly employed.

The indirect job holders received \$7.0 million of personal wages and salaries. The related users received \$83.8 million. Combining the direct, induced/local consumption, indirect and related income impacts, the maritime cargo activity and non-maritime real estate tenants at the Port of Harlingen supported \$169.9 million of income and consumption expenditures in the state of Texas.

2.3 Local Purchases

The firms directly dependent upon the maritime activity at the Port of Harlingen made \$15.2 million of purchases in the state of Texas. These purchases were for maintenance and repair services, utilities, communications services, office products, parts and equipment, fuel, etc. The \$15.2 million of purchases supported the 133 indirect jobs previously described.

2.4 Tax Impacts

State and local tax impacts are based on per employee tax burdens which are developed at the county, local and state jurisdictional levels. These tax per employee burdens are essentially tax indices that are used to allocate total taxes at each level of government to economic activity generated by the marine terminals. To estimate the per employee tax indices, total taxes received at each governmental level in Texas were developed from the Tax Foundation³, which reports total state and local taxes from all sources as a percent of total personal income.

Maritime activity at the Port of Harlingen and real estate tenants supported \$6.5 million of state and local taxes (direct, induced and indirect). The related user state and local tax impact is estimated at \$6.3 million, for a total state and local tax impact of \$12.7 million in fiscal year 2014.

3. *NATIONAL ECONOMIC IMPACTS ON THE UNITED STATES*

In addition to generating the economic impact results of the Port of Harlingen on the state of Texas, Martin Associates also developed a measure of the economic impacts of the Port on the U.S. economy. To estimate the economic impacts on the national economy, Martin Associates developed national induced and indirect models, as well as national impact models for the related users sector. This sector includes the importers and exporters using the Port of Harlingen's marine terminals, as well as the support industries that are involved in providing goods and services to produce a specific export item moving via the Port or that support manufacturers and retailers using imported cargo that moves through the Port. It is important to emphasize that these related impacts are not necessarily generated by the Port of Harlingen, as the employment levels are based on the demand for the goods exported and imported via the Port, but at this given point in time, these jobs with importers and exporters and the industries supporting these importers and exporters are related to the Port, and underscore the far reaching geographical sphere of influence of the Port of Harlingen in FY2014.

³The Tax Foundation is an educational organization formed in 1937 to provide American citizens with a better understanding of the tax system and the effects of tax policy (www.taxfoundation.org).

In FY2014, cargo activity at the marine terminals at the Port of Harlingen generated **1,427** direct, induced and indirect jobs in the United States, of which **1,232** were created in the state of Texas:

- **525** are *direct* jobs. These jobs are generated by activities at the Port, and if such activities should cease, the jobs would be discontinued over the short term. It is these jobs that are most directly dependent upon the Port of Harlingen. The direct jobs are with the terminal operators, trucking firms, railroads, warehousemen, federal and state government agencies, towing/barge companies and marine construction companies, etc.
- **732** are *induced* jobs, or those jobs supporting the local and national purchases made by the 525 individuals holding the direct jobs due to port activity. Should the direct jobs be lost from the economy, the induced jobs supported by the purchases of the direct jobs would also be lost. Jobs with local grocery stores, retail outlets, restaurants, transportation services, local government services, schools and hospitals are examples of induced jobs. Of the 732 induced jobs, 573 were induced jobs held by Texas residents.
- The firms' dependent upon the Port of Harlingen made \$15.2 million of purchases nationwide for office supplies, equipment, utilities, communications, maintenance and repair services, transportation services, professional services and goods and services. These purchases supported **170 indirect** jobs in the national economy, of which 133 were created in the state.
- In addition to the direct, induced and indirect job impacts, the Port activity supports **2,675 related** jobs throughout the United States, of which 2,396 related jobs are in the state of Texas. The directly related jobs are held by employees of the firms exporting and importing cargo through the Port of Harlingen. In addition, the related jobs include the induced and indirect jobs created at each level of production that are related to an imported product (through the Port of Harlingen) used as an intermediate input in a manufacturing activity, as well as the jobs created at each level of activity to produce an export product moved via the Port of Harlingen. For consumer imports, the related jobs include all jobs and economic activity that are required to the point of final sale. These jobs are considered to be *related* to activities at the Port, but the degree of dependence on the Port is difficult to estimate and should not be considered as dependent on the port as are the direct, induced and indirect jobs. If the Port of Harlingen was not available to these organizations, they would suffer an economic penalty over the longer term. Such a penalty would vary from a loss of employment opportunities in some cases to an increase in total transportation costs in other cases, which could, in turn, result in employment reductions and corporate relocations.

The port activity generated **\$99.8 million** in personal wage and salary income and consumption activity throughout the United States, of which \$86.0 million was generated for Texas residents.

- The 525 directly employed individuals received **\$20.7 million** of personal wage and salary income, for an average salary or wage of \$39,300.

- As the result of the multiplier effects of using a portion of this income for purchases, **\$70.9 million** in induced income and consumption expenditures were created in the United States, of which \$58.4 million of consumption expenditures occurred in the State.⁴ Those 170 indirectly employed received **\$8.3 million** of indirect income. Of the 170 indirect jobs nationwide, 133 were indirect jobs in the State, earning \$7.0 million in income.
- The 2,675 related user jobs generated throughout the United States earned **\$93.6 million** of total wages and salaries throughout the United States.

Businesses providing maritime services at the Port of Harlingen received **\$96.5 million** of direct revenue.

- The \$96.5 million of revenue received by the businesses providing the services at the Port does not include the value of the cargo moving over the marine terminals, since the value of the cargo is determined by the demand for the cargo, not the use of the Port of Harlingen. It is to be emphasized that only the portion of the revenue paid out in direct salaries, in state and local taxes, and for local purchases can be identified as a “Texas impact”.
- Of the \$96.5 million of business revenue, \$20.7 million was paid out in terms of direct salaries to the employees of these firms. It is to be emphasized that the value of sales or output by the directly dependent shippers/consignees is not included in the business revenue impact, even though the direct jobs and personal income with these shippers/consignees is included as a local impact.
- In addition to the direct, induced and indirect impacts, cargo moving via the Port of Harlingen in FY2014 generated **\$836.5 million** of related economic activity in the United States, of which \$613.4 million was created within the state. This represents the value of the output to the United States and the State of Texas that is created due to the cargo moving via the Port of Harlingen marine terminals. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using imported raw materials and intermediate products that flow via the marine terminals and are consumed within the state, as well as the revenue generated at each stage of delivery of a consumer import (via the Port) to final sales.

A total of **\$28 million** of Federal, state and local tax revenue was generated by Port activity in FY2014 throughout the United States. The state of Texas and local governments within Texas received \$6.5 million of state and local taxes.

- The related users’ tax impact in the United States is estimated at **\$26.2 million**, of which \$6.3 million represents Texas state and local taxes for the related users.

⁴The re-spending impact includes the purchases by those directly employed as well as the consumption expenditures. Therefore, the total re-spending impact cannot be divided by induced jobs to estimate induced salary, as this would be an overestimate of personal income.

Table 6 presents the economic impacts of the Port of Harlingen’s cargo operations on the United States.

Table 6
Summary of Economic Impacts at the Port of Harlingen
United States

	U.S. TOTAL
JOBS	
Direct	525
Induced	732
Indirect	<u>170</u>
TOTAL	1,427
PERSONAL INCOME (\$ Millions)	
Direct	\$20.65
Re-spending/Local Consumption	\$70.90
Indirect	<u>\$8.29</u>
TOTAL	\$99.84
BUSINESS REVENUE (\$ Millions)	\$96.47
LOCAL PURCHASES (\$ Millions)	\$15.20
STATE AND LOCAL TAXES (\$ Millions)	\$27.96
RELATED USER IMPACTS	
Jobs	2,675
Personal Income (\$ Millions)	\$93.62
Output (\$ Millions)	\$836.54
Taxes (\$ Millions)	\$26.21

Note: Totals may not add due to rounding