THE ECONOMIC IMPACTS OF THE PORT OF HARLINGEN 2023

Prepared for:
PORT OF HARLINGEN
24633 E. Port Road
Harlingen, TX 78550
www.portofharlingen.com

Prepared by:
MARTIN ASSOCIATES
941 Wheatland Ave., Suite 203
Lancaster, PA 17603
WWW.JOHNCMARTINASSOCIATES.COM

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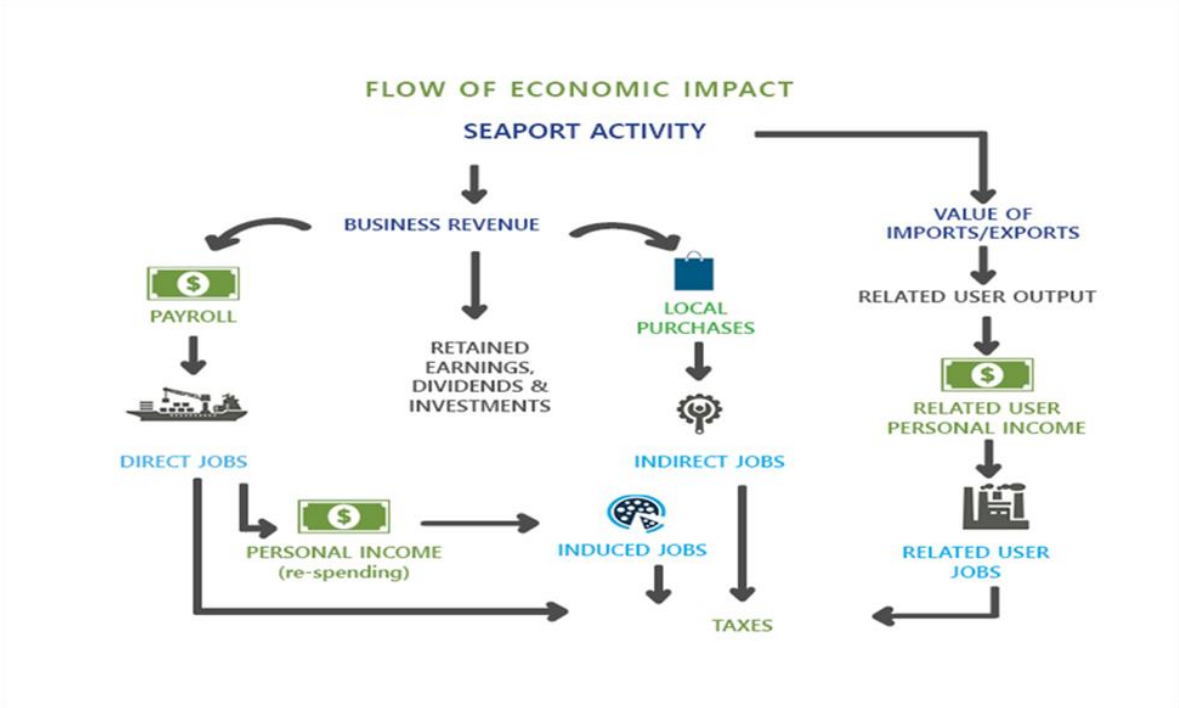
EXECUTIVE SUMMARY

As part of the economic analysis of the state of Texas Port and Maritime Transportation System, conducted by Martin Associates for the Texas Ports Association, a separate report was prepared for the Port of Harlingen to summarize the economic impacts generated by marine cargo activity at the marine terminals located within the Port of Harlingen. The terminals at the port handled 2.3 million tons of liquid bulk products, sugar, sand/cement, sugar and cotton.

This study focuses on impacts generated by marine cargo activity in calendar year 2023. Impacts are estimated in terms of jobs, personal earnings, business revenue, and state, local and federal taxes. In addition to the baseline impact estimates, computer models specific to each terminal operation have been prepared that can be used in evaluating the sensitivity of impacts to changes in tonnage, commodities, inland transportation modes, vessel size and the use of barges. The model can also be used for annual updates.

Exhibit E-1 graphically demonstrates how seaport activity impacts the local and regional and federal economies. As this exhibit indicates, the marine cargo and vessel activity initially generate business revenue to the firms supplying marine services. This revenue is used to purchase employment (direct jobs) to provide the services, to pay stockholders and for retained earnings, and to purchase goods and services from local firms, as well as national and international firms (creating indirect jobs with these firms). Businesses also pay taxes from the business revenue.

Exhibit E-1
Flows of Economic Impacts through the Economy



The employees hired by the firms receive wages and salaries (personal income), a portion of which is saved, while another portion is used to buy goods and services such as food, housing, clothing, health care, etc. These purchases create a re-spending impact throughout the economy, known as the personal income multiplier. As a result of these local purchases, additional jobs (known as induced jobs) are created in the local economy. Finally, taxes are paid by individuals employed with the firms providing the services to the marine terminals.

As demonstrated by this chart, four types of impacts are measured:

- Jobs
- Employee earnings
- Business revenue
- State and local taxes

With respect to jobs, four types of job impacts are measured. These are direct, induced, indirect and related jobs. The job impacts are defined as follows:

- ***Direct jobs*** are those jobs with local firms providing support services to the seaport. These jobs are dependent upon this activity and would suffer immediate dislocation if the seaport

activity were to cease. Seaport direct jobs include jobs with railroads and trucking companies moving cargo to and from Port of Harlingen's marine terminals, steamship agents, ship chandlers, warehouse operators, shipyards, marine construction firms, etc.

- ***Induced jobs*** are jobs created locally and throughout the regional economy due to purchases of goods and services by those directly employed. These jobs are with grocery stores, the local construction industry, retail stores, health care providers, local transportation services, etc., and would also be discontinued if seaport activity were to cease.

- ***Indirect jobs*** are those jobs generated in the local economy as the result of local purchases by the firms directly dependent upon seaport activity. These jobs include jobs in local office supply firms, equipment and parts suppliers, maintenance and repair services, etc.

- ***Related jobs*** are estimated for marine cargo activity only, and are mostly users of the liquid bulk and fertilizer products moving over the port facilities. 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.

The ***employee earnings*** consist of wages and salaries and include a re-spending effect (local purchases of goods and services by those directly employed), while ***business revenue*** consists of total business receipts by firms providing services in support of the marine activity. ***Federal, state and local taxes*** include taxes paid by individuals, as well as firms dependent upon the seaport activity.

The study is based on interviews with firms providing services to the cargo and vessels handled at the Port of Harlingen. These interviews are included in the statewide economic impact analysis in which the data collection consisted of interviews with firms providing maritime services in the state of Texas. In many cases, especially with lines and agents, miscellaneous maritime services, tug and barge companies, and maritime construction firms, these firms were providing maritime services at more than one port in the analysis. In this situation, in which one firm provides services at multiple ports, care was taken to allocate the level of activity to the Port of Harlingen. The data collected from the interviews were then used to develop an operational model of the public and private marine terminals located at the Port of Harlingen.

SUMMARY OF IMPACTS GENERATED BY THE PORT OF HARLINGEN

The economic impacts generated by the Port of Harlingen, for calendar year 2023, are summarized in Exhibit E-2.

Exhibit E-2
Summary of the Economic Impacts Generated by the Port of Harlingen

HARLINGEN	
JOBS	
Direct	966
Induced	1,225
Indirect	216
Related Users	22,817
TOTAL JOBS	**25,224**
PERSONAL INCOME ($ Millions)	
Direct	$54.0
Re-Spending/Local Consumption	$175.5
Indirect	$13.1
Related User Income	$798.6
TOTAL PERSONAL INCOME	**$1,041.2**
REVENUE/ECONOMIC OUTPUT ($ Millions)	
Direct Business Revenue	$249.8
Related Users Output	$4,185.2
TOTAL REVENUE	**$4,435.0**
LOCAL PURCHASES ($ Millions)	**$24.0**
STATE AND LOCAL TAXES ($ Millions)	
Direct	$4.1
Re-Spending/Local Consumption	$13.3
Indirect	$1.0
Related User Taxes	$60.7
TOTAL TAXES	**$79.1**
TOTAL ECONOMIC VALUE ($ MILLIONS)	
Direct Business Revenue	$249.8
Re-spending and Local Consumption	$175.5
Related Users Output	$4,185.2
TOTAL ECONOMIC VALUE	**$4,610.5**

Totals may not add due to rounding

Specifically, the vessel and cargo activity at the complex generated the following impacts in the state of Texas in 2023:

- **25,224 jobs in Texas** are in some way related to the cargo moving via the marine terminals.

- Of the 25,224 jobs, **966 direct jobs** are generated by the marine cargo and vessel activity. The majority of the direct jobs are created by the movement of sugar and liquid bulk.

- As the result of local and regional purchases by those 966 individuals holding the direct jobs, an additional **1,225 induced jobs** are supported in the regional economy.

- **216 indirect jobs** were supported by $24 million of local purchases by businesses supplying services at the marine terminals.

- **22,817 jobs in the state of Texas were related to the cargo** moving via the Port of Harlingen marine terminals and the terminals within the Harlingen Port District. These jobs are considered to be **related** to activities at the marine terminals at the Port of Harlingen, but the degree of dependence on the marine terminals is difficult to quantify and should not be considered as dependent on the port as are the direct, induced and indirect jobs. If the marine terminals were not available to these organizations, they would suffer an economic penalty over the longer term. Such a penalty would vary from 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.

In 2023, marine cargo activity at the public and private marine terminals at the Port of Harlingen supported a total of $4.6 billion of economic activity in the state of Texas.

- Of the $4.6 billion, $250 million 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 and the vessels calling the ports. An additional $4.2 billion 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. In addition, $175.6 million of the re-spending of personal income

and local consumption purchases are supported in the Texas economy. These components are additive and represent independent monetary impacts supported by the cargo and vessel activity. Other dollar value impact measures are not included in the total economic value since they are interdependent. Direct income is not included since it is part of the direct business impact and similarly, local purchases by the firms are from the direct business revenue generated by port activity, and also used to pay indirect income. Finally, taxes are paid by the individuals from the direct, induced, indirect and related income and the direct business revenue and the related output.

- Marine activity supported $1.0 billion of total personal wage and salary income and local consumption expenditures for Texas residents in 2023. This includes $242.7 million of direct, indirect, induced and local consumption expenditures, while the remaining $798.6 million was received by the related port users. The 966 direct job holders received $54.0 million of direct wage and salary income, for an average salary of $55,942.

A total of $18.4 million of direct, induced and indirect state and local tax revenue was generated by cargo activity at the marine terminals. In addition, $60.7 million of state and local taxes were created due to the economic activity of the related users of the cargo moving via the public and private marine terminals at the Port of Harlingen. The total tax impact, including the impact of the related port users is $79.1 million.

I. OVERVIEW OF THE ANALYSIS AND SUMMARY OF METHODOLOGY

As part of the economic analysis of the state of Texas Port and Maritime Transportation System, conducted by Martin Associates for the Texas Ports Association, a separate report was prepared for the Port of Harlingen to summarize the economic impacts generated by marine cargo activity at the marine terminals located within the Port of Harlingen. The terminals at the port handled 2.3 million tons of liquid bulk products, sugar, sand/cement, sugar and cotton.

The methodology used in this analysis has been developed by Martin Associates and has been used to estimate the economic impacts of national seaport activity at public and private marine terminals of more than 500 United States and Canadian port studies.

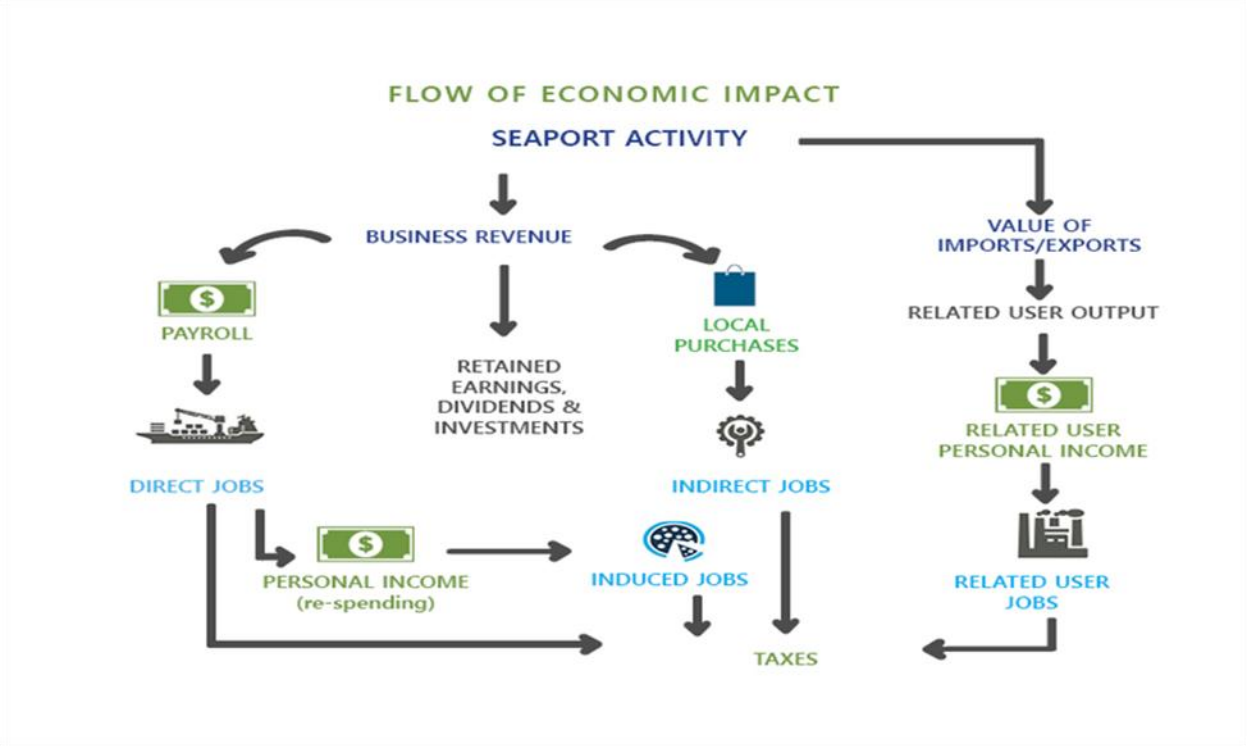
The remainder of this chapter presents an overview of the economic impact analysis and consists of the following sections:

- Flow of economic impacts through the local and regional economies
- The structure of the impact analysis
- Summary of the methodology
- Commodities included in the analysis.

1. FLOW OF IMPACTS

Waterborne activity at a seaport contributes to the local and regional economy by generating business revenue to local and national firms providing vessel and cargo handling services at the marine terminals. These firms, in turn, provide employment and income to individuals, and pay taxes to federal, state and local governments. Exhibit I-1, on the following page, shows how activity at marine terminals generate impacts throughout the local, state and national economies. As this exhibit indicates, the impact of a seaport on a local, state or national economy cannot be reduced to a single number, but instead, the seaport activity creates several impacts. These are 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 I-1 shows graphically how activity at the Port of Harlingen's marine terminals generates the four impacts.

Exhibit I-1
Flow of Economic Impacts Generated By
Marine Activity



1.1 Business Revenue Impact

At the outset, activity at the port generates ***business revenue*** for firms which provide services. This business revenue impact is dispersed throughout the 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 stock-holders, retire debt, make investments, or is held as retained earnings. 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 federal, state and local taxes.

1.2 Employment Impact

The ***employment impact*** of seaport activity consists of four levels of job impacts.

- ***Direct employment impact*** - jobs directly generated by marine cargo activity. Direct jobs generated by marine cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations and the marine terminals, steamship agents, freight forwarders, terminal operators and petroleum and chemical plants located in the complex. It is to be emphasized that these are classified as directly generated in the sense that these jobs would experience near term dislocation if the cargo and vessel activity at the Port of Harlingen were to be discontinued.

- ***Induced employment impact*** - jobs created throughout the local economy because *individuals* directly employed due to seaport activity spend their wages locally on goods and services such as food, housing and clothing. These jobs are held by residents located throughout the region, since they are estimated based on local and regional purchases.

- ***Indirect Jobs*** -- are jobs created locally due to purchases of goods and services *by firms, 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.

- ***Related user employment impact*** -- jobs with Texas shippers and consignees related to liquid bulk facilities and petrochemical plants located at the Port of Harlingen. While the facilities and services provided at the marine terminals are a crucial part of the infrastructure allowing these jobs to exist, they would not necessarily be immediately displaced if marine activity were to cease.

1.3 Personal Earnings Impact

The ***personal earnings impact*** is the measure of employee wages and salaries (excluding benefits) received by individuals directly employed due to seaport activity. Re-spending of these earnings throughout the regional 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 Harlingen region. The re-spending effect varies by region -- a larger re-spending effect occurs in regions that produce a relatively large proportion of the goods and services consumed by residents, while lower re-spending effects are associated with regions 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 seaport activity.

1.4 Tax Impact

Tax impacts are tax payments to the federal, state and local governments by firms and by individuals whose jobs are directly dependent upon and supported (induced jobs) by activity at the marine terminals.

2. IMPACT STRUCTURE

The four types of economic impacts are created throughout various business sectors of the federal, state and local economies. These sectors include:

- Surface Transportation Sector
- Maritime Services Sector
- Shippers/Consignees using the Port
- Port of Harlingen

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.

2.1 The Surface Transportation Sector

The ***Surface Transportation Sector*** consists of railroads, trucking firms and pipeline operations moving cargo between the marine terminals and sources/destinations, including all normal commercial traffic plus supporting crude oil movements into and out of the Federal Strategic Petroleum Reserve and the delivery of jet fuel to the U.S. Military.

2.2 The Maritime Services Sector

The ***Maritime Services Sector*** consists of numerous firms and participants performing functions related to the following maritime services:

- Cargo Marine Transportation
- Vessel Operations
- Cargo Handling
- Federal, State and Local Government Agencies

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

- ***Cargo Marine Transportation***

  Participants in this category are involved in arranging for inland and water transportation for export or import freight. The freight forwarder/customshouse broker is the major participant in this category. The freight forwarder/customshouse 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 customshouse brokers is most prevalent for containerized and general cargo commodities.

- ***Vessel Operations***

  This category consists of several participants. The 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, and for ship supplies. The agents are also responsible for vessel documentation. In addition to the steamship agents arranging for vessel services, those providing the services include:

  - Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.)
  - Towing firms - provide the tug service to guide the vessel to and from port
  - Pilots - assist in navigating the vessels to and from the Port of Harlingen marine terminals and private marine terminals located within the Port of Harlingen
  - Bunkering firms - provide fuel to the vessels
  - Marine surveyors - inspect the vessels and the cargo
  - Shipyards/marine construction firms - provide repairs, either emergency or scheduled as well as marine pier construction and dredging.

- ***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 terminal operators that operate the maritime terminals where cargo is loaded and off-loaded. In this study, employment with the refineries and chemical companies with associated marine terminals are included in this category.

- ***Government Agencies***

  This service sector involves federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Port. U.S. Customs, Bureau of Immigration, U.S. Department of Labor, U.S. Department of Agriculture, U.S. Coast Guard, the Army Corps of Engineers, and U.S. Department of Commerce employees are involved. These services are provided by the government offices located in Harlingen and adjacent county areas.

2.3 Shippers/Consignees

The ***Shippers/Consignees Sector*** includes those firms that ship or receive cargo via the specific port. For the purpose of the analysis, shippers/consignees will be divided into two categories. The first category will consist of those users dependent upon the Port and are usually located within the Port's immediate hinterland, and most often associated with a privately-owned marine facility. These direct impacts are included in the terminal operators and dependent shippers/consignees' category.

The second category of shippers/consignees consists of those users that could easily use competing ports. For example, if the Port were not available, members of the first category would likely be driven out of business in the near term, while members of the second category will shift to another port. These impacts are classified as ***related user impacts*** in that the exporters and importers using the marine terminals can and do use other ports for the shipment and receipt of cargo. The related impacts measure the impact, or influence, of the Port's marine terminals at a given point in time, and if the Port's terminals were no longer used, these influenced users would use other ports to export and import cargo. Unlike the direct, induced, and indirect impacts, the related impacts would not necessarily be dislocated from the economy – instead, the impacts would no longer be influenced by the port, but by another out of state port. It is emphasized that only the portion of jobs, income taxes and revenue related to the actual cargo moving via the public and private marine terminals within the Port of Harlingen are counted in the related user impacts.

2.4 Port of Harlingen

The ***Port of Harlingen*** includes those individuals employed whose purpose is to oversee port activity at the Port of Harlingen.

3. 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 vessel and cargo activity at the Port of Harlingen.

3.1 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 additional interviews with firms included in the statewide economic impact analysis. In cases in which one firm provides services at multiple ports, care was taken to allocate the level of activity at the Port of Harlingen. The firms providing maritime services with the marine terminals at the Port of Harlingen were included in this analysis for the Port of Harlingen. These firms represent the universe of firms providing services at the Port of Harlingen's marine terminals located within the Port District, as identified by:

- Port of Harlingen internal customer and tenant lists
- Martin Associates internal databases developed for the 2018 and 2022 economic impact studies
- Statewide Economic Impact Analysis Directory

3.2 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 the Port of Harlingen's terminals.

The direct tax impacts are estimated at a federal, state, county 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 versus pipeline), as well as the geographical distribution of each commodity; and
- Vessel calls and vessel size.

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.

3.3 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 marine 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). 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.

3.4 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.

3.5 Related Impacts

Related impacts measure the jobs with shippers and consignees moving cargo through the Port's marine terminals and private terminals. These impacts are classified as related jobs, since the shippers/consignees using the marine terminals for the movement of cargo potentially can use other seaports and marine terminals. Because of the proximity of other ports and the associated steamship service at these ports, the exporters and importers have some flexibility in port choice if operations at the Port of Harlingen would cease. It is the demand for the final product, not the use of a particular seaport or marine terminal. As a result, impacts with the importers and exporters cannot be counted as directly dependent upon the Port of Harlingen's marine terminals as are the direct, indirect and induced impacts.

These jobs are estimated based on the value per ton of the commodities exported and imported via the Port of Harlingen and the associated jobs to value of output ratios for the respective producing and consuming industries located in the state. The value per ton of each of the key commodities moving via the Port was developed from the US Department of Transportation, Maritime Administration. The average value per ton for each commodity moving over the Port of Harlingen's marine terminals was then multiplied by the respective tonnage moved in calendar year 2023. Ratios of jobs to value of output for the corresponding consuming and producing industries were developed by Martin Associates from the US Bureau of Economic Analysis, Regional Input-Output Modeling System for the state of Texas. These jobs to value coefficients include the in-state, spin-off impacts that would occur in order to produce the export commodity or use the import commodity in production. The percent of each commodity that is produced or consumed in the state of Texas was next developed from the interviews, and the value of each commodity remaining in the state of Texas was calculated. The ratios of jobs to value of export or import cargo were then combined with the in-state value of the respective commodities moving within the Port of Harlingen to estimate related jobs and the spin-off jobs in-state to support the export and import industries. Similarly, the respective income and output multipliers (for the consuming and producing industries) were used to estimate the related personal income impact as well as the total value of economic output and taxes generated by the Port of Harlingen's public and private marine terminals. It is to be emphasized that care was taken to control for double counting of the direct, induced and indirect impacts.

4. COMMODITIES INCLUDED IN THE ANALYSIS

A major use of an economic impact analysis is to provide a tool for the port to achieve the best utilization of access to the authorized federal channel and marine terminal infrastructures, and for present and future port development planning. As a port grows, available land and other resources for port facilities become scarce, and decisions must be made as to how to develop the land and/or best utilize access to the authorized federal channel, as well as how to use the marine terminal infrastructure and/or resources in the most efficient manner. Various types of facility configurations are associated with different commodities. For example, crude oil imports and dry bulk cargoes require deeper water, while petroleum products require tankage for storage. In addition, dry bulk cargo requires covered storage and open 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 achieving the best utilization of access to the authorized federal channel and to formulate present and future development plans for the port. Because of this need for understanding relative commodity impacts, economic impacts are estimated for the following commodities handled at the private marine terminals.

- Sand
- Cement
- Sugar
- Cotton
- Liquid Fertilizer
- Liquid Bulk

It should be emphasized that commodity-specific impacts are not estimated for each of the economic sectors described in the last section. Specific impacts by commodity could not be allocated to individual commodities with any degree of accuracy for marine construction, ship repair, or the state and federal government. 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.

II. MARITIME EMPLOYMENT IMPACTS

In this chapter, the employment generated by maritime cargo activity at the marine terminals within the Port of Harlingen is estimated. The chapter is organized as follows:

- First, the total employment that is in some way related to the cargo and vessel activities at the complex is estimated.

- Second, the subset of total employment that is judged to be totally dependent (i.e., direct jobs) on port activity is analyzed as follows:

    - The direct job impact is estimated by detailed job category, i.e., terminal operations, trucking, freight forwarders/customhouse brokers, steamship agents, chandlers, surveyors, shipyards, etc.

    - The direct job impact is estimated for each of the key commodities/commodity groups.

    - The direct job impact is estimated based on the residency of those directly employed.

- Induced and indirect jobs are estimated.

- Finally, jobs related to the marine activity at the public and private marine terminals are described.

1. TOTAL MARINE CARGO EMPLOYMENT IMPACT

It is estimated that about 25,224 jobs are directly or indirectly generated by port activities at the public and private marine terminals within the Port of Harlingen Port District. Of the 25,224 jobs:

- 966 jobs are directly generated by activities at the public and private marine terminals and if such activities should cease, these jobs would be discontinued over the short term.

- 1,225 jobs (induced jobs) are supported by the local purchases of the 966 individuals directly generated by port activity at the marine terminals.

- An additional 216 indirect jobs were supported by $24 million of purchases in the local and regional economy by firms providing direct cargo handling and vessel services, as well as the

dependent terminal operations.

- 22,817 jobs are related to cargo exported and imported via the private marine terminals. These jobs with Texas exporters and importers are considered to be related to activities at the marine terminals, but the degree of dependence on these terminals is difficult to estimate. ***It is to be emphasized that the level of employment with the Texas shippers and consignees is dependent on the demand for the cargo moving via the terminals, not by the use of the marine terminals at the Port of Harlingen.*** However, if other terminals were used, it is likely that the costs of shipping and receiving cargo by water would increase, which could have long-term implications on the level of shipments and receipts at the Port of Harlingen.

2. DIRECT MARINE CARGO JOB IMPACTS

In 2023, 2.3 million tons of domestic and foreign waterborne cargo moved via the Port of Harlingen. As a result of this activity, 966 full-time jobs were directly created.[1] In this section these direct jobs are analyzed in terms of:

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

These distributions are described in more detail below.

2.1 Direct Job Impacts by Job Category

Exhibit II-1 presents the distribution of the 966 direct jobs by job category. The exhibit indicates that the majority of direct jobs are with dependent terminal operators, and these jobs are with petrochemical firms and refineries located within the Port of Harlingen.

[1] Jobs are measured in terms of full-time worker equivalents. If a worker is employed only 50 percent of the time by activity at Port of Harlingen's marine terminals, then this worker is counted as .5 jobs.

Exhibit II-1
Employment Impacts by Sector and Job Category

PORT OF HARLINGEN	DIRECT JOBS
SURFACE TRANSPORTATION	
Rail	2
Truck	127
MARITIME SERVICES	
Terminal	630
Maritime Services/Construction	93
Warehouse	23
Government	2
Barge/Bunkers	82
PORT OF HARLINGEN	7
TOTAL	**966**

Totals may not add due to rounding

2.2 Direct Job Impacts by Commodity

Most of the 966 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 and employees with marine construction and ship repair cannot be identified with a specific commodity. As a result, employment in these groups (which totaled 114) was not allocated to commodity groups.

Exhibit II-2 presents the relative employment impacts in terms of commodity groups.

Exhibit II-2
Distribution of Direct Job Impact by Commodity

PORT OF HARLINGEN	DIRECT JOBS
Sand	30
Cement	19
Cotton	24
Sugar	448
Liquid Fertilizer	36
Liquid Bulk	295
Not Allocated	114
TOTAL	**966**

Totals may not add due to rounding

Sugar created the largest number of direct jobs, 448 jobs, followed by the 295 jobs created by the movement of liquid bulk over the marine terminals at the Port of Harlingen.

2.3 Distribution of Direct Jobs by Place of Residency

To underscore the geographic scope of the impacts generated by the marine terminals, Exhibit II-3 presents the distribution of the 966 direct jobs by place of residency. The residency analysis is based on the results of the interviews with the firms dependent on maritime operations at the Port of Harlingen's public and private marine terminals. As this exhibit indicates, 57 percent, of the direct jobs are held by residents of Hidalgo County and about 32 percent are held by residents of Cameron County.

Exhibit II-3
Distribution of Direct Jobs by Place of Residency

PORT OF HARLINGEN		
JURISDICTION	**SHARE**	**DIRECT JOBS**
Harlingen	6.20%	60
Rio Hondo	1.07%	10
Cameron	31.85%	308
Hidalgo	57.29%	553
Willacy	3.44%	33
Other TX	0.16%	2
TOTAL	**100%**	**966**

Totals may not add due to rounding

3. INDUCED JOBS

The 966 directly employed individuals due to activity at the marine terminals received wages and salaries, a part of which was used to purchase local goods and services such as food, housing, clothing, transportation services, etc. As a result of these local purchases, 1,225 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.

4. INDIRECT JOBS

In addition to the induced jobs generated by the purchases by directly employed individuals, the *firms* providing the direct services and employing the 966 direct jobs make local purchases for goods and services. These local purchases by the firms' dependent upon the private marine facilities generate additional local jobs -- indirect jobs. Based on interviews with the tenants and service providers, these firms made $24 million of local and in-state purchases in calendar year 2023. These direct local purchases created an additional 216 indirect jobs in the local economy.

5. RELATED JOBS

It is estimated that 22,817 jobs with Texas shippers and consignees are related to crude petroleum and petrochemicals received at the refineries and chemical plants located in the port complex. 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 public and private 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 vessel/barge activity. Given a level of demand for the specific commodities, the cargo would be shipped through another port.

It is to be further emphasized that when the impact models are used for planning purposes, related jobs should not be used to judge the economic benefits of a particular project. Related jobs are not estimated with the same degree of defensibility as are the direct, induced and indirect jobs. Therefore, only these three types of job impacts should be used in evaluating port investments. The purpose of the related jobs estimates is to provide a proxy for the magnitude of the more general economic development impact of the private and public port facilities.

III. MARINE CARGO REVENUE, INCOME AND TAX IMPACTS

The 2.3 million tons of cargo handled at the Port of Harlingen generated revenue for firms in each of the economic sectors. For example, revenue is received by the trucking companies and railroads within the surface transportation sector as a result of moving export cargo to the marine terminals and distributing the imported commodities inland after receipt at the marine terminals. The firms in the maritime services sector receive revenue from arranging for transportation services, cargo handling, providing services to vessels in port and repairs to vessels calling the port facilities. In addition, revenue is received by shippers/consignees from the sales of cargo shipped or received via the marine cargo terminals and from the sales of products made with raw materials received through the terminals.

The revenue generated by port activity consists of many components. For example, gross revenue is used to pay employee salaries and taxes, it is distributed to stockholders of the companies providing the vessel and cargo handling services, 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. These are the personal income component of revenue, which can be traced to geographic locations based on the residence of those receiving the income, the payment of federal, state and local taxes, and the local purchases made by firms dependent upon the maritime activity. The balance of the revenue is distributed in the form of payments to firms located outside the region providing goods and services to the dependent firms and for the distribution of company profits to shareholders.

Since it is difficult to trace all the components of the revenue beneficiaries, an estimate of revenue is developed, but no conclusions are formulated as to how the revenue (other than personal income, taxes and local purchases) is distributed, geographically. 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.

1. REVENUE IMPACT – TOTAL ECONOMIC ACTIVITY

In 2023 marine cargo activity at the Port generated a total of $4.6 billion of economic activity in the state of Texas. Of the $4.6 billion, $250 million 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 and the vessels calling the ports. An additional $4.2 billion 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. In addition, $175.6 million of the re-spending of personal income and local consumption

purchases are supported in the Texas economy. These components are additive and represent independent monetary impacts supported by the cargo and vessel activity. Other dollar value impact measures are not included in the total economic value since they are interdependent. Direct income is not included since it is part of the direct business impact and similarly, local purchases by the firms are from the direct business revenue generated by port activity, and also used to pay indirect income. Finally, taxes are paid by the individuals from the direct, induced, indirect and related income and the direct business revenue and the related output.

The balance of this section focuses only on the $250 million of direct business revenue impact generated from the provision of transportation services in support of the cargo and vessel activity at the Port of Harlingen. It is important to emphasize that the direct business revenue does not include the value of the cargo moving via the marine facilities.

1.1 Revenue Impacts by Economic Sector

Exhibit III-1 presents the total revenue estimated to have been generated by port activity in calendar year 2023. This revenue includes the revenue received by firms providing services to the commodity and vessel activity at the public and private terminals, and includes revenue received by trucking firms, stevedores, the Port of Harlingen, chandlers, agents, pilots, towing companies, etc. Not included is the revenue from the use/value of the cargo moving via the marine terminals.

The majority of the direct business revenue impact is generated with terminal operators and dependent shippers/consignees. Truck operations received the next largest revenue impact, followed by barge operations and bunkers and the miscellaneous maritime service firms and those providing ship repair and marine construction.

Exhibit III-1
Total Revenue Generated By
Port Activity

PORT OF HARLINGEN	REVENUE ($1,000)
SURFACE TRANSPORTATION	
Rail	$18
Truck	$38,428
MARITIME SERVICES	
Terminal	$163,275
Maritime Services/Construction	$15,485
Freight Forwarders	$4
Warehouse	$4,185
Barge/Bunkers	$20,090
Tenants	$3,150
PORT OF HARLINGEN	$5,161
TOTAL	**$249,796**

Totals may not add due to rounding

1.2 Revenue Impacts by Commodity

Exhibit III-2 shows the total revenue impact by commodity. It is to be emphasized that the revenue received by shippers/consignees from the sales of the products (value of the commodities) moving via the marine terminals is not included, since product value is determined by the demand for the product, not the use of the marine terminals. The exhibit shows that in terms of total revenue, sugar generates the greatest revenue impact followed by liquid bulk then cement.

Exhibit III-2
Revenue Impacts by Commodity

PORT OF HARLINGEN	REVENUE ($1,000)
Sand	$7,757
Cement	$12,865
Cotton	$2,419
Sugar	$119,485
Liquid Fertilizer	$8,021
Liquid Bulk	$73,552
Not Allocated	$25,696
TOTAL	**$249,796**

Totals may not add due to rounding

2. PERSONAL EARNINGS IMPACT

In the previous section of this chapter, the total revenue generated by port activity was identified. As described earlier, the personal income received by those directly employed by the tenants of the Port of Harlingen is paid from the business revenue. The income impact is estimated by multiplying the average annual earnings (excluding benefits) of each port participant, i.e., truckers, steamship agents, pilots, towing firm employees, terminal employees, government employees, etc., by the corresponding number of direct jobs in each category. The individual annual earnings in each category multiplied by the corresponding job impact resulted in $54.0 million in personal wage and salary earnings. It is important to emphasize that the average annual earnings of a port-dependent job is about $55,942.

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 supplied by the Bureau of Economic Analysis (BEA), Regional Input-Output Modeling System (RIMS II). The BEA estimates that for every one dollar earned by direct employees generated by activity at the marine terminals, an additional $3.25 of personal income and consumption expenditures would be created as a result of re-spending the income for purchases of goods and services produced in locally. Hence, a personal earnings multiplier of 4.25 was used to estimate the total income and consumption impact of $1.0 billion, inclusive of the re-spending effect. This additional re-spending of the direct income generates the 1,225 induced job impact, described in the previous chapter.[2]

The 216 indirect job holders earned $13.1 million in indirect wages and salaries. Combining the direct, induced and indirect personal income impacts, the total income and local consumption impact is $242.6 million. When the $798.6 million of related personal income is included, the total personal income impact is estimated at $1.0 million.

3. TAX IMPACTS

Federal, 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 Tax Foundation, which reports total state and local taxes from all sources as a percent of total personal income.

[2] It is to be emphasized that the re-spending impact of $175.6 million does not represent the earnings of the 1,225 induced jobs. The $175.6 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.

Activity at the marine terminals at the Port of Harlingen generated $18.4 million of state, county and local taxes. The related users contributed an additional $60.7 million of state and local taxes for a total state and local tax impact of $79.1 million in calendar year 2023.