ECONOMIC IMPACT OF THE PORT OF HARLINGEN

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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 non-maritime tenants, onsite at the Port of Harlingen but using alternate modes to transport their cargo. This study focuses on impacts generated by cargo activity in fiscal year 2021. In total, the terminals at the port handled over 3.0 million tons of liquid bulk, aggregates, sugar, fertilizer, grains, and cotton.

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 port activity at more than 700 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

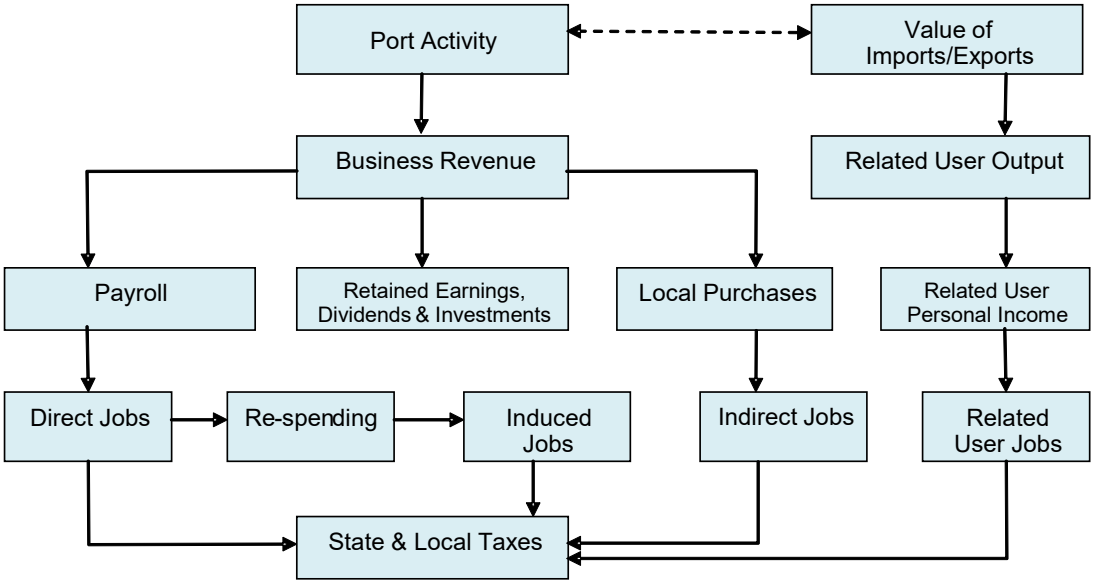
In addition, a summary of the data sources used in the analysis is presented.

1. IMPACT DEFINITIONS

Waterborne activity at a port 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 I-1 illustrates the flows of economic impacts throughout the economy. As this exhibit shows, the activity at a port (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 I-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 I-1, and the previous discussion, the flow of economic impacts throughout an economy creates four separate types of 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.

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 port, and in contributions to federal, state and local taxes.

1.2 Employment Impact

The employment impact of port 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, terminal operators, and onsite tenants. 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 barge 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 port 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, 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 primarily to petroleum facilities 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 port 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 port 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

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.

2.1 The Surface Transportation Sector

The surface transportation sector consists of both the trucking and railroad 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) to Mexico. Additional liquid bulk volume, liquid fertilizer and sand/cement cargo are also transported via truck 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 service is provided by Union Pacific to move some liquid fertilizer and grain through the Port.

2.2 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.
- 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.

2.3 Non-Maritime Real Estate Tenants

The Port also leases land to tenants not engaged in marine cargo activity. These non–maritime tenants include a compost operation and a heavy machinery manufacturer. 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 through the port but are not utilizing the water for transport. Jobs associated with these commodities are allocated specifically to each of the commodities.

2.4 Port of Harlingen Authority

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

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 barge and cargo activity at the Port of Harlingen marine terminals.

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 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, etc. that are involved in the movement of cargo. 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, 2021".

The economic relationships and methodology developed in 2021 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 and barge assumptions. Also, the model is designed to test the impacts of new facilities development.

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 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 port 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.

3.3 Induced Impacts

Induced impacts are those generated by the purchases of the individuals employed as a result of port 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, 2021). 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 Impacts

Indirect impacts are generated in the local economy as the result of purchases by firms that are directly dependent upon cargo and barge 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. 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 ports 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.

4. 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 bulk 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:

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

5. IMPACT SUMMARY

The resulting economic impacts are presented in Exhibit I-2. The impacts for marine cargo and non-maritime real estate activity at the Port of Harlingen are detailed, in the following exhibit.

Exhibit I-2
Summary of Economic Impacts Supported by Port Activity in FY2021

ECONOMIC IMPACT CATEGORIES	
JOBS	
Direct	920
Induced	1,109
Indirect	163
Total Jobs	**2,192**
PERSONAL INCOME ($1,000)	
Direct	$49.23
Re-Spending/Consumption	$202.08
Indirect	$12.93
Total	**$264.25**
BUSINESS REVENUE ($ Millions)	**$202.41**
LOCAL PURCHASES ($ Millions)	**$22.91**
STATE AND LOCAL TAXES ($ Millions)	**$16.34**
RELATED USER IMPACTS	
Jobs	7,533
Personal Income ($ Millions)	$263.67
Output ($ Millions)	$1,386.55
Taxes ($ Millions)	$20.04

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., trucking and rail 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 barge activity are then described. Lastly, the related user jobs are estimated.

1.1 Total Jobs

It is estimated that **9,725** jobs in the Harlingen regional economy are influenced by cargo and barge activity at the Port of Harlingen: Of the 9,725 jobs:

- **920** 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.

- **1,109** jobs (induced jobs) are supported by the local purchases of the 920 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 **163** indirect jobs were supported by $22.91 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, communication services and fuel.

- **7,533** 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.

The next section of this chapter is dedicated to the direct impact category of the **920** jobs.

1.2 Direct Jobs

In fiscal year 2021, over 3.0 million tons of cargo shipped in and out of the Port of Harlingen via a mix of barge, truck, pipeline, and rail. As a result of activity at the Port of Harlingen, **920** 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.

Exhibit II-1 presents the distribution of the 920 direct jobs by type of job. As this exhibit shows, a large impact is employment with dependent terminal operators, followed by the trucking and tug/barge jobs moving the cargo to and from the Port of Harlingen.

Exhibit II-1
Direct Employment Impacts by Job Category

	DIRECT JOBS
SURFACE TRANSPORTATION	
Rail	2
Truck	185
MARITIME SERVICES	
Terminal	451
Maritime Services/Construction	117
Government	2
Tug/Barge	113
NON-MARITIME TENANTS	45
PORT OF HARLINGEN	6
TOTAL	920

Note: Totals may not add due to rounding

Most of the 920 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, Port Authority employees and employees with marine construction cannot be identified with a specific commodity. As a result, employment in these groups was not allocated to specific commodity groups.

Exhibit II-2 presents the relative employment impacts in terms of commodity groups. As the exhibit indicates, sugar created the largest number of direct jobs, followed by the movement of liquid bulk.

[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.

Exhibit II-2
Distribution of Direct Job Impact by Commodity

	DIRECT JOBS
Grain	12
Aggregates	30
Cotton	27
Sugar	368
Liquid Fertilizer	44
Liquid Bulk	303
Not Allocated	136
TOTAL	920

Note: Totals may not add due to rounding

To underscore the geographic scope of the impacts generated by the marine terminals, Exhibit II-3 presents the distribution of the 920 direct jobs by place of residency. The residency analysis is based on the results of the interviews.

Exhibit II-3
Distribution of Direct Job Impact by Place of Residency

JURISDICTION	SHARE	DIRECT JOBS
Harlingen	7.43%	68
Rio Hondo	1.01%	9
Other Cameron County	37.19%	342
Hidalgo County	48.62%	447
Willacy County	3.10%	29
Other TX	1.92%	18
Other US	0.73%	7
TOTAL	100%	920

1.3 Induced Jobs

The purchases by the 920 direct job holders with the direct income earned from port activity create additional jobs throughout the regional economy. In fiscal year 2021, $49.23 million was received by those 920 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 1,109 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", 2021. 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 $22.91 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 163 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 7,533 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 3.0 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, and providing repairs. 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.

2.1 Revenue Impact

In 2021 marine cargo activity at the Port generated a total of $1.79 billion of economic activity in the state of Texas. Of the $1.79 billion, $202.41 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 $1.38 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, $202.08 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 the discussion regarding revenue focuses on the $202.41 million of direct business revenue.

Exhibit II-4 presents the total revenue estimated to have been generated by port activity in 2021. This revenue includes the revenue received by firms providing services at the port, and includes revenue received by trucking firms, railroads, terminal operators, tug/barge companies, and maritime support firms.

Exhibit II-4
Total Revenue Generated by Port Activity

	REVENUE ($MILLIONS)
SURFACE TRANSPORTATION	
Rail	$0.12
Truck	$51.58
MARITIME SERVICES	
Terminal	$100.34
Maritime Services/Construction	$17.37
Tug/Barge	$23.07
Miscellaneous	$3.24
NON-MARITIME TENANTS	$2.67
PORT OF HARLINGEN	$4.02
TOTAL	$202.41

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 $49.23 million in personal income. This equates to an average annual salary of about $53,507 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 $3.37 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 4.37 was used to estimate the total income and consumption impact of $202.08 million, inclusive of the re-spending effect. This additional re-spending of the direct income supports the induced job impact (1,109 induced jobs), described in the previous chapter.[2]

The indirect job holders received $12.93 million of personal wages and salaries. The related users received $263.67 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 $527.91 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 $22.91 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 $22.91 million of purchases supported the 163 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 Foundation[3], 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 $16.34 million of state and local taxes (direct, induced, and indirect). The related user state and local tax impact is estimated at $20.04 million, for a total state and local tax impact of $36.38 million in fiscal year 2021.

[2] The re-spending impact of $202.08 million does not represent the earnings of the 1,109 induced jobs. The $202.08 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.

[3] The 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).

III. COMPARISON OF IMPACTS 2021 - 2018

The last economic impact study was conducted by Martin Associates as part of the statewide Texas Ports Association study in 2019, in which the Port of Harlingen Authority's results were measured for fiscal year 2018. Since the last study, the Port's tonnage has doubled; leading to increases in jobs, revenue, and overall impact. Most of the increases can be attributed to the liquid bulk flowing through the Port destined for Mexico. Aggregate volume also increased while the other commodities remained relatively consistent. Exhibit III-1 presents the changes in impacts between 2018 and 2021.

Exhibit III-1
Change in Economic Impacts 2021 - 2018

ECONOMIC IMPACT CATEGORIES	2021	2018	CHANGE
JOBS			
Direct	920	610	310
Induced	1,109	670	439
Indirect	163	137	25
Total Jobs	2,192	1,418	774
PERSONAL INCOME ($1,000)			
Direct	$49.23	$28.13	$21.10
Re-Spending/Consumption	$202.08	$76.27	$125.81
Indirect	$12.93	$6.75	$6.18
Total	$264.25	$111.15	$153.10
BUSINESS REVENUE ($ Millions)	$202.41	$119.98	$82.43
LOCAL PURCHASES ($ Millions)	$22.91	$15.20	$7.71
STATE AND LOCAL TAXES ($ Millions)	$16.34	$8.45	$7.89
RELATED USER IMPACTS			
Jobs	7,533	3,253	4,280
Personal Income ($ Millions)	$263.67	$113.86	$149.81
Output ($ Millions)	$1,386.55	$818.30	$568.25
Taxes ($ Millions)	$20.04	$8.65	$11.39

Note: Totals may not add due to rounding

Direct jobs increased by 310 jobs since 2018 and indirect jobs increased by 25, reflecting the increase of local purchases by $7.71 million. Induced jobs increased by 439. Direct, induced, and indirect state and local taxes generated by port activity grew by $7.89 million and directly dependent business revenue increased by $82.43 million. Total economic value of the Port of Harlingen Authority maritime activity increased from $1.0 billion in 2018 to $1.79 billion in 2021.