THE 2022 ECONOMIC IMPACT OF MARINE CARGO ACTIVITY AT THE HOUSTON SHIP CHANNEL ON THE STATE OF TEXAS AND THE UNITED STATES

May 9, 2023

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PORT HOUSTON™

SUMMARY

The Houston Ship Channel consists of public marine terminals owned by the Port of Houston Authority ("PHA") as well as private marine terminals located along the Houston Ship Channel. The public marine terminals include the Houston Public Grain Elevator #2, the Fentress Bracewell Barbours Cut Container Terminal, the Bayport Container Terminal, the Bulk Materials Handling Plant, Jacintoport, the Care Terminal, the PHA Terminals in the Houston Turning Basin, and the Woodhouse Terminal. Private terminals include the petroleum refineries, general cargo terminals (e.g., Manchester Terminal, Greensport Terminal, etc.), the petrochemical plants and the dry bulk/fertilizer terminals along the Houston Ship Channel included in the Houston Ship Channel District. In 2022, these public and private marine terminals in the Houston Ship Channel District handled 256.8 million tons of international and domestic cargo for exporters and importers located within the state of Texas, as well as throughout the United States. It is the purpose of this study to quantify the economic impacts generated by the cargo and vessel activity at these marine terminals both on the state of Texas, as well as the United States.

The purpose of this current study is to update the economic impacts of the Houston Ship Channel and to also provide a measure of the economic impacts of the port on the U.S. economy. The analysis is based on the structural models developed by Martin Associates as part of the 2022 economic impact study conducted for the Port of Houston Authority[1]. 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 consists of the importers and exporters using the Houston Ship Channel's public and private marine terminals for containerized cargo; heavy equipment manufactures of agricultural, construction and mining equipment exporting and importing through the Houston Ship Channel facilities; farmers exporting grain via the terminals; importers of steel products located both in Texas as well as throughout the U.S.; and users and manufacturers of the petroleum products and petrochemical products moving via the port's marine terminals. In addition to the jobs with these exporters and importers that are using the port, the related user impacts also include the support industries that are involved in providing goods and services to produce a specific export item moving via the port, or 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 Houston Ship Channel, as the employment levels are based on the demand for the goods exported and imported via the port, but at the given point in time in 2022, these jobs with importers and exporters and the industries supporting these exporters and importers are related to the port, and underscore the far reaching geographical sphere of influence of the port in 2022.

Exhibit 1 shows the impacts of the Houston Ship Channel cargo operations on the U.S., while Exhibit 2 presents the economic impacts on the state of Texas. The biggest difference between the

[1] The Local and Regional Economic Impacts of the Port of Houston - 2022, prepared for the Port of Houston Authority, by Martin Associates, April 19, 2023.

economic impacts on the United States vs. Texas are the related economic impacts, as these impacts are with the importers and exporters using the Houston Ship Channel facilities and underscores the national economic significance of the port's public (PHA owned terminals) and private 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 Houston Ship Channel.

Exhibit 1

Summary of the 2022 Economic Impacts of the Houston Ship Channel on the United States Economy

	Terminals	Terminals	
JOBS			
Direct	30,161	48,148	78,308
Induced	65,099	105,602	170,702
Indirect	28,810	45,992	74,802
Subtotal	*124,070*	*199,742*	*323,812*
Related	1,159,053	1,882,355	3,041,408
Total	1,283,123	2,082,096	3,365,220
PERSONAL INCOME(MILLIONS)			
Direct	$2,494	$4,054	$6,548
Re-spending/Local Personal Consumption	$9,904	$16,099	$26,003
Indirect	$1,165	$1,859	$3,024
Subtotal	*$13,563*	*$22,011*	*$35,574*
Related	$93,321	$97,925	$191,246
Total	$106,884	$119,936	$226,820
TOTAL ECONOMIC VALUE (MILLIONS)			
Direct Business Revenue	$9,036	$20,521	$29,557
Re-spending/Local Personal Consumption	$9,904	$16,099	$26,003
Related Output	$342,740	$507,651	$850,392
Total Economic Value	$361,681	$544,271	$905,951
LOCAL PURCHASES (MILLIONS)	$2,774	$4,429	$7,203
FEDERAL/STATE/LOCALTAXES (MILLIONS)			
Direct	$690	$1,122	$1,812
Induced	$2,740	$4,454	$7,194
Indirect	$322	$514	$837
Subtotal	*$3,752*	*$6,090*	*$9,842*
Related	$25,819	$27,093	$52,912
Total	$29,571	$33,183	$62,754

Totals may not add due to rounding

Exhibit 2
Summary of the 2022 Economic Impacts of the Houston Ship Channel on the State of Texas

	PHA Terminals	Private Terminals	Total
JOBS			
Direct	30,161	48,148	78,308
Induced	52,705	85,456	138,161
Indirect	26,494	42,294	68,787
Subtotal	*109,360*	*175,897*	*285,257*
Related	870,135	385,025	1,255,160
Total	979,495	560,922	1,540,417
PERSONAL INCOME(MILLIONS)			
Direct	$2,494	$4,054	$6,548
Re-spending/Local Personal Consumption	$7,743	$12,586	$20,329
Indirect	$1,071	$1,710	$2,780
Subtotal	*$11,308*	*$18,349*	*$29,657*
Related	$69,990	$22,481	$92,471
Total	$81,298	$40,829	$122,128
TOTAL ECONOMIC VALUE (MILLIONS)			
Direct Business Revenue	$9,036	$20,521	$29,557
Re-spending/Local Personal Consumption	$7,743	$12,586	$20,329
Related Output	$245,175	$144,158	$389,332
Total Economic Value	$261,953	$177,264	$439,218
LOCAL PURCHASES (MILLIONS)	$2,774	$4,429	$7,203
STATE/LOCALTAXES (MILLIONS)			
Direct	$217	$353	$570
Induced	$674	$1,095	$1,769
Indirect	$93	$149	$242
Subtotal	*$984*	*$1,596*	*$2,580*
Related	$6,089	$1,956	$8,045
Total	$7,073	$3,552	$10,625

Totals may not add due to rounding

In 2022, cargo activity at the public and private marine terminals at the Houston Ship Channel supported 3,365,220 direct, induced, indirect and related jobs in the United States, of which 1,540,417 jobs were supported in the state of Texas:

- 78,308 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 Houston Ship Channel. The direct jobs are with the International Longshoremen's Association, terminal operators, dependent shippers/consignees, stevedores, trucking firms, railroads, steamship agents, freight forwarders and customhouse brokers, warehousemen, federal and state government agencies, towing companies, pilot organizations, and marine construction companies, etc. The majority, about 77 percent, of the direct jobs are held by residents of Harris County.

- 170,702 are **induced** jobs, or those jobs supporting the local and national purchases made by the 78,308 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 grocery stores, retail outlets, restaurants, transportation services, government services, schools and hospitals are examples of induced jobs. Of the 170,702 induced jobs, 138,161 were induced jobs held by Texas residents.

- The firms' dependent upon the Houston Ship Channel made $7.2 billion of purchases for office supplies, equipment, utilities, communications, maintenance and repair services, transportation services, professional services and goods and services. These purchases supported 74,802 **indirect** jobs in the national economy, of which 68,787 were created in the state.

- In addition to the direct, induced and indirect job impacts, the port activity supports 3,041,408 jobs throughout the United States, of which 1,255,160 related jobs are in the state of Texas. 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 Houston Ship Channel were 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.

In 2022, marine cargo activity at the public and private marine terminals along the Houston Ship Channel supported a total of $906.0 billion of total U.S. economic value, of which $439.2 billion of total economic value was supported in the state of Texas. The PHA facilities supported $361.7 billion of total economic value to the U.S. economy.

- Of the $906 billion of total U.S. economic value, $29.6 billion 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 port, as well as ship and rig repair and maintenance services. An additional $850.4 billion represents the value of the output to the United States that is created due to the cargo moving via the Houston Ship Channel public and private 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. The majority of these user impacts are associated with the imported steel products receipts. In addition, $26.0 billion of the re-spending of personal income and local consumption purchases are supported in the U.S. 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 nearly $226.8 billion of total personal wage and salary income and local consumption expenditures in the United States. This includes $26.0 billion of direct, indirect, induced and local consumption expenditures in the U.S., while the remaining $191.2 billion was received by the related port users throughout the United States. The 78,308 direct job holders received $6.6 billion of direct wage and salary income, for a direct annual salary of $83,613.

A total of $62.7 billion of federal, state, and local tax revenue in the U.S. was supported by maritime activity at the public and private terminals along the Houston Ship Channel. Of the $62.7 billion of federal, state, and local tax revenue supported in the U.S., $10.6 billion of state and local taxes was supported in the state of Texas.