THE ECONOMIC IMPACTS OF THE CALCASIEU SHIP CHANNEL 2024

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May 15, 2025

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EXECUTIVE SUMMARY

Martin Associates was retained by the Lake Charles Harbor and Terminal District (LCH&TD) to estimate the economic impacts generated by marine cargo activity at the public and private marine terminals located along the Calcasieu Ship Channel and to quantify the economic value of the ship channel to the national, state, and local economies. The local economy is defined as the Lake Charles Metropolitan Statistical Area (MSA), which consists of Calcasieu and Cameron parishes. Included in the economic value of the Ship Channel, is also a measurement of the economic benefits of using the ship channel to move cargo over the inland waterways including the Gulf Intracoastal Waterway between Lake Charles and domestic origins and destinations. These benefits measure the environmental, safety and infrastructure degradation that would occur should the Calcasieu Ship Channel not be available for navigation. Finally, the economic value of planned new construction along the Ship Channel in terms of LNG export facilities and methanol facilities within the next five years are quantified at the national, state, and local levels.

The Calcasieu River and Pass project consists of a 68-mile navigation channel located in southwest Louisiana that provides deep draft access to the facilities along the Calcasieu Ship Channel. The Upper limit of the project commences at Mile 36.0, just south of Interstate 10 in Lake Charles, LA, and extends towards the outer/southern boundary at Approximate Mile (-32.0) in the Gulf of America. The project is authorized under the River & Harbor Act of 14 July 1960 House Document 436, 86th Congress, 2nd Session. The current authorized dimensions for the *Calcasieu River and Pass Main Channel* are -43' MLLW by 800' from the jetties to Mile (-32.0) in the Gulf of America (bar channel), - 41' MLLW by 400' from the jetties to Mile 34.1, transitioning to a -36' MLLW by 250' channel from Mile 34.3 to Mile 36.0 in Lake Charles, LA. The project also includes a turning basin in Lake Charles at the upper limit of the project, along with a -41' MLLW by 400' channel in Clooney Island Loop. Also included in the project is the Industrial Canal. The Industrial Canal is 12 miles south of Lake Charles City Docks at the intersection of the Calcasieu Ship Channel and the Gulf Intracoastal Waterway. The 1,100-acre site is 22 miles from the Gulf of America. The Industrial Canal is three miles long and has a 1,400-foot by 1,400-foot turning basin at its east end with a depth of 12.2 meters (40 feet). The canal is dredged to a project depth of 40 feet and has a bottom width of 400 feet.

The Calcasieu Ship Channel is home to public marine terminals which are owned, leased, or operated by the LCH&TD, as well as privately owned marine terminals and industries dependent upon the movement of cargo along the Ship Channel. The majority of the private industries located along the Ship Channel include petroleum refineries and chemical manufacturing facilities, while the LCH&TD's public facilities handle coke, lumber, bagged and bulk grain, wind energy equipment and project cargo, limestone, cement, rutile, barite, and chemical products. With the opening of the Cameron LNG facility which was developed on property leased from the LCH&TD, LNG has become a key export commodity in 2024. While the LCH&TD also leases land to two casino/hotel complexes, the impact of these facilities, which employ nearly 3,500 local residents of the Lake Charles MSA, are not included in the economic analysis of the Calcasieu Ship Channel but are included in the measurement of the economic impact of the LCH&TD.

Calcasieu Ship Channel

The economic impacts of the Calcasieu Ship Channel are measured for the marine cargo activity in year 2024[1]. In 2024, it is estimated that about 65 million tons were either shipped or received at terminals located on the Ship Channel. About 53% of the 65 million tons moving on the Ship Channel was international cargo, while the balance of the cargo moved domestically on the nation's inland waterways and coastal routes. This balance has shifted in favor of international cargo since the previous impact study was completed in 2020, reflecting the strong growth in export LNG from the facilities located on the Ship Channel. In 2020 about 45% of the 58 million tons of cargo moving on the Ship Channel was international cargo, with 55% moving on the nation's inland waterways and coastal routes.

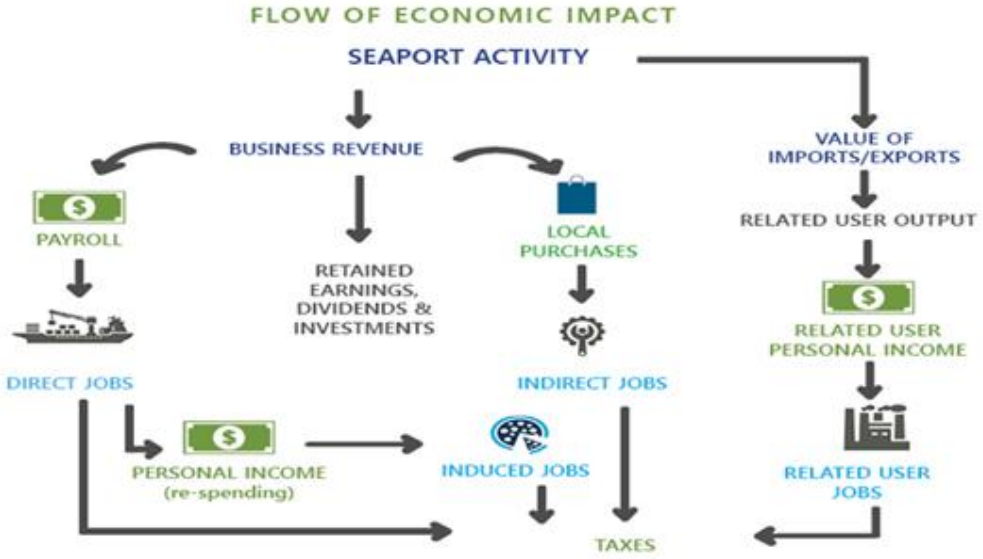
The 2024 analysis is based on detailed interviews with nearly 200 firms using the Ship Channel as well as those providing maritime services to the vessels and cargo activity along the Ship Channel. Based on the data collected through the interviews with these 200 firms, which were used to develop the direct impacts, economic impact models were also developed for the public and private marine terminals to reflect the unique operations at each of the LCH&TD marine terminals along the Ship Channel. These economic impact models can be used to estimate annual updates, as well as to test the sensitivity of the impacts to changes in such factors as marine cargo tonnage levels, labor productivity and work rules, new marine facilities development and expansion and the impacts of harbor and channel deepening. The models can also be used to compare the economic impacts of marine activity with non-maritime development of waterfront land.

[1]International cargo moving on the Calcasieu Ship Channel in the year 2024 was developed from the U.S. Census, USA Trade Online. Domestic cargo volume was developed from the U.S. Army Corps of Engineers, Waterborne Commerce Statistics, which is for 2023, and where possible the domestic cargo data was updated based on interviews with terminal operators along the Ship Channel. Actual 2024 domestic cargo data will not be available from the U.S. Army Corps of Engineers until 2025. Therefore, the 65 million tons is an estimate of the 2024 international cargo volume plus the domestic cargo data, assuming that the domestic cargo will remain at nearly the same levels in 2024 as it is in 2023. In 2023, 64.1 million tons of international and domestic cargo moved on the Ship Channel according to the U.S. Army Corps of Engineers, Waterborne Commerce Statistics, 2023.

Martin Associates has used this same methodology to estimate the economic impacts for nearly every port in the United States and Canada, and since 1986 has conducted more than 825 such economic impact studies worldwide. The methodology developed and used by Martin Associates has been reviewed and used by the U.S. Council of Economic Advisors, the Federal Reserve Board, and the International Trade Commission.

Exhibit E-1 graphically demonstrates how maritime activity along the Calcasieu Ship Channel impacts the local and regional 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. Local purchases are also made by the firms directly dependent upon the Calcasieu Ship Channel, including the petroleum refineries and petrochemical plants located along the Ship Channel, as well as firms providing services to the terminal operations such as stevedores, pilots, barge operations and tug assists, terminal operators, trucking firms and railroads, steamship lines and agents and freight forwarders. The local purchases by directly dependent firms create indirect jobs. Finally, federal, state, and local taxes are paid by individuals employed with the firms providing the services to the marine terminals and by the firms directly dependent upon the marine traffic along the Calcasieu Ship Channel.

As demonstrated by Exhibit E-1, four types of impacts are measured:

- Jobs;
- Employee earnings;
- Business revenue; and
- State, local, and federal taxes.

In addition to the taxes, Martin Associates has also estimated U.S. Customs revenue generated by the international marine cargo import activity along the Ship Channel, as well as the Harbor Maintenance Tax generated from the receipt of international and domestic cargo at terminals along the Ship Channel.

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 maritime cargo activity and those firms directly dependent upon the shipment and receipt of cargo on the Ship Channel. These jobs are dependent upon this activity and would suffer immediate dislocation if the marine cargo activity along the Calcasieu Ship Channel were to cease. These direct jobs include jobs with railroads and trucking companies moving cargo to and from the marine terminals, employment with the companies directly dependent upon the cargo moving on the Ship Channel for production and manufacturing purposes such as the jobs with the refineries and petrochemical manufacturing facilities directly dependent on the receipt and shipments of raw materials and products via the Ship Channel, members of the International Longshoremen's Association (ILA) and non-ILA dockworkers, barge operations, tug assist and pilots, steamship agents, freight forwarders, ship chandlers, warehouse operators, terminal operators and stevedores.

- 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, local and state government agencies providing public services and education to those directly employed and businesses providing professional and business services in support of those directly employed. These goods and services 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, insurance companies, consulting, and other business services. If port operations were discontinued, these indirect purchases and the associated jobs and income would also be discontinued.

- Related jobs are jobs that are determined to be related to physical cargo that is shipped and received via the Ship Channel. These jobs include the portion of jobs at firms that are directly associated with the cargo moved via the Ship Channel and terminals

located along the ship channel. It is the demand for the product that generates the employment and other impacts with the shippers/consignees. See "related user impacts" below for more details. The majority of the related jobs are associated with the petroleum and petrochemical shipments and receipts and the extraction of natural gas from shale fields in Texas and Louisiana that is transported to the facilities by pipeline, and then liquefied and exported via the LNG facilities along the Ship Channel.

The personal income impact consists of wages and salaries and includes a re-spending effect (purchases of goods and services by those directly employed) as well as the wages paid to indirect jobs holders, while business revenue consists of total business receipts by firms providing services in support of the marine activity. Local, state, and federal taxes include taxes paid by individuals, as well as firms dependent upon the marine cargo activity as well as by the users of the Ship Channel.

In addition to the direct impacts, induced and indirect impacts marine cargo activity along the Ship Channel also supports activity with regional exporters and importers using the marine terminals located along the Ship Channel. These impacts are classified as related user impacts in that the shippers and consignees using the marine terminals can and do use other ports for the shipment and receipt of cargo. The related user impacts are the jobs, income, revenue, and federal, state, and local taxes related to the value and tonnage of the cargo shipped and received via the marine terminals on the Ship Channel, and does not include the total employment, revenue and taxes with the importers and exporters, only that portion associated with the cargo moved via the marine terminals. If the Ship Channel's terminals were no longer used by these shippers and consignees then these influenced users would use other ports to ship and receive 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 related to the Ship Channel. Furthermore, for the petroleum products and chemical products produced at the refineries and chemical manufacturing facilities along the Ship Channel and shipped to other domestic locations throughout the U.S., these products would likely move by truck overland to final domestic destinations in the absence of the use of the Ship Channel. As a result, increased environmental, infrastructure and safety impacts would be generated in the United States. The environmental, infrastructure and safety cost metrics used by the U.S. Department of Transportation in developing the benefit cost analysis of marine transportation projects were used in this study to quantify the environmental, infrastructure, and safety savings provided to the national economy by the use of the Calcasieu Ship Channel.

The study is based on interviews with nearly 200 firms providing services to the cargo and vessels handled at the marine terminals, refineries, chemical plants, and other water dependent industries located along the Calcasieu Ship Channel. The data collected from the interviews was then used to develop an operational model of the marine terminals, refineries, manufacturing facilities, marine service providers etc. along the Calcasieu Ship Channel. The 2024 economic impacts of the Calcasieu Ship Channel have been estimated separately for the Lake Charles MSA which consists of Cameron and Calcasieu parishes, the state of Louisiana, and the entire United States. A separate impact analysis was also conducted for the LCH&TD's facilities including the casinos that lease property from the Port.

SUMMARY OF THE ECONOMIC MPACTS GENERATED BY THE CALCASIEU SHIP CHANNEL

The economic impacts supported by the marine cargo activity at the terminals along the Calcasieu Ship Channel are summarized in Exhibit E-2. The impacts are estimated at the national, state, and local (MSA) levels.

Exhibit E-2
Summary of the Economic Impacts Supported by Marine Cargo Activity Along the Calcasieu Ship Channel

	US	State	MSA
Jobs			
Direct	14,969	14,969	14,969
Induced	34,376	23,894	16,661
Indirect	13,500	10,289	6,920
Subtotal	***62,844***	***49,151***	***38,550***
Related	239,265	86,450	9,455
Total	**302,110**	**135,602**	**48,004**
Personal Income ($1,000)			
Direct	$1,724,470	$1,724,470	$1,724,470
Re-Spending/Local Personal Consumption	$6,885,119	$3,887,645	$2,388,046
Indirect	$622,013	$474,079	$318,841
Subtotal	***$9,231,602***	***$6,086,194***	***$4,431,357***
Related	$18,237,796	$6,679,345	$747,262
Total	**$27,469,397**	**$12,765,539**	**$5,178,619**
Total Economic Value ($1,000)			
Direct Business Revenue	$8,129,688	$8,129,688	$8,129,688
Re-Spending/Local Personal Consumption	$6,885,119	$3,887,645	$2,388,046
Related Output	$68,341,602	$30,681,724	$6,556,328
Total Economic Value	**$83,356,408**	**$42,699,057**	**$17,074,062**
Local Purchases ($1,000)	**$1,507,619**	**$1,507,619**	**$1,507,619**
State and Local Taxes ($1,000)			
Direct, Induced, Indirect	$763,532	$525,482	$401,040
Related	$2,113,715	$576,695	$134,287
Total State and Local Taxes	**$2,877,247**	**$1,102,177**	**$535,327**
Federal Taxes ($1,000)			
Direct, Induced, Indirect	$1,280,793	$931,653	$747,966
Related	$4,177,156	$1,707,882	$289,470
Total Federal Taxes	**$5,457,949**	**$2,639,534**	**$1,037,436**
US Customs Receipts ($1,000)	**$11,585**	**$11,585**	**$11,585**
Harbor Maintenance Tax Receipts ($1,000)	**$7,117**	**$7,117**	**$7,117**

Totals may not add due to rounding

Specifically, the marine cargo and vessel activity along the Calcasieu Ship Channel supported the following economic impacts:

In 2024, 302,110 jobs in the United States are supported by the cargo moving via the marine terminals located along the Calcasieu Ship Channel. Of the 302,110 jobs in the United States, 135,602 jobs are supported in the state of Louisiana, which represents about 7.1% of statewide employment in 2024. Of the 135,602 jobs supported in the state of Louisiana, 48,004 jobs are supported in the Lake Charles MSA, which represents 47.9% of the 100,270 total non-farm jobs reported in 2024 for the Lake Charles MSA.[2]

- Of the 302,110 jobs supported in the United States, marine cargo activity along the Ship Channel generated **14,969 direct jobs**. These jobs are generated in the Lake Charles MSA.

- In addition to the direct jobs generated by the marine cargo activity, purchases by these direct jobs supported **34,376 induced jobs** in the United States, of which 23,894 induced jobs were created in the state of Louisiana, and 16,661 induced jobs in the Lake Charles MSA

- As the result of the $1.5 billion of purchases by the firms dependent on the Calcasieu Ship Channel, an additional **13,500 indirect jobs** are supported in the United States, of which 10,289 indirect jobs were supported in the State. Of the 10,289 induced jobs in the State, 6,920 indirect jobs were supported in the Lake Charles MSA.

- The balance of the jobs, **239,265 jobs are classified as related jobs** and are with shippers and consignees and supporting firms using the marine cargo moving via the Calcasieu Ship Channel. Of these user jobs, 86,450 jobs are in the state of Louisiana, of which 9,455 jobs are with users located in the Lake Charles MSA.

In 2024, marine cargo activity along the Calcasieu Ship Channel supported a total of $83.4 billion of total economic value to the United States economy, of which $42.7 billion of total economic value was supported in the state of Louisiana. This represents about 11.3% of the $377.8 billion Louisiana Gross Domestic Product in 2024. Of the $42.7 billion economic value to the state of Louisiana, $17.1 billion of economic value was supported in the Lake Charles MSA, representing about 83% of the projected Lake Charles MSA Gross Domestic Product in 2024.[3]

- Of the $83.4 billion, $8.1 billion is the direct business revenue received by the firms directly dependent upon the Calcasieu Ship Channel and those firms providing maritime services and inland transportation services to the cargo handled at the marine terminals and the vessels calling the port. This $8.1 billion of direct revenue is generated in the Lake Charles MSA.

- An additional $68.3 billion represents the value of the output to the United States that is created due to the cargo moving via the Calcasieu Ship Channel. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of

[2] U.S. Bureau of Labor Statistics, May, 2024 Occupational Employment and Wage Statistics

[3] U.S. Bureau of Economic Analysis; GDP for Lake Charles MSA is not available for 2024 as of this report writing date. Overall state of Louisiana GDP grew by 4.1% between 2023 and 2024. Applying this statewide growth to the $19.7 billion 2023 GDP for Lake Charels, it is estimated that the GDP for the Lake Charles MSA in 2024 is about $20.5 billion.

production for the firms using imported raw materials and intermediate products that flow via the marine terminals and are consumed within the United States. Of the $68.3 billion of output at the national level, $25.9 billion is associated with the extraction of natural gas that is exported via LNG export facilities located on the Calcasieu Ship Channel. The key sources for the extraction of the gas are shale oil fields in Texas followed by shale oil fields in Louisiana. The export and domestic shipments of petroleum products from refineries located on the Ship Channel accounted for an additional $23.1 billion of the $68.3 billion of related output. Of the $68.3 billion of the value of output supported nationwide, $30.7 billion was supported in the state of Louisiana. Finally, about $6.6 billion of the value of output was supported within the Lake Charles MSA.

- In addition, $6.9 billion of the re-spending of personal income and local consumption purchases are supported in the U.S. economy. These components (the direct business revenue impact, the value of output and the re-spending of personal income and local consumption purchases) 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, and thus not added with the value of output and re-spending of income.

Marine activity along the Calcasieu Ship Channel supported $27.5 billion of total personal wage and salary income and local consumption expenditures in the national economy. This includes $9.2 billion of direct, indirect, induced, and local consumption expenditures, while the remaining $18.2 billion was received by the related port users. The 14,969 direct job holders received $1.7 billion of direct wage and salary income, for a direct annual salary of $115,206. This compares to $55,130, which is the mean annual salary in 2024 for all workers in the state of Louisiana, as reported by the U.S. Bureau of Labor Statistics.[4]

A total of $2.9 billion of state and local tax impacts was generated throughout the United States by maritime activity at the marine terminals along the Calcasieu Ship Channel. Of the $2.9 billion of state and local tax impacts, about $1.1 billion of state and local tax revenue was generated in the state of Louisiana. Of the $1.1 billion of state and local tax impacts, $535.3 million of state and local taxes were generated in the Lake Charles MSA.

With respect to federal tax revenue, the marine cargo activity along the Calcasieu Ship Channel supported $5.5 billion of federal tax revenue at the national level, of which $2.6 billion of the federal tax revenue was supported by the activity in the state of Louisiana. $1.0 billion of federal tax revenue was supported by the marine cargo activity impacts in the Lake Charles MSA.

Finally, in addition to the federal tax revenue supported by the marine cargo activity along the Calcasieu Ship Channel, $11.6 million of U.S. Customs revenue was collected from the international imported cargo moving along the Calcasieu Ship Channel. Furthermore, as the result

[4] U.S. Bureau of Labor Statistics, May, 2024 Occupational Employment and Wage Statistics

of the collection of revenue from the Harbor Maintenance Tax levied on the receipt of international and domestic waterborne cargo along the Ship Channel, about $7.1 million of Harbor Maintenance Tax Revenue was generated in 2024.

DISTRIBUTION BY STATE OF THE ECONOMIC IMPACTS GENERATED BY THE CALCASIEU SHIP CHANNEL

The national economic impacts supported by the Calcasieu Ship Channel were allocated to each state in the United States using a combination of S&P Transearch data that identified truck, rail, and domestic waterborne movements of cargo between the marine terminals and associated manufacturing facilities and refineries in each state. The national economic impacts were estimated by commodity and then allocated to a state level, using the above noted data. The commodity specific impacts were summed to total U.S. impacts by state – jobs, income, revenue, total economic value, and federal/state/local taxes. Exhibit E-3 shows the national economic impacts supported by the Calcasieu Ship Channel in 2024 by state.

Exhibit E-3
National Economic Impact of Calcasieu Ship Channel by State

STATE	Total Jobs	Total Income (Millions $)	Total Ecoomic Value (Millions $)	Total State/Local Taxes (Millions $)	Total Federal Taxes (Millions $)
Louisiana	135,602	$12,765.5	$42,699.1	$1,411.7	$2,639.5
Texas	122,353	$10,591.8	$30,207.6	$1,033.6	$1,996.7
Florida	29,105	$2,718.4	$6,556.1	$290.4	$550.6
Illinois	3,453	$316.7	$807.4	$33.2	$63.2
Tennessee	1,352	$125.8	$330.7	$13.2	$25.2
Georgia	1,175	$109.7	$271.8	$11.7	$22.1
Mississippi	1,146	$106.2	$303.5	$11.1	$21.2
Alabama	1,036	$96.8	$351.7	$7.2	$14.8
South Carolina	926	$86.5	$227.7	$9.1	$17.3
Missouri	902	$84.2	$207.2	$9.0	$17.0
Ohio	742	$66.3	$199.0	$6.7	$12.8
Kentucky	646	$60.3	$209.9	$6.0	$11.5
Arkansas	455	$41.6	$143.6	$4.3	$8.2
California	406	$37.4	$121.9	$3.1	$6.2
Pennsylvania	383	$35.8	$93.7	$3.8	$7.2
Indiana	308	$28.8	$74.4	$3.0	$5.8
Iowa	241	$22.5	$61.3	$2.4	$4.5
Oklahoma	237	$22.1	$55.7	$2.3	$4.3
Minnesota	169	$15.8	$38.9	$1.7	$3.2
New Jersey	164	$15.3	$38.5	$1.6	$3.1
Arizona	134	$12.5	$32.1	$1.2	$2.3
North Carolina	116	$10.8	$40.3	$1.1	$2.0
New Mexico	107	$10.0	$24.3	$1.1	$2.0
New York	91	$8.5	$22.8	$0.9	$1.7
Nevada	89	$8.3	$20.7	$0.8	$1.6
Kansas	69	$6.4	$20.5	$0.6	$1.2
Michigan	42	$4.0	$11.8	$0.4	$0.8
Maryland	32	$3.0	$8.1	$0.3	$0.6
Utah	26	$2.4	$6.7	$0.2	$0.4
Massachusetts	22	$2.1	$7.2	$0.2	$0.4
Colorado	15	$1.4	$3.8	$0.1	$0.2
Connecticut	7	$0.6	$1.6	$0.1	$0.1
Nebraska	4	$0.4	$1.2	$0.0	$0.1
Maine	4	$0.3	$0.8	$0.0	$0.1
New Hampshire	2	$0.2	$0.5	$0.0	$0.0
Oregon	2	$0.2	$0.5	$0.0	$0.0
Delaware	0	$0.0	$0.3	$0.0	$0.0
Dist. Of Columbia	0	$0.0	$0.1	$0.0	$0.0
Montana	0	$0.0	$0.1	$0.0	$0.0
Idaho	0	$0.0	$0.0	$0.0	$0.0
North Dakota	0	$0.0	$0.1	$0.0	$0.0
South Dakota	0	$0.0	$0.1	$0.0	$0.0
Vermont	0	$0.0	$0.0	$0.0	$0.0
Alberta	0	$0.0	$0.0	$0.0	$0.0
British Columbia	0	$0.0	$0.0	$0.0	$0.0
Canada	0	$0.0	$0.0	$0.0	$0.0
Mexico	0	$0.0	$0.0	$0.0	$0.0
México	0	$0.0	$0.0	$0.0	$0.0
TOTAL	302,110	$27,469.4	$83,356.4	$2,877.2	$5,457.9

Totals may not add due to rounding.
*Jobs are expressed as full-time equivalents and when less than .5 job, 0 jobs are displayed.

THE ENVIRONMENTAL, SAFETY, AND EXTERNAL INFRASTRUCTURE BENEFITS GENERATED BY THE CALCASIEU SHIP CHANNEL

In addition to the economic impact of the Calcasieu Ship Channel as measured in terms of jobs, income, economic value, and federal, state, and local taxes, the ability to move cargo on the Calcasieu Ship Channel provides significant savings in terms of reduced environmental emissions, vehicle accidents, and external infrastructure costs including noise pollution, highway congestion, and infrastructure degradation. In order to estimate these environmental, safety, and external infrastructure benefits of the use of the Calcasieu Ship Channel, the U.S. Waterborne Commerce Statistics of the U.S. was used to identify the volume of domestic waterborne shipments and receipts from and to the marine terminals along the Calcasieu Ship Channel. S&P Transearch data was then used to identify the flows of the domestic cargo to and from the Ship Channel and points of consumption and production outside the Lake Charles MSA. It is further assumed that truck would be the mode used to move these cargoes between the Lake Charles MSA and the points of origin and destination (or the next least costly port), since the average distance traveled was relatively short (about 200 miles) for most cargoes, while in other cases where the distance was longer, the volumes were smaller and not conducive for rail transportation. In addition, truck was also selected as the alternative mode, since the availability of rail service to the consumption and production points now served by water shipments is unknown.

Strict guidelines for measuring the merits of transportation activity are outlined in the "Benefit-Cost Analysis Guidance for Discretionary Grant Programs 2025 Update", U.S. Department of Transportation, November 2024. The benefit criteria used to measure the environmental, safety, and external and infrastructure benefits of the use of the Calcasieu Ship Channel for the shipment and receipt of domestic cargo moving within the inland waterways of the U.S. or via coastal routings are:

- ***Determination of Environmental Benefits*** which results from the savings in the truck travel distance and resulting vehicle miles traveled (and ton-miles) to serve the consumption and production markets now served domestic water transportation via the Calcasieu Ship Channel. In the absence of the use of the Ship Channel, truck would be used to serve the domestic markets now served via the inland waterways and coastal shipping routes connecting the Calcasieu Ship Channel.

- ***Determination of the Safety Benefits*** which results from the savings in the truck travel distance and resulting vehicle miles traveled (and ton-miles) to serve the consumption and production markets now served domestic water transportation via the Calcasieu Ship Channel. In the absence of the use of the Ship Channel, truck would be used to serve the domestic markets now served via the inland waterways and coastal shipping routes connecting the Calcasieu Ship Channel.

- ***Determination of External Trucking and National Infrastructure Benefits*** which results from the savings in the truck travel distance and resulting vehicle miles traveled (and ton-miles) to serve the consumption and production markets now served domestic water transportation via the Calcasieu Ship Channel. In the absence of the use of the Ship Channel, truck would be used to serve the domestic markets now served via the inland waterways and coastal shipping routes connecting the Calcasieu Ship Channel.

The weighted average truck miles saved for each major domestic cargo flow via the Calcasieu

Ship Channel are then applied to the domestic cargo volumes estimated to be diverted to truck if the Ship Channel were unavailable. Vehicle miles traveled (VMT) savings were computed by multiplying the number of annual truck trips by the weighted mileage savings. Ton-miles were next computed by multiplying the annual tons for each waterborne cargo moved domestically on the Ship Channel by the truck miles that would be driven in the absence of the use of the Ship Channel. The VMT savings and the ton-mile savings with the project are then used to compute the benefits by category, using the rigidly defined benefit metrics as set out above. The environmental, safety, external infrastructure benefits of the Calcasieu Ship Channel were then estimated and presented by benefit category in Exhibit E-4. ***Based on this analysis, the Calcasieu Ship Channel further provides about $1.8 billion of benefits to the U.S. Economy annually due to the avoidance of environmental emissions, safety, and external trucking costs that would result if the domestic cargo now shipped and received along the Calcasieu Ship Channel could no longer use the Ship Channel and would have to be delivered by truck.***

Exhibit E-4
Environmental, Safety and Infrastructure Benefits of the Calcasieu Ship Channel

BENEFIT CATEGORIES	
EMISSIONS	$1,480,115,433
SAFETY	$157,255,809
INFRASTRUCTURE	$174,448,956
TOTAL BENEFITS	$1,811,820,198

Totals may not add due to rounding

In addition to the environmental, safety and external infrastructure benefits provided by the use of the Ship Channel, it is estimated that 4.2 billion gallons of petroleum products are moved from the area refineries by the Colonial Pipeline. The ability to use this pipeline rather than the use of truck distribution throughout the United States removes nearly 500,000 trucks from the nation's highways annually

PROJECTED ECONOMIC IMPACTS OF PLANNED PROJECTS ALONG THE CALCASIEU SHIP CHANNEL

Over the next five years, there are $55.5 billion of planned projects that will be utilizing the Calcasieu Ship Channel. These projects at full development will result in an increase of 92.7 million tons annually of new cargo, primarily LNG export tonnage, that will use the Calcasieu Ship Channel. These 92.7 million tons of annual cargo, combined with the 65 million tons estimated to be currently moving on the Ship Channel would result in nearly 158 million tons of cargo moving on the Ship Channel, making this the fourth largest port in the U.S. in terms of tonnage

Exhibit E-5
Planned Projects, Level of Investment and Annual Tonnage

	TOTAL INVESTMENT	ANNUAL TONNAGE
1. Venture Global	$6,000,000,000	20,000,000
2.Cameron LNG Expansion	$4,000,000,000	6,750,000
3. Woodside Louisiana LNG	$17,500,000,000	27,600,000
4. Lake Charles LNG to Export	$11,000,000,000	16,450,000
5. Magnolia LNG	$7,000,000,000	8,800,000
6. Lake Charles Methanol	$5,000,000,000	3,600,000
7. Commonwealth LNG	$5,000,000,000	9,500,000
TOTAL	$55,500,000,000	92,700,000

Totals may not add due to rounding

At full build-out, these new planned projects will add 92.7 million tons to the Calcasieu Ship Channel. The economic impact model developed to measure the baseline impacts of the Ship Channel was used to estimate the potential additional annual impacts of these projects at full build-out. The direct employment levels at planned LNG and methanol facilities were developed from interviews with the planned developers, as well as a review of literature describing the planned projects. Due to confidentiality the actual projected plant employment is not presented in this report but used in the model. The estimated annual impacts of the planned projects at full build-out are presented in Exhibit E-6, and have been estimated at the national, state and MSA level.

Exhibit E-6
Projected Additional Economic Impacts of Planned New Projects Along the Calcasieu Ship Channel

	US	State	MSA
Jobs			
Direct	3,005	3,005	3,005
Induced	6,332	4,417	3,100
Indirect	2,710	2,066	1,389
Subtotal	***12,048***	***9,488***	***7,494***
Related	325,301	209,575	20,444
Total	**337,349**	**219,063**	**27,938**
Personal Income ($1,000)			
Direct	$314,143	$314,143	$314,143
Re-Spending/Local Personal Consumption	$1,254,245	$708,203	$435,025
Indirect	$124,878	$95,178	$64,012
Subtotal	***$1,693,266***	***$1,117,524***	***$813,179***
Related	$26,024,089	$16,887,515	$1,308,228
Total	**$27,717,354**	**$18,005,039**	**$2,121,407**
Total Economic Value ($1,000)			
Direct Business Revenue	$2,704,235	$2,704,235	$2,704,235
Re-Spending/Local Personal Consumption	$1,254,245	$708,203	$435,025
Related Output	$90,280,432	$65,504,253	$7,700,991
Total Economic Value	**$94,238,913**	**$68,916,691**	**$10,840,251**
Local Purchases ($1,000)	**$302,676**	**$302,676**	**$302,676**
State and Local Taxes ($1,000)			
Direct, Induced, Indirect	$148,844	$90,290	$87,121
Related	$2,287,603	$1,364,419	$140,158
Total State and Local Taxes	**$2,436,447**	**$1,454,709**	**$227,279**
Federal Taxes ($1,000)			
Direct, Induced, Indirect	$273,136	$209,229	$175,446
Related	$5,732,507	$3,937,898	$387,795
Total Federal Taxes	**$6,005,643**	**$4,147,127**	**$563,241**

Totals may not add due to rounding

At full build-out of all the planned projects, it is estimated that an additional 337,349 jobs in the United States will be supported annually by the cargo estimated to be shipped and received by these planned projects. Of the 337,349 jobs projected at the national level, it is estimated that 219,063 additional jobs are projected to be supported in the state of Louisiana, while 27,938 additional jobs are projected to be supported in the Lake Charles MSA. It is to be

emphasized that these impacts are in addition to the baseline impacts of the Ship Channel.

It is to be emphasized that the allocation of the related jobs is dependent on where the gas used in the planned facilities will be sourced. Under the existing assumption it is assumed that the gas will be sourced from Louisiana oil shale deposits. If the gas is sourced from out of state sources such as the Barnett shale field or the Eagle Ford field, the state and MSA related impacts will be reduced depending upon the percentage of the gas sourced out of state. Therefore, focus should be placed on the total impacts at the national level, and direct, induced and indirect impacts at the state and MSA level.

- Of the 337,349 projected additional total jobs estimated to be supported in the United States, direct jobs with the planned facilities as well as the maritime support jobs associated with the cargo movements are projected to generate an additional **3,005 direct jobs.** These jobs are generated in the Lake Charles MSA.

- In addition to the direct jobs generated by the marine cargo activity, purchases by these direct jobs are projected to support an additional **6,332 induced jobs** in the United States, of which 4,417 additional induced jobs are projected in the state of Louisiana, and 3,100 additional induced jobs are projected in the Lake Charles MSA.

- As the result of the additional $302.7 million of purchases projected to be made by the directly dependent planned firms, an additional **2,710 indirect jobs** are projected to be supported in the United States, of which 2,066 indirect jobs are projected to be supported in the State, while 1,389 additional indirect jobs are projected to be supported in the Lake Charles MSA.

- The balance of the projected additional jobs, **325,301 jobs are classified as related jobs** and are projected to be with shippers and consignees and supporting firms using the projected 92.7 million tons of marine cargo projected to move via Calcasieu Ship Channel at full build-out. Under the current assumption that the gas will be sourced from Louisiana sources, of the additional user jobs, 209,575 are projected to be in the state of Louisiana, of which 20,444 additional jobs are projected to be with users located in the Lake Charles MSA.

The 92.7 million tons of additional marine cargo activity projected along the Calcasieu Ship Channel are estimated to support a total of $94.2 billion of additional total economic value to the United States economy, of which $68.9 billion of total economic value is projected to be supported in the state of Louisiana. Of the $68.9 billion additional economic value projected for the state of Louisiana, $10.8 billion of additional economic value is projected to be supported in the Lake Charles MSA. Again, it is emphasized that these state and MSA level impacts are based on the current assumption that the gas will be sourced from Louisiana fields.

The 92.7 million tons of cargo projected to move along the Calcasieu Ship Channel is estimated to support an additional $27.7 billion of total personal wage and salary income and local consumption expenditures in the national economy. This includes $1.7 billion of direct, indirect, induced, and consumption expenditures, while the remaining $26.0 billion additional income was received by the related port users. The 3,005 direct job holders (who are generated within the MSA) are projected to receive $314.1 million of additional direct wage and salary income.

A total of $2.4 billion of additional state and local tax impacts are projected to be supported nationally by the maritime activity at the planned projects along the Calcasieu Ship Channel. Of the $2.4 billion of state and local tax impacts, about $1.5 billion of additional state and local tax revenue is projected to be supported in the state of Louisiana, while $227.3 million of additional state and local taxes are projected to be generated in the Lake Charles MSA at full build-out. Again, the allocation of the source of gas will impact these tax impacts at the state and local levels.

With respect to federal tax revenue, the marine cargo projected to move annually at full build-out of the planned projects is projected to support an additional $6.0 billion of federal tax revenue at the national level.

SUMMARY OF THE ECONOMIC IMPACT OF THE LAKE CHARLES HARBOR AND TERMINAL DISTRICT

The Lake Charles Harbor and Terminal District (LCH&TD) public facilities handle coke, lumber, dry bulk cargo, bagged and bulk grain, wind energy equipment and project cargo, limestone, cement, rutile, barite, and chemical products. With the export of LNG via the Cameron LNG facility, which was developed on property leased from the LCH&TD, LNG has become a key export commodity in 2024. The key facilities owned by the LCH&TD include City Docks, BT-1, BT-4, BT-7, as well as the Industrial Canal property and property in the Industrial Park East. In addition to the cargo handling activities at the public facilities, the LCH&TD also leases land to two casino/hotel complexes, the impacts which are included in these impacts. The same methodology was used to estimate the economic impacts of the LCH&TD as was used to estimate the economic impacts of the Calcasieu Ship Channel. The impacts are estimated at the national, state of Louisiana, and Lake Charles MSA levels of detail.

In 2024, 86,007 jobs in the United States are supported by the cargo moving via the LCH&TD facilities, including the impacts generated by the two casinos/hotels on Port property. Of the 86,007 jobs in the United States, 50,335 jobs are supported in the state of Louisiana, of which 21,288 jobs are supported in the Lake Charles MSA.

Marine cargo and casino/hotel activity at the LCH&TD facilities supported a total of $21.1 billion of total economic value to the United States economy, of which $12.3 billion of total economic value was supported in the state of Louisiana. Of the $12.3 billion economic value to the state of Louisiana, $4.6 billion of economic value was supported in the Lake Charles MSA, which represents about 22.4% of the Lake Charles MSA Gross Domestic Product.

Marine cargo and casino/hotel activity at the LCH&TD supported $7.5 billion of total personal wage and salary income and local consumption expenditures in the national economy. This includes $3.5 billion of direct, indirect, induced, and local consumption expenditures, while the remaining $4.0 billion was received by the related port users. The 8,147 direct job holders received $627.4 million of direct wage and salary income, for a direct annual salary of $77,008. This compares to $55,130, which is the mean annual salary in 2024 for all workers in the state of Louisiana, as reported by the U.S. Bureau of Labor Statistics.

A total of $612.2 million of state and local tax impacts was generated throughout the United States by maritime and casino/hotel activity at LCH&TD. Of the $612.2 million of state and local tax impacts, $285.0 million of state and local tax revenue was generated in the state of Louisiana, of which $166. million of state and local taxes was generated in the Lake Charles MSA.

With respect to federal taxes, $1.4 billion of federal taxes was supported in the national economy, of which $822.6 million of federal taxes was supported within the state of Louisiana, and $327 million in the Lake Charles MSA as the result of the marine cargo and casino/hotel activity at the LCH&TD facilities.

CHANGES IN ECONOMIC IMPACT SINCE 2020

The Calcasieu Ship Channel experienced significant growth in tonnage since the last economic impact study conducted by Martin Associates in 2020.[5] Tonnage grew substantially led by an increase of 17.6 million export tons of LNG, followed by an increase of 5.3 million tons of petroleum and petroleum products, and 1.5 million tons of coke. This growth in tonnage resulted in strong gains in the economic impacts supported nationally, within the state of Louisiana and locally within the Lake Charles MSA. Exhibit E-7 underscores the growth in economic impacts at the various geographical levels.

Exhibit E-7
Changes in Economic Impacts Supported by the Calcasieu Ship Channel, 2020-2024

IMPACTS	US	State	MSA
Total Jobs	143,625	26,828	5,930
Total Personal Income and Consumption (1,000)	$13,023,042	$3,431,342	$1,517,732
Total Economic Value ($1,000)	$44,291,746	$12,804,319	$4,999,158
Total Federal, State and Local Taxes ($1,000)	$4,174,229	$894,514	$444,996
US Customs Receipts ($1,000)	$1,240	$1,240	$1,240
Harbor Maintenance Tax Receipts ($1,000)	$150	$150	$150

Overall, total jobs supported at the national level grew by 143,625 direct, induced, indirect and related jobs at the national level, of which a job growth of 26,828 jobs was recorded at the State level, while the Lake Charles MSA experienced a 5,930 growth in jobs. Total income grew by $13.0 billion at the national level, by $3.4 billion at the State level, and by about $1.5 billion at the local MSA level. Total economic value of the ship channel grew significantly, increasing by $44.3 billion at the national level. Of that increase in economic value at the national level, $12.8 billion of additional economic value was supported within the State, of which $5.0 billion was supported in the Lake Charles MSA. In 2020, the total economic value supported by the Ship Channel accounted for 67% of the Lake Charles MSA. By 2024, this activity accounted for 83.4% of the Lake Charles MSA Gross Domestic Product, underscoring the significant growing contribution of the Ship Channel to the local economy. Total federal, state and local taxes supported at the national level grew by $4.2 billion; $894.5 million at the state level, and $445.0 million at the MSA level. U.S. Customs receipts grew by $1.2 million while the revenue contribution to the Harbor Maintenance Tax grew by $150,000. The smaller growth in U.S. Customs revenue and revenue from the Harbor Maintenance Tax reflects the fact that the growth in cargo was dominated by the growth in exports and domestic shipments, rather than imported international cargo and domestic receipts at the public and private marine terminals along the Calcasieu Ship Channel.

[5] The Economic Impacts of the Calcasieu Ship Channel, 2020; prepared by Martin Associates; Lake Charles Harbor and Terminal District; December 20, 2021.

The environmental, safety and infrastructure benefits generated by the use of the Calcasieu Ship Channel to move domestic cargo via the inland and coastal waterways increased from$1.1 billion in 2020 to $1.8 billion in 2024.

With respect to the growth in economic impacts generated by the Lake Charles Harbor and Terminal District (LCH&TD), the contribution to the national, state and local economies also grew since 2020. Exhibit E-8 documents the growth in economic contribution by the LCH&TD cargo and casino operations at the three geographic levels of detail.

Exhibit E-8
Changes in Economic Impacts Supported by the LCH&TD, 2020-2024

	US	State	MSA
Total Jobs	32,284	10,974	2,987
Total Personal Income and Consumption (1,000)	$3,125,583	$1,395,657	$696,198
Total Economic Value ($1,000)	$11,650,627	$5,117,899	$994,547
Total Federal, State and Local Taxes ($1,000)	$859,531	$292,814	$141,943

The growth in cargo activity at the LCH&TD supported a growth of 32,284 jobs at the national level, 10,974 jobs at the state level, and 2,987 jobs at the local MSA level. Total personal income supported by the LCH&TD grew by $3.1 billion at the national level, $1.4 billion at the state level and $696.2 million at the local MSA level. The cargo activity growth at the LCH&TD resulted in a growth of $11.7 billion in total economic value at the national level, $5.2 billion at the state level and $994.6 million at the MSA level. Finally, total federal, state and local tax revenue grew by $859.5 million nationally, by $292,8 million within the state of Louisiana and by $141.9 million within the Lake Charles MSA.

This strong growth in the economic impacts supported by the Calcasieu Ship Channel between 2020 and 2024 underscores the importance of the continued investment in marine terminal development and supporting infrastructure along the Ship Channel. The contribution to the national and state economies in the growth in jobs, economic value and tax revenue justifies investment participation by both the federal and State governments in supporting continued cargo growth along the Ship Channel in order for this waterway to continue to be a key economic generator at the national, state and local levels.

I. EMPLOYMENT IMPACTS OF THE CALCASIEU SHIP CHANNEL

In this chapter, the employment generated by maritime activity along the Calcasieu Ship Channel is estimated. The chapter is organized as follows:

- First, the total employment that is in some way related to the marine cargo activity along the Ship Channel 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 in terms of key economic sectors, i.e., surface transportation sector, maritime services sector, shippers/consignees' sector and Port Authority sector.
  - The direct job impact is estimated by detailed job category, i.e., trucking, dependent shippers/consignees, ILA/dockworkers, freight forwarders/ customhouse brokers, steamship agents, chandlers, warehousemen, stevedores and terminal operators, surveyors, etc.
  - The direct job impact is estimated for each of the key commodities/commodity groups.
- Induced and indirect jobs are estimated at the national, state, and local MSA levels.
- Finally, jobs related to the marine activity along the Ship Channel are described.

1. TOTAL EMPLOYMENT IMPACT

In 2024, 302,110 jobs in the United States are supported by the cargo moving via the marine terminals located along the Calcasieu Ship Channel. Of the 302,110 jobs in the United States, 135,602 jobs are supported in the state of Louisiana, which represents about 7.1% of statewide employment in 2024. Of the 135,602 jobs supported in the state of Louisiana, 48,004 jobs are supported in the Lake Charles MSA, which represents 47.9% of the 100,270 total non-farm jobs reported in 2024 for the Lake Charles MSA.[6]

- Of the 302,110 jobs supported in the United States, marine cargo activity along the Ship Channel generated **14,969 direct jobs**. These jobs are generated in the Lake Charles MSA.

[6] U.S. Bureau of Labor Statistics, May, 2024 Occupational Employment and Wage Statistics

- In addition to the direct jobs generated by the marine cargo activity, purchases by these direct jobs supported **34,376 induced jobs** in the United States, of which 23,894 induced jobs were created in the state of Louisiana, and 16,661 induced jobs in the Lake Charles MSA

- As the result of the $1.5 billion of purchases by the firms dependent on the Calcasieu Ship Channel, an additional **13,500 indirect jobs** are supported in the United States, of which 10,289 indirect jobs were supported in the State. Of the 10,289 indirect jobs in the State, 6,920 indirect jobs were supported in the Lake Charles MSA.

- The balance of the jobs, **239,265 jobs are classified as related jobs** and are with shippers and consignees and supporting firms using the marine cargo moving via the Calcasieu Ship Channel. Of these user jobs, 86,450 jobs are in the state of Louisiana, of which 9,455 jobs are with users located in the Lake Charles MSA.

2. DIRECT JOB IMPACTS

In 2024, nearly 65 million tons of domestic and foreign waterborne cargo moved via the public and private marine terminals[5]. As a result of this activity, 14,969 full-time jobs were directly created[6]. In this section the direct jobs are analyzed in terms of:

- Distribution by economic sector and job category; and
- Distribution by commodity group.

[5] International cargo moving on the Calcasieu Ship Channel in the year 2024 was developed from the U.S. Census, USA Trade Online. Domestic cargo volume was developed from the U.S. Army Corps of Engineers, Waterborne Commerce Statistics, which is for 2023, and where possible the domestic cargo data was updated based on interviews with terminal operators along the Ship Channel. Actual 2024 domestic cargo data will not be available from the U.S. Army Corps of Engineers until 2025. Therefore, the 65 million tons is an estimate of the 2024 volume, assuming that the domestic cargo will remain at nearly the same levels in 2024 as it is in 2023. In 2023 64.1 million tons of cargo moved on the Ship Channel according to the U.S. Army Corps of Engineers, Waterborne Commerce Statistics, 2023.

[6] Jobs are measured in terms of full-time worker equivalents. If a worker is employed only 50 percent of the time by activity on the Calcasieu Ship Channel, then this worker is counted as 0.5 jobs.

2.1 Job Impacts by Sector and Job Category

Exhibit I-1 presents the distribution of the 14,969 direct jobs by sector and job category. As this exhibit shows, the largest job impacts are with shippers and consignees dependent upon the cargo moving via the terminals along the Ship Channel, the majority are with the petroleum refineries and petrochemical plants. Jobs with terminal operators such as those handling LNG and the operations at the LCH&TD including the cargo handled at City Docks, BT-1, BT-2 and BT-4 and the Cameron LNG facility generates the second largest direct job impact, followed closely by jobs with trucking moving cargo to and from the marine terminals along the Ship Channel.

Exhibit I-1
Direct Employment Impacts by Job Category

IMPACT CATEGORY	DIRECT JOBS
SURFACE TRANSPORTATION	
RAIL	16
TRUCK	1,038
SUBTOTAL	**1,054**
MARITIME SERVICES	
TERMINALS	1,232
ILA	126
TUG ASSISTS/PILOTS	148
MARITIME SERVICES/AGENTS/CONSTRUCTION	944
FORWARDERS	29
GOVERNMENT	88
BARGE	677
SUBTOTAL	**3,244**
SHIPPERS & CONSIGNEES	**10,554**
PORT AUTHORITY	**117**
TOTAL	**14,969**

Totals may not add due to rounding

2.2 Direct Job Impacts by Commodity

Most of the 14,969 jobs considered to be generated by port activity can be related to the handling of specific commodities or commodity groups. Certain employment categories such as government employees, employees with marine construction and ship repair, and the miscellaneous maritime services firms cannot be identified with a specific commodity. As a result, employment in these groups (which totaled 455 jobs) was not allocated to commodity groups.

Exhibit I-2 presents the direct employment impacts in terms of commodity groups. This exhibit indicates that in 2024, petroleum and petroleum products handled at the private terminals generated the largest number of direct jobs, 6,398. The majority of these jobs are with refineries along the Ship Channel directly dependent upon the shipment and receipt of petroleum and petroleum products via the Calcasieu Ship Channel. The movement of liquid bulk such as petrochemicals, created the next largest job impact, followed by the handling of project cargo. Project cargo includes wind energy as well as over-dimensional pieces of equipment used in construction projects, specifically the LNG construction projects along the Ship Channel.

Exhibit I-2
Distribution of Direct Job Impact by Commodity

Commodity	Direct Jobs
Petroleum and Products	6,398
Chemicals	3,050
Project Cargo	1,530
LNG	722
Ores	539
Stone/Cement	500
Grain	484
Rubber	322
Coke	223
Lumber	153
Scrap	63
Non Allocated	984
Total	**14,969**

Totals may not add due to rounding

3. INDUCED JOBS

The 14,969 directly employed individuals due to the marine cargo and vessel activity along the Calcasieu Ship Channel received wages and salaries, a part of which was used to purchase goods and services such as food, housing, clothing, transportation services, etc. As a result of these purchases, 34,376 jobs in the national economy were supported, of which 23,894 were generated in the state of Louisiana, including 16,661 induced jobs in the Lake Charles MSA. The majority of the induced jobs are with state and local government agencies providing school, health care, police and fire protection, other community and social services, as well as firms providing business and personal services. The next largest induced job impact occurs in the local food industry (restaurant and groceries).

4. INDIRECT JOBS

In addition to the induced jobs generated by the purchases of 14,969 directly employed individuals, the firms providing the direct services and employing the 14,969 direct jobs make purchases for goods and services. These purchases by the firms dependent upon the public and private marine facilities generate additional local jobs – indirect jobs. Based on interviews with the port service providers and terminal operators, these firms made $1.5 billion of local purchases in 2024. These direct purchases created an additional 13,500 indirect jobs in the national economy, of which 10,289 were generated in the state of Louisiana, including 6,920 jobs in the Lake Charles MSA. These purchases include expenditures for equipment and parts, maintenance and repair services, office supplies, raw materials, fuel, and utilities. Care is taken to avoid any double counting of indirect jobs already included in direct jobs.

5. RELATED JOBS

It is estimated that about 239,265 jobs with companies using the terminals on the Calcasieu Ship Channel ship and receive waterborne cargo classified as related to the cargo activity along the Ship Channel. The distribution of the related user jobs by geographic region is shown in Exhibit I-3. As indicated, the majority of the related user jobs are supported by the shipment and receipt of petroleum products, crude and chemical products, followed by LNG exports. It is to be emphasized that the related jobs assigned to LNG are based on the geographic area where the gas is sourced and processed. For the most part the LNG exported via Calcasieu Ship Channel facilities is sourced from the Barnett and Eagle Ford shale fields in Texas and the Haynesville shale formation in Louisiana. As supply sources shift geographically, the allocation of user jobs with the LNG will also change.

Exhibit I-3
Related User Jobs

Commodity	U.S.	Louisiana	MSA
Petroleum and Chemical Products	139,377	40,459	7,306
LNG	93,029	41,492	NA
Aggregates/Dry Bulk	5,018	3,384	1,499
Lumber	1,216	587	346
Grain	625	528	303
TOTAL	**239,265**	**86,450**	**9,455**

Totals may not add due to rounding

II. REVENUE, INCOME AND TAX IMPACTS OF THE CALCASIEU SHIP CHANNEL

The marine activity along the Calcasieu Ship Channel generated revenue for firms in each of the economic sectors. For example, revenue is received by the railroads and the trucking companies 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 refineries and chemical production facilities receive revenue from the production of products, and 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.

1. REVENUE IMPACT - TOTAL ECONOMIC ACTIVITY

In 2024, marine cargo activity along the Ship Channel supported a total of $83.4 billion of total economic value to the U.S. economy, of which $42.7 billion was generated in the state of Louisiana, including $17.1 billion in the Lake Charles MSA. Of the $83.4 billion, $8.1 billion is the direct business revenue received by the firms directly dependent upon the Ship Channel and those 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 barge fleeting and line haul operations. An additional $68.3 billion represents the value of the output to the nation that is created due to the cargo moving via the 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. The majority of these user impacts are associated with the shipment and receipts of petroleum and chemical products and the export of LNG. Of the $68.3 billion of user related output, $30.7 billion is supported in the state of Louisiana, while $6.6 billion is supported in the Lake Charles MSA. In addition to the direct business revenue and the related user value of output, $6.9 billion of the re-spending of personal income and consumption purchases are supported in the national economy, of which $3.9 billion of the re-spending impact in the state economy, while $2.4 billion is supported in the Lake Charles MSA. 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 $8.1 billion direct revenue impact generated from the provision of transportation services the value of direct revenue from dependent shippers/consignees' activities along the Ship Channel. 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 Direct Revenue Impacts by Economic Sector

In 2024, the cargo and vessel activity on the Calcasieu Ship Channel generated $8.1 billion of direct business revenue to the firms providing cargo handling and vessel services and the value of output by the shippers/consignees' dependent upon the Ship Channel. This revenue is generated in the Lake Charles MSA.

1.2 Direct Revenue Impacts by Economic Sector and Job Category

Exhibit II-1 presents the distribution of the $8.1 billion of directly generated revenue across the various port sectors and job categories.

Exhibit II-1
Direct Revenue by Sector and Category

IMPACT CATEGORY	DIRECT REVENUE
SURFACE TRANSPORTATION	
RAIL	$35,558
TRUCK	$366,130
SUBTOTAL	**$401,689**
MARITIME SERVICES	
TERMINAL OPERATIONS	$565,423
TUG ASSISTS/PILOTS	$30,271
MARITIME SERVICES/AGENTS/CONSTRUCTION	$258,825
FORWARDERS	$3,229
GOVERNMENT	NA
BARGE	$63,259
SUBTOTAL	**$921,008**
SHIPPERS & CONSIGNEES	**$6,761,256**
PORT AUTHORITY	**$45,736**
TOTAL	**$8,129,688**

Totals may not add due to rounding

The majority of the direct revenue is received by the dependent shippers/consignees, followed by the maritime services sector. Within this sector, the terminal operators generated the largest impact, $565.4 million, consisting of terminal operating revenue as well as revenue from pipeline operations on

the terminal site.

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 dependent upon port activity along the Ship Channel is paid from the business revenue received by the firms supplying direct services at the marine terminals.

The direct income impact is estimated by multiplying the average annual earnings (excluding benefits) of each port participant, i.e., truckers, dependent shippers/consignees, steamship agents, pilots, towing firm employees, longshoremen, warehousemen, 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 the $173 billion direct personal income (wage and salary earnings) impact.

The impact of the re-spending of this direct income for local purchases is estimated using personal earnings multipliers for the specific geographic regions. The personal earnings multipliers are based on data supplied by the Bureau of Economic Analysis (BEA) for the U.S., state of Louisiana, and the Lake Charles MSA. The BEA estimates that for every one dollar earned by direct employees generated by activity at the marine terminals, an additional $3.99 of personal income and consumption expenditures would be created at the national levels, $2.35 at the State level, and $1.38 at the Lake Charles MSA level as a result of re-spending the income for purchases of goods and services produced nationally, in the State, and in the MSA. Hence, a personal earnings multiplier of 4.99 was used to estimate the additional consumption and income impact due to re-spending at the national levels, 3.25 at the state of Louisiana level, and 2.38 at the Lake Charles MSA level. This additional re-spending of the direct income generates the 34,376 induced jobs at the national levels, 23,894 induced jobs within the state of Louisiana, and 16,661 induced jobs within the Lake Charles MSA, described in the previous chapter.[7]

[7] It is to be emphasized that the re-spending impact at geographic levels does not represent the earnings of the induced jobs at the respective geographic levels, as it also includes the value of the purchases of the goods and services.

In addition to the direct and induced personal income and consumption impact, wages and salaries were received by the indirect employees. Using wage and salary data for these indirect employees as reported by the U.S. Bureau of Economic Analysis, RIMS II at each geographic level, it is estimated that $622.0 million, $474.1 million, and $318.8 million of indirect wages and salaries were created by the marine cargo and vessel activity at the three levels of geographic detail.

In addition, the related job holders received $18.2 billion of personal wages and salaries at the national level, $6.7 billion at the state level, and $747.3 million at the MSA level. These wages and salaries for the related users are similarly based on average wage rates for the respective related user industry categories as reported by the BEA, RIMS II.

3. LOCAL PURCHASES

Each of the firms surveyed were asked to provide a breakdown of expenditures for equipment, parts, office supplies, business services, utilities, raw materials, maintenance and repair, new construction, etc. Based on the reported expenditures, it is estimated that $1.5 billion of purchases were made by the firms directly dependent upon maritime cargo activity along the Calcasieu Ship Channel. These firms also include the refineries and petrochemical firms located along the Ship Channel that ship and receive cargo by barge or vessel. The purchases were combined with the relevant jobs to revenue multipliers for each related user industry at the three levels of geographic detail. The indirect job impacts are greatest at the national level since the total indirect jobs at the national level are based on the national multipliers applied to the $1.5 billion of purchases, followed by the indirect jobs at the state level, which represents the impact of the $1.5 billion of purchases in the state of Louisiana and the various stages of value added at the state level to deliver the final goods and services; followed by the indirect job levels at the MSA level, which reflects the greater leakage of multiple levels of value added from the smaller MSA geographic region.

4. TAX IMPACTS

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 and indirect jobs) by activity at the marine terminals. The tax impacts are based on the state of Louisiana tax rates for state sales taxes, state income and corporate taxes, and other miscellaneous state taxes. For local taxes the sales tax rates and property tax indices are specific to Lake Charles at the MSA level and for the state of Louisiana at the state level. The federal taxes include income and corporate taxes, based on the average federal income tax levy rate and a 15% profit margin for the corporate tax rate. At the national level the state and local taxes are based on the average national tax rates for the above noted taxes.

The marine cargo and vessel activity on the Calcasieu Ship Channel supported $2.9 billion of

state and local taxes at the national level, about $1.1 billion at the state of Louisiana level, including $535.3 million at the MSA level. With respect to the federal taxes, the marine cargo and vessels activity supported $5.5 billion of federal tax revenue at the national levels, $2.6 billion at the state level and $1.0 billion at the MSA level.

The U.S. Customs collection was estimated from the U.S. Customs tax revenue by commodity collected at the larger New Orleans Customs District, of which Lake Charles is a part. These rates were then applied to the value of the international imports by commodity received in the Ship Channel, as reported by USA Trade OnLine. Using this methodology, $11.6 million of U.S. Customs revenue was generated by imported international marine cargo handled at the marine terminals located along the Calcasieu Ship Channel.

The Harbor Maintenance Tax collections from the international and domestic cargo received at the terminals along the Ship Channel were calculated by applying the Harbor Maintenance Tax rate of .125% to the value of the imported and domestic cargo received at the Ship Channel marine terminals. Applying the .125% tax rate to the value of international and domestic cargo received at the terminals along the Ship Channel, it is estimated that $7.1 million annually of Harbor Maintenance Tax Revenue was generated by the cargo received at the marine terminals along the Ship Channel.

III. THE ENVIRONMENTAL, SAFETY, AND EXTERNAL INFRASTRUCTURE BENEFITS GENERATED BY THE CALCASIEU SHIP CHANNEL

In addition to the economic impact of the Calcasieu Ship Channel as measured in terms of jobs, income, economic value, and federal, state, and local taxes, the ability to move cargo on the Calcasieu Ship Channel provides significant savings in terms of reduced environmental emissions, vehicle accidents, and external costs including noise pollution and highway congestion infrastructure degradation. In order to estimate these environmental, safety, and external infrastructure benefits of the use of the Calcasieu Ship Channel, the U.S. waterborne Commerce Statistics of the U.S. was used to identify the volume of domestic waterborne shipments and receipts from and to the marine terminals along the Calcasieu Ship Channel. S&P Transearch data was then used to identify the flows of the domestic cargo to and from the Ship Channel and points of consumption and production outside the Lake Charles MSA. It is further assumed that truck would be the mode used to move these cargoes between the Lake Charles MSA and the points of origin and destination, since the average distance traveled was relatively short (about 200 miles) for most cargoes, while in other cases where the distance was longer, the volumes were smaller and not conducive for rail transportation. In addition, truck was also selected as the alternative mode, since the availability of rail service to the consumption and production points now served by water shipments is unknown.

Strict guidelines for measuring the merits of transportation activity are outlined the "Benefit-cost Analysis Guidance for Discretionary Grant Programs", U.S. Department of Transportation, November 2024. The benefit criteria used to measure the environmental, safety, and external and infrastructure benefits of the use of the Calcasieu Ship Channel for the shipment and receipt of domestic cargo moving within the inland waterways of the U.S. or via coastal routings are:

- ***Determination of Environmental Benefits*** which results from the savings in the truck travel distance and resulting vehicle miles traveled (and ton-miles) to serve the consumption and production markets now served domestic water transportation via the Calcasieu Ship Channel. In the absence of the use of the Ship Channel, truck would be used to serve the domestic markets now served via the inland waterways and coastal shipping routes connecting the Calcasieu Ship Channel.

- ***Determination of the Safety Benefits*** which results from the savings in the truck travel distance and resulting vehicle miles traveled (and ton-miles) to serve the consumption and production markets now served domestic water transportation via the Calcasieu Ship Channel. In the absence of the use of the Ship Channel, truck would be used to serve the domestic markets now served via the inland waterways and coastal shipping routes connecting the Calcasieu Ship Channel.

- ***Determination of External Trucking and National Infrastructure Benefits*** which results from the savings in the truck travel distance and resulting vehicle miles traveled (and ton-miles) to serve the consumption and production markets now served domestic water transportation via the Calcasieu Ship Channel. In the absence of the use of the Ship Channel, truck would be used to serve the domestic markets now served via the inland waterways and coastal shipping routes connecting the Calcasieu Ship Channel.

To estimate the environmental, safety and external truck infrastructure impacts that would be generated if the Calcasieu Ship Channel were not available for navigation, the initial step was to estimate the volume flows of the key waterborne domestic cargo flow volumes moving to and from the Calcasieu Ship Chanel and other parts of the United States. As noted, these flows were identified from a combination of U.S. Army Corps of Engineers Waterborne Commerce Statistics for the Calcasieu Ship Channel, and the S&P Transearch data which provided actual domestic waterborne cargo flows between the Ship Channel and U.S. origins and destinations, for the key commodities moving domestically along the Ship Channel. The key domestic waterborne cargoes moving by water are petroleum products, chemical products, crude petroleum, stone and aggregates, and coke. Based on the domestic flows by water to and from the facilities on the Ship Channel, truck miles were then calculated between the Lake Charles MSA and each of the domestic origins and destinations of the key domestic cargo waterborne shipments and receipts.

The waterborne volumes for each commodity were then converted into truck trips that would be required to move the waterborne cargo should the Calcasieu Ship Channel not be available for navigation. The weighted average truck miles saved for each major domestic cargo flow via the Calcasieu Ship Channel are then applied to the domestic cargo volumes estimated to be diverted to truck if the Ship Channel were unavailable. Vehicle miles traveled (VMT) savings were computed by multiplying the number of annual truck trips by the weighted mileage savings. Ton-miles were next computed by multiplying the annual tons for each waterborne cargo moved domestically on the Ship Channel by the truck miles that would be driven in the absence of the use of the Ship Channel. The VMT savings and the ton-mile savings with the project are then used to compute the benefits by category, using the rigidly defined benefit metrics as set out above. Exhibit III-1 provides the summary of tonnage that would be diverted, weighted average truck miles that would be required to move the cargo, and the vehicle miles traveled by the truck in the absence of the ability to navigate the Calcasieu Ship Channel.

Exhibit III-1
Summary of Diverted Tonnage, Truck Miles, Vehicle Miles Traveled and Ton-Miles

Commodity	Volume (Tons)	Truck Miles	VMT	Ton-miles
Petroleum Products Shipments	16,143,873	358	262,704,842	5,779,506,534
Crude Petroleum Receipts	4,325,547	144	28,312,671	622,878,768
Chemical Products Shipments	1,610,416	331	24,229,441	533,047,696
Chemical Products Receipts	394,759	206	3,696,380	81,320,354
Stone Shipments	1,610,416	241	17,641,375	388,110,256
Stone Receipts	394,759	681	12,219,585	268,830,879
Coke Shipments	88,858	578	2,334,542	51,359,924

The ton-miles and VMT were used to estimate the environmental, safety and external truck costs that would result should trucking be used instead of using the Calcasieu Ship Channel. The key conversion metrics used to compute the costs for each category are described in the following sections.

1. SAFETY COSTS

Definition: Safety benefits are defined in terms of reduced accidents and associated injuries as the result of the vehicle truck miles traveled due to the inability to navigate the Calcasieu Ship Channel.

Methodology: Accidents per 100 million vehicle miles traveled were developed from *Surface Transportation, A Comparison of the Costs of Road, Rail and Waterways Freight Shipments that are not Passed on to Consumers*, GAO, Report to the Subcommittee on Select Revenue Measures, Committee on Ways and Means House of Representatives, January 2011. The value of an accident, a fatality, injury, or property damage only (PDO) was collected from *BTS Motor Vehicle Safety* Data, 2015 National Transportation Statistics, 2015, and the *Benefit Cost Analysis Guidelines for Discretionary Grant Programs, November 2024, Table A-1*.

Exhibit III- 2
Accidents per 100 Million VMT

	Accident Probability/ 100 million VMT	Value per Accident, 2023$
Fatal Accident Cost (K)	1.13369	$14,860,000
Severe Injury Accident Cost (A)	78.92426	$329,500
PDO Accident Cost (no injury)	203.40039	$9,500

Source: Traffic accident incidents per 100 million miles from BTS Motor Vehicle Safety Data, 2015, National Transportation Statistics, 2015; Benefit Cost Analysis Guidance for Discretionary Grant Programs, Office of the Secretary, U.S. Department of Transportation, November 2024, Table A-1: Value of Reduced Fatalities and Injuries

The accident rates per 100 million VMT by type of accident were multiplied by the vehicle miles traveled annually to estimate the number of accidents by type (due to the VMT). The estimated number of annual accidents by type were then multiplied by the value of accidents (by type) to estimate the total annual value of accidents that would be incurred should the Ship Channel be unavailable for navigation.

2. ENVIRONMENTAL COSTS

Definition: Environmental benefits are generated due to the truck ton-miles traveled due to the inability to navigate the to the Calcasieu Ship Channel.

Methodology: Emissions of air pollutants are generated per million ton-miles, and the metrics used to estimate the volume of emissions per truck million ton-miles are shown in Exhibit III-3. These emission rates are measured in terms of short tons emitted per million ton-miles.

Exhibit III-3
Short Tons of Emissions per Million Ton-Miles

Emissions	TONS EMITTED PER MILLION TON MILES
Nitrogen Oxides (NOx)	3.0193
Volatile Organic Compounds (VOC)	0.11
Fine Particule (PM)	0.1191
Sulfur Dioxide (SO2)	0.0055
Carbon Dioxide	229.8

The costs per metric ton of the emissions by type of emission were developed from Benefit Cost Analysis Guidance for Discretionary Grant Programs, Office of the Secretary, U.S. Department of Transportation, November 2024, Table A-6. The ton-miles saved (in terms of million-ton miles saved)

under the Build scenario were multiplied by the short tons emitted per million ton-miles, by emissions type, to estimate short tons of emissions that would be incurred should the Ship Channel be unavailable for navigation. The short tons emitted were multiplied by the cost per short ton (after conversion from cost per metric ton to cost per short ton) of each emission type was then multiplied by the corresponding level of short tons emitted that would be incurred in the absence of the ability to navigate the Ship Channel.[9]

3. EXTERNAL TRUCK COSTS

Definition: External truck costs consist of costs of highway/pavement repair, highway congestion, and noise pollution, due to truck vehicle miles traveled should the Ship Channel be unavailable for navigation.

Methodology: Metrics that measure highway/pavement degradation costs per vehicle mile traveled, noise pollution costs per vehicle mile traveled and highway congestion per vehicle mile are published in the *1997 Federal Highway Cost Allocation Study*, Final Report, USDOT, Federal Highway Administration, May 2000, Table 13.

The external cost per vehicle mile traveled metrics shown in Exhibit IV-4 were multiplied by the annual vehicle mile savings provided by the Calcasieu Ship Channel to estimate the external truck cost savings. Since the reduction in truck miles traveled under the use of the Ship Channel compared to the use of truck in the case that the Ship Channel was unavailable for navigation, the current use of the Ship Channel results in a loss in federal gasoline tax revenues. Therefore, it is necessary to subtract the reduced federal fuel tax from the pavement degradation costs without the use of the Ship Channel, as these tax revenues are used in interstate highway maintenance and repair. The federal fuel tax on diesel fuel, $0.244 per gallon, was used to estimate the lost federal fuel tax revenue from the vehicle miles savings. The gallons saved were estimated by dividing the vehicle miles traveled savings by using the Ship Channel by 6.5 miles per gallon. The lost federal tax revenue is estimated by multiplying the gallons of diesel saved multiplied by the $0.244 federal fuel tax per gallon. This lost federal fuel tax revenue was subtracted from the pavement degradation costs to compute the benefits of the Ship Channel on pavement damage. These cost metrics are shown in Exhibit III-4.

[9] It is to be emphasized that the emissions costs are net emission costs reflecting the emission costs of waterway transportation that are subtracted from the truck emission costs.

Exhibit III-4
External Truck Cost Metrics

Combination Truck 4 Axle	Cost/VMT
Congestion	$0.2450
Noise	$0.0228
Pavement (Urban Interstate)	$0.2665

Source: *1997 Federal Highway Cost Allocation Study*, Final Report, USDOT, Federal Highway Administration, May 2000,

These metrics are applied to the VMT that would be incurred should the Ship Channel not be available for navigation.

The environmental, safety, and external infrastructure costs that would be incurred should the Calcasieu Ship Channel be unavailable for navigation can conversely be viewed as the benefits of the Calcasieu Ship Channel in terms of these national categories. ***Based on this analysis, the Calcasieu Ship Channel further provides about $1.8 billion benefits to the U.S. economy due to the avoidance of environmental emissions, safety, and external trucking costs that would result if the domestic cargo now shipped and received along the Calcasieu Ship Channel could no longer use the Ship Channel and would have to be delivered by truck.***

Exhibit III-5
Annual Environmental, Safety, and External Truck Infrastructure Benefits of the Calcasieu Ship Channel

BENEFIT CATEGORIES	
EMISSIONS	$1,480,115,433
SAFETY	$157,255,809
INFRASTRUCTURE	$174,448,956
TOTAL BENEFITS	**$1,811,820,198**

Totals may not add due to rounding

In addition to the environmental, safety and external infrastructure benefits provided by the use of the Ship Channel, 4.2 billion gallons of petroleum products are moved from the area refineries by the Colonial Pipeline. The ability to use this pipeline rather than the use of truck distribution throughout the United States removes nearly 500,000 trucks from the nation's highways.

IV. PROJECTED ECONOMIC IMAPCTS OF PLANNED PROJECTS ALONG THE CALCASIEU SHIP CHANNEL

Over the next five years, there are $55.50 billion of planned projects that will be utilizing the Calcasieu Ship Channel. These projects at full development will result in an increase of 92.7 million tons annually of new cargo, primarily LNG export tonnage that will use the Calcasieu Ship Channel.

Exhibit IV-1
Planned Projects, Level of Investment and Annual Tonnage

	TOTAL INVESTMENT	ANNUAL TONNAGE
1. Venture Global	$6,000,000,000	20,000,000
2.Cameron LNG Expansion	$4,000,000,000	6,750,000
3. Woodside Louisiana LNG	$17,500,000,000	27,600,000
4. Lake Charles LNG to Export	$11,000,000,000	16,450,000
5. Magnolia LNG	$7,000,000,000	8,800,000
6. Lake Charles Methanol	$5,000,000,000	3,600,000
7. Commonwealth LNG	$5,000,000,000	9,500,000
TOTAL	$55,500,000,000	92,700,000

Totals may not add due to rounding

At full build-out, these new planned projects will add 92.7 million tons to the Calcasieu Ship Channel. The economic impact model developed to measure the baseline impacts of the Ship Channel was used to estimate the potential annual job impacts of these projects at full build-out. The direct employment levels at planned LNG and methanol facilities were developed from interviews with the planned developers, as well as a review of literature describing the planned projects. Due to confidentiality, the actual projected plant employment is not presented in this report but used in the model.

The economic impact models for the MSA, state and national levels were used to estimate the additional direct jobs, income, business revenue and taxes generated with the maritime support services, such as tugs, pilots, agents, chandlers, etc. that would be required to handle the additional 90.8 million tons at full build-out. The impact models were also used to estimate the additional induced and indirect impacts as well as related user impacts that would be supported at the three geographical levels of detail. The estimated annual impacts of the planned projects at full build-out are presented in Exhibit IV-2, and have been estimated at the national, state and MSA level.

Exhibit IV-2
Projected Additional Annual Economic Impacts of Planned New Projects Along the Calcasieu Ship Channel

	US	State	MSA
Jobs			
Direct	3,005	3,005	3,005
Induced	6,332	4,417	3,100
Indirect	2,710	2,066	1,389
Subtotal	***12,048***	***9,488***	***7,494***
Related	325,301	209,575	20,444
Total	**337,349**	**219,063**	**27,938**
Personal Income ($1,000)			
Direct	$314,143	$314,143	$314,143
Re-Spending/Local Personal Consumption	$1,254,245	$708,203	$435,025
Indirect	$124,878	$95,178	$64,012
Subtotal	***$1,693,266***	***$1,117,524***	***$813,179***
Related	$26,024,089	$16,887,515	$1,308,228
Total	**$27,717,354**	**$18,005,039**	**$2,121,407**
Total Economic Value ($1,000)			
Direct Business Revenue	$2,704,235	$2,704,235	$2,704,235
Re-Spending/Local Personal Consumption	$1,254,245	$708,203	$435,025
Related Output	$90,280,432	$65,504,253	$7,700,991
Total Economic Value	**$94,238,913**	**$68,916,691**	**$10,840,251**
Local Purchases ($1,000)	**$302,676**	**$302,676**	**$302,676**
State and Local Taxes ($1,000)			
Direct, Induced, Indirect	$148,844	$90,290	$87,121
Related	$2,287,603	$1,364,419	$140,158
Total State and Local Taxes	**$2,436,447**	**$1,454,709**	**$227,279**
Federal Taxes ($1,000)			
Direct, Induced, Indirect	$273,136	$209,229	$175,446
Related	$5,732,507	$3,937,898	$387,795
Total Federal Taxes	**$6,005,643**	**$4,147,127**	**$563,241**

Totals may not add due to rounding

At full build-out of all the planned projects, it is estimated that an additional 337,349 jobs in the United States will be supported annually by the cargo estimated to be shipped and received by these planned projects. Of the 337,349 jobs projected at the national level, it is estimated that 219,063 additional jobs are projected to be supported in the state of Louisiana, while 27,938 additional jobs are projected to be supported in the Lake Charles MSA. It is to be emphasized that these impacts are in addition to the baseline impacts of the Ship Channel.

It is to emphasized that the allocation of the related jobs is dependent on where the gas used in the planned facilities will be sourced. Under the existing assumption it is assumed that the gas will be sourced from Louisiana oil shale deposits. If the gas is sourced from out of state sources such as the Barnett shale field of the Eagle Ford field, the state and MSA related impacts will be reduced depending upon the percentage of the gas sourced out of state. Therefore, focus should be placed on the total impacts at the national level, and direct, induced and indirect impacts at the state and MSA level.

- Of the 337,349 projected additional total jobs estimated to be supported in the United States, direct jobs with the planned facilities as well as the maritime support jobs associated with the cargo movements are projected to generate an additional **3,005 direct jobs.** These jobs are generated in the Lake Charles MSA.

- In addition to the direct jobs generated by the marine cargo activity, purchases by these direct jobs are projected to support an additional **6,332 induced jobs** in the United States, of which 4,417 additional induced jobs are projected in the state of Louisiana, and 3,100 additional induced jobs are projected in the Lake Charles MSA.

- As the result of the additional $302.7 million of purchases projected to be made by the directly dependent planned firms, an additional **2,710 indirect jobs** are projected to be supported in the United States, of which 2,066 indirect jobs are projected to be supported in the State, while 1,389 additional indirect jobs are projected to be supported in the Lake Charles MSA.

- The balance of the projected additional jobs, **325,301 jobs are classified as related jobs** and are projected to be with shippers and consignees and supporting firms using the projected 92.7 million tons of marine cargo projected to move via Calcasieu Ship Channel at full build-out. Under the current assumption that the gas will be sourced from Louisiana sources, of the additional user jobs, 209,575 are projected to be in the state of Louisiana, of which 20,444 additional jobs are projected to be with users located in the Lake Charles MSA.

The 92.7 million tons of additional marine cargo activity projected along the Calcasieu Ship Channel are estimated to support a total of $94.2 billion of additional total economic value to the United States economy, of which $68.9 billion of total economic value is projected to be

supported in the state of Louisiana. Of the $68.9 billion additional economic value projected for the state of Louisiana, $10.8 billion of additional economic value is projected to be supported in the Lake Charles MSA. Again, it is emphasized that these state and MSA level impacts are based on the current assumption that the gas will be sourced from Louisiana fields.

The 92.7 million tons of cargo projected to move along the Calcasieu Ship Channel is estimated to support an additional $27.7 billion of total personal wage and salary income and local consumption expenditures in the national economy. This includes $1.7 billion of direct, indirect, induced, and consumption expenditures, while the remaining $26.0 billion additional income was received by the related port users. The 3,005 direct job holders (who are generated within the MSA) are projected to receive $314.1 million of additional direct wage and salary income.

A total of $2.4 billion of additional state and local tax impacts are projected to be supported nationally by the maritime activity at the planned projects along the Calcasieu Ship Channel. Of the $2.4 billion of state and local tax impacts, about $1.4 billion of additional state and local tax revenue is projected to be supported in the state of Louisiana, while $227.3 million of additional state and local taxes are projected to be generated in the Lake Charles MSA at full build-out. Again, the allocation of the source of gas will impact these tax impacts at the state and local levels.

With respect to federal tax revenue, the marine cargo projected to move annually at full build-out of the planned projects is projected to support an additional $6.0 billion of federal tax revenue at the national level.

V. THE ECONOMIC IMPACT OF THE LAKE CHARLES HARBOR AND TERMINAL DISTRICT

In this chapter, the economic impacts of the Lake Charles Harbor and Terminal District (LCH&TD) are presented. The LCH&TD public facilities handle coke, lumber, bagged and bulk grain, wind energy equipment and project cargo, limestone, rutile, cement, barite, and chemical products. As a result of the Cameron LNG facility coming on line, which was developed on property leased from the LCH&TD, LNG has become a key export commodity in 2024. The key facilities owned by the LCH&TD include City Docks, BT-1, BT-4, BT-7, as well as the Industrial Canal property and property in the Industrial Park East. In addition to the cargo handling activities at the public facilities, the LCH&TD also leases land to two casino/hotel complexes, the impacts which are included in these impacts.

The same methodology was used to estimate the economic impacts of the LCH&TD as was used to estimate the economic impacts of the Calcasieu Ship Channel. The impacts are estimated at the national, state of Louisiana, and Lake Charles MSA levels of detail, and are presented in Exhibit V-1.

Exhibit V-1
Economic Impacts of the LCH&TD

	US	State	MSA
Jobs			
Direct	8,147	8,147	8,147
Induced	13,186	9,321	6,690
Indirect	7,348	5,600	3,766
Subtotal	***28,681***	***23,068***	***18,603***
Related	57,325	27,266	2,685
Total	**86,007**	**50,335**	**21,288**
Personal Income ($1,000)			
Direct	$627,387	$627,387	$627,387
Re-Spending/Local Personal Consumption	$2,504,904	$1,414,381	$868,805
Indirect	$338,548	$258,031	$173,538
Subtotal	***$3,470,838***	***$2,299,798***	***$1,669,730***
Related	$4,044,821	$2,011,896	$205,497
Total	**$7,515,660**	**$4,311,693**	**$1,875,227**
Total Economic Value ($1,000)			
Direct Business Revenue	$2,864,853	$2,864,853	$2,864,853
Re-Spending/Local Personal Consumption	$2,504,904	$1,414,381	$868,805
Related Output	$15,767,471	$8,055,848	$908,641
Total Economic Value	**$21,137,229**	**$12,335,082**	**$4,642,299**
Local Purchases ($1,000)	**$820,563**	**$820,563**	**$820,563**
State and Local Taxes ($1,000)			
Direct, Induced, Indirect	$282,700	$151,997	$147,794
Related	$329,451	$132,969	$18,189
Total State and Local Taxes	**$612,151**	**$284,965**	**$165,983**
Federal Taxes ($1,000)			
Direct, Induced, Indirect	$475,506	$345,520	$275,583
Related	$945,650	$477,080	$51,432
Total Federal Taxes	**$1,421,156**	**$822,600**	**$327,015**

Totals may not add due to rounding

In 2024, 86,007 jobs in the United States are supported by the cargo moving via the LCH&TD facilities, including the impacts generated by the two casinos/hotels on Port property. Of the 86,007 jobs in the United States, 50,335 jobs are supported in the state of Louisiana, of which 21,288 jobs are supported in the Lake Charles MSA.

- Of the 86,007 jobs supported in the United States, the marine cargo activity and casinos/hotels generated **8,142 direct jobs**. These jobs are generated in the Lake Charles MSA.

- In addition to the direct jobs generated by the marine cargo activity, purchases by these direct jobs supported **13,186 induced jobs** in the United States, of which 9,312 induced jobs were created in the state of Louisiana, and 6,690 induced jobs in the Lake Charles MSA.

- As the result of the $820.6 million of purchases by the firms dependent on the LCH&TD marine cargo operations and casinos/hotel activity, an additional **7,348 indirect jobs** are supported in the United States, of which 5,600 indirect jobs were supported in the State, while 3,766 indirect jobs were supported in the Lake Charles MSA.

- The balance of the jobs, **57,325 jobs are classified as related jobs** and are with shippers and consignees and supporting firms using the marine cargo moving via the LCH&TD terminals. Of these user jobs, 27,266 jobs are in the state of Louisiana, while 2,685 jobs are with users located in the Lake Charles MSA.

In 2024, marine cargo and casino/hotel activity at the LCH&TD facilities supported $21.1 billion of total economic value to the United States economy, of which $12.3 billion of total economic value was supported in the state of Louisiana. Of the $12.3 billion economic value to the state of Louisiana, $4.6 billion of economic value was supported in the Lake Charles MSA, about 22.4% of the GDP of the Lake Charles MSA.

- Of the $21.1 billion, $2.8 billion is the direct business revenue received by the firms directly dependent upon the LCH&TD. This $2.8 billion of direct revenue is generated in the Lake Charles MSA.

- An additional $15.8 billion represents the value of the output to the United States that is created due to the cargo moving via the LCH&TD 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 United States. Of the $15.8 billion of the value of output supported nationwide, $8.1 billion was supported in the state of Louisiana, while $908.6 million of the value of output was supported within the Lake Charles MSA.

- In addition, $2.5 billion of the re-spending of personal income and local consumption purchases are supported in the U.S. economy, of which $1.4 billion occurs in the state of Louisiana, and $868.8 million occurs in the Lake Charles MSA. These components (the value of output and the re-spending of personal income and local consumption purchases) 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, and thus not added with the value of output and re-spending of income.

Marine cargo and casino/hotel activity at the LCH&TD supported $7.5 billion of total personal wage and salary income and local consumption expenditures in the national economy. This includes $3.5 billion of direct, indirect, induced, and local consumption expenditures, while the remaining $4.0 billion was received by the related port users. The 8,147 direct job holders received $627.4 million of direct wage and salary income, for a direct annual salary of $77,008. This compares to $55,130, which is the mean annual salary in 2024 for all workers in the state of Louisiana, as reported by the U.S. Bureau of Labor Statistics.

A total of $612.2 million of state and local tax impacts was generated throughout the United States by maritime and casino/hotel activity at LCH&TD. Of the $612.2 million of state and local tax impacts, $285.0 million of state and local tax revenue was generated in the state of Louisiana, of which $327.0 million of state and local taxes was generated in the Lake Charles MSA.

With respect to federal taxes, $1.4 billion of federal taxes was supported in the national economy, of which $822.6 million of federal taxes was supported within the state of Louisiana, and $227.9 million in the Lake Charles MSA as the result of the marine cargo and casino/hotel activity at the LCH&TD facilities.

APPENDIX: ECONOMIC IMPACT METHODOLOGY

Martin Associates was retained by the Lake Charles Harbor and Terminal District (LCH&TD) to estimate the economic impacts generated by marine cargo activity at the public and private marine terminals located along the Calcasieu Ship Channel and to quantify the economic value of the ship channel to the national, state, and local economies. The local economy is defined as the Lake Charles Metropolitan Statistical Area (MSA). Included in the economic value of the Ship Channel, is also a measurement of the economic benefits of using the ship channel to move cargo over the inland waterways including the Gulf Intracoastal Waterway between Lake Charles and domestic origins and destinations. These benefits measure the environmental emissions, safety and external infrastructure degradation that would occur should the Calcasieu Ship Channel not be available for navigation. Finally, the economic value of planned new construction along the Ship Channel in terms of LNG export facilities and methanol facilities within the next five years are quantified at the national, state, and local levels.

The Calcasieu River and Pass project consist of a 68-mile navigation channel located in southwest Louisiana that provides deep draft access to the LCH&TD. The Upper limit of the project commences at Mile 36.0, just south of Interstate 10 in Lake Charles, LA, and extends towards the outer/southern boundary at Approximate Mile (-32.0) in the Gulf of America. The project is authorized under the River & Harbor Act of 14 July 1960 House Document 436, 86th Congress, 2nd Session. The current authorized dimensions for the *Calcasieu River and Pass Main Channel* are -42' MLG by 800' from the jetties to Mile (-32.0) in the Gulf of America (bar channel), - 40' MLG by 400' from the jetties to Mile 34.1, transitioning to a -35' MLG by 250' channel from Mile 34.3 to Mile 36.0 in Lake Charles, LA. The project also includes a turning basin in Lake Charles at the upper limit of the project, along with a -40' MLG by 400' channel in Clooney Island Loop. In addition to these features, a *mooring basin* along the right descending bank of the waterway was also authorized and constructed in Cameron Parish. Also included in the project is the Industrial Canal. The Industrial Canal is 12 miles south of Lake Charles City Docks at the intersection of the Calcasieu Ship Channel and the Gulf Intracoastal Waterway. The 1,100-acre site is 22 miles from the Gulf of America. The Industrial Canal is three miles long and has a 1,400-foot by 1,400-foot turning basin at its east end with a depth of 12.2 meters (40 feet). The canal is dredged to a project depth of 40 feet and has a bottom width of 400 feet.

The Calcasieu Ship Channel is home to public marine terminals owned, leased, or operated by the LCH&TD, as well as privately owned marine terminals and industries dependent upon the movement of cargo along the Ship Channel. The majority of the private industries located along the Ship Channel include petroleum refineries and chemical manufacturing facilities, while the LCH&TD public facilities handle coke, lumber, bagged grain and bulk grains, wind energy equipment and project cargo, limestone, rutile, barite, and chemical products. With the opening of the Cameron LNG facility, which was developed on property leased from the LCH&TD, LNG has become a key export commodity in 2024. While the LCH&TD also leases land to two casino/hotel complexes, the impacts of these facilities, which

employ nearly 3,500 local residents of the Lake Charles MSA, are not included in the economic analysis of the Ship Channel but are included in the economic impacts of the LCH&TD.

Calcasieu Ship Channel

The methodology used in this analysis has been developed by Martin Associates and has been used to estimate the economic impacts of seaport activity at public and private marine terminals of more than 750 United States and Canadian ports as well as ports throughout the world. The methodology has been used in studies that have been presented before the International Trade Commission, the Council of Economic Advisors, the Federal Reserve Board, the Canadian Justice Department, and several U.S. Presidents.

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

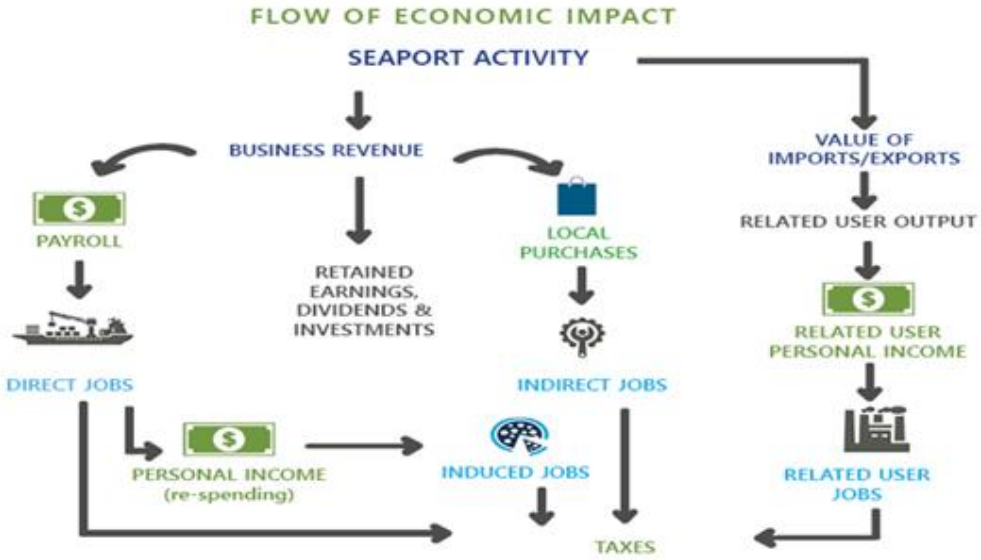
- Flow of economic impacts through the local and regional economies;
- The structure of the impact analysis;
- Summary of the methodology; and
- Commodities included in the analysis.

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 state and local governments. Exhibit I-1 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 A-1 shows graphically how marine cargo activity shipped and received at the marine terminals located along the Calcasieu Ship Channel generate the economic impacts.

Exhibit A-1
Flow of Economic Impacts Generated



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 stockholders, 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, in contributions to federal, state and local taxes, in lease payments to the LCH&TD by tenants and wharfage and dockage fees paid by the steamship lines to the LCH&TD and to the privately owned and operated terminals along the Ship Channel.

1.2 Employment Impact

The employment impact of seaport activity consists of four levels of job impacts:

- Direct employment impact – jobs directly generated by the marine cargo activity along the Ship Channel. Direct jobs generated by marine cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations and the marine terminals, employees of refineries, chemical plants and other manufacturing plants shipping and receiving cargo; longshoremen and dockworkers; steamship

agents, freight forwarders, barge operations, pilots, tug assist companies, stevedores, etc. 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 activity along the Calcasieu Ship Channel 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 MSA, State and the United States.

- Indirect employment impact – 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 156 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 jobs are jobs that are determined to be related to physical cargo that is shipped and received via the marine terminals in 2024. These jobs include the portion of jobs at importing and exporting firms that are directly associated with the cargo moved via the Ship Channel.

1.3 Personal Income Impact

The personal income 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 impact is measured at the national, state and MSA level using a national, state and MSA personal earnings multipliers, which reflects the percentage of purchases by individuals that are made within each geographical region based on personal income multipliers for the water transportation sector developed for each geographical region by the U.S. Bureau of Economic Analysis, RIMSII. 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). Therefore, the re-spending impact is the largest at the national level, followed

by the state level and then at the MSA level. The re-spending impact at each geographic level generates the induced jobs at each geographic level.

1.4 Federal, State and Local Tax Impacts, and U.S. Customs and Harbor Maintenance Tax Rates

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 and indirect jobs) by activity at the marine terminals. The tax impacts are based on the state of Louisiana tax rates for state sales taxes, state income and corporate taxes, and other miscellaneous state taxes. For local taxes, the sales tax rates and property tax indices are specific to Lake Charles. The federal taxes include income and corporate taxes, based on the average federal income tax levy rate and a 15% profit margin for the corporate tax rate. At the national level, the state and local taxes are based on the average national tax rates for the above noted taxes.

The U.S. Customs collection was estimated from the U.S. Customs tax revenue by commodity collected at the larger New Orleans Customs District, of which Lake Charles is a part.[11] These rates were then applied to the value of the international imports by commodity received in the Ship Channel, as reported by USA Trade OnLine.

The Harbor Maintenance Tax collections from the international and domestic cargo received at the terminals along the Ship Channel were calculated by applying the Harbor Maintenance Tax rate of .125% to the value of the imported and domestic cargo received at the Ship Channel marine terminals.

1.5 Related User Impacts

In addition to the direct impacts, induced and indirect impacts also support activity with regional exporters and importers using the marine terminals located along the Ship Channel. These impacts are classified as ***related user impacts*** in that the shippers and consignees using the marine terminals can and do use other ports for the shipment and receipt of cargo. The related user impacts are the jobs, income, revenue, and federal, state, and local taxes related to the value and tonnage of the cargo shipped and received via the marine terminals, and does not include the total employment, revenue and taxes with the importers and exporters, only that portion associated with the cargo moved via the marine terminals. If the Ship Channel's terminals were no longer used by these shippers and consignees then these influenced users would use other ports to ship and receive 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 related to the Ship Channel.

Finally, the direct, induced, and indirect port sector job, income, revenue, and tax impacts

[11] U.S. Customs collection and the smaller Lake Charles Port District are not publicly available due to confidentiality.

associated with each of the cargoes for which related shipper/consignee impacts were estimated were subtracted from the total related impacts (by commodity and cargo type). This was done to avoid double counting, as the related shipper/consignee impacts include impacts at each logistical stage of handling the imported and exported cargo, such as the port activity and the trucking and rail activity to move the cargo to and from each port and the induced and indirect jobs associated with the direct port activity.

2. IMPACT STRUCTURE

The four types of economic impacts are created throughout various business sectors of the state and local economies. Specifically, three distinct economic sectors are impacted as a result of activity at the marine terminals. These are the:

- Surface Transportation Sector;
- Maritime Services Sector;
- Shippers/Consignees using the Port; and
- Port 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 railroad and trucking industries. The trucking firms and railroads are responsible for moving the various cargoes between the marine terminals and the inland origins and destinations. In addition, pipelines also move liquid petroleum and chemical products to and from the refineries and petrochemical facilities.

2.2 The Maritime Services Sector

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

- Cargo Marine Transportation;
- Vessel Operations;
- Cargo Handling; and
- 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/customhouse broker is the major participant in this category. The freight forwarder/customhouse broker arranges for the freight to be delivered between the terminals and inland destinations, as well as the ocean transportation. This function performed by freight forwarders and customhouse brokers is most prevalent for general cargo commodities.

- Vessel Operations - This category consists of several participants. 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; these firms sometimes are involved in domestic barge operations;

  - Pilots - assist in navigating the vessels along the Calcasieu Ship Channel to and from the marine terminals;

  - 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 following participants:

  - Longshoremen - include members of the International Longshoremen's Association (ILA), as well as non-ILA dockworkers that are involved in the loading and unloading of cargo from the vessels, as well as handling the cargo prior to loading and after unloading. ILA members operate mainly at the public terminals owned by the LCH&TD.

- Stevedoring firms - manage the longshoremen and cargo-handling activities. Stevedoring services at the LCH&TD terminals are provided by private stevedoring companies.

- Terminal operators - are often stevedoring firms who operate the maritime terminals where cargo is loaded and off-loaded.

- Warehouse operators - store cargo after discharge or prior to loading and consolidate cargo units into shipment lots.

- 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 and Border Protection, 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 the Lake Charles area.

2.3 Shippers/Consignees

Two categories of shippers and consignees are considered in the analysis: those that are totally dependent on the public and privately-owned marine terminals and those located throughout the regional economy whose business is only related to the port. Those in the first category would most likely shut down operations if the marine terminals were not available for their use, while those in the second category would ship or receive materials via another port. Related jobs consist of jobs with consumers of petroleum and chemical products, fabrication firms, users and producers and consumers of break bulk and project cargo and farmers producing the grain for export, both in bulk and bagged. Dependent shippers/consignees include employees of the oil refineries and petrochemical plants that are dependent upon the receipt of crude and chemicals by vessel/barge and the shipment of refined product by vessel/barge. For this current study, the majority of related shippers and consignees are with petroleum refineries and petrochemical plants.

2.4 Public Port Authority

The Port Authority Sector includes those individuals employed by the LCH&TD whose purpose is to oversee port activity at the Port's owned and operated marine terminals.

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 public and private terminals located along the Calcasieu Ship Channel.

3.1 Data Collection

The cornerstone of the Martin Associates' approach is the collection of detailed baseline impact data from firms providing services at the public and private marine terminals and facilities along the Ship Channel. To ensure accuracy and defensibility, the baseline impact data were collected from interviews with nearly 200 firms in the Calcasieu Ship Channel maritime community. These firms represent the universe of firms providing services along the Ship Channel as well as those dependent shippers/consignees such as the refineries and petrochemical plants. For the most part, multiple interviews were conducted with several persons in each firm.

3.2 Direct Jobs, Income and Revenue 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 marine terminals, service providers, as well as the dependent shippers/consignees such as the refineries and petrochemical firms.

This baseline survey data was also used to develop operational models which can be used to update the impacts of the Calcasieu Ship Channel marine terminals and private terminals on an annual basis and to evaluate the impacts of changes in:

- Marine cargo tonnage, by commodity;
- Seaport labor productivity and work rules;
- Modal distribution of seaport cargo (what percent of the inland transportation of a commodity is truck versus rail), as well as the geographical distribution of each commodity;
- Vessel calls and vessel size; and
- New carrier services.

Also, the operational models 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 personal earnings multiplier was developed from data provided by the Bureau of Economic Analysis, Regional Income Division. The personal earnings multipliers are used to estimate the total personal earnings generated in the Lake Charles MSA, the state of Louisiana, and the United States as a result of the marine activity along the Ship Channel. A portion of this total personal earnings impact is then next allocated to specific purchases (as determined from consumption data 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 national, state and MSA economies.

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 include indirect jobs, personal income and state and local taxes. These indirect impacts are generated in the local, state, and national economy as the result of purchases by firms that are directly dependent upon cargo and vessel activity at the marine terminals, including the shippers/consignees located along the Calcasieu Ship Channel. 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, purchases, by type of purchase, were collected from each of the firms interviewed. These purchases were then combined with employment to sales ratios in supplying industries at the national, state and MSA level of detail, as developed from the U.S. Bureau of Economic Analysis Regional Input-Output Modeling System. The indirect job ratios also account for the in -MSA, in-state, and national spin-off effects from multiple rounds of supply chains that are required to provide the purchased goods and services by the dependent firms.

3.5 Related Impacts

Related impacts measure the jobs, income, revenue and state and local taxes with shippers and consignees moving cargo through the Ship Channel's marine terminals. These jobs are classified as related

jobs since the firms using the marine terminals for the movement of cargo can and do use other seaports and marine terminals. For example, the consumers of domestically shipped petroleum and chemical products on the inland waterways as well as via coastal waterborne transportation can use products produced by facilities located on other waterways in addition to those located along the Ship Channel. Farmers using the Lake Charles grain elevator, bagging facilities and berths, can and do use other ports for grain export, particularly Houston and Galveston, as do the exporters of bagged grain using the LCH&TD City Docks. The importers of lumber via the LCH&TD also import lumber via other ports such as Port Arthur and Beaumont, while project cargo importers can and do use other ports such as Houston, Galveston, and Corpus Christi to move wind energy product and dimensional cargo to inland wind farms and LNG project construction sites. As a result, jobs with these shippers and consignees cannot be counted as dependent upon the marine terminals located along the Ship Channel.

These jobs are estimated based on the value per ton of the commodities shipped and received only via the Ship Channel and the associated jobs to value of output ratios for the respective producing and consuming industries located in the MSA, state and national economies. The value per ton of each of the key commodities moving via the Ship Channel was developed from the U.S. Census Bureau, USA Trade On-Line. The average value per ton for each commodity moving over marine terminals was then multiplied by the respective tonnage moved in 2024. Ratios of jobs to value of output for the corresponding consuming and producing industries were developed by Martin Associates from the U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System for the U.S. economy, the state of Louisiana, and the Lake Charles MSA. These jobs to value coefficients include the national, in-state, and in-MSA spin-off impacts that would occur in order to produce the export commodity or use the import commodity in production. The percentages of each commodity that is produced or consumed in the Lake Charles MSA, state of Louisiana, and all other states throughout the U.S. were next developed from the interviews with manufacturers and the S&P Transearch data base, which provided detailed origin and destination volume flows by water, truck, and rail for each of the marine cargo commodities shipped and received via the Ship Channel. The ratios of jobs to value of export or import cargo at each geographic level of detail were then combined with the value of the respective commodities moving via the marine terminals to estimate related jobs and the spin- off jobs by each state in the U.S., the state of Louisiana and the Lake Charles MSA. Similarly, the respective income and output multipliers were used to estimate the related personal income impact as well as the total value of economic output and taxes generated by the cargo activity shipped and received at the marine terminals by geographic region. 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 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 utilize the resources in the most efficient manner. Various

types of facility configurations are associated with different commodities. For example, certain types of dry bulk cargo require covered storage and special dust removing equipment, while project cargo requires open storage; and liquid bulk requires tank storage.

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 moving on the Ship Channel:

- Crude Petroleum
- Petroleum Products
- Chemical Products
- LNG
- Coke
- Bulk Grain
- Lumber
- Bagged Grain
- Limestone and aggregates
- Dry bulk/Ores
- Project Cargo/Wind Energy
- Miscellaneous Cargo
- Scrap

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 the marine construction sand government sectors.