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Contribution of the Port of Tampa to the Tampa Bay and Florida economies in 2001 Tampa Port Authority Economic impact of the Port of Tampa

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BREA

Business Research & Economic
Advisors

The Contribution of the Port of Tampa to the Tampa Bay and Florida Economies in 2001

Prepared for:

Tampa Port Authority

November 2002

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Executive Summary

Introduction

Business Research and Economic Advisors (BREA) was engaged by the Tampa Port Authority (TPA) to conduct an analysis of the contribution of the Port of Tampa to the Tampa Bay regional economy¹ and the state of Florida during 2001. Drs. Joseph DeSalvo, author of two previous studies of the Port of Tampa,² and Dennis Colie, both of the University of South Florida, provided invaluable assistance throughout the project. Dr. Colie, who is also Director of the Center for Economic Development Research at USF, directed the estimation of the indirect economic impacts of the port using an econometric model of the Tampa Bay region and the state of Florida. The objective of the study was to quantify the state and regional employment, wages, output and taxes that were directly and indirectly related to the movement of goods and cruise passengers through the Port of Tampa.

The major findings of this analysis included:

- The Port of Tampa moved 47.9 million tons of inbound and outbound cargo and handled 544,880 cruise passengers during 2001.
- Inbound cargo accounted for three-fourths (75 percent) of the total port tonnage. Petroleum and coal products, in turn, accounted for 70 percent of inbound tonnage.
- Phosphates were, by far, the most important outbound commodity accounting for 90 percent of the port's outbound tonnage.
- The movement of goods and people through the Port of Tampa directly contributed \$6.0 billion in output to the Tampa Bay regional economy. The production of this output in turn contributed to the direct employment of 34,658 workers who received \$1.2 billion in wages.
- As a result of this direct contribution, the spending of businesses and employees in the Tampa Bay area was responsible for generating a total economic impact in the Tampa Bay region of \$13 billion dollars in output, 107,900 jobs and \$3.7 billion in wage income.

¹ The Tampa Bay region is defined as the seven-county area composed of Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk and Sarasota counties.

² The Economic Impact of the Port of Tampa, FY1985-86 with Debra L. Fuller and Economic Impact of the Port of Tampa, FY 1994-95.

- The total economic activity contributed by the Port of Tampa also generated tax revenues for the state and the local taxing authorities in the Tampa Bay area. Our analysis shows that this activity generated an estimated \$380 million in state and local tax revenues.

The total economic contribution of the port was the sum of the direct, indirect and induced impacts³ of cargo and passenger activity at the Port of Tampa. The direct economic contribution of the port consisted of the estimated output, jobs and wage income that occurred in the Tampa Bay region to:

- produce goods that were exported from the Port of Tampa;
- produce goods that utilized commodities that were imported through the port;
- transport commodities and passengers to and from port facilities and the Tampa Bay region;
- move, load, inspect and store commodities at the port;
- drydock and repair ships at the port;
- construct and maintain facilities at the Port of Tampa; and
- provide other business and financial services that were necessary to the functioning of the port.

The indirect economic benefits associated with the Port of Tampa were generated through the spending by businesses that were directly impacted by the port. For example, terminal operators purchased equipment to move and store commodities, electricity and fuel to operate their facilities and equipment, and insurance for their property and employees. Thus, the indirect contribution measured the additional output, jobs and income that were generated elsewhere in the Tampa Bay economy in support of those firms and businesses directly impacted by the port.

Finally, the induced impact of the port measured the economic activity that was generated by the spending of the employees whose jobs were directly and indirectly caused by the movement of cargo and passengers through the Port of Tampa. These workers spent their

³ The terms contribution, impact and benefit are used interchangeably throughout this report. While these terms can be interpreted somewhat differently, the approach taken in this study is one of economic contribution. In essence we statistically measure the flow of inbound and outbound cargo and passengers at the port, support activities in the region and the spending by port-impacted businesses and their employees during 2001 through the Tampa Bay regional economy.

incomes on household and consumer goods, including autos, groceries, education and so forth. This spending generated jobs in transportation, trade, services, government and even some local manufacturing. Thus, the induced contribution occurred throughout the economy, but primarily among consumer-based businesses and services.

Cargo and Cruise Activity at the Port of Tampa During 2001

It was the movement of cargo and cruise passengers through the Port of Tampa that provided the base of activity that allowed the port to have an economic impact. Without the movement of commodities and people there was just a body of water. As shown in **Table 1**, 47.9 million tons of cargo with an estimated value of \$7.2 billion moved through the Port of Tampa during calendar year 2001. Inbound cargo accounted for 75 percent of the port's total tonnage during the year with almost 60 percent of total tonnage having come from domestic inbound cargo.

Table 1 – Port of Tampa Cargo Tonnage and Value – CY 2001

Year	Outbound		Total	Inbound		Total	Total
	Domestic	Foreign	Outbound	Domestic	Foreign	Inbound	
Cargo Tonnage							
2001	3,664,051	8,266,118	11,930,169	27,970,549	7,963,519	35,934,068	47,864,237
% of Total	7.7%	17.3%	24.9%	58.4%	16.6%	75.1%	
Cargo Value							
2001	\$ 668,990,137	\$ 1,550,166,929	\$ 2,219,157,066	\$ 3,935,744,390	\$ 1,056,492,803	\$ 4,992,237,193	\$ 7,211,394,259
% of Total	9.3%	21.5%	30.8%	54.6%	14.7%	69.2%	

Source: Tampa Port Authority & BREAA

Exports, or outbound cargo, accounted for one-fourth of the port's tonnage and 31 percent of the value of all cargo. Unlike inbound cargo, foreign exports accounted for the bulk, approximately 70 percent, of the port's tonnage and value of outbound cargo. Thus, most of the port's outbound cargo was destined for foreign markets while the vast majority of the port's inbound cargo arrived from other U.S. ports.

Not surprisingly, the mix of commodities that made up inbound cargo was considerably different from the mix of commodities that were exported or shipped from the Port of Tampa. Having accounted for 90 percent of the port's outbound cargo during 2001,

phosphate products and related agricultural chemicals, including phosphate rock, were the most important outbound commodities. Over 10.7 million tons of phosphate products were exported through the Port of Tampa. Other outbound commodities included citrus and fruit products, scrap metal, vehicles and other chemical products.

Inbound cargo was somewhat more diversified but petroleum and coal products combined accounted for 70 percent of the tonnage of inbound cargo. A total of 17.8 and 7.2 million tons of petroleum and coal products, respectively, were shipped into the Port of Tampa during 2001. Other major inbound cargo included sulphur and ammonia products, aggregates, steel, food products and other chemicals.

The Port of Tampa is also a major cruise port. As shown in **Table 2**, the port handled 153 cruise ship calls and 544,880 cruise passengers during 2001.

Table 2 – Cruise Activity at the Port of Tampa – CY 2001

	Total	Embarkations	Disembarkations	Intransit
Passengers:	544,880	270,853	272,186	1,841
Cruise Ship Calls:	153	150	150	3
Passenger/Call	3,561	1,806	1,815	614

Source: Tampa Port Authority

The vast majority of cruise ship calls, over 90 percent, were homeport turnaround calls, i.e., the cruise ships began and terminated their cruises at the Port of Tampa. The principal destination of the cruises that embarked from the port was the western Caribbean, including Jamaica, the Cayman Islands, Cozumel and Cancun. While the port is expanding its cruise base, Carnival cruise ships carried more than 95 percent of the cruise passengers during 2001.

Direct Economic Contribution of the Port of Tampa

The direct economic contribution of the port was allocated among the following four major sectors:

- ◆ Port Services
- ◆ Export
- ◆ Import
- ◆ Inland Transport.

The Port Services sector was defined as those firms that were immediately and directly involved in providing water transportation service for goods and passengers through the Port of Tampa, as well as those additional firms that directly provided support services to them. This included activities, such as chandlery, ship repair and maintenance, stevedoring, piloting and towing, terminal and warehousing services, cargo vessel operation and government services, such as those provided by the U.S. Coast Guard and Department of Agriculture. Activity generated by cruise passenger spending was also included in this sector, including lodging, retailing, dining, and entertainment.

The Export sector included firms engaged in the manufacture, sale and distribution of goods exported through the Port of Tampa. Local industrial activity included in this sector consisted of the mining and manufacture of phosphates and other fertilizers, food processing, paper manufacturing, scrap metal processing and the wholesale trade of non-locally produced export goods, such as autos and lumber.

The Import sector included firms engaged in the sale and distribution of goods imported through the Port of Tampa and those local firms that directly used the imported goods in their production processes. By definition imported goods are not produced locally. Consequently, the economic contribution of the Import sector occurred through the local wholesale trade and distribution of the imported goods, as well as, the local output that was generated by the use of the imported commodities. All industries were directly impacted by imports to some degree but the major industries included electric utilities, food processors, metal fabricators and transportation services.

Finally, the Inland Transport sector included those firms that moved both goods and cruise passengers to and from the port. The trucking and railroad industries were the primary industries in this sector, but it also included the air transportation and local transportation industries that transported cruise passengers to the area and port.

As shown in **Table 3**, the flow of goods and passengers through the Port of Tampa contributed \$6 billion in industry output to the Tampa Bay regional economy during 2001. This production generated an estimated 34,658 jobs throughout the Tampa Bay region paying an annual wage income of \$1.25 billion.

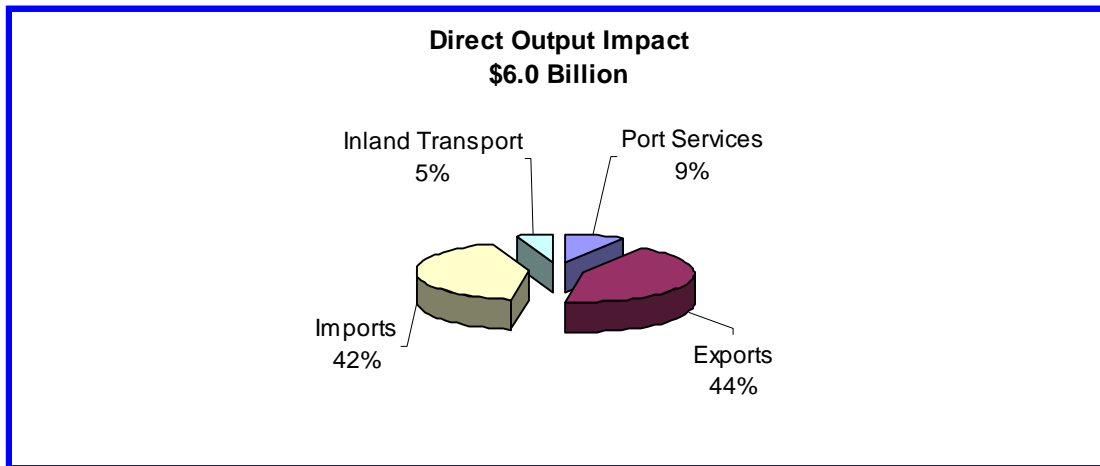
**Table 3 – Direct Economic Contribution of the Port of Tampa by Sector
Tampa Bay Regional Economy – CY 2001**

<u>Sector</u>	<u>Output (\$ Million)</u>	<u>Jobs</u>	<u>Wages (\$ Million)</u>	<u>Avg. Ann. Wage</u>
Port Services	\$ 521	3,984	\$ 162	\$ 40,671
Export	\$ 2,627	6,787	\$ 332	\$ 48,947
Import	\$ 2,521	21,079	\$ 634	\$ 30,061
Inland Transport	\$ 318	2,808	\$ 123	\$ 43,672
Total	\$ 5,987	34,658	\$ 1,251	\$ 36,082

Source: Business Research & Economic Advisors

As indicated in the table and **Figure 1**, the Export and Import sectors accounted for the bulk of the economic contribution of the Port of Tampa. Combined, these two sectors accounted for 86 percent of the output, 80 percent of the jobs and 77 percent of the wages contributed by the activity at the Port of Tampa.

**Figure 1 – Percentage Distribution of the Direct Output Contribution by Sector
Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

The Port Services sector, even with the smallest contribution, generated \$521 million in industry output in the Tampa Bay region during 2001. The Tampa Bay businesses that produced this output employed 3,984 workers. These workers earned \$162 million in an-

nual wages for an average annual wage of \$40,671 per worker. Because this sector included the impact of non-transportation expenditures of cruise passengers, the direct contribution of this sector was spread across numerous industries beyond those involved in providing transportation services, including retailing, lodging and entertainment.

The direct contribution of exports to the Tampa Bay regional economy primarily occurred through the production, sale and transportation to the port of locally produced goods. The volume and value of the export (outbound) commodities were shown earlier and totaled 11.9 million tons and \$2.2 billion, respectively. It was determined that \$2.1 billion of the outbound goods were produced in the Tampa Bay region and thus their production contributed to the regional economy.

As indicated in Table 3, exports contributed \$2.6 billion in industrial output, 6,787 jobs and \$332 million in wage income to the Tampa Bay regional economy. Of the four sectors, exports contributed the largest share of output and because of its high concentration of mining and manufacturing jobs this sector also had the highest average annual wage, almost \$49,000.

As noted above, phosphates accounted for 90 percent of outbound tonnage; consequently, the phosphate industry accounted for slightly more than 80 percent of the direct economic contribution (output, employment and income) of the Export sector. In fact, the access to the waterborne commerce of the Port of Tampa is critical to the viability of the phosphate industry in the Tampa Bay area.

While the contribution of imports also occurred through the production of goods and services, it is not the direct production of the imported goods that generated the economic contribution. Obviously, these goods were not produced locally and thus their production cannot contribute to the Tampa Bay economy. Rather their contribution was generated by their use in the production of other goods that were produced locally. For example, coal was used in the production of electricity and aggregates and lumber were used in construction.

As discussed previously, 35.9 million tons of inbound cargo with an estimated value of \$5 billion moved through the Port of Tampa during 2001. As shown in Table 3, these imports supported the production of \$2.5 billion in output in the Tampa Bay region during 2001. This output, in turn, provided for the employment of 21,079 workers who received wage income of \$634 million.

The Inland Transport sector's direct contribution to the Tampa Bay regional economy occurred through the distribution of goods to and from the Port of Tampa. As noted previously, 47.9 million tons of goods were moved through the port during 2001. The distribution of these goods relied primarily upon the trucking and rail industries. As shown in Table 3, the inland transportation of these goods contributed \$318 million in output, 2,808 jobs and \$123 million in wages to the Tampa Bay regional economy during 2001.

The trucking industry accounted for 75 percent of the Inland Transport sector's direct output contribution. The railroad industry contributed another 13 percent primarily through the transportation of coal. The contribution of the air transportation and other transportation industries primarily occurred as a result of the travel of cruise passengers to and around the Tampa Bay area.

Direct Contribution by Industry

As the previous discussion makes clear, the economic contribution of the Port of Tampa is ultimately measured in terms of the output, jobs and wage income generated in the industrial sectors of the Tampa Bay regional economy. **Table 4** shows these direct economic contributions for the major industrial sectors of the Tampa Bay region.

Figure 2 shows the percentage distribution of the direct output contribution of the Port of Tampa by industry. The manufacturing sector accounted for the largest proportion, 59 percent, of the port's direct output contribution. Due to the impact of phosphates and other agricultural chemicals, the manufacture of nondurable goods accounted for almost half of the total direct impact of the port. Within the durable goods manufacturing sector, the ship repair, fabricated metals and the machinery (electrical and nonelectrical) industries were the major beneficiaries of activity at the port.

The transportation industry accounted for 10 percent of the port's direct output contribution. As discussed previously, the trucking industry, which moves goods to and from the port, accounted for about three-fourths of the overall transportation contribution.

**Table 4 – Direct Economic Contribution of the Port of Tampa by Industry
Tampa Bay Regional Economy – CY 2001**

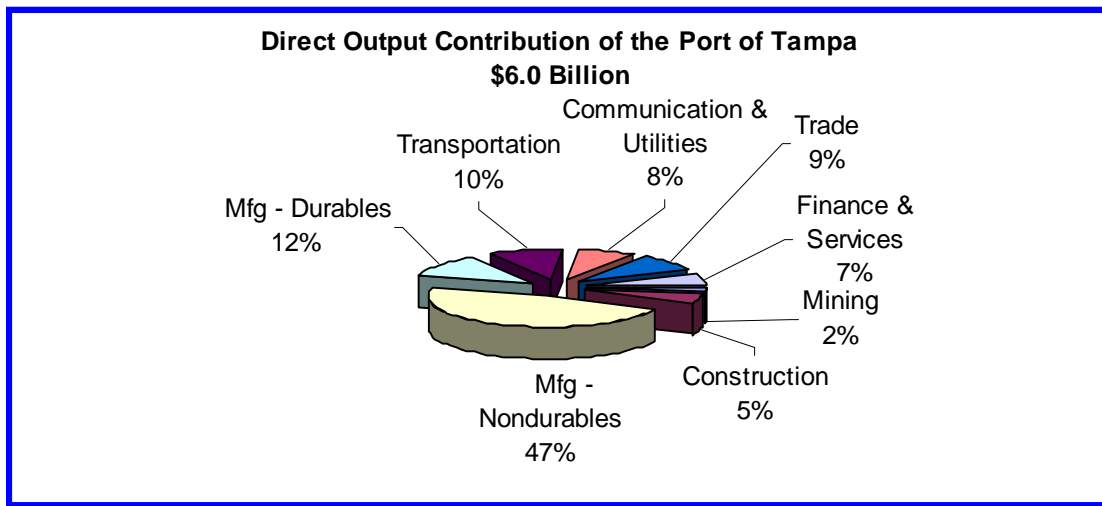
Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Mining	\$ 100	765	\$ 23	\$ 30,010
Construction	\$ 316	3,298	\$ 110	\$ 33,376
Manufacturing	\$ 3,563	9,882	\$ 451	\$ 45,656
Mfg - Nondurables	\$ 2,830	6,636	\$ 328	\$ 49,463
Mfg - Durables	\$ 733	3,247	\$ 123	\$ 37,874
Transportation	\$ 595	5,481	\$ 242	\$ 44,072
Communication & Utilities	\$ 465	1,060	\$ 58	\$ 54,878
Trade	\$ 532	4,556	\$ 149	\$ 32,738
Finance & Services	\$ 398	8,531	\$ 193	\$ 22,618
Other	\$ 17	1,084	\$ 24	\$ 22,544
Total	\$ 5,987	34,658	\$ 1,251	\$ 36,082

Source: Business Research & Economic Advisors

The trade industry, which includes both wholesale and retail trade, accounted for 9 percent of the port's economic impact. Wholesale trade is by far the more important of the two having accounted for about 90 percent of the trade sector's contribution. The retail trade contribution resulted from the cruise passenger expenditures for food and beverages, gifts and souvenirs and other general retail.

Driven principally by the production of electric power, the communication and utilities industry accounted for 8 percent of the direct output contribution of the port. The services industry, including financial, business and personal services, accounted for 7 percent of the direct output contribution. The construction industry, which was impacted by new and maintenance construction at the port, accounted for 5 percent of the port's direct output impact. And finally, 2 percent of the direct output contribution of the port was generated by the mining industry.

Figure 2 – Percentage Distribution of the Direct Output Contribution of the Port of Tampa - Tampa Bay Regional Economy – CY 2001



Source: Business Research & Economic Advisors

Total Economic Contribution of the Port of Tampa

The movement of cargo and cruise passengers through Port of Tampa was responsible for considerable economic activity in the Tampa Bay region. As noted previously this activity directly generated \$6.0 billion in regional output. As shown in **Table 5**, this spending generated a total of \$13 billion in regional output through the direct, indirect and induced spending of port-impacted businesses and their employees. This production, in turn, generated 107,903 jobs and \$3.7 billion in wages and salaries throughout the Tampa Bay regional economy in 2001.

The nondurable goods manufacturing sector was the most significantly impacted sector of the regional economy. Having generated \$3.8 billion in output, 8,167 jobs and \$384 million in wage income, it accounted for 28 percent of the port's output impact (see **Figure 3**). As a result of its significant export volume, the agricultural chemical industry accounted for about half of this sector's contribution. Other significant impacts were found in the food processing industry (9 percent), and the petroleum products and printing industries. Each accounted for about 4 percent of the output impact of this sector.

**Table 5 – Total Economic Contribution of the Port of Tampa by Industry
Tampa Bay Regional Economy – CY 2001**

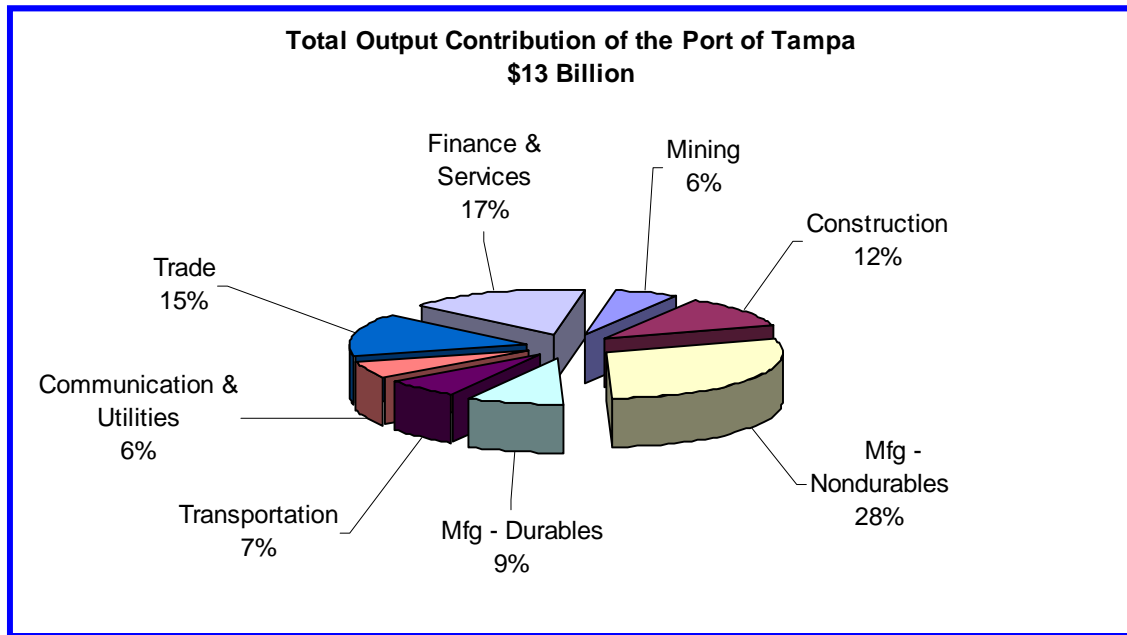
<u>Sector</u>	<u>Output (\$ Million)</u>	<u>Jobs</u>	<u>Wages (\$ Million)</u>	<u>Avg. Ann. Wage</u>
Mining	\$ 758	4,152	\$ 138	\$ 33,351
Construction	\$ 1,509	19,011	\$ 488	\$ 25,656
Manufacturing	\$ 4,936	13,820	\$ 614	\$ 44,428
Mfg - Nondurables	\$ 3,762	8,167	\$ 384	\$ 47,046
Mfg - Durables	\$ 1,173	5,653	\$ 230	\$ 40,647
Transportation	\$ 876	8,037	\$ 350	\$ 43,600
Communication & Utilities	\$ 795	2,241	\$ 119	\$ 52,954
Trade	\$ 1,933	24,352	\$ 707	\$ 29,035
Finance & Services	\$ 2,136	32,980	\$ 1,224	\$ 37,111
Other	\$ 36	3,310	\$ 95	\$ 28,689
Total	\$ 12,978	107,903	\$ 3,735	\$ 34,616

Source: Business Research & Economic Advisors

The largest employment impact occurred in the finance and services sector. This sector, with almost 33,000 jobs generated by port-related activity, accounted for 31 percent of the overall employment contribution of the port. This sector also generated \$1.2 billion in wages and \$2.1 billion in output. One-third of the impact occurred in financial services, 40 percent in business services and one-fourth in personal services. The impacts in the financial services component were generated primarily by the induced consumer spending and were concentrated in the real estate industry. The indirect impacts resulting from business spending generated employment in numerous business service sectors such as advertising, legal services and engineering consulting. Finally, the personal services were impacted by employee spending with the biggest impacts having occurred in the education and health sectors.

The wholesale and retail trade sector accounted for 23 percent of the employment contribution and 15 percent of the output impact of the port. Just over half (55 percent) of this sector's contribution occurred in the wholesale trade industry. Within the retail trade sector, one-fifth of the benefits occurred in eating and drinking establishments with the rest spread throughout the rest of retail.

**Figure 3 – Percentage Distribution of the Total Output Contribution
Port of Tampa - Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

The construction sector added over 19,000 jobs with a total income of \$488 million to the Tampa Bay regional economy as a result of the movement of goods and cruise passengers through the Port of Tampa. Eighty percent of the construction sector's contribution was due to the indirect and induced impacts. The indirect and induced business and consumer spending generated by the port spurred \$1.2 billion in nonresidential and residential construction output.

The remaining sectors contributed \$3.6 billion in output, 23,393 jobs and \$932 million in wage income to the Tampa Bay regional economy during 2001 as a result of the operations at the Port of Tampa. Combined these sectors accounted for 28 percent of the total output contribution in the Tampa Bay region.

In summary, the Port of Tampa affected virtually all sectors of the Tampa Bay regional economy. The industries that were most significantly impacted included:

- Phosphate Mining
- Construction
- Food Processing
- Agricultural Chemicals
- Ship Maintenance and Repair
- Machinery and Computers
- Fabricated Metals
- Railroads
- Trucking
- Communications
- Utilities
- Wholesale & Retail Trade
- Banking
- Advertising
- Legal Services
- Health Services.

Total Fiscal Contribution of the Port of Tampa

The total fiscal contribution of the Port of Tampa was determined by the direct, indirect and induced contribution of each sector's economic activity. In Florida, there are six principal state and local taxes: 1) the state sales tax; 2) the state corporate income tax; 3) the state motor fuels tax; 4) the local option sales tax; 5) local motor fuel taxes and 6) local property taxes. In addition, there are numerous smaller taxes and fees collected by state and local taxing authorities in the state.

BREA's fiscal impact analysis showed that the total economic contribution of the Port of Tampa to the Tampa Bay regional economy contributed a total of \$380 million in state and local tax revenues in 2001 (see **Table 6**). These were state and local tax revenues that were generated by the economic contribution of the port that occurred within the Tampa Bay region. The analysis also showed that the state received an estimated \$210 million in tax revenues from the total economic contribution of the Port of Tampa to the Tampa Bay regional economy. Sales tax revenues accounted for over two-thirds of the state tax collections. On the local level, taxing authorities received a total of \$170 million, 92 percent from local property taxes, as a result of the economic contribution of the Port of Tampa.

**Table 6 – State & Local Fiscal Contribution of the Port of Tampa
Tampa Bay Regional Economy – CY 2001**

<u>Categories</u>	<u>Revenues \$ Millions</u>
State Sales Tax	\$ 147
State Corporate Income Tax	\$ 15
State Fuel Tax	\$ 16
Other State Taxes & Fees	\$ 32
State Subtotal	\$ 210
Local Sales Tax	\$ 8
Local Property Tax	\$ 155
Local Fuel Tax	\$ 7
Local Subtotal	\$ 170
State & Local Total	\$ 380

Source: Business Research & Economic Advisors

Total Contribution of the Port of Tampa to the Florida Economy

The economic contribution of the Port of Tampa to the state of Florida was about 15 per cent higher than its contribution to the Tampa Bay region. The larger impact was due to two principal reasons. First, the direct contribution to the state economy was slightly higher due to such factors as spending by Tampa cruise passengers in other Florida destinations, such as Orlando, and the use of inland transportation services in other regions in Florida to deliver or receive Port of Tampa cargo. Second, the indirect and induced impacts were larger because directly impacted Tampa businesses and consumers purchased goods and services that were produced in other parts of the state.

As shown, in **Table 7**, we estimated that the movement of cargo and cruise passengers through the Port of Tampa during 2001 generated 124,600 jobs throughout the state of Florida. Approximately 15 percent of these jobs were outside of the Tampa Bay region. These workers produced an estimated \$14.8 billion in output and received \$4.4 billion in wages and salaries during the year.

**Table 7 – Economic Contribution of the Port of Tampa
to the Tampa Bay and Florida Economies – CY 2001**

Region	Output (\$ Million)	Jobs	Wages (\$ Million)	State and Local Taxes (\$ Million)
Florida	\$ 14,812	124,600	\$ 4,438	\$451
Tampa Bay	\$ 12,978	107,903	\$ 3,735	\$380
Share of FL Impacts	87.6%	86.6%	84.2%	84.2%

Source: Business Research & Economic Advisors

Introduction

The primary objectives of this study were to estimate the economic contribution or impact⁴ of the Port of Tampa during 2001:

- ◆ to the Tampa Bay region;
- ◆ to the state of Florida; and
- ◆ generated by four industry segments
 - cruise,
 - shipyards and drydocks,
 - inland transportation, and
 - phosphates and related agricultural chemicals.

For the purposes of this study the Tampa Bay region includes the following seven counties: Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk and Sarasota. The economic contribution of the Port of Tampa was measured in terms of the annual employment, wage and salary distributions, industry output and state and local tax collections that resulted from the movement of goods and cruise passengers through the port and the Tampa area.

The total economic contribution of the port is the sum of the following three categories of impacts:

- direct;
- indirect; and
- induced.

Direct impacts were defined as that spending and activity that occurred as a necessary condition or result of the movement of cargo and cruise passengers through the port. This included such activities as:

⁴ The terms contribution, impact and benefit are used interchangeably throughout this report. While these terms can be interpreted somewhat differently, the approach taken in this study is one of economic contribution. In essence we statistically measure the flow of inbound and outbound cargo and passengers through the port, support activities in the region and the spending by port-impacted businesses and their employees during 2001 through the Tampa Bay regional economy.

- local production of export goods;
- local spending by cruise passengers;
- handling, loading, storage and inspection of commodities at the port; and
- transportation of commodities and passengers to and from port facilities and the area.

Indirect economic impacts can be described as business-to-business impacts. These occurred as the directly impacted businesses (shipyards, terminals, export manufacturers, government agencies, etc.) purchased supplies, materials and services from other businesses. These included such goods and services as:

- machinery and equipment;
- raw materials;
- utility services; and
- insurance.

Induced economic impacts were derived from the spending by the employees of the directly and indirectly impacted firms for household and consumer goods. These included such goods and services as:

- groceries;
- furniture;
- housing; and
- medical services.

Thus, the economic contribution of the Port of Tampa touched virtually every aspect of the Tampa Bay region.

Data and Methodology

To accomplish the objectives of the project economic, cargo, and cruise data had to be collected from a variety sources, including:

- surveys of port service providers;
- State of Florida Agency for Workforce Innovation;
- U.S. Bureau of Economic Analysis;
- U.S. Department of Commerce;
- U.S. Bureau of Labor Statistics;
- Tampa Bay Convention & Visitors Bureau;
- Tampa Port Authority;
- Port Import Export Reporting Service (PIERS); and
- Center for Economic Development Research, Univ. of South Florida.

These data formed the basis for estimating the economic contribution of the Port of Tampa. In the following sections, we discuss the methodology underlying this study, including the data sources and the calculations that were made to develop the various economic impacts.

Port Activity

Since the economic contribution of the Port of Tampa is derived from the movement of cargo and passengers through the port, the first phase of the project required us to: 1) collect and estimate data on the volume and value of cargo handled at the port, and 2) assemble cruise passenger statistics and data on cruise industry (passengers and cruise lines) spending during 2001.

The Tampa Port Authority (TPA) provided cargo reports detailing the volume (tonnage) of inbound and outbound cargo by commodity for calendar year 2001. However, in order to estimate the economic contribution of the cargo, the value of both inbound and outbound cargo had to be estimated. A three-month sample (March, June and October of 2001) of the value and volume of all inbound and outbound cargo by commodity was obtained from PIERS.⁵ These data were aggregated into the same commodity categories as

⁵ PIERS maintains comprehensive statistics on global cargo movements transiting seaports in the United States, Mexico and South America to companies around the globe. PIERS reporters collect import and export information daily from over 25,000 bills of lading and vessel manifests. The data collected by PIERS

reported by the TPA and the average price per ton was calculated by dividing the total value of each commodity by the tonnage as reported by PIERS for each of the three months.⁶ The average commodity price per ton calculated from the PIERS data was then multiplied by the total commodity tonnage reported by the TPA to estimate the total value of inbound and outbound cargo handled at the Port of Tampa during 2001. Based upon these data, we estimated that 47.9 million tons of cargo with a value of \$7.2 billion moved through the port in calendar year 2001 (see **Table 8**). The volume and estimated value of inbound and outbound commodities are shown in **Appendix III.A**.

Inbound cargo at 35.9 million tons accounted for three-fourths of the port's total tonnage and 70 percent of the value of all cargo handled at the port during 2001. Most inbound cargo (78 percent) arrived from other U.S. ports while most outbound cargo (69 percent) was destined for foreign ports.

Table 8 – Cargo Tonnage and Estimated Value – Port of Tampa – CY 2001

Year	Outbound		Total Outbound	Inbound		Total Inbound	Total
	Domestic	Foreign		Domestic	Foreign		
Cargo Tonnage							
2001	3,664,051	8,266,118	11,930,169	27,970,549	7,963,519	35,934,068	47,864,237
% of Total	7.7%	17.3%	24.9%	58.4%	16.6%	75.1%	
Cargo Value							
2001	\$ 668,990,137	\$ 1,550,166,929	\$ 2,219,157,066	\$ 3,935,744,390	\$ 1,056,492,803	\$ 4,992,237,193	\$ 7,211,394,259
% of Total	9.3%	21.5%	30.8%	54.6%	14.7%	69.2%	

Source: Tampa Port Authority & BREA

The Port of Tampa is also an important and expanding cruise port. The TPA also provided data on cruise ship calls and passengers. As shown in **Table 9**, 153 cruise ships called at the Port of Tampa and a total of 544,880 cruise passengers moved through the port during 2001 for average of 3,561 passengers per cruise ship call.

include such items as volume, value, destination, origination and numerous other types of data by commodity.

⁶ It should also be noted that the PIERS data contained volume and value data for individual commodity shipments for both inbound and outbound cargo at the Port of Tampa. Thus, the average prices for commodity group were calculated from a sample that included more than 3,800 outbound and inbound commodity shipments.

Table 9– Cruise Activity at the Port of Tampa – CY 2001

	Total	Embarkations	Disembarkations	Intransit
Passengers:	544,880	270,853	272,186	1,841
Cruise Ship Calls:	153	150	150	3
Passenger/Call	3,561	1,806	1,815	614

Source: Tampa Port Authority & BREA

The volume and value of cargo and the spending of the cruise passengers were the critical inputs for estimating the port's direct economic contribution. The application of the cargo and passenger data in the development of the estimate of the port's direct economic contribution is discussed next.

Direct Economic Contribution

The second phase of the project focused on estimating the direct contribution of the port and defining the industries or sectors in the Tampa Bay region that were directly impacted by the movement of cargo and passengers through the Port of Tampa. As discussed previously the direct contribution was defined as that spending and activity that occurred as a necessary condition or result of the movement of cargo and cruise passengers through the port. The businesses that were directly impacted by the activity at the port were grouped into four major sectors:

- Port Services;
- Export;
- Import; and
- Inland Transport.

The Port Services sector was defined as those firms that were immediately and directly involved in providing water transportation service for goods and passengers through the Port of Tampa, as well as those firms that directly provided support services to them. Firms in this sector provided the following services:

- chandlery;
- ship repair and maintenance;
- stevedoring;
- piloting and towing;
- terminal and warehousing services; and
- cargo vessel operators and agents.

Government services were also included in this sector, such as those provided by the Tampa Port Authority and federal government agencies, such as the U.S. Coast Guard, Department of Agriculture, U.S. Customs Service and others. Lastly, the businesses that benefit from the landside spending of the cruise lines and their passengers were included as well. Industries that benefited from the landside spending of the cruise lines and their passengers include:

- lodging;
- restaurants;
- general retail;
- entertainment and amusements;
- personal services; and
- business services.

The Export sector included firms engaged in the manufacture and distribution of goods exported through the Port of Tampa. Export (outbound) commodities were identified from cargo reports published by the Tampa Port Authority. To be included in the direct economic contribution, the production and distribution activities had to have taken place by firms located in the seven-county Tampa Bay region. Industries included in this sector were:

- mining and manufacture of phosphates and other fertilizers;
- food processing;
- paper manufacturing;
- scrap metal processing; and
- wholesale trade of non-locally produced export goods, i.e., autos, lumber, etc.

The Import sector included firms engaged in the sale and distribution of goods imported through the Port of Tampa and those local firms that directly used the inbound commodities in their production processes. By definition imported (inbound) cargo were not produced locally; consequently, the economic contribution of the Import sector occurred through the local wholesale trade of the imported goods, as well as, the local output that was generated by the use of the inbound commodities. All major industries were directly impacted by imports to some degree but the major industries included:

- electric utilities;
- food processors;
- metal fabricators; and
- transportation services.

Again, the distribution and manufacturing activity had to have taken among firms located in the seven-county Tampa Bay region.

Finally, the Inland Transport sector included those firms that moved both goods and cruise passengers to and from the port. The trucking and railroad industries were the primary industries in this sector, but it also included the air transportation and local transportation industries that transported cruise passengers to the area and port.

In the following sections, we describe the measurement of the direct economic contribution of each sector including a discussion of data collection and estimation techniques.

Economic Contribution of the Port Services Sector

The Port Services sector included port service providers (shipyards, cargo vessel operators and agents, ship chandlers, stevedores, terminal and warehouse operators and other firms that directly supported the movement of cargo through the Port of Tampa), cruise service providers (firms impacted by the spending of cruise lines and their passengers) and government agencies.

Port Service Providers

Using the 2001 Tampa Port Authority Official Directory and a list of Port Authority tenants, 105 firms were identified as port service providers. A set of surveys, similar to those used in the 1988 Port of Tampa economic impact study,⁷ were distributed to each of these firms. The surveys were designed to collect data on employment, wages and benefits, revenues and other expenses for each of the firms that were directly dependent upon the Port of Tampa. Separate surveys (see **Appendix III.B**) were designed for firms engaged in providing the following goods or services:

- bunker fuels;
- chandlery;
- drydock and ship repair;
- government;
- stevedoring;
- terminals and warehousing;
- piloting and towing; and
- other port service providers.

Complete responses were received from 29 of these firms. These responses were then supplemented with employment and wage data from the U.S. Department of Labor.⁸ Employment and wage income data for 2001 were obtained for an additional 41 companies. As a result, we were able to identify employment and wages for 70 (66.7%) of the 105 firms in the Port Services sector. We refer to these 70 companies as “covered” companies or firms while the “uncovered” companies were those for which we lacked employment and wage data. Estimates for the “uncovered” firms were calculated from average employment and wages of the “covered” companies.

⁷ Joseph S. DeSalvo and Debra L. Fuller, The Economic Impact of the Port of Tampa, Center for Economic and Management Research, University of South Florida, 1988.

⁸ The Department of Labor’s ES-202 program collects monthly employment and quarterly wage income from each firm that is covered by state unemployment insurance programs. Company specific data was obtained while maintaining complete confidentiality.

Because the average size of firms and wages varied significantly across groups of companies, average employment per company and average annual wage per employee were estimated for the “covered “ companies in each of the following groups in the Port Services sector:

- Chandlers
- Shipyards and Drydocks
- Stevedores
- Ship Agents and Operators
- Pilots and Tugboats
- Terminal and Warehousing Services.

Within the Terminal and Warehousing Services group, separate averages were calculated for food, petroleum, aggregates and other terminals and warehouses.⁹

Then for each group, the number of “uncovered” establishments was multiplied by the average employee size of “covered” establishments to estimate total employment among the “uncovered” firms. The employment estimate for “uncovered” firms was then multiplied by the average annual wage per employee of the “covered” firms in each group to estimate total annual wage income for the “uncovered” companies. The estimates of employment and wage income for the “uncovered” firms were then added to the “covered” totals for each group to arrive at the employment and wage income estimates reported in **Table 10** for each group.

Using firms providing chandler services as an example, the following procedure was used to estimate total employment, wages and output for each Port Services group. Nineteen firms were identified as providing chandlery services as their principal business activity. Surveys were sent to all nineteen. Six firms returned completed surveys and we obtained ES-202 employment and wage data for seven other firms. Thus we were able to obtain actual employment and wage data for 68% of the identified firms that provided chandlery services at the Port of Tampa during 2001. As shown in Table 10, the thirteen firms averaged 7.7 employees and paid an average annual wage (excluding benefits)

⁹ Phosphate and scrap metal terminals were excluded from this component of the analysis because they were included in the Export sector.

of \$33,447 per worker. Using these averages we then estimated that all nineteen firms employed 146 (19 x 7.7) workers during 2001 and paid these workers total annual wages of \$4.9 million (146 x \$33,447).

Table 10– Estimated Employment and Wages for Port Service Providers – 2001

Port Service	Covered Firms			All Port Firms			
	Number	Average Number of Workers	Average Ann. Wage per Worker	Number	Estimated Total Employees	Estimated Total Wages	Estimated Total Output
Chandlers	13	7.7	\$ 33,447	19	146	\$ 4,883,289	\$ 16,385,319
Ship Agents & Operators	16	13.0	\$ 59,888	26	339	\$ 20,302,137	\$ 29,709,048
Shipyards & Drydocks	4	183.6	\$ 36,458	5	918	\$ 33,468,649	\$ 257,343,664
Stevedores	5	44.9	\$ 50,667	8	359	\$ 18,189,556	\$ 30,635,506
Piloting & Towing Services	7	25.4	\$ 52,154	10	254	\$ 13,247,235	\$ 22,584,906
Terminal & Warehouses	25	28.0	\$ 44,448	37	1,035	\$ 46,004,131	\$ 109,461,507
Food	7	14.4	\$ 40,711	9	130	\$ 5,292,372	\$ 12,592,587
Aggregates	6	78.9	\$ 47,751	7	552	\$ 26,358,367	\$ 62,716,685
Fuel	9	20.9	\$ 41,020	15	313	\$ 12,839,188	\$ 30,549,362
Other	3	6.7	\$ 37,855	6	40	\$ 1,514,204	\$ 3,602,873
Total	70			105	3,051	\$ 136,094,997	\$ 466,119,950

Source: Business Research & Economic Advisors

Also shown in Table 10 is output. This is defined as the total value of goods and services produced by the workers employed in each group within the sector. We estimated each group's output from data on industry output and wage and salary disbursements for the Tampa Bay region as provided by the Center for Economic Development Research (CEDR) of the University of South Florida. Using these data we calculated the ratio of output to wage and salary disbursements at the two-digit SIC level. The appropriate industry ratio was then multiplied by the estimated wage and salary contribution for each group as shown in Table 10. Again, using the Chandler group, which on an industry classification basis is considered to be in the wholesale trade industry, the ratio of output to wages and salaries was 3.36 [or wages accounted for 30% of output (the inverse of 3.36)]. Multiplying Chandler wages (\$4.9 million) by 3.36 we arrived at estimated Chandler output of \$16 million. These estimation techniques were used for each group shown in Table 10.

An exception to this estimation technique was applied to the Piloting and Towing group. Pilots were employed to supervise the movement of cargo and cruise vessels into and out

of the Port of Tampa while firms engaged in towing services (including tugboats) towed barges and also positioned ships into and away from docks and through narrow channels.

Pilots operate through the Tampa Bay Pilots Association (TBPA) which manages their assignments and interacts with and pays fees to the Florida Board of Professional Regulation. The board regulates and certifies pilots throughout the state. During 2001, pilots were assessed 0.6% of their revenue to be paid to the Board. The TBPA paid \$52,547.28 to the Board on behalf of the Tampa Bay pilots. Thus, piloting output has been estimated to be \$8.8 million ($\$52,547.28 \div 0.006$) during 2001. The board also reported that Tampa Bay pilots handled 4,886 vessels during 2001. The TBPA also reported that 24 pilots operated in Tampa Bay during 2001 and that the association, itself, had a staff of 19 employees. Based on the information provided by the TBPA, we estimated that the 43 individuals associated with piloting in Tampa Bay received total wages of \$1.3 million, about 10 percent of total wages for the Piloting and Towing group.

The estimates of employment, wages and output for the towing operations were estimated using the same procedure as discussed for chandlers.

Overall, we estimated that the 105 firms in the Port Services sector employed 3,051 workers as a direct result of maritime activity at the Port of Tampa during 2001. These workers received an estimated annual wage income of \$136 million. We also estimated that these firms produced \$466 million in goods and services in support of the Tampa maritime industry.

Following is a brief description of each group and its estimated direct economic contribution.

Terminals and Warehouses

The subgroups included within the Terminals and Warehouses group employed an estimated total of 1,035 workers during 2001. These workers received estimated annual wages of \$46 million and had an output contribution of \$109 million. For the group as a whole, employment and wage data were obtained for 25 of the 37 firms (67 percent)

identified as having facilities at the port. The average size of firms ranged from a high of 78.9 for terminals/warehouses handling Aggregates to a low of 6.7 for facilities in the Other category. These two subgroups also had the highest and lowest average annual wage per employee, \$47,751 for Aggregates and \$37,855 for the Other subgroup.

The Aggregates subgroup, which includes the handling and storage of construction-related building materials, such as gypsum, asphalt, cement, sand and gravel, was responsible for the largest employment (552), wage (\$26.4 million) and output (\$62.7 million) impacts within the Terminal and Warehouse group. The Fuel subgroup, which is primarily petroleum terminals, contributed 313 jobs paying \$12.8 million in wage income to the Tampa Bay region as a result of the movement of fuel oil through the Port of Tampa. The Food subgroup included storage and warehousing for a variety of food products, including fresh and frozen citrus products, edible oils, seafood, raw and processed grains and salt. Finally, the Other subgroup included storage facilities for a broad range of products, including chemicals (excluding phosphates and fertilizers), tallow and soap products. Combined the terminal and storage facilities of the Food and Other subgroups contributed 170 jobs paying \$6.8 million in wage income to the Tampa Bay region during 2001.

Shipyards and Drydocks

The companies of the Shipyard and Drydock group provided maintenance and repair services for maritime vessels including cruise ships, cargo vessels, tugboats and barges. Employment and wage data were obtained for four of the five firms (80 percent) with drydock and maintenance facilities at the port. We have estimated that the Tampa shipyards serviced more than 200 vessels during 2001. While there were a small number of firms in this group, their average employment was significant during 2001 with 183.6 workers who received an average annual wage of \$36,458. Thus, we estimated that the Shipyard and Drydock group was responsible for the creation of 918 jobs in the Tampa Bay region. These workers received annual wage income of \$33.5 million and had an output impact estimated at \$257 million.

Stevedores

Stevedoring firms employed workers to load and unload goods from cargo and cruise vessels. Our analysis identified eight firms that were primarily involved in providing stevedoring services at the Port of Tampa and employment and wage data were obtained for five of them (62 percent). The average stevedoring firm employed 44.9 workers paid annual wages of \$50,667 per worker. In total, these firms employed an estimated 359 workers and paid wage income of \$18.2 million during 2001. The estimated output impact of this group was \$30.6 million.

Ship Agents and Operators

Because cruise and cargo vessel operators do not necessarily maintain any operations in a particular port city, they hire agents to represent their interests in these port cities. Ship agents will arrange for a variety of services, including stevedoring, freight forwarding, storage, documentation and verification of cargo and financial services, such as insurance bonds. The Tampa Bay region is also home to a number of cargo vessel operators. Some of these have cargo ships that operate from the Port of Tampa and others do not. This analysis only included those companies whose ships operated from the Port of Tampa in 2001.

Our analysis identified 26 companies that operated as agents or owners at the Port of Tampa during 2001. Most of these companies were small with only a few employees while a few had significantly higher employment. The average company size for the 16 companies for which employment data were obtained was 13 employees who received an average annual wage of \$59,888. Based upon the averages calculated for the thirteen firms, we estimated that a total of 339 workers were employed in this group and were paid \$20.3 million in wage income during 2001. This group had an estimated output impact of \$29.7 million.

Piloting and Towing Services

In total, we estimated that the 10 companies in the Piloting and Towing Service group employed 254 workers.¹⁰ These workers received \$13.2 million in wage income during 2001 and had an estimated output contribution of \$22.6 million. Excluding the pilots, employment and data were obtained for six of nine firms with towing or tugboat operations at the port. The tugboat operators accounted for about 85 percent of the employment and wage income of this sector.

Chandlers

Chandlers provided a variety of goods to cargo and cruise vessels. These included food and beverages for passengers and crew, maintenance supplies, safety and navigation equipment and other soft and hard goods for cargo and cruise vessels. Employment and wage data were obtained for 13 of the 19 of the firms (68 percent) with operations at the port. The average chandlery firm employed 7.7 workers had paid annual wages of \$33,447 per worker. In total, chandlers employed an estimated 146 workers and paid them \$4.9 million in wage income during 2001. The estimated output impact was \$16.4 million.

Cruise Service Providers

The cruise sector has been one of the fastest growing sectors at the Port of Tampa. During 2001, 153 cruise ships made calls at the Port of Tampa, 150 of which were cruise embarkations from Tampa. Carnival Cruises was the major cruise company operating out of Tampa and accounted for approximately 90 percent of the cruise ship calls in 2001. Holland America was next with 6 percent of the calls. As shown in **Table 11**, 270,853 passengers embarked on cruises at the port during 2001. Total passenger movements at the port were 544,880. Passenger movements have been on a steady growth trend over the past decade having increased from 55,248 passengers in 1991. Thus, passenger movements have increased at an average annual rate of 26 percent since 1991.

¹⁰ For purposes of this report pilots and their association were treated as a single establishment. The employment figure also includes the staff of the Tampa Bay Pilots Association.

Table 11– Passenger Movement at the Port of Tampa – 2001

	<u>Total</u>	<u>Embarkations</u>	<u>Disembarkations</u>	<u>Intransit</u>
Passengers:	544,880	270,853	272,186	1,841
Cruise Ship Calls:	153	150	150	3
Passenger/Call	3,561	1,806	1,815	614

Source: Tampa Port Authority

Cruise Sector Expenditures

The impact of the cruise sector on the Tampa Bay region was generated by the landside spending of the cruise lines and their passengers. Cruise lines purchased a variety of soft and hard goods, including food and beverages, fuel, hotel supplies, maintenance supplies, and services, such as security, entertainment and sanitary services, from Tampa Bay businesses. Cruise passengers purchased lodging services, food and beverages, entertainment services, such as visits to the Florida Aquarium, and gifts and souvenirs. Data on cruise line spending in Tampa Bay were obtained from BREA which tracks cruise industry spending by industry and location. Cruise passenger spending in Tampa was estimated from cruise passenger survey data collected by Bonn Marketing Research Group, Inc. for the Tampa Bay Convention and Visitors Bureau (TBCVB).¹¹

As shown in **Table 12**, just over half (56 percent) of cruise passengers arrived in Tampa on the day of the cruise during 2001. About one-fourth (28 percent) stayed at least one night in an area hotel while the remaining passengers (16 percent) stayed with friends, at a condo or at a campground. The average cruise party consisted of 3.1 persons and spent 1.17 days in the Tampa area. This implies that the 44 percent of passengers who stayed at hotels and other places stayed an average of 1.4 days in the Tampa area.

The TBCVB study also indicated that the average cruise party spent \$225.39 per day. Given the average size of a cruise party and their average length of stay, this implies that the average cruise passenger spent \$72.00 per day and \$84.25 per visit.

¹¹ Dr. Mark Bonn, 2001 Annual Visitor's Study for Tampa/Hillsborough County, Tampa Bay Convention and Visitors Bureau.

Table 12– Major Cruise Passenger Spending Characteristics – 2001

% Hotel Stay	27.6%
No Stay	56.4%
Family/Friends	15.1%
Condos	0.7%
Campgrounds	0.3%
Exp./Party/Day	\$225.39
Avg. Party Size	3.13
Avg. # of Nights	1.17

Source: Bonn Market Research Group, Inc.

As shown in **Table 13**, most cruise passengers (55 percent) arrived in Tampa by automobile with the remaining (45 percent) having arrived by air. Also, 11.9 percent of Tampa cruise passengers arrived from Orlando.

Table 13– Transportation Characteristics of Cruise Passengers– 2001

Travel Mode to Tampa	
Air	44.6%
Auto	55.4%
Arriving from Orlando	11.9%

Source: Business Research & Economic Advisors

The above cruise passenger characteristics and more detailed expenditure data by category and visitor type, i.e., hotel stay, no stay, campground, etc., were combined to develop the estimates of passenger spending by category as shown in **Table 14**. A few points are worth mentioning before proceeding with the discussion of passenger spending. First, intransit passengers and the difference between passenger embarkations and debarkations (see Table 11) were treated as 1-day visitors. There were 3,174 such passengers during 2001. Second, since passengers who arrived in Tampa via air obviously made use of the airport facilities, their arrival at the airport contributed to the cruise sector's impact. We applied half of the estimated airfare expenditures to the air transportation sector in the Tampa region. Implicitly the other half would be applied to their origi-

nation/home airport. Third, as indicated above 12 percent of cruise passengers arrived from Orlando. We assumed that their spending occurred in the Orlando market and not the Tampa area.

Table 14– Cruise Passenger Spending by Category in the Tampa Bay Region - 2001

<u>Category</u>	<u>Annual Spending</u>
Restaurant	\$ 5,934,258
Shopping	\$ 3,321,169
Attractions	\$ 4,418,790
Ground Transp.	\$ 2,544,931
Special Events	\$ 834,974
Entertainment	\$ 574,414
Groceries	\$ 1,081,447
Other	\$ 1,014,271
Sporting Event	\$ 318,464
Lodging	\$ 2,092,569
Total Spending (ex. Transp.)	\$ 22,135,286
Airfare (Tampa Share)	\$ 19,634,877
Total Expenditures	\$ 41,770,164
Per Passenger Expenditures	\$ 154.13

Source: Business Research & Economic Advisors

Our analysis indicated that cruise passengers spent an estimated \$41.8 million in the Tampa Bay region during 2001 for an average of \$154.13 per passenger. Airfares were the single largest category. Based upon an average air fare of \$325 for Carnival and Holland America passengers,¹² we have estimated that the 45 percent of cruise passengers who flew to Tampa spent a total of \$39.2 million, half of which (\$19.6 million) was allocated to the Tampa region. Excluding airfares, cruise passengers spent an estimated \$22.1 million at Tampa area businesses. Based upon the TBCVB information, we estimated that cruise passengers spent almost \$6 million at area restaurants, \$6.1 million on entertainment and at area attractions, such as the Aquarium, MOSI/MAX, Busch Gardens and sporting and other events, \$3.3 million at retail establishments and \$2.5 million on ground transportation. Those passengers who stayed in area hotels spent an additional

¹² The average airfare for the Carnival and Holland America passengers is a weighted average of airfares paid by the cruise lines on behalf of their passengers. These data were obtained by BRE from a survey of U.S.-based cruise lines for 2001.

\$2.1 million on lodging. Detailed data on passenger spending are shown in **Appendix III.C**.

To estimate cruise line spending in the Tampa area, we utilized survey data maintained by BREA. BREA conducts a survey of the North American cruise industry on an annual basis for the International Council of Cruise Lines. Among other information, expenditure data by vendor and location were collected. Using these data we were able to estimate cruise line expenditures for goods and services in the Tampa Bay region. These estimates are shown in **Table 8**.

Table 15– Cruise Industry Spending by Category in the Tampa Bay Region - 2001

Chandlers	\$ 5,528,308
Shipbuilding	\$ 100,631
Transportation Services	\$ 26,240
Business Services	\$ 2,636,090
Personal Services	\$ 2,514,070
Total (ex. Fees)	\$ 10,805,541
Wharfage & Dockage Fees	\$ 4,909,000
Total	\$ 15,714,541
Passenger Expenditures	\$ 41,770,164
Total Cruise Expenditures	\$ 57,484,705
Total Per Passenger Exp.	\$ 209.78

Source: Business Research & Economic Advisors

Cruise lines spent an estimated \$10.8 million with Tampa-based businesses in 2001. Just over half, \$5.5 million, was spent with chandlers in the Tampa Bay region. These included expenditures for food, linens and other hotel goods, galley equipment and electrical motors and equipment. The lines also spent just over \$100,000 with area shipyards for repair services. The \$2.6 million in expenditures for business services included legal, computer, marketing and sanitary services while the \$2.5 million in expenditures for personal services primarily included spending for entertainment and photographic services.

Cruise lines were also required to pay wharfage and dockage fees. Wharfage fees are based upon the number of passengers. A fee of \$5.25 was assessed to each passenger embarkation, disembarkation and intransit during 2001. Dockage fees are based upon the

length of the vessel. As reported by the Tampa Port Authority, cruise lines paid \$4.9 million in wharfage and dockage fees to the Authority during 2001. Combining these fees with their other expenditures, the cruise lines spent an estimated \$15.7 million with Tampa Bay businesses and the Port Authority.

In total the cruise industry operating in Tampa, both the cruise lines and their passengers, spent a total of \$57.5 million with Tampa Bay businesses and the Port Authority. On a per passenger basis, the cruise sector generated \$209.78 in total expenditures in the Tampa Bay region.

Cruise Sector Direct Economic Contribution

To estimate the direct economic contribution of the cruise service providers, output was estimated from the spending estimates discussed above, then wage income was estimated from the output estimates using wage shares and finally employment was estimated from wages using average wages per worker.

The spending estimates were treated as the estimated output contribution of the cruise service providers for the following expenditure categories: business services, personal services, air transportation, transportation services, lodging and entertainment/amusements. Output for passenger spending for restaurants, shopping, groceries and other retail was estimated as the retail trade margins associated with that spending. The details for these calculations are shown in **Appendix III.C**.

Finally, cruise lines expenditures with chandlers and shipyards were already captured in our analysis of Port Service Providers and thus have not been included in the economic contribution of the cruise service providers. Similarly, wharfage and dockage fees, which were collected by the Tampa Port Authority, support the Authority's spending and were included in the analysis for the government sector to be discussed next.

As shown in **Table 16**, the landside spending by the cruise lines and their passengers contributed 516 jobs paying \$12.9 million in wages to the Tampa Bay regional economy. These jobs had an output contribution of \$39.1 million. The largest contribution occurred

in the air transportation industry with 198 jobs and \$6.6 million in wage income. The more than 120,000 cruise passengers that arrived at the Tampa International Airport generated these jobs. The retail sector, including restaurants and other retail establishments, contributed 90 jobs and \$1.2 million in wage income. The entertainment and amusement industry contributed a similar number of jobs, 84, and wage income of \$1.9 million. The service sector, including transportation, lodging, business and personal services, contributed 154 jobs and \$3.2 million in wage income.

**Table 16– Employment, Wages and Output Generated by the Cruise Sector – 2001
Tampa Bay Region**

Industry	Employment	Wage Income	Output
Transportation Services	41	\$ 839,231	\$ 2,571,170
Business Services	45	\$ 1,126,665	\$ 2,636,090
Personal Services	34	\$ 623,490	\$ 2,514,070
Air Transportation	198	\$ 6,640,516	\$ 19,634,877
Lodging	34	\$ 629,236	\$ 2,092,569
Restaurants	47	\$ 568,672	\$ 1,725,863
Retail Trade	33	\$ 598,553	\$ 1,816,549
Entertainment/Amusements	84	\$ 1,918,982	\$ 6,146,642
Total	516	\$ 12,945,345	\$ 39,137,832

Source: Business Research & Economic Advisors

Government Agencies

The government agencies that contributed to the economic impact of the port included federal and state agencies that were directly impacted by the maritime activity at the Port of Tampa. The principal agencies included: the Tampa Port Authority, the U.S. Coast Guard, the U.S. Department of Agriculture, the U.S. Customs Office and the U.S. Immigration and Naturalization Service.

Data for the Port Authority were obtained from its annual report and other financial records. All data were adjusted from a fiscal year basis to a calendar year basis. The economic contribution of the Port Authority was estimated as its direct labor and nonlabor

expenses during 2001, including the value of construction work-in-progress during the year.

Data for the government agencies were collected both from the surveys previously discussed and through conversations with agency and port representatives. The contribution of the U.S. Coast Guard was based on survey data and the Coast Guard's assessment of the allocation of its resources to the Port of Tampa. The estimates for the remaining agencies were based upon their total staffing in the Tampa area and the average assignment of staff to cruise and cargo vessel calls.

As shown in **Table 17**, a total of 656 jobs were generated in both the private and public sectors as a result of the maritime activity at the Port of Tampa. These workers received annual wage income of \$23.9 million and had an output contribution of \$37.9 million. The Public sector, government agencies and the Tampa Port Authority, accounted for about 40% of the total employment and wage contribution.

**Table 17– Employment, Wages and Output Generated by Government Agencies – 2001
Tampa Bay Region**

Industry	Employment	Wage Income	Output
Port Authority	146	\$ 5,772,780	NA
Pub. Rel. & Marketing	10	\$ 420,546	\$ 677,445
Utilities	3	\$ 107,045	\$ 1,352,892
Insurance	4	\$ 156,122	\$ 324,438
Business Services	28	\$ 724,016	\$ 1,368,962
Communications	1	\$ 31,769	\$ 210,302
Construction	347	\$ 11,934,000	\$ 34,000,000
Government Agencies	117	\$ 4,728,510	NA
Total	656	\$ 23,874,788	\$ 37,934,039

Source: Business Research & Economic Advisors

Within the private sector, the bulk of the employment contribution, 347 jobs, was generated in the construction sector. This figure was based upon an estimated \$34 million worth of construction work-in-progress as reported by the Tampa Port Authority. The output contribution of the private sector industries was equal to the Port Authority's reported annual expenses for the services provided by those industries. As was described

for the previous sectors, wage income was estimated by multiplying industry output by the appropriate wage share and the employment impact was estimated by dividing the wage contribution by the average annual wage for workers in that industry.

The government agencies assign staff to the port to patrol the waterways and to inspect cargo and vessels. Based upon our survey and discussions with the government agencies, we have estimated that state and federal government agencies assigned 117 employees (full-time equivalent basis) to undertake their assigned tasks in the waterways of Tampa Bay and at the port. These employees received annual wages of \$4.7 million. Because output data for the government sector is unreliable, we limited our analysis of the output contribution of the Port of Tampa to private sector output.

The employment, wage and output impacts for the port service providers, cruise service providers and government agencies (excluding the impacts associated with the transportation sector) were summed to arrive at the economic contribution of the Port Services sector.

Economic Contribution of the Export Sector

As shown in Table 8, 11.9 million tons of outbound cargo were shipped from the Port of Tampa during 2001. Thirty percent was shipped to domestic destinations with the remaining 70 percent having been shipped to foreign destinations. Phosphates (chemical and rock) were, by far, the most important commodities shipped from Tampa, accounting for 90 percent of export¹³ tonnage. The next three largest commodities, citrus pellets, scrap metal and phosphoric acid, accounted for another 8 percent of total tonnage on a combined basis. Thus, the top five commodities accounted for 98 percent of the total tonnage exported through the Port of Tampa.

As discussed previously, the outbound cargo had an estimated value of \$2.2 billion during 2001. The tonnage and estimated value of the outbound cargo by commodity are shown in **Table III.A.1** in Appendix III.A.

¹³ Exports and outbound cargo are used interchangeably. For purposes of this report exports may be destined for U.S. ports as well as foreign ports.

The following procedures were followed to estimate the economic contribution of the Export sector. First, the commodities were aggregated into the following groups:

- phosphate chemicals;
- gypsum rock;
- food products;
- paper;
- petroleum products;
- general cargo, incl. containerized cargo;
- lumber.
- phosphate rock;
- scrap metal and steel;
- other chemicals;
- coal;
- vehicles and boats;
- machinery; and

The tonnage of outbound cargo for each of these commodity groups is shown in **Table 18**. Following discussions with representatives of export companies, locally produced export goods were identified.

**Table 18– Outbound Cargo Tonnage by Commodity Group – 2001
Tampa Bay Region**

<u>Commodity Group</u>	<u>Tonnage</u>	<u>%</u>
Phosphate	8,917,134	74.7%
Phosphate Rock	1,835,895	15.4%
Food Products	658,471	5.5%
Scrap Metal	283,954	2.4%
Other Chemicals	73,011	0.6%
Coal	46,125	0.4%
General Cargo	33,057	0.3%
Paper	30,751	0.3%
Petroleum	24,651	0.2%
Machinery	24,610	0.2%
Vehicles & Boats	1,582	0.0%
Gypsum Rock	905	0.0%
Lumber	23	0.0%
Total	11,930,169	

Source: Tampa Port Authority

They included: phosphate chemicals, phosphate rock, scrap metal, food products, other chemicals and paper. Third, the economic contribution for these locally produced export

commodities was estimated as the total production value of these goods. Fourth, for the remaining exports goods, which were not produced locally, only the wholesale trade and inland transportation margins were considered to contribute to the Tampa Bay regional economy.¹⁴

Direct Economic Contribution of Locally Produced Export Goods

As the above data indicate the economic contribution of locally produced export goods was primarily related to the mining and manufacture of phosphates and related agricultural chemicals. Essentially all of phosphate chemical and rock production was produced for export from the region. Consequently, the entire production value, jobs and income of these commodities were directly related to the Port of Tampa. During 2001, the agricultural chemical industry and the phosphate mining industry in the Tampa Bay region had a combined employment and production value of 8,588 employees and \$2.5 billion, respectively. As shown in **Table 19** the local production of outbound commodities contributed 6,719 jobs to the Tampa Bay regional economy. The phosphate industry, both mining and chemical manufacturing, accounted for 5,544 of them or 83% of the total. We estimated that approximately two-thirds of the employment in the agricultural chemical and phosphate mining industry directly produced the exported commodities. These impacted workers received \$282 million during the year.

**Table 19– Employment and Output Generated by Locally Produced Exports – 2001
Tampa Bay Region**

Industry	Export Tonnage	Employment	Wage Income
Phosphates	10,799,154	5,544	\$ 282,087,404
Scrap Metal & Steel	283,954	293	\$ 11,083,527
Other Chemicals	73,011	662	\$ 28,547,459
Food	658,471	217	\$ 7,633,291
Paper	1,582	3	\$ 78,910
Total	11,816,172	6,719	\$ 329,430,591

Source: Business Research & Economic Advisors

¹⁴ The trade and transportation margins associated with the locally produced exports were captured in the indirect impacts estimated with the REMI™ model.

The remaining employees and production were indirectly impacted, primarily in the mining industry, through the supply of materials required to produce the goods destined for markets outside of the Tampa area. For example, 8.9 million tons of phosphate chemicals were exported but only 1.8 million tons of phosphate rock were shipped from the Port of Tampa. The export of these specific commodities generated the direct employment impact. However, the 8.9 million tons of phosphate chemicals required phosphate rock. The production of this phosphate rock, which was not directly exported, generated indirect employment in the mining industry. Thus, the combined direct and indirect impacts within the agricultural chemical and phosphate mining industries accounted for the full production of these two industries in 2001. Within the scrap metal and steel industry, the employment and wage impacts were estimated from survey results. The survey data indicated that the 284 thousand tons of steel and scrap metal exports generated jobs for 293 workers among the metal processors and exporters and that these workers also received \$11 million in wages during 2001.

Finally, for the remaining industries, other chemicals, food and paper, only the export share of total production was considered in estimating the economic contribution of these exports. In the case of other chemicals, less than 10 percent of the industry's total output was exported through the Port of Tampa, while less than 1 percent of the food and paper industries' output was exported. Combined these three industries employed 882 workers that were directly impacted by exports through the Port of Tampa. These workers also received \$36.2 million in wage income.

The employment generated by the locally produced exports contributed \$329.4 million in wage income to the Tampa Bay regional economy during 2001. The phosphate industry, with relatively high wages, accounted for 86% of the wage income with \$282.1 million in wages.

Direct Economic Contribution of Export Goods Produced Outside of the Tampa Bay Region

With only \$70.4 million in exports produced outside of the Tampa Bay region during 2001, these export industries had a much smaller impact on the regional economy. Their

contribution was limited to the jobs and income created through the wholesale distribution and inland transportation of these goods. The export values were multiplied by each industry's wholesale trade and transportation margin to estimate the wholesale trade and transportation output associated with each non-locally produced export. Given this output, wage income was estimated by multiplying the trade and transportation output by wage income shares. Finally, employment was estimated by dividing wage income by average annual wage per worker in the trade and transportation industries in the Tampa Bay region. These calculations are shown in **Table III.D.1** in Appendix III.D.

As shown in **Table 20**, the export of 114 thousand tons of non-locally produced outbound cargo generated a total of 78 jobs in the wholesale trade and transportation sectors that, in turn, produced \$3.3 million in wage income in the Tampa Bay regional economy. The direct economic contribution of locally produced exports and the wholesale trade contribution of nonlocally produced exports were summed to arrive at the total direct contribution of the Export sector. The transportation contribution was included in the Inland Transport sector and is discussed later in this report.

**Table 20– Employment and Output Generated by Non-Locally Produced Exports – 2001
Tampa Bay Region**

Industry	Export Tonnage	Wholesale Trade		Inland Transportation	
		Employment	Wage Income	Employment	Wage Income
Petroleum	33,057	7	\$ 286,035	2	\$ 109,975
Vehicles	24,651	43	\$ 1,751,516	7	\$ 385,554
General Cargo	24,610	8	\$ 346,879	0	\$ 22,949
Machinery	30,751	7	\$ 291,244	1	\$ 35,474
Coal	905	2	\$ 85,739	2	\$ 115,303
Lumber	23	0	\$ 383	0	\$ 112
Total	113,997	68	\$ 2,761,797	13	\$ 669,368

Source: Business Research & Economic Advisors

Economic Contribution of the Import Sector

As shown in Table 8, the 35.9 million tons of inbound cargo at the Port of Tampa during 2001 was three times as large as outbound tonnage. Approximately three-fourths was received from domestic ports while one-fourth arrived from foreign ports. Petroleum was the most important inbound commodity moved through Tampa, having accounted for 49 percent of inbound tonnage. Coal was next with 7.2 million tons inbound or 20 percent of inbound tonnage. Almost all of these two commodities were inbound from domestic ports. The next three largest commodities, sulphur products, aggregates and ammonia products, accounted for another 26 percent of total tonnage on a combined basis. Thus, the top five commodities accounted for 95 percent of the total tonnage imported through the Port of Tampa. Import volume and value by commodity is shown in **Table III.A.2** in Appendix III.A.

Economic Contribution of Inbound Cargo

The economic contribution of imports was generated by the wholesale distribution and inland transportation of these goods, as well as their use in the production of goods in the Tampa Bay region.

Before estimating the economic contribution of the inbound commodities they were aggregated into the following groups:

- petroleum products;
- other chemicals;
- steel;
- other minerals;
- agriculture;
- phosphate;
- machinery; and
- coal;
- food products;
- vehicles;
- general cargo;
- paper;
- glass;
- lumber.

The volume of inbound cargo for each of these commodity groups is shown in **Table 21**.

**Table 21– Inbound Cargo Tonnage by Commodity Group – 2001
Tampa Bay Region**

<u>Commodity Group</u>	<u>Tonnage</u>	<u>%</u>
Petroleum Products	17,790,215	49.5%
Coal	7,170,784	20.0%
Other Chemicals	6,760,147	18.8%
Aggregates	2,685,087	7.5%
Steel Products	511,018	1.4%
General Cargo	482,777	1.3%
Food Products	306,108	0.9%
Phosphates	87,997	0.2%
Agricultural Products	53,174	0.1%
Vehicles & Boats	44,047	0.1%
Lumber	30,576	0.1%
Paper and Paper Products	11,280	0.0%
Glass	623	0.0%
Machinery	236	0.0%
Total	35,934,069	

Source: Tampa Port Authority

Next, we estimated the wholesale trade and transportation contribution of the inbound cargo. The methodology was essentially the same as for outbound cargo. One difference was that all inbound cargo utilized local transportation carriers to ship the commodities to their destination. The import values were multiplied by each industry's wholesale trade and transportation margin to estimate the wholesale trade and transportation output associated with each inbound commodity. Given this output, wage income was estimated by multiplying the trade and transportation output by wage income shares. Finally, employment was estimated by dividing wage income by average annual wage per worker in the trade and transportation industries in the Tampa Bay region. These calculations are shown in **Table III.D.2** in Appendix III.D.

The analysis of wholesale trade and transportation margins showed that the inbound cargo at the Port of Tampa directly contributed 2,307 wholesale trade jobs and 2,556 inland transportation jobs (see **Table 22**). Consistent with their share of inbound cargo, petroleum and coal combined accounted for 46 percent of wholesale trade jobs and 79

percent of inland transportation jobs. Combined all imports generated \$94 million of wage income in the wholesale trade sector and \$113 million in the inland transportation sectors.

**Table 22 – Employment and Income Generated by Inbound Cargo at Port of Tampa – 2001
Tampa Bay Region**

Commodity Group	Inbound Tonnage	Wholesale Trade		Inland Transportation	
		Employment	Wage Income	Employment	Wage Income
Petroleum	17,790,215	636	\$ 26,003,705	979	\$ 43,325,441
Coal	7,170,784	424	\$ 17,328,886	1,042	\$ 46,098,043
Other Chemicals	6,760,147	540	\$ 22,065,840	264	\$ 11,656,163
Vehicles	44,047	238	\$ 9,724,306	74	\$ 3,255,015
Steel	511,018	269	\$ 10,989,551	104	\$ 4,591,322
Food	306,108	106	\$ 4,313,619	38	\$ 1,696,944
Other Mining	2,685,087	14	\$ 569,540	25	\$ 1,093,316
General Cargo	482,777	38	\$ 1,550,936	4	\$ 172,175
Agriculture	53,174	8	\$ 335,530	5	\$ 209,737
Paper	11,280	7	\$ 287,464	6	\$ 274,918
Lumber	30,576	13	\$ 520,320	7	\$ 289,094
Phosphate	87,997	11	\$ 435,419	6	\$ 263,932
Glass	623	2	\$ 87,066	2	\$ 101,183
Machinery	236	2	\$ 67,344	0	\$ 16,034
Total	35,934,069	2,307	\$ 94,279,526	2,556	\$ 113,043,317

Source: Business Research & Economic Advisors

Finally, we estimated the contribution of the inbound cargo to local production. Using the national input-output table referenced previously, we estimated the input requirements for the \$177 billion in output produced in the Tampa Bay region during 2001 and shown in **Table 23**.¹⁵

¹⁵ The output estimates were obtained from the REMI™ model of the Tampa Bay economy. As noted previously, this model was used by the Center of Economic Development Research at USF to estimate the indirect and induced impacts of the Port of Tampa.

Table 23 – Output by Industry in the Tampa Bay Region in 2001

Industry	Output (\$1,000)
Agricultural Services	\$ 869,950
Forestry, etc.	\$ 73,660
Metallic ores mining	\$ 5,750
Coal mining	\$ 41,400
Crude petroleum and natural gas	\$ 78,200
Nonmetallic minerals mining	\$ 573,850
Construction	\$ 13,409,930
Food and kindred products	\$ 6,690,700
Tobacco products	\$ 601,450
Textiles	\$ 36,800
Apparel	\$ 678,500
Lumber and wood products	\$ 1,000,500
Furniture and fixtures	\$ 293,250
Paper and allied products, except containers	\$ 824,550
Newspapers and periodicals	\$ 2,335,650
Chemicals	\$ 3,826,050
Petroleum refining and related products	\$ 1,764,100
Rubber and miscellaneous plastics products	\$ 1,059,150
Footwear, leather, and leather products	\$ 138,000
Stone, Clay & Glass	\$ 868,250
Primary Metals	\$ 488,750
Fabricated Metals	\$ 1,461,650
Industrial machinery ³	\$ 2,926,750
Electrical machinery	\$ 3,893,900
Motor Vehicles	\$ 200,100
Other Transportation Eq	\$ 2,234,450
Instruments	\$ 2,213,750
Miscellaneous manufacturing	\$ 499,100
Railroads and related services; passenger ground transportation	\$ 247,250
Motor freight transportation and warehousing	\$ 2,884,200
Air transportation	\$ 1,558,290
Transportation	\$ 836,930
Communications, except radio and TV	\$ 6,003,290
Utilities	\$ 4,805,680
Wholesale trade	\$ 12,273,950
Retail trade	\$ 21,141,690
Finance	\$ 7,556,500
Insurance	\$ 4,518,660
Real estate and royalties	\$ 15,732,760
Hotels and lodging places	\$ 1,207,770
Personal and repair services (except auto)	\$ 1,753,870
Misc. Bus. Serv.	\$ 25,751,790
Eating and drinking places	\$ 2,534,920
Automotive repair and services	\$ 2,311,400
Amusements	\$ 2,146,300
Health services	\$ 11,685,270
Educational and social services, and membership organizations	\$ 3,690,620
Total Output	\$ 177,729,280

Source: REMI™ Model of the Tampa Bay Regional Economy

The use matrix of the national input-output model shows for each industry its input requirements from other industries and its own contribution (value added) for its total production. An example for the Tampa Bay chemical industry is shown in **Table 24**.

This table shows the estimated use of other industry outputs to produce the \$3.8 billion in chemical industry output in the Tampa Bay region. The “use coefficient” was obtained from the national use matrix. The use coefficient implies that in the national economy a dollar of chemical industry output used \$.00013 of livestock and livestock products. One of the largest input industries was industry number 27A (Industrial and Other Chemicals). Every \$1 of chemical industry output consisted of \$.18 of output from the Industrial and Other Chemicals industry. As shown in the Total Intermediate Inputs row, inputs from other industries accounted for \$.58 of every dollar of chemical industry output.

Using the national use coefficients and Tampa Bay output for the chemical industry (\$3.8 billion), we estimated that the Tampa Bay chemical industry required \$2.2 billion of inputs from other industries. These requirements by industry are shown in Table 17. As indicated in the table, the chemical industry required materials and services from most, but not all, industries. Our estimates show that the Tampa Bay chemical industry required \$614 million of industrial and other chemicals output, \$219 million of wholesale trade services and \$102 million in advertising services to produce the \$3.8 billion in chemical products. The chemical industry, itself, contributed \$1.6 billion in value added. Similar calculations were made for each producing industry in the Tampa Bay regional economy.

Table 24 – Input Requirements for the Chemical Industry in the Tampa Bay Region in 2001

Code	Input Industry	Input Requirements of the Chemical Ind. (\$1,000)	Use Coefficient
1	Livestock and livestock products	\$ 502	0.00013
2	Other agricultural products	\$ 8,079	0.00211
3	Forestry and fishery products	\$ 1,252	0.00033
4	Agricultural, forestry, and fishery services	\$ 2,136	0.00056
5+6	Metallic ores mining	\$ 11,849	0.00310
7	Coal mining	\$ 2,802	0.00073
8	Crude petroleum and natural gas	\$ 56,802	0.01485
9+10	Nonmetallic minerals mining	\$ 21,604	0.00565
12	Maintenance and repair construction	\$ 35,725	0.00934
14	Food and kindred products	\$ 19,550	0.00511
16	Broad and narrow fabrics, yarn and thread mills	\$ 117	0.00003
17	Miscellaneous textile goods and floor coverings	\$ 278	0.00007
18	Apparel	\$ 31	0.00001
19	Miscellaneous fabricated textile products	\$ 78	0.00002
20+21	Lumber and wood products	\$ 453	0.00012
24	Paper and allied products, except containers	\$ 14,885	0.00389
25	Paperboard containers and boxes	\$ 37,793	0.00988
26A	Newspapers and periodicals	\$ 73	0.00002
26B	Other printing and publishing	\$ 6,670	0.00174
27A	Industrial and other chemicals	\$ 614,311	0.16056
27B	Agricultural fertilizers and chemicals	\$ 41,104	0.01074
28	Plastics and synthetic materials	\$ 50,776	0.01327
29A	Drugs	\$ 104,244	0.02725
29B	Cleaning and toilet preparations	\$ 30,004	0.00784
30	Paints and allied products	\$ 11,798	0.00308
31	Petroleum refining and related products	\$ 28,125	0.00735
32	Rubber and miscellaneous plastics products	\$ 101,594	0.02655
35	Glass and glass products	\$ 5,946	0.00155
36	Stone and clay products	\$ 4,508	0.00118
37	Primary iron and steel manufacturing	\$ 2,521	0.00066
38	Primary nonferrous metals manufacturing	\$ 112	0.00003
39	Metal containers	\$ 18,474	0.00483
41	Screw machine products and stampings	\$ 1,687	0.00044
42	Other fabricated metal products	\$ 10,934	0.00286
47	Metalworking machinery and equipment	\$ 1,139	0.00030
48	Special industry machinery and equipment	\$ 3,438	0.00090
49	General industrial machinery and equipment	\$ 742	0.00019
50	Miscellaneous machinery, except electrical	\$ 6,453	0.00169
52	Service industry machinery	\$ 590	0.00015
53	Electrical industrial equipment and apparatus	\$ 1,732	0.00045
55	Electric lighting and wiring equipment	\$ 501	0.00013
58	Miscellaneous electrical machinery and supplies	\$ 29	0.00001
59B	Truck and bus bodies, trailers, and motor vehicles parts	\$ 322	0.00008
62	Scientific and controlling instruments	\$ 2,006	0.00052
63	Ophthalmic and photographic equipment	\$ 346	0.00009
64	Miscellaneous manufacturing	\$ 426	0.00011
65A	Railroads and related services; ground transportation	\$ 25,934	0.00678
65B	Motor freight transportation and warehousing	\$ 75,317	0.01969
65C	Water transportation	\$ 3,387	0.00089
65D	Air transportation	\$ 13,469	0.00352
65E	Pipelines, freight forwarders, and related services	\$ 2,099	0.00055
66	Communications, except radio and TV	\$ 11,845	0.00310
68A	Electric services (utilities)	\$ 46,913	0.01226
68B	Gas production and distribution (utilities)	\$ 39,686	0.01037
68C	Water and sanitary services	\$ 18,550	0.00485
69A	Wholesale trade	\$ 218,836	0.05720
69B	Retail trade	\$ 3,666	0.00096
70A	Finance	\$ 30,400	0.00795
70B	Insurance	\$ 6,178	0.00161
71B	Real estate and royalties	\$ 30,294	0.00792
72A	Hotels and lodging places	\$ 11,143	0.00291
72B	Personal and repair services (except auto)	\$ 6,913	0.00181
73A	Computer and data processing services	\$ 13,551	0.00354
73B	Legal, engineering, accounting, and related services	\$ 89,062	0.02328
73C	Other business and professional services, ex medical	\$ 84,061	0.02197
73D	Advertising	\$ 102,438	0.02677
74	Eating and drinking places	\$ 10,785	0.00282
75	Automotive repair and services	\$ 17,106	0.00447
76	Amusements	\$ 3,160	0.00083
77B	Educational and social services	\$ 4,297	0.00112
78	Federal Government enterprises	\$ 1,921	0.00050
79	State and local government enterprises	\$ 2,734	0.00071
80	Noncomparable imports	\$ 68,337	0.01786
81	Scrap, used and secondhand goods	\$ 67	0.00002
I	Total intermediate inputs	\$ 2,206,691	0.57675
VA	Value added	\$ 1,619,359	0.42325
T	Total Industry Output	\$ 3,826,050	

Source: Source: Business Research & Economic Advisors

The aggregation of all the industry requirements is shown in **Table 25**. Based on the input requirements of each industry the production of \$177 billion in Tampa Bay regional output used an estimated \$1.1 billion in livestock products, \$.6 billion of other agricultural products, \$.2 billion of forestry and fishery products and so forth. In all, the \$177 billion of Tampa Bay regional output required \$76 billion in inputs from other industries. The remaining \$102 billion was generated by the value added (labor, profits, etc.) of the Tampa Bay industries.

Table 25 – Input Requirements for All Industries in the Tampa Bay Region in 2001

Code	Input Industry	Input Requirements All Industries (\$1,000)	Implicit Total Use Coefficient
1	Livestock and livestock products	\$ 1,114,077	0.00627
2	Other agricultural products	\$ 661,090	0.00372
3	Forestry and fishery products	\$ 190,350	0.00107
4	Agricultural, forestry, and fishery services	\$ 535,447	0.00301
5+6	Metallic ores mining	\$ 30,818	0.00017
7	Coal mining	\$ 218,037	0.00123
8	Crude petroleum and natural gas	\$ 1,441,033	0.00811
9+10	Nonmetallic minerals mining	\$ 188,124	0.00106
11	New construction	\$ 3,614	0.00002
12	Maintenance and repair construction	\$ 2,352,284	0.01324
13	Ordnance and accessories	\$ 2,539	0.00001
14	Food and kindred products	\$ 1,826,194	0.01028
15	Tobacco products	\$ 45,669	0.00026
16	Broad and narrow fabrics, yarn and thread mills	\$ 222,272	0.00125
17	Miscellaneous textile goods and floor coverings	\$ 91,740	0.00052
18	Apparel	\$ 136,319	0.00077
19	Miscellaneous fabricated textile products	\$ 86,060	0.00048
20+21	Lumber and wood products	\$ 1,213,311	0.00683
22+23	Furniture and fixtures	\$ 55,631	0.00031
24	Paper and allied products, except containers	\$ 1,052,360	0.00592
25	Paperboard containers and boxes	\$ 462,014	0.00260
26A	Newspapers and periodicals	\$ 73,821	0.00042
26B	Other printing and publishing	\$ 849,044	0.00478
27A	Industrial and other chemicals	\$ 1,181,528	0.00665
27B	Agricultural fertilizers and chemicals	\$ 70,251	0.00040
28	Plastics and synthetic materials	\$ 359,196	0.00202
29A	Drugs	\$ 452,532	0.00255
29B	Cleaning and toilet preparations	\$ 119,361	0.00067
30	Paints and allied products	\$ 160,671	0.00090
31	Petroleum refining and related products	\$ 900,475	0.00507
32	Rubber and miscellaneous plastics products	\$ 1,439,275	0.00810
33+34	Footwear, leather, and leather products	\$ 65,395	0.00037
35	Glass and glass products	\$ 216,046	0.00122
36	Stone and clay products	\$ 829,810	0.00467
37	Primary iron and steel manufacturing	\$ 803,987	0.00452
38	Primary nonferrous metals manufacturing	\$ 652,531	0.00367
39	Metal containers	\$ 165,207	0.00093
40	Heating, plumbing, and fabricated structural metal products	\$ 635,283	0.00470
41	Screw machine products and stampings	\$ 324,877	0.00183
42	Other fabricated metal products	\$ 721,019	0.00406
43	Engines and turbines	\$ 117,487	0.00066
44+45	Farm, construction, and mining machinery	\$ 68,285	0.00038
46	Materials handling machinery and equipment	\$ 71,284	0.00040
47	Metalworking machinery and equipment	\$ 118,420	0.00067
48	Special industry machinery and equipment	\$ 64,195	0.00036
49	General industrial machinery and equipment	\$ 206,327	0.00116
50	Miscellaneous machinery, except electrical	\$ 269,865	0.00152
51	Computer and office equipment	\$ 647,556	0.00364
52	Service industry machinery	\$ 233,240	0.00131
53	Electrical industrial equipment and apparatus	\$ 322,166	0.00181
54	Household appliances	\$ 58,362	0.00033
55	Electric lighting and wiring equipment	\$ 319,173	0.00180
56	Audio, video, and communication equipment	\$ 269,228	0.00151
57	Electronic components and accessories	\$ 1,542,022	0.00868
58	Miscellaneous electrical machinery and supplies	\$ 169,527	0.00095
59A	Motor vehicles (passenger cars and trucks)	\$ 17,871	0.00010
59B	Truck and bus bodies, trailers, and motor vehicles parts	\$ 639,134	0.00360
60	Aircraft and parts	\$ 265,946	0.00150
61	Other transportation equipment	\$ 36,744	0.00021
62	Scientific and controlling instruments	\$ 449,325	0.00253
63	Ophthalmic and photographic equipment	\$ 111,590	0.00063
64	Miscellaneous manufacturing	\$ 207,050	0.00116
65A	Railroads and related services; ground transportation	\$ 381,905	0.00215
65B	Motor freight transportation and warehousing	\$ 1,698,960	0.00956
65C	Water transportation	\$ 150,828	0.00085
65D	Air transportation	\$ 749,725	0.00422
65E	Pipelines, freight forwarders, and related services	\$ 370,218	0.00208
66	Communications, except radio and TV	\$ 2,435,700	0.01370
67	Radio and TV broadcasting	\$ 28,889	0.00016
68A	Electric services (utilities)	\$ 1,346,645	0.00758
68B	Gas production and distribution (utilities)	\$ 713,025	0.00401
68C	Water and sanitary services	\$ 406,731	0.00229
69A	Wholesale trade	\$ 3,927,435	0.02210
69B	Retail trade	\$ 807,219	0.00454
70A	Finance	\$ 3,993,674	0.02247
70B	Insurance	\$ 1,934,070	0.01088
71A	Owner-occupied dwellings	\$ -	0.00000
71B	Real estate and royalties	\$ 6,512,152	0.03664
72A	Hotels and lodging places	\$ 510,229	0.00287
72B	Personal and repair services (except auto)	\$ 424,431	0.00239
73A	Computer and data processing services	\$ 2,115,266	0.01190
73B	Legal, engineering, accounting, and related services	\$ 3,629,170	0.02042
73C	Other business and professional services, ex medical	\$ 7,361,309	0.04142
73D	Advertising	\$ 3,006,984	0.01692
74	Eating and drinking places	\$ 596,557	0.00336
75	Automotive repair and services	\$ 1,156,798	0.00651
76	Amusements	\$ 880,685	0.00496
77A	Health services	\$ 233,655	0.00131
77B	Educational and social services	\$ 297,284	0.00167
78	Federal Government enterprises	\$ 900,901	0.00507
79	State and local government enterprises	\$ 101,663	0.00057
80	Noncomparable imports	\$ 780,916	0.00439
81	Scrap, used and secondhand goods	\$ 28,050	0.00016
82	General government industry	\$ -	0.00000
83	Rest of the world adjustment to final uses	\$ -	0.00000
84	Household industry	\$ -	0.00000
85	Inventory valuation adjustment	\$ -	0.00000
I	Total intermediate inputs	\$ 75,835,163	0.42669
VA	Value added	\$ 101,894,117	0.57331
T	Total Industry Output	\$ 177,729,280	

Source: Source: Business Research & Economic Advisors

The \$76 billion of inputs (also referred to as apparent consumption) were obtained from local businesses and businesses around the globe. As we noted in the beginning of this section, 35.9 million tons of inbound cargo with an estimated value of \$5 billion was moved through the Port of Tampa. The value of the inbound cargo by commodity group is shown in **Table III.A.2** in Appendix III.A. We have aggregated those commodities into the industry categories of the use matrix. The value of the inbound cargo and the input requirements for those commodities are shown in **Table 26**.

Table 26 – Value (\$1,000) of Inbound Cargo and Estimated Input Requirements in the Tampa Bay Region in 2001

		Input Requirements All Industries	Value of Inbound Cargo	Share of Input Requirements
	Tampa Bay Regional Output	\$ 177,729,280		
2	Other agricultural products	\$ 661,090	\$ 13,049	0.01974
7	Coal and coal products	\$ 218,037	\$ 1,925,881	8.83282
8	Petroleum and related products	\$ 1,441,033	\$ 1,810,048	1.25608
9+10	Nonmetallic minerals mining	\$ 188,124	\$ 45,676	0.24280
14	Food and kindred products	\$ 1,826,194	\$ 116,470	0.06378
20+21	Lumber and wood products	\$ 1,213,311	\$ 11,262	0.00928
25	Paperboard containers and boxes	\$ 462,014	\$ 9,638	0.02086
27A	Industrial and other chemicals	\$ 1,181,528	\$ 486,289	0.41158
35	Glass and glass products	\$ 216,046	\$ 2,597	0.01202
37	Primary iron and steel manufacturing	\$ 803,987	\$ 294,846	0.36673
49	General industrial machinery and equipment	\$ 206,327	\$ 1,405	0.00681
85	All Other Industries	\$ 67,417,474	\$ -	0.37933
I	Total intermediate inputs	\$ 75,835,163		0.42669
VA	Value added	\$ 101,894,117		0.57331
T	Total Industry Output	\$ 177,729,280		

* Excludes the value of inbound used vehicles and boats which were destined for personal consumption.

Source: Source: Business Research & Economic Advisors

As shown in the table, with the exception of coal and petroleum products the value of the inbound cargo was less than the overall production usage of those commodities. Thus, we have assumed that for those commodities where inbound value was less than the input requirements local firms used the full value of the inbound cargo. For example, we have assumed that the \$13 million of inbound agricultural products were used by businesses in the Tampa Bay economy. With respect to coal and petroleum products, the input requirements were less than value of inbound cargo. Since neither coal nor petroleum was produced by the regional economy, we have assumed that the local usage of these prod-

ucts was taken from the inbound cargo and the remaining “unused” portion of these products were left in inventory or exported from the region.

Thus, we estimated that \$2.6 billion (sum of the bolded values in Table 19) of the \$5 billion of inbound cargo was used by Tampa Bay businesses. To estimate their contribution to production, we first calculated the share of the region’s total requirement for each commodity for each industry, i.e., the construction industry used 20 percent of the region’s total estimated usage of petroleum, chemical manufacturers used 3 percent, the air transportation industry used 10 percent, the retail trade industry used 9 percent, and so forth. The utilized inbound commodities were then allocated to each industry in the region based on those shares. The value of the allocated commodities was then multiplied by the appropriate requirement coefficient to estimate each commodity’s contribution to production in those industries in which a commodity was used. The results of these calculations are shown in **Table 27**.

As shown in the table, the \$2.6 billion in utilized imports contributed to the production of \$2.2 billion in goods and services in the Tampa Bay regional economy. These impacts were spread across most industries primarily due to the contribution of coal and petroleum to energy inputs in almost all aspects of the economy. It should be noted that no impacts are shown for the nonmetallic mining, chemicals, railroad, freight and wholesale trade sectors to avoid double counting. In the process of estimating the impacts of the port in the Port Services, Export and Inland Transport sectors, the contribution of imports to these industries was implicitly captured through the direct and indirect impacts of these particular industries.

Table 27 – Contribution of Inbound Cargo to Production in the Tampa Bay Region in 2001

Producing Industry	Output (\$1,000)
Agricultural Services	\$ 16,598
Forestry, etc.	\$ 797
Metallic ores mining	\$ 349
Coal mining	\$ -
Crude petroleum and natural gas	\$ -
Nonmetallic minerals mining	\$ -
Construction	\$ 282,300
Food and kindred products	\$ 126,778
Tobacco products	\$ 4,199
Textiles	\$ 394
Apparel	\$ 1,383
Lumber and wood products	\$ 8,204
Furniture and fixtures	\$ 7,806
Paper and allied products, except containers	\$ 22,892
Newspapers and periodicals	\$ 28,556
Chemicals	\$ -
Petroleum refining and related products	\$ 138,910
Rubber and miscellaneous plastics products	\$ 27,906
Footwear, leather, and leather products	\$ 3,588
Stone, Clay & Glass	\$ 41,611
Primary Metals	\$ 31,376
Fabricated Metals	\$ 138,707
Industrial machinery ³	\$ 94,699
Electrical machinery	\$ 56,290
Motor Vehicles	\$ 533
Other Transportation Eq	\$ 62,125
Instruments	\$ 23,330
Miscellaneous manufacturing	\$ 10,699
Railroads and related services; passenger ground transportation	\$ -
Motor freight transportation and warehousing	\$ -
Air transportation	\$ 85,891
Transportation	\$ -
Communications, except radio and TV	\$ 5,242
Utilities	\$ 457,991
Wholesale trade	\$ -
Retail trade	\$ 127,661
Finance	\$ 5,476
Insurance	\$ 1,488
Real estate and royalties	\$ 14,251
Hotels and lodging places	\$ 3,021
Personal and repair services (except auto)	\$ 7,631
Misc. Bus. Serv.	\$ 95,144
Eating and drinking places	\$ 62,829
Automotive repair and services	\$ 19,371
Amusements	\$ 9,345
Health services	\$ 147,404
Educational and social services, and membership organizations	\$ 20,205
Total Output	\$ 2,192,983

Source: Source: Business Research & Economic Advisors

The wage contribution of the production generated by imports was estimated by multiplying the output contribution by each industry's wage share. Then, we divided each industry's wage contribution by its average annual wage per worker to estimate the employment impact by industry. These calculations are shown in **Table 28**. We estimated that the \$5 billion in imports generated \$2.2 billion in output, 18,773 jobs and \$540 million in wage income in the Tampa Bay region in 2001.

Table 28 - Contribution of Inbound Cargo to Production in the Tampa Bay Region in 2001

Producing Industry	Output (\$1,000)	Wage Share	Wage Income (\$1,000)	Avg. Ann. Wage	Employment
Agricultural Services	\$ 16,598	0.801	\$ 13,294	\$ 16,974	783
Forestry, etc.	\$ 797	0.801	\$ 638	\$ 16,974	38
Metallic ores mining	\$ 349	0.580	\$ 202	\$ 86,957	2
Construction	\$ 282,300	0.348	\$ 98,127	\$ 33,256	2,951
Food and kindred products	\$ 126,778	0.079	\$ 9,965	\$ 35,426	281
Tobacco products	\$ 4,199	0.045	\$ 188	\$ 37,344	5
Textiles	\$ 394	0.223	\$ 88	\$ 20,000	4
Apparel	\$ 1,383	0.216	\$ 298	\$ 24,469	12
Lumber and wood products	\$ 8,204	0.162	\$ 1,331	\$ 26,726	50
Furniture and fixtures	\$ 7,806	0.290	\$ 2,263	\$ 27,778	81
Paper and allied products, except containers	\$ 22,892	0.109	\$ 2,502	\$ 39,548	63
Newspapers and periodicals	\$ 28,556	0.305	\$ 8,701	\$ 30,586	284
Petroleum refining and related products	\$ 138,910	0.028	\$ 3,858	\$ 40,429	95
Rubber and miscellaneous plastics products	\$ 27,906	0.252	\$ 7,032	\$ 31,051	226
Footwear, leather, and leather products	\$ 3,588	-	\$ -		-
Stone, Clay & Glass	\$ 41,611	0.302	\$ 12,565	\$ 48,279	260
Primary Metals	\$ 31,376	0.123	\$ 3,871	\$ 40,698	95
Fabricated Metals	\$ 138,707	0.211	\$ 29,303	\$ 33,960	863
Industrial machinery	\$ 94,699	0.126	\$ 11,913	\$ 41,274	289
Electrical machinery	\$ 56,290	0.172	\$ 9,678	\$ 40,104	241
Motor Vehicles	\$ 533	0.199	\$ 106	\$ 32,258	3
Other Transportation Eq	\$ 62,125	0.172	\$ 10,714	\$ 48,346	222
Instruments	\$ 23,330	0.216	\$ 5,037	\$ 51,064	99
Miscellaneous manufacturing	\$ 10,699	0.254	\$ 2,719	\$ 21,615	126
Air transportation	\$ 85,891	0.299	\$ 25,664	\$ 37,391	686
Communications, except radio and TV	\$ 5,242	0.236	\$ 1,235	\$ 49,554	25
Utilities	\$ 457,991	0.124	\$ 56,791	\$ 55,085	1,031
Retail trade	\$ 127,661	0.269	\$ 34,315	\$ 20,631	1,663
Finance	\$ 5,476	0.306	\$ 1,673	\$ 32,341	52
Insurance	\$ 1,488	0.472	\$ 702	\$ 38,268	18
Real estate and royalties	\$ 14,251	0.049	\$ 703	\$ 15,470	45
Hotels and lodging places	\$ 3,021	0.439	\$ 1,327	\$ 21,830	61
Personal and repair services (except auto)	\$ 7,631	0.349	\$ 2,666	\$ 12,077	221
Misc. Bus. Serv.	\$ 95,144	0.470	\$ 44,670	\$ 22,951	1,946
Eating and drinking places	\$ 62,829	0.658	\$ 41,342	\$ 14,553	2,841
Automotive repair and services	\$ 19,371	0.200	\$ 3,872	\$ 23,226	167
Amusements	\$ 9,345	0.586	\$ 5,478	\$ 28,358	193
Health services	\$ 147,404	0.511	\$ 75,368	\$ 33,006	2,283
Educational and social services, and membership organizations	\$ 20,205	0.473	\$ 9,555	\$ 20,571	464
Total Output	\$ 2,192,983		\$ 539,757		18,773

Source: Source: Business Research & Economic Advisors

The direct economic contribution of the local production generated by imports and the wholesale trade contribution of these imports were summed to arrive at the total direct contribution of the Import sector. The transportation contribution was included in the Inland Transport sector and is discussed next.

Economic Contribution of the Inland Transport Sector

The contribution of the Inland Transport sector was measured as the utilization of rail, truck, air and other ground transportation to move goods and cruise passengers to and from the Port of Tampa and the area. The measurement of these impacts has actually been discussed in the previous subsections of the Data and Methodology section. The rail and truck impacts and their estimation were detailed in the Export and Import subsections, while the air and other ground transportation impacts were discussed in the cruise subsection. As shown in **Table 29**, the Export and Import sectors generated \$59 million of output in the railroad industry and \$236 million in the trucking industry. This production required the employment of 2,269 truckers and 300 railroad workers who received annual wage income of \$94 million and \$19 million, respectively (see **Tables III.D.1** and **III.D.2** in Appendix III.D for the details).

The cruise industry generated the impacts in the air transportation and other ground transportation industries. Combined these two industries employed 239 workers who produced \$23 million in output and received \$9 million in wages (see **Table III.C.2** in Appendix III.C for the details).

Table 29 – Direct Economic Contribution of the Inland Transport Sector to the Tampa Bay Region in 2001

<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Railroad	\$ 59	300	\$ 19	\$ 64,915
Trucking	\$ 236	2,269	\$ 94	\$ 41,531
Air Transportation	\$ 20	198	\$ 7	\$ 33,538
Other Transport*	\$ 3	41	\$ 2	\$ 55,635
Total	\$ 318	2,808	\$ 123	\$ 43,672

Source: Source: Business Research & Economic Advisors

Indirect, Induced and Total Economic Contribution

The indirect and induced impacts were then estimated using the REMI™ models of the Tampa Bay and Florida economies. A description of these models is provided in **Appendix III.E**. REMI™ models are used for both forecasting and impact analysis applications. Each regional model contains a baseline solution or forecast based upon a variety of national and regional economic assumptions. An impact analysis, such as this port impact analysis, is performed by changing one or more input or internal (endogenous) variables within the model, re-simulating the model and then comparing the “impact” solution to the baseline solution or forecast. The difference between the “impact” solution and the baseline solution is the economic impact of the changed variables.

To estimate the total economic impact of the Port of Tampa, the estimated direct impacts were entered into the model as reductions in the baseline solution. For example, we estimated that the direct activity at the port supported 2,269 jobs in the trucking industry (see Table 29) and that these workers received \$94 million in wage income. These impacts were entered into the REMI™ model as a reduction of 2,269 jobs and a \$94 million reduction in wage and salary disbursements in the trucking industry. Similar adjustments were made for other industries that were directly impacted so that a total reduction of 34,658 jobs and \$1.25 billion in wages were entered into the model for 2001. These were the sum of all the direct employment and wage impacts by sector (Port Services, Export, Import and Inland Transport). The model was then re-simulated (solved) and the “port impact” solution was compared to the baseline solution for 2001. The difference between the two solutions represented the total economic contribution or impact of the Port of Tampa. When the REMI™ model was solved, all internal variables were subject to change. In our analysis we focused on the changes in employment, wages and salaries and output.

The indirect and induced contribution of the Port of Tampa was calculated by subtracting the direct contribution from the total contribution for employment, wages and output. Given this approach the indirect and induced impacts were not separable.

Several distinct impact analyses were performed. Individual industry impacts were estimated for the cruise, shipyard and phosphate and related agricultural chemicals industries. The direct impacts for each of these specific-industries were entered into the REMI™ models of the Tampa Bay and Florida economies. The estimation of these direct impacts for each industry was discussed previously. The estimation of the total economic impact for each of these industries was undertaken in isolation from other direct industry impacts. As a consequence, the impact analysis for any one of the industries may include indirect impacts for the other industries.

The impacts reported for the Tampa Bay and Florida economies were estimated by including all direct impacts in a single solution or simulation.

Fiscal Contribution

The total fiscal contribution of the Port of Tampa was determined by the direct, indirect and induced contribution of each sector's economic activity. In Florida, there are six principal state and local taxes: 1) the state sales tax; 2) the state corporate income tax; 3) the state motor fuels tax; 4) the local option sales tax; 5) local motor fuel taxes and 6) local property taxes. In addition, there are numerous smaller taxes and fees collected by state and local taxing authorities.

Total revenues for each of the tax categories, including other fees and taxes, for FY 2001 were obtained from the State of Florida Department of Revenue. Implicit tax rates were estimated for each category by dividing total revenues by statewide personal income. These implicit rates are shown in **Table 30**. The implicit tax rates calculated for the local tax categories are based upon revenues collected among all local taxing jurisdictions throughout the state and not just those in the Tampa Bay region.

The implicit tax rates were then multiplied by the direct and total wage income impacts to estimate the fiscal or tax contribution for the direct and total economic impact of the Port of Tampa.

Table 30– Value of Inbound Cargo and Input Requirements in the Tampa Bay Region in 2001

<u>Categories</u>	<u>Implicit Tax Rates</u>
State Sales Tax	3.93%
State Corporate Income Tax	0.40%
State Fuel Tax	0.42%
Other State Taxes & Fees	0.85%
Local Sales Tax	0.21%
Local Property Tax	4.18%
Local Fuel Tax	0.17%

Source: Source: Business Research & Economic Advisors

Data Appendices

APPENDIX III.A

The value of outbound and inbound cargo by commodity was estimated by multiplying the tonnage of each commodity by the estimated average price per ton of that commodity. The average price per ton was estimated from data obtained from the Port Import Export Reporting Service (PIERS). A cargo shipments database containing data on the tonnage and value of individual commodity shipments, both inbound and outbound, for the months of March, June and October of 2001 was purchased from PIERS. The database contained data for more than 3,800 individual shipments for the three months. The volume and value of the shipments were aggregated into the commodity categories reported by the TPA (see **Table III.A.1** and **III.A.2**). The average price per ton by commodity was calculated by dividing the total commodity value from the PIERS sample by the total commodity tonnage in the PIERS sample.

To arrive at an estimate of the producer price, the prices estimated from the PIERS data required a further adjustment. Implicitly, the PIERS data includes the various trade and transportation margins associated with each commodity, i.e., transportation and wholesale trade costs. Using data from the 1998 I/O Table published by the Bureau of Economic Analysis,¹⁶ estimates of the trade and transportation margins were subtracted from the prices estimated from the PIERS data. For purposes of this study, the estimated PIERS prices were considered to be purchaser prices. Using the BEA data we were able to calculate the share of purchaser value for each of the following margins:

- railroads;
- trucking;
- water transportation;
- air transportation;
- oil and gas pipelines;
- wholesale trade; and
- retail trade.

¹⁶ Bureau of Economic Analysis, U.S. Department of Commerce, Annual Input-Output Accounts of the U.S. Economy, 1998.

Using these shares, the producer prices were then estimated from the PIERS prices. As an example, trade and transportation margins accounted for 30 percent of the purchaser price for non-metallic minerals such as phosphates. The estimated average price per ton (on a producer basis) for each outbound commodity is shown in Table III.A.1.

Table III.A.1 – Outbound Cargo Tonnage and Estimated Value - Port of Tampa - CY 2001

Type	Group	Commodity	Outbound Tonnage			Outbound Value	
			Domestic	Foreign	Total	\$/Ton	Value
Bulk	Phosphate	PHOSPHAT CHEMICAL, BULK	1,605,828	7,311,306	8,917,134	\$ 138.35	\$ 1,233,685,489
Bulk	Phosphate	PHOSPHATE, ROCK, BULK	1,831,426	4,469	1,835,895	\$ 36.29	\$ 66,624,630
Bulk	Food Bulk	CITRUS PELLETS		620,274	620,274	\$ 66.58	\$ 41,295,382
General	Scrap Metal	SCRAP METAL	170,124	113,477	283,601	\$ 2,164.30	\$ 613,796,975
Bulk	Phosphate	PHOSPHORIC ACID		60,313	60,313	\$ 2,824.29	\$ 170,341,371
Bulk	Bldg Rock	GYPSUM ROCK		46,125	46,125	\$ 5.65	\$ 260,606
Bulk	Petroleum	PETROLEUM PRODUCTS	32,063	994	33,057	\$ 166.73	\$ 5,511,484
General	Container	COMMODO, CONTAINERIZED		27,344	27,344	\$ 117.41	\$ 3,210,434
Bulk	Coal	COAL	24,610	-	24,610	\$ 276.99	\$ 6,816,655
Bulk	Oth. Bulk	TALLOW, BULK		22,947	22,947	\$ 328.52	\$ 7,538,477
General	Vehicles	VEHICLES, MINIMUM		22,420	22,420	\$ 1,858.75	\$ 41,673,206
Bulk	Sulphur	SULPHURIC ACID/IN		12,098	12,098	\$ 25.63	\$ 310,066
General	Paper	PAPER/PAPER PRODUCTS		1,582	1,582	\$ 295.15	\$ 466,920
General	Seafood	SEAFOOD, FRESH/FROZEN		12	12	\$ 4,929.92	\$ 59,159
General	Commodities	COMMODITIES, NOS, PCKGD		3,407	3,407	\$ 783.29	\$ 2,668,658
Bulk	Food Bulk	CONCENTRATE, CITRS BULK		10,438	10,438	\$ 337.54	\$ 3,523,266
General	Poultry	POULTRY (FRESH OR FROZ)		3,298	3,298	\$ 1,460.34	\$ 4,816,196
General	Tractors	TRACTORS, OTHER		1,937	1,937	\$ 2,314.30	\$ 4,482,797
General	Machinery	MACHINERY		905	905	\$ 5,406.28	\$ 4,892,688
General	Fertilizer	FERTILIZER, BAGGED		528	528	\$ 187.75	\$ 99,133
General	Food	MEAT (FRESH OR FROZEN)		853	853	\$ 2,085.48	\$ 1,778,916
General	Trailers	TRAILERS, OTHER		262	262	\$ 3,188.20	\$ 835,309
General	Dry Food	FOOD,FRZN/CH,NOS		477	477	\$ 8,054.47	\$ 3,841,983
General	Vegetables	VEGETABLES, FRESH		159	159	\$ 103.87	\$ 16,515
General	Steel	STEEL, PLATES/SHEETS		353	353	\$ 412.44	\$ 145,591
General	Insecticide	INSECT/FUNGICIDES, PKGD		67	67	\$ 2,865.93	\$ 192,017
General	Lumber	PLYWOOD		23	23	\$ 348.41	\$ 8,013
Bulk	Chemicals	CHEMICALS, PACKAGED		5	5	\$ 55.95	\$ 280
General	Yachts	YACHTS & BOATS >19'11		32	32	\$ 8,048.67	\$ 257,557
General	Fruit	FRUIT, FRESH, NOS		9	9	\$ 690.11	\$ 6,211
General	Food	EGGS, FRESH		4	4	\$ 270.33	\$ 1,081
		Total	3,664,051	8,266,118	11,930,169		\$ 2,219,157,066

Source: Tampa Port Authority & BREA

Outbound cargo for calendar year 2001 as reported by the TPA totaled 11.9 million tons and, based upon the adjusted average prices calculated from the PIERS data, had a total estimated producer value of \$2.2 billion. As indicated in the table, 10.7 million tons of phosphates (chemical and rock) were shipped or exported from the Port of Tampa and accounted for 90 percent of the port's outbound tonnage. Phosphate chemicals had an estimated producer price of \$138.35 per ton while phosphate rock had an estimated producer price of \$66.58 per ton. As a consequence, we estimated that the 10.7 million tons of outbound phosphates had a producer value of \$1.3 billion or 60 percent of the value of all outbound cargo.

Average prices for inbound commodities were estimated in the same manner as the prices for the outbound commodities and are shown in Table III.A.2. As shown in the table, inbound cargo for calendar year 2001 as reported by the TPA totaled 35.9 million tons and, based upon average prices calculated from the PIERS data, had a total estimated value of \$5 billion. Over 24 million tons of coal and petroleum products were brought through the Port of Tampa during 2001 accounting for almost 70 percent of the port's inbound tonnage. On a value basis, the \$3.7 billion of coal and petroleum products accounted for 74 percent of inbound commodities.

Table III.A.2 – Inbound Cargo Tonnage and Estimated Value - Port of Tampa - CY 2001

Type	Group	Commodity	Inbound Tonnage			Inbound Value	
			Domestic	Foreign	Total	\$/Ton	Value
Bulk	Aluminum	ALUMINUM		1,093	1,093	\$ 1,419.03	\$ 1,551,004
Bulk	Ammonia	AMMONIA, ANHYDROUS	-	2,537,846	2,537,846	\$ 110.82	\$ 281,239,518
Bulk	Ammonia	AMMONIUM SULFATE	-	31,024	31,024	\$ 66.14	\$ 2,052,008
Bulk	Blgd Rock	CEMENT, BULK	142,860	568,452	711,312	\$ 40.55	\$ 28,845,936
Bulk	Blgd Rock	CONCRETE PRODUCTS	-	2,219	2,219	\$ 1,870.78	\$ 4,151,258
Bulk	Blgd Rock	GRANITE ROCK, BULK		638,107	638,107	\$ 3.50	\$ 2,230,902
Bulk	Blgd Rock	GRAVEL, BULK	5,532	5,532	5,532	\$ 3.14	\$ 17,364
Bulk	Blgd Rock	GYPSUM ROCK		351,136	351,136	\$ 5.65	\$ 1,983,920
Bulk	Blgd Rock	LIMESTONE		948,507	948,507	\$ 8.61	\$ 8,163,055
Bulk	Blgd Rock	PUMICE		28,274	28,274	\$ 10.05	\$ 284,016
General	Chemicals	CALCIUM NITRATE, BAGGED		770	770	\$ 216.80	\$ 166,335
General	Chemicals	CHEMICALS, PACKAGED		1,577	1,577	\$ 55.95	\$ 88,239
General	Chemicals	NITRATE OF SODA, BAGGED		1,327	1,327	\$ 216.80	\$ 287,692
General	Chemicals	POTASH, BAGGED		550	550	\$ 117.59	\$ 64,673
General	Chemicals	POTASSIUM NITRATE, BAGGED		769	769	\$ 110.97	\$ 85,338
Bulk	Coal	COAL	6,621,616	175,698	6,797,314	\$ 276.99	\$ 1,882,768,991
Bulk	Coal	COKE	325,141	48,329	373,470	\$ 115.44	\$ 43,112,255
General	Commodities	COMMODITIES, NOS, PCKGD		1,057	1,057	\$ 592.35	\$ 626,111
General	Container	COMMOD, CONTAINERIZED		2,804	2,804	\$ 4,211.07	\$ 11,807,831
General	Fertilizer	FERTILIZER, BAGGED		1,998	1,998	\$ 187.75	\$ 375,122
General	Fertilizer	FERTILIZER, BAGGED/CONT		1,644	1,644	\$ 187.75	\$ 308,659
Bulk	Food Bulk	CONCENTRATE, CITRUS BULK		56,488	56,488	\$ 716.64	\$ 40,475,959
Bulk	Food Bulk	CORN SYRUP, BULK NOS	77,043		77,043	\$ 570.68	\$ 43,967,213
Bulk	Food Bulk	GRAINS, NOS, BULK	141,288	28,297	169,585	\$ 105.13	\$ 17,828,179
General	Fruit	FRUIT, FRESH, MELONS		51,728	51,728	\$ 248.07	\$ 12,832,089
General	Glass	GLASS PRODUCTS		623	623	\$ 4,167.77	\$ 2,596,521
General	Lumber	CHIPBOARD		2,428	2,428	\$ 317.41	\$ 770,681
General	Lumber	LUMBER, PINE		15,464	15,464	\$ 426.00	\$ 6,587,689
General	Lumber	LUMBER, TOMATO STAKES		11,806	11,806	\$ 295.78	\$ 3,491,982
General	Lumber	PLYWOOD		878	878	\$ 468.56	\$ 411,394
General	Machinery	MACHINERY		236	236	\$ 5,954.66	\$ 1,405,299
Bulk	Oth. Bulk	BAUXITE, BULK		3,638	3,638	\$ 48.97	\$ 178,138
Bulk	Oth. Bulk	CAUSTIC SODA	67,254		67,254	\$ 576.95	\$ 37,763,104
Bulk	Oth. Bulk	IRON ORE	6,029	14,217	20,246	\$ 10.67	\$ 216,070
Bulk	Oth. Bulk	KIESERITE		16,890	16,890	\$ 47.80	\$ 807,282
Bulk	Oth. Bulk	MILLSCALE, BULK		7,554	7,554	\$ 156.95	\$ 1,185,567
Bulk	Oth. Bulk	POTASH, BULK	12,493	35,308	47,801	\$ 100.44	\$ 4,801,349
Bulk	Oth. Bulk	SALT, BULK	11,677	169,489	181,166	\$ 13.81	\$ 2,502,106
Bulk	Oth. Bulk	SLAG		127,552	127,552	\$ 3.14	\$ 400,372
Bulk	Oth. Chem.	CALCIUM NITRATE, DRY BULK		14,752	14,752	\$ 216.80	\$ 3,198,218
Bulk	Oth. Chem.	CALCIUM NITRATE, LIQ BULK		29,333	29,333	\$ 216.80	\$ 6,359,418
Bulk	Oth. Chem.	CHEMICALS, BULK	1,373	7,715	9,088	\$ 55.95	\$ 508,506
Bulk	Oth. Chem.	FERTILIZER MATERIALS, BLK		14,079	14,079	\$ 152.10	\$ 2,141,349
Bulk	Oth. Chem.	NITRATE OF SODA, BULK		2,969	2,969	\$ 216.80	\$ 643,676
Bulk	Oth. Chem.	POTASSIUM NITRATE, BULK		31,437	31,437	\$ 110.97	\$ 3,488,947
General	Other	PROJECT CARGO		5,706	5,706	\$ 801.12	\$ 4,571,189
General	Other	TILE		1,109	1,109	\$ 539.26	\$ 598,040
General	Paper	PAPER/PAPER PRODUCTS		11,280	11,280	\$ 854.48	\$ 9,638,485
Bulk	Petroleum	PETROLEUM PRODUCTS	17,227,965	499,789	17,727,754	\$ 101.74	\$ 1,803,692,528
Bulk	Petroleum	PETROLEUM BKRS, ALL OTHS	62,461		62,461	\$ 101.74	\$ 6,355,032
Bulk	Phosphate	PHOSPHAT CHEMICAL, BULK		49,543	49,543	\$ 138.35	\$ 6,854,274
Bulk	Phosphate	PHOSPHATE, ROCK, BULK		34,812	34,812	\$ 36.29	\$ 1,263,327
General	Poultry	POULTRY (FRESH OR FROZ)		159	159	\$ 1,460.34	\$ 232,194
General	Seafood	SEAFOOD, FRESH/FROZEN		2,833	2,833	\$ 4,929.92	\$ 13,966,472
General	Steel	STEEL, ANGLES		2,158	2,158	\$ 408.32	\$ 882,449
General	Steel	STEEL, BARS		4,235	4,235	\$ 582.94	\$ 2,468,764
General	Steel	STEEL, BEAMS		2,899	2,899	\$ 372.29	\$ 1,079,276
General	Steel	STEEL, CHANNEL		2,748	2,748	\$ 1,290.21	\$ 3,545,493
General	Steel	STEEL, COILS	4,318	118,433	122,751	\$ 641.89	\$ 78,792,209
General	Steel	STEEL, MISCELLANEOUS		2,713	2,713	\$ 379.68	\$ 1,030,060
General	Steel	STEEL, PILINGSS		6,590	6,590	\$ 378.00	\$ 2,501,571
General	Steel	STEEL, PIPE	1,477	70,577	72,054	\$ 457.82	\$ 32,987,783
General	Steel	STEEL, PLATES/SHEETS	2,676	17,600	20,276	\$ 340.66	\$ 6,907,156
General	Steel	STEEL, REBAR		8,548	8,548	\$ 527.58	\$ 4,509,793
General	Steel	STEEL, TUBING		6,100	6,100	\$ 355.43	\$ 2,168,097
General	Steel	STEEL, WIRE IN COILS	5,559	9,796	15,355	\$ 725.88	\$ 11,145,904
General	Steel	STEEL, WIRE ROD	199,121	44,377	243,498	\$ 598.62	\$ 145,276,213
Bulk	Sulphur	SULPHATE, FERROUS		6,745	6,745	\$ 36.75	\$ 247,851
Bulk	Sulphur	SULPHUR, LIQUID	3,054,666	628,571	3,683,237	\$ 36.75	\$ 135,343,844
Bulk	Sulphur	SULPHURIC ACID/IN		394,644	394,644	\$ 25.63	\$ 10,114,527
General	Vegetables	VEGETABLES, FRESH		4	4	\$ 103.87	\$ 415
General	Vegetables	VEGETABLES, FRESH, CUKES		1,442	1,442	\$ 150.13	\$ 216,483
General	Vehicles	AUTOMOBILES) <10M LBS		1	1	\$ 6,245.10	\$ 6,484
General	Vehicles	VEHICLES, EACH		42,755	42,755	\$ 6,245.10	\$ 267,009,201
General	Vehicles	VEHICLES, MINIMUM		461	461	\$ 6,245.10	\$ 2,878,991
General	Vehicles	VEHICLES, OTHER		830	830	\$ 6,245.10	\$ 5,183,432
		Total	27,970,549	7,963,520	35,934,069		\$ 4,992,237,193

Source: Tampa Port Authority & BREA

APPENDIX III.B

BUNKERING SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port’s contribution to the Tampa and Florida economies. Your company’s assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. What were your firm’s gross sales revenues for your most recent full fiscal year?

\$ _____ Fiscal Year Beginning Period: Mo. _____ Yr. 19 _____

2. Approximately what percentage of your gross revenues were generated at or connected to the Port of Tampa? _____%

3. Did you provide bunkering services to passenger cruise ships? Yes No

a. If yes, approximate the percentage of your gross revenues that were generated from serving cruise ships: _____%

4. Approximately what percentage of your firm’s revenues were generated from the following categories (must sum to 100%)?

Bunkering: _____%

Warehousing: _____%

Importing: _____%

Terminal Operations: _____%

Other: _____% Describe: _____

Total: 100%

Labor Expenses

Please provide the following information on employment, wages and benefits.

5. Please provide the following for you firm’s full-time employees for your most recent fiscal year:

- a. Number of employees: _____
- b. Annual Salary and Wages: \$ _____
- c. Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- d. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

6. Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:

- a. Number of employees: _____
- b. Average Weekly Hours: _____
- c. Average Hourly Pay: \$ _____
- d. Annual Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- e. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

7. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %
Structures	\$ _____	_____ %	_____ %

SHIP CHANDLERING SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port’s contribution to the Tampa and Florida economies. Your company’s assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. What were your firm’s gross sales revenues for your most recent full fiscal year?

\$ _____ Fiscal Year Beginning Period: Mo. _____ Yr. 19 _____

2. Approximately what percentage of your gross sales revenues were generated at or connected to the Port of Tampa? _____%

3. Did you provide chandlery services to passenger cruise ships? Yes No

a. If yes, approximate the percentage of your gross revenues that were generated from serving cruise ships: _____%

4. Approximately what percentage of your firm’s revenues were generated from the following categories (must sum to 100%)?

Ship Agents/Owners: _____%

Port Industry Firms: _____% (Stevedores, Terminal Operators, Etc.)

Non-Port Industry Firms: _____% (Construction, Manufacturing, Etc.)

Other: _____% Describe: _____

Total: 100%

Labor Expenses

Please provide the following information on employment, wages and benefits.

5. Please provide the following for you firm’s full-time employees for your most recent fiscal year:

a. Number of employees: _____

b. Annual Salary and Wages: \$ _____

c. Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)

d. Approximate percentage of these employees living in:

Tampa: _____% Elsewhere in Florida: _____%

6. Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:

- a. Number of employees: _____
- b. Average Weekly Hours: _____
- c. Average Hourly Pay: \$ _____
- d. Annual Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- e. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

7. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %
Structures	\$ _____	_____ %	_____ %

SHIP REPAIR & MAINTENANCE SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port's contribution to the Tampa and Florida economies. Your company's assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. What were your firm's gross sales revenues for your most recent full fiscal year?
\$ _____ Fiscal Year Beginning Period: Mo. ____ Yr. 19 ____
2. Approximately what percentage of your gross revenues were generated at or connected to the Port of Tampa? _____%
3. How many ships did your firm service during your most recent fiscal year?
4. Cargo Ships: _____ Passenger Ships: _____ Other: _____
5. Approximate the percentage of your gross revenues that were generated from serving cruise ships: _____%

Labor Expenses

Please provide the following information on employment, wages and benefits.

6. Please provide the following for you firm's full-time employees for your most recent fiscal year:
 - b. Number of employees: _____
 - c. Annual Salary and Wages: \$ _____
 - d. Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
 - e. Approximate percentage of these employees living in:

Tampa: _____% Elsewhere in Florida: _____%
7. Please provide the following for you firm's part-time employees (including any contract employees) for your most recent fiscal year:
 - a. Number of employees: _____
 - b. Average Weekly Hours: _____

- c. Average Hourly Pay: \$ _____
- d. Annual Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- e. Approximate percentage of these employees living in:
- f. Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

- 8. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.**

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %
Structures	\$ _____	_____ %	_____ %

GOVERNMENT SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port’s contribution to the Tampa and Florida economies. Your company’s assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. Which best describes your jurisdictional authority?

Federal State and/or Local Other: _____

2. What were your agency’s total collection of taxes, charges and fees (excluding intergovernmental transfers, personal & corporate income taxes) for your most recent full fiscal year?

\$ _____ Fiscal Year Beginning Period: Mo. _____ Yr. 19 _____

3. Approximately what percentage of these gross taxes, charges and fees were generated at or connected to the Port of Tampa? _____%

4. Approximately what percentage of your gross collections were obtained through

User fees: _____% Tax Assessments: _____% Fines: _____%

Other (Describe: _____): _____%

Labor Expenses

Please provide the following information on employment, wages and benefits of those employees that provide services and support to port-related businesses and activity.

5. Please provide the following for you agency’s full-time employees for your most recent fiscal year:

a. Number of employees: _____

b. Annual Salary and Wages: \$ _____

c. Value of Benefits: \$ _____ (including insurance, pension contributions)

d. Approximate percentage of these employees living in:

e. Tampa: _____% Elsewhere in Florida: _____%

6. Please provide the following for you agency’s part-time employees (including any contract employees) for your most recent fiscal year:

- a. Number of employees: _____
- b. Average Weekly Hours: _____
- c. Average Hourly Pay: \$ _____
- d. Annual Value of Benefits: \$ _____ (including insurance, pension contributions)
- e. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

7. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %
Structures	\$ _____	_____ %	_____ %

STEVEDORING SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port's contribution to the Tampa and Florida economies. Your company's assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. What percentage of your firm's gross revenues are generated by stevedoring services? _____%
2. What were your firm's gross revenues for your most recent full fiscal year?
3. \$_____ Fiscal Year Beginning Period: Mo. _____ Yr. 19 _____
4. Approximately what percentage of your gross revenues were generated at or connected to the Port of Tampa? _____%
5. How many of tons of cargo did you stevedore during your most recent full fiscal year? Tons: _____
6. Did you provide stevedoring services to passenger cruise ships? Yes No
 - a. If yes, approximate the percentage of your gross revenues that were generated from serving cruise ships: _____%

7. To the best of your ability please approximate the percentage of your revenues and the average charge per ton⁺ your firm generated during your most recent fiscal year for the following cargo categories:

<u>Category</u>	<u>% of Rev.</u>	<u>Rate/Ton</u>	<u>Category</u>	<u>% of Rev.</u>	<u>Rate/Ton</u>
Phosphate			Coal	_____ %	\$ _____
Rock	_____ %	\$ _____	Gypsum	_____ %	\$ _____
Chemicals	_____ %	\$ _____	Other Dry Bulk	_____ %	\$ _____
Ammonia	_____ %	\$ _____	Other Chemicals	_____ %	\$ _____
Petroleum	_____ %	\$ _____	Other Liq. Bulk	_____ %	\$ _____
Grains	_____ %	\$ _____	Bananas	_____ %	\$ _____
Livestock	_____ %	\$ _____	Other Ag. Prod.	_____ %	\$ _____
Automobiles	_____ %	\$ _____	Scrap Metal	_____ %	\$ _____
Other Metals	_____ %	\$ _____	Oth Gen Cargo	_____ %	\$ _____

Labor Expenses

Please provide the following information on employment, wages and benefits.

8. How many man-hours of stevedoring services did your firm provide in your most recent fiscal year? _____ Man-hours

9. Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:

a. Number of employees: _____

b. Annual Salary and Wages: \$ _____

c. Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)

d. Approximate percentage of these employees living in:

Tampa: _____ % Elsewhere in Florida: _____ %

⁺ We recognize that contracts might be offered on a basis other than a per ton basis. We ask that you estimate the per ton charge to the best of your ability.

10. Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:

- a. Number of employees: _____
- b. Average Weekly Hours: _____
- c. Average Hourly Pay: \$_____
- d. Annual Value of Benefits: \$_____ (including insurance, 401k and pension contributions)
- e. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

11. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$_____	_____%	_____%
Telecomm	\$_____	_____%	_____%
Utilities	\$_____	_____%	_____%
Rent	\$_____	_____%	_____%
Capital Purchases			
Equipment	\$_____	_____%	_____%
Structures	\$_____	_____%	_____%

TERMINAL FACILITIES & WAREHOUSING

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port’s contribution to the Tampa and Florida economies. Your company’s assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. Which of the following represents your principal business activity? (Check only one)

- Terminal Operations Warehousing
- Other (describe): _____

2. What were your firm’s gross sales revenues for your most recent full fiscal year?

\$ _____ Fiscal Year Beginning Period: Mo. ____ Yr. 19 ____

3. Approximately what percentage of your gross sales revenues was generated by products/commodities processed at the Port of Tampa? _____%

4. Did you provide terminal or warehousing services for passenger cruise ships?

- Yes No

If yes, approximate the percentage of your gross revenues that were generated from serving cruise ships: _____%

5. Approximately what percentage of your firm’s revenues was generated from the following categories (must sum to 100%)?

- Terminal Operations: _____%
- Warehousing: _____%
- Importing: _____%
- Exporting: _____%
- Other: _____% Describe: _____
- Total: 100%

Labor Expenses

Please provide the following information on employment, wages and benefits.

6. Please provide the following for you firm’s full-time employees for your most recent fiscal year:

- a. Number of employees: _____
- b. Annual Salary and Wages: \$ _____
- c. Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- d. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

7. Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:

- a. Number of employees: _____
- b. Average Weekly Hours: _____
- c. Average Hourly Pay: \$ _____
- d. Annual Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- e. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

8. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Cost of Materials	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %

Structures \$ _____ % _____ %

9. To the best of your ability please approximate the percentage of your gross sales revenues and the average charge per ton⁺ for handling (terminal operations) or average charge per ton⁺ per month for storage (warehousing) that your firm generated during your most recent fiscal year for the following cargo categories:

<u>Category</u>	<u>% of Rev.</u>	<u>Rate/Ton</u>	<u>Category</u>	<u>% of Rev.</u>	<u>Rate/Ton</u>
Phosphate			Coal	_____ %	\$ _____
Rock	_____ %	\$ _____	Gypsum	_____ %	\$ _____
Chemicals	_____ %	\$ _____	Other Dry Bulk	_____ %	\$ _____
Ammonia	_____ %	\$ _____	Sulphur	_____ %	\$ _____
Other Chemicals	_____ %	\$ _____	Petroleum	_____ %	\$ _____
Other Liq. Bulk	_____ %	\$ _____	Grains	_____ %	\$ _____
Fruits & Veggies.	_____ %	\$ _____	Livestock	_____ %	\$ _____
Other Ag. Prod.	_____ %	\$ _____	Steel Prod.	_____ %	\$ _____
Automobiles	_____ %	\$ _____	Scrap Metal	_____ %	\$ _____
Other Metals	_____ %	\$ _____	Oth Gen Cargo	_____ %	\$ _____

⁺ We recognize that contracts might be offered on a basis other than a per ton basis. We ask that you estimate the per ton charge to the best of your ability.

PILOTING/TOWING/TUGS/BARGE SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port’s contribution to the Tampa and Florida economies. Your company’s assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. What were your firm’s gross sales revenues for your most recent full fiscal year?

\$ _____ Fiscal Year Beginning Period: Mo. _____ Yr. 19 _____

2. Approximately what percentage of your gross revenues were generated at or connected to the Port of Tampa? _____%

3. Did you provide services to passenger cruise ships? Yes No

If yes, approximate the percentage of your gross revenues that were generated from serving cruise ships: _____%

4. Approximately what percentage of your firm’s revenues were generated from the following categories (must sum to 100%)?

Ship Agents/Owners: _____%

Port Industry Firms: _____% (Stevedores, Terminal Operators, Etc.)

Non-Port Industry Firms: _____% (Construction, Manufacturing, Etc.)

Other: _____% Describe: _____

Total: 100%

Labor Expenses

Please provide the following information on employment, wages and benefits.

5. Please provide the following for you firm’s full-time employees for your most recent fiscal year:

a. Number of employees: _____

b. Annual Salary and Wages: \$ _____

- c. **Value of Benefits:** \$ _____ (including insurance, 401k and pension contributions)
 - d. **Approximate percentage of these employees living in:**
 Tampa: ____% Elsewhere in Florida: ____%
6. **Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:**
- a. **Number of employees:** _____
 - b. **Average Weekly Hours:** _____
 - c. **Average Hourly Pay:** \$ _____
 - d. **Annual Value of Benefits:** \$ _____ (including insurance, 401k and pension contributions)
 - e. **Approximate percentage of these employees living in:**
 Tampa: ____% Elsewhere in Florida: ____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

7. **Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.**

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %
Structures	\$ _____	_____ %	_____ %

PORT SERVICES

On behalf of the Tampa Port Authority, BREA is conducting a comprehensive analysis of the port’s contribution to the Tampa and Florida economies. Your company’s assistance is essential for the successful completion of this project. All data will be held in the strictest confidence. All data will be aggregated to and analyzed at an industry level. No firm-specific data will be released to any third party or published in the final report. If you have any questions, please contact Dr. Andrew Moody of BREA at 610-524-5973. Completed surveys can be faxed to BREA at 610-363-9273 or mailed to BREA, P.O. Box 955, Exton PA 19341.

Revenues and Charges

1. Which of the following represents your principal business activity? (Check only one)

- Stevedoring Ship Agent Customhouse Broker
- Freight Forwarder Port Services Terminal Operator & Warehouser
- Legal Piloting Shipyard/Drydock/Repairs
- Towing/Tugs/Barges Other: Describe _____

2. To which types of ships do you provide services? (Check all that apply)

- Cruise Ships Bulk Cargo Ships General Cargo Ships

3. What were your firm’s gross sales revenues for your most recent full fiscal year?

\$ _____ Fiscal Year Beginning Period: Mo. _____ Yr. 19 _____

4. Please approximate the percentage of your firms gross revenues accounted by providing services to:

- Cruise Ships: _____% Bulk Cargo Ships: _____%

5. Approximately what percentage of your gross revenues were generated at or connected to the Port of Tampa? _____%

Labor Expenses

Please provide the following information on employment, wages and benefits.

6. Please provide the following for you firm’s full-time employees for your most recent fiscal year:

- a. Number of employees: _____**

- b. Annual Salary and Wages: \$ _____
- c. Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- d. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

7. Please provide the following for you firm’s part-time employees (including any contract employees) for your most recent fiscal year:

- a. Number of employees: _____
- b. Average Weekly Hours: _____
- c. Average Hourly Pay: \$ _____
- d. Annual Value of Benefits: \$ _____ (including insurance, 401k and pension contributions)
- e. Approximate percentage of these employees living in:
 Tampa: _____% Elsewhere in Florida: _____%

Non-Labor Expenses

Please provide the following information on the selected non-labor expenses during the most recent fiscal year. The value of capital purchases should represent the value of equipment and structures that were put-in-place or in development during 2001.

8. Please provide expenses in the most recent fiscal year for the following categories and your best estimate of the percentage of these expenses paid to firms located in Tampa and elsewhere in Florida.

<u>Category</u>	<u>Expenses</u>	<u>% to Tampa Firms</u>	<u>% Elsewhere in Florida</u>
Insurance	\$ _____	_____ %	_____ %
Telecomm	\$ _____	_____ %	_____ %
Utilities	\$ _____	_____ %	_____ %
Rent	\$ _____	_____ %	_____ %
Capital Purchases			
Equipment	\$ _____	_____ %	_____ %
Structures	\$ _____	_____ %	_____ %

APPENDIX III.C

Estimates of cruise passenger spending were derived from statistics on the average spending per type of visitor, i.e., day tripper, hotel/motel stay, condo stay, etc., for each of the categories as reported by Bonn Marketing Research Group, Inc. and published by the Tampa Bay Convention and Visitors Bureau (TBCVB). Since these were averages for all visitors, not just cruise visitors, they were adjusted to reflect the type of stay of cruise passengers and their average length of stay as reported in the TBCVB report.

The TBCVB reported total expenditures for five groups of visitors:

- Hotel/Motel Stays
- Visitors to Friend and Family (VFR)
- Campground Stays
- Condo Stays
- Day-trippers

Visitor spending was estimated for the following ten categories:

- Restaurants
- Lodging
- Shopping
- Attractions
- Ground Transportation
- Special Events
- Evening Entertainment
- Groceries
- Sport Events
- Other

The TBCVB study also reported the distribution of cruise passengers by type of visitor (see Table 12). Based upon the average expenditure per cruise party per day of \$225.39, a total of 274,027 cruise visitors, an average cruise party of 3.13 passengers and an average length of stay of 1.17 days, we estimated that during 2001 cruise passengers spent \$23.1 million in the Tampa and Orlando areas.

$$\$23.1 \text{ million} = (\$225.39 \div 3.13 \times 274,027 \times 1.17)$$

These total expenditures were allocated to each of the five visitor types and each of the ten categories based upon the percentage of cruise passengers in each of the five visitor types. We assumed that cruise passengers in each visitor group spread their spending across the ten spending categories in the same fashion as all visitors to the Tampa area.

The estimated total spending for cruise passengers by category for all overnight stays (hotel, VFR, campgrounds and condos) and day trippers (intransit passengers, day of cruise arrivals and difference between embarkations and disembarkations) are shown in **Table III.C.1**. The 274,028 cruise passengers (embarkations plus visits) spent an estimated \$22.1 million in the Tampa area during 2001 for an average of \$80.78 per passenger. Those passengers who stayed one or more nights in the Tampa area spent an estimated \$10 million while day-trippers spent an estimated \$12.2 million. The Tampa area spending is \$22.1 million rather than \$23.1 million because 11.9 percent of cruise passengers arrived from Orlando. It was assumed that their spending took place in Orlando rather than Tampa.

Table III.C.1 – Cruise Passenger Spending by Category - Tampa - CY 2001

<u>Category</u>	<u>All Cruise Passengers</u>	<u>Avg. Exp per Passenger</u>	<u>Overnight Stays</u>	<u>Day Trippers & Intransit</u>
Hotel	\$ 2,092,569	\$ 7.64	\$ 2,092,569	
Restaurant	\$ 5,934,258	\$ 21.66	\$ 2,355,808	\$ 3,578,450
Shopping	\$ 3,321,169	\$ 12.12	\$ 1,274,148	\$ 2,047,021
Attractions	\$ 4,418,790	\$ 16.13	\$ 1,650,555	\$ 2,768,235
Ground Transit	\$ 2,544,931	\$ 9.29	\$ 1,111,710	\$ 1,433,221
Special Events	\$ 834,974	\$ 3.05	\$ 307,106	\$ 527,867
Entertainment	\$ 574,414	\$ 2.10	\$ 298,205	\$ 276,210
Groceries	\$ 1,081,447	\$ 3.95	\$ 384,784	\$ 696,662
Other	\$ 1,014,271	\$ 3.70	\$ 360,574	\$ 653,696
Sporting Event	\$ 318,464	\$ 1.16	\$ 128,186	\$ 190,278
Total	\$ 22,135,286	\$ 80.78	\$ 9,963,646	\$ 12,171,640

Source: Bonn Marketing Research Group, Inc. & BREA

The following table shows the estimates of the output, wage income and employment impact of cruise industry (cruise lines and their passengers) spending in the Tampa Bay region during 2001. The spending estimates were treated as the estimated output contribution of the cruise service providers for the following expenditure categories: business services, personal services, air transportation, transportation services, lodging and entertainment/amusements (see Table 16). Output for passenger spending for restaurants, shopping, groceries and other retail was estimated as retail trade margins associated with that spending. The trade margin data were obtained from the 1998 U.S. Input-Output Accounts.¹⁷ These margins represent the value created by local businesses. For example, the trade margin for restaurants is .29. Thus, we have estimated restaurant output to be \$1.7 million [.29 x \$5.9 million (passenger spending at restaurants)]. Similarly, passenger spending for shopping, groceries and other retail were summed to \$5.4 and multiplied by the average retail trade margin of .335 to arrive at estimated retail output of \$1.8 million.

Table III.C.2 – Estimated Output, Wages and Employment Generated by Cruise Industry Spending - Tampa - CY 2001*

Industry	Output	Wage Share	Wage Income	Average Annual Wage per Worker	Employment
Transportation Services	\$ 2,571,170	32.6%	\$ 839,231	\$ 20,469	41
Business Services	\$ 2,636,090	42.7%	\$ 1,126,665	\$ 25,037	45
Personal Services	\$ 2,514,070	24.8%	\$ 623,490	\$ 18,338	34
Air Transportation	\$ 19,634,877	33.8%	\$ 6,640,516	\$ 33,538	198
Lodging	\$ 2,092,569	30.1%	\$ 629,236	\$ 18,507	34
Restaurants	\$ 1,725,863	33.0%	\$ 568,672	\$ 12,099	47
Retail Trade	\$ 1,816,549	33.0%	\$ 598,553	\$ 18,138	33
Entertainment/Amusements	\$ 6,146,642	31.2%	\$ 1,918,982	\$ 22,845	84
Total	\$ 39,137,832		\$ 12,945,345		516

* Excludes cruise line expenditures for chandlers and shipbuilding which were captured by the port service providers and wharfage and dockage fees which were captured by government agencies.

Source: Bonn Marketing Research Group, Inc. & BRE A

Wage income was estimated by multiplying output by the appropriate wage share. And finally, the employment contribution was estimated by dividing the wage impact by the average wage per worker for that industry. Thus, we estimated that the \$46.9 million (ex-

¹⁷ Bureau of Economic Analysis, U.S. Department of Commerce, Annual Input-Output Accounts of the U.S. Economy, 1998.

cludes chandlery, shipbuilding, and port fees which were captured elsewhere) in spending by the cruise lines and their passengers in the Tampa Bay area generated \$39.1 million in output, \$12.9 million in wages and 516 jobs.

APPENDIX III.D

To estimate the contribution of the non-locally produced exports, each export value was first multiplied by the wholesale trade and the two transportation margins that were appropriate for the commodity. The results of that multiplication are shown as the implied trade, truck and railroad output for each commodity. Only half of the export value was included in the calculation of the transportation output based on discussions with transporters that indicated that only about half of these exports used local transportation companies. The outputs were then summed to generate the total wholesale trade, truck and railroad output. These totals were then multiplied by their corresponding wage share to generate wage income in each industry. Finally, the wage income was divided by each industry's average annual wage to estimate the corresponding employment.

Table III.D.1 – Estimated Output, Wages and Employment Generated in the Wholesale Trade and Inland Transportation Industries by Non-Locally Produced Exports - Tampa CY 2001

	Estimated Export Value	Wholesale Trade Margin	Trucking Margin	Other Transport Margins	Implied Trade Output	Implied Truck Output	Implied Other Transp. Output (Railroad)	Transp. Total
Petroleum	\$ 5,511,484	15.4%	5.6%	3.1%	\$ 848,769	\$ 139,881	\$ 173,061	\$ 312,942
Vehicles	\$ 47,248,870	11.0%	1.4%	1.7%	\$ 5,197,376	\$ 289,163	\$ 807,956	\$ 1,097,119
General Cargo	\$ 6,816,655	15.1%	0.8%	0.6%	\$ 1,029,315	\$ 25,767	\$ 39,537	\$ 65,304
Machinery	\$ 5,879,092	14.7%	2.3%	0.7%	\$ 864,227	\$ 59,790	\$ 41,154	\$ 100,944
Coal	\$ 4,892,688	5.2%	3.5%	5.1%	\$ 254,420	\$ 76,619	\$ 251,484	\$ 328,104
Lumber	\$ 8,013	14.2%	4.9%	1.8%	\$ 1,138	\$ 176	\$ 143	\$ 319
	\$ 70,356,801		Total Output		\$ 8,195,243	\$ 591,397	\$ 1,313,333	\$ 1,904,731
			Wage Share		33.7%	39.9%	33.0%	35.1%
			Estimated Wages		\$ 2,761,797	\$ 235,968	\$ 433,400	\$ 669,368
			Annual Wage		\$ 40,867	\$ 41,550	\$ 65,000	\$ 52,104
			Estimated Empl.		68	6	7	13

Source: Business Research and Economic Advisors

The results show that the \$70 million in non-locally produced exports generated \$8.2 million in wholesale trade output in the Tampa Bay region and \$1.9 million in transportation output. This production required 68 wholesale trade workers, 6 truckers and 7 railroad employees (annualized). These workers received wages of \$2.8 million in the trade sector, \$.2 million in the trucking industry and \$.5 million in the railroad industry.

To estimate the contribution of inbound cargo, each import value was first multiplied by the wholesale trade and the two transportation margins that were appropriate for the commodity. The results of that multiplication are shown as the implied trade, truck and railroad output for each commodity. The outputs were then summed to generate the total wholesale trade, truck and railroad output. These totals were then multiplied by their corresponding wage shares to generate wage income in each industry. Finally, the wage income was divided by each industry's average annual wage to estimate the corresponding employment.

Table III.D.2 – Estimated Output, Wages and Employment Generated in the Wholesale Trade and Inland Transportation Industries by Inbound Cargo - Tampa - CY 2001

	Value of Inbound Cargo	Wholesale Trade Margin	Trucking Margin	Other Transport Margins	Implied Trade Output	Implied Truck Output	Implied Other Transp. Output (Railroad)	Transp. Output	
Petroleum	\$ 1,810,047,560	7.0%	5.2%	1.0%	\$ 126,386,571	\$ 94,122,473	\$ 18,281,480	\$ 112,403,953	\$ 4,369,971,081
Coal	\$ 1,925,881,146	2.7%	5.2%	1.0%	\$ 51,421,027	\$ 100,145,820	\$ 19,451,400	\$ 119,597,219	\$ 1,571,257,036
Other Chemicals	\$ 446,030,439	14.7%	4.6%	2.1%	\$ 65,477,268	\$ 20,695,812	\$ 9,545,051	\$ 30,240,864	\$ 1,754,862,900
Vehicles	\$ 275,076,308	10.5%	1.4%	1.7%	\$ 28,855,505	\$ 3,741,038	\$ 4,703,805	\$ 8,444,843	\$ 350,312,307
Steel	\$ 294,845,771	11.1%	3.1%	0.9%	\$ 32,609,942	\$ 9,228,673	\$ 2,683,097	\$ 11,911,769	\$ 237,775,960
Food	\$ 116,470,017	11.0%	2.6%	1.2%	\$ 12,800,055	\$ 2,993,279	\$ 1,409,287	\$ 4,402,567	\$ 250,324,060
Other Mining	\$ 45,676,452	3.7%	5.2%	1.0%	\$ 1,690,029	\$ 2,375,175	\$ 461,332	\$ 2,836,508	\$ 99,267,395
General Cargo	\$ 31,457,159	14.6%	0.8%	0.6%	\$ 4,602,182	\$ 264,240	\$ 182,452	\$ 446,692	\$ 41,149,915
Agriculture	\$ 13,048,987	7.6%	2.5%	1.7%	\$ 995,638	\$ 327,530	\$ 216,613	\$ 544,143	\$ 26,408,285
Paper	\$ 9,638,485	8.9%	5.9%	1.5%	\$ 853,006	\$ 570,598	\$ 142,650	\$ 713,248	\$ 11,509,207
Lumber	\$ 11,261,667	13.7%	4.9%	1.8%	\$ 1,543,975	\$ 549,569	\$ 200,458	\$ 750,027	\$ 8,072,232
Phosphate	\$ 8,801,383	14.7%	4.6%	3.1%	\$ 1,292,043	\$ 408,384	\$ 276,363	\$ 684,748	\$ 8,967,665
Glass	\$ 2,596,521	10.0%	8.0%	2.1%	\$ 258,354	\$ 207,722	\$ 54,787	\$ 262,508	\$ 6,824,592
Machinery	\$ 1,405,299	14.2%	2.3%	0.7%	\$ 199,834	\$ 31,760	\$ 9,837	\$ 41,597	\$ 2,075,659
	\$ 4,992,237,193				\$ 328,985,427	\$ 235,662,073	\$ 57,618,611	\$ 293,280,685	\$ 1,163,869
					Wage Share	28.7%	39.9%	33.0%	38.5%
					Estimated Wages	\$ 94,279,519	\$ 94,029,167	\$ 19,014,142	\$ 113,043,309
					Annual Wage	\$ 40,867	\$ 41,550	\$ 65,000	\$ 44,234
					Estimated Empl.	2,307	2,263	293	2,556

Source: Business Research and Economic Advisors

The results show that the \$5 billion of inbound cargo generated \$329 million in wholesale trade output in the Tampa Bay region and \$293 million in transportation output. This production required 2,307 wholesale trade workers, 2,263 truckers and 293 railroad employees. These workers received wages of \$94 million in the trade sector, \$94 million in the trucking industry and \$19 million in the railroad industry.

APPENDIX III.E

Founded in 1980, Regional Economic Models, Inc. (REMI) constructs models that reveal the economic and demographic effects that policy initiatives or external events may cause on a local economy. REMI™ Policy Insight model users include national, regional, state, and city governments, as well as universities, nonprofit organizations, public utilities and private consulting firms. REMI™ users in Florida include the State of Florida (Legislature, Governor's Office, Agency for Workforce Innovation), Tampa Bay Regional Planning Council and the University of South Florida, Florida State University, City of Jacksonville, Florida's Space Coast Economic Development Commission, and the Northeast Florida Regional Planning Council.

REMI™ is a dynamic model that predicts how changes in an economy will occur on a year-by-year basis. The model is sensitive to a wide range of policy and project alternatives as well as interactions between regional economies and the national economy. The model uses data from the Bureau of Economic Analysis, the Bureau of Labor Statistics, the Department of Energy, the Census Bureau and other public sources.

The model's dynamic property means that it forecasts not only what will happen but also when it will happen. This results in long-term predictions that have general equilibrium properties. This means that the long-term properties of general equilibrium models are preserved without sacrificing the accuracy of event timing predictions and without simply taking elasticity estimates from secondary sources.

REMI™ is a structural model, meaning that it clearly includes cause and effect relationships. The model shares two key underlying assumptions with mainstream economic theory: households maximize utility and producers maximize profits. Because these assumptions make sense to most people, the model can be understood by intelligent lay people as well as trained economists.

In the model, businesses produce goods to sell to other firms, consumers, investors, governments and purchasers outside of the region. The output is produced using labor, capital, fuel and intermediate inputs. The demand for labor, capital and fuel per unit of output depends on their relative costs, because an increase in the price of any one of these inputs

leads to substitution away from that input to other inputs. The supply of labor in the model depends on the number of people in the population and the proportion of those people who participate in the labor force. Economic migration affects the population size. People will move into an area if the real after-tax wage rates or the likelihood of being employed increases in a region.

Supply and demand for labor in the model determines the wage rates. These wage rates, along with other prices and productivity, determine the cost of doing business for every industry in the model. An increase in the cost of doing business causes either an increase in price or a cut in profits depending on the market for the product. In either case, an increase in cost would decrease the share of the local and US market supplied by local firms. This market share combined with the demand described above determines the amount of local output. There are also many other feedback loops in the model such as the feedback from changes in wages and employment to income and consumption, the feedback of economic expansion to investment, and the feedback of population to government spending.

The model brings together the fundamental economic elements mentioned in the previous two paragraphs to determine a baseline forecast for each year. The model includes all the inter-industry relationships that are in an input-output model, like IMPLAN ProfessionalTM, and goes beyond the input-output model by including added relationships with population, labor supply, wages, prices, profits, and market shares.

A feature, which distinguishes the REMITM model from other economic simulation models, is the way REMITM handles the labor market. In the basic REMITM model, the general equilibrium demand for labor slopes downward and the general equilibrium supply of labor slopes upward. The wage responds to derived labor demand and there is an inverse relationship between the wage and market share. Thus, as the demand for labor rises, the wage rises and market share falls. Also, migration responds directly (positively) to a change in the wage, thereby increasing the labor supply.

In contrast with REMI™, a basic input-output model suppresses the labor intensity response to wage rates, market shares responses to regional competitiveness, and migration response to real after-tax wage rates and relative employment rates. The result is a horizontal labor supply curve and a vertical labor demand curve. Employment is a fixed proportion of output. Thus, a basic input-output model is linear with respect to a change in output or employment. Labor is immobile, i.e. migration is not an alternative to unemployment. Following from labor immobility, an implied assumption is that there are unemployed workers in the region if the number of jobs is to increase. Labor immobility is the assumption of Type I (without household sector) and Type II (with household sector) input-output models.

Economic Contribution of the Port of Tampa

During 2001 more than 5,000 cargo vessels and cruise ships called at the Port of Tampa representing an average of more than 13 ships per day. Cargo ships transported goods throughout the globe. Foreign imports included orange juice from Costa Rica, wood products from Honduras, stone products from Mexico, seafood from Guyana, calcium nitrates from Norway and ammonia from Russia. Phosphate products were the dominant exports with product shipments delivered to 39 countries around the globe. China was the major export destination accounting for about 15 percent of phosphate exports. Other foreign destinations included Australia, Japan and Brazil. While the majority of the cruises originating at the Port of Tampa sailed throughout the western Caribbean, other cruises visited ports in the eastern and southern Caribbean as well. Thus, the Port of Tampa is certainly a global gateway for goods and people.

The economic contribution of the Port of Tampa to the Tampa Bay regional economy originates from the movement of cargo and cruise passengers through the port. Ships arriving or leaving the port require piloting and towing services, bunker fuels, maintenance and repair services and Chandler services. The cargo being carried by these ships requires terminals and warehouses for storage, stevedores and equipment operators to load and unload commodities, inspectors to document and verify cargo and rail and trucking services to move the inbound and outbound cargo to and from the port. Cruise ships require many of the same services as cargo ships. They require piloting services and bunker fuels, and stevedoring services are required to load and unload passenger baggage and provisions for each cruise. In addition, cruise passengers purchase food, lodging, entertainment and other goods and services during their pre- and post-cruise visits to the Tampa area. Thus, almost on a daily basis all of these activities are taking place at the Port of Tampa.

As these activities take place income is generated among businesses and workers throughout the Tampa Bay area. This income supports further spending by these businesses and workers spreading the contribution of the Port of Tampa deeper into the Tampa Bay economy. For example, terminal operators must purchase equipment from local dealers for moving and storing goods; insurance is required for property and employees; and utility and communication services must be procured so that the terminals

can function. Meanwhile, the pilots and stevedores use their income to purchase a variety of household goods and services, including housing, groceries, utilities and health services to name a few. This spending by business and workers supports income among other businesses and workers spreading the impact of the port throughout the regional economy. This income multiplier process underlies the economic contribution of the Port of Tampa to the Tampa Bay region and the state of Florida.

In this chapter we describe and quantify the activities that took place at the port and the resulting direct, indirect and induced impacts that were generated during 2001 in the Tampa Bay region and the state of Florida. The derivation of the data and the methods employed for this analysis were described in Section III.

Cargo and Cruise Activity at the Port of Tampa During 2001

The economic impact of the Port of Tampa during 2001 began with the inbound and outbound movement of cargo through the port. As shown in **Table 31**, the Port of Tampa, Florida's largest port in terms of cargo tonnage, moved 47.9 million tons of cargo with an estimated value of \$7.2 billion during calendar year 2001.

Table 31- Port of Tampa Cargo Tonnage and Value – CY 2001

Year	Outbound		Total Outbound	Inbound		Total Inbound	Total
	Domestic	Foreign		Domestic	Foreign		
Cargo Tonnage							
2001	3,664,051	8,266,118	11,930,169	27,970,549	7,963,519	35,934,068	47,864,237
% of Total	7.7%	17.3%	24.9%	58.4%	16.6%	75.1%	
Cargo Value							
2001	\$ 668,990,137	\$ 1,550,166,929	\$ 2,219,157,066	\$ 3,935,744,390	\$ 1,056,492,803	\$ 4,992,237,193	\$ 7,211,394,259
% of Total	9.3%	21.5%	30.8%	54.6%	14.7%	69.2%	

Source: Tampa Port Authority & BREA

Inbound cargo accounted for 75% of the port's total tonnage during the year with almost 60 percent of total tonnage coming from domestic inbound cargo. Inbound cargo had an estimated value of \$5.0 billion with about 80 percent of this value, \$3.9 billion, generated by domestic inbound cargo.

Exports, or outbound cargo, accounted for one-fourth of the port's tonnage and 31 percent of the value of all cargo. Unlike inbound cargo, foreign exports accounted for the bulk, approximately 70 percent, of the port's tonnage and value of outbound commodities. Thus, most of the port's outbound cargo was destined for foreign markets while the vast majority of the port's inbound cargo arrived from other U.S. ports.

Not surprisingly, the mix of commodities that made up inbound cargo is considerably different from the mix of commodities that were exported or shipped from the Port of Tampa. Accounting for 90 percent of the port's outbound cargo during 2001, phosphates, including phosphate rock, were the most important outbound commodities (see **Table 32**). Over 10.7 million tons of phosphate products were exported through the Port of Tampa. Approximately two-thirds of outbound phosphate cargo was destined for foreign destinations. While some phosphate rock was exported, processed phosphate, primarily in the form of phosphate chemicals, accounted for 99 percent of all phosphate products shipped through the port.

Table 32 – Tonnage of Outbound Commodities at the Port of Tampa – CY 2001

Commodity Group	Outbound Cargo		Total	% of Total
	Domestic	Foreign		
Phosphates	3,437,254	7,315,775	10,753,029	90.1%
Citrus & Other Fruit Products	-	630,721	630,721	5.3%
Scrap Metal	170,124	113,477	283,601	2.4%
Other Chemicals	-	73,011	73,011	0.6%
Petroleum & Coal Products	56,673	994	57,666	0.5%
Containerized Cargo	-	27,344	27,344	0.2%
Vehicles	-	24,652	24,652	0.2%
Other Food Products	-	4,803	4,803	0.0%
Other Outbound Cargo	-	75,342	75,342	0.6%
Total	3,664,051	8,266,118	11,930,169	

Source: Tampa Port Authority

Citrus and other fruit products were the next most important outbound commodity group. During 2001, almost 631 thousand tons of citrus and fruit products, 5.3 percent of outbound tonnage, were shipped through the Port of Tampa. All of these products were des-

tinued for foreign ports. Over 98 percent of these citrus and fruit exports were in the form of citrus pellets.

Approximately 283 thousand tons of scrap metal, accounting for 2.4% of the tonnage of outbound cargo, were shipped from the Port of Tampa during 2001. In fact, the volume of scrap metal moved through the port has increased in each of the last two years. Unlike the previous two commodity groups, most of the scrap metal, 60 percent, was shipped to U.S. domestic locations.

Each of the remaining commodity groups accounted for less than one percent of the outbound cargo tonnage. A total of 263 thousand tons of these commodities were shipped from the Port of Tampa during 2001, accounting for 2.2 percent of the port's tonnage of outbound cargo. With the exception of petroleum and coal products, all of these commodities were destined for foreign ports.

Inbound cargo was somewhat more diversified but petroleum and coal products combined accounted for 70 percent of the tonnage of inbound cargo. Both petroleum and coal were delivered from other U.S. ports which explains the dominance of the domestic component of all inbound cargo (see **Table 33**). Coal was used principally in the generation of electric power while petroleum products, which included all forms of fuel from bunker fuel to jet fuels, were used primarily in the transportation industry.

Sulphur and ammonia products accounted for about 20 percent of inbound cargo. Interestingly, both of these products were primarily used in the production of agricultural chemicals, the major export of the Tampa Bay region, and thus, were ultimately processed and then exported in the form of fertilizers. Sulphur, which accounted for 11 percent of inbound tonnage, was delivered from other U.S. ports, while ammonia, 7 percent of inbound tonnage, arrived from foreign markets, such as Russia.

Aggregates, which were primarily delivered from other U.S. ports and Mexico, accounted for 7 percent of the tonnage of inbound commodities. Limestone, cement, granite and gypsum were the major inbound aggregates and were primarily used in local construction projects.

Table 33 – Tonnage of Inbound Commodities at the Port of Tampa – CY 2001

Inbound Cargo				
Commodity Group	Domestic	Foreign	Total	% of Total
Petroleum Products	17,290,426	499,789	17,790,215	49.5%
Coal	6,946,757	224,027	7,170,784	20.0%
Sulphur Products	3,054,666	1,029,960	4,084,626	11.4%
Aggregates	148,392	2,536,695	2,685,087	7.5%
Ammonia Products	-	2,568,870	2,568,870	7.1%
Steel Products	213,151	296,774	509,925	1.4%
Food Products	218,331	84,785	303,116	0.8%
Other Chemicals	1,373	105,278	106,651	0.3%
Other Inbound Cargo	97,453	617,342	714,795	2.0%
Total	27,970,549	7,963,520	35,934,069	

Source: Tampa Port Authority

The remaining inbound commodities accounted for about 5 percent of the inbound tonnage and consisted of a variety products including structural steel products, miscellaneous chemicals, poultry, seafood, vehicles and machinery to name a few.

The Port of Tampa is also a major cruise port. As shown in **Table 34**, the port handled 153 cruise ship calls and 544,880 cruise passengers during 2001. The vast majority of cruise ship calls, over 90 percent, are turnarounds, i.e., the cruise ships begin and terminate their cruises at the Port of Tampa. The principal destination of cruises that embarked

Table 34 – Cruise Activity at the Port of Tampa – CY 2001

	Total	Embarkations	Disembarkations	Intransit
Passengers:	544,880	270,853	272,186	1,841
Cruise Ship Calls:	153	150	150	3
Passenger/Call	3,561	1,806	1,815	614

Source: Tampa Port Authority

from the port during 2001 was the western Caribbean, including Jamaica, the Cayman Islands, Cozumel and Cancun. While the port is expanding its cruise base, Carnival cruise ships carried more than 95 percent of the 2001 cruise passengers.

Direct Economic Contribution of the Port of Tampa

The exporting and importing of cargo and the flow of cruise passengers generated the direct economic contribution of the Port of Tampa during 2001. The direct economic contribution was measured as the employment, output and wages that were generated as a direct or immediate consequence of the cargo and cruise passenger activity at the port and throughout the Tampa Bay region. This economic activity was allocated among the following four port sectors:

- ◆ Port Services;
- ◆ Export;
- ◆ Import; and
- ◆ Inland Transport.

The Port Services sector was defined as those firms that were immediately and directly involved in providing water transportation service for goods and passengers through the Port of Tampa, as well as firms that directly provided support services to them. The following services were among those that were provided by firms included in this sector:

- chandlery;
- ship repair and maintenance;
- stevedoring;
- piloting and towing;
- terminal and warehousing services;
- cargo vessel operation; and
- government services, such as those provided by the U.S. Coast Guard and Department of Agriculture.

Economic activity generated by passenger spending was also included in this sector and included expenditures for:

- lodging;
- general retailing;
- transportation services;
- dining; and
- entertainment.

The Export sector included firms engaged in the local manufacture and wholesale distribution of goods exported through the Port of Tampa. Local economic activity included in this sector consisted of:

- mining and manufacture of phosphates and other agricultural chemicals;
- food processing;
- paper manufacturing;
- scrap metal processing; and
- wholesale trade of non-locally produced export goods such as autos and lumber.

The Import sector included firms engaged in the sale and distribution of goods imported through the Port of Tampa and those local firms that directly used the imported goods in their production processes. By definition imported goods were not produced locally; consequently, the economic contribution of the Import sector occurred through the local wholesale trade and distribution of the imported goods, as well as the local output that was generated by the use of the imported commodities. All major industries were directly impacted by imports to some degree but the major industries included:

- electric utilities;
- food processors;
- metal fabricators;
- transportation services; and
- wholesale trade of the imported commodities.

Finally, the Inland Transport sector included those firms that moved both goods and passengers to and from the port. The trucking and railroad industries were the primary industries in this sector, but it also included the air transportation and local transportation industries that transported cruise passengers to the area and port.

As shown in **Table 35**, the flow of goods and passengers through the Port of Tampa in 2001 contributed \$6 billion in industry output to the Tampa Bay regional economy. The production of this \$6 billion in goods and services generated an estimated 34,658 jobs throughout the Tampa Bay region paying an annual wage income of \$1.25 billion. The

impacted businesses and workers also paid an estimated \$126 million in state and local taxes.

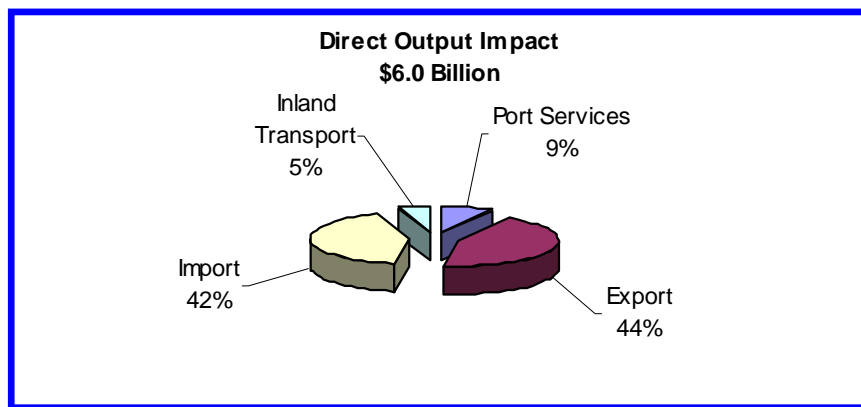
**Table 35 – Direct Economic Contribution of the Port of Tampa by Sector
Tampa Bay Regional Economy – CY 2001**

Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	State & Local Taxes (\$ Million)
Port Services	\$ 521	3,984	\$ 162	\$16
Export	\$ 2,627	6,787	\$ 332	\$34
Import	\$ 2,521	21,079	\$ 634	\$64
Inland Transport	\$ 318	2,808	\$ 123	\$12
Total	\$ 5,987	34,658	\$ 1,251	\$126

Source: Business Research & Economic Advisors

As indicated in the table and **Figure 4**, the Export and Import sectors accounted for the bulk of the economic contribution of the Port of Tampa. Combined, these two sectors accounted for 86 percent of the output, 80 percent of the jobs and 77 percent of the wages directly generated in the Tampa Bay region by the activity at the Port of Tampa.

**Figure 4 – Percentage Distribution of the Direct Output Contribution by Sector
Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

Port Services Sector

Accounting for 9 percent of the port's direct economic contribution, the Port Services sector generated \$521 million in industry output in the Tampa Bay region during 2001. The Tampa Bay businesses that produced this output employed 3,984 workers and paid annual wages of \$164 million. The impacted businesses and workers also paid an estimated \$16 million in state and local taxes. **Table 36** shows these impacts for the major sub-sectors that make up the Port Services sector.

**Table 36 – Direct Economic Contribution of the Port Services Sector
Tampa Bay Regional Economy – 2001**

Port Service	Output (\$ Million)	Jobs	Wages (\$ Million)
Chandlers	\$ 16	146	\$ 5
Ship Agents & Operators	\$ 30	339	\$ 20
Shipyards & Drydocks	\$ 257	918	\$ 33
Stevedores	\$ 31	359	\$ 18
Piloting & Towing Services	\$ 23	254	\$ 13
Terminal & Warehouses	\$ 109	1,035	\$ 46
Cruise Services	\$ 17	277	\$ 5
Government	\$ 38	656	\$ 24
Total	\$ 521	3,984	\$ 164

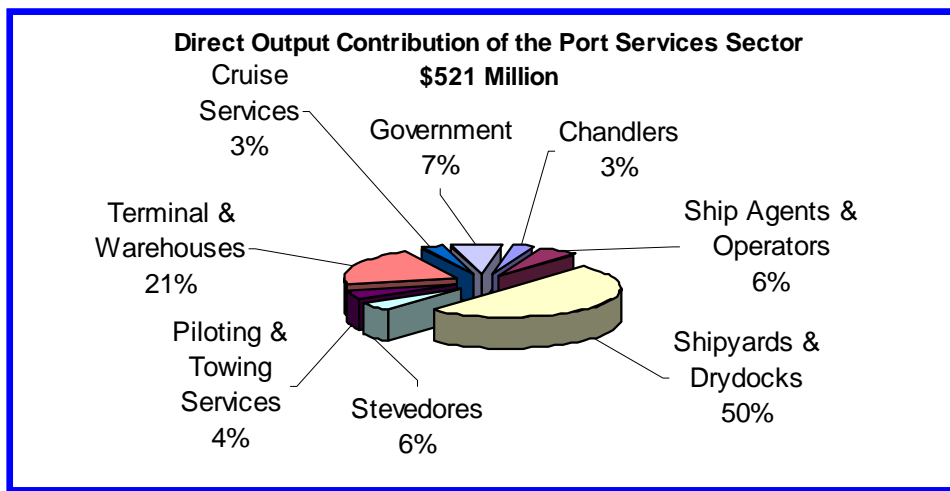
Source: Business Research & Economic Advisors

Shipyards and Terminal & Warehouses were the most significantly impacted sub-sectors. Shipyards generated the most output, \$257 million, within this sector while terminal and warehouses generated the most jobs, 1,035. The shipyards located at the port repaired more than 200 vessels during 2001 and in the process employed 918 workers and paid wages of \$33 million. As shown in **Figure 5**, shipyards accounted for half of the output impact generated by the Port of Tampa in the Port Services sector.

Terminals and warehouses provided cargo storage and handling services at the port. These businesses essentially provide temporary storage and intermodal transfer services for inbound and outbound commodities. For example, inbound petroleum products were offloaded from tankers and stored in tank farms (terminals) at the port. These fuels were

then shipped via pipelines elsewhere in Florida or trucked to local distributors and retailers. In addition to petroleum products, firms in this sub-sector stored and handled food products, aggregates, and other chemical products.¹⁸ The businesses in this sub-sector generated \$109 million in direct output, 21 percent of the port-related output generated by the Port Services sector. In the process 1,035 workers were hired and paid \$46 million in wages during 2001.

Figure 5 – Percentage Distribution of the Direct Output Impact of the Port Services - Tampa Bay Regional Economy – CY 2001



Source: Business Research & Economic Advisors

Chandlers provided a variety of goods to cargo and cruise vessels. Chandlers are essentially wholesalers of durable and nondurable goods. These included food and beverages for passengers and crew, maintenance supplies, safety and navigation equipment and other soft and hard goods for cargo and cruise vessels. As a result of these sales, chandlers directly employed 146 workers and paid annual wages of \$5 million. The chandler sub-sector accounted for 3 percent, \$16 million, of the port-related direct output of the Port Services sector.

Because owners/operators of cruise and cargo vessels do not necessarily maintain any operations in a particular port city, they hire agents to represent their interests in these

¹⁸ Phosphate and scrap metal terminals were excluded from this component of the analysis because they were included in the Export sector.

port cities. Ship agents arranged for a variety of services, including stevedoring, freight forwarding, storage, documentation and verification of cargo and financial services, such as insurance bonds. This sub-sector also included the few companies that were located in Tampa and whose ships operated from the Port of Tampa in 2001. Ship agents and operators produced \$30 million in port-related output and accounted for 6 percent of the direct output impact of the Port Services sector. Businesses in this sub-sector directly employed 339 workers and paid out \$20 million in wages.

Stevedoring firms employed workers to load and unload goods from cargo and cruise vessels. During 2001, an estimated 359 stevedores were employed and paid \$18 million in wages. These workers directly produced \$31 million of output and accounted for 6 percent of port-related direct output of the Port Services sector.

Pilots were employed to direct the movement of cargo and cruise vessels into and out of the Port of Tampa while firms engaged in towing services (including tugboats) towed barges and also positioned ships into and away from docks and through narrow channels. This sub-sector accounted for 4 percent, \$23 million, of the port-related direct output of the Port Services sector, employed 254 workers and paid annual wages of \$13 million during 2001.

The remaining 10 percent of the direct contribution of the Port Services sector was generated by the government and cruise industry. The Cruise Services sub-sector accounted for 3 percent of the port-related direct output of the Port Services sector. The cruise industry's contribution was produced by the spending of the cruise lines for support services at the port, including stevedores, ship stores and maintenance supplies and bunker fuels, which have already been captured, but also for business, legal and personal services that support cruise activities in Tampa. Cruise passengers, in turn, purchased local goods and services ranging from food and lodging to transportation and entertainment. Thus, the cruise sector's impact occurred primarily among non-maritime industries, such as retailing, lodging, transportation and services. In all, the cruise sector directly generated \$17 million in output, 277 jobs and \$5 million wage income in the Tampa area during 2001.

Finally, the two primary sources of economic contribution from the government sector were the Tampa Port Authority and the U.S. Coast Guard. Combined, these two agencies accounted for approximately 85 percent of the government sector's contribution. The Port Authority's contribution was generated through its direct employment of personnel, construction and maintenance of facilities at the port and its purchase of support services, such as communications, insurance and legal services. The U.S. Coast Guard's direct contribution consisted of the assignment of staff and ships to patrol, monitor and control shipping activity into and from the port. Other federal government agencies that had a direct contribution to the Tampa Bay economy included: the Department of Agriculture, the U.S. Customs Agency, the U.S. Border Patrol, the Immigration and Naturalization Service and the U.S. Army Corps of Engineers. Overall, the government sector directly generated \$38 million in output, 656 jobs and \$24 million in wages in the Tampa Bay region during 2001.

Export Sector

The Export sector's direct contribution to the Tampa Bay regional economy occurred through the production and the wholesale distribution of locally produced outbound commodities and the wholesale distribution of export commodities produced outside of the Tampa Bay area. The volume and value of the export commodities were shown earlier and totaled 11.9 million tons and \$2.2 billion, respectively. It was determined that 99 percent of the outbound commodities, 11.8 million tons with an estimated value of \$2.1 billion, were produced in the Tampa Bay region and thus their production contributed to the regional economy.

Table 37 shows the economic impact of the Export sector for the major commodity groups. These values also include the wholesale trade contribution for each commodity group. The Export sector contributed the largest share of the direct output impact of the four sectors generating \$2.6 billion in industrial output, 6,787 jobs and \$332 million in wage income to the Tampa Bay regional economy during 2001.

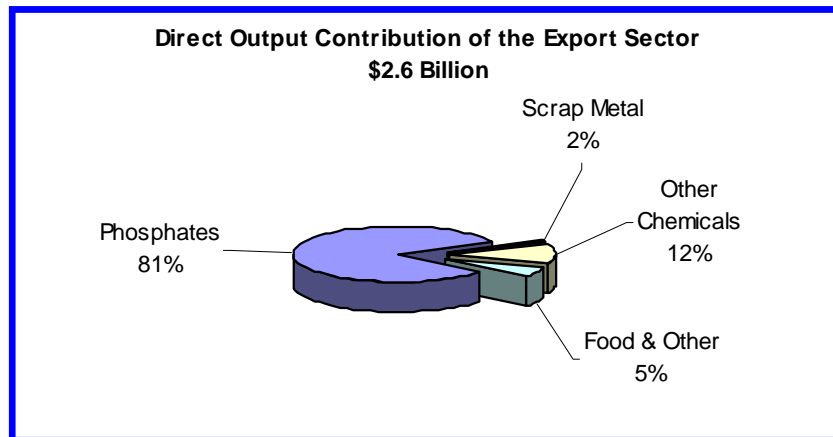
**Table 37 - Direct Economic Contribution of the Export Sector
Tampa Bay Regional Economy – 2001**

Commodity	Output (\$ Million)	Jobs	Wages (\$ Million)
Phosphates	\$ 2,135	5,544	\$ 282
Scrap Metal	\$ 42	293	\$ 11
Other Chemicals	\$ 313	662	\$ 29
Food & Other	\$ 137	288	\$ 10
Total	\$ 2,627	6,787	\$ 332

Source: Business Research & Economic Advisors

The importance of the phosphate industry to the direct contribution of the Exports sector is clearly shown in the above table and **Figure 6**. The phosphate industry, including the mining of phosphate rock, accounted for over 81 percent of the output contribution of the Export sector. Other chemicals accounted for 12 percent while food, scrap metal and other commodities accounted for 7 percent of the output impact.

**Figure 6 – Percentage Distribution of the Value of Outbound Cargo
Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

The economic contribution of these commodities is the result of their production or processing in the Tampa Bay region and their subsequent export through the Port of Tampa. Phosphates were exported in bulk and included phosphate rock and processed phosphate

chemicals. Approximately 75 percent of phosphate products were destined for foreign ports. Phosphoric and sulphur acids were the principal outbound commodities included in the Other Chemicals group. All of these commodities were destined for foreign destinations. Outbound food products consisted primarily of citrus pellets but also included some seafood, poultry, vegetables and meat products. Again, all of these products were destined for foreign markets. Finally, outbound processed scrap metal was split almost evenly between foreign and U.S. destinations.

Import Sector

While the contribution of the Import sector also occurred through the production of goods and services, it was not the direct production of the imported goods that generated the economic contribution. Obviously, these goods were not produced locally and thus their production could not contribute to the Tampa Bay economy. Rather their contribution was generated by their use in the production of other goods that were produced locally. For example, coal was used in the production of electricity and stone aggregates and lumber were used in construction. In addition, the wholesale distribution of these commodities in the Tampa Bay area contributed to their direct economic impact.

As discussed previously, 35.9 million tons of inbound cargo with an estimated value of \$5 billion moved through the Port of Tampa during 2001. Coal and petroleum products accounted for 70 percent of the inbound commodities and were primarily used in the support of energy production and transportation services. As a result, the direct economic impact of the Import sector spread throughout the Tampa Bay region. As shown in **Table 38**, these imports directly supported the production of \$2.5 billion in output in the Tampa Bay region during 2001. This output, in turn, provided for the employment of 21,079 workers who received wage income of \$634 million. These impacts were spread throughout the Tampa Bay economy but were concentrated in the manufacturing and utilities industries.

**Table 38 – Direct Economic Contribution of the Import Sector
Tampa Bay Regional Economy – CY 2001**

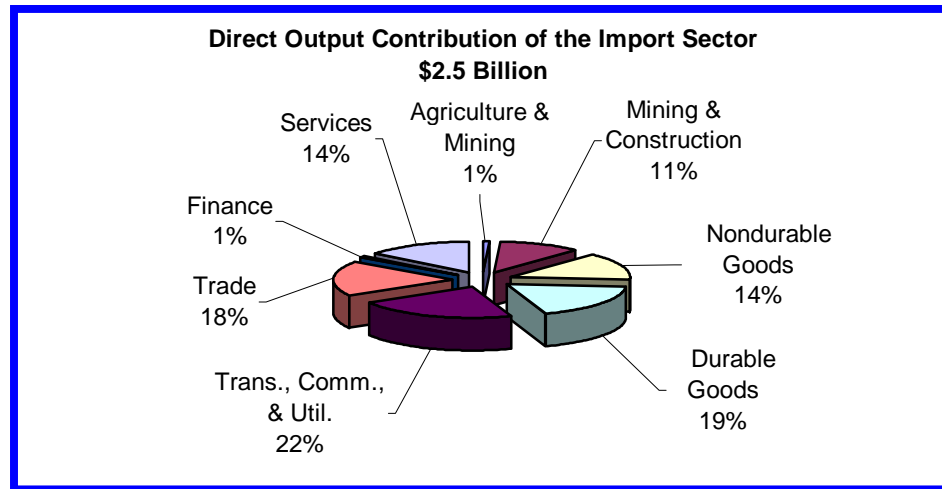
Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Agriculture & Mining	\$ 18	823	\$ 14	\$ 17,011
Mining & Construction	\$ 282	2,951	\$ 98	\$ 33,321
Manufacturing	\$ 830	3,301	\$ 122	\$ 36,995
Nondurable Goods	\$ 355	973	\$ 33	\$ 33,916
Durable Goods	\$ 475	2,328	\$ 89	\$ 38,281
Trans., Comm., & Util.	\$ 549	1,742	\$ 84	\$ 48,035
Trade	\$ 456	3,971	\$ 129	\$ 32,534
Finance	\$ 21	115	\$ 3	\$ 26,087
Services	\$ 365	8,176	\$ 184	\$ 22,505
Total	\$ 2,521	21,079	\$ 634	\$ 30,094

Source: Business Research & Economic Advisors

As shown in **Figure 7**, 33 percent of the Import sector's output contribution occurred within the manufacturing sector. Local manufacturing industries produced an estimated \$830 million in output and employed 3,301 workers with total annual wages of \$122 million as a result of the use of commodities imported through the Port of Tampa. The manufacturing contribution was concentrated in the petroleum products, fabricated metals, industrial machinery and food processing industries. Combined these four industries accounted for 60 percent of the manufacturing output attributed to imported goods in the Tampa Bay region. The complete industry detail is shown in the Data and Methodology chapter.

The Transportation, Communications and Utilities industry accounted for an additional 22 percent of the Import sector's direct output contribution with \$549 million in output. The utility industry, principally the generation of electric power, accounted for more than 80 percent of the output contribution of this industry. In all, 1,742 jobs were directly related to the use of imported commodities that, in turn, generated \$84 million in wage income.

**Figure 7 – Percentage Distribution of the Direct Output Impact of the Imports Sector
Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

The Services industry, which is a broadly defined industry that includes business, personal, education, social and health services, was impacted primarily through the use of energy-related products and services, such as heating and cooling and transportation. But other commodities also had a significant economic impact. Imported food products contributed to the restaurant and retail industry; machinery imports provided an economic impact to the business service sector; and paper imports contributed to the health services sector. As a result, the Services industry directly employed 8,176 workers as a result of the use of imported commodities. These workers received \$184 million in wage income and produced \$365 million in services output, 14 percent of the direct output impact of the Import sector. Over 80 percent of the Service industry impacts were generated among providers of business services (such as advertising, building maintenance and consulting services), restaurants and health services.

As noted previously, imported aggregates, steel and lumber products supported construction throughout the Tampa Bay region. It was estimated that these imported contributed \$282 million of output, 11 percent of the Import sector's direct output contribution, to the construction industry that, in turn, generated 2,951 jobs and \$98 million in wages.

The remaining sectors accounted for 20 percent of the economic impact of the Import sector, most, of which, occurred among wholesale and retail establishments.

Inland Transportation Sector

The Inland Transportation sector's direct contribution to the Tampa Bay regional economy occurred through the distribution of goods to and from the Port of Tampa. The distribution of the 47.9 million tons of goods that moved through the port during 2001 relied primarily upon the trucking and rail industries. As shown in **Table 39**, the inland transportation of these goods contributed \$318 million in output, 2,808 jobs and \$123 million in wages to the Tampa Bay regional economy during 2001.

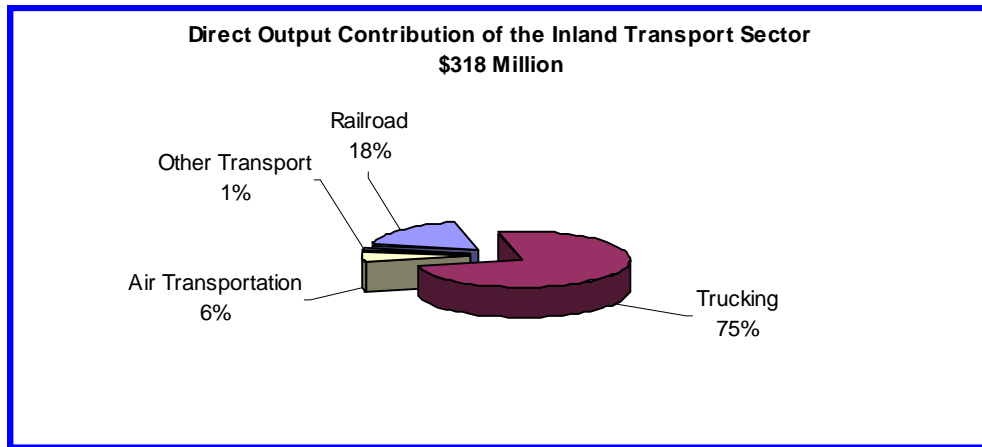
**Table 39– Direct Economic Contribution of the Inland Transport Sector
Tampa Bay Regional Economy – CY 2001**

<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)
Railroad	\$ 59	300	\$ 19
Trucking	\$ 236	2,269	\$ 94
Air Transportation	\$ 20	198	\$ 7
Other Transport	\$ 3	41	\$ 2
Total	\$ 318	2,808	\$ 123

Source: Business Research & Economic Advisors

The trucking industry accounted for 75 percent of the Inland Transportation sector's direct output contribution (see **Figure 8**). The railroad industry contributed another 18 percent primarily through the transportation of coal and phosphates. The contribution of the air transportation and other transportation industries primarily occurred as a result of the travel of cruise passengers to and around the Tampa Bay area.

**Figure 8 – Percentage Distribution of the Direct Output Impact
Inland Transportation Sector - Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

Direct Contribution by Industry

As the previous discussion makes clear, the economic contribution of the Port of Tampa is ultimately measured in terms of the output, jobs and wage income generated in the industrial sectors of the Tampa Bay regional economy rather than the port sectors. **Table 40** shows these same direct economic contributions for the major industrial sectors of the Tampa Bay region.

Figure 9 shows the percentage distribution of the direct output contribution of the Port of Tampa by industry. The manufacturing sector accounted for the largest proportion, 59 percent, of the port's direct output contribution. Due to the impact of phosphates and other agricultural chemicals, the manufacture of nondurable goods accounted for almost half of the total direct impact of the port. Within the durable goods manufacturing sector, the ship repair, fabricated metals and the machinery (electrical and nonelectrical) industries were the other major beneficiaries of activity at the port.

The transportation industry accounted for 10 percent of the port's direct output contribution. As discussed previously, the trucking industry, which moved goods to and from the port, accounted for about three-fourths of the overall transportation contribution.

**Table 40 – Direct Economic Contribution of the Port of Tampa by Industry
Tampa Bay Regional Economy – CY 2001**

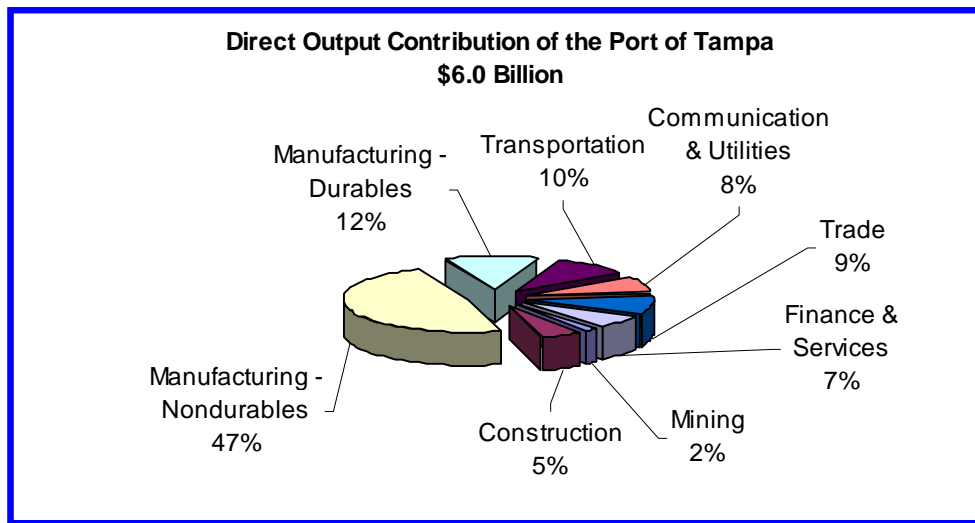
Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	State & Local Taxes (\$ Million)
Mining	\$ 100	765	\$ 23	\$2
Construction	\$ 316	3,298	\$ 110	\$11
Manufacturing	\$ 3,564	13,271	\$ 452	\$45
Mfg - Nondurables	\$ 2,831	6,636	\$ 329	\$33
Mfg - Durables	\$ 733	3,247	\$ 123	\$13
Transportation	\$ 595	5,481	\$ 242	\$25
Communication & Utilities	\$ 465	1,060	\$ 58	\$6
Trade	\$ 532	4,556	\$ 149	\$15
Finance & Services	\$ 398	8,531	\$ 193	\$20
Other	\$ 17	1,084	\$ 24	\$2
Total	\$ 5,987	34,658	\$ 1,251	\$126

Source: Business Research & Economic Advisors

The trade industry, which included both wholesale and retail trade, accounted for 9 percent of the port's economic impact. Wholesale trade is by far the more important of the two accounting for about 90 percent of the trade sector's contribution. The retail trade contribution resulted from the cruise passenger expenditures for food and beverages, gifts and souvenirs and other general retail.

Driven principally by the production of electric power, the communication and utilities industry accounted for 8 percent of the direct output contribution of the port. The services industry, which included financial, business and personal services, accounted for 7 percent of the direct output contribution. The construction industry, primarily through the use of imported commodities, contributed 5 percent of the port's output impact. And finally, the mining sector produced 2 percent of the port's direct output contribution through the mining of exported phosphate rock.

**Figure 9 – Percentage Distribution of the Direct Output Contribution
Port of Tampa - Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

Indirect and Induced Economic Contribution of the Port of Tampa

The indirect economic benefits derived from the Port of Tampa resulted in part from the additional spending by the suppliers to those businesses directly influenced by activity at the port. For example, the shipyards purchased tools and equipment; fabricated metal products; utility services, such as, electricity and water, to run equipment; paid for transportation services for materials shipped to the yard; insurance for property and employees and so forth. To estimate the indirect contribution of the Port of Tampa an econometric model of the Tampa Bay regional economy¹⁹ was utilized. An econometric model is a statistical representation of the economy being analyzed. The structure of the Tampa Bay regional model reflects the specific economic structure of each county in the region. The Tampa Bay regional model provided estimates of the additional economic impacts that

¹⁹ This model was developed and maintained by Regional Economic Models, Inc. (REMI). The Center for Economic Development Research (CEDR) at USF has a contract with REMI to use this model. Dr. Dennis Colie of CEDR directed the use of the model for this project. A description of the model is included in the Data and Methodology chapter.

the direct contribution of the Port of Tampa had on all other industries in the Tampa Bay region.

In addition to this indirect contribution, the employees of the directly and indirectly impacted business generated induced economic benefits through their purchases of consumer goods and services, including such goods as autos, food, clothing, furniture, health care and so forth. The value of these induced contributions were also estimated with the Tampa Bay econometric model.

The contribution analysis for the Tampa Bay region showed that the direct economic contribution of the Port of Tampa generated another \$7 billion in output in the Tampa Bay region. The production of these goods and services contributed an additional 73,245 jobs in the region through the indirect and induced spending by businesses and employees. In addition, these jobs generated \$2.5 billion in wage income for these workers. Furthermore, these businesses and workers paid an estimated \$254 million in state and local taxes. As shown in **Table 41**, the indirect and induced economic contribution touched virtually all sectors in the region.

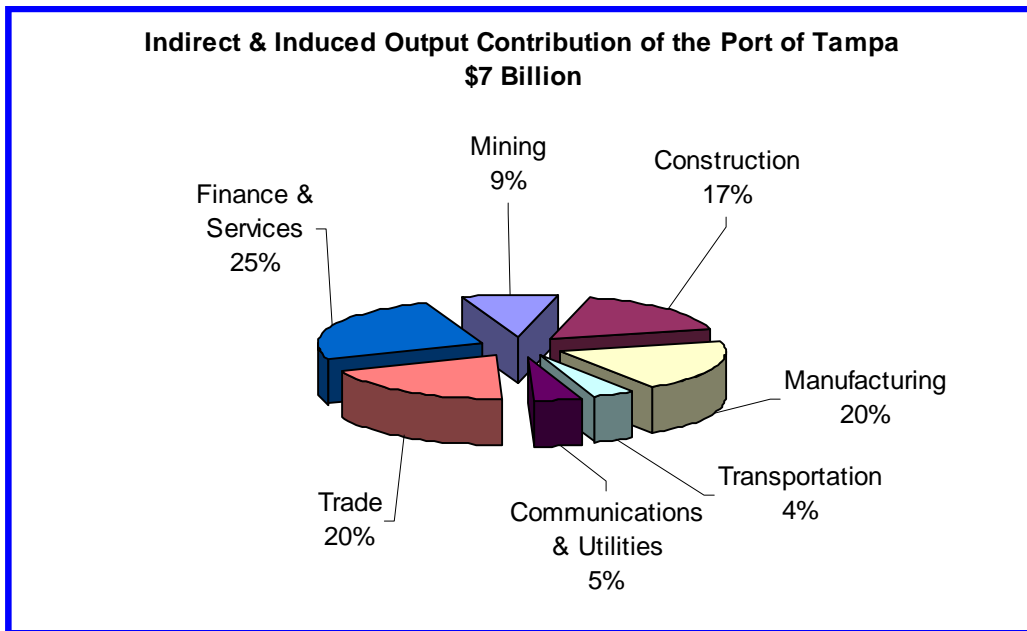
**Table 41 – Indirect & Induced Economic Contribution of the Port of Tampa by Industry
Tampa Bay Regional Economy – CY 2001**

<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)	State & Local Taxes (\$ Million)
Mining	\$ 658	3,387	\$ 115	\$ 12
Construction	\$ 1,193	15,713	\$ 378	\$ 39
Manufacturing	\$ 1,371	3,937	\$ 162	\$ 17
Mfg - Nondurables	\$ 931	1,531	\$ 55	\$ 6
Mfg - Durables	\$ 440	2,406	\$ 107	\$ 11
Transportation	\$ 281	2,556	\$ 108	\$ 11
Communication & Utilities	\$ 330	1,181	\$ 61	\$ 6
Trade	\$ 1,401	19,796	\$ 558	\$ 57
Finance & Services	\$ 1,738	24,449	\$ 1,031	\$ 104
Other	\$ 19	2,226	\$ 71	\$ 8
Total	\$ 6,991	73,245	\$ 2,484	\$ 254

Source: Business Research & Economic Advisors

The Finance & Services sector was the most significantly impacted sector within the region as a result of the indirect and induced impacts of the port. This sector added \$1.7 billion in output, 24,449 jobs and \$1 billion in wage income during 2001. This contribution resulted from the demand for a variety of business and personal services, including accounting, consulting services, especially computer consulting, equipment rental, manpower services, and security and building maintenance services. Business and employee spending also contributed to the impacts in financial services such as, banking, insurance and real estate. As shown in **Figure 10**, the services sector accounted for one-quarter of the indirect and induced output contribution in the region.

Figure 10 – Percentage Distribution of the Indirect & Induced Output Contribution Port of Tampa - Tampa Bay Regional Economy – CY 2001



Source: Business Research & Economic Advisors

Approximately \$1.4 billion in output and 19,796 jobs with an annual income of \$558 million were contributed by the wholesale and retail trade sectors as a result of the movement of cargo and passengers through the Port of Tampa during 2001. The wholesale trade sector was the more important of the two sectors having accounted for about 85 percent of the indirect and induced output contribution of the trade sector throughout the

Tampa Bay area. The wholesale trade impacts resulted from both business and household demand for goods throughout the region while the retail trade impacts were primarily generated by the purchase of consumer goods and services by impacted employees. The trade sector accounted for 20 percent of the indirect and induced contribution generated by the port.

The indirect and induced contribution of the Port of Tampa also generated \$1.4 billion in manufacturing output in the Tampa Bay region during 2001. The manufacturing production in turn created an estimated 3,937 jobs paying \$162 million in wage income. While the manufacturing sector accounted for more than half of the port's direct impact (see Figure 9), it only accounted for 20 percent of the indirect and induced contribution in the Tampa Bay region. This was reflective of the fact that much of the business equipment and consumer goods, such as autos, that are purchased by Tampa Bay businesses and employees are produced outside of the Tampa Bay region.

The construction sector accounted for 17 percent of the port's indirect and induced impact. Construction activity contributed \$1.2 billion in output, 15,713 jobs and \$378 million in wage income. Within the construction sector the indirect and induced contribution resulted from both residential and nonresidential building linked to the production and income generated throughout the region.

The mining sector accounted for 9 percent of the combined indirect and induced impacts of all sectors of the Tampa Bay regional economy. The indirect and induced contribution in the mining sector primarily reflected the mining of phosphate rock that was required for production of exported agricultural chemicals and fertilizers.²⁰

Combined the transportation, communications and utilities sectors contributed \$611 million in output, 3,737 jobs and \$169 million in wage income to the Tampa Bay regional economy during 2001 as a result of the operations at the Port of Tampa. Combined these

²⁰ The indirect and induced contribution is distinct from the direct contribution associated with the direct export of phosphate rock. Our analysis indicates that approximately 20 percent of the total contribution of the phosphate mining contribution is direct export related and 80 percent is an indirect contribution.

sectors accounted for 9 percent of the total indirect and induced output contribution in the Tampa Bay region.

Total Economic Contribution of the Port of Tampa

The total economic contribution of the Port of Tampa to the Tampa Bay regional economy is the sum of the direct, indirect and induced impacts. As shown in **Table 42**, this study found that the movement of cargo and cruise passengers through Port of Tampa was responsible for considerable economic activity in the Tampa Bay region.

**Table 42 - Total Economic Contribution of the Port of Tampa by Industry
Tampa Bay Regional Economy – CY 2001**

Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	State & Local Taxes (\$ Million)
Mining	\$ 758	4,152	\$ 138	\$14
Construction	\$ 1,509	19,011	\$ 488	\$50
Manufacturing	\$ 4,935	13,820	\$ 614	\$62
Mfg - Nondurables	\$ 3,762	8,167	\$ 384	\$39
Mfg - Durables	\$ 1,173	5,653	\$ 230	\$23
Transportation	\$ 876	8,037	\$ 350	\$36
Communication & Utilities	\$ 795	2,241	\$ 119	\$12
Trade	\$ 1,933	24,352	\$ 707	\$72
Finance & Services	\$ 2,136	32,980	\$ 1,224	\$125
Other	\$ 36	3,310	\$ 95	\$10
Total	\$ 12,978	107,903	\$ 3,735	\$380

Source: Business Research & Economic Advisors

As noted previously, this activity directly generated \$6.0 billion in regional output and more than 34,500 jobs that paid wage income of \$1.25 billion throughout Tampa Bay in 2001. This spending, in turn, generated a total of \$13 billion in regional output. The \$13 billion in regional output resulted in the employment of an estimated 107,903 workers and \$3.7 billion in wages and salaries throughout the Tampa Bay regional economy in 2001. The impacted businesses and workers also paid an estimated \$380 million in state and local taxes.

The Port of Tampa affected virtually all sectors of the Tampa Bay regional economy. The industries that were most significantly affected included:

- Phosphate Mining;
- Agricultural Chemicals;
- Ship Maintenance and Repair;
- Food Processing;
- Construction;
- Trucking;
- Wholesale Trade;
- Utilities; and
- Business Services.

However, many other industries were affected in some form, including lodging, insurance, telecommunications, retail trade and many others.

The \$13 billion in regional output generated by the Port of Tampa during 2001 was 7 percent of the total Tampa Bay regional output of \$177 billion. However, as shown in **Table 43** the port-related share of regional output varied considerably by sector. Due to the importance of agricultural chemicals and fertilizers, port-related output accounted for

Table 43 – Port-Related and Total Regional Output in the Tampa Bay Region, CY 2001

Sector	Port-Related Output (\$ Million)	Total Regional Output (\$ Million)	Share
Ag, Mining & Construction	\$ 2,303	\$ 15,053	15.3%
Manufacturing	\$ 4,935	\$ 34,035	14.5%
Mfg - Nondurables	\$ 3,762	\$ 17,955	21.0%
Mfg - Durables	\$ 1,173	\$ 16,080	7.3%
Transportation	\$ 876	\$ 5,527	15.8%
Communication & Utilities	\$ 795	\$ 10,809	7.4%
Trade	\$ 1,933	\$ 33,416	5.8%
Finance & Services	\$ 2,136	\$ 78,890	2.7%
Total	\$ 12,978	\$ 177,729	7.3%

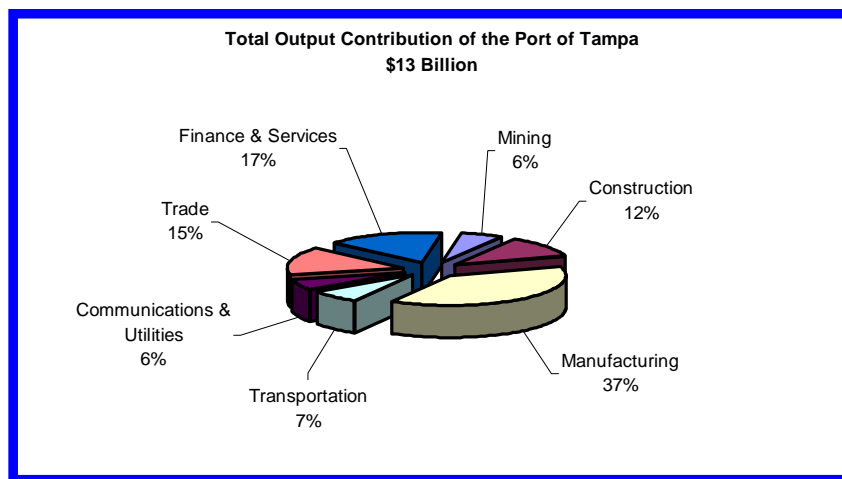
Source: Business Research & Economic Advisors & Center for Economic Development Research

21 percent of the output of the region's nondurable goods manufacturing industry and 15 percent of the region's output produced in the agriculture, mining and construction indus-

tries. The remaining double-digit share was found in the transportation industry in which port-related output accounted for almost 16 percent of transportation output in the region.

As shown in **Figure 11**, the manufacturing sector accounted for 37 percent of the total output contribution of the Port of Tampa to the Tampa Bay regional economy during 2001. The manufacturing sector was followed by the Finance & Services sector with 17 percent of the total output contribution. The trade sector generated 15 percent of the port's total output contribution. Twelve percent of the total output contribution was generated by the construction sector. The remaining sectors accounted for about one-fifth of the total output contribution of the Port of Tampa.

**Figure 11 – Percentage Distribution of the Total Output Contribution
Port of Tampa - Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

Total Fiscal Contribution of the Port of Tampa

The total fiscal contribution of the Port of Tampa was determined by the direct, indirect and induced contribution of each sector's economic activity. In Florida, there are six principal state and local taxes: 1) the state sales tax; 2) the state corporate income tax; 3) the state motor fuels tax; 4) the local option sales tax; 5) local motor fuel taxes and 6) local property taxes. In addition, there are numerous smaller taxes and fees collected by state and local taxing authorities in the state.

In order to estimate the annual fiscal impact of the Port of Tampa, state personal income was used as a proxy for the state's tax base with the following effective rates²¹: state sales tax at 3.93%; state corporate income tax at 0.40%; state motor fuel tax at 0.42%; local sales tax at 0.21%; local motor fuel tax at 0.17%, local property taxes at 4.2%; and all other state and local taxes and fees at 0.85%.

BREA's fiscal impact analysis showed that the total economic contribution of the Port of Tampa to the Tampa Bay regional economy generated a total of \$380 million in state and local tax revenues in 2001 (see **Table 44**). These consisted of state and local tax revenues that were generated by the economic contribution of the port that occurred only within the Tampa Bay region. The study showed that the state received an estimated \$210 million in tax revenues from the total economic contribution of the Port of Tampa to the Tampa Bay regional economy. Sales tax revenues accounted for 70 percent of the state tax collections. On the local level, taxing authorities received a total of \$170 million, 92 percent from local property taxes, as a result of the economic contribution of the Port.

Table 44 – State & Local Fiscal Contribution of the Port of Tampa to the Tampa Bay Regional Economy – CY 2001

<u>Categories</u>	<u>Revenues \$ Millions</u>
State Sales Tax	\$ 147
State Corporate Income Tax	\$ 15
State Fuel Tax	\$ 16
Other State Taxes & Fees	\$ 32
State Subtotal	\$ 210
Local Sales Tax	\$ 8
Local Property Tax	\$ 155
Local Fuel Tax	\$ 7
Local Subtotal	\$ 170
State & Local Total	\$ 380

Source: Business Research & Economic Advisors

²¹ The effective tax rates are calculated as the ratio of total state and local tax collections for each tax category divided by total state personal income. The state tax data and local tax data were obtained from the Florida Dept. of Revenue for fiscal year 2001.

Total Economic Contribution of the Port of Tampa on the State of Florida

BREA also analyzed the economic contribution of the Port of Tampa to the state of Florida. The port's contribution to the state is larger for two reasons. First, the contribution to the state includes all of the contribution of the Port to the Tampa Bay region, as well as contributions of the port to other areas in the state. For example, approximately 12% of the cruise passengers who traveled by air to Florida for their cruise stayed overnight in Orlando. Thus, the contribution associated with the overnight spending by these passengers affected the Orlando area and not the Tampa Bay region. Second, the indirect and induced effect per dollar of direct effect (the multiplier) was higher for the state than for the Tampa Bay region. This was because some of the indirect contribution that was generated by direct Port activity occurred in parts of Florida that were not in the Tampa Bay region.

The process by which the direct, indirect and induced contributions were generated for the state was identical to that discussed for the Tampa Bay region. The only difference is that Florida economy is larger in dollar and geographic size.

Table 45 – Economic Contribution of the Port of Tampa to the Tampa Bay and Florida Economies – CY 2001

Region	Output (\$ Million)	Jobs	Wages (\$ Million)	State and Local Taxes (\$ Million)
Florida	\$ 14,812	124,600	\$ 4,438	\$451
Tampa Bay	\$ 12,978	107,903	\$ 3,735	\$380
Share of FL Impacts	87.6%	86.6%	84.2%	84.2%

Source: Business Research & Economic Advisors

As shown in **Table 45** the Port of Tampa contributed \$14.8 billion of output to the state's economy. This output impact of the Port of Tampa on the state of Florida was 14 per cent higher than its contribution to the Tampa Bay region. This, in turn, contributed 124,600 jobs paying an estimated \$4.4 million in wages to Florida's economy. The spending by

the impacted businesses and employees in Florida also generated \$451 million in state and local tax revenues throughout the state. The ports’ statewide impact by industry is shown in **Table 46**. The distribution of the economic impacts by industry at the state level shown in **Figure 12** is similar to that found at the regional level.

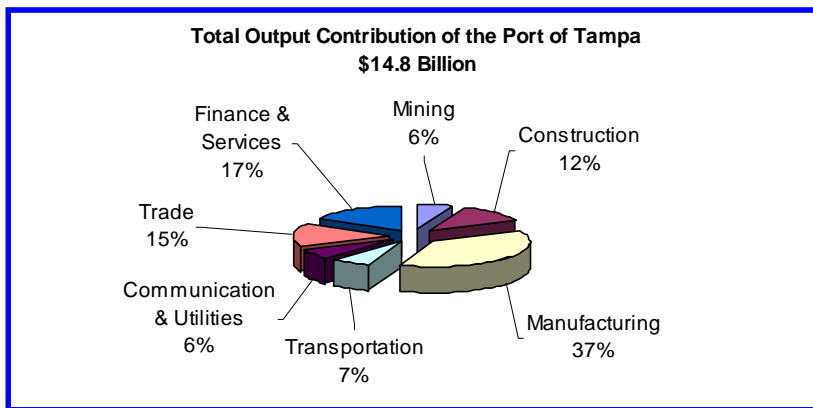
**Table 46 – Total Economic Contribution of the Port of Tampa
State of Florida Economy – CY 2001**

Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	State & Local Taxes (\$ Million)
Mining	\$ 865	4,794	\$ 165	\$17
Construction	\$ 1,722	21,953	\$ 580	\$59
Manufacturing	\$ 5,633	15,959	\$ 730	\$74
Mfg - Nondurables	\$ 4,294	9,431	\$ 457	\$46
Mfg - Durables	\$ 1,339	6,528	\$ 273	\$28
Transportation	\$ 999	9,280	\$ 416	\$42
Communications & Utilities	\$ 908	2,587	\$ 141	\$14
Trade	\$ 2,206	28,120	\$ 840	\$85
Finance & Services	\$ 2,438	38,084	\$ 1,454	\$148
Other	\$ 41	3,822	\$ 113	\$11
Total	\$ 14,812	124,600	\$ 4,438	\$451

Source: Business Research & Economic Advisors

As with the Tampa Bay region, the manufacturing sector contributed the largest share of output to the state’s economy, while the mining and construction sector contributed the largest share of jobs and the services sector contributed the largest share of wage income.

**Figure 12 – Percentage Distribution of the Total Output Contribution
Port of Tampa - Tampa Bay Regional Economy – CY 2001**



Source: Business Research & Economic Advisors

Selected Industry Impacts

While the economic contribution of the Port of Tampa touched virtually every industry in the Tampa Bay region, four industries were at the core of the port's impact:

- cruise;
- phosphates and related agricultural chemicals;
- inland transport; and
- shipyards and drydocks.

Each of these port-related industries contributed to the local and state economies in distinct ways. The cruise industry's impact was primarily generated by passenger spending on a variety of vacation-related services. Phosphates and related agricultural chemicals were the principal exports of the Port of Tampa and contributed to the local and state economies through the mining and manufacturing of the phosphate products. All modes of inland transportation services were required to move goods and passengers to and from the port and the Tampa area. Finally, shipyards and drydocks provided ship maintenance and repair services to cargo vessels, cruise ships, barges and tugboats that operated in Tampa Bay.

In the following sections we discuss and quantify the independent impact of each of these industries on the Tampa Bay and Florida economies.

Economic Contribution of Cruise Activity at the Port of Tampa

The cruise sector has been one of the most rapidly growing segments of activity at the port. As indicated in **Table 47**, passenger volumes and cruise ship sailings have increased dramatically since 1991. While cruise activity declined over the 1995-1997 period, it has steadily increased since and in FY 2001, cruise passenger volume²² at 517,235 was almost 10 times higher than in 1991. Since 1997, passenger volume has increased at an average annual rate of 175 percent or an average of more than 82,000 additional passengers each year. The growth in cruise passenger volume has been generated by an increase in the number of cruises as indicated by the number of sailings; but, of equal importance has been the increase in the average number of passengers per sailing. This has almost doubled from an average of 1,980 passengers in FY1991 to 3,748 in FY2001 and reflects the introduction of increasingly larger ships by the cruise lines.

Table 47 - Passenger Volume Port of Tampa – FY1991 to FY2001

Fiscal Year	Number of Passengers	Sailings	Average Passengers per Sailing
1991	55,428	28	1,980
1992	72,988	47	1,553
1993	200,185	117	1,711
1994	304,345	210	1,449
1995	281,484	183	1,538
1996	192,230	115	1,672
1997	187,851	84	2,236
1998	244,968	104	2,355
1999	413,618	156	2,651
2000	459,803	151	3,045
2001	517,235	138	3,748

Source: Tampa Port Authority

The Port of Tampa's location on Florida's Gulf coasts has also played a significant role in its growth. The western Caribbean and Mexico have been among the fastest growing destination markets in the cruise industry and Tampa's location has allowed it to increase its share of the cruise market by offering cruises to these and other destinations. In addition, the cruise lines have positioned some of their largest ships at the port as illustrated by

²² Passenger volume includes embarking, disembarking and intransit passengers.

Carnival’s Sensation with a capacity of more than 2,000 passengers. With the introduction of additional Caribbean cruises by Celebrity and Royal Caribbean in 2002 and 2003, Tampa’s growth will continue into the foreseeable future.

During calendar year 2001, the focus of our analysis, the port handled 153 cruise ship calls and 544,880 cruise passengers (see **Table 48**). The vast majority of cruise ship calls, over 90 percent, were turnarounds, i.e., the cruise ships began and terminated their cruises at the Port of Tampa. As noted above, the principal destination of cruises that embarked from the port during 2001 was the western Caribbean, including Jamaica, the Cayman Islands, Cozumel and Cancun. While the port is expanding its cruise base, Carnival cruise ships carried more than 95 percent of the 2001 cruise passengers. Holland America accounted for another 3 percent of cruise passengers. The remaining passengers sailed upon ships operated by Regal Cruises, Costa and Radisson Seven Seas.

Table 48 – Cruise Activity at the Port of Tampa – CY 2001

	Total	Embarkations	Disembarkations	Intransit
Passengers:	544,880	270,853	272,186	1,841
Cruise Ship Calls:	153	150	150	3
Passenger/Call	3,561	1,806	1,815	614

Source: Tampa Port Authority

The impact of the cruise sector on the Tampa Bay region was generated by the landside spending of the cruise lines and their passengers and fees paid to the Tampa Port Authority (TPA). Cruise lines purchased a variety of soft and hard goods, including food and beverages, fuel, hotel supplies, maintenance supplies, and services, such as security, entertainment and sanitary services, from Tampa Bay businesses. Cruise passengers purchased lodging services, food and beverages, entertainment services, such as visits to the Florida Aquarium, and gifts and souvenirs.²³ In addition, cruise lines pay wharfage and dockage fees to the TPA for the use of the port’s dock and terminal facilities. As shown

²³ Data on cruise line spending in Tampa Bay were obtained from BREA which tracks cruise industry spending by industry and location. Cruise passenger spending in Tampa was estimated from cruise passenger survey data collected by Bonn Marketing Research Group, Inc. for the Tampa Bay Convention and Visitors Bureau (TBCVB).

in **Table 49**, these expenditures totaled \$57.5 million in 2001 and represented an average of \$210 per passenger.

Table 49 – Direct Cruise Industry Spending in Tampa Bay – 2001

<u>Category</u>	<u>Annual Spending</u>
Cruise Passengers	\$ 41,770,164
Cruise Lines	\$ 10,805,541
Port Fees	\$ 4,909,000
Total	\$ 57,484,705
Per Passenger Expenditures	\$ 209.78

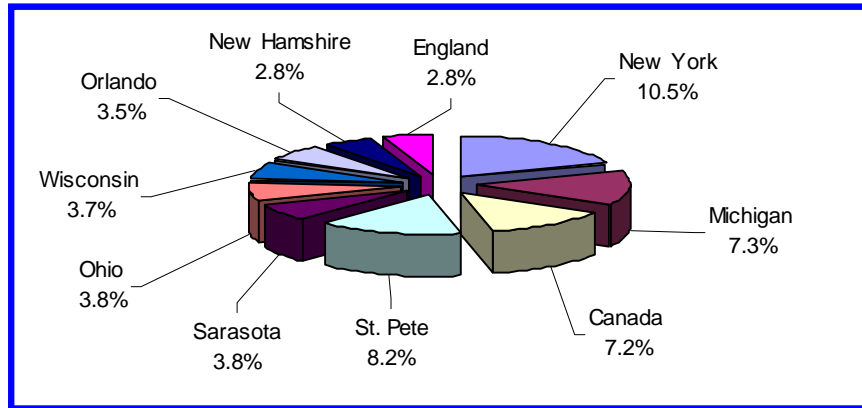
Source: Business Research & Economic Advisors

As indicated in the table, cruise passengers were the most important source of spending in the Tampa Bay area, accounting for 73 percent of the cruise industry's direct spending in the region. Cruise passengers purchased a variety of goods and services both prior to and following their cruise. According to the TBCVB study prepared by Bonn Marketing Research Group, 44 percent of cruise passengers spent one or more pre- or post-cruise nights in the Tampa Bay area.²⁴ Of these overnight stays almost two-thirds were at area hotels. The average length of stay of an overnight cruise visitor was 1.4 days, i.e. about 50% spent one night and 50% spent two nights in the Tampa Bay area.

As shown in **Figure 13**, Tampa cruise passengers came from around the globe. Eleven percent of cruise passengers arrived from Canada and England. New York was the state of residence for 10.5 percent of Tampa cruise passengers while 14.8 percent of the cruise passengers came from the midwestern states of Michigan, Ohio and Wisconsin. Florida residents of Orlando, St Pete and Sarasota accounted for 15.5 percent of cruise passengers.

²⁴ It should also be noted that 11.9% of cruise passengers visited Orlando prior to their cruise from Tampa. Thus, about one-fourth of cruise passengers who arrived in Tampa on the day of their cruise had a pre-cruise stay in Orlando.

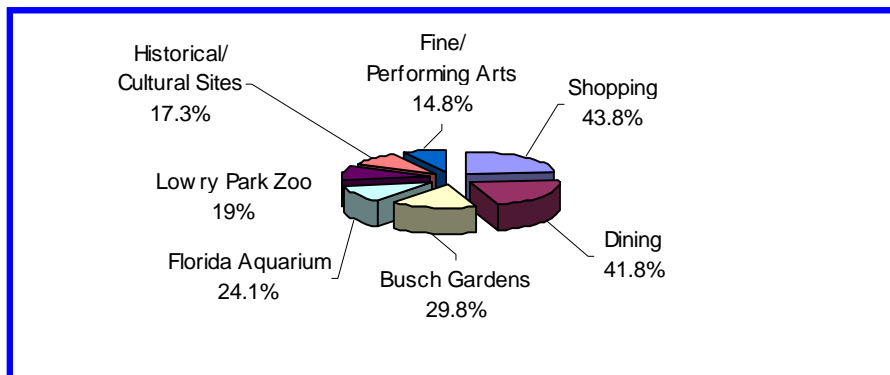
Figure 13 – Top 10 Cruise Visitor Places of Residence - 2001



Source: Bonn Marketing Research Group, Inc.

Thus, for a great many of the cruise passengers, Tampa is more than just a port of embarkation. It has a climate that is distinctly different than their place of residence and Tampa is, in fact, a part of their vacation experience. This is borne out by the variety of non-cruise activities undertaken by cruise passengers. As shown in **Figure 14**, almost 30 percent of cruise passengers visited Busch Gardens, 24 percent went to the Florida Aquarium, almost 20 percent visited Lowry Park Zoo and 32 percent visited historical/cultural/performing arts venues. Over 40 percent shopped at local retail and eating establishments.

Figure 14 – Major Non-cruise Activities of Cruise Passengers - 2001



Source: Bonn Marketing Research Group, Inc.

It was these and other activities that generated the \$41.8 million in cruise passenger spending during 2001 that is detailed in **Table 50**. Excluding airfares, cruise passengers spent an estimated \$22.1 million at Tampa area businesses. Based upon the TBCVB information, it was estimated that cruise passengers spent almost \$6 million at area restaurants, \$6.1 million on entertainment and recreation at area attractions, such as the Florida Aquarium, MOSI/MAX, Busch Gardens and sporting and other events, \$3.3 million at retail establishments and \$2.5 million on ground transportation. Those passengers who stayed in area hotels spent an additional \$2.1 million on lodging. Based upon an average airfare of \$325 for Carnival and Holland America passengers,²⁵ it was estimated that the 45 percent of cruise passengers who flew to Tampa spent a total of \$39.2 million, half of which (\$19.6 million) was allocated to the Tampa region. Thus, cruise passengers spent an estimated \$154.13 per passenger on local goods and services prior to and after their cruise.

Table 50 – Cruise Passenger Spending by Category in the Tampa Bay Region - 2001

<u>Category</u>	<u>Annual Spending</u>
Restaurant	\$ 5,934,258
Shopping	\$ 3,321,169
Attractions	\$ 4,418,790
Ground Transp.	\$ 2,544,931
Special Events	\$ 834,974
Entertainment	\$ 574,414
Groceries	\$ 1,081,447
Other	\$ 1,014,271
Sporting Event	\$ 318,464
Lodging	\$ 2,092,569
Total Spending (ex. Transp.)	\$ 22,135,286
Airfare (Tampa Share)	\$ 19,634,877
Total Expenditures	\$ 41,770,164
Per Passenger Expenditures	\$ 154.13

Source: Business Research & Economic Advisors

²⁵ The average airfare for the Carnival and Holland America passengers is a weighted average of airfares paid by the cruise lines on behalf of their passengers. These data were obtained by BREA from a survey of U.S.-based cruise lines for 2001.

As shown in **Table 51**, cruise lines spent an estimated \$10.8 million with Tampa-based businesses in 2001. Just over half, \$5.5 million, was spent with chandlers in the Tampa Bay region. These included expenditures for food, linens and other hotel goods, galley equipment and electrical motors and equipment. The lines also spent just over \$100,000 with area shipyards for repair services. The \$2.6 million in expenditures for business services included legal, computer, marketing and sanitary services while the \$2.5 million in expenditures for personal services primarily included spending for entertainment and photographic services.

Table 51 – Cruise Industry Spending by Category in the Tampa Bay Region - 2001

Chandlers	\$ 5,528,308
Shipbuilding	\$ 100,631
Transportation Services	\$ 26,240
Business Services	\$ 2,636,090
Personal Services	\$ 2,514,070
Total (ex. Fees)	\$ 10,805,541
Wharfage & Dockage Fees	\$ 4,909,000
Total	\$ 15,714,541
Passenger Expenditures	\$ 41,770,164
Total Cruise Expenditures	\$ 57,484,705
Total Per Passenger Exp.	\$ 209.78

Source: Business Research & Economic Advisors

Cruise lines were also required to pay wharfage and dockage fees. Wharfage fees are based upon the number of passengers. A fee of \$5.25 was assessed to each passenger embarkation, disembarkation and intransit during 2001. Dockage fees are based upon the length of the vessel. As reported by the Tampa Port Authority, cruise lines paid \$4.9 million in wharfage and dockage fees to the Authority during 2001. Combining these fees with their other expenditures, the cruise lines spent an estimated \$15.7 million with Tampa Bay businesses and the Port Authority. In total the cruise industry operating in Tampa, both the cruise lines and their passengers, spent a total of \$57.5 million with Tampa Bay businesses and the Port Authority. On a per passenger basis, the cruise sector generated \$209.78 in total expenditures in the Tampa Bay region.

As shown in **Table 52**, the landside spending by the cruise lines and their passengers contributed 530 jobs paying \$13.5 million in wages to the Tampa Bay regional economy. These jobs had an output contribution of \$41.3 million. The largest contribution occurred in the air transportation industry with 198 jobs and \$6.6 million in wage income. The more than 120,000 cruise passengers who arrived and/or departed from at the Tampa International Airport generated these jobs.

**Table 52 – Direct Economic Impact of the Cruise Industry – 2001
Tampa Bay Region**

Industry	Employment	Wage Income	Output
Transportation Services	41	\$ 839,231	\$ 2,571,170
Business Services	45	\$ 1,126,665	\$ 2,636,090
Personal Services	34	\$ 623,490	\$ 2,514,070
Air Transportation	198	\$ 6,640,516	\$ 19,634,877
Lodging	34	\$ 629,236	\$ 2,092,569
Restaurants	47	\$ 568,672	\$ 1,725,863
Wholesale Trade	13	\$ 528,990	\$ 1,849,616
Retail Trade	33	\$ 598,553	\$ 1,816,549
Entertainment/Amusements	84	\$ 1,918,982	\$ 6,146,642
Ship Maintenance	1	\$ 36,443	\$ 280,331
Total	530	\$ 13,510,778	\$ 41,267,779

Source: Business Research & Economic Advisors

Cruise passengers spent over \$10 million during 2001 at retail and eating and drinking establishments (see Table 50). This spending was responsible for the employment of 80 retail and restaurant workers who earned \$1.2 million in wage income. In addition to retail, cruise passengers spent another \$6 million at entertainment and recreation venues. As a result, the entertainment and amusement industry provided jobs to a similar number of employees, 84, and wage income of \$1.9 million.

The service sector, including transportation, lodging, business and personal services, generated a total 154 jobs and \$3.2 million in wage income as a result of the approximately \$10 million spent by the cruise lines and their passengers for these services. The wholesale trade sector, which primarily consisted of chandlery services for the cruise lines, generated 13 jobs that paid \$529 thousand in wage income during 2001.

The spending by these directly impacted businesses and workers generated additional employment and income throughout the Tampa Bay region. For example, hotels purchased linens and personal care items for their rooms, food and beverages for their restaurants and insurance for their property and employees. As a result of their employment, the directly impacted workers purchased household goods and services, such as food, clothing, utilities and health care. Combining the impacts of this spending with the direct economic impacts, the cruise sector generated a total of 1,140 jobs throughout the Tampa Bay region with wages of \$41 million. These impacts are shown by industry in **Table 53**.

**Table 53 – Total Economic Impact of the Cruise Industry – 2001
Tampa Bay Region**

Industry	Employment	Wage Income	Output
Mining & Construction	81	\$ 3,114,560	\$ 7,904,594
Manufacturing	23	\$ 1,392,300	\$ 4,381,500
Transportation, Comm. & Utilities	291	\$ 10,050,000	\$ 35,914,500
Trade	248	\$ 6,468,000	\$ 14,070,250
Finance, Insurance & Real Estate	48	\$ 2,191,000	\$ 7,095,500
Services	429	\$ 15,890,000	\$ 21,045,000
Government & Other	20	\$ 1,914,140	\$ 128,225
Total	1,140	\$ 41,020,000	\$ 90,539,569

Source: Business Research & Economic Advisors

Just under 40 percent of the cruise sector's total economic impact occurred in the Services sector. A total of 429 jobs and income of \$15.9 million were generated in this sector during 2001. The cruise sector's direct spending generated approximately 50 percent of the total impact for the lodging, business and personal services described above. The remaining 50 percent were generated by the indirect and induced business and employee spending and occurred throughout the service sector, including accounting, consulting and healthcare services to name a few.

An even greater percentage, 80 percent, of the economic impacts in the Transportation, Communications and Utilities (TCPU) sector was generated by the cruise sector's direct

expenditures for transportation services. A total of 291 jobs and \$10 million in income were generated throughout the Tampa Bay area by cruise-related spending, one-fourth of the cruise sector's total economic impact. Business and worker spending for communications and utility services generated the remaining 20 percent of the cruise sector's impact on the TCPU sector.

The cruise sector generated 248 jobs and \$6.5 million in wages in the Trade sector which includes both wholesale and retail trade. Cruise line and passenger spending generated about one-third of the total economic impact in the trade sector. The Trade sector accounted for about 20 percent of the cruise industry's total economic contribution to the Tampa Bay regional economy.

The spending by the cruise lines and their passengers generated another 172 jobs and \$8.6 million in wages in the remaining sectors of the Tampa Bay economy. Combined these sectors accounted for approximately 15 percent of the cruise-related economic impacts.

As shown in **Table 54**, the economic contribution of Tampa's cruise sector to the state of Florida was about 40 per cent higher than its contribution to the Tampa Bay region. The larger impact was due to two principal reasons. First, the direct contribution to the state economy was higher due to spending by the 12 percent of Tampa cruise passengers who visited and stayed in Orlando prior to their cruise. Second, the indirect and induced impacts were larger because directly impacted Tampa businesses and consumers purchased goods and services that were produced in other parts of the state.

**Table 54 – Total Economic Impact of the Cruise Industry – 2001
Tampa Bay Region and the State of Florida**

Region	Employment	Wage Income	Output
Florida	1,622	\$ 58,110,000	\$ 135,815,000
Tampa Bay	1,140	\$ 41,020,000	\$ 90,539,569
Share of FL Impacts	70.3%	70.6%	66.7%

Source: Business Research & Economic Advisors

In total, the cruise sector generated over 1,600 jobs and \$58 million in wage income throughout the state of Florida. The direct spending by the cruise lines and their Tampa passengers accounted for approximately 40 percent of the sector's total economic contribution to the state's economy with the remaining 60 percent generated by the indirect and induced spending of the directly impacted businesses and employees.

Economic Contribution of the Phosphate and Ag Chemical Industry

Phosphates and related agricultural chemicals are the leading export commodities of the Port of Tampa. The Tampa Port Authority (TPA) reported that just over 10.7 million tons of these commodities²⁶ were shipped from the port during 2001. These phosphate-based commodities accounted for 90 percent of the total outbound tonnage of the port for the year.²⁷ Over 8.9 million tons of these outbound commodities were bulk phosphate and agricultural chemicals and 1.8 million tons were phosphate rock. As also shown in **Table 55**, over two-thirds of phosphate exports were destined for foreign markets. According to the TPA phosphate exports were destined for 39 countries, including China, Australia, Japan and Brazil.

Table 55 - Outbound Cargo Tonnage at the Port of Tampa – 2001

<u>Commodity Group</u>	<u>Outbound Cargo</u>		<u>Total</u>
	<u>Domestic</u>	<u>Foreign</u>	
Phosphates	3,437,254	7,315,775	10,753,029
Share of Total	93.8%	88.5%	90.1%
Other Outbound Cargo	226,797	950,343	1,177,140
Total	3,664,051	8,266,118	11,930,169

Source: Tampa Port Authority

The exports of phosphates through the Port of Tampa also accounted for a significant percentage of the industry's total production in the state of Florida. The industry reported that 22.8 million metric tons of phosphate rock were mined in the state and that 11.1 million tons of diammonium, monoammonium and triple super phosphate were available for shipment during 2001.²⁸ Thus, the 8.9 million tons of bulk phosphate chemicals that were exported through the Port of Tampa accounted for 80 percent of the phosphate chemicals available for shipment.

During 2001, the exports of phosphates and agricultural chemicals directly supported the employment of 8,588 workers in the mining and chemical manufacturing industries of the

²⁶ These commodities consisted of phosphate rock, processed bulk phosphate, such as diammonium and monoammonium phosphates, animal feed supplements and other phosphate-based fertilizers.

²⁷ Total (inbound plus outbound) cargo tonnage for the port during 2001 was 47.9 million tons. Thus, phosphate exports accounted for 22 percent of total port tonnage

²⁸ 2001 Florida Phosphate Facts, Florida Phosphate Council.

Tampa Bay region.²⁹ Approximately 44 percent of these workers were employed in mining operations and 56 percent in manufacturing. Seventy percent of the total employment in the regional phosphate industry occurred at establishments located in Polk County and 15 percent in establishments in Hillsborough County. The remaining 15 percent were spread throughout the other five counties in the Tampa Bay region.

As shown in **Table 56**, these 8,588 impacted workers received an estimated \$373 million in wages during the year. This represented an average annual wage of \$43,432 per employee. This is approximately 25 percent higher than the average annual wage of all workers in the Tampa Bay region. Phosphate mining workers received an estimated \$114 million in wage income while those employed in manufacturing operations received \$259 million. Finally, the mined phosphate rock and manufactured agricultural chemicals had a combined output or production value of \$2.5 billion.

Table 56 – Direct Economic Impact of the Phosphate Mining and Manufacturing Industry Tampa Bay Region - 2001

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Phosphate Mining	3,807	\$ 114	\$ 29,836	\$ 499
Ag Chemicals Mfg.	4,781	\$ 259	\$ 54,241	\$ 2,035
Total	8,588	\$ 373	\$ 43,422	\$ 2,534

Source: Business Research & Economic Advisors

As shown in **Table 57**, overall activity at the Port of Tampa was estimated to have had a direct economic impact in the Tampa Bay region of \$6 billion in output, 34,658 jobs and \$1.25 billion in wage income during 2001. Thus, the phosphate industry accounted for approximately 40 percent of the direct output impact, 25 percent of the direct employment impact and 30 percent of the wage impact of the Port of Tampa. The fact that the phosphate industry’s share of the employment impact is lower than both the output and wage impacts reflects the relatively high productivity of the mining and agricultural

²⁹ The Tampa Bay region is defined as the seven-county area composed of Hernando, Hillsborough, Manatee, Pasco, Pinellas, Polk and Sarasota counties.

chemical industries which results in higher output per worker and consequently, higher average wages per worker. As also indicated in the table, impacted phosphate industry workers received 20 percent more in average annual wage income than the average worker directly impacted by all port activity.

**Table 57 – Direct Economic Impact of the Phosphate Industry and Total Port Activity
Tampa Bay Region - 2001**

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Phosphate Industry	8,588	373	\$ 43,422	2,534
Share of Port Direct Impact	24.8%	29.8%	1.20	42.3%
Port Direct Impact	34,658	\$ 1,251	\$ 36,082	\$ 5,987

Source: Business Research & Economic Advisors

The spending by phosphate industry and its workers generated additional employment and income throughout the Tampa Bay region. For example, the phosphate industry purchased mining and manufacturing equipment, trucking services to move material between the mine and the chemical plant and then to the port, utility services to operate its facilities, terminal and warehousing services at the port, insurance for its facilities and workers and numerous other materials and services. As a result of their employment, the directly impacted phosphate workers purchased household goods and services, such as food, clothing, utilities and health care. The impacts generated by the industry spending are referred to as the indirect economic impacts of the industry while the impacts related to the spending of the industry's employees are the induced economic impacts.

As indicated in **Table 58**, the combined indirect and induced impacts were significant and spread throughout the Tampa Bay regional economy. The export activity of the phosphate industry generated an additional \$3.3 billion in industry output, 32,687 jobs and \$1.05 billion in wage income due to the spending of the industry and its employees. The largest indirect and induced output impact, \$959 million, was generated in the Manufacturing sector while the largest indirect and induced employment impact, 9,302 jobs, occurred in the Services sector. Even though the Services sector had only an average annual wage of \$33,327, the large employment impact also resulted in the largest indirect

and induced wage impact. Combined, these two sectors accounted for 42 percent of the phosphate industry's indirect and induced output, 34 percent of the employment and 38 percent of the wage impacts.

**Table 58 – Indirect & Induced Economic Impact of the Phosphate Industry
Tampa Bay Region - 2001**

<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)	Average Annual Wage
Mining	\$ 243	3,604	\$ 70	\$ 19,526
Construction	\$ 633	6,582	\$ 188	\$ 28,578
Manufacturing	\$ 959	1,884	\$ 90	\$ 48,028
Mfg - Nondurables	\$ 747	799	\$ 34	\$ 42,565
Mfg - Durables	\$ 212	1,086	\$ 55	\$ 51,084
Transportation	\$ 134	1,241	\$ 40	\$ 32,146
Communication & Utilities	\$ 149	465	\$ 32	\$ 68,051
Trade	\$ 573	7,157	\$ 206	\$ 28,839
Finance	\$ 205	1,597	\$ 56	\$ 35,098
Services	\$ 463	9,302	\$ 310	\$ 33,317
Other	\$ 7	855	\$ 58	\$ 67,758
Total	\$ 3,366	32,687	\$ 1,051	\$ 32,148

Source: Business Research & Economic Advisors

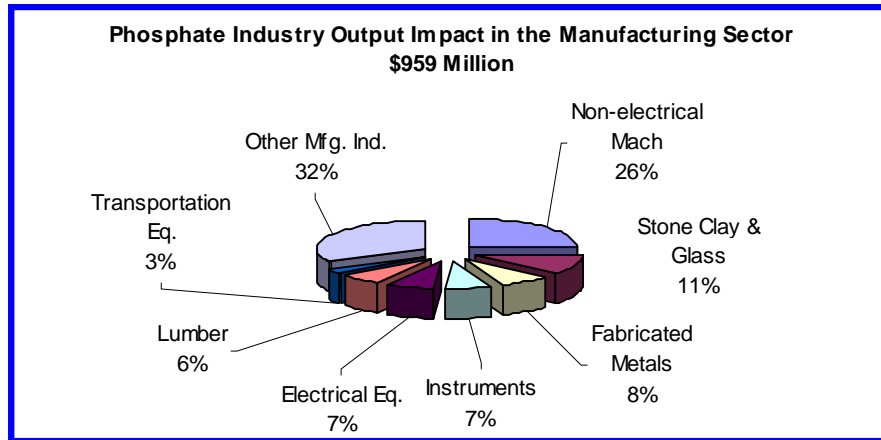
The impacts within the Manufacturing sector were primarily generated by purchases of material and equipment by the phosphate industry and its suppliers. Four industries, nonelectrical machinery, electrical equipment, instruments and stone, clay and glass, accounted for half of the phosphate industry's impact on the manufacturing sector.

As shown in **Figure 15**, 26 percent of the phosphate industry's indirect and induced output impact in the manufacturing sector occurred in the non-electrical machinery industry. Businesses in this industry manufacture mining machinery, such as pulverizers, drills, loaders and mining trucks, material handling equipment, such as conveyors, and specialized equipment for processing phosphates and other chemicals.

Combined the electrical equipment and instruments industries accounted for 14 percent of the phosphate industry's manufacturing output impact. Manufacturers in these indus-

tries produce industrial lighting equipment, power generation equipment and controls and process monitoring equipment.

Figure 15 – Phosphate Industry Impact in the Manufacturing Sector - 2001



Source: Business Research & Economic Advisors

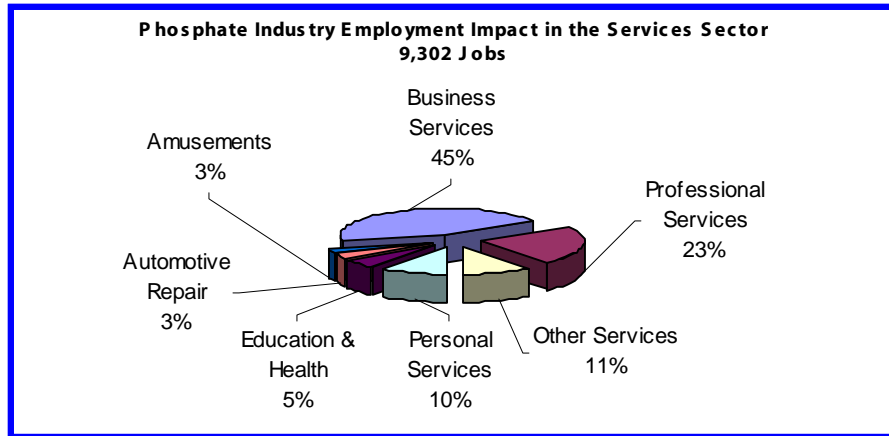
The impacts on the stone, clay and glass industry were generated by both construction-related and chemical processing requirements. The chemical processing requirements included the purchase of processed non-metallic minerals as additives to agricultural chemical products.

As shown in **Figure 16**, the indirect and induced impacts within the Services sector were concentrated in two services categories, business and professional services. Combined, these two sectors accounted for three-fourths of the phosphate industry's indirect and induced employment impact within the Services sector. Businesses in these sectors provide a broad range of services including accounting, manpower, building maintenance, security, equipment leasing, logistics consulting, management consulting and engineering services. These types of services are primarily sold directly to businesses and thus are the result of the indirect impacts generated by industry spending.

The induced spending of the employees of the phosphate industry and its suppliers generated the remaining 25 percent of the industry's impact in the Services sector. Since em-

ployee spending generates these impacts they include such services as education, health, recreation and amusement, personal care and automotive repair services.

Figure 16 – Phosphate Industry Impact in the Services Sector - 2001



Source: Business Research & Economic Advisors

Other significant impacts occurred in the Mining, Construction, Transportation and Trade sectors. The spending of the phosphate industry, its suppliers and their employees generated over 3,600 jobs paying \$70 million in wages and producing \$243 million in output within the Mining sector. These impacts occurred primarily among other non-metallic and mineral mining operations, including limestone, gypsum and other stone aggregates.

The 6,582 jobs, \$188 million in wage income and \$633 million in output generated in the Construction sector resulted from the indirect and induced residential and nonresidential construction activity created by the export activity of the phosphate industry.

Within the Transportation sector 1,241 jobs paying \$40 million in wages and creating \$134 million in output were generated. The trucking industry accounted for 80 percent of these impacts principally as a result of the transportation of phosphates and other agricultural chemicals to and from the Port of Tampa.

Finally, over 7,150 jobs paying \$206 million in wages and producing \$573 million in output were generated in the Trade sector. Approximately 70 percent of these indirect and induced impacts occurred among retail trade establishments and were the result of the

induced spending of the employees of the phosphate industry and its suppliers. The remaining 30 percent of the indirect and induced impacts took place among wholesale trade businesses.

Combining the direct, indirect and induced impacts, the export of phosphates and related agricultural chemicals had a total economic contribution of 41,275 jobs paying \$1.4 billion in wages and producing \$5.9 billion in output. As shown in **Table 59**, phosphate exports accounted for 45 percent of the Port of Tampa's total output impact and 38 percent of the port's total impact on employment and wages in the Tampa Bay region. Given the pervasive impact of the phosphate industry and its large share of the total impact of the port, the average wage of all workers impacted by the export of phosphates and agricultural chemicals was essentially the same as the average for all workers impacted by the Port of Tampa.

**Table 59 – Total Economic Impact of the Phosphate Industry and Total Port Activity
Tampa Bay Region - 2001**

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Phosphate Industry	41,275	1,424	\$ 34,493	5,900
Share of Total Port Impact	38.3%	38.1%	1.00	45.5%
Total Port Impact	107,903	\$ 3,735	\$ 34,616	\$ 12,978

Source: Business Research & Economic Advisors

As shown in **Table 60**, the economic contribution to the state of Florida of Tampa's phosphate exports was about 20 per cent higher than its contribution to the Tampa Bay region. The larger impact was primarily due to the larger statewide indirect and induced impacts. The statewide impacts were larger because directly impacted Tampa businesses and consumers purchased goods and services that were produced in other parts of the state.

In total, the export of phosphates and related agricultural chemicals through the Port of Tampa generated over 49,700 jobs, \$1.7 billion in wage income and \$6.9 billion in output

throughout the state of Florida. The direct production of phosphates and agricultural chemicals for export accounted for approximately 35 percent of the sector's total economic contribution to the state's economy with the remaining 65 percent generated by the indirect and induced spending of the directly impacted businesses and employees.

**Table 60 – Total Economic Impact of the Phosphate Industry and Total Port Activity
State of Florida - 2001**

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Total Impact on Tampa Bay	41,275	1,424	\$ 34,493	5,900
Share of Florida Impact	83.0%	85.5%	1.03	86.0%
Total Impact on Florida	49,740	\$ 1,665	\$ 33,474	\$ 6,859

Source: Business Research & Economic Advisors

Economic Contribution of the Inland Transport Industry

The inland transport industry, which includes rail, trucking, air, pipeline and local transportation, is an essential component of the port-related network of industries. The rail, trucking and pipeline industries moved the 47.9 million tons of inbound and outbound cargo to and from the port and the Tampa Bay region. The air and local transportation industries were responsible for transporting cruise passengers to and from the Tampa Bay region and the port's cruise terminal. Obviously, without these industries, the Port of Tampa could not function as a cargo or cruise port.

During 2001 several unit trains per day moved through the various terminals at the port transporting phosphate-related chemicals, coal and agricultural products. Thousands of trucks also visited the port on a daily basis carrying petroleum, refrigerated food products, fertilizers, stone, other minerals, scrap metal and the many other goods shipped into and from the Port of Tampa. In addition to the petroleum tank trucks, pipelines were used to transport the 17.8 million tons of inbound petroleum products to destinations throughout Florida, including the Tampa International Airport and central Florida. In fact, the Tampa Port Authority (TPA) has estimated that approximately 850 rail cars and 11,200 trucks access port facilities on a daily basis.³⁰ The TPA's intermodal transportation plan also indicates that trucks hauled about 80 percent of the non-phosphate cargo and 58 percent of the phosphate-related cargo, rail carried about 1 percent of the non-phosphate cargo and 41 percent of the phosphate cargo and pipelines moved approximately 19 percent of the phosphate cargo and 1 percent of the non-phosphate cargo. Based upon these percentages, trucks hauled an estimated 36 million tons, rail carried 4.8 million tons and pipelines 7.1 million tons of cargo to and from the port of Tampa during 2001 (see **Table 61**).

The air transportation and local transportation industry have been crucial to the growth of the port's cruise activity. During 2001, 45 percent of Tampa's cruise passengers, or about 121,000 passengers, arrived in Tampa via air. These passengers then utilized local transportation services, i.e., buses, taxis and limousines, to reach the cruise terminal. The remaining passengers primarily arrived via automobiles. The TPA has estimated that each

³⁰ Tampa Port Authority Intermodal Transportation Plan.

cruise sailing brings 300 to 400 automobiles and 40 to 50 buses to the port carrying cruise passengers. With 150 cruises during 2001, the port generated over 50,000 auto trips and 6,500 bus trips to the port during the year.

Table 61 – Volume of Cargo Carried by Mode of Transportation – 2001
Millions of Tons

	Trucks	Rail	Pipelines	Total
Phosphate-related	6.3	4.4	0.1	10.8
Non-phosphates	29.7	0.4	7.0	37.1
Total	36.0	4.8	7.1	47.9

Source: Business Research & Economic Advisors

Thus, all modes of transportation were impacted by and contributed to the movement of cargo and cruise passengers throughout the Tampa Bay region and, as a result, generated significant employment opportunities in the area. As shown in **Table 62**, the inland transport industry generated over 2,800 jobs in the Tampa Bay region as a result of the direct transportation of cargo and cruise passengers. These workers earned \$123 million in wages and generated \$318 million in transportation industry output. As also shown in the table, the average impacted transportation worker earned annual wages of \$43,672 during 2001.

Table 62 – Direct Economic Contribution of the Inland Transport Industry
Tampa Bay Region - 2001

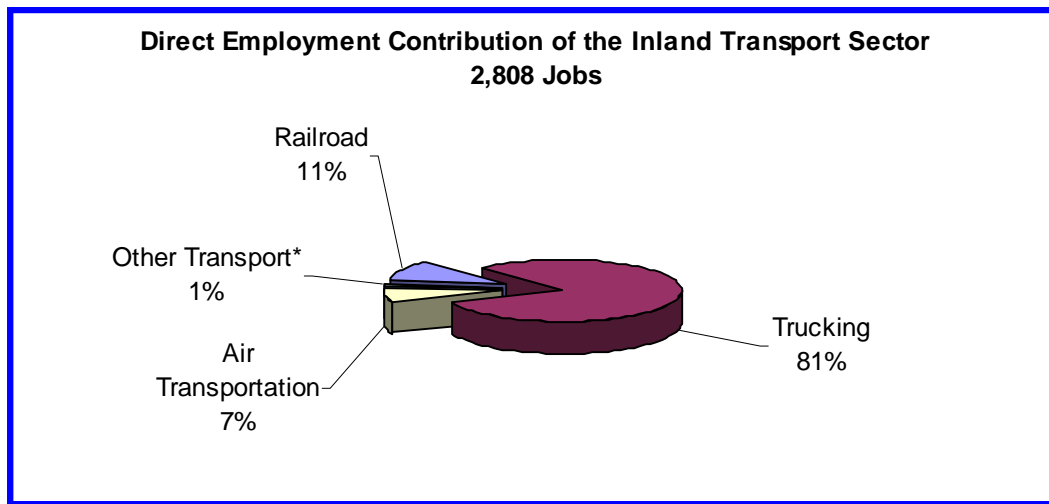
<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Railroad	\$ 59	300	\$ 19	\$ 64,915
Trucking	\$ 236	2,269	\$ 94	\$ 41,531
Air Transportation	\$ 20	198	\$ 7	\$ 33,538
Other Transport*	\$ 3	41	\$ 2	\$ 55,635
Total	\$ 318	2,808	\$ 123	\$ 43,672

* Includes local and intraurban and pipeline transportation.

Source: Business Research & Economic Advisors

As shown in **Figure 17** and the previous table, the trucking industry accounted for 81 percent of the inland transport sector's direct employment contribution. An estimated 2,269 workers were employed by the trucking industry to haul 36 million tons of inbound and outbound cargo at the port. These workers received an average annual wage of \$41,531 generating a total wage income of \$94 million.

Figure 17 – Direct Employment Contribution by Mode of Transportation – 2001



* Includes local and intraurban and pipeline transportation.

Source: Business Research & Economic Advisors

The railroad industry employed an estimated 300 employees, 11 percent of the inland transport sector's employment contribution, to carry 4.8 million tons of cargo to and from the Port of Tampa. The average impacted rail worker earned almost \$65,000 in annual wages resulting in total wages of \$19 million for the 300 directly impacted rail workers.

The transportation of cruise passengers and the movement of petroleum products through local pipelines generated the remaining 8 percent of the employment contribution of the inland transport sector. Combined the air transportation and other transport industries generated 239 jobs and \$9 million in wage income through the direct transportation of cruise passengers and petroleum products.

As shown in **Table 63**, overall activity at the Port of Tampa was estimated to have had a direct economic impact in the Tampa Bay region of \$6 billion in output, 34,658 jobs and \$1.25 billion in wage income during 2001. Thus, the inland transport industry accounted for approximately 5 percent of the direct output impact, 8 percent of the direct employment impact and 10 percent of the wage impact of the Port of Tampa. As also indicated in the table, impacted transportation industry workers received 21 percent more in average annual wage income than the average worker among all industries that were directly impacted by port activity.

**Table 63 – Direct Economic Impact of the Inland Transport Industry and Total Port Activity
Tampa Bay Region - 2001**

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Inland Transportation Industry	2,808	\$ 123	\$ 43,672	\$ 318
Share of Port Direct Impact	8.1%	9.8%	1.21	5.3%
Port Direct Impact	34,658	\$ 1,251	\$ 36,082	\$ 5,987

Source: Business Research & Economic Advisors

The inland transport sector was also impacted by the indirect and induced impacts of overall activity at the port. The directly impacted port businesses purchased equipment, fuel and other goods that required transportation services. Also, impacted employees purchased household goods, such as food, furniture and clothing that also had to be transported within the Tampa Bay region. Adding the impacts of the indirect and induced impacts of the port on the inland transport industry to the direct impacts we arrived at the total contribution of the inland transport sector generated by port-related activity.

As indicated in **Table 64**, the inland transport generated a total of \$876 million in industry output, 8,073 jobs and \$325 million in wage income due to port-related activity. As shown in the table and **Figure 18**, the total contribution of the inland transport sector, like the direct contribution, was concentrated in the trucking industry although to a smaller degree. The total economic contribution of the Port of Tampa generated over 5,100 jobs in the trucking industry. These jobs accounted for 63 percent of the employment impact

within the inland transport sector compared to the 81 percent share of the direct employment impact (see Figure 17).

**Table 64 – Total Economic Contribution of the Inland Transport Industry
Tampa Bay Region - 2001**

<u>Sector</u>	<u>Output (\$ Million)</u>	<u>Jobs</u>	<u>Wages (\$ Million)</u>	<u>Avg. Ann. Wage</u>
Railroad	\$ 75	382	\$ 26	\$ 68,090
Trucking	\$ 536	5,117	\$ 185	\$ 36,154
Air Transportation	\$ 143	1,144	\$ 47	\$ 41,364
Other Transport*	\$ 121	1,430	\$ 67	\$ 46,782
Total	\$ 876	8,073	\$ 325	\$ 40,285

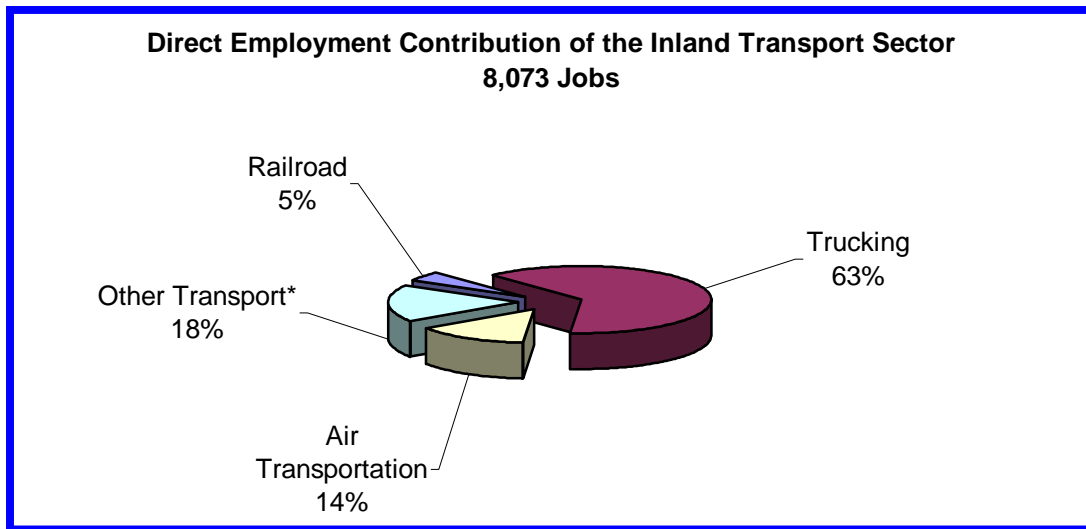
* Includes local and intraurban and pipeline transportation.

Source: Business Research & Economic Advisors

The relative decline in the share of the trucking industry was shifted to the air transportation and other transport industries which showed a combined increase in share from 8 percent for the direct employment impact to 32 percent for the total impact. This increase was due to the more diverse nature of the indirect and induced impacts of the Port of Tampa. The movement of goods to and from the port primarily generated the direct impacts. In contrast, the indirect and induced impacts within the inland transport sector are principally generated by the movement of people to, from and around the Tampa Bay region. A total of 2,574 jobs paying \$114 million in wages were generated in the air transportation and other transport industries as a result of the total economic impact of the Port of Tampa.

The railroad industry generated a total of 382 jobs and \$26 million in wages, all as a result of the movement of goods and people through the Port of Tampa during 2001.

Figure 18 – Total Employment Contribution by Mode of Transportation – 2001



* Includes local and intraurban and pipeline transportation.

Source: Business Research & Economic Advisors

The importance of the transportation industry is illustrated by the share of the total economic contribution of the Port of Tampa that is generated within the inland transport sector. As discussed above the inland transport sector accounted for just under 10 percent of the port's direct economic impact, however, as shown in **Table 65**, the inland transport industry accounted for more than 15 percent of the total economic impact of the port. Specifically, the inland transport industry accounted for 13 percent of the Port of Tampa's total output impact and 16 percent of the port's total impact on employment and 19 percent of the port's impact on wages in the Tampa Bay region.

As shown in **Table 66**, the Port of Tampa's economic contribution to the state of Florida generated significantly more jobs and income in the inland transport sector throughout the state. The larger impact was primarily due to the larger statewide indirect and induced impacts. The statewide impacts were larger because directly impacted Tampa businesses and consumers purchased goods and services that were produced in and shipped from other parts of the state.

**Table 65 – Total Economic Impact of the Inland Transport Industry and Total Port Activity
Tampa Bay Region - 2001**

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Inland Transportation Industry	8,073	\$ 325	\$ 40,285	\$ 876
Share of Total Port Impact	16.2%	19.5%	1.20	12.8%
Total Port Impact	49,740	\$ 1,665	\$ 33,474	\$ 6,859

Source: Business Research & Economic Advisors

In total, the Port of Tampa generated over 9,300 jobs, \$393 million in wage income and \$1 billion in output in the inland transport sector throughout the state of Florida. The direct impacts of the port in the Tampa Bay region accounted for about 31 percent of the total statewide impacts of the Port of Tampa on the inland transport industry during 2001.

**Table 66 – Total Economic Impact of the Phosphate Industry
Tampa Bay Region and State of Florida - 2001**

	Jobs	Wage Income (\$ Million)	Average Annual Wage	Output (\$ Million)
Total Impact on Tampa Bay	8,073	\$ 325	\$ 40,285	\$ 876
Share of Florida Impact	86.6%	82.8%	0.96	87.6%
Total Impact on Florida	9,322	\$ 393	\$ 42,158	\$ 1,000

Source: Business Research & Economic Advisors

Economic Contribution of the Tampa Bay Shipyard Industry

While Tampa Bay's shipyards were not directly involved in the movement of cargo and cruise passengers, they are an excellent example of the nontransportation support services that developed as a result of the trade activity at the port and, in fact, provide the type of services that are critical to the long term success of the port. For the Port of Tampa to continue to grow, cargo and cruise ships must have access to timely repair and maintenance services that will promote the free and prompt movement of cargo and cruise passengers to and from Tampa Bay.

The Tampa Port Authority (TPA) 2001 Directory indicated that five shipyards operated at the Port of Tampa during 2001. A survey of these shipyards indicated that the five yards provided maintenance and repair services to over 200 vessel during 2001 including, cargo ships, tankers, barges, tug boats and cruise ships. These yards provided a broad range of services including drydock repair, blasting and coating, piping and machinery repair, installation and repair of marine electronics, metal fabrication and welding.

With respect to the analysis of the economic impact of the Port of Tampa, the Tampa area shipyards were considered to be part of the Port Services sector. The Port Services sector was defined as those firms that were immediately and directly involved in providing water transportation service for goods and passengers through the Port of Tampa, as well as firms that directly provided support services to them. In addition to shipyards, this included such services as chandlery, stevedoring, piloting and towing, ships agents and government and cruise operations. As shown in **Table 67**, Tampa's shipyards accounted for almost half of the output and slightly less than one-fourth of the employment and income that was produced by the Port Services sector in support of trade activity at the port during 2001. Specifically, the shipyards employed over 900 workers and paid them an estimated \$33 million in wages during 2001. These workers were employed to repair the more than 200 vessels serviced by the yards. Combined, the five yards generated over \$250 million in industrial output during the year.

In addition to the direct economic impact of the shipyards, their activity also generated indirect and induced economic impacts. The indirect economic benefits were derived from the purchases of the shipyards in support of their maintenance and repair services.

**Table 67 – Direct Economic Contribution of the Shipyard Industry
Tampa Bay Region - 2001**

<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Shipyards	\$ 257	918	\$ 33	\$ 36,458
Share of All Port Services	49.4%	23.0%	20.4%	0.88
All Port Services	\$ 521	3,984	\$ 164	\$ 41,272

Source: Business Research & Economic Advisors

For example, the shipyards purchased tools and equipment, fabricated metal products; utility services, such as, electricity and water, to run equipment; paid for transportation services for materials shipped to the yard; insurance for property and employees and so forth. In addition to this indirect contribution, the employees of the shipyards and their suppliers generated induced economic benefits through their purchases of consumer goods and services, including such goods as autos, food, clothing, furniture, health care and so forth. To estimate the indirect and induced economic contribution of Tampa's shipyards, in addition to the other industries affected by the Port of Tampa, an econometric model of the Tampa Bay regional economy³¹ was utilized.

The contribution analysis for the Tampa Bay shipyards showed that the direct economic contribution of the yards generated another \$147 million in output in the Tampa Bay region (see **Table 68**). The production of these goods and services contributed an additional 1,612 jobs in the region through the indirect and induced spending by businesses and employees. In addition, these jobs generated \$68 million in wage income for these workers.

³¹ This model was developed and maintained by Regional Economic Models, Inc. (REMI). The Center for Economic Development Research (CEDR) at USF has a contract with REMI to use this model. Dr. Dennis Colie of CEDR directed the use of the model for this project. A description of the model is included in the Data and Methodology chapter.

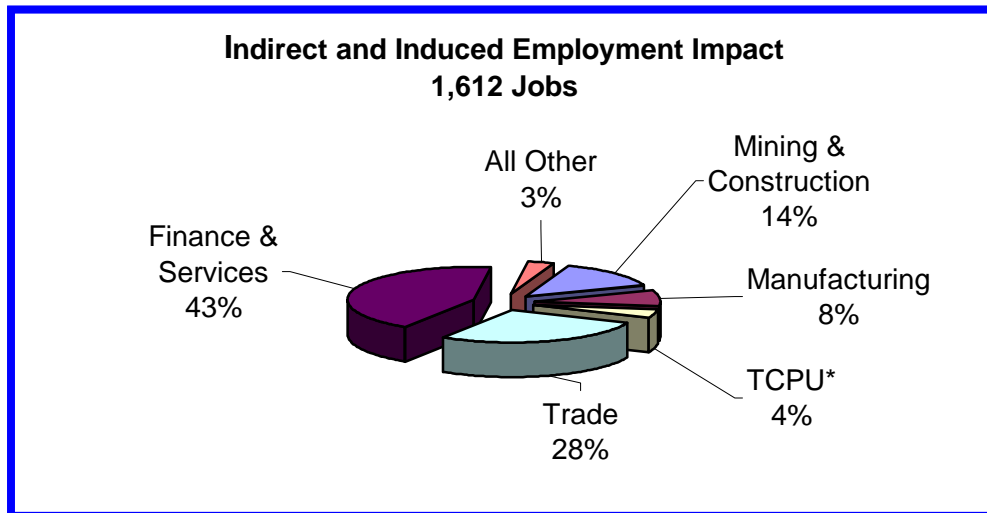
**Table 68 – Total Economic Contribution of the Shipyard Industry
Tampa Bay Region - 2001**

<u>Sector</u>	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Direct Economic Impact	\$ 257	918	\$ 33	\$ 36,458
Indirect & Induced Economic Impact	\$ 147	1,612	\$ 68	\$ 42,451
Total Economic Impact	\$ 404	2,530	\$ 102	\$ 40,277

Source: Business Research & Economic Advisors

As shown in **Figure 19**, these additional jobs generated by the indirect and induced impacts of the shipyard industry were spread throughout Tampa Bay regional economy. The manufacturing sector benefited from the purchases of equipment by the shipyard industry and accounted for 8 percent (126 jobs) of the indirect and induced employment impacts.

**Figure 19 – Indirect and Induced Employment Contribution of the Shipyard Industry
Tampa Bay Region – 2001**



* Transportation, Communications and Public Utilities.

Source: Business Research & Economic Advisors

The largest impacts were in the Finance and Services sector which accounted for 43 percent (694 jobs) of the indirect and induced impacts during 2001. These included finan-

cial, business and personal services such as insurance, real estate, business consulting, accounting, education and health services. These impacts were generated by both the spending by the shipyards and their suppliers (indirect impacts) and employee expenditures (induced impacts).

The Trade sector accounted for 28 percent (447 jobs) of the indirect and induced impacts and were primarily generated by employee purchases of household goods.

Combining the direct, indirect and induced impacts, the maintenance and repair services of the shipyards at the Port of Tampa were responsible for the generation of 2,530 jobs throughout the Tampa Bay region during 2001 (see **Table 69**). These workers produced over \$400 million in output and received \$102 million in wages and salaries. As also shown in the table, the shipyards' economic contribution to the state of Florida generated even more jobs and income throughout the state. The larger impact was primarily due to the larger statewide indirect and induced impacts. The statewide impacts were larger because directly impacted Tampa businesses and consumers purchased goods and services that were produced in and shipped from other parts of the state.

**Table 69 – Total Economic Impact of the Shipyard Industry
Tampa Bay Region and State of Florida - 2001**

Sector	Output (\$ Million)	Jobs	Wages (\$ Million)	Avg. Ann. Wage
Total Impact on Tampa Bay	\$ 404	2,530	\$ 102	\$ 40,277
Share of Florida Impact	91.4%	88.2%	93.3%	1.06
Total Impact on Florida	\$ 442	2,867	\$ 109	\$ 38,089

Source: Business Research & Economic Advisors

In total, the Tampa shipyard industry generated 2,867 jobs, \$109 million in wage income and \$442 million in output throughout the state of Florida. The total impacts of the shipyards in the Tampa Bay region accounted for about 90 percent of the total statewide impacts of the industry during 2001.

Project Principals

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BREA specializes in custom market analyses for clients throughout the private and public sectors. These unique market analyses integrate economic, financial, and demographic trends with primary market research, proprietary client data, and advanced statistical and modeling techniques. This approach results in comprehensive and actionable analysis, databases and models, designed to support planning, sales and marketing, and education within client organizations.

Dr. Moody, Principal of BREA, has more than twenty-five years of experience in consulting and forecasting with a wide range of international product and service companies, including consumer products, leisure, retailing, gaming, business services, telecommunications, and utility and financial services. Typical consulting assignments provide critical analysis and insight into market dynamics, product demand, economic trends, consumer behavior and public policy.

BREA's approach to market analysis focuses on determining market or product characteristics that can be summarized by three attributes: size, share, and growth. Since studies are designed to meet the specific needs of each client, they can incorporate many dimensions of the market and include a variety of ancillary services. To carry out this market analysis BREA provides the following services:

Market Research: design and implementation of primary market research instruments using telephone, mail, and intercept surveys. Test instruments are designed to collect information on product demand, attributes of consumers and users, perceived product attributes, and customer satisfaction.

Segmentation Analyses: segmenting demand attributes by product line, consumer demographics (age, income, region, etc.) and business characteristics using market research, government statistics and proprietary databases.

Statistical and Econometric Modeling: developing quantitative models relating market and product demand to key economic factors and demographic market/consumer attributes. Models can be used for forecasting, trend analysis and divergence/convergence analysis.

Market Studies and Trend Analyses: detailed descriptions of markets (defined as products, regions, industries, consumer segments, etc.) and comprehensive analyses of underlying market forces (such as economic and financial conditions, competitive environment, technology, etc.).

Economic Impact Studies: thorough analysis of industries and consumption behavior and their contribution to or impact on national and regional (state, metropolitan areas, counties, etc.) economies.

Dennis Colie
Director, Center for Economic Development Research
College of Business Administration
University of South Florida

In May 1994, Dr. Dennis Colie became the first graduate from USF's Ph.D. program in finance. He also holds an MBA from Sul Ross State University in Alpine, TX, and a bachelor's degree in mathematics from Hofstra University on Long Island in NY. Dr. Colie came to USF in 1987 following a successful 23-year career in the U.S. Army, during which he served in leadership and management positions in the U.S. and abroad. His international experience includes six years as a NATO tactical evaluation team chief, as well as spending one year as advisor to the Saudi Arabian Air Defense School. In the U.S. his activities encompassed logistics planning, training supervision, and personnel management. Before joining CEDR in May 1998, Dr. Colie taught undergraduate and graduate courses for the Finance Department in the College of Business Administration at USF.

CEDR undertakes research projects on which its contribution is substantive and recognized, and that confer significant benefits on the region. While CEDR must attract outside funding to support some activities, the Center does not actively compete with private consulting groups.

CEDR provides the College of Business Administration, the University, local communities, and in particular, the Region's economic development professionals with information and analysis on a wide range of urban, regional, and international issues affecting the 7-county Region. The Center also maintains a data center focusing on the measurement of variables, which pertain to the demographics and business activity in the University's service area, and conducts analysis of the data.

CEDR cooperates with the Office of Corporate Development and the Small Business Development Center in the College of Business Administration on issues of business growth and development. It also works with development agencies and with community organizations interested in regional economic and employment growth and the factors influencing business location.

CEDR provides information, technical support and research to agencies dealing with the development of physical and human resources. The Center facilitates the coordination of private and public policies and programs in development of physical infrastructure and of human and natural resources.

Joseph S. DeSalvo
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Joseph S. DeSalvo has been Professor of Economics in the College of Business Administration at the University of South Florida since 1983. He served as Director of the Center for Economic and Management Research at USF from 1984 to 1989 and has been serving as Chairman of the Department of Economics since 1998. Dr. DeSalvo earned the Ph.D. in economics from Northwestern University in 1968 and holds M.A. and B.A. degrees, also in economics, from the University of Florida.

While a graduate student at the University of Florida, Dr. DeSalvo served as a research assistant in the Bureau of Economic and Business Research. After earning his master's degree from the University of Florida, he taught for two years at the Virginia Military Institute. From VMI, Dr. DeSalvo attended graduate school at Northwestern University. While at Northwestern, he taught in the Evening Division and served as a research assistant in the Transportation Center and the Econometrics Research Center.

After leaving Northwestern, Dr. DeSalvo worked as a research economist at the Rand Corporation from 1967 to 1971. He was associated with the Department of Economics at the University of Wisconsin-Milwaukee from 1971 to 1983. At UW-Milwaukee, he served as Associate Professor, Professor, and Department Chairman. During the academic year 1974-75, Dr. DeSalvo served as Visiting Research Professor at the Faculté Universitaire Catholique de Mons in Mons, Belgium.

Dr. DeSalvo has authored or co-authored fourteen grant-funded research monographs in the general area of urban and regional economics for a variety of sponsors, including the Hillsborough County Aviation Authority, the Tampa Port Authority, the City of New York, the State of Wisconsin, the U.S. Army Corps of Engineers, the U.S. Department of Transportation, the U.S. Bureau of Public Roads, and the U.S. Department of Housing and Urban Development. He has acted as principal investigator on twenty grant-funded projects. He has edited a book on regional transportation planning and co-authored a study guide and an instructor's manual to accompany a widely used macroeconomics textbook. Dr. DeSalvo has published over thirty articles in professional journals and books in the areas of urban, regional, housing, and transportation economics. Dr. DeSalvo has published over fifty articles in magazines, newspapers, and newsletters. He has given numerous interviews for newspaper and magazine articles and has appeared often on local TV news and business shows.