

THE LOCAL AND REGIONAL ECONOMIC IMPACTS OF THE PORT OF BUCKS

PREPARED FOR THE:

**REDEVELOPMENT AUTHORITY OF BUCKS COUNTY AT
THE REQUEST OF THE BUCKS COUNTY INTERNATIONAL
TRADE COUNCIL ON BEHALF OF THE PORT OF BUCKS**

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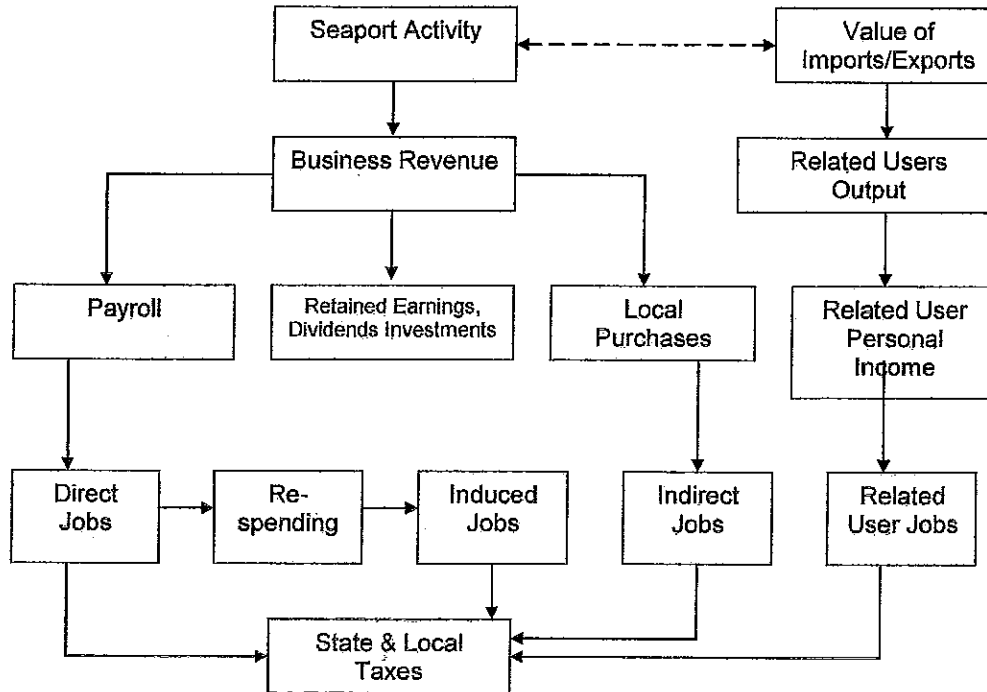
EXECUTIVE SUMMARY

Martin Associates was retained by the Redevelopment Authority of Bucks County, at the request of the Bucks County International Trade Council, to estimate the economic impacts generated by waterborne cargo activity at the marine terminals located at the Port of Bucks, Falls Township, Bucks County and vicinity. The largest terminal facilities comprising the Port of Bucks are the properties owned by the United States Steel Corporation (operated by Kinder Morgan Bulk Terminals) and Waste Management. By agreement between Waste Management and the Commonwealth of Pennsylvania dated June 20, 1997, Waste Management also provides, to the Army Corps of Engineers, capacity for dredge materials from the Federal Channel and Fairless Turning Basin, affording a unique advantage to the users of the Port of Bucks. With the redevelopment of the USS Fairless Works, now known as Keystone Industrial Port Complex, the Port of Bucks serves a growing sector of renewable energy manufacturers in addition to historic users in the steel and building materials industries.

The users of these marine terminals include Amerada Hess, Bulk Materials Inc., Gamesa, Gus Proper, International Materials, International Slat, Kinder Morgan, National Gypsum Co., PSEG Energy, Silvi Concrete, handling steel slab, steel coils, windmills and project cargo, salt, coal, cement, gypsum, other dry bulk cargo and other liquid bulk cargo. In 2007, these marine facilities handled about 4 million tons of cargo. The impacts are measured for the tonnage handled in 2007 and an economic impact model has been developed for the Port of Bucks marine terminals to provide for annual updates, as well as to test the sensitivity of the impacts to changes in such factors as marine cargo tonnage levels, labor productivity and work rules, new marine facilities development and expansion, and the number of vessel calls and vessel size. The model can also be used to compare the economic impacts of marine activity with non-maritime development of waterfront land along the Delaware River.

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

Exhibit E-1
Flows of Economic Impacts
Through the Economy



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

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

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

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

- Direct jobs are those jobs with local firms providing support services to the seaport.

These jobs are dependent upon this activity and would suffer immediate dislocation if the seaport activity were to cease. Seaport direct jobs include jobs with railroads and trucking companies moving cargo to and from the Port's marine terminals, members of the United Steel Workers Union, steamship agents, freight forwarders, ship chandlers, warehouse operators, terminal operators, stevedores, etc.

- Induced jobs are jobs created locally and throughout the regional economy due to purchases of goods and services by those directly employed. These jobs are with grocery stores, the local construction industry, retail stores, health care providers, local transportation services, etc., and would also be discontinued if seaport activity were to cease.
- Indirect jobs are those jobs generated in the local economy as the result of local purchases by the firms directly dependent upon seaport activity. These jobs include jobs in local office supply firms, equipment and parts suppliers, maintenance and repair services, utilities, etc.
- Related jobs are with distribution and manufacturing firms -- such as steel fabrication firms using the steel imported through the marine terminals. Related jobs are not dependent upon the seaport marine terminals to the same extent as are the direct, induced and indirect jobs. For example, these firms can and do use other ports. It is the demand for the final product, i.e. imported steels slab which creates the demand for the employment with steel fabricators, not the use of a particular seaport or marine terminal.

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

The study is based on interviews with the 11 tenants of the Port of Bucks and more than 400 maritime service firms in the Delaware Valley providing services to the cargo and vessels handled at the Port of Bucks marine terminals. These firms represent 100% of the firms providing terminal operations at the Port of Bucks. The data collected from the interviews were then used to develop an operational model of the Port of Bucks marine terminals. The impact of maritime services to vessels and cargo handled at the Port of Bucks were estimated based on more than 400 interviews conducted by Martin Associates on previous studies of cargo handled at marine terminals along the Delaware River, both in Pennsylvania and New Jersey, as well as firms providing services to the Diamond State Port Corporation.¹

1 The Local and Regional Economic Impact of the Delaware River Ports, prepared by Martin Associates for the Delaware River Port Authority, 2002; the Economic Impacts of the Diamond State Port Corp., prepared by Martin Associates for the Diamond State Port Corp., 2007

SUMMARY OF IMPACTS GENERATED BY THE PORT OF BUCKS

The economic impacts generated by the Port of Bucks marine terminals are summarized in Table E-1.

Table E-1
Summary of the Economic Impacts Generated by
the Port of Bucks

	PORT OF BUCKS COUNTY
JOBS	
DIRECT	1,115
INDUCED	1,141
INDIRECT	<u>1,465</u>
TOTAL	3,722
PERSONAL INCOME (\$1,000)	
DIRECT	\$43,484
RE-SPENDING/LOCAL CONSUMPTION	\$147,802
INDIRECT	<u>\$72,901</u>
TOTAL	\$264,187
DIRECT BUSINESS REVENUE (\$1,000)	\$312,303
STATE AND LOCAL TAXES (\$1,000)	\$26,947
LOCAL PURCHASES (\$1,000)	\$133,793
RELATED IMPACTS WITH SHIPPERS/CONSIGNEES	
RELATED JOBS	5,711
VALUE OF ECONOMIC ACTIVITY (\$1,000)	\$1,095,685
RELATED PERSONAL INCOME (\$1,000)	\$225,344
RELATED STATE AND LOCAL TAXES (\$1,000)	\$22,985

Specifically, the marine cargo and vessel calls at the facilities owned and operated by the Port of Bucks generated the following impacts in 2007:

- 1,115 direct jobs are generated by the marine terminals. It is estimated that 64 percent of these jobs are held by residents of Bucks County.
- As the result of local and regional purchases by those 1,115 individuals holding the direct

jobs, an additional 1,141 induced jobs are supported in the regional economy.

- Because of the \$133.8 million of local purchases made by the firms directly providing services to the Port of Bucks, 1,465 indirect jobs were supported in the local economy.
- A total of \$264.2 million of personal wages and salaries and local consumption expenditures were created in the local economy as the result of maritime activity at the Port of Bucks, of which \$43.5 million was directly earned by the 1,115 direct employees, representing an average salary of \$39,000 annually. As the result of re-spending this income, an additional \$147.8 million of income and consumption expenditures were created. Those holding the indirect jobs received \$72.9 million in wages and salaries.
- Businesses providing services at the marine terminals received \$312.3 million of revenue, excluding the value of cargo shipped through the marine terminals.
- \$26.9 million of state and local taxes were generated by activity at the marine terminals.
- 5,711 related jobs were also supported by activity at the Port of Bucks. These include jobs with grocery and produce distributors using the marine terminals to import steel slab and coils, coal, windmills, dry bulk cargoes and cement, coal and liquid bulk cargoes. These jobs are classified as related, not directly dependent upon the Port of Bucks facilities, because the employment with these distributors and manufacturers is driven by the demand for the product, not by the use of the Port facilities. The value of the economic activity generated with the users of the marine terminals is measured at \$1.1 billion, while the 5,711 related users received \$225.3 million of total wages and salaries. A total of \$23.0 million of related state and local taxes were created by the shippers/consignees using the Port of Bucks to ship and receive cargo.

I. OVERVIEW OF THE ANALYSIS

Martin Associates was retained by the Redevelopment Authority of Bucks County to estimate the economic impacts generated by waterborne cargo activity at the marine terminals located at the Port of Bucks, Falls Township, Bucks County. These marine terminals include Amerada Hess, Bulk Materials Inc., Gamesa, Gus Proper, International Materials, International Slat, Kinder Morgan, National Gypsum Co., PSEG Energy, Silvi Concrete, handling steel slab, steel coils, windmills and project cargo, salt, coal, cement, gypsum, other dry bulk cargo and other liquid bulk cargo. In 2007, these marine facilities handled about 4 million tons of cargo. The impacts are measured for the tonnage handled in 2007 and an economic impact model has been developed for the Port of Bucks' marine terminals to provide for annual updates, as well as to test the sensitivity of the impacts to changes in such factors as marine cargo tonnage levels, labor productivity and work rules, new marine facilities development and expansion, and the number of vessel calls and vessel size. The model can also be used to compare the economic impacts of marine activity with non-maritime development of waterfront land along the Delaware River.

The methodology used in this analysis has been developed by Martin Associates and has been used to estimate the economic impacts of seaport activity at more than 300 ports, including the Port of Philadelphia and the South Jersey Port Corporation Terminals, as well as the Diamond State Port Corp. In addition to the impact studies for the other Delaware River Ports, Martin Associates has used this methodology to estimate the economic impacts generated by activity at such ports as:

- *Baltimore, Maryland*
- *Virginia Port Authority*
- *Richmond, Virginia*
- *Wilmington, North Carolina*
- *Morehead City, North Carolina*
- *Port Everglades, Florida*
- *Tampa, Florida*
- *Miami, Florida*
- *Jacksonville, Florida*
- *Houston, Texas*
- *Corpus Christi, Texas*
- *Galveston, Texas*
- *Los Angeles, California*
- *Long Beach, California*
- *San Diego, California*
- *San Francisco, California*
- *Oakland, California*
- *Portland, Oregon*
- *Seattle, Washington*
- *Longview, Washington*
- *Tacoma, Washington*
- *Providence, Rhode Island*
- *Sacramento, California*
- *Brunswick, Georgia*
- *Montreal, Quebec*
- *Saint John, New Brunswick*
- *Halifax, Nova Scotia*
- *Vancouver, British Columbia*
- *Thunder Bay, Ontario*
- *Windsor, Ontario*
- *18 US Ports on the Great Lakes*

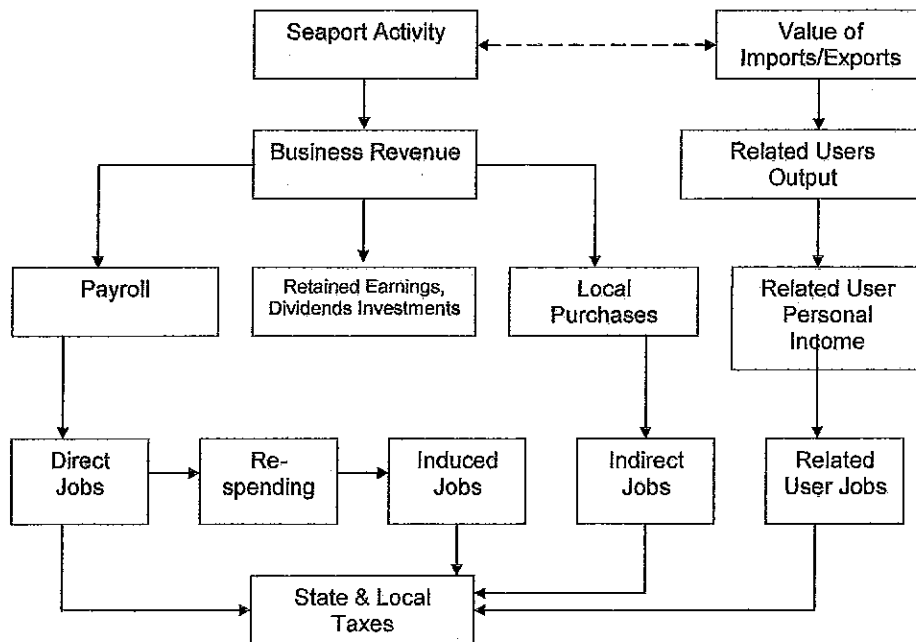
The remainder of this chapter presents an overview of the economic impact analysis and consists of the following sections:

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

1. FLOW OF IMPACTS

Waterborne activity at a seaport contributes to the local and regional economy by generating business revenue to local and national firms providing vessel and cargo handling services at the marine terminals. These firms, in turn, provide employment and income to individuals, and pay taxes to state and local governments. Exhibit I-1 shows how activity at marine terminals generates impacts throughout the local, state and national economies. As this exhibit indicates, the impact of a seaport on a local, state or national economy cannot be reduced to a single number, but instead, the seaport activity creates several impacts. These are the revenue impact, employment impact, personal income impact, and tax impact. These impacts are non-additive. For example, the income impact is a part of the revenue impact, and adding these impacts together would result in double counting. Exhibit I-1 shows graphically how activity at the Port of Bucks' marine terminals generates the four impacts.

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



1.1 Business Revenue Impact

At the outset, activity at the port generates business revenue for firms which provide services. This business revenue impact is dispersed throughout the economy in several ways. It is used to hire people to provide the services, to purchase goods and services, and to make Federal, state and local tax payments. The remainder is used to pay stockholders, retire debt, make investments, or is held as retained earnings. It is to be emphasized that the only portions of the revenue impact that can be definitely identified as remaining in the local economy are those portions paid out in salaries to local employees, for local purchases by individuals and businesses directly dependent on the seaport, in contributions to state and local taxes. In addition, the total economic value attributed to the cargo activity at the Port with the shippers/consignees using the marine terminals is computed. This measures the economic value added at each stage of handling the cargo after it is moved from the Port facilities, including the distribution impact and final sales for the fruit and bananas handled at the port as well as the economic value of the imported steel used as an intermediate product in the local steel fabrication business and construction activity.

1.2 Employment Impact

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

- Direct employment impact - jobs directly generated by seaport activity. Direct jobs generated by marine cargo include jobs with railroads and trucking companies moving cargo between inland origins and destinations and the marine terminals, steamship agents, freight forwarders, stevedores, etc. It is to be emphasized that these are classified as directly generated in the sense that these jobs would experience near term dislocation if the activity at the Port of Bucks' marine terminals were to be discontinued.
- Induced employment impact - jobs created throughout the local economy because **individuals** directly employed due to seaport activity spend their wages locally on goods and services such as food, housing and clothing. These jobs are held by residents located throughout the region, since they are estimated based on local and regional purchases.
- Indirect Jobs - jobs created locally due to purchases of goods and services **by firms, not individuals**. These jobs are estimated directly from local purchases data supplied to Martin Associates by the companies interviewed as part of this study, and include jobs with local office supply firms, maintenance and repair firms, parts and equipment suppliers, etc. It is to be emphasized that special care was taken to avoid double counting, since the current study counts certain jobs as direct (i.e., trucking jobs, jobs with railroads, jobs with off-dock warehouses, etc.) which are often classified as indirect by other approaches, notably the input/output model approach.

- Related user employment impact - jobs with firms using the seaport to ship and receive cargo. While the facilities and services provided at the Port's marine terminals are a crucial part of the infrastructure allowing these jobs to exist, they would not necessarily be immediately displaced if marine activity were to cease. The related user job impact measures the jobs generated at each stage of delivery of the final product or intermediate product, including all support jobs required in the final sales or use of the imported cargo.

1.3 Personal Earnings Impact

The personal earnings impact is the measure of employee wages and salaries (excluding benefits) received by individuals directly employed due to seaport activity. Re-spending of these earnings throughout the regional economy for purchases of goods and services is also estimated. This, in turn, generates additional jobs -- the induced employment impact. This re-spending throughout the region is estimated using a regional personal earnings multiplier, which reflects the percentage of purchases made by individuals that are spent within the Bucks County region. The re-spending effect varies by region -- a larger re-spending effect occurs in regions that produce a relatively large proportion of the goods and services consumed by residents, while lower re-spending effects are associated with regions that import a relatively large share of consumer goods and services (since personal earnings "leak out" of the region for these out-of-regional purchases). The direct earnings are a measure of the local impact since they are received by those directly employed by seaport activity.

The total wages and salaries of the users are also included in the analysis.

1.4 Tax Impact

Federal, state and local tax impacts are tax payments to the state and local governments by firms and by individuals whose jobs are directly dependent upon and supported (induced and indirect jobs) by activity at the marine terminals. An estimate of the taxes paid by the related users has also been developed.

2. IMPACT STRUCTURE

The two types of economic impacts are created throughout various business sectors of the state and local economies. These are the:

- Surface Transportation Sector; and
- Maritime Services Sector.

Within each sector, various participants are involved. Separate impacts are estimated for each of the participants. A discussion of each of the economic impact sectors is provided below, including a description of the major participants in each sector.

2.1 The Surface Transportation Sector

The surface transportation sector consists of both the railroad and trucking industries. The trucking firms and railroads are responsible for moving the various cargoes between the marine terminals and the inland origins and destinations.

2.2 The Maritime Services Sector

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

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

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

➤ Cargo Marine Transportation

Participants in this category are involved in arranging for inland and water transportation for export or import freight. The freight forwarder/customshouse broker is the major participant in this category. The freight forwarder/customshouse broker arranges for the freight to be delivered between the terminals and inland destinations, as well as the ocean transportation. This function performed by freight forwarders and customshouse brokers is most prevalent for general cargo commodities.

➤ Vessel Operations

This category consists of several participants. The steamship agents provide a number of services for the vessel as soon as it enters the port; the agents arrange for pilot services and towing, for medical and dental care of the crew, and for ship supplies. The agents are also responsible for vessel documentation. In addition to the steamship agents arranging for vessel services, those providing the services include:

- Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.);
- Towing firms - provide the tug service to guide the vessel to and from port;
- Pilots - assist in navigating the vessels along the Delaware River to and from the Port of Bucks' marine terminals;

- Bunkering firms - provide fuel to the vessels;
- Marine surveyors - inspect the vessels and the cargo; and
- Shipyards/marine construction firms - provide repairs, either emergency or scheduled as well as marine pier construction and dredging.

➤ Cargo Handling

This category involves the physical handling of the cargo at the terminals between the land and the vessel. Included in this category are the following participants:

- Terminal operators - operate the marine terminals where cargo is loaded and off-loaded. At the Port of Bucks, 11 marine terminals handle the cargo.

➤ Government Agencies

This service sector involves Federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Port. US Customs, Bureau of Immigration, US Department of Labor, US Department of Agriculture, US Coast Guard, the Army Corps of Engineers and US Department of Commerce employees are involved. These services are provided by the government offices located in the Bucks County area.

3. SUMMARY OF METHODOLOGY

The purpose of this section is to provide a summary of the methodological approach used to estimate the economic impacts of the Port of Bucks.

3.1 Data Collection

The cornerstone of the Martin Associates approach is the collection of detailed baseline impact data from firms providing services at the Port of Bucks' marine terminals. To ensure accuracy and defensibility, the baseline impact data were collected from interviews with the 11 tenants of the Port of Bucks. In addition, more than 400 interviews were conducted with maritime service firms in the Wilmington, Philadelphia, South Jersey and Delaware River Port and maritime community. These firms represent the universe of firms providing services to marine cargo and vessels at ports and marine terminals in the Delaware River Valley, including the Port of Bucks.²

² The Local and Regional Economic Impact of the Delaware River Ports, prepared by Martin Associates for the Delaware River Port Authority, 2002; the Economic Impacts of the Diamond State Port Corp., prepared by Martin Associates, 2007

Data from these interviews was used to develop an economic impact model specific to the vessel and cargo activity at the Port of Bucks.

3.2 Direct Jobs, Income, Revenue and Tax Impacts

The results of these interviews were then used to develop the baseline direct job, revenue and income impacts for the economic sectors and job categories associated with the Port's marine terminals.

The direct tax impacts are estimated at a state, county and local level based on data supplied by the Tax Foundation.

This baseline survey data was also used to develop an operational model which can be used to update the impacts of the Port of Bucks' marine terminals on an annual basis and to evaluate the impacts of changes in:

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

Also, the operational model can be used to evaluate alternative facilities expansion projects and new marine terminal construction, and as a key input into dredging and channel deepening.

3.3 Induced Impacts

Induced impacts are those generated by the purchases of the individuals employed as a result of seaport activity. For example, a portion of the personal earnings received by those directly employed due to activity at the marine terminals is used for purchases of goods and services, both regionally, as well as out-of-the region. These purchases, in turn, create additional jobs in the region which are classified as induced. To estimate these induced jobs, a regional personal earnings multiplier was developed from data provided by the Bureau of Economic Analysis, Regional Income Division. This personal earnings multiplier is used to estimate the total personal earnings generated in the Bucks County area as a result of the activity at the Port of Bucks marine terminals. A portion of this total personal earnings impact is next allocated to specific local purchases (as determined from consumption data for Bucks residents, as developed from the US Bureau of Labor Statistics, Consumer Expenditure Survey). These purchases are next converted into retail and wholesale induced jobs in the regional economy.

Induced jobs are not estimated at lower levels of purchasing rounds (after the wholesale round) since it is not possible to trace with a sufficient degree of accuracy, geographically, where purchases at the remaining levels occur. However, about 80 percent of the consumption will likely occur at the first two rounds of purchases, which are most likely local retail and wholesale purchases. It is not possible to divide the re-spending impact by the induced jobs to develop an average salary for induced workers, since this would result in an overestimation of the induced income.

3.4 Indirect Jobs

Indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon cargo and vessel activity at the marine terminals. These purchases are for goods such as office supplies and equipment, maintenance and repair services, communications and utilities, transportation services and other professional services. To estimate the indirect economic impact, local purchases, by type of purchase, were collected from each of the firms interviewed. These local purchases were then combined with employment to sales coefficients in local supplying industries. To develop these job multipliers, an input-output model for Pennsylvania was developed for Martin Associates by the US Bureau of Economic Analysis, Regional Input-Output Modeling System.

3.5 Related Impacts

Related impacts measure the jobs with shippers and consignees moving cargo through the Port's marine terminals and private terminals. These jobs are classified as related jobs, since the firms using the marine terminals for the movement of cargo can and do use other seaports and marine terminals. For example, firms importing slab can and do use the Port of Bucks. Importers of steel often use freight forwarders, who in turn choose the port of import based on market locations. Because of the proximity of other ports such as Philadelphia, Camden, Chester, Gloucester City, and Baltimore to the Port of Bucks' marine terminals, importers as well as exporters of breakbulk cargo have some flexibility in port choice, and jobs with these exporters and importers cannot be counted as dependent upon the marine terminals owned and operated by the Port of Bucks.

These jobs are estimated based on the volume and value per ton of each commodity moving over the Port of Bucks' marine terminals. Ratios of jobs to the value of inputs for the corresponding consuming and producing industries are then developed from US Bureau of Economic Analysis, RIMS II data base developed for the Commonwealth of Pennsylvania. The job multipliers for the construction industry are then applied to the value of the slabs and coil imports moving via the Port's terminals to estimate related jobs.

4. COMMODITIES INCLUDED IN THE ANALYSIS

A major use of an economic impact analysis is to provide a tool for port development planning. As a port grows, available land and other resources for port facilities become scarce, and decisions must be made as to how to develop the land and utilize the resources in the most efficient manner. Various types of facility configurations are associated with different commodities. For example, slab requires outside storage, while some types of coil will require indoor storage. Liquid bulk requires tanks and pipelines, while project cargo, such as wind mills, requires open storage for cargo lay down.

An understanding of the commodity's relative economic value in terms of employment and income to the local community, the cost of providing the facilities and the relative demand for the different commodities is essential in making future port development plans. Because of this need for understanding relative commodity impacts, economic impacts are estimated for the following commodities handled at the Port of Bucks' marine terminals.

- Steel Slab
- Steel Coils
- Scrap
- Project Cargo (windmills)
- Salt
- Cement
- Other Dry Bulk
- Other Liquid Bulk

The next chapter describes the job impacts of the Port of Bucks.

II. EMPLOYMENT IMPACTS

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

- First, the total employment that is in some way related to the activities at the Port of Bucks is described;
- Second, the subset of total employment that is judged to be totally dependent (i.e., direct jobs) on port activity is detailed as follows:
 - The direct job impact is estimated by detailed job category, i.e., trucking, ILA, warehousemen, terminal employees, etc;
 - The direct job impact is estimated for each of the key commodities/commodity groups;
- The direct job impact is estimated based on the residency of those directly employed;
- Induced jobs are presented;
- Indirect jobs are described; and
- Finally, jobs related to the marine activity are described.

1. TOTAL EMPLOYMENT IMPACT

It is estimated that 9,433 jobs are in some way related to port activities at the Port of Bucks' marine terminals. Of the 9,433 jobs:

- 1,115 are directly generated by activities at the Port of Bucks' marine terminals and if such activities should cease, these jobs would be discontinued over the short term.
- 1,141 jobs (induced jobs) are supported by the local purchases of the 1,115 individuals directly generated by port activity at the Port of Bucks' marine terminals. An additional 1,465 indirect jobs were generated due to \$133.8 million of purchases made in the local and regional economy by firms providing direct cargo handling and vessel services.
- An additional 5,711 jobs are related to cargo imported and exported via the Port of Bucks' marine terminals. These jobs are with regional steel mills using the slab as imports into the production process of coils and steel products. These jobs are considered

to be related to activities at the Port of Bucks' marine terminals, but the degree of dependence on these terminals is difficult to estimate. It is to be emphasized that the level of employment with these importers is based on the demand for the final product, i.e., steel coils and products, not by the use of the Port of Bucks' marine terminals. However, if other terminals were used, it is likely that the cost of importing would increase, which could have long run implications on the level of employment with the related importers.

2. DIRECT JOB IMPACTS

About 4 million tons of cargo moved via marine terminals at the Port of Bucks. As a result of this activity, 1,115 full-time jobs were directly created³. In this section the jobs are analyzed in terms of:

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

These distributions are developed in more detail below.

2.1 Job Impacts by Sector

Exhibit II-1 presents the distribution of the 1,115 direct jobs among the following economic sectors and job categories.

As this exhibit shows, the largest job impacts are with trucking and the majority of these trucking jobs are generated by the movement of steel coils, windmills, and dry bulk cargoes. The second largest direct job impact is with the 11 terminal operators at the Port of Bucks. These include Kinder Morgan, PSEG Energy, Fairless Metals and Scrap, International Salt, National Gypsum, and Silvi Concrete.

³ Jobs are measured in terms of full-time worker equivalents. If a worker is employed only 50 percent of the time by activity at the marine terminals, then this worker is counted as .5 jobs.

Exhibit II-1
Direct Jobs by Category and Sector

	DIRECT JOBS
SURFACE TRANSPORTATION	
RAIL	31
TRUCK	<u>582</u>
SUBTOTAL	613
MARITIME SERVICES	
TERMINAL OPERATIONS	401
TOWING	11
PILOTS	4
AGENTS	11
SURVEYORS/CHANDLERS/MISCELLANEOUS	19
FORWARDERS	30
GOVERNMENT	<u>26</u>
SUBTOTAL	502
TOTAL	1,115

2.2 Direct Job Impacts by Commodity

Most of the 1,115 jobs considered to be generated by port activity can be related to the handling of specific commodities or commodity groups. Certain employment categories such as government employees and banking and insurance cannot be identified with a specific commodity. As a result, employment in these groups (which totaled 34 jobs) was not allocated to commodity groups.

Exhibit II-2 presents the relative employment impacts in terms of commodity groups. This exhibit indicates that the handling of imported steel coils generated the greatest number of direct jobs (reflecting the regional truck distribution of the coils), followed by other dry bulk cargo (reflecting the gypsum operations and truck distribution of the dry bulk cargo), steel slab, salt and coal (reflecting the employment with PSEG Energy).

Exhibit II-2
Distribution of Direct Job Impact by Commodity

	DIRECT JOBS
Slab	150
Coil	244
Scrap	187
Project Cargo	36
Salt	124
Coal	103
Cement	61
Other Dry Bulk	169
Other Liquid Bulk	6
Not Allocated	<u>34</u>
Total	1,115

3. DISTRIBUTION OF DIRECT JOBS BY PLACE OF RESIDENCE

To underscore the geographic scope of the impacts generated by the Port of Bucks' marine terminals, Exhibit II-3 presents the distribution of the 1,115 direct jobs by place of residency. The residency analysis is based on the results of the interviews. As this exhibit indicates, 64 percent of the direct jobs generated by activity at the Port of Bucks' marine terminals are held by residents of Bucks County, while another 28.6% are held by non-Pennsylvania residents, primarily from New Jersey.

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

JURISDICTION	SHARE	DIRECT JOBS
Bucks County	63.7%	711
Chester County	4.0%	45
Other PA	3.7%	41
Other US	<u>28.6%</u>	<u>319</u>
Total	100.0%	1,115

4. INDUCED JOBS

The 1,115 directly employed individuals due to activity at the Port of Bucks' marine terminals received wages and salaries, a part of which was used to purchase local goods and services such as food, housing, clothing, transportation services, etc. As a result of these local purchases, 1,141 jobs in the regional economy were supported. The induced jobs are with local and regional social services; state and county government employees; business services and educational services; jobs with local construction and housing industry; jobs with restaurants and grocery stores; and health care.

5. INDIRECT JOBS

In addition to the induced jobs generated by the purchases of the 1,115 directly employed individuals, the **firms** providing the direct services and employing the 1,115 direct jobs make local purchases for goods and services. These purchases by the firms' dependent upon the Port of Bucks' facilities generate additional local jobs -- indirect jobs. Based on interviews with the maritime community, an additional 1,465 indirect jobs were generated in the local economy as the result of \$133.8 million of **local purchases** by the firms directly dependent upon the Port of Bucks' marine terminals.

6. RELATED JOBS

It is estimated that 5,711 jobs in the local area (Pennsylvania, New Jersey, Delaware and Maryland) are related to cargo moving via the Port of Bucks' marine terminals. These jobs are with steel fabricators and mills using the steel slab for the production of coils. For steel slab imports, the relationship between the value of output in steel mill production and the cost of materials for that industry were first developed from the US Bureau Census, Economic Census 2002. This ratio was then used to convert the value of steel slabs imported via the Port of Bucks into the value of output of steel mill production. The job multiplier for steel mills activity in the Commonwealth of Pennsylvania was then used to convert the steel import values into related jobs.

It is to be emphasized that these are related jobs, and would not likely disappear if the Port of Bucks' marine terminals were to close marine cargo activity. Given a level of demand for the steel industry output, the cargo would be imported through another port such as Philadelphia, Camden, Gloucester City, Baltimore, Norfolk or New York.

III. REVENUE, INCOME AND TAX IMPACTS

The 4 million tons of cargo and related vessel activity at the Port of Bucks' marine terminals generate revenue for firms providing cargo and vessel handling services. For example, revenue is received by the railroads and the trucking companies within the surface transportation sector as a result of moving export cargo to the marine terminals and distributing the imported commodities inland after receipt at the marine terminals. The firms in the maritime services sector receive revenue from arranging for transportation services, cargo handling, warehousing cargo, and providing services to vessels in port and repairs to vessels calling the Port facilities.

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

Since it is difficult to trace all the components of the revenue beneficiaries, an estimate of revenue is developed, but no conclusions are formulated as to how the revenue (other than personal income, taxes and local purchases) is distributed, geographically. It is more accurate to trace the distribution of personal income (which is a subset of revenue) through the geographic locations of individuals receiving the income.

1. TOTAL ECONOMIC ACTIVITY

Marine cargo activity at the Port of Bucks' terminals generated a total of \$1.4 billion of total economic activity in the region. Of the \$1.4 billion, \$312.3 million is the direct business revenue received by the firms directly dependent upon the Port's marine terminals and providing maritime services and inland transportation services to the cargo handled at the marine terminals and the vessels calling the terminals. The remaining \$1.1 billion represents the value of the output to the Commonwealth that is created due to the cargo moving via the Port of Bucks. This includes the value added at each stage of producing an export cargo, as well as the value added at each stage of production for the firms using imported raw materials and intermediate and final products that flow via the marine terminals and are consumed within the region.

The balance of the discussion focuses on the \$312.3 million of direct business revenue generated from the provision of services to the cargo and vessels.

2. DIRECT REVENUE IMPACT

The maritime activity at the Port of Bucks generated \$312.3 million of business revenue to the firms providing cargo handling and vessel services.

Included in the \$312.3 million revenue impact is \$43.5 million of direct personal earnings, \$133.8 million of local purchases by those firms directly dependent upon the Port of Bucks' marine terminals. Also included are direct tax impacts. The \$133.8 million of local purchases were estimated from the interview results and used to estimate the indirect jobs described in the last chapter. The income and tax impacts are the subject of the last two sections of this chapter.

2.1 Revenue Impacts by Economic Sector and Impact Category

Exhibit III-1 presents the total revenue estimated to have been generated by marine activity in 2007. This revenue includes the revenue received by firms providing services to the commodity and vessel activity at the marine terminals, and includes revenue received by trucking firms, terminal operators, manufacturers, agents, pilots, towing companies, freight forwarders, etc. About 60 percent of the \$312.3 million revenue impact is received by the firms in the marine services sector, of which terminal operators received the largest revenue impact. Trucking firms received \$83.9 million from moving cargo to and from the Port of Bucks, while railroads earned about \$40.8 million from moving cargo, primarily steel slabs, to consuming industries.

Exhibit III-1
Total Revenue Generated by
Port Activity

	REVENUE (\$1,000)
SURFACE TRANSPORTATION	
RAIL	\$40,835
TRUCK	\$83,897
SUBTOTAL	\$124,732
MARITIME SERVICES	
TERMINAL OPERATORS	\$173,654
TOWING	\$2,455
PILOTS	\$2,683
AGENTS	\$236
SURVEYORS/CHANDLERS	\$1,811
FORWARDERS	\$5,653
BANK/INSURANCE/LAW	\$1,080
GOVERNMENT	NA
SUBTOTAL	\$187,571
TOTAL	\$312,303

2.2 Direct Revenue Impacts by Commodity

Exhibit III-2 shows the total revenue impact by commodity and the revenue per ton. This value is included in the related revenue of \$2.8 billion. The \$151.1 million of non-allocated revenue reflects revenue received by the terminal operators that could not be allocated to a specific commodity.

Exhibit III-2
Revenue Impacts by Commodity

	REVENUE \$1,000
Slab	\$51,757
Coil	\$39,455
Scrap	\$27,272
Project Cargo	\$4,447
Salt	\$14,910
Coal	\$2,818
Cement	\$6,113
Other Dry Bulk	\$13,793
Other Liquid Bulk	\$607
Not Allocated	\$151,133
Total	\$312,303

In terms of total revenue, steel slab generated the highest revenue impact, followed by steel coils and scrap.

3. PERSONAL EARNINGS IMPACT

In the previous section of this chapter, the total revenue generated by port activity was identified. As described earlier, the personal income received by those directly dependent upon port activity is paid from the business revenue received by the firms supplying direct services at the Port of Bucks' marine terminals.

The income impact is estimated by multiplying the average annual earnings (excluding benefits) of each port participant, i.e., truckers, steamship agents, pilots, towing firm employees, longshoremen, warehousemen etc., by the corresponding number of direct jobs in each category. The individual annual earnings in each category multiplied by the corresponding job impact resulted in \$43.5 million in personal wage and salary earnings. This represents an average annual earnings per employee of about \$39,000.

The impact of the re-spending of this direct income for local purchases is estimated using a

personal earnings multiplier. The personal earnings multiplier is based on data supplied by the Bureau of Economic Analysis (BEA) for the Commonwealth of Pennsylvania. It is estimated that for every one dollar earned by direct employees generated by activity at the Port of Bucks' marine terminals, an additional \$3.40 of personal income and consumption expenditures would be created as a result of re-spending the income for purchases of goods and services produced locally. Hence, a personal earnings multiplier of 4.40 was used to estimate the induced income and consumption impact of \$147.8 million. This additional re-spending of the direct income generates the 1,141 induced job impact, described in the previous chapter. *It is to be emphasized that the \$147.8 million of re-spending and consumption impact includes consumption expenditures by those directly employed, as well as salaries. Therefore, the \$147.8 million of re-spending and consumption impact cannot be divided by the 1,141 induced job holders to estimate an average induced salary, as this would result in an overestimation of induced wages and average salary income per induced job.*

Those 1,465 indirect jobholders earned \$72.9 million of wages and salaries. Therefore, the total personal wage and salary impact is estimated at \$264.2 million.

The 5,711 related users earned \$225.3 million in wages and salaries.

4. TAX IMPACTS

State and local tax impacts are based on per capita income tax indices which are developed for the Commonwealth of Pennsylvania residents. The state and local tax index was developed from the Tax Foundation, and reflects total state and local taxes paid per dollar of income for residents of each of the four states. The index is then applied to the percent of income (direct, induced and indirect). Activity at the Port of Bucks' marine terminals generated \$26.9 million of state, county and local taxes. Of this \$26.9 million of taxes collected, \$15.9 million was collected by the Commonwealth, while the balance, \$10.8 million was received at the county and local levels of government within the Commonwealth.

The related user tax impact is estimated at \$23.0 million annually.