PORT OF NEW BEDFORD
America's #1 Fishing Port

Economic Impact Study of the New Bedford/Fairhaven Harbor

Examining the Economic Impact of the Port of New Bedford and Phase V & Navigational Dredging in the New Bedford/Fairhaven Harbor

March 2019

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Executive Summary

Conducted by Martin Associates and Foth-CLE Engineering Group

For the New Bedford Port Authority and Town of Fairhaven

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Overview of the Port of New Bedford

The Port of New Bedford is located in the New Bedford/Fairhaven Harbor along the southern coast of Massachusetts. In addition to being the highest value fishing port in the United States, the Port also handles cargo, and several forms of recreational boating are located throughout the Harbor.

The Port of New Bedford is an international seafood hub. In 2018, seafood landed at the Port of New Bedford was valued at $427 million. This seafood was harvested and processed by local fleet operators and processors located in New Bedford. The 50+ processors not only processed this domestic locally-landed seafood, but also an additional 275.3 million pounds of seafood from around the world.

The non-seafood cargo handled at the Port totaled 312,000 tons in 2018 and included petroleum, aggregates, and imported fruit.

The Harbor is also home to many recreational boating activities, such as water taxis, ferries, and seven recreational marinas that moored approximately 570 recreational boats in 2018.

Methodology

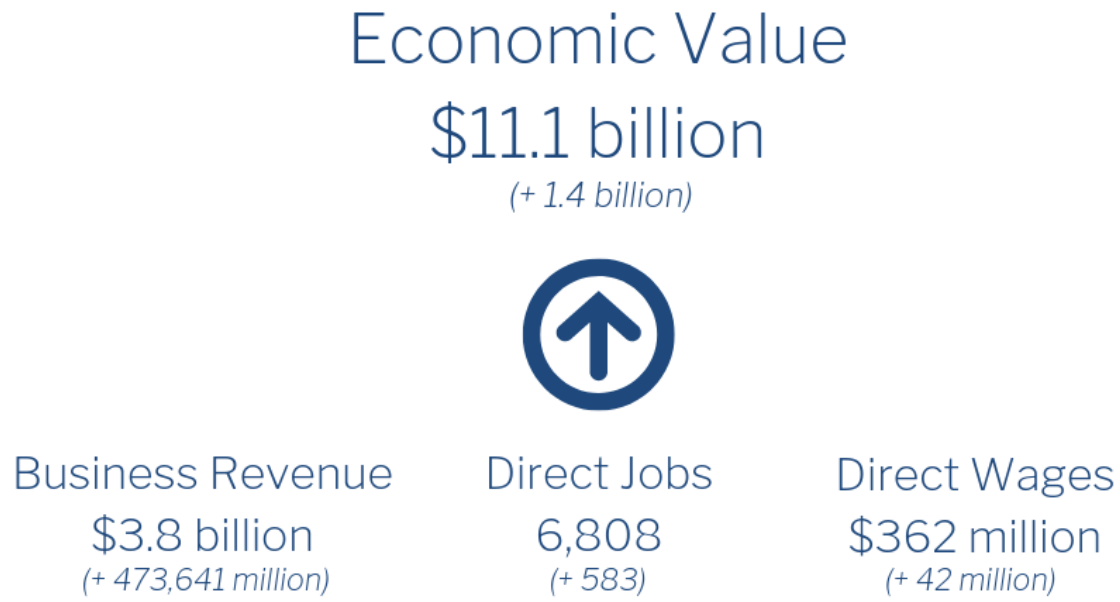
This current study is an update of the 2015 Economic Impact Study of the Port of New Bedford, conducted by Martin Associates, and the same methodology was used on this current study as in the previous economic impact study. **Therefore, direct comparisons can be made between the two studies.**

The cornerstone of the Martin Associates approach is the collection of detailed baseline impact data from firms providing services at the Port and within the Harbor. To ensure accuracy and defensibility, the baseline impact data was collected from personal and telephone interviews with 153 firms in the Port of New Bedford's *Port Services Directory*. These firms represent the universe of firms providing services in the New Bedford Harbor, including marine terminals and cargo activity, seafood processors and fleet operators, maritime services, commercial ferry operations and marinas.

Between 2015 and 2018, the economic contribution of the Port of New Bedford grew by 1,591 direct, induced and indirect jobs. Direct business revenue increased by $473.6 million, state and local taxes increased by $23.4 million and federal taxes increased by $54.4 million. **Overall, the total economic value of the Port of New Bedford grew by $1.4 billion.**

This remarkable growth in economic value to the Commonwealth is driven by the growth in the seafood industry (processing and commercial fishing), as several processors recorded growth in employment, volume of processed seafood, and increased local expenditures for goods and services. Furthermore, ship repair business also increased.

It is to be emphasized that to continue this economic contribution, it is critical that investments in harbor dredging continue, as this will further enable the expansion of local ship and boatbuilding and repair, the ability to handle additional commercial fishing vessels, and the expansion and addition of new lines of operations at the local processors.



Maritime Industrial Working Waterfront

New Bedford is a full service port, providing businesses to support the fishing and cargo industry, including operations such as warehouses, ice houses, boatyards and ship repair yards, construction, engineering, tug assists, pilots and other maritime services.

With regards to the fishing industry, once the seafood is processed, it is then distributed for consumption either locally or internationally. From the processor, the seafood can be trucked locally to wholesalers, go to a cold storage warehouse, trucked to an airport such as Boston's Logan International Airport or New York's John F. Kennedy International Airport where it is flown to various domestic and international destinations, or trucked to the Port of New York New Jersey where it is put on container vessels to be shipped internationally. It can also be trucked from New Bedford to Worcester where it is railed out to the West Coast for export to Asia.

The cargo handled at the Port totaled 312,000 tons in 2018 with the majority consisting of aggregates, followed by petroleum and fruit.

The Harbor is also home to many recreational boating activities such as water taxis, ferries, and seven recreational marinas with 694 slips that moored approximately 570 recreational boats in the 2018.

	2018	2015	Change
Total Economic Value	**$11.1 billion**	**$9.8 billion**	**$1.4 billion**
Jobs			
-Direct	6,808	6,225	583
-Induced	4,207	4,101	106
-Indirect	3,414	2,512	902
Total	**14,429**	**12,839**	**1,591**
Personal Income (1,000)			
-Direct	$362,295	$320,285	$42,010
-Respending/Local Consumption	$476,966	$429,375	$47,591
-Indirect	$171,585	$118,185	$53,400
Total	**$1,010,846**	**$867,845**	**$143,001**
Business Revenue (1,000)	**$3,762,717**	**$3,289,076**	**$473,641**
Local Purchases (1,000)	**$441,737**	**$280,192**	**$161,545**
State and Local Taxes (1,000)	**$173,984**	**$150,544**	**$23,440**
Federal Taxes (1,000)	**$412,496**	**$358,057**	**$54,439**
Related Impacts			
-Jobs	26,499	23,739	2,760
-Income (1,000)	$924,736	$811,723	$113,013
-Output (1,000)	$6,900,065	$6,069,271	$830,795
-State/Local Taxes (1,000)	$228,320	$200,666	$27,654
-Federal Taxes (1,000)	$608,171	$534,678	$73,493

Commercial Fishing/Seafood Processing

In 2018, commercial fishing/seafood processing activity in the New Bedford/Fairhaven Harbor generated the following impacts:

39,697 jobs were supported by the seafood and commercial fishing industry

- 6,237 direct jobs
- As the result of purchases by these 6,237 directly generated jobs, an additional 3,807 induced jobs are created in the local economy.
- The $398.7 million of local purchases by the firms located in the New Bedford Harbor and surrounding area created an additional 3,155 indirect jobs in the local economy.
- Another 26,499 jobs are classified as related jobs and include downstream logistics operations involved in the seafood processing industry in 2018.

Commercial fishing and seafood processing activities supported $1.8 billion of total personal wage and salary income and local consumption expenditures for Massachusetts residents. This includes $914.5 million of direct, indirect, and re-spending and local consumption expenditures, while the remaining $924.7 million was received by related port users as personal income.

Commercial fishing and seafood processing activities supported $11.0 billion of total economic activity in the Commonwealth of Massachusetts.

- Of the $11.0 billion, $3.7 billion is the direct business revenue received by firms directly dependent on the seafood processing and fleet operations.
- An additional $6.9 billion represents the value of the output to the Commonwealth that is supported by the seafood processing operations in the New Bedford area. This includes value added at each stage of the seafood processing supply chain.
- The remainder, $426.5 million, represents the personal re-spending and local personal consumption impact generated by the direct earnings received by the direct job holders.

A total of $162.8 million of direct, induced and indirect state and local tax revenue was generated by processing activity at the Port of New Bedford with another $391.1 million of federal taxes. In addition, $228.3 million of state and local taxes and $608.2 million federal taxes were supported due to economic activity of the related users using the Port of New Bedford.

Marine Cargo, Ferry & Marina

In 2018, a total of 312,000 tons of cargo moved through the marine facilities owned by the Port of New Bedford and was also home to many recreational boating activities such as water taxis, ferries, and recreational marinas. These 312,000 tons included petroleum, aggregates, and imported fruits. The ferries take passengers back and forth to locations such as Martha's Vineyard, Cuttyhunk Island, and Nantucket. Additionally, the seven marinas moored 570 recreational boats in 2018.

1,231 jobs were generated by the marine cargo, ferry and marina activity in the Harbor:

- 571 direct jobs;
- 400 induced jobs were supported by the purchases of the 571 directly employed individuals;
- 259 indirect jobs were generated as a result of $43.0 million of local purchases by firms directly dependent upon non-seafood activity at Port of New Bedford marine cargo and marina facilities.

$94.0 million of personal earnings, re-spending and local consumption and indirect income were created on the local economy:

- The 571 direct employees earned $28.6 million of wages and salaries;
- As the result of the re-spending of the direct wages and salaries, an additional $50.5 million of re-spending and local personal consumption activity was created;
- The 259 indirect jobs holders received $15.0 million of indirect income.

Dredging Impact

Four phases of the State Enhanced Remedy process have been completed. The next phase of this project, Phase V, could serve up to 65 waterfront properties and businesses and remove up to 500,000 cubic yards (cy) of impacted and unsuitable for offshore disposal material from the Harbor bottom, enhancing the cleanup efforts and maintaining harbor depth that users depend upon.

The Federal Navigational channel, which prior to 2015 when the Commonwealth conducted an interim dredge project, has not been dredged in over 50 years and now requires between 200,000 and over 700,000 cy of material to be removed from the Federal Channel in order to restore it to its authorized depth of -30 MLLW.

Based on the analysis conducted by Martin Associates, the Phase V CAD Cell Construction and the U.S.A.C.E. Channel Dredging Project would generate 879 direct, induced and indirect jobs, and further support another 1,343 related jobs within the Commonwealth. $286.5 million of new direct business revenue is projected to be generated in the local New Bedford/Fairhaven Harbor, and $12.5 million annually in state and local tax revenue would be generated.

Given a net cost of $20.7 million to the Commonwealth, and given the state and local tax pay back of $12.5 million annually, the Commonwealth would recoup its $20.7 million net investment in less than two years.

Dredging will also generate more than 850 jobs in New Bedford, and generate $69.4 million in annual wages and re-spending/local consumption impacts to the Commonwealth's economy. In addition, the project would generate $30.2 million annually in new federal tax revenue.

Jobs (direct, induced, indirect)	**879**
Personal Income (1,000)	
-Direct	$26.190
-Respending/Local Consumption	$35.563
-Indirect	$7.678
Total	**$69.432**
Business Revenue (1,000)	**$286.492**
Local Purchases (1,000)	**$14.625**
State and Local Taxes (1,000)	**$12.511**
Federal Taxes (1,000)	**$30.205**
Related Impacts	
-Jobs	1,343
-Income (1,000)	$44,999
-Output (1,000)	$368,004
-State/Local Taxes (1,000)	$11,755
Federal Taxes (1,000)	$31,746

The 2018 Economic Impact of the Port of New Bedford and the New Bedford/Fairhaven Harbor

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TABLE OF CONTENTS

I. OVERVIEW OF THE ANALYSIS

The Port of New Bedford is located in the New Bedford/Fairhaven Harbor along the southern coast of Massachusetts. In addition to being the largest fishing port in the United States, the Port also handles cargo and several forms of recreational boating and commercial ferry services located throughout the Harbor. In 2018, seafood landed at the Port of New Bedford was valued at $427.0 million. This seafood was caught and processed by local fleet operators and processors located in New Bedford. These 50 plus processors not only processed this locally caught seafood, but also an additional 275.3 million pounds of seafood from around the world. New Bedford is a full service port, providing businesses to support the fishing and cargo industry, including operations such as warehouses, ice houses, boatyards and ship repair yards, construction, engineering, tug assists, pilots and other maritime services. With regards to the fishing industry, once the seafood is processed, it is then distributed for consumption either locally or internationally. From the processor, the seafood can be trucked locally to wholesalers, go to a cold storage warehouse, trucked to an airport such as Boston's Logan International Airport or New York's John F. Kennedy International Airport where it is flown to various domestic and international destinations, or trucked to the Port of New York New Jersey where it is put on container vessels to be shipped internationally. It can also be trucked from New Bedford to Worcester where it is railed out to the West Coast for export to Asia. The cargo handled at the Port totaled 312,000 tons in 2018 with the majority consisting of aggregates, followed by petroleum and fruit. The Harbor is also home to many recreational boating activities such as water taxis, ferries, and seven recreational marinas with 694 slips that moored approximately 570 recreational boats in the 2018.

The New Bedford Port Authority (formerly the New Bedford Harbor Development Commission) and the Town of Fairhaven retained the services of Martin Associates to evaluate the economic impacts generated by maritime and seafood activity in the New Bedford/Fairhaven Harbor.

A major emphasis of the study is its defensibility and realistic assessment of the impacts generated by activity at the Port of New Bedford and New Bedford/Fairhaven Harbor. The study is based on interviews with 153 firms participating in the various lines of businesses involved with the New Bedford Harbor. This includes fish processors, fleet operators, maritime services, cargo operations, and marinas, underscoring the defensibility of the study. The impacts can be traced back to the company level of detail.[1] The data collected from the interviews were then used to develop operational models for the New Bedford area to measure the impacts generated by the fish processing and fishing fleet operators, as well as the maritime services, marinas, and cargo activity within the Harbor.

[1] Individual firm data is collected by Martin Associates to develop the overall economic impact models. Company specific data is held strictly by Martin Associates and not provided to the Port or any other entity under the confidentiality agreement between Martin Associates and the individual companies.

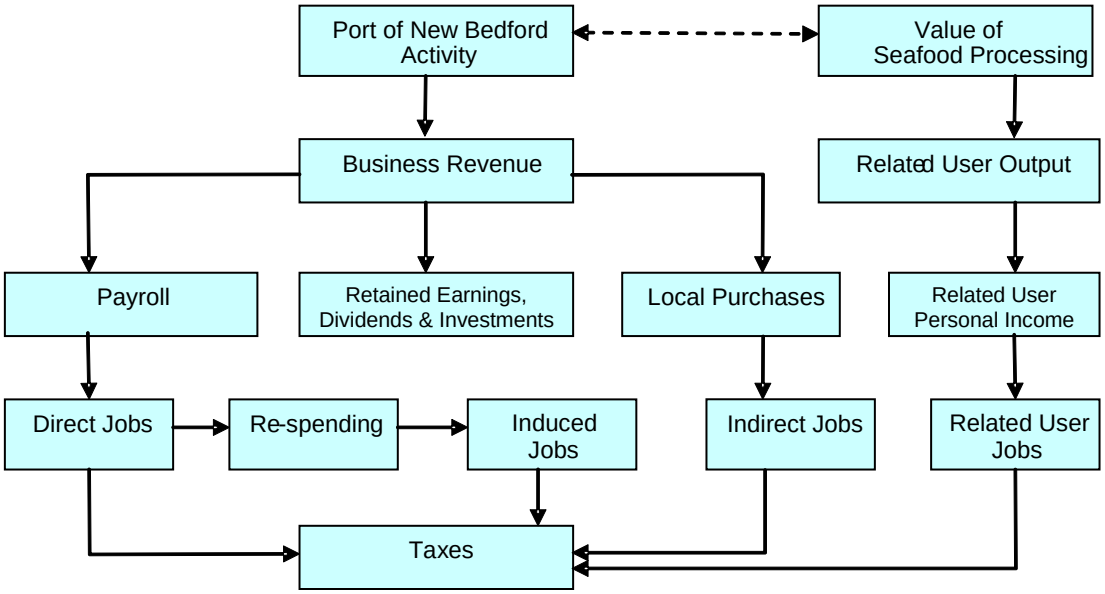
The impacts are measured for the year 2018 and separate economic impact models have been developed to measure the impacts generated by the fish processing and fleet operators; and the impacts generated by the maritime services, marinas, commercial ferry operations and cargo activity at the Port and within the Harbor. These economic models can be used to estimate annual updates, as well as to test the sensitivity of the impacts to new fish processing facilities, expansion of fishing fleets, new marine cargo tonnage levels, new marine facilities development and expansion, and the impacts of harbor navigational projects.

The remainder of this chapter presents an overview of the impact analysis and a summary of the results.

1. FLOW OF IMPACTS

Waterborne activity within the Harbor contributes to the local and regional economy by generating business revenue to local and national firms providing services to the seafood, marine cargo, and marinas and commercial ferry sectors. These firms, in turn, provide employment and income to individuals and pay taxes to state and local governments. Exhibit I-1, below, shows how waterborne cargo, marina operations, ferry activity and seafood processing at the Port of New Bedford and within the New Bedford Harbor generate impacts throughout the local, state and national economies. As this exhibit indicates, the impact of a seaport on a local, state or national economy cannot be reduced to a single number, but instead, they create 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 New Bedford generates the four impacts.

Exhibit I-1
Flow of Economic Impacts Generated by
The Port of New Bedford Activity



1.1 Business Revenue Impact

At the outset, activity at the marine cargo and ferry terminals, marinas and seafood processors/fleet operators generate business revenue for firms that 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 other services, to pay for the use of port facilities 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 Commonwealth of Massachusetts are those portions paid out in salaries to Massachusetts employees, for local purchases by individuals and businesses directly dependent on the seaport, and in contributions to state and local taxes, as well as federal taxes.

1.2 Employment Impact

The employment impact consists of the following levels of job impacts.

- Direct employment impact - jobs directly generated by marine cargo, marina and ferry operations, and commercial fishing and processing activity. Direct jobs generated by marine

cargo include jobs with trucking companies moving cargo between inland origins and destinations and the Port's cargo marine terminals, longshoremen, stevedores, etc. Direct jobs generated by the fishing fleet and processors using the New Bedford Harbor include fishing fleet crew, shipyard and repair employees, local fishing gear and marine suppliers, packaging, ice, water, fuel, insurance brokers and marine attorneys, etc. Direct jobs supported by the marina activity include jobs directly involved with operating the seven marinas in the Harbor, and jobs supported by the direct purchases by the boat owners including boat repair, equipment, nautical supplies, etc.

It is to be emphasized that these jobs are classified as directly generated in the sense that the jobs would experience near term dislocation if the New Bedford Harbor commercial and recreational marine terminals and fish processing facilities were to be closed. These jobs are, for the most part, local jobs and are held by residents of Bristol County.

The direct jobs are estimated directly from the survey results of the 153 firms, as well as economic models developed from these surveys.

- Induced employment impact - jobs created throughout the local economy because individuals directly employed due to port activity spend their wages locally on goods and services such as food, housing and clothing. These jobs are held by residents located throughout the region and state, since they are estimated based on local and regional statewide purchases.

- Indirect employment impact - jobs created in the Commonwealth of Massachusetts 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 153 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, which are often classified as indirect by other approaches.

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 and seafood industry activity.

1.3.1 Direct Personal Earnings Impact

The direct personal earnings impact is a measure of the wages and salaries received by the direct job holders, and obtained directly from interviews with the maritime service providers.

1.3.2 Induced Impacts

Induced impacts are those generated by the purchases of the individuals employed as a result of maritime and seafood activity. For example, a portion of the personal earnings received by those directly employed due to activity at the seaport is used for purchases of goods and services, both in-state, as well as out-of-state. These purchases, in turn, create additional jobs in the Commonwealth of Massachusetts, which are classified as induced. To estimate these induced jobs, a personal earnings multiplier for the Commonwealth was developed from data provided by the Bureau of Economic Analysis, Regional Input-Output Modeling System. This income multiplier is used to estimate the total personal earnings generated in Massachusetts. A portion of this total personal earnings impact is next allocated to specific local purchases (as determined from consumption data for the Commonwealth of Massachusetts, as developed from the U.S. Bureau of Labor Statistics, Consumer Expenditure Survey, 2017). These purchases are next converted into retail and wholesale induced jobs in the regional economy

The re-spending effect varies by state: a larger re-spending effect occurs in states that produce a relatively large proportion of the goods and services consumed by residents, while lower re-spending effects are associated with states that import a relatively large share of consumer goods and services (since personal earnings "leak out" of the state for these out-of-state purchases). The direct earnings are a measure of the local impact since those directly employed by seaport activity and the seafood industry receive the wages and salaries. The re-spending effect is regional.

1.4 Indirect Impacts

Indirect impacts include indirect jobs, personal income and state and local taxes. These indirect jobs are generated in the local economy as the result of purchases by firms that are directly dependent upon activity in the New Bedford/Fairhaven Harbor, including the seafood processors, maritime services, cargo activity and marinas. These purchases are for goods such as office supplies and equipment, maintenance and repair services, raw materials, 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 153 firms interviewed and the New Bedford Port Authority. These local purchases were then combined with employment to sales ratios in local supplying industries, developed from U.S. Bureau of Economic Analysis, Regional Input-Output Modeling System for the Commonwealth of Massachusetts. These jobs to sales ratios capture the numerous spending rounds associated with the supply of goods and services. Special care has been exercised to avoid double counting the indirect impacts, and to specifically include only the expenditures by the directly dependent firms that are, in fact, local.

1.5 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 seaport activity and seafood processing at the Port of New Bedford. The tax impacts include state and local taxes collected from all sources, both personal and business taxes. State and local taxes are based on income indices developed by the Tax Foundation, as well as tax metrics developed from State and Local Government Finance, published by the U.S. Bureau of Census. These metrics are applied to the direct, induced and indirect personal income impacts, as well as average corporate profits.[2]

1.6 Related User Impacts

Related user impacts occur with firms in the downstream logistics operations involved in the seafood processing industry, such as warehousing and distribution as well as the ultimate sales to wholesalers and restaurants. These jobs are not entirely dependent upon the seaport and Harbor, but reflect the importance of the Harbor to local and national firms. While the facilities and services provided in the Harbor are a crucial part of the infrastructure allowing these related jobs to exist, they would not necessarily be immediately displaced if marine cargo or seafood operations were to cease.

The direct, induced, and indirect port sector job, income, revenue and tax impacts were subtracted from the total related impacts to avoid double counting, as the related impacts include impacts at each stage of the supply chain.

2. DATA COLLECTION

The purpose of this section is to provide a summary of the methodological approach used to estimate the economic impacts of the Port of New Bedford Harbor. The methodological approach to this study is designed to provide highly defensible, as well as accurate results and has been used by Martin Associates over the last 32 years to assess the economic impacts of activity at more than 500 seaports throughout the United States and Canada.

[2] The Tax Foundation publishes similar tax indices for state and local tax burdens for each state in the United States. State and Local Government Finance published by the U.S. Bureau of Census, provides detailed tax revenues by type of tax.

The cornerstone of the Martin Associates approach is the collection of detailed baseline impact data from firms providing services at the Port and within the Harbor. To ensure accuracy and defensibility, the baseline impact data was collected from personal and telephone interviews with 153 firms in the Port of New Bedford's *Port Services Directory*. These firms represent the universe of firms providing services in the New Bedford Harbor, including marine terminals and cargo activity, seafood processors and fleet operators, maritime services, commercial ferry operations and marinas.

3. ECONOMIC IMPACT OF THE PORT OF NEW BEDFORD

Table I-1
Summary of the Economic Impacts Generated by the Port of New Bedford, 2018

	Total Harborwide
Jobs	
Direct	6,808
Induced	4,207
Indirect	3,414
TOTAL	**14,429**
Personal Income (1,000)	
Direct	$362,295
Respending/Local Consumption	$476,966
Indirect	$171,585
TOTAL	**$1,010,846**
Business Revenue (1,000)	$3,762,717
Local Purchases (1,000)	$441,737
State and Local Taxes (1,000)	$173,984
Federal Taxes (1,000)	$412,496
Related Impacts	
Jobs	26,499
Income (1,000)	$924,736
Output (1,000)	$6,900,065
State/Local Taxes (1,000)	$228,320
Federal Taxes (1,000)	$608,171

* Totals may not add due to rounding

**The re-spending/local consumption impact cannot be divided by induced jobs to estimate induced income, since the re-spending impact also includes local purchases. This would overstate the induced income impact.

As Table I-1 indicates, the seafood processors combined with the other maritime services, cargo activity, and marinas in the New Bedford/Fairhaven Harbor generated the following economic impacts for the local and regional economy:

- **40,928 jobs in Massachusetts** are in some way related to the cargo, seafood and other marine industrial activities in the Harbor.

- Of those 40,928 jobs in Massachusetts, **6,808 direct jobs** are generated by the seafood activity including commercial fishing and processing, marine cargo, and marinas. Approximately 96 percent of these direct jobs are held by residents in cities located within Bristol County, which is depicted in Table I-2.

Table I-2
Summary of Residency for New Bedford Harbor Employees

City/County	Residency Share
Bristol County	**95.76%**
New Bedford	33.49%
Fairhaven	4.91%
Dartmouth	0.40%
Acushnet	0.17%
Fall River	18.27%
Westport	0.15%
Other Bristol County	37.49%
Plymouth County	**1.84%**
Marion	0.00%
Mattapoisett	0.14%
Other Plymouth County	1.69%
Barnstable County	**0.87%**
Falmouth	0.87%
Other MA	**1.24%**
Other RI	**1.10%**
Other US	**0.06%**
TOTAL	**100%**

- As the result of local and regional purchases by those 6,808 individuals holding the direct jobs, an additional **4,207 induced jobs** are supported in the region.

- **3,414 indirect jobs** are supported by $441.7 million of local purchases made by businesses supplying services to the processors, maritime services, cargo operations, and marinas dependent on the Harbor.

- The balance, 26,499 jobs, are classified as related jobs and are with downstream logistics operations involved with the seafood processing, such as warehousing and distribution after the seafood leaves the port processing operations and cold storage facilities, as well as ultimate sales to wholesalers and restaurants.

In 2018, the seafood, marine cargo, and marina and ferry services activity in the New Bedford/Fairhaven Harbor generated $11.1 billion of total economic activity in the Commonwealth of Massachusetts.

- Of the $11.1 billion, $3.8 billion is the direct business revenue received by the firms directly dependent upon the Port and Harbor and additionally, those firms providing maritime and inland transportation services to the cargo and seafood handled in the Harbor and the vessels and fishing fleets calling on the Port, as well as ship and rig repair and maintenance services. An additional $477.0 million is used for local purchases by the direct job holders, and this is captured by the re-spending and local consumption impact portion of the total personal income impact. The remaining $6.9 billion represents the value of the output to the Commonwealth of Massachusetts that is created from the downstream logistics involved with the seafood processing industry. This includes the value added at each stage of the processing, as well as the value added at each stage of the logistics supply chain. This dollar value represents the sphere of influence of the processors, cargo operators, maritime services and marinas in 2018, and accounts for 2 percent of the $569.3 billion GDP for the Commonwealth[3].

- Marine activity supported nearly $1.9 billion of total personal wage and salary income and local consumption expenditures for Massachusetts residents. This includes $1.01 billion of direct, indirect, induced and local consumption expenditures, while the remaining $924.7 million was received by the related port users. The 6,808 direct job holders received $362.3 million of direct wage and salary income, for an average salary of $55,220.

A total of $174.0 million of state and local tax revenue and $412.5 million of federal taxes were generated by marine and seafood activity in the Harbor. In addition, $228.3 million of state and local taxes and $608.2 million of federal taxes were supported by the economic activity of related users of the seafood processing and commercial fishing activity in the Harbor.

This current study is an update of the 2015 Economic Impact Study of the Port of New Bedford, conducted by Martin Associates, and the same methodology was used on this current study

[3] U.S. Bureau of Economic Analysis, Gross Domestic Product, Q2 2018.

as in the previous economic impact study. Therefore, direct comparisons can be made between the two studies. Between 2015 and 2018, the economic contribution of the Port of New Bedford grew by 1,591 direct, induced and indirect jobs. Direct business revenue increased by $473.6 million, state and local taxes increased by $23.4 million and federal taxes increased by $54.4 million. Overall, the total economic value of the Port of New Bedford grew by $1.4 billion. This remarkable growth in economic value to the Commonwealth is driven by the growth in the seafood industry (processing and commercial fishing), as several processors recorded growth in employment, volume of processed seafood, and increased local expenditures for goods and services. Furthermore, ship repair business also increased. It is to be emphasized that to continue this economic contribution, it is critical that investments in harbor dredging continue, as this will further enable the expansion of local ship and boatbuilding and repair, the ability to handle additional commercial fishing vessels, and the expansion and addition of new lines of operations at the local processors.

II. THE ECONOMIC IMPACTS OF THE PORT OF NEW BEDFORD AND THE NEW BEDFORD/FAIRHAVEN HARBOR

The impacts were estimated for two sectors of the New Bedford harbor:

1.) The seafood processing and vessel operations, and
2.) The non-seafood sector including marine cargo terminals, marinas, commercial ferries and marine construction/non-fishing ship repair and boat building operations.

1. THE ECONOMIC IMPACTS OF THE SEAFOOD PROCESSING AND FLEET OPERATIONS AT THE PORT OF NEW BEDFORD

The commercial seafood sector operating in the New Bedford/Fairhaven Harbor consists of processing operations and the fishing fleet operations. Interviews with the processors and vessel owners/operators located in New Bedford Harbor and surrounding area were used to estimate the direct impacts of the home-porting activity as well as the shore-side activity that occurs to support these operations. For those directly employed as crew members on these vessels, efforts were made to identify what percent of the crew are full time residents of the region versus those who travel to the New Bedford-area for a specific fishery's season.

1.1 Processors

Interviews with nearly 50 processors located in the New Bedford Harbor area were used to estimate the direct impacts associated with processing operations. Through these interviews, full time and part time employees were identified as well as residency, pounds of seafood processed from landings in New Bedford and from other domestic and international origins, as well as local expenditures. These expenditures include materials such as ice, packaging, rent and utilities, cost of goods, and contract services with trucking companies, etc. The expenditures were then combined with jobs to value-of-sales ratios in corresponding supplying industries to estimate the number of local direct jobs supported by processors in the New Bedford Area. In total, seafood valued at approximately $427.0 million was landed in New Bedford Harbor in 2018 and an additional 275.3 million pounds of domestic and international seafood was processed. The largest seafood type processed and landed in New Bedford is sea scallops, which accounted for more than 30 percent of the landed catch in 2018. Other seafood that is landed and processed in New Bedford includes Jonah crab, surf clams, Atlantic herring and mackerel, lobster, haddock, squid, hake, flounder, skate, cod, and pollock as well as several other species.

Processing operations include weighing, fileting, cleaning, and repackaging the seafood. Once the seafood is processed, it is then distributed for consumption either locally or internationally. From the processor, the seafood can be trucked locally to wholesalers, go to a cold storage warehouse, trucked to an airport such as Boston's Logan International Airport or New York's John F. Kennedy International Airport where it is flown to various domestic and international destinations, or trucked to the Port of New York New Jersey where it is put on container vessels to be shipped internationally. It can also be trucked from New Bedford to Worcester where it is railed out to the West Coast for export to Asia.

Economic models were developed to measure the economic impacts at each stage. Interviews were used to develop estimates of the total share and volume of seafood processed that was locally landed; the share and volume of seafood that was trucked or railed into New Bedford for processing (more than 70%), the volume of processed seafood that was frozen and distributed locally, nationally or internationally; the volume and share that was trucked to cold storage facilities in the Harbor or nearby locations of cold storage operations; the share and volume of processed seafood that was moved by rail to the West Coast for export; the volume and share of fresh seafood that was distributed directly from New Bedford processors; and the volume and share of seafood that was trucked to regional distribution centers and also loaded onto flights at JFK International Airport of Logan International Airport.

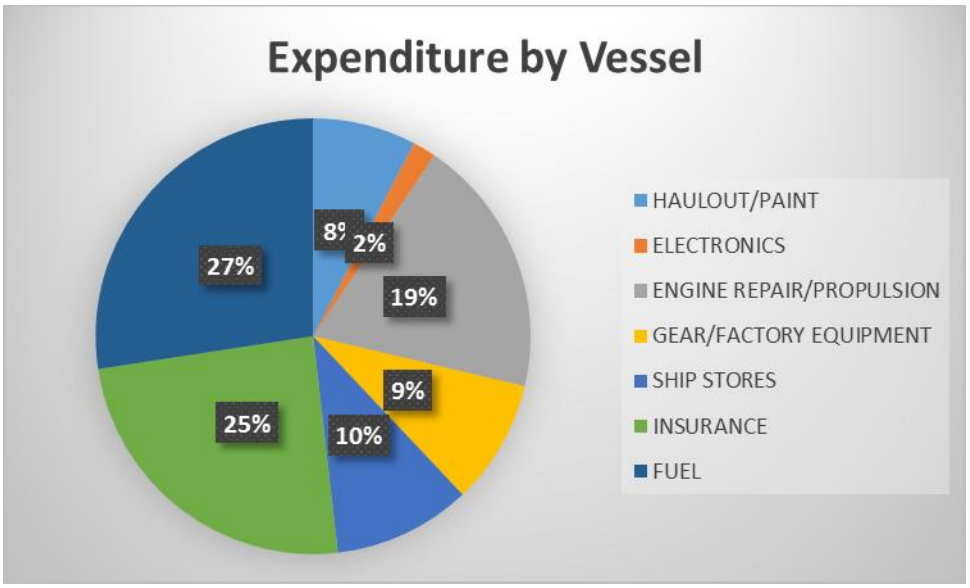
Using these models, the direct jobs, income, revenue, local purchases and tax metrics were developed for all stages of the fish processing operations and used to estimate the direct impacts for the seafood processing operations. Induced and indirect models, as previously described, were then used to estimate the induced and indirect impacts.

1.2 Fleet Operations

To estimate the economic impacts generated by the commercial fishing fleet activity in the Harbor, the types of fishing vessels moored at the marinas were profiled as to the average expenditures per type of vessel. To estimate the expenditures for the fishing vessel, Martin Associates conducted interviews with the various fishing vessel and fleet operators operating in the Harbor. Furthermore, interviews were conducted with shipyards specializing in providing services to the New Bedford based fishing fleet, as well as with chandlers, brokers, hardware and electronics retailers, and engine and propulsion shops.

Exhibit II-1 presents the expenditures in New Bedford per vessel for the fleet based in New Bedford in 2018. These expenditures were then combined with the jobs to value-of-sales ratios in corresponding supplying industries to estimate the number of local direct jobs supported by the vessels based in the Harbor. Added to these direct jobs are the number of crew employed by the fleet, ship brokers and insurance brokers, as well as employees at the Whaling City Seafood Display Auction. Care was taken to not double count jobs in the maritime services sector also providing services to the marine cargo operations, commercial ferries, marine construction, and marinas.

Exhibit II-1
Annual Expenditures in New Bedford/Fairhaven Harbor by Fishing Vessels in the Harbor



These expenditures were then multiplied by the number of fishing boats moored in the Harbor to estimate the total direct impacts. Induced impacts were also estimated using the previously described induced and indirect impact models developed by Martin Associates for the Commonwealth of Massachusetts.

The impacts of the fish processing operations and the fleet operations were then combined to estimate the impacts of the seafood industry located in the New Bedford/Fairhaven Harbor in the Commonwealth of Massachusetts.

Table II-1 presents the economic impacts generated by the fishing activity in the Harbor.

Table II-1
Economic Impacts of Port of New Bedford Seafood Industry

	Seafood Industry
Jobs	
Direct	6,237
Induced	3,807
Indirect	3,155
Total	**13,198**
Personal Income (1,000)	
Direct	$333,726
Respending/Local Consumption	$426,501
Indirect	$154,288
Total	$914,514
Business Revenue (1,000)	$3,672,937
Local Purchases (1,000)	$398,770
State and Local Taxes (1,000)	$162,779
Federal Taxes (1,000)	$391,129
Related Impacts	
Jobs	26,499
Income (1,000)	$924,736
Output (1,000)	$6,900,065
State/Local Taxes (1,000)	$228,320
Federal Taxes (1,000)	$608,171

Note: Totals may not add due to rounding
*Revenue excludes value of the catch

In 2018, commercial fishing/seafood processing activity in the New Bedford/Fairhaven Harbor generated the following impacts:

39,697 were supported by the seafood and commercial fishing industry

- 6,237 direct jobs, including full-time equivalent jobs with the fishing crew based at the Harbor, jobs with local shipyards, chandlers, engine/propulsion repair shops, retail stores, suppliers of fishing gear, insurance brokers, public restaurants, retail stores, and fish processing and cold storage operations.

- As the result of purchases by these 6,237 directly generated jobs, an additional 3,807 induced jobs are created in the local economy.

- The $398.7 million of local purchases by the firms located in the New Bedford Harbor and surrounding area created an additional 3,155 indirect jobs in the local economy.

- Another 26,499 jobs are classified as related jobs and include downstream logistics operations involved in the seafood processing industry in 2018.

Commercial fishing and seafood processing activities supported $1.8 billion of total personal wage and salary income and local consumption expenditures for Massachusetts residents. This includes $914.5 million of direct, indirect, and re-spending and local consumption expenditures, while the remaining $924.7 million was received by related port users as personal income.

Commercial fishing and seafood processing activities supported $11.0 billion of total economic activity in the Commonwealth of Massachusetts.

- Of the $11.0 billion, $3.7 billion is the direct business revenue received by firms directly dependent on the seafood processing and fleet operations.
- An additional $6.9 billion represents the value of the output to the Commonwealth that is supported by the seafood processing operations in the New Bedford area. This includes value added at each stage of the seafood processing supply chain.
- The remainder, $426.5 million, represents the personal re-spending and local personal consumption impact generated by the direct earnings received by the direct job holders.

A total of $162.8 million of direct, induced and indirect state and local tax revenue was generated by processing activity at the Port of New Bedford with another $391.1 million of federal taxes. In addition, $228.3 million of state and local taxes and $608.2 million federal taxes were supported due to economic activity of the related users using the Port of New Bedford.

2. THE ECONOMIC IMPACTS OF MARINE CARGO, MARINA, AND FERRY ACTIVITY AT THE PORT OF NEW BEDFORD

In 2018, a total of 312,000 tons of cargo moved through the marine facilities owned by the Port of New Bedford and was also home to many recreational boating activities such as water taxis, ferries, and recreational marinas. These 312,000 tons included petroleum, aggregates, and imported fruits. The ferries take passengers back and forth to locations such as Martha's Vineyard, Cuttyhunk Island, and Nantucket. Additionally, the seven marinas moored 570 recreational boats in 2018.

2.1 Overview of the Seaport Impact Structure

The movement of these 312,000 tons of cargo through the Port of New Bedford cargo terminals generates economic activity in various business sectors of the state and local economy.

Specifically, three distinct economic sectors are involved in providing services to move the cargo through the Port of New Bedford marine terminals and provide maritime services to the marinas and ferry operations. These are the:

- Surface Transportation Sector
- Maritime Service Sector
- New Bedford Harbor Development Commission

Jobs, income, revenue and tax impacts are estimated for each sector, as well as for specific job categories within each sector.

2.1.1 Economic Impact Sectors

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

(1) The Surface Transportation Sector

The surface transportation sector consists primarily of trucking activity moving cargo to and from the marine terminals.

(2) The Maritime Service Sector

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

- Cargo Marine Transportation;
- Vessel Operations;
- Cargo Handling;
- Federal, State, and Local Government Agencies;
- Marinas and Ferry Boat Operations; and
- Port of New Bedford.

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

- Cargo Marine Transportation - Participants in this category are involved in arranging for overland and water transportation for export or import freight through the seaport. The freight forwarder/customhouse broker is the major participant in this category. The freight forwarder/customhouse broker arranges for the freight to be delivered between the Port of New Bedford and inland destinations, as well as the ocean transportation. This function performed by freight forwarders is most prevalent for general cargo commodities. For bulk cargo, arrangements are often made by the shipper/receiver.

- 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 New Bedford/Fairhaven Harbor; the agents arrange for pilot services and towing 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:

    - Pilots - assist vessels navigating to and from the Port of New Bedford terminals;

    - Chandlers - supply the vessels with ship supplies (food, clothing, nautical equipment, etc.);

    - Towing firms - provide tug assist service to vessels docking and undocking at a terminal;

    - 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 cargo at the Port of New Bedford between land and the vessel. Included in this category are the following participants:

    - Longshoremen - are members of the International Longshoremen's Association and are involved in the loading and unloading of cargo from the vessels, as well as handling the cargo prior to loading and after unloading;

    - Stevedoring firms - manage the longshoremen and cargo-handling activities;

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

- Government Agencies - this maritime service sector category involves federal, state and local government agencies that perform services related to cargo handling and vessel operations at the Port of New Bedford. These include U.S. Customs and Border Protection, U.S. Environmental Protection Agency, U.S. National Oceanic and Atmospheric Administration, and U.S. Coast Guard.

- Marinas and Ferry Boat Operations - this includes those that are employed by the seven recreational marinas located in the Harbor which moored approximately 570 recreational boats in 2018. This also includes employees involved with the ferries located in the

Harbor which travel to Cuttyhunk Island, Martha's Vineyard, and Nantucket as well as a water taxi that also sails to Cuttyhunk.

- Port of New Bedford - this sector includes those individuals employed by the New Bedford Port Authority to oversee port activity.

2.1.2 Commodities Included in the Study

The Port of New Bedford handled 312,000 tons of cargo in 2018 including aggregates, fruit, and petroleum. Aggregates handled at the Port of New Bedford are often shipped to Cape Cod for construction projects. Clementines from Morocco are the largest imported fruit at the Port. Petroleum is handled at terminals such as Sprague Energy and Global and is used by bunker supply companies who fuel fishing vessels in the Harbor as well as petroleum products distributors that provide fuel to residential customers.

2.2 Methodology

The direct jobs, income and revenue impacts were estimated directly for the surveys of terminal operators, maritime services providers, ship and boat yards, and marine construction companies. For the cargo operations, models were developed to measure the number of dockworker hours generated by the cargo throughput, the number of tug assists and pilotage assignments required by the vessel operations and the number of truck trips and associated trucker jobs. Jobs with freight forwarders and agents were also estimated for the fruit, aggregates and petroleum products handled at the marine cargo terminals.

The results of the interviews with the ferry and marina operations were used to develop the direct impacts for these categories. In addition, a recreational boating model was developed to translate annual expenditures by power and sailboats into jobs with support operations including haulout and storage, painting, electronics and gear, fuel, etc. These expenditures by type of recreational boat were developed from internal Martin Associates databases for marina operations. The recreational boat expenditures by type of boat were multiplied by the number of sail boats and power boats moored at the marinas located in the Harbor to estimate the direct jobs with the local service providers.

Induced and indirect impacts for the cargo, maritime services, ferry, and marina operations were estimated using the induced and indirect models described previously.

2.3 Summary of the Economic Impacts Generated by Non-Seafood Marine Cargo, Recreational Boating and Ferry Operations Activity at Port of New Bedford Marine Terminals

The economic impacts generated by marine cargo, maritime services, and marina activity handled at Port of New Bedford marine terminals and within the Harbor are summarized in Table II-2.

Table II-2
Economic Impacts of Cargo Activity at Port of New Bedford Marine Terminals and Maritime Services and Marina Activity

	Maritime Sercies/Cargo/Marinas
Jobs	
Direct	571
Induced	400
Indirect	259
Total	**1,231**
Personal Income (1,000)	
Direct	$28,569
Respending/Local Consumption	$50,465
Indirect	$14,993
Total	**$94,028**
Business Revenue (1,000)	**$89,780**
Local Purchases (1,000)	**$42,967**
State and Local Taxes (1,000)	**$10,979**
Federal Taxes (1,000)	**$21,000**

Note: Totals may not add due to rounding

As this table indicates, maritime (cargo and vessel) and ferry and marina activity at the Port of New Bedford and within the New Bedford/Fairhaven Harbor facilities created the following economic impacts:

1,231 jobs were generated by the marine cargo, ferry and marina activity in the Harbor:

- 571 direct jobs;
- 400 induced jobs were supported by the purchases of the 571 directly employed individuals;
- 259 indirect jobs were generated as a result of $43.0 million of local purchases by firms directly dependent upon non-seafood activity at Port of New Bedford marine cargo and marina facilities.

$94.0 million of personal earnings, re-spending and local consumption and indirect income were created on the local economy:

- The 571 direct employees earned $28.6 million of wages and salaries;

- As the result of the re-spending of the direct wages and salaries, an additional $50.5 million of re-spending and local personal consumption activity was created;
- The 259 indirect jobs holders received $15.0 million of indirect income.

Businesses providing services to the Port of New Bedford and the Harbor received $89.8 million of business revenue and the directly dependent companies providing the services to the Harbor activity made $43.0 million of local purchases that supported the indirect jobs.

A total of $11.0 million of state and local taxes were generated by the marine cargo, ferry and marina activity in the Harbor with an additional $21.0 million of federal taxes.

No related impacts were estimated for the cargo, ferry and marina operations, since the related impacts are actually part of the direct, induced and indirect impacts for these sectors.

3. COMPARISON OF THE ECONOMIC IMPACTS OF MARINE CARGO, MARINA, AND FERRY ACTIVITY AT THE PORT OF NEW BEDFORD, 2015-2018

Martin Associates conducted the 2015 Economic Impact Study of the Port of New Bedford in 2015, using the same methodology as used on this current study. Therefore, direct comparisons can be made between the two studies[4]. Over the three-year period, the major changes that occurred were in the expansion of several fish processing operations as new lines have been added, an increase in processing poundage, and further expansion has occurred at some of the local ship and boat repair operations. However, due to the construction at State Pier during the last year, cargo job growth was affected as vessel activity was limited during this time. In addition, Martin Associates was able to identify additional amounts of local purchases from processors and fleet operators, which resulted in a growth in locally supported induced jobs. As shown in Table II-3, overall direct, induced and indirect jobs increased by nearly 1,600 jobs over the three year period, while direct business revenue grew by $473.6 million. State and local taxes grew by $23.4 million, while the federal tax collections generated by the Port of New Bedford grew by $54.4 million. Overall economic value of the Port of New Bedford and Fairhaven Harbor grew from $9.8 billion in 2015 to $11.1 billion in 2018, which includes the growth of direct business revenue, the increase in the re-spending and local consumption by those directly employed, and the value of economic activity with industries supported by the seafood industry, marinas, and marine cargo activity at the Port of New Bedford. Related jobs with firms supporting the seafood, marine cargo and marina activity grew by 2,760 jobs, and the growth in the related users supported an increase of $27.7 million state and local taxes and $73.4 million of federal tax revenue.

[4] Economic Impact Study of the Port of New Bedford/Fairhaven, prepared for the New Bedford harbor Development Commission, by Martin Associates, August, 2016

Table II-3
Comparison of Economic Impacts: 2015-2018

	2018	2015	Change
Total Economic Value	**$11.1 billion**	**$9.8 billion**	**$1.4 billion**
Jobs			
-Direct	6,808	6,225	583
-Induced	4,207	4,101	106
-Indirect	3,414	2,512	902
Total	**14,429**	**12,839**	**1,591**
Personal Income (1,000)			
-Direct	$362,295	$320,285	$42,010
-Respending/Local Consumption	$476,966	$429,375	$47,591
-Indirect	$171,585	$118,185	$53,400
Total	**$1,010,846**	**$867,845**	**$143,001**
Business Revenue (1,000)	**$3,762,717**	**$3,289,076**	**$473,641**
Local Purchases (1,000)	**$441,737**	**$280,192**	**$161,545**
State and Local Taxes (1,000)	**$173,984**	**$150,544**	**$23,440**
Federal Taxes (1,000)	**$412,496**	**$358,057**	**$54,439**
Related Impacts			
-Jobs	26,499	23,739	2,760
-Income (1,000)	$924,736	$811,723	$113,013
-Output (1,000)	$6,900,065	$6,069,271	$830,795
-State/Local Taxes (1,000)	$228,320	$200,666	$27,654
-Federal Taxes (1,000)	$608,171	$534,678	$73,493

This growth in economic activity created by the Port of New Bedford to the Commonwealth of Massachusetts underscores the critical need to maintain the marine infrastructure in the New Bedford/Fairhaven Harbor, and to increase the depth of the harbor to continue to attract new fishing vessels, expand current processors capacity, attract additional processors and support additional boat repair and construction at the local ship and boat yards.

The following chapter describes the current harbor dredging program in place in the New Bedford/Fairhaven Harbor.

IMPACTS OF DREDGING IN THE NEW BEDFORD/FAIRHAVEN HARBOR

The economic impact of dredging the New Bedford/Fairhaven Harbor is addressed in this section.

1. STATE ENHANCED REMEDY PROCESS

The New Bedford/Fairhaven Harbor supported 40,928 direct, induced, indirect, and related jobs within the Commonwealth of Massachusetts in 2018 and supported $11.1 billion of economic value to the Commonwealth as a result from this maritime activity. Maintaining this Harbor for vessel activity and access to businesses along the water is extremely important to retain these jobs, as well as increase activity by investing in dredging and infrastructure projects.

Because of the contamination in the Harbor combined with the complex permitting and expensive disposal requirements of conventional dredging projects, it is economically unfeasible to have individual property owners privately fund the dredging along their properties to maintain access. However, the State Enhanced Remedy (SER) process, a plan created between the Environmental Protection Agency and the Massachusetts Department of Environmental Protection, provides a streamlined permitting methodology and allows for property owners to take advantage of economies of scale associated with group permitting, design and implementation of a group phased approach to dredging projects. Furthermore, dredge material disposal costs are dramatically reduced by adding the use of Confined Aquatic Disposal (CAD) cells, which allow for nearby, in-water disposal in a manageable consolidated area.

Four phases of the State Enhanced Remedy process have been completed. The next phase of this project, Phase V, could serve up to 65 waterfront properties and businesses and remove up to 500,000 cubic yards (cy) of impacted and unsuitable for offshore disposal material from the Harbor bottom, enhancing the cleanup efforts and maintaining harbor depth that users depend upon. The Federal Navigational channel, which prior to 2015 when the Commonwealth conducted an interim dredge project, has not been dredged in over 50 years and now requires between 200,000 and 700,000 cy of material to be removed from the Federal Channel in order to restore it to its authorized depth of -30 MLLW. These dredging projects are critical to increase the ability to handle additional fishing and cargo vessels, in turn increasing jobs in the fish processing, ship repair and cargo handling operations within the Harbor.

2. ECONOMIC IMPACT OF STATE ENHANCEMENT REMEDY PROCESS

As part of the Economic Impact Analysis of the New Bedford/Fairhaven Harbor conducted by Martin Associates[5], a survey was conducted with 153 maritime service providers, including fish processors, fleet operators, shipyards, and cargo marine terminal operators, to identify the potential

[5] Martin Associate's *2015 Economic Impact of the Port of New Bedford and the New Bedford/Fairhaven Harbor.* July 21, 2016.

economic benefits that could be realized from the Phase V CAD Cell Construction in coordination with the U.S. Army Corps of Engineers Federal Channel Dredging project. The results of the survey indicated that the combined projects would provide additional waterfront access for 64 additional commercial fishing vessels now offloading at neighboring ports; the ability to compete for about 100,000 tons of bulk cargo now handled at marine terminals in Providence, RI that are destined for the New Bedford area and currently trucked to New Bedford; and the addition of new or expanded processing operations and ship repair and maintenance support to accommodate the 64 additional fishing vessels that would supply about 7.5 million pounds of additional landings.

The potential marine cargo throughput and expanded fleet operations, associated processing activity, and fishing vessel support activity were used in the Martin Associates New Bedford/Fairhaven Harbor Economic Impact Model to estimate the annual benefits of the Phase V CAD Cell Construction and the Federal Channel Dredging Project. These annual impacts are summarized in the following table.

Table III-1
Annual Economic Benefits of the Phase V CAD Cell Construction and the Federal Channel Dredging Project

	Total
Jobs	
Direct	463
Induced	302
Indirect	114
TOTAL	**879**
Personal Income (1,000)	
-Direct	$26,190
-Respending/Local Consumption	$35,563
-Indirect	$7,678
Total	**$69,432**
Business Revenue (1,000)	**$286,492**
Local Purchases (1,000)	**$14,625**
State and Local Taxes (1,000)	**$12,511**
Federal Taxes (1,000)	**$30,205**
Related Impacts	
-Jobs	1,343
-Income (1,000)	$44,999
-Output (1,000)	$368,004
-State/Local Taxes (1,000)	$11,755
Federal Taxes (1,000)	$31,746

Based on the analysis conducted by Martin Associates, the Phase V CAD Cell Construction and the U.S. Army Corps of Engineers Channel Dredging Project would generate 879 direct,

induced and indirect jobs, and further support another 1,343 related jobs within the Commonwealth. $286.5 million of new direct business revenue is projected to be generated in the local New Bedford/New Haven Harbor, and $12.5 million annually in state and local tax revenue would be generated.

Given a net cost of $20.7 million to the Commonwealth, and given the state and local tax pay back of $12.5 million annually, the Commonwealth would recoup its $20.7 million net investment in less than two years, while generating more than 870 new jobs in the New Bedford economy and generating an additional $69.4 million in annual wages and re-spending/local consumption impacts to the Commonwealth's economy.

In addition, the project would generate $30.2 million annually in new federal tax revenue. Finally, the Phase V CAD Cell Construction and the U.S.A.C.E. Channel Dredging Project is projected to support another 1,343 jobs with related industries within the Commonwealth, receiving about $45.0 million of personal income. The dredging and deepening projects would also support about $368.0 million of additional output with related industries, along with $11.8 million of state and local taxes and $31.8 million in federal tax revenue. In total, the value of these projects to the Commonwealth is estimated at about $690.1 million in economic value annually.

In 2015, Martin Associates estimated the economic impact of the dredging and deepening program to be about 391 direct jobs, less than this current estimate, but the indirect and induced jobs were greater in 2015 due to greater jobs to sales multipliers for indirect jobs as developed by the U.S. Bureau of Economic Analysis, and slightly reduced income multiplier for the seafood processing industry in Massachusetts, also reported in the updated Bureau of Economic Analysis RIMS II model. The reduction in the income multiplier in turn reflects a greater leakage for out-of-state purchases by the seafood processing industry, primarily reflecting the growth in e-commerce over the past three years. The reduction in jobs generated per dollar of purchases in the Commonwealth reflects improving productivity, as well as the increased use of part-time jobs to fill jobs previously held by full time employees. Finally, the 2018 estimated of the value of the Phase V CAD Cell Construction and the U.S.A.C.E. Channel Dredging Project includes an estimate of the related impacts with firms that would be supported by the additional processing, fishing, ship repair and cargo activity due to the navigational projects.

III. SUMMARY

In conclusion, the Port of New Bedford is a major catalyst of economic activity in the New Bedford region, as well as in the Commonwealth of Massachusetts. The activity in the New Bedford/Fairhaven Harbor supports $11.1 billion of annual economic activity, or about 2 percent of the total state Gross Domestic Product for the Commonwealth. The seafood industry and marine cargo, ferry and marina operations directly and indirectly generate nearly 14,500 jobs in the Commonwealth of Massachusetts and impact another 26,500 related jobs in the seafood supply chain. As demonstrated by the major economic benefits of the New Bedford/Fairhaven Harbor, in order to continue to generate and grow the economic benefits to the Commonwealth, it is critical that the infrastructure within the Harbor is continually maintained and expanded to accommodate the demands of the seafood and maritime activity.