



# IMPACTS of the CONNECTICUT MARITIME INDUSTRY

---

Prepared for Connecticut Port Authority

Prepared by Connecticut Economic Resource Center, Inc.

July 2019



Connecticut  
Economic  
Resource Center

*Collaboration at Work*

The Connecticut Economic Resource Center, Inc. (CERC) is a nonprofit corporation and public-private partnership that drives economic development in Connecticut by providing research-based data, planning and implementation strategies to foster business formation, recruitment and growth. CERC has proven and relevant expertise providing clients with the knowledge and insight they need to gain a competitive advantage. CERC is a pioneer in the development of programs, technologies and capabilities to support effective economic development and offers a complete range of services from economic impact analysis, strategic planning, data gathering and communications, to outreach, site selection and business assistance. CERC has earned a reputation for excellence in Connecticut's economic development community through our accomplished, professional staff, commitment to customer service, and connection to a network of strategic partners.

# TABLE OF CONTENTS

---

- Introduction ..... 3**
  - Structure of Report ..... 5
- Chapter 1 – An Overview of Connecticut’s Ports ..... 8**
  - Connecticut Port Authority ..... 9
  - Municipal Port Authorities and Their Operations .....11
  - Conclusion .....13
- Chapter 2 – The Impact of the Commodities Moving Through Connecticut Ports and Stamford Harbor on Output and Employment ..... 14**
  - Commodities Moving through Connecticut’s Ports and Stamford Harbor .....15
  - The Impacts of the Commodities Moving Through Connecticut’s Ports and Stamford Harbor .....20
  - Conclusion .....26
- Chapter 3 – The Impact of Connecticut Ports’ Maritime Activities on Output and Employment ..... 27**
  - Businesses and Employment in Port Districts.....28
  - The Impacts of Connecticut’s Ports and Port Districts .....31
  - Conclusion .....37
- Chapter 4 – The Impact of Government Maritime Activities in Connecticut on Output and Employment ..... 38**
  - The Components of Connecticut’s Government Maritime Activities.....39
  - The Impacts of Government Maritime Activities in Connecticut .....48
  - Conclusion .....52
- Chapter 5 – The Impact of Business and Nonprofit Maritime Activities in Connecticut on Output and Employment..... 53**
  - The Components of Connecticut’s Business and Nonprofit Maritime Activities.....54
  - The Impacts of Business and Nonprofit Maritime Activities in Connecticut .....66
  - Conclusion .....70
- Chapter 6 – The Impact of Recreation and Tourism Maritime Activities in Connecticut on Output and Employment..... 71**
  - The Components of Connecticut’s Recreation and Tourism Maritime Activities .....71



The Impacts of Recreation and Tourism Maritime Activities in Connecticut.....	76
Conclusion .....	80
<b>Appendix A – Data Sources.....</b>	<b>81</b>
Interviews and/or Data Providers.....	81
Data Collection Process by Chapter.....	82
<b>Appendix B – Overview of IMPLAN Methodology and Glossary of Terms.....</b>	<b>91</b>
IMPLAN Modeling.....	91
Glossary of Impact Analysis Terms .....	94
<b>Appendix C – Maps of Port Districts.....</b>	<b>96</b>
<b>Appendix D – The Impact of Non-Maritime Employers in Connecticut Port Districts on Output and Employment.....</b>	<b>99</b>
The Non-Maritime Components of Connecticut’s Port Districts .....	99
The Impacts of Non-Maritime Employers in Connecticut’s Port Districts .....	101
Conclusion .....	105
<b>Appendix E – Literature Review of Connecticut Maritime Impact Analyses.....</b>	<b>106</b>
Comprehensive Maritime Industry Studies.....	106
Partial Studies of Maritime Industry.....	112
Conclusion .....	113

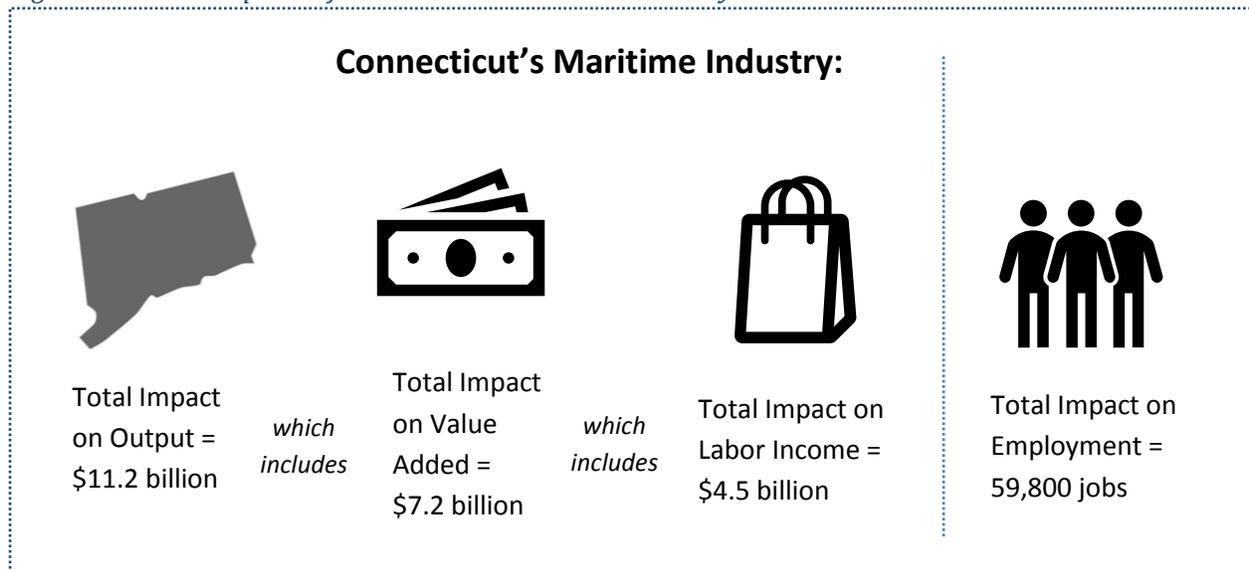
# Introduction

Connecticut’s maritime industry is an essential driver of the state’s economy and has been for over three centuries. Today the maritime industry in Connecticut creates an estimated annual impact of more than \$11 billion dollars in output and supports nearly 60,000 jobs (Figure I.1).<sup>1</sup> This study examines this total impact as it originates across the complete spectrum of maritime industry activities in the state and then ripples out into all sectors of the state’s economy. This spectrum is divided into five categories that are studied in this report. These categories are:

*For this report, a “maritime activity” is defined as a water-related activity connected to, on or near a navigable waterway. In Connecticut, these waterways include both Long Island Sound and the Connecticut River.*

1. Economic maritime activities generated in the three deepwater port districts;
2. Commodities moving through the deepwater ports and Stamford Harbor;
3. Federal, state, and local government maritime activities;
4. Maritime activities of for-profit businesses and nonprofit organizations; and
5. Maritime-related recreation and tourism.

Figure I.1: Total Impacts of Connecticut’s Maritime Industry



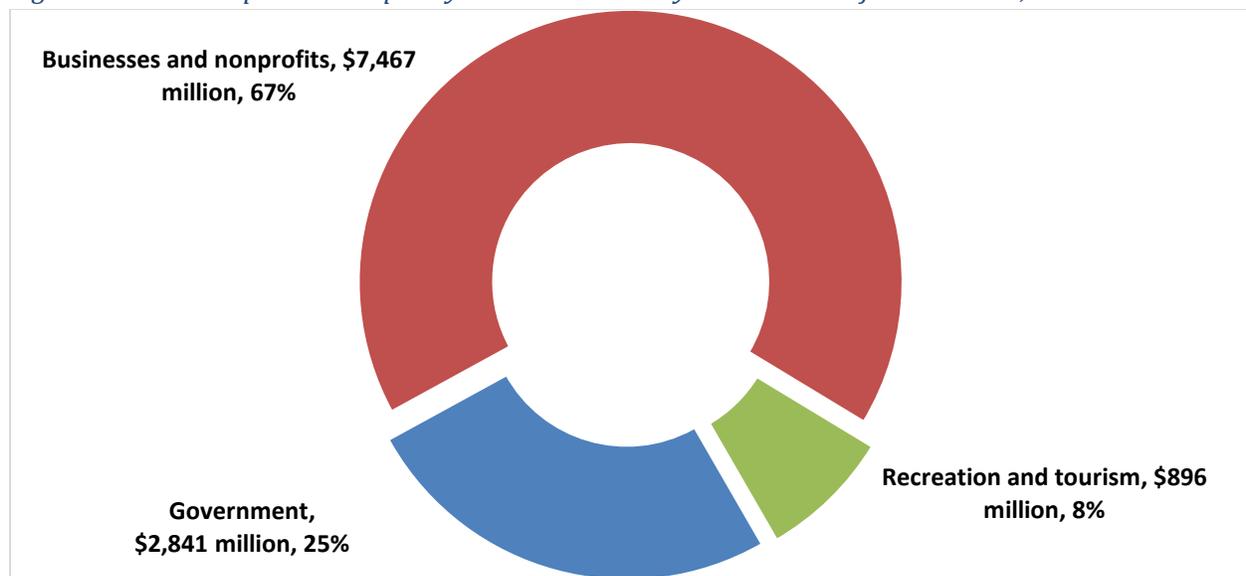
This analysis identified 37,100 jobs and \$8.8 billion in total annual sales and government expenditures related to maritime industries. Through this initial activity, the maritime industry in Connecticut generates a total impact on output of \$11.2 billion and almost 59,800 jobs. This estimated impact includes \$7.2 billion in value added, which is new wealth that accrues to the state

<sup>1</sup> All dollars in this report are in 2018 values, unless otherwise noted.

due to maritime-related activity. Over \$4.5 billion of this wealth is labor income going to Connecticut residents.

Of the total estimated impact on output in Connecticut in 2017, the largest share (\$7.5 billion) was generated by the maritime-related activities of for-profit businesses and nonprofit organizations (Figure I.2).<sup>2</sup> These activities range from ship and boat builders to insurance firms to maritime heritage attractions across the state. This share also includes impacts from maritime-related businesses and nonprofits in the deepwater port districts, which was estimated at \$1.3 billion. The second largest share (\$2.8 billion) was generated by the federal, state, and local governments in Connecticut as they protect, regulate, and provide maritime-related services on and near Long Island Sound (LIS) and the Connecticut River. The remaining share is based on recreation and tourism activities (\$896 million).

*Figure I.2: Total Impact on Output by Maritime Industry on the State of Connecticut, 2017*

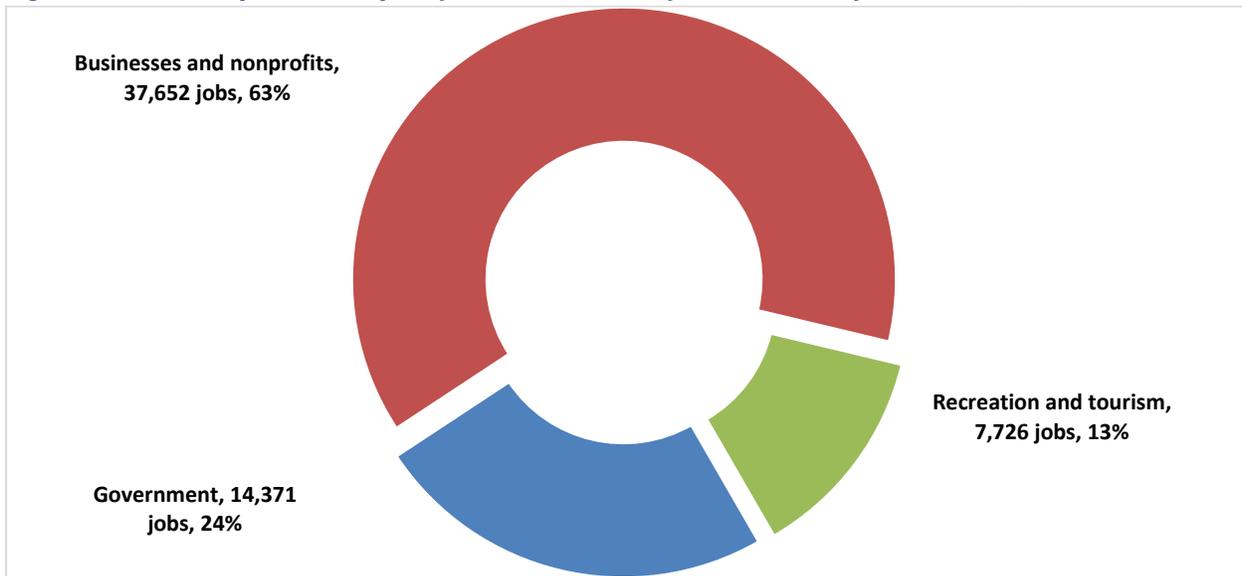


As with the impacts on output, the largest share of impact on employment was due to the maritime activities of for-profit businesses and nonprofit organizations (Figure I.3). These businesses and organizations supported more than 37,600 jobs. Government maritime activities generated almost 14,400 total jobs, and spending on recreation and tourism supported more than 7,700 jobs.

---

<sup>2</sup> Impacts presented in the Executive Summary have been adjusted to compensate for double-counting of direct, indirect, and induced impacts due to government, business, and nonprofit maritime activities. Therefore, amounts presented here do not match amounts presented in Chapters 2 to 6. To avoid double-counting, the impacts presented in chapters should not be totaled by the reader. More information about data used for this analysis is in Appendix A, while information on the impact analysis methodology, the IMPLAN models used in this report, and these double-counting adjustments is available in Appendix B.

Figure I.3: Total Impact on Output by Maritime Industry on the State of Connecticut, 2017



In addition to these impacts, the production and sales associated with the commodities that move through the three deepwater ports and Stamford Harbor generated an estimated impact of \$6.5 billion in 2016. While these impacts cannot be directly attributed to the ports and harbors, since the commodities could have entered or left the state via other means, this impact is associated with the state's maritime economy because these commodities were transported using the state's waters. The activity associated with these commodities also generated a total impact on employment estimated at over 35,000 jobs in 2016.

## Structure of Report

As this report shows, Connecticut's maritime industry is extensive and ranges across industries and municipalities. Some parts of the industry, such as ship and boat building spurred by national defense spending, are thriving and are expected to continue growing in the future; other parts of the industry, such as commodity traffic through the three deepwater ports, have declined in recent years and their future is uncertain. This report has been developed to present the baseline impacts from the Connecticut maritime industry on the state's economy in an average year. It therefore does not include the impacts of special, one-time, or irregular events.

The chapters in this report provide an overview of Connecticut's maritime industry. First, a component of the maritime industry is explored, then the impacts associated with that component are presented.<sup>3</sup> Briefly, the chapters in this report are as follows:

---

<sup>3</sup> Readers should not add the impacts from the chapters together to avoid double-counting of estimated effects.



**Chapter 1 – An Introduction to Connecticut’s Ports.** Connecticut’s three deepwater ports are each managed by a local port authority that works with the statewide Connecticut Port Authority (CPA) to promote public and private development. The three ports differ substantially from one another in both size of the official port district (which affects the number and types of jobs generated at the ports) as well as in the commodities traffic that moves through the ports. This chapter introduces the ports and the CPA.



**Chapter 2 – The Impact of the Commodities Moving through Connecticut’s Ports and Stamford Harbor.** The goods that move through Connecticut’s deepwater ports and Stamford Harbor are made in the state, used in production in the state, and/or sold throughout the state. While the impacts of these commodities are not directly attributable to the ports, the number of jobs and amount of state output that results from production or sale of the commodities does contribute to the state’s economy.



**Chapter 3 – The Impact of Connecticut Ports’ Maritime Activities.** Each of Connecticut’s three deepwater ports operates within a local port district and is overseen by a local port authority. This chapter examines the impact of maritime activities in the port districts.<sup>4</sup>



**Chapter 4 – The Impact of Government Maritime Activities in Connecticut.** Local, state and federal governments all have maritime-related programs and staffs, which contribute to safety on the waterways, protection of the resources, attractions for residents and visitors, and education for the next generation of maritime industry workers. This chapter examines the impact of maritime activities by the local, state, and federal governments in Connecticut.



**Chapter 5 – The Impact of Business and Nonprofit Maritime Activities in Connecticut.** Connecticut has a range of businesses and nonprofit organizations working on maritime activities. Some of these private sector employers work directly in the maritime industry, such as moving goods through the deepwater ports, piloting fishing charters or scenic ferry rides, or building part of the nation’s nuclear submarine defense. Other businesses and nonprofits have maritime-related activities among their wider work, such as retail chains that sell fishing supplies among their other products or architectural firms that design maritime facilities for private households (e.g., docks) or large maritime infrastructure projects. This chapter examines the impact of maritime activities by for-profit businesses and nonprofit organizations in Connecticut.

---

<sup>4</sup> Appendix D examines the impact of non-maritime businesses in the port districts.



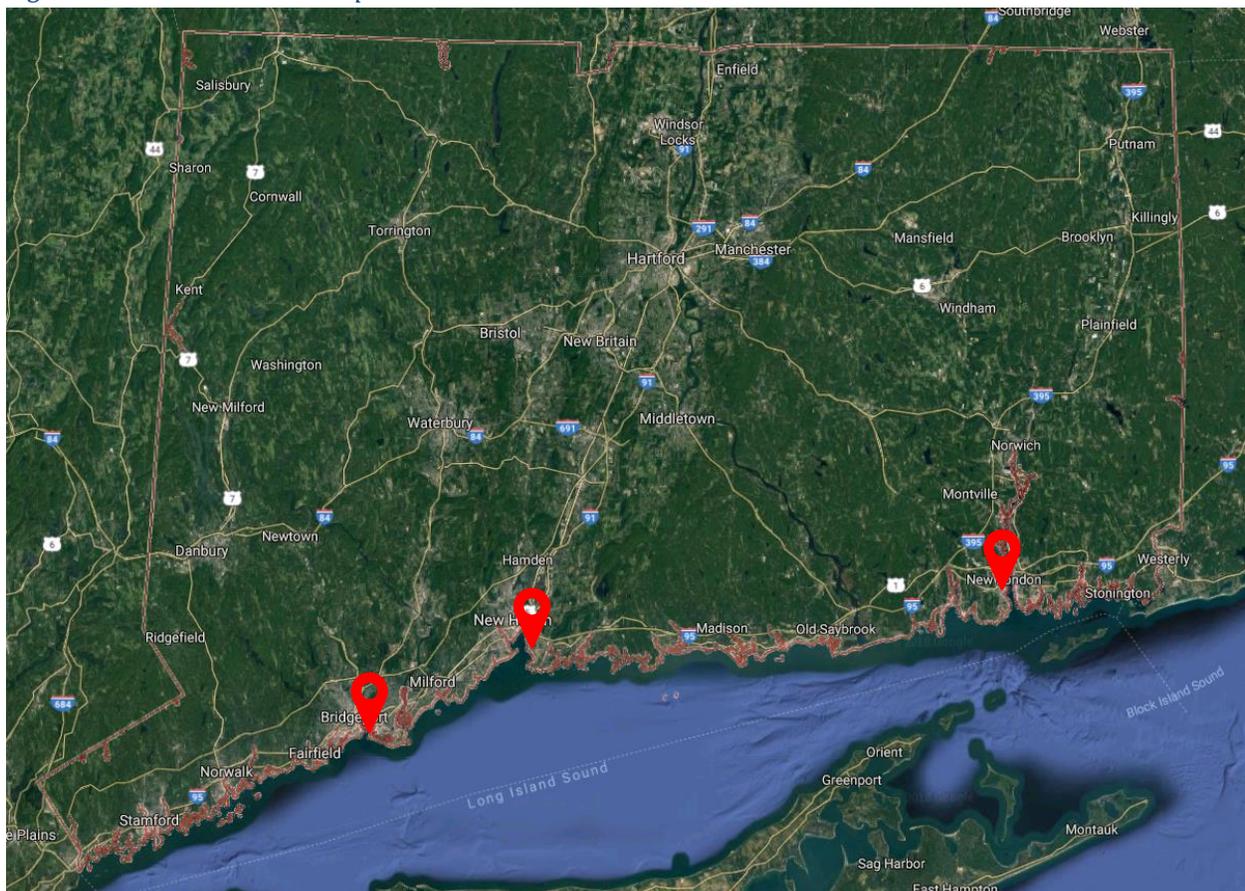
## **Chapter 6 – The Impact of Recreation and Tourism Maritime Activities in**

**Connecticut.** The final component of the state’s maritime industry examined in this analysis is the recreation and tourism opportunities offered on LIS and the Connecticut River. These activities bring in tourists from other states and countries, extend the stay of visitors attending other, non-maritime attractions, and provide Connecticut residents with opportunities for in-state recreation and tourism, rather than going out-of-state. This chapter explores the impact of spending by visitors on recreation and tourism maritime activities in Connecticut.

# CHAPTER 1 – AN OVERVIEW OF CONNECTICUT’S PORTS

Connecticut has three deepwater ports in Bridgeport, New Haven and New London that handle imports and exports of goods and some intra-U.S. trade as well (Figure 1.1).<sup>5</sup> While not as well-trafficked or as large as the nearby ports in New York, New Jersey and Massachusetts, Connecticut’s ports are long-standing institutions in their host cities and neighboring communities, and they address unique needs for the state and the nation. Connecticut’s ports contribute jobs both at the ports themselves and also through the larger logistics, warehousing, transportation, and other industries that move the goods to and from ships to other businesses and consumers throughout the state and the wider region. In addition, employees at the ports purchase goods and services in the state with their labor earnings, which creates a ripple effect in the wider economy.

Figure 1.1: Connecticut’s Deepwater Ports



Source: Imagery ©2018 Google.

<sup>5</sup> Domestic trade also moves through the harbor at Stamford. This trade is discussed in the next chapter.

This chapter provides an introduction to the Connecticut Port Authority (CPA) and to Connecticut's three deepwater ports. It reviews the similarities and differences among the three ports, which drive the types of commodities that move through the ports and the other maritime activities at the ports. The similarities and differences among these characteristics affect the economic impacts of the three ports, which are discussed in the next two chapters.

## Connecticut Port Authority

The Connecticut Port Authority (CPA) was established through legislation by the state General Assembly in 2014. Prior to this legislation, state oversight of the ports occurred through the Connecticut Department of Transportation Bureau of Public Transportation. The CPA was designed to work in cooperation with the local port authorities in Bridgeport, New Haven, and New London to promote public and private development. The CPA also supports the overall maritime economy in the state, serving as the principal maritime advisor for the governor and coordinating Connecticut maritime policy and strategy. The CPA is a small quasi-public agency that, in 2017, had two employees, State employees on-loan from other agencies, and other contract workers or consultants.

In 2018, the CPA launched its first Connecticut Maritime Strategy, which outlined eight strategic objectives concerning the state's marine assets. These objectives were identified to help guide investment and resources to further develop and strengthen the state's maritime economy through 2023. The eight objectives are:

1. Manage the State Pier to Increase Utilization and Profitability;
2. Build More Volume in Our Commercial Ports;
3. Support Dredging of Connecticut's Ports and Waterways;
4. Support Small Harbor Improvement Projects Program (SHIPP);
5. Create Intermodal Options;
6. Leverage Emerging Opportunities;
7. Enhance Ferry Systems and Cruise Coordination Activities; and
8. Ensure Future Support of the CPA.<sup>6</sup>

### *Maintaining Waterway Navigability*

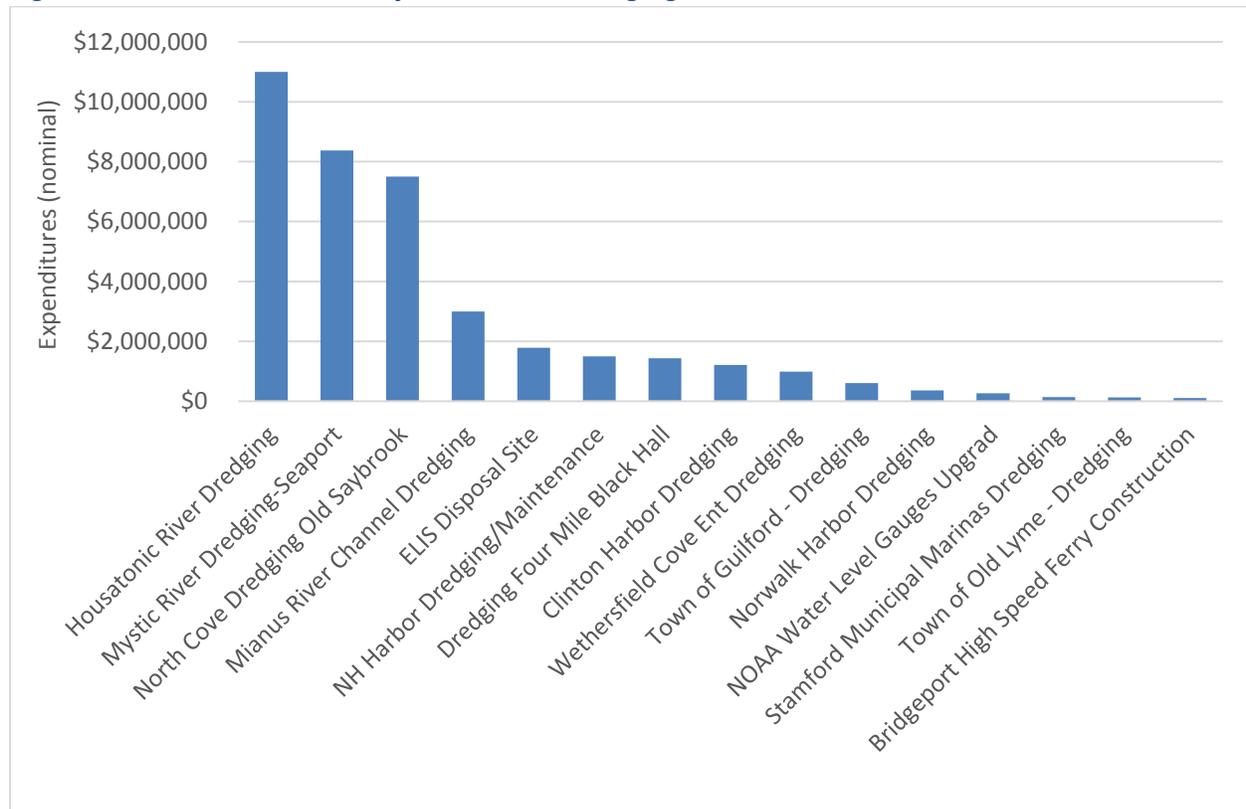
In addition to its overall strategic and economic development tasks, the CPA manages funds for or provides oversight of dredging projects across the state (Figure 1.2), principally through state bond funds. Dredging of the state's shoreline along Long Island Sound and on rivers and smaller inland bodies of water is done in concert with the U.S. Army Corps of Engineers (USACE). The state has a strong relationship with USACE with respect to the dredging process, and the state

---

<sup>6</sup> The maritime strategy is available at <https://ctportauthority.com/wp-content/uploads/2018/09/Connecticut-Maritime-Strategy-2018.pdf>.

completes pre-project work (such as environmental studies) and funds dredging while the USACE is responsible for conducting the work.

Figure 1.2: Connecticut State Expenditures on Dredging, Fiscal 2011-2016



Source: Connecticut Port Authority.

The impact of the dredging overseen by the CPA in conjunction with USACE staff and local Connecticut governments has significant value and costs associated with it but, because most of the actual dredging work is conducted by national firms, there is little economic impact on Connecticut from the dredging itself. This is because most of the economic activity for the dredging work is associated with per diem worker expenditure and office and hotel rentals.

The impact of dredging operations is more accurately felt in the increased commerce that is possible after dredging is conducted or, negatively, in the loss of activity when dredging is not conducted.<sup>7</sup> USACE is currently in the initial planning stages for a major dredging operation in the Port of New Haven, with benefits expected to result from the use of larger vessels with more goods through the port.<sup>8</sup> The Port of Bridgeport, meanwhile, has not been significantly dredged since

<sup>7</sup> The CPA plans to measure these alternative impacts in a future study.

<sup>8</sup> These benefits are part of the business case to support this dredging, and such business cases are required by USACE before a dredging project.

1969, and the build-up of silt and related navigation problems has been one of the major factors leading to decreased commodity volumes through that port, especially considering the trend toward use of bigger ships in international trade. For smaller harbors and waterways, dredging maintains access to docks, marinas, and other facilities utilized by town residents and out-of-town visitors (the impacts of which are discussed in detail in Chapter 6), and a lack of dredging would limit access to these attractions and decrease output and employment in the state and locally. Dredging also has other benefits to the state, including the use of dredged materials in enhancing state assets. As an example, sand dredged from the Housatonic River was moved to Hammonasset State Park to counter the effects of beach erosion there.

## Municipal Port Authorities and Their Operations

The three deepwater ports are overseen by local port authorities established by the local governments under state law. These local authorities operate as quasi-public agencies to oversee the local ports within port districts, also determined by the local governments following state legislation, and have one part-time employee or contractor each. All three port districts have nearby highway access, while the ports of New Haven and New London also have railroad connections on site. There are also extensive aquaculture and commercial fishing operations off the entire Connecticut Long Island Sound shoreline. As discussed below, however, the three local port districts also differ substantially from one another (Figure 1.3 and Figure 1.4)<sup>9</sup>

*Figure 1.3: Satellite Views of Bridgeport, New Haven and New London (Left to right)*



Source: Imagery ©2018 Google.

---

<sup>9</sup> Maps of the local port districts are available in Appendix C.

Figure 1.4: View of Some Operations at Bridgeport, New Haven and New London (Left to right)



Source: CERC.

### Bridgeport

The Bridgeport port district is physically the largest of the three. It captures much of the shoreline on the many waterways branching off Bridgeport harbor and some of the city's downtown. The Bridgeport port district includes employers covering a range of industrial and commercial activities, along with government offices and residential single- and multi-family homes.<sup>10</sup>

The Port of Bridgeport primarily handles domestic commodity traffic, or goods moving between Connecticut and another state. The port also handles a small amount of foreign trade, and this trade has declined significantly in recent years. Some of this decline is attributable to the lack of dredging discussed earlier, which limits the size of ships that can move into the port, even as other states invested in their ports through economic incentives and infrastructure, which drew cargo traffic to those ports from Bridgeport. A prime example of this is importation of bananas, which moved from Bridgeport to the Port of Philadelphia in 2009. Also located at the port is the Bridgeport & Port Jefferson Steamboat Company, which moves passengers and cars between the city and Long Island, New York.<sup>11</sup>

### New Haven

The New Haven port district consists almost entirely of commercial and industrial operations, with a significant portion of the district used for non-maritime functions. The Port of New Haven's district has seven terminals for port operations and includes the Buckeye Pipeline, which transports jet fuel to Bradley International Airport and to the Massachusetts Air National Guard.

Of the three deepwater ports, the Port of New Haven handles the most domestic and international commodity traffic in the state. The commodities imported through New Haven include petroleum, chemical products, and sand and gravel, while steel scrap is exported from the port. As

---

<sup>10</sup> This impact analysis does not include the impacts of residential properties. These properties produce fiscal impacts for the local or state government through, for example, property or income taxes, but the economic impacts are minor.

<sup>11</sup> The Bridgeport & Port Jefferson Steamboat Company is discussed in more detail in Chapter 3.

noted above, USACE is currently in the planning stages for a major dredging project at the Port of New Haven, with the goal to increase the commodity traffic through the port.

### *New London*

The New London port district is approximately one block wide along the city's entire waterfront and includes a significant number of single-family residences. The primary commercial activity in the port district occurs on one pier for commodity traffic, which is known as "State Pier," and on several piers for recreational use. The port district also includes U.S. Coast Guard (USCG) facilities, including the U.S. Coast Guard Academy (USCGA), which creates most of the employment in the port district. There are also several passenger ferries operating out of New London, transporting passengers and cargo between Connecticut and Long Island, Block Island, Rhode Island, and Fishers Island, New York.<sup>12</sup>

The Port of New London handles both domestic and foreign commodity traffic. Goods moved through the port include petroleum products, wood and lumber, salt, and steel products. The port also has the potential to serve as the installation harbor for new North Atlantic wind turbine operations, as it is one of the only deepwater ports in the northeastern United States that lacks overhead obstructions. The CPA is currently working with state agencies, the new State Pier operator, and other partners on redevelopment of the pier to support offshore wind operations. Bringing this industry to the Port of New London may also result in more businesses and employment in the wind energy supply chain in southeastern Connecticut.

## **Conclusion**

The local and state port authorities provide for overall coordination of economic development for the specialized businesses in these cities, focusing attention on the issues facing the operators in these districts and coordinating efforts for their improvement, creating unofficial "maritime clusters" at the three ports. The impacts of the local port authorities and dredging operations should therefore be considered as long-term investments by the state and local governments. This investment through the port authorities reshapes the abilities of the ports and the companies in them to handle trade and passenger traffic. This type of investment is an important impact to study but beyond the scope of this specific analysis.

---

<sup>12</sup> More information on these ferries is available in Chapter 3.

## CHAPTER 2 – THE IMPACT OF THE COMMODITIES MOVING THROUGH CONNECTICUT PORTS AND STAMFORD HARBOR ON OUTPUT AND EMPLOYMENT

---

The commodities coming through the state’s ports and harbors impact the state’s economy in a number of ways. In addition to the impacts from products that originate in or are used in Connecticut, products that just move through the state from the ports create an impact through the transportation-related activity. For example, wood products imported through the ports are used in a multitude of final products including home and building construction in Connecticut (and in the wider region), while petroleum products are used by consumers ranging from airlines at Bradley International Airport and the Massachusetts Air National Guard to residential households and businesses using heating oil.

The impacts associated with the companies that handle these commodities and are located in the deepwater port districts are discussed in Chapter 3, while the impacts associated with companies located outside the port districts who are transporting or storing the commodities or otherwise involved with related logistics are discussed in Chapter 5.

This chapter estimates the impacts of the full value of these commodities on output, employment, and value added in Connecticut as the commodities are used in production or final demand. These estimates are based on three years of commodity data and the share of import commodities that stay in Connecticut for further production or are distributed to final demand in Connecticut and the share of exported commodities that originate in the state.<sup>13</sup> These impacts cannot be directly attributed to the ports and harbors, since the commodities could have entered or left the state via other means (e.g., truck or rail); however, because these commodities are transported using the state’s ports and waters, the impacts analyzed in this chapter are associated with the state’s maritime economy.

The key findings in this chapter are:

- Connecticut’s deepwater ports handled 2.8 million tons of imports and exports in 2017, a slight increase from 2016 and after several years of decline. The value of these goods was over \$1.1 billion.

---

<sup>13</sup> States for final production, final demand, or origination are based on U.S. Census definitions of those terms, which relate to the first location of imports after the port of entry and the final location of exports prior to shipment. Estimates of the Connecticut share of imports and exports were provided by WISERTrade Foreign Trade Database.

- The total impact on output in the State of Connecticut by commodities entering through or leaving from the state’s deepwater ports and Stamford Harbor in 2016 was estimated as \$7.1 billion.
  - Most of this impact was due to goods moving into or out of Connecticut from or to other states. This domestic trade generated an estimated \$5.9 billion in total impacts on output, or 82.8% of the impact of total trade in that year. International imports and exports generated \$1.2 billion in impact in 2016 (17.2% of overall impact).
  - New Haven, which handles the largest volume of commodities among the three ports, produced the largest share of total impact (\$6.0 billion) in 2016.
- Movement, production, use or sale of these commodities generated a total impact on employment estimated at over 40,600 jobs in 2016.

### **Commodities Moving through Connecticut’s Ports and Stamford Harbor**

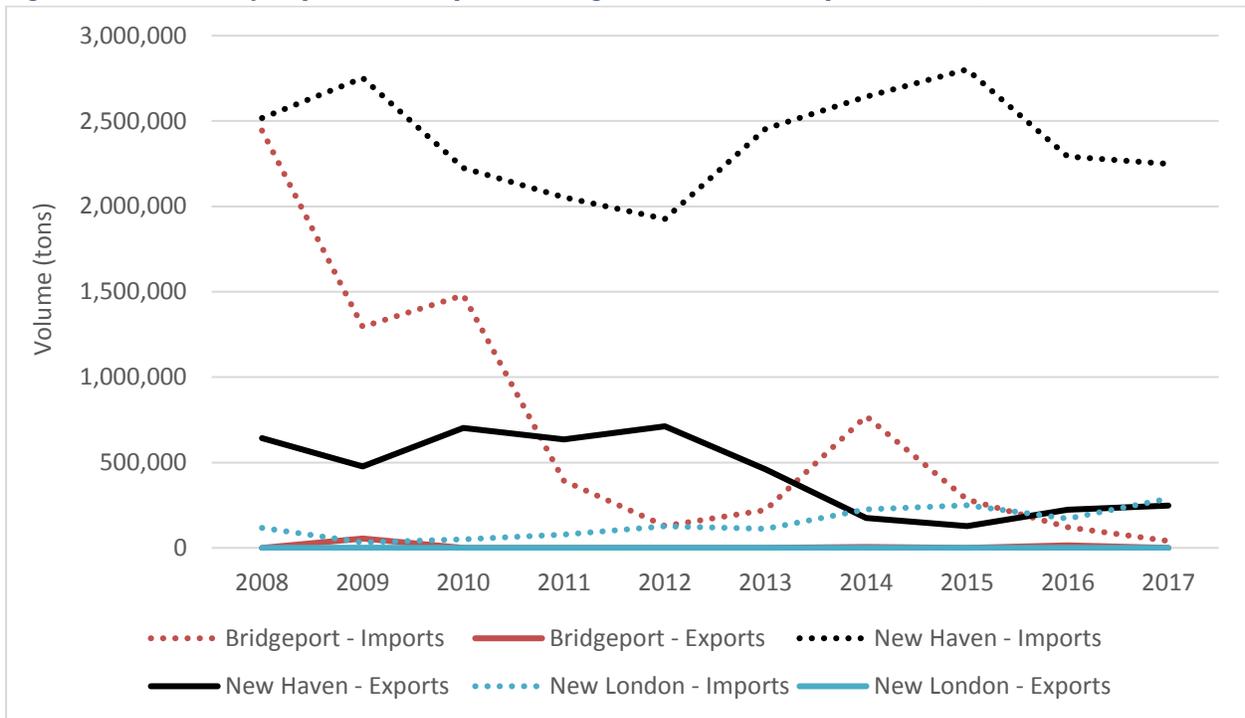
In 2017, over 2.5 million tons of imports and 247,000 tons of exports moved through Connecticut’s three deepwater ports (Figure 2.1).<sup>14</sup> The value of these commodities was over \$1.1 billion (Figure 2.2). Most of the international trade through Connecticut’s deepwater ports was through the Port of New Haven, with this port handling 87% of imports by volume and almost all exports by volume in 2017. Imports included petroleum products, such as home heating oil, gasoline, kerosene, diesel, and jet fuels along with salt, steel, and other products. New London handled 11% of imports by volume in 2017, and Bridgeport handled the remainder. Over the last ten years, imports through Connecticut’s deepwater ports have declined 49% by volume (47% by value), while exports have dropped 62% by volume (81% by value).<sup>15</sup>

---

<sup>14</sup> Data presented in this section are for volume and value of trade going through vessel, or seaborne, ports. While there are no international cargo airports in Bridgeport, New Haven or New London, there is some trade moving by air or other methods through these ports according to both U.S. Census Bureau and WISERTrade data. This data is not included in this analysis.

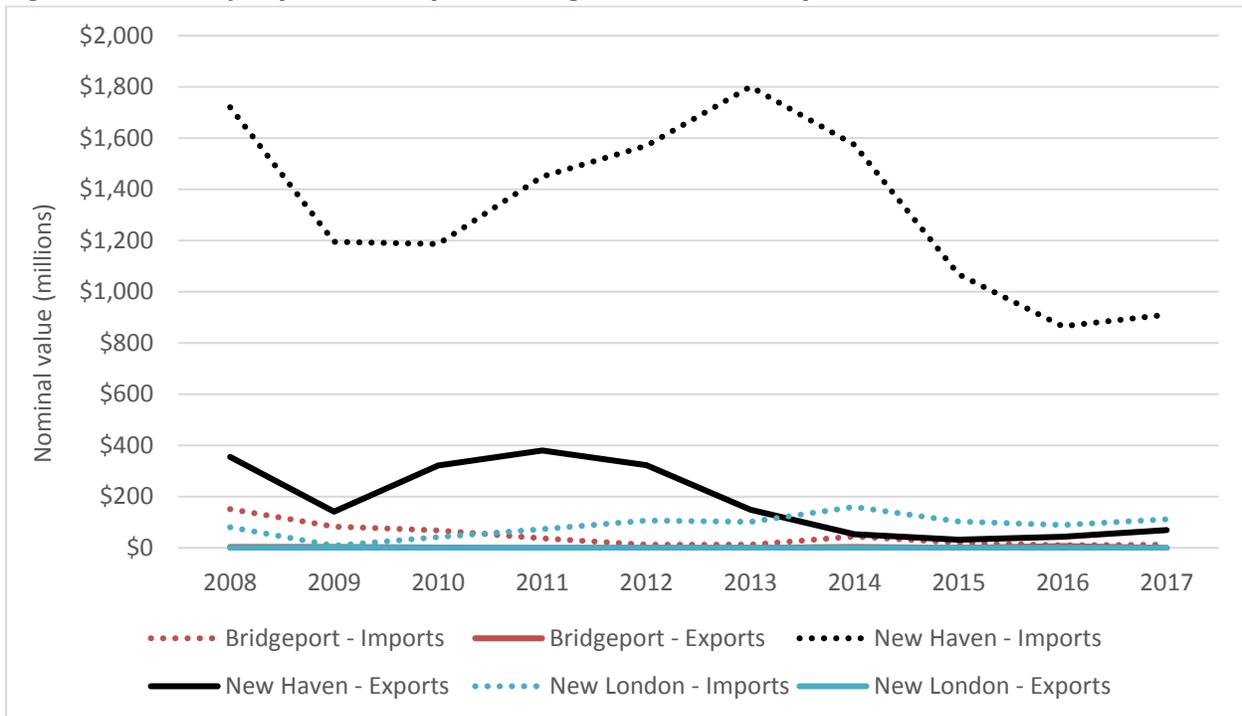
<sup>15</sup> Source: U.S. Census Bureau, USA Trade Online and CERC calculations.

Figure 2.1: Volume of Imports and Exports through Connecticut Deepwater Ports, 2008-2017



Source: U.S. Census Bureau, USA Trade Online; CERC calculations.

Figure 2.2: Value of Imports and Exports through Connecticut Deepwater Ports, 2008-2017



Source: U.S. Census Bureau, USA Trade Online; CERC calculations.

Imports and exports through Connecticut’s deepwater ports are largely of bulk and break-bulk commodities,<sup>16</sup> with iron and steel, petroleum products, and salt and related products comprising the largest categories (Table 2.1). This provides a competitive advantage to the state’s ports, since ports in nearby states largely focus on containerized cargo. The movement of goods to and from the ports involves multi-modal connections to highways for all ports as well as rail connections in New Haven and New London. There is also a petroleum pipeline from the Port of New Haven to Bradley International Airport and the Massachusetts Air National Guard facility in Westover, MA.

<sup>16</sup> Break bulk goods are those commodities transported individually, often on pallets or crates or in bags or bundles. The steel and wood products that move through Connecticut’s ports are examples of break bulk commodities. Bulk goods are usually transported loose, within the hold of a ship, and include commodities such as petroleum products, salt, and grains.

*Table 2.1: Import and Export Commodities Through Connecticut Deepwater Ports, 2017*

<b>Commodity</b>	<b>Volume (tons)</b>	<b>Value</b>
<b>Imports</b>		
Mineral Fuel, Oil Etc.; Bitumen Subst.; Mineral Wax	1,662,363	\$786,880,755
Salt; Sulfur; Earth & Stone; Lime & Cement Plaster	521,346	\$13,495,811
Iron and Steel	348,358	\$198,247,393
Miscellaneous Chemical Products	18,630	\$13,802,739
Articles of Iron or Steel	17,556	\$14,269,499
Wood and Articles of Wood; Wood Charcoal	8,984	\$5,109,334
Industrial Machinery, Including Computers	160	\$1,886,414
Ships, Boats and Floating Structures	96	\$1,448,932
Prep Cereal, Flour, Starch or Milk; Bakers Wares	13	\$33,462
<b>Exports</b>		
Iron and Steel	199,772	\$49,743,153
Mineral Fuel, Oil Etc.; Bitumen Subst.; Mineral Wax	46,338	\$18,846,572
Animal or Vegetable Fats, Oils Etc. & Waxes	978	\$524,600
Miscellaneous Chemical Products	132	\$66,198
Industrial Machinery, Including Computers	53	\$24,000
Impregnated Etc. Text Fabrics; Tex Art for Industry	8	\$127,205
Vehicles, Except Railway or Tramway, And Parts Etc.	4	\$25,155
Optic, Photo Etc., Medic or Surgical Instruments Etc.	1	\$16,786

Source: WISERTrade Foreign Trade Database and CERC calculations.

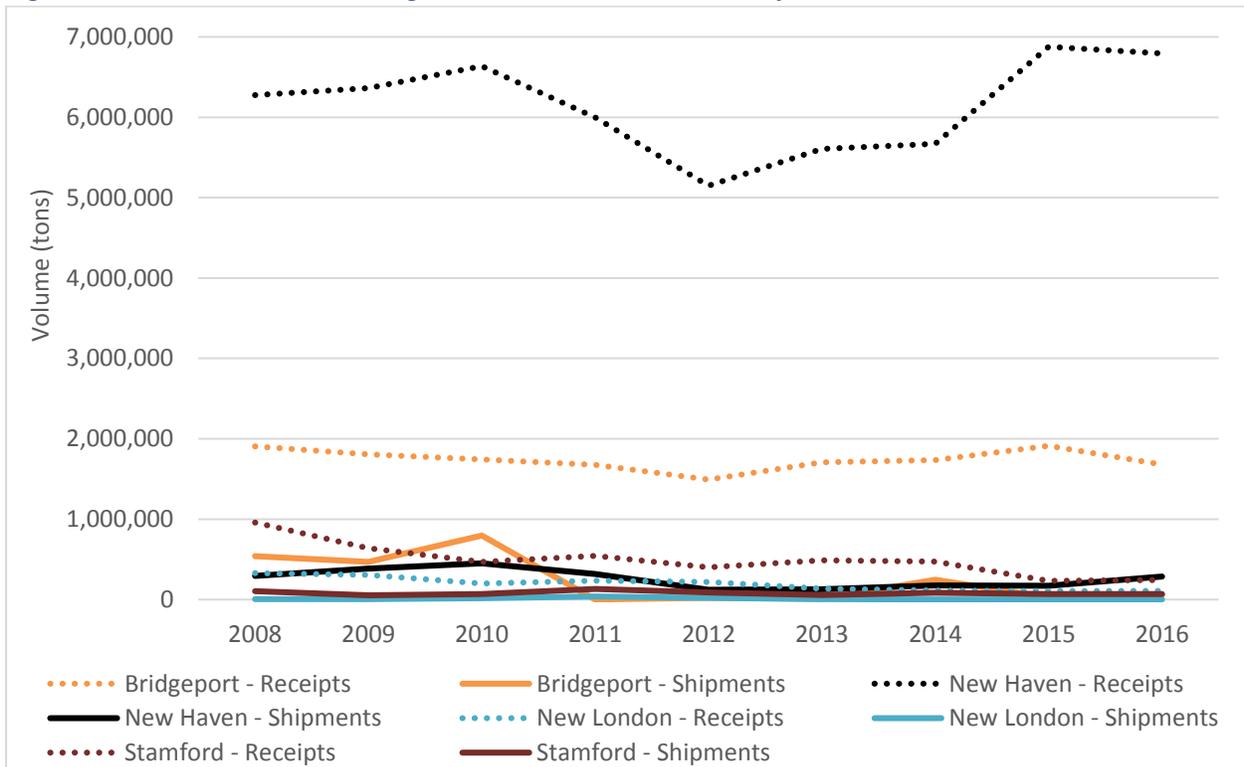
### *Domestic Trade through Connecticut's Deepwater Ports and Stamford Harbor*

The ports of Bridgeport, New Haven, and New London handle shipments of commodities domestically, or the movement of goods within the United States, and this trade is much larger by volume than the foreign traffic through the ports (Figure 2.3). Together with Stamford Harbor,<sup>17</sup> the ports handled over 9.2 million tons of domestic commodities in 2016,<sup>18</sup> or three times more than the foreign trade through the three deepwater ports. There has been an increase in the amount of domestic trade overall through these harbors in recent years, although there was a slight decline from 2015 to 2016. Most of the domestic trade has been through the Port of New Haven. Both New Haven and Bridgeport have seen increases in the volume of commodities moving domestically, while New London and Stamford have seen decreases over the last five years. In 2016, much of the domestic traffic through Connecticut's ports was gasoline, kerosene, and fuel oils, followed by sand and gravel as well as iron and steel scrap (Table 2.2).

<sup>17</sup> The Stamford Harbor is not the first or last stop for commodities imported to or exported from the United States to other countries, therefore all trade in Stamford is considered domestic trade.

<sup>18</sup> Data from 2016 was the most recent data available on domestic commodity flows at the time of the writing of this chapter.

Figure 2.3: Domestic Trade through Connecticut Ports and Stamford Harbor, 2008-2016<sup>19</sup>



Source: U.S. Army Corps of Engineers Navigation Data Center; CERC calculations.

<sup>19</sup> “Receipts” refers to inbound domestic traffic, and “shipments” refers to outbound domestic traffic.

Table 2.2: Domestic Commodities Through Connecticut Deepwater Ports and Stamford Harbor, 2016

Commodity	Volume (tons)
<b>Receipts</b>	
Gasoline	3,970,879
Distillate Fuel Oil	1,911,160
Residual Fuel Oil	1,111,255
Sand & Gravel	831,533
Alcohols	619,480
Kerosene	284,730
Asphalt, Tar & Pitch	135,800
Cement & Concrete	102,444
Coal & Lignite	70,850
Building Stone	13,200
Fab. Metal Products	8,613
<b>Shipments</b>	
Iron & Steel Scrap	217,672
Distillate Fuel Oil	78,014
Gasoline	54,789
Coal & Lignite	46,525
Residual Fuel Oil	9,541
Cement & Concrete	8,273
Fab. Metal Products	1,794

Source: U.S. Army Corps of Engineers Navigation Data Center; CERC calculations.

## The Impacts of the Commodities Moving Through Connecticut's Ports and Stamford Harbor<sup>20</sup>

The total impact of the economic activity in Connecticut generated by the commodities coming into or leaving from Connecticut's ports and harbors on output was an estimated \$7.136 billion in 2016 (Table 2.3).<sup>21</sup> This total impact on output in Connecticut in 2016 includes:

- Direct effects of \$3.731 billion, which represent the change in sales and inventories in the state that results from the commodity traffic through the ports and harbor;
- Indirect effects of \$1.257 billion, which results from the increased production by other companies in the state due to purchases by producers of the identified commodities; and
- Induced effects of \$2.149 billion, which results as labor income received by workers in companies using the commodities and as the indirect effects ripple through the state's economy as household spending.

<sup>20</sup> See Appendix B for more information about the impact analysis methodology and a glossary of terms.

<sup>21</sup> See Appendix A for more information about the data used in this section.

*Table 2.3: Impact on Output, Employment, and Value Added of Commodities Moving through Connecticut Ports and Harbors by Type of Effect, 2014-2016*

	Output (Mil 2018 \$)			Employment			Value Added (Mil 2018 \$)		
	2014	2015	2016	2014	2015	2016	2014	2015	2016
<b>Total</b>	<b>\$8,037</b>	<b>\$7,324</b>	<b>\$7,136</b>	<b>46,540</b>	<b>42,299</b>	<b>40,644</b>	<b>\$4,599</b>	<b>\$4,171</b>	<b>\$4,040</b>
Direct	\$4,193	\$3,808	\$3,731	22,671	20,473	19,545	\$2,110	\$1,895	\$1,838
Indirect	\$1,414	\$1,293	\$1,257	7,144	6,522	6,311	\$870	\$795	\$771
Induced	\$2,430	\$2,223	\$2,149	16,726	15,305	14,788	\$1,619	\$1,481	\$1,431

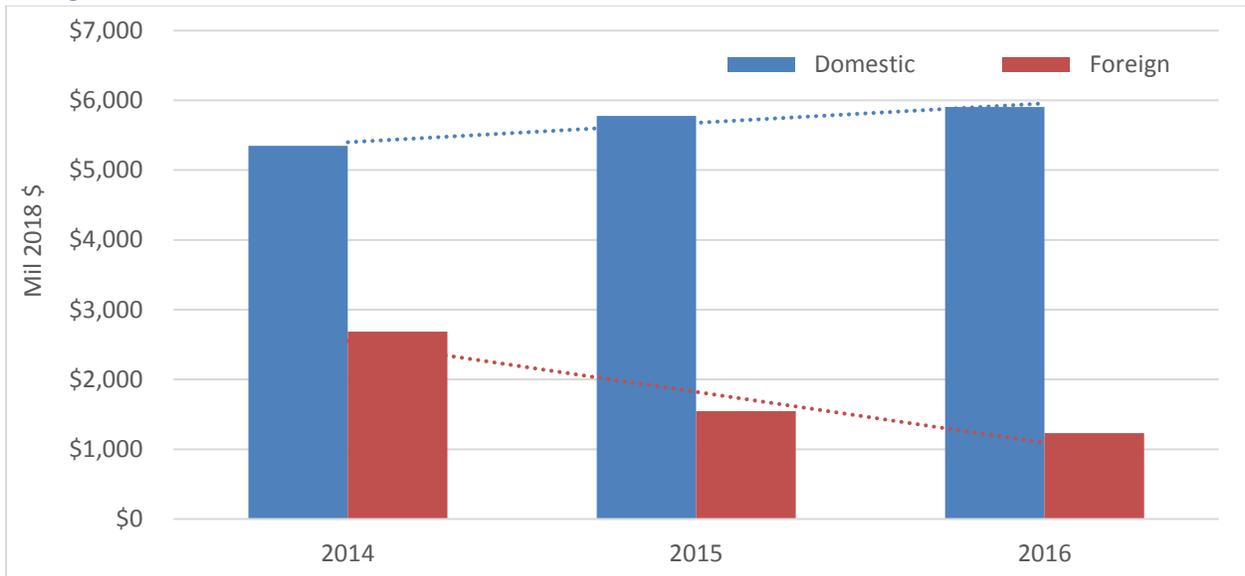
Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

In 2016 these commodities generated an estimated 40,600 jobs in Connecticut. Over 6,300 jobs were from indirect effects, and almost 14,800 jobs were due to induced effects. The total estimated value added, or output minus the cost of all intermediate inputs, from the commodities was \$4.040 billion in 2016, with over half of this resulting from indirect and induced effects. This value added is a measure of the wealth created in the state's economy due to the commodities moving through Connecticut's ports and harbors. It is important to note that employment and value added declined in both 2015 and 2016 from the previous years.

#### *Impacts by Type of Trade*

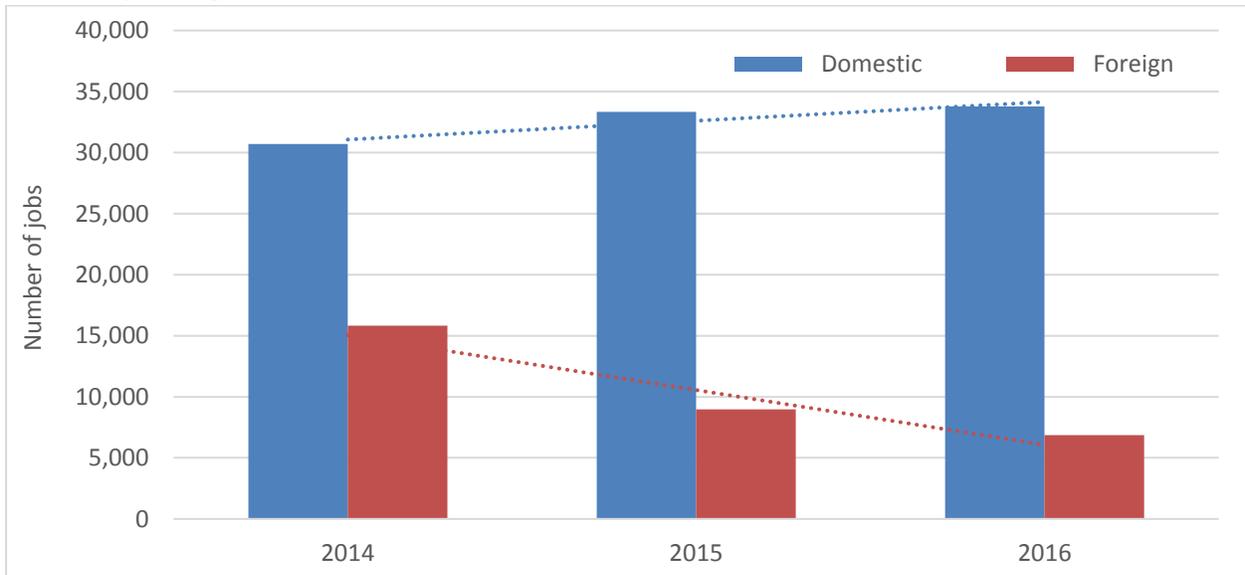
These impacts can be further broken down according to whether the commodities are moving as domestic trade (i.e., to or from other U.S. ports and harbors) or foreign trade (i.e., to or from ports and harbors in other countries). Most of the total impact from trade of these commodities was generated from domestic trade. In 2016, commodities moving domestically through Connecticut generated an estimated \$5.9 billion in impact on output (Figure 2.4) and almost 33,800 jobs (Figure 2.5). Commodities moving between Connecticut and foreign ports, by contrast, generated an estimated \$1.2 billion in total impact on output and almost 6,900 jobs in 2016.

Figure 2.4: Total Impact on Output of Commodities Moving through Connecticut Ports and Harbors by Foreign or Domestic Trade, 2014-2016



Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

Figure 2.5: Total Impact on Employment of Commodities Moving through Connecticut Ports and Harbors by Foreign or Domestic Trade, 2014-2016



Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

From 2014 to 2016, the total impacts of commodities imported or exported through Connecticut’s ports on output and employment have declined by over half (54% for output and 57% for employment). In contrast, the impacts of the domestically-sourced or -destined commodities increased annually from 2014 to 2016, for total two-year increases of 10% for output and 10% for employment.

The impacts of the domestic and foreign trade through Connecticut’s ports and harbors can further be broken down according to whether the commodities were moving into or out of the state. Commodities moved into Connecticut domestically (“receipts”) produced an estimated impact on output of more than \$5.7 billion and an estimated impact on employment of over 33,300 jobs in 2016. Included in these measures is the activity associated with their final sales and their use as inputs for further production (Table 2.4). From 2014 to 2016, the impacts on output and employment both increased. Commodities moving out of Connecticut to other states (“shipments”) generated an estimated \$163 million in impacts on output and over 440 jobs in 2016. These impacts from shipments were due to the commodities’ production by companies within the state.

*Table 2.4: Total Impact on Output and Employment of Commodities Moving through Connecticut Ports and Harbors by Trade Type, 2014-2016*

	Total Impact on Output (Mil 2018 \$)			Total Impact on Employment		
	2014	2015	2016	2014	2015	2016
<b>Total</b>	<b>\$8,037</b>	<b>\$7,324</b>	<b>\$7,136</b>	<b>46,540</b>	<b>42,299</b>	<b>40,644</b>
<b>Domestic</b>	<b>\$5,350</b>	<b>\$5,776</b>	<b>\$5,907</b>	<b>30,707</b>	<b>33,327</b>	<b>33,785</b>
Receipts	\$5,077	\$5,670	\$5,744	30,029	33,036	33,341
Shipments	\$273	\$106	\$163	677	291	444
<b>Foreign</b>	<b>\$2,687</b>	<b>\$1,548</b>	<b>\$1,229</b>	<b>15,833</b>	<b>8,972</b>	<b>6,860</b>
Imports	\$2,644	\$1,532	\$1,190	15,668	8,909	6,717
Exports	\$43	\$16	\$39	166	63	142

Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

With respect to foreign trade, imports also produced most of the impacts on output and employment (\$1.2 billion and over 6,700 jobs, respectively) in 2016. Exported commodities generated an estimated \$39 million in impact on output and over 140 jobs in 2016.

### *Impacts by Port*

Because the Port of New Haven is the busiest of the four ports and harbors that handle commodity trade in the state, the commodities moving through New Haven’s port also had the biggest impact on output in the state in 2016. Commodities moving through the Port of New Haven generated 85% of the total impact of the commodities that came into or out of the state’s ports and harbors (Table 2.5). The total estimated impact on output by domestic commodities moving through the Port of New Haven was \$4.9 billion in 2016, of which \$4.8 billion was receipts, or commodities coming into the state from other states. Shipments through New Haven generated an estimated impact of \$108 million. With respect to foreign trade, commodities imported through

New Haven generated over \$1 billion in output, while exported commodities generated an estimated \$34 million in output.

*Table 2.5: Total Impact on Output of Commodities Moving through Connecticut Ports and Harbors by Port or Harbor and Type of Trade, 2016*

<i>(Mil 2018 \$)</i>	<b>Bridgeport</b>	<b>New Haven</b>	<b>New London</b>	<b>Stamford</b>
<b>Total (percent of total)</b>	<b>\$829 (12%)</b>	<b>\$6,052 (85%)</b>	<b>\$208 (3%)</b>	<b>\$47 (1%)</b>
<b>Domestic</b>	<b>\$824</b>	<b>\$4,919</b>	<b>\$117</b>	<b>\$47</b>
Receipts	\$786	\$4,811	\$108	\$38
Shipments	\$38	\$108	\$8	\$8
<b>Foreign</b>	<b>\$5</b>	<b>\$1,133</b>	<b>\$92</b>	<b>\$0</b>
Imports	\$0	\$1,099	\$92	\$0
Exports	\$5	\$34	\$0	\$0

Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

In 2016, the Port of Bridgeport had the second largest estimated impact on output in Connecticut, with \$824 million in estimated output due to domestic commodities traffic and \$5 million in output for foreign trade. Commodities moving through the Port of New London created an estimated \$208 million impact on output, of which \$117 million was due to domestic trade and \$92 million was due to foreign trade. Commodities moving domestically through Stamford Harbor had an estimated impact of \$47 million on the state, most of which was due to commodities coming into Connecticut (\$38 million) versus those leaving the state (\$8 million).

Commodities moving through the Port of New Haven also produced the largest share of impact on employment, generating almost 34,700 jobs in 2016 (Table 2.6). Of these jobs, more than 27,900 were due to commodities brought into Connecticut from other states, compared to less than 290 for commodities that went to other states and almost 6,490 for commodities that were foreign-traded. Commodities moving through the Port of Bridgeport generated an estimated almost 4,660 jobs, almost all of which were due to domestic receipts, while commodities through the Port of New London generated over 1,000 jobs.

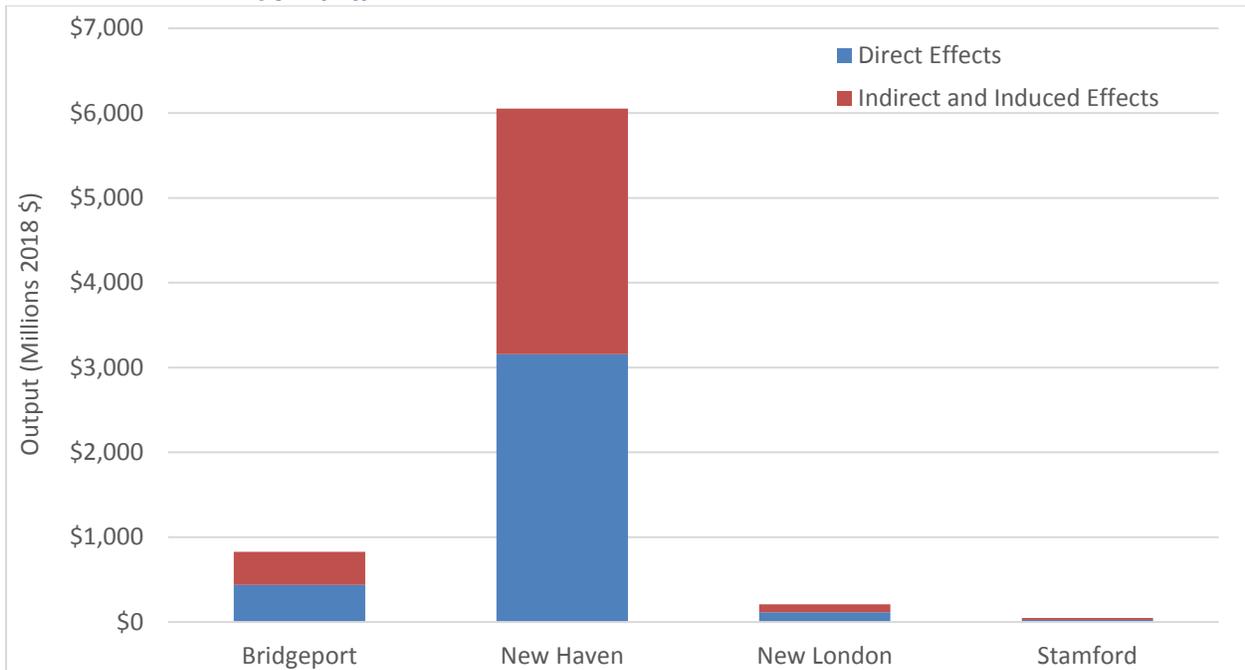
*Table 2.6: Total Impact on Employment of Commodities Moving through Connecticut Ports and Harbors by Port or Harbor and Type of Trade, 2016*

	<b>Bridgeport</b>	<b>New Haven</b>	<b>New London</b>	<b>Stamford</b>
<b>Total (percent of total)</b>	<b>4,657 (11%)</b>	<b>34,691 (85%)</b>	<b>1,023 (3%)</b>	<b>274 (1%)</b>
<b>Domestic</b>	<b>4,646</b>	<b>28,207</b>	<b>658</b>	<b>274</b>
Receipts	4,557	27,919	623	242
Shipments	90	287	34	32
<b>Foreign</b>	<b>10</b>	<b>6,484</b>	<b>365</b>	<b>0</b>
Imports	0	6,352	365	0
Exports	10	132	0	0

Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

Almost half (48%) of the total impact on output of commodities moving through the three ports and Stamford Harbor was due to indirect or induced effects. Commodities moving through the Port of New Haven produced the largest impacts via indirect and induced effects (\$2.9 billion; Figure 2.6).

Figure 2.6: Total Impact on Output of Commodities Moving through Connecticut Ports and Harbors by Port or Harbor and Type of Effect, 2016



Source: WISERTrade Foreign Trade Database; U.S. Army Corps of Engineers Navigation Data Center; IMPLAN 2016 model; CERC calculations.

## Conclusion

In 2016, the economic activity that was generated by the commodities that moved through Connecticut’s deepwater ports and Stamford Harbor had an estimated impact of over \$7.1 billion. Of this, \$3.4 billion was due to indirect and induced effects. The commodities also produced over 40,600 jobs. The largest share of these impacts was due to commodities moving through the Port of New Haven, the busiest of the state’s three deepwater ports. While these impacts cannot be attributable to the ports directly since the commodities could have entered or left the state via other means, estimates of these impacts provide more information on the state’s maritime industry.

# CHAPTER 3 – THE IMPACT OF CONNECTICUT PORTS’ MARITIME ACTIVITIES ON OUTPUT AND EMPLOYMENT

---

Connecticut’s three deepwater port districts in Bridgeport, New Haven, and New London are important drivers of their local economies, and the effects of maritime activities in the port districts ripple throughout the wider state economy. Within the port districts are a range of private businesses, nonprofit organizations, and government agencies that provide jobs and produce output directly, such as marinas, companies that move goods on or off ships, and fish or shellfish wholesalers. Such activities are known as direct effects or impacts. The establishments in the port districts also generate jobs and output indirectly, as other companies increase production due to purchases by the maritime-related establishments in the port districts, causing indirect effects or impacts. Finally, the businesses, nonprofits, and government agencies in the port districts also produce induced effects or impacts, as employees at the maritime-related businesses spend their earnings on household purchases.<sup>22</sup>

This chapter explores the three ports, reviewing their formal structures and considering the types of maritime-related employers (i.e., businesses, nonprofit organizations, and government agencies) in the ports. It then provides estimates of the economic impacts of these ports in terms of employment and output to the state.

The key findings in this chapter are:

- The total estimated annual impact of maritime-related activity in Connecticut’s port districts was \$1.66 billion in output in 2017, which included direct effects of \$878 million, indirect effects of \$295 million, and induced effects of \$489 million. The total impact on employment in Connecticut is estimated at over 7,220 jobs.
- Maritime-related establishments in the New London port district had the biggest total impact on output of the three districts. This estimated impact was \$958 million, followed by \$372 million for Bridgeport and \$329 million for New Haven. The New London port district also produced the largest share of employment of the three port districts, primarily due to U.S. Coast Guard facilities, especially the U.S. Coast Guard Academy, located within the port district.
- Connecticut’s three maritime port districts differ substantially in geographic size and, thus, the amount of employment within them. They also differ in the types of industrial and commercial businesses, nonprofit organizations, government agencies, and residential

---

<sup>22</sup> See Appendix B for more information about the impact analysis methodology and a glossary of terms.

property within them, which affects the amounts and types of impacts each port makes on the state’s economy.

## Businesses and Employment in Port Districts

Due to the differences among the three port districts, total employment by businesses, nonprofits, and governments in the port districts themselves also differs substantially (Table 3.1). The Bridgeport port district has the greatest number of employers with a maritime function and, by far, the greatest number of non-maritime employers of the three port districts. The New London port district is the second-largest by maritime-related and non-maritime employers, although it has the most maritime-related employees due to the presence of the USCG. The New Haven port district, the smallest by geographic size, has fewer establishments and employees, since there is simply less geographic space within the district to house them.<sup>23</sup>

*Table 3.1: Total Number of Establishments and Employees in Port Districts*

	<b>Number of establishments</b>	<b>Number of employees</b>
<b>Bridgeport</b>		
Maritime-related	35	798
Non-maritime	713	12,087
<b>New Haven</b>		
Maritime-related	12	330
Non-maritime	30	368
<b>New London</b>		
Maritime-related	28	1,227
Non-maritime	35	734

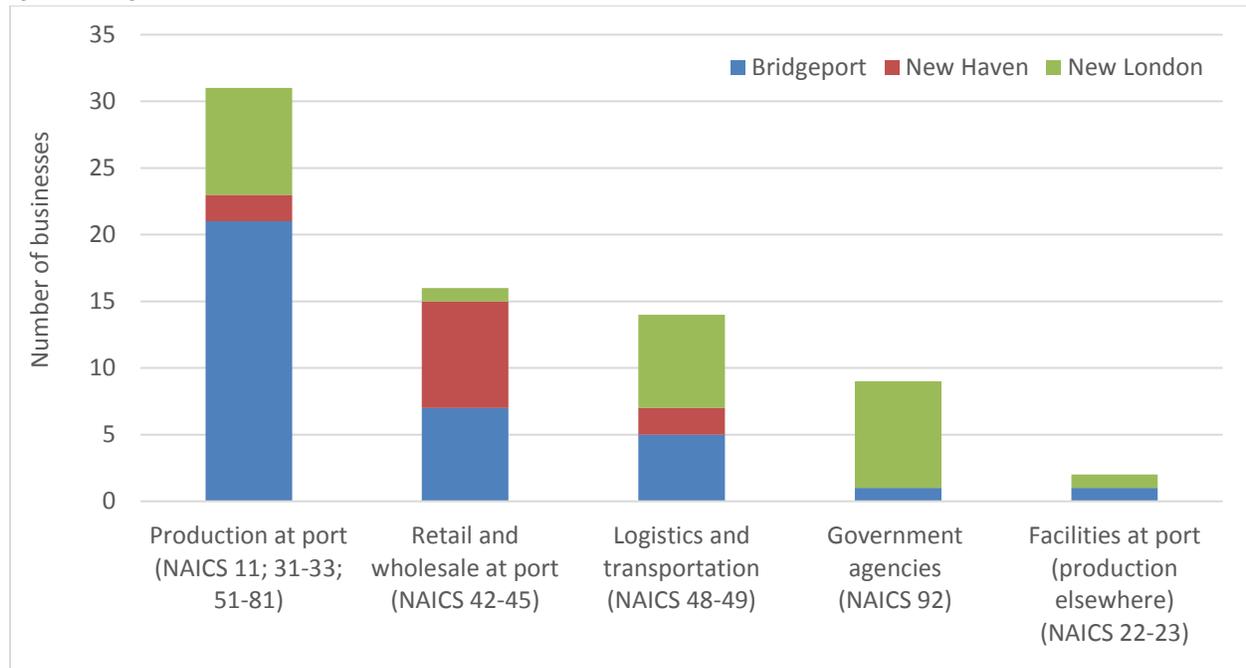
Source: Source: D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; CERC calculations.

### *Maritime-related Employment in Port Districts*

The Connecticut deepwater ports also vary in the types of maritime-related establishments that are within the port districts (Figure 3.1). Most businesses and nonprofit organizations in the three port districts are involved in production at the ports (31 establishments; 43%), with the largest share of these in the Bridgeport port district (21 establishments). These establishments include aquaculture companies, ship and boat builders, sailing or marine schools, port security, and marinas, yacht clubs, and charter fishing boats.

<sup>23</sup> Instead, some businesses and employment related to the port’s operations may be located outside the formal port district, due to its small size. The impact of these activities is included in Chapter 5.

Figure 3.1: Maritime-related Establishments in Bridgeport, New Haven and New London Port Districts by Industry, 2017

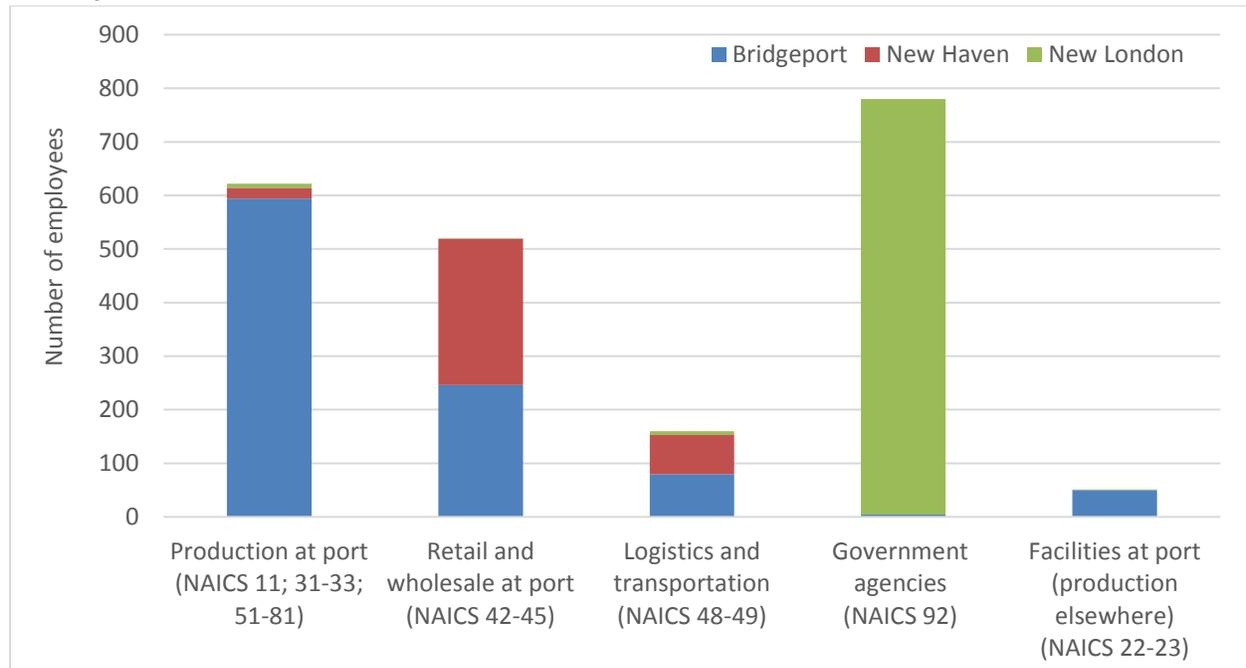


Source: D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; CERC calculations.

After production, the second largest share of employers were involved in retail and wholesale at the port districts (16 businesses; 22%), which included many of the companies importing fuel oils, including home heating oils and jet fuel. In the retail sector were companies selling lobster, shellfish, boats, or fishing supplies, among other goods. There were 14 establishments involved in logistics and transportation at the ports, including companies importing commodities by seaborne vessels and moving those goods across and out of Connecticut. Cruise ships and water taxis from Bridgeport and New London were also included in the logistics and transportation category. There were also two construction companies with their offices in the port but production elsewhere. The nine government employers in the port districts were largely various USCG facilities in New London.

Looking at maritime-related employment in the port districts shows the importance of government agencies to the port districts (Figure 3.2). Government agencies employed the most maritime-related employment in the port districts, with 780 government jobs (37%) in the port districts. This was largely due to the U.S. Coast Guard Academy in New London. The second largest number of jobs was due to companies and nonprofits with production in the port districts (622 jobs; 29%). Most of these jobs were in the Bridgeport port district. Retail and wholesale industries represented the third largest number of jobs (520 jobs; 24%), with just over half of these jobs in the New Haven port district.

Figure 3.2: Maritime-related Employment in Bridgeport, New Haven and New London Port Districts by Industry, 2017



Source: D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps; CERC calculations.

Note: Industries arranged in descending order by number of establishments, as in Figure 3.1.

### Passenger Traffic Moving through the Ports<sup>24</sup>

Ferries and water taxis operate out of the Bridgeport and New London ports. In Bridgeport, the Bridgeport & Port Jefferson Steamboat Company transports approximately 1 million people and 450,000 cars annually between Bridgeport and Long Island, New York. While some of these individuals are commuting, most of them are tourists, and the ferry company also offers packages for visitors from Long Island that include ferry tickets plus land transportation to various Connecticut attractions, such as the PEZ Factory or the Essex Steam Train, as well as to other destinations across New England. There are changes planned for passenger traffic in Bridgeport, as the Bridgeport & Port Jefferson Ferry considers moving its terminal to the other side of the harbor and the Bridgeport Port Authority explores options for a new ferry with high-speed service to New York.

Other ferries operate out of the Port of New London. The largest is the Cross Sound Ferry, which makes regular trips from New London to Long Island, NY, and Block Island, RI. This company also offers cruises during the summer during which riders can view the lighthouses, mansions, and

<sup>24</sup> The impact analysis in this chapter only includes the estimated impacts from the port activity resulting from these operations, which are derived from the employment of these companies. Other impacts generated by tourism or recreation supported by these companies are included in Chapter 6.

coastline of Long Island Sound. In 2017, over 1 million passengers rode the Cross Sound Ferry to Long Island, while another 156,000 rode to Block Island or took a lighthouse cruise. Over half of the riders of the Cross Sound Ferry are from Long Island, although the majority of riders on the Block Island and lighthouse cruises are from Connecticut. The Fishers Island Ferry serves a largely residential population on Fishers Island, by transporting residents, their vehicles, and commercial vehicles and other freight to the island from Connecticut.

There are also two water taxis with stops in these port districts. In Bridgeport, a water taxi moves between a fishing pier on the mainland and Pleasure Beach, an island with a beach and recreational park. In New London, City Pier serves as one of three stops (along with Fort Trumbull and Fort Street in Groton) for the Thames River Water Taxi's operations during summer weekends; the water taxi is also available for private rentals and charters.

## The Impacts of Connecticut's Ports and Port Districts

The total estimated annual impact of maritime-related employers in Connecticut's port districts was \$1.661 billion in output in 2017 (Table 3.2).<sup>25</sup> The impact on output includes:

- Direct effects of \$878 million, which represent the sales and changes in inventory activities of the maritime-related employers;
- Indirect effects of \$295 million, which result from the increased production by establishments in the state due to purchases by the maritime-related port-based employers; and
- Induced effects of \$489 million, which result from household spending as labor income received by employees of the maritime-related employers in the port districts and the indirectly affected establishments ripples through the wider economy along with the iterative impact of this induced household spending.

---

<sup>25</sup> This analysis represents the impacts of maritime-related employment in the three port districts; it does not include the impacts of cadets at the U.S. Coast Guard Academy. The impacts of visitors drawn by tourism and recreation attractions in the port districts are included as an additional analysis in Chapter 6. The impacts of non-maritime-related employment in the port districts is discussed in Appendix D.

*Table 3.2: Impacts of Maritime-related Employers in Port Districts on Output, Employment, Value Added and Labor Income by Type of Effect, 2017<sup>26</sup>*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018\$)</b>
<b>Total</b>	<b>\$1,661</b>	<b>7,221</b>	<b>\$1,005</b>	<b>\$674</b>
Direct	\$878	2,423	\$501	\$347
Indirect	\$295	1,446	\$181	\$120
Induced	\$489	3,352	\$324	\$207

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

The impact of these maritime-related employers can also be measured through the jobs created through direct, indirect, and induced effects. Overall, the total employment impact of these establishments was estimated to be over 7,220 jobs, of which 1,446 were generated through indirect effects and 3,352 through induced effects.

The total estimated impact on Connecticut’s wealth as measured by value added, or the observed production (output) minus the cost of intermediate inputs, was just over \$1 billion in 2017. Almost half of this value added was due to direct effects of the maritime-related employers, while \$181 million was due to indirect effects and \$324 million due to induced effects. Included in this value added is labor income, which includes employee compensation and proprietors’ income.<sup>27</sup> Total labor income from maritime-related employers in the port districts was an estimated \$674 million in 2017, with \$347 million of that due to direct effects.

### *Impacts by Port Districts*

Looking at these impact measures by port district shows that each port district has different impacts on the state economy. Maritime-related activity in the Port of New London was the largest share of output in Connecticut of the three port districts, producing an estimated output of \$958 million (57.7%), of which \$505 million was through direct effects and \$453 million was via indirect and induced effects (Table 3.3). Bridgeport, the largest port district by geographic size and employment, was second in overall estimated impact on output (\$372 million), followed by the Port of New Haven, with \$329 million in estimated impact on the state’s economy.

<sup>26</sup> Due to rounding, numbers presented throughout this report may not add up to the totals indicated.

<sup>27</sup> Employee compensation includes both wages and benefits. Proprietors’ income represents economic returns to business or property owners. In addition to labor income, value added includes indirect business taxes, profits, rental income, and returns on investments.



*Table 3.3: Impacts of Maritime-related Employers in Port Districts on Output by Type of Effect and Port, 2017*

<i>(Mil 2018 \$)</i>	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Connecticut total</b>	<b>\$1,661</b>	<b>\$878</b>	<b>\$295</b>	<b>\$489</b>
Bridgeport	\$372	\$206	\$74	\$92
New Haven	\$329	\$165	\$29	\$135
New London	\$958	\$505	\$191	\$262

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Note: Totals do not equal due to rounding and the exclusion of the CPA, which is not associated with a specific port geography.

Similarly, the maritime-related employers in the Port of New London produced the largest share of estimated value added, \$576 million of the total \$1 billion of wealth created in the state (Table 3.4). The production from these employers in New London also created the largest share of labor income, \$353 million of the total \$674 million. However, because of the types of maritime-related employers in the other two port districts, the New Haven port district produced more estimated value added (\$241 million) and labor income (\$197 million) than the Bridgeport port district (\$188 million and \$123 million, respectively).

*Table 3.4: Impacts of Maritime-related Employers in Port Districts on Value Added and Labor Income by Port, 2017*

<i>(Mil 2018 \$)</i>	<b>Value Added</b>	<b>Labor Income</b>
<b>Connecticut total</b>	<b>\$1,005</b>	<b>\$674</b>
Bridgeport	\$188	\$123
New Haven	\$241	\$197
New London	\$576	\$353

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Note: Totals do not equal due to rounding and the exclusion of the CPA, which is not associated with a specific port geography.

The estimated employment effects in the three port districts differed due to the geographical size of the port districts and the types of employers there (Table 3.5). Overall, maritime-related employers in the New London port district had the largest share of total employment (4,031), followed by Bridgeport then New Haven. Excluding the New London port district, Bridgeport supported larger shares of employment through direct and indirect effects while New London had a larger share through induced effects. Notably, while New Haven generated fewest jobs via direct and indirect employment, it had the second largest share of jobs through

induced employment, with over half of jobs in New Haven supported via the induced effect, compared to 44% of jobs in New London and 36% of jobs in Bridgeport.

*Table 3.5: Impact of Maritime-related Employers in Port Districts on Employment by Type of Effect and Port, 2017*

	<b>Total Impact on Employment</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Connecticut total</b>	<b>7,221</b>	<b>2,423</b>	<b>1,446</b>	<b>3,352</b>
Bridgeport	1,753	779	345	630
New Haven	1,428	332	168	928
New London	4,031	1,307	933	1,791

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Note: Totals do not equal due to rounding and the exclusion of the CPA, which is not associated with a specific port geography.

### *Impacts by Types of Activity*

The impact on the State of Connecticut from the maritime employers in the port districts also differs by the type of activities in which the establishments are engaged. The largest total impact on output derive from employers involved in port logistics and transportation, with establishments in these industries producing an estimated \$516 million due to direct effects and another \$489 million in indirect and induced effects (Table 3.6). The establishments in this industry group do work directly related to the central missions of these ports – moving goods onto and off ships in the ports and moving passengers, vehicles, and freight via traffic on ferries, water taxis, and cruises. Government agencies produced the second largest share of impact (\$247 million), primarily due to the U.S. Coast Guard facilities in the New London port district. Employers engaged in production of goods and services at the ports, such as manufacturing companies relying on commodities imported through the port itself, represent the third largest impact on output (\$229 million for the estimated total effect) followed by companies selling to the public or other businesses (\$164 million in total impact on output). Employers that have their facilities at the port but do the actual production elsewhere, such as construction companies, produce a relatively smaller share of output.

*Table 3.6: Impact of Maritime-related Employers in Port Districts on Output by Type of Effect and Activity, 2017*

	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<i>(Mil 2018 \$)</i>				
<b>Total</b>	<b>\$1,661</b>	<b>\$878</b>	<b>\$295</b>	<b>\$489</b>
Logistics and transportation (NAICS 48-49)	\$1,005	\$516	\$194	\$295
Government agencies (NAICS 92)	\$247	\$135	\$29	\$83
Production at port (NAICS 11; 31-33; 51-81)	\$229	\$131	\$44	\$54
Retail and wholesale at port (NAICS 42-45)	\$164	\$86	\$25	\$53
Facilities at port (production elsewhere; NAICS 22-23)	\$17	\$9	\$3	\$5

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

The port logistics and transportation industry also generated the largest share of total employment with the three port districts (3,493 jobs), followed by government agencies (1,608 jobs) and those doing production at the port (1,197; Table 3.7). However, government agencies generated the largest share of direct jobs (875 jobs), again due to the USCG, while production at the ports produces the second largest share (628 jobs) followed by logistics and transportation (543 jobs). This is due, in part, to the fact that many of the logistics and transportation jobs are more seasonal (especially for the ferries and water taxis), whereas USCG and manufacturing tend to offer more regular work year-round.

*Table 3.7: Impact of Maritime-related Employers in Port Districts on Employment by Type of Effect and Activity, 2017*

	<b>Total Impact on Employment</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Total</b>	<b>7,221</b>	<b>2,423</b>	<b>1,446</b>	<b>3,352</b>
Logistics and transportation (NAICS 48-49)	3,493	543	931	2,019
Government agencies (NAICS 92)	1,608	875	168	565
Production at port (NAICS 11; 31-33; 51-81)	1,197	628	200	369
Retail and wholesale at port (NAICS 42-45)	810	310	134	367
Facilities at port (production elsewhere; NAICS 22-23)	113	67	14	33

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

### *Impacts by Port Districts and Types of Activity*

The impacts of maritime-related businesses by port districts and by types of activity also reflects the differences in the employment size and types of businesses in the three port districts. The New London port district generated the largest overall total impact on output. This district produced over half its estimated output from businesses involved in port logistics and transportation (\$707 million out of \$958 million of total estimated output), with the second largest

share derived from government activities such as USCG (\$243 million; Table 3.8). In the New Haven port district, by contrast, port logistics and transportation produced the largest total impact on output (\$186 million) followed by retail and wholesale companies in the port district (\$138 million). Bridgeport, the largest port district, generated the largest impact on output on the state's economy through companies involved in production at the port district (\$216 million), followed by those involved in port logistics and transportation (\$112 million).

*Table 3.8: Impact of Maritime-related Employers in Port Districts on Total Output by Port and Activity, 2017*

<i>(Mil 2018 \$)</i>	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Bridgeport</b>	<b>New Haven</b>	<b>New London</b>
<b>Total</b>	<b>\$1,661</b>	<b>\$372</b>	<b>\$329</b>	<b>\$958</b>
Logistics and transportation (NAICS 48-49)	\$1,005	\$112	\$186	\$707
Government agencies (NAICS 92)	\$247	\$4	\$0	\$243
Production at port (NAICS 11; 31-33; 51-81)	\$229	\$216	\$5	\$7
Retail and wholesale at port (NAICS 42-45)	\$164	\$25	\$138	\$0
Facilities at port (production elsewhere; NAICS 22-23)	\$17	\$15	\$0	\$2

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Note: Tables may not equal totals due to rounding; excludes impacts of CPA.

Employment impacts by port district and type of activity displayed similar patterns. In the New London port district, almost all of the total employment impacts resulted from the port logistics and transportation industries and government agencies, whereas most employment in the Bridgeport port district was from employers working on production at the port (Table 3.9). In New Haven, the employment impacts were largely split between businesses in port logistics and transportation and those in retail and wholesale in the port district.

*Table 3.9: Impact of Maritime-related Employers in Port Districts on Total Employment by Port and Activity, 2017*

	<b>Total Impact on Employment</b>			
	<b>Total</b>	<b>Bridgeport</b>	<b>New Haven</b>	<b>New London</b>
<b>Total</b>	<b>7,221</b>	<b>1,753</b>	<b>1,428</b>	<b>4,031</b>
Logistics and transportation (NAICS 48-49)	3,493	394	730	2,369
Government agencies (NAICS 92)	1,608	31	2	1,575
Production at port (NAICS 11; 31-33; 51-81)	1,197	1,087	37	63
Retail and wholesale at port (NAICS 42-45)	810	150	659	1
Facilities at port (production elsewhere; NAICS 22-23)	113	91	0	22

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Note: Tables may not equal totals due to rounding; excludes impacts of CPA.

## Conclusion

Connecticut’s ports make a significant contribution to the state’s economy through the jobs they produce in maritime-related industries. The total impact on output in the state was an estimated \$1.66 billion in 2017, of which \$878 million was a direct effect of the employers working in the port district and the remainder was from indirect and induced effects. The maritime-related employers in the port districts also supported over 7,200 jobs throughout the state, including more than 3,300 jobs through induced effects as household incomes of workers rippled through the economy. The differences in total impacts among the three ports primarily reflected the different geographic sizes of the port districts and of the types of properties – commercial, industrial, and residential – within them.

# CHAPTER 4 – THE IMPACT OF GOVERNMENT MARITIME ACTIVITIES IN CONNECTICUT ON OUTPUT AND EMPLOYMENT

---

Local, state and federal governments in Connecticut have diverse roles with respect to maritime activities. Two important members of the U.S. Armed Forces are in Connecticut, with the presence of the Naval Submarine Base New London and the U.S. Coast Guard Academy (USCGA) along with other U.S. Coast Guard operations (USCG). In addition, other federal agencies also have an on-site presence in the state. State agencies care for natural resources and support residents' and tourists' experiences in maritime-related activities,<sup>28</sup> while two state universities have programs specifically related to research, job preparation, or other facets of the maritime industry. The state's towns and cities along Long Island Sound (LIS) and the Connecticut River also provide recreational, environmental, public safety and other services along the LIS and river coastlines.

Through their work, federal, state, and local governments have an impact on the State of Connecticut. This chapter explores those impacts, first by reviewing the types of government operations in the state (broken down by level of government), then by presenting estimates of their impacts on output and employment.

The key findings in this chapter are:

- The federal government employed more than 9,700 individuals, including contractors and consultants, on maritime-related activities in the state, while the state government employed almost 250 people. Local governments along LIS and the Connecticut River are estimated to have employed over 440 individuals to perform a range of functions related to maritime activities.<sup>29</sup>
- The total estimated annual impact of government maritime activities in Connecticut was \$3.71 billion in 2017, which included direct effects of \$2.36 billion, indirect effects of \$200 million, and induced effects of \$1.15 billion.
- The total impact on employment in Connecticut was more than 18,760 jobs.
- Federal government maritime-related activities in Connecticut produced 95% of the total impact on output due to government activities. This was largely due to employment by the U.S. Navy and U.S. Coast Guard in the state.
- Local governments and harbormasters on Long Island Sound generated an impact on output of \$78 million, while local governments and harbormasters on the Connecticut River

---

<sup>28</sup> The CPA is not included in this chapter due to its structure as a quasi-governmental agency. It and other quasi-agencies are included in Chapter 5.

<sup>29</sup> See Appendix A for more information on the data used in this analysis.

generated an impact on output of \$31 million. An additional impact of \$3 million was generated by local governments and harbor masters on both LIS and the Connecticut River.

## The Components of Connecticut’s Government Maritime Activities

There are over 600 miles of shoreline in the state, according to the National Oceanic and Atmospheric Administration.<sup>30</sup> In addition, Connecticut’s history and location have enabled it to serve as an important element of the nation’s maritime and defense structures. While the federal government employs more individuals in maritime-related activities than the state or local governments do, all are involved in natural resources, public safety, education, and other services to residents and visitors.

### Federal Government Maritime Activities

The two principal federal maritime activities in Connecticut are the Naval Submarine Base New London and U.S. Coast Guard (USCG) operations throughout the state. Together, these two branches of the nation’s uniformed services employ almost 10,000 military and civilian personnel, not including the cadets being educated at the U.S. Coast Guard Academy (USCGA) in New London (Table 4.1). While these are by far the largest government employers at any level in the state’s maritime economy, there are several other federal government agencies involved in maritime activities in the state.

Table 4.1: Federal Government Maritime Employment in Connecticut

Department or Agency	Town or City	Maritime Employment*
<b>Total</b>	<b>Various</b>	<b>9,701</b>
U.S. Navy	Groton	8,500
U.S. Coast Guard	Various	1,072
U.S. Customs and Border Protection	Various	66
National Oceanic and Atmospheric Administration	Various	52
U.S. Fish and Wildlife Service	Westbrook	7
Environmental Protection Agency	Stamford	4

Sources: Review of agency websites; Connecticut Department of Labor Employer Search; D&B Hoovers; email or telephone interviews with officials from relevant agencies.

\*Totals for USCG and NOAA do not include USCGA cadets or NOAA Corps officer candidates.

**Naval Submarine Base New London.**<sup>31</sup> Although actually based across the Thames River in Groton, the Naval Submarine Base New London is the “Home of the Submarine Force” and was the first naval submarine base in the country. The base is home to 15 submarines and over 70 operational, administrative and other units, including the Submarine Learning Center, the Naval

<sup>30</sup> Retrieved from <https://coast.noaa.gov/states/connecticut.html>.

<sup>31</sup> Information obtained from Naval Submarine Base New London’s website and via email data request to public affairs office on Base. For a list of all data contacts, see Appendix A.



Submarine School, the Naval Submarine Medical Research Laboratory, and the Naval Undersea Medical Institute. There are 6,500 military personnel stationed at the base, and more than 5,000 are regularly in the state while the remainder are deployed around the world. In addition, 1,000 civilians and another 1,000 contractors are employed there, and the base also supports over 12,000 family members of service members, 12,000 retirees, and over 300 Reservists who drill there. One further large contribution of the Base to the activities of the port includes official visitors, as over 15,000 U.S. Armed Forces personnel visit the facility each year, as do occasional foreign naval ships.

**U.S. Coast Guard.**<sup>32</sup> Another branch of the U.S. Armed Forces, the USCG employs over 1,000 people in the State of Connecticut. Most of these individuals work in New London, where the USCG has multiple units. Foremost among these is the USCGA, which has over 500 faculty and staff and 1,000 cadets. At the Academy, students work toward a Bachelor of Science in one of eight majors, and their education includes time onboard ships, in ship and aircraft simulators, and community service. Upon graduation, they are commissioned as ensigns in the USCG.

Both the USCG Leadership Development Center and the USCG Band are co-located with the USCGA, while the Coast Guard's Research and Development Center (RDC), International Ice Patrol (IIP) and Marine Safety Lab (MSL) are located elsewhere in New London. The RDC, which has over 80 personnel, is responsible for all experimentation in USCG R&D. This includes technologies to improve search and rescue, to utilize unmanned aircraft, and to respond to maritime emergencies. The IIP patrols, researches and tracks icebergs in the North Atlantic Ocean to help keep shipping and transportation lanes safe, while the MSL conducts analysis and testimony for federal law enforcement efforts related to oil pollution.

The USCG's day-to-day operations in the state include search and rescue, maritime law enforcement, commercial vessel inspections, port security, and coastal resiliency, among other missions. The USCG's local field unit, Sector Long Island Sound, is based in New Haven and has just over 160 personnel. There are also stations in New Haven and New London that each have approximately 50 personnel and are the homes of the USCG cutters Albacore and Bollard, respectively. New Haven is also the home of the service's Aids to Navigation Team Long Island Sound and the Electronics Support Detachment, and the service's recruiting office is located in Hartford.

**Other Agencies.**<sup>33</sup> The other federal agencies with maritime-related activity in Connecticut have smaller operations. For example, the National Oceanic and Atmospheric Administration (NOAA) has a research laboratory in Milford with more than 30 staff members working on ecosystems and aquaculture and a navigation response team of three personnel based in New

---

<sup>32</sup> Information obtained via telephone interview with representative from USCG Sector Long Island Sound and USCG websites.

<sup>33</sup> Websites for federal agencies with a maritime mission or maritime-related duties, along with federal employee counts by agency by state from the U.S. Office of Personnel Management, were reviewed to identify programs and staffing specifically related to the maritime industry.

London. NOAA also conducts basic training for its commissioned officer corps at the USCGA. In 2013, NOAA moved this 19-week training to New London from Long Island and also expanded the number of supervisors. Program trainees will ultimately serve on and manage NOAA research vessels.

U.S. Customs and Border Protection has offices in Bridgeport, New Haven and New London, where the agency’s duties include clearing commodities moving through the three deepwater ports.

The U.S. Fish and Wildlife Service Stewart B. McKinney National Wildlife Refuge provides a habitat for shorebirds, including wintering habitats for various water birds.

The U.S Environmental Protection Agency (EPA) oversees much of its work in the state, including its responsibilities concerning dredging, from its New England Region headquarters in Massachusetts.<sup>34</sup> However, the agency does have personnel based in the state, including employees at the EPA’s Long Island Sound Office in Stamford and others who work on issues such as brownfields, wastewater permits, and clean-up on the upper Housatonic River.

*State Government Maritime Activities*

The state government in Connecticut has responsibility for a range of maritime activities, including enforcement, research, management, and oversight. Many of these activities take place through the Connecticut Department of Energy and Environmental Protection (DEEP) or the University of Connecticut (UConn) Avery Point. Other state agencies and educational facilities also have activity related to the maritime industry or programs to support the industry. Altogether, these agencies employ more than 200 workers doing a wide variety of work related to maritime issues (Table 4.2).

*Table 4.2: State Government Maritime Employment in Connecticut*

<b>Agency</b>	<b>Town or City</b>	<b>Maritime Employment</b>
<b>Total</b>	<b>Various</b>	<b>253</b>
CT Department of Energy and Environmental Protection*	Various	145
CT Department of Transportation	Various	10
CT Department of Agriculture	Milford	10
CT Department of Public Health	Various	4
University of Connecticut Avery Point	Groton	80
Southern Connecticut State University	New Haven	4

Sources: Review of agency websites; email or telephone interviews with officials from relevant agencies.

\* DEEP employee count includes state-appointed harbor masters and deputy harbor masters.

<sup>34</sup> The U.S. Army Corps of Engineers (USACE), which conducts dredging in LIS and other bodies of water in Connecticut, also manages its programs in Connecticut from its New England District headquarters in Massachusetts.



**CT Department of Energy and Environmental Protection (DEEP).**<sup>35</sup> DEEP employs 145 workers to support its mission to protect and improve the state’s environment and natural resources. Among its duties, DEEP administers the state’s coastal management program, which works to balance the economic uses of the shoreline with protection of the natural resources. DEEP also works with federal agencies and local jurisdictions to manage the coastline including dredging, planning and zoning requirements, and coastal management.

One of DEEP’s newer maritime programs, the Long Island Sound Blue Plan, is a collaborative effort to identify data that already exist about LIS and to understand current and possible future uses of the Sound. The goal is to balance protection of the natural resources with human uses and, thereby, minimize conflict among the involved parties. In 2018, a draft of the *Long Island Sound Blue Plan Resource and Use Inventory* was issued, exploring the ecology and uses of the Sound.<sup>36</sup>

DEEP also administers the Connecticut Harbor Masters Program. Harbor masters and deputy harbor masters are appointed by the governor, per state statute, in towns and cities along LIS and portions of rivers that enter the Sound. They are responsible for keeping harbor and navigation channels clear and free of obstructions, including the moving of anchored vessels as necessary. Harbor masters and deputy harbor masters also implement local harbor management plans and work closely with the government in the town or city in which they are assigned along with federal and other state agencies. The department also manages state parks such as Hammonasset Beach State Park in Madison and Rocky Neck State Park in East Lyme, issues marine and inland fishing licenses and boating certifications, permits marine events, and allocates pass-through federal funding grants for clean vessels and boating infrastructure.

**CT Department of Transportation (DOT).** Prior to the formation of the CPA, DOT was responsible for state activities related to the deepwater ports. Foremost among these responsibilities was working with USACE, municipal governments, and other interested parties, as necessary, to coordinate dredging of LIS and other bodies of water. DOT also funded improvements at the ports and managed the State Pier in New London. As discussed in Chapter 1, these responsibilities have largely shifted to the CPA, although DOT retains some responsibility for funding port improvements, dredging, and other maritime activities. In addition, DOT issued the Connecticut Statewide Freight Plan in 2017, which called for enabling more efficient movement of goods to and from the state’s deepwater ports.<sup>37</sup>

DOT’s primary maritime-related function currently is the management and operation of two ferries across the Connecticut River (Figure 4.1). Operating seasonally, these ferries move vehicles and passengers between Rocky Hill and Glastonbury and between Chester and Hadlyme (a village

---

<sup>35</sup> Information obtained via telephone interview with representative from CT DEEP.

<sup>36</sup> [http://www.ct.gov/deep/cwp/view.asp?a=2705&q=601262&deepNav\\_GID=1635](http://www.ct.gov/deep/cwp/view.asp?a=2705&q=601262&deepNav_GID=1635).

<sup>37</sup> [http://www.ct.gov/dot/lib/dot/fastlane/freight\\_plan/ctdot\\_freight\\_plan\\_final\\_11-16-17.pdf](http://www.ct.gov/dot/lib/dot/fastlane/freight_plan/ctdot_freight_plan_final_11-16-17.pdf).



that spans the towns of Haddam and Lyme). In 2017 the ferries moved over 43,000 vehicles and 90,000 passengers, with over 70% of the traffic moving between Chester and Hadlyme.<sup>38</sup> This traffic includes commuters as well as residents and tourists. Five employees, including the ferry captains, work with each ferry, and during the off-months some employees perform maintenance on the boats while others work on other DOT maintenance or snowplowing programs.

*Figure 4.1: Chester-Hadlyme Ferry*



Source: Rebecca Mead Communications.

**CT Department of Agriculture.** The state Department of Agriculture, Bureau of Aquaculture is responsible for oversight of and support for commercial and recreational shellfishing in the state. Per the department’s website, “In Connecticut, shellfish are defined as oysters, clams, mussels and scallops; either shucked or in the shell, fresh or frozen, whole or in part. Scallops are excluded from this definition when the final product is the shucked adductor muscle only. Lobsters, crabs, snails and finfish are not included in this definition.”<sup>39</sup> In 2016, the aquaculture harvest included over 338,000 bushels of oysters and over 328,000 bushels of hard clams.<sup>40</sup>

The Bureau has a number of responsibilities with respect to the state’s shellfish industry, including general oversight and development of relevant laws and regulations. The Bureau’s work also includes ensuring that shellfishing areas are safe for harvest and the foods produced are safe for consumption. As part of this, the office inspects and licenses shellfish dealers, reviews applications from potential harvesters, and performs tests at its laboratory facility. The Bureau also manages state-owned shellfish beds and leases state-owned areas for shellfishing.

**CT Department of Public Health (DPH).** The Department of Public Health assists local governments with monitoring the state’s public beaches for public health risks. While local or regional public health officials are responsible for water sample collection and for closing beaches due to health risks when necessary, DPH conducts the testing of the samples at a laboratory in

---

<sup>38</sup> Information obtained via telephone interview with representative from CT DOT.

<sup>39</sup> <http://www.ct.gov/doag/cwp/view.asp?a=1369&Q=259170&pm=1>.

<sup>40</sup> Data provided by CT Department of Agriculture Bureau of Aquaculture.

Rocky Hill and provides assistance to the towns and cities (for example, with funding for laboratory supplies or for couriers to transport the samples). DPH also provides overall data coordination for these samples and the closure of the state's beaches, for which the agency receives funding via a grant from the EPA.<sup>41</sup>

**UConn Avery Point and Southern Connecticut State University (SCSU).** Both the UConn Avery Point campus in Groton and SCSU in New Haven offer maritime-specific college programs. While most academic programs at Avery Point are designed to provide the first two years toward a UConn bachelor's degree, there are several offerings related to the campus's waterfront location. These include the Department of Marine Sciences, where undergraduate students can obtain a Bachelor of Science or Bachelor of Arts major while graduate students can pursue a Doctor of Philosophy and Master of Science in Oceanography. Professors in other academic programs at UConn Avery Point, such as American Studies or English, also typically have a maritime-related specialty.

UConn Avery Point is also home to several marine programs, including: The Connecticut Institute for Resilience and Climate Adaptation, which helps shoreline and inland towns and cities build resilience and sustainability and is a partnership between UConn and DEEP; Connecticut Sea Grant, which is a partnership between NOAA, UConn, and other relevant agencies for research and outreach on the issues confronting the Sound and the state; and the Northeast Underwater Research, Technology and Education Center, which is focused on local and national coastal environments.

The Department of Environment, Geography & Marine Sciences at SCSU offers a Bachelor of Science degree in Environmental Systems and Sustainability with a specialization in Coastal Marine Systems and a minor degree in Marine Studies. In addition, the Werth Center for Coastal and Marine Studies (WCCMS) is led by three SCSU faculty to bring together faculty interested in the marine fields, identify funding opportunities for them, and provide student opportunities for research in the marine sciences.

**Other Agencies.**<sup>42</sup> Other state agencies support the state's maritime industry, although they generally do not have specific programs or dedicated employee positions. This includes the Department of Economic and Community Development (DECD), which has a number of business development incentive programs for which maritime-related businesses may be eligible. For example, Connecticut is supporting Electric Boat's future workforce growth with a loan for

---

<sup>41</sup> [https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental\\_health/BEACH/052317BGAnnualReportFINALpdf.pdf?la=en](https://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/BEACH/052317BGAnnualReportFINALpdf.pdf?la=en)

<sup>42</sup> Websites for state agencies with potential maritime-related duties were thoroughly reviewed in order to identify programs and staffing specifically related to the maritime industry. The impacts for these grants are not included in this chapter; they will be captured in the next chapters, on the impacts of for-profit businesses, nonprofit organizations, and tourism and recreation, as they ripple through recipient companies or organizations to the wider economy.

equipment, exemptions from some sales and use taxes, and a grant for external workforce development programs.<sup>43</sup> The Connecticut Department of Labor and branches within the Connecticut State Colleges & Universities system also offer workforce development programs that help residents train for and find jobs in manufacturing or other maritime-related businesses.

State agencies also provide grants that have supported maritime-focused nonprofits. Among DECD's grant recipients for tourism, arts and historic organizations in 2017 were the Connecticut River Museum, the Maritime Aquarium at Norwalk, Opsail Connecticut, Inc., and the Sea Research Foundation, Inc.<sup>44</sup>

### *Local Government Maritime Activities*

Forty-five towns and cities in Connecticut are located along LIS or the Connecticut River, and their governments all have some responsibility for waterborne activities. Local government work on these maritime activities generally occurs as a piece of larger municipal functions, including public safety, recreation and parks, and public works, and the governments usually do not have specific public programs, budgets or personnel related to maritime issues.

**Maritime-related Commissions, Boards, and Agencies.** Per Connecticut statute, towns and cities with navigable waters can establish a harbor management commission with members drawn from other commissions in the jurisdiction.<sup>45</sup> The harbor management commissions set permit fees for mooring or anchoring and may also be responsible for preparing harbor management plans that concern operations, uses, and futures of local harbor areas. Local governments may also establish shellfish commissions to manage beds within their jurisdictions but not under management of the state.<sup>46</sup> These commissions may issue licenses or fees, designate locations for aquaculture and the amounts and sizes that can be taken and prepare and update shellfish management plans. The most recent data available on DEEP's website identifies 26 towns and cities with harbor management commissions<sup>47</sup> and 17 towns and cities with shellfish commissions.<sup>48</sup>

---

<sup>43</sup> <http://portal.ct.gov/Office-of-the-Governor/Press-Room/Press-Releases/2018/05-2018/Gov-Malloy-Announces-Historic-Long-Term-Partnership-with-General-Dynamics-Electric-Boat>.

<sup>44</sup> Review of DECD Arts and State Historic Preservation Office grant recipients in 2017 retrieved from <https://data.ct.gov/Housing-and-Development/DECD-Arts-and-SHPO-Grant-Recipients/ud2k-2im4/data>.

<sup>45</sup> Specifically, Sec. 22a-113k says that a Harbor Management Commission "may include one member representing each of the following: The planning commission, the zoning commission, or the combined planning and zoning commission, the conservation commission, shellfish commission and flood control board." ([https://www.cga.ct.gov/2015/pub/chap\\_444a.htm](https://www.cga.ct.gov/2015/pub/chap_444a.htm)).

<sup>46</sup> Per Sec. 26-257a ([https://www.cga.ct.gov/2017/pub/chap\\_492.htm](https://www.cga.ct.gov/2017/pub/chap_492.htm)).

<sup>47</sup> [http://www.ct.gov/deep/lib/deep/permits\\_and\\_licenses/land\\_use\\_permits/long\\_island\\_sound\\_permits/harbor\\_commission.pdf](http://www.ct.gov/deep/lib/deep/permits_and_licenses/land_use_permits/long_island_sound_permits/harbor_commission.pdf).

<sup>48</sup> [http://www.ct.gov/deep/lib/deep/Permits\\_and\\_Licenses/Land\\_Use\\_Permits/Long\\_Island\\_Sound\\_Permits/shellfish\\_commission.pdf](http://www.ct.gov/deep/lib/deep/Permits_and_Licenses/Land_Use_Permits/Long_Island_Sound_Permits/shellfish_commission.pdf). An internet search was conducted to see if other towns or cities had established shellfish commissions since the publication of this list, and the Town of Milford is currently in the process of

Most of these commissions are staffed by volunteers, rather than paid staff, and those that do have funded operations generally are supported by revenues earned via the specific activity. For example, the Town of Stratford's Waterfront and Harbor Management Commission had a budget of just over \$100,000 in Fiscal 2018, with expenditures including seasonal labor, contracted services, fuels, and materials and revenues from launching fees and state grants.<sup>49</sup> Stamford's self-funded Harbor Management Commission, by contrast, had an operating budget of \$34,421 in Fiscal 2018, of which \$20,000 was budgeted for a consultant.<sup>50</sup> Old Saybrook's Harbor Management Commission employs one clerk part-time,<sup>51</sup> while Bridgeport has a city-funded harbor master whose responsibilities range from port security to oversight of the city's water taxi.<sup>52</sup>

**Public Safety.** Local police and fire departments in towns and cities along LIS and the Connecticut River are responsible for various water-related public safety functions, including search and rescue or emergency preparations.<sup>53</sup> One example is the Middletown Police Marine/ Dive Team, which has twelve officers that conduct enforcement and recovery on the Connecticut River.<sup>54</sup> The officers are all certified divers, and the unit has a boat and two trucks along with other marine supplies. The Middletown Police Marine/ Dive Team also works with the city's fire department on rescue and recovery efforts and works regionally, with a jurisdiction that extends from Cromwell to the East Haddam Swing Bridge. While the other towns along that part of the river also have their own police marine or dive teams, these units go out less frequently than the Middletown team, and the latter also has some equipment specifically for regional work.

Local fire departments in Connecticut, including the volunteer departments in many communities, also conduct water rescues and safety activities. For example, the three volunteer fire departments in Darien are involved in these types of activities as needed, with the Noroton Volunteer Fire Department specifically responsible for emergency response in LIS.<sup>55</sup> The Noroton department has ten U.S. Coast Guard-trained boat captains and thirty personnel with other marine-related training, along with a boat that can handle fires and search and rescue. While the department owns the boat, the town funds fuel and maintenance of it.

---

establishing a shellfish commission, either as a standalone commission or as part of the Town's Harbor Management Commission.

<sup>49</sup> [http://www.townofstratford.com/filestorage/39879/43107/78878/2017-2018\\_Adopted\\_Operating\\_budget.pdf](http://www.townofstratford.com/filestorage/39879/43107/78878/2017-2018_Adopted_Operating_budget.pdf).

<sup>50</sup> [https://www.stamfordct.gov/sites/stamfordct/files/uploads/2018\\_city\\_operating\\_budget.pdf](https://www.stamfordct.gov/sites/stamfordct/files/uploads/2018_city_operating_budget.pdf).

<sup>51</sup> Information obtained via telephone interview with official from Town of Old Saybrook.

<sup>52</sup>

[http://www.bridgeportct.gov/filestorage/341650/341652/342544/2017\\_2018\\_Proposed\\_Budget\\_4.7.17.pdf](http://www.bridgeportct.gov/filestorage/341650/341652/342544/2017_2018_Proposed_Budget_4.7.17.pdf).

<sup>53</sup> The Haddam Volunteer Fire Company, for example, responded to over 500 calls in 2016, but only seven of these calls were for marine-related emergencies, per a report in Haddam Now (<http://www.haddamnow.com/2017/02/hvfc-2016-year-end-totals/>).

<sup>54</sup> Information obtained via telephone call with representative from Middletown Police Department.

<sup>55</sup> Noroton is a section of Darien, CT. Information obtained via telephone calls with representatives from Darien and Noroton volunteer fire departments.

**Recreation and Parks.** Local governments' recreation departments are responsible for a range of activities related to the maritime sector, although these duties are typically part of more generalized recreation functions and not associated with specific maritime programs. The most common maritime-related activities for local governments are operations at local beaches, of which there are 69 in Connecticut.<sup>56</sup> Bridgeport's Recreation Program, for example, oversees certified lifeguards at the beaches and provides some summer staff for Seaside Park and Pleasure Beach, while the city's Parks Administration provides services, including maintenance, at a number of waterfront parks and attractions.<sup>57</sup> Bridgeport's Parks Administration also oversees concessions at Pleasure Beach and Seaside Park and is improving connectivity between city rights-of-way to and from the waterfront.<sup>58</sup> Stratford's Recreation Division provides another example of maritime-related work, with budgeted line items for beach lifeguards.<sup>59</sup>

The Town of Greenwich is one of the towns with specific parks and recreation activities related to the maritime industry identified in the budget for its Parks and Recreation Department. These programs are Marine Supervision (2 positions), Marine Maintenance (8 positions), Beaches (6 positions) and Harbors and Boating (3 positions).<sup>60</sup> Together, these four programs represented 25% of the department's General Fund expenditure budget for Fiscal 2018.<sup>61</sup> As part of these operations, Greenwich's Parks and Recreation Department operates a summer ferry to Great Captain Island, a town-owned island in LIS, and offers a summer "cruise to nowhere," which is a two-hour boat tour in the Sound.

**Public Works.** As part of their regular construction, maintenance and repair functions, local public works departments in shoreline towns and cities in Connecticut are also involved in the maritime industry. In all towns, this takes the form of engineering and highway, pedestrian, and bike access to maritime-related businesses and attractions, such as beaches. Public Works may also be responsible for waterfront public facilities<sup>62</sup> or for the condition of boats or other watercraft in the town or city's fleet. Local public works departments also work closely with the CPA and U.S. Army Corps of Engineers on dredging shorelines and waters.

---

<sup>56</sup> Count includes only "Local" regulated beaches as identified by the Connecticut Department of Public Health. [http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental\\_health/BEACH/032217CTREGULATEDBEACHES2016pdf.pdf?la=en](http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/BEACH/032217CTREGULATEDBEACHES2016pdf.pdf?la=en).

<sup>57</sup> [http://www.bridgeportct.gov/filestorage/341650/341652/342544/2017\\_2018\\_Proposed\\_Budget\\_4.7.17.pdf](http://www.bridgeportct.gov/filestorage/341650/341652/342544/2017_2018_Proposed_Budget_4.7.17.pdf).

<sup>58</sup> Ibid.

<sup>59</sup> [http://www.townofstratford.com/filestorage/39879/43107/78878/2017-2018\\_Adopted\\_Operating\\_budget.pdf](http://www.townofstratford.com/filestorage/39879/43107/78878/2017-2018_Adopted_Operating_budget.pdf).

<sup>60</sup> <http://www.greenwichct.org/upload/medialibrary/da3/Final-Budget-2017-2018.pdf>.

<sup>61</sup> Ibid.; CERC calculations. Spending on maritime-related activities in the Greenwich Parks and Recreation Department may be even higher, as workers in other Parks and Recreation programs, such as Administration or Park Areas, also likely perform some work on waterfront programs.

<sup>62</sup> In Clinton, for example, the Department of Public Works is responsible for the Town Marina and the Town Beach. <https://clintonct.org/Faq.aspx?TID=19>.

**High Schools.**<sup>63</sup> There are three maritime-related public schools in Connecticut: the Bridgeport Regional Aquaculture Science & Technology Education Center (Aqua), the Marine Science Magnet High School (MSMHS) in Groton, and the Sound School in New Haven. All three high schools are regional (i.e., open to students in nearby towns) and are designed to prepare students for jobs or further education in the maritime industry through exposure and training to various facets of the industry as well as a traditional academic curriculum. The Sound School and Aqua have been in operation more than 25 years, while MSMHS opened in 2011 and graduated its first class in 2014.

Over 1,000 students attend the three schools, with Aqua serving the most students and the Sound School employing the most faculty and staff (Table 4.3). The differing enrollment and staffing levels are due to the different educational environments at the three schools. For example, both MSMHS and the Sound School offer a comprehensive high school education with the same types of classes in mathematics and English language arts or literacy as in a traditional school along with electives focused on maritime, aquaculture, agriculture, science or technology. Students at Aqua, meanwhile, are on campus for two hours a day for aquaculture education and spend the remainder of their school day on their regular public school campus. Students at all three schools have time for water-related or on-boat experiences, and at Aqua this includes a research boat, smaller vessels, and a navigation simulator.

*Table 4.3: Enrollment and Staff at Marine-Focused Public High Schools*

School	Academic Year	Number of Faculty and Staff*	Number of Students
<b>Total</b>	<b>NA</b>	<b>111</b>	<b>1,014</b>
Aqua	2017-2018	20	410
MSMHS	2016-2017	37	271
Sound School	2016-2017	54	333

Source: Data on Aqua obtained from official from the school. Data on MSMHS and the Sound School obtained from Connecticut State Department of Education School Profiles and Performance Reports.

\*Faculty and staff counts represent the number of positions at Aqua and the number of full-time equivalents at MSMHS and the Sound School.

## The Impacts of Government Maritime Activities in Connecticut <sup>64</sup>

The total estimated annual impact of government maritime activities in Connecticut was \$3.710 billion in output in 2017 (Table 4.4). This impact represents the activity that occurred in the

<sup>63</sup> Information obtained from school websites, CT Department of Education Profile and Performance Reports and email data requests to schools.

<sup>64</sup> See Appendix B for more information about the impact analysis methodology and a glossary of terms.



state due to government employers or direct spending on maritime-related work. The impact on output includes:

- Direct effects of \$2.359 billion, which represent expenditures related to maritime activities by government agencies;
- Indirect effects of \$200 million, which result from the increased production in the state due to purchases by the maritime-related government offices;<sup>65</sup> and
- Induced effects of \$1.150 billion, which result as labor income received by employees of the maritime-related government agencies and of establishments impacted by the indirect effects ripple through the wider economy as household spending.

*Table 4.4: Impacts of Government Maritime Activities on Output, Employment, and Value Added by Type of Effect, Fiscal 2018*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018 \$)</b>
<b>Total</b>	<b>\$3,710</b>	<b>18,767</b>	<b>\$3,010</b>	<b>\$1,437</b>
Direct	\$2,359	9,818	\$2,129	\$879
Indirect	\$200	1,147	\$126	\$82
Induced	\$1,150	7,803	\$755	\$476

Sources: Review of websites; direct information requests; review of town or city budgets; Connecticut Department of Labor Employer Search; D&B Hoovers; Connecticut State Department of Education School Profiles and Performance Reports; IMPLAN 2016 model; CERC calculations.

Within Connecticut, these government activities generated an estimated 18,760 jobs, of which over 1,100 were from indirect effects and more than 7,800 were due to induced effects. The total estimated value added, or output minus the cost of all intermediate inputs, was over \$3 billion, with almost 71% of this resulting from direct effects. Total labor income, which is part of value added, was over \$1.4 billion due to these government activities.

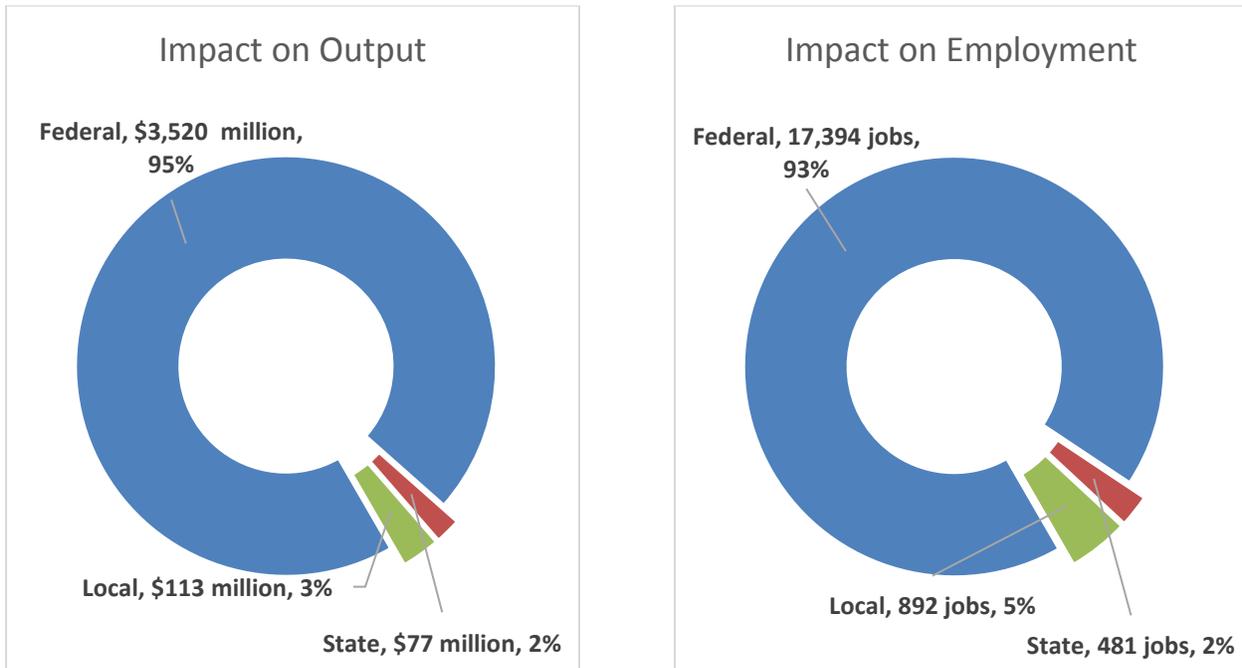
#### *Impacts by Level of Government*

The federal government contributed by far the largest impact on output (95%) compared to that generated by local and state governments (Figure 4.2). Overall, maritime-related federal activities in are is estimated to have generated over \$3.5 billion in total impact on output. Public maritime activities at the state level produced \$77 million in total impacts on output, and local government spending and employment generated \$113 million in total impact.

<sup>65</sup> Impacts from government activities are measured differently from economic activities (such as those by businesses or nonprofit organizations), and the indirect and induced effects derived from government activities tend to be smaller (as seen here) relative to those produced by for-profit business activities. This analysis does not incorporate the effects of tax revenues collected from resident households or businesses that would fund these government activities and, therefore, decrease the total impacts.



Figure 4.2: Total Impacts of Government Maritime Activities on Output and Employment by Level of Government, Fiscal 2018



Sources: Review of websites; direct information requests; review of town or city budgets; Connecticut Department of Labor Employer Search; D&B Hoovers; Connecticut State Department of Education School Profiles and Performance Reports; IMPLAN 2016 model; CERC calculations.

Similarly, most of the employment generated by government maritime activities was due to federal programs, with these activities generating almost 17,400 jobs. Local government maritime-related activities are estimated to have generated more than 890 jobs, while state maritime-related activities generated over 480 jobs.

The total estimated impact on Connecticut’s wealth from government maritime activities as measured by value added, or output minus the cost of all intermediate inputs, was \$3.0 billion, of which almost \$2.9 billion was due to federal activities (Table 4.5). State government maritime activities generated an estimated \$53 million in value added, and local government activities generated an estimated \$87 million. Included in this value added is labor income, which includes employee compensation, both wages and benefits, as well as proprietor income. Total labor income from maritime-related government activities is estimated at \$1.4 billion, including \$1.3 billion in labor income due to federal maritime activities.

*Table 4.5: Impacts of Government Maritime Activities on Value Added and Labor Income by Level of Government, Fiscal 2018*

<i>(Mil 2018 \$)</i>	<b>Value Added</b>	<b>Labor Income</b>
<b>Total</b>	<b>\$3,010</b>	<b>\$1,437</b>
Federal	\$2,871	\$1,332
State	\$53	\$37
Local	\$87	\$68

Sources: Review of websites; direct information requests; review of town or city budgets; Connecticut Department of Labor Employer Search; D&B Hoovers; Connecticut State Department of Education School Profiles and Performance Reports; IMPLAN 2016 model; CERC calculations.

*Impacts by Location on Long Island Sound or Connecticut River*

While the federal and state governments’ maritime activities may be located in one facility or town, the emphasis of their work is generally on the state’s overall conditions. In contrast, local towns and cities are more focused on work within their own jurisdictions, while state-appointed harbor masters and deputy harbor masters are assigned to specific portions of LIS or the Connecticut River by jurisdiction as well.

The impacts for both local government spending and the harbor master program can also be examined based on where the impact is generated (with a reminder that the impact itself is calculated for the entire state). As shown in Table 4.6, local governments and harbor masters on LIS generated an estimated economic impact of \$81 million compared to the impact of \$34 million generated by local governments and harbor masters along the Connecticut River.<sup>66</sup> Similarly, value added, or wealth created in the state due to these activities, was also larger due to local government activities and harbor masters along LIS. These government activities on the Sound also generated an estimated 614 jobs and \$47 million in labor income compared to 254 jobs and \$19 million in labor income generated from activities on the Connecticut River.

*Table 4.6: Impacts of Local Government Maritime Activities on Output, Employment, and Value Added by Location, Fiscal 2018*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018 \$)</b>
<b>Total*</b>	<b>\$112</b>	<b>849</b>	<b>\$85</b>	<b>\$65</b>
Long Island Sound	\$81	614	\$62	\$47
Connecticut River	\$34	254	\$25	\$19

Sources: Review of websites; review of town or city budgets; IMPLAN 2016 model; CERC calculations.

\*The towns of Old Lyme and Old Saybrook are on both the Connecticut River and Long Island Sound, and therefore included in both locations. Thus, the amounts on the row for “Total” do not equal the sums for the Connecticut River and LIS.

<sup>66</sup> Old Lyme and Old Saybrook are on both LIS and the Connecticut River, and so are included in the impacts for both bodies of water.



### *Impacts of Educational Activities*

Each of the three levels of government provide formal educational opportunities with a maritime emphasis: the USCGA, UConn Avery Point and SCSU, and the three magnet high schools. The combined annual economic impact of these schools was an estimated \$155 million in Fiscal 2018 (Table 4.7). This includes an estimated \$78 million in direct effects and \$77 million in indirect and induced effects. These educational institutions generate almost 1,200 jobs, along with \$107 million in value added that includes \$81 million in labor income.

*Table 4.7: Impacts of Government Education Maritime Activities on Output, Employment, and Value Added by Location, Fiscal 2018*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018 \$)</b>
<b>Total</b>	<b>\$155</b>	<b>1,180</b>	<b>\$107</b>	<b>\$81</b>
Direct	\$78	692	\$57	\$51
Indirect	\$20	102	\$12	\$6
Induced	\$57	386	\$37	\$24

Sources: Review of websites; direct information requests; Connecticut Department of Labor Employer Search; D&B Hoovers; IMPLAN 2016 model; CERC calculations.

### **Conclusion**

The federal, state, and local governments in Connecticut are important pieces of the state's maritime industry. They engage in a wide variety of maritime activities that impact the Connecticut economy. These activities include supporting the nation's defense, providing education, protecting natural resources, and promoting public safety. Together, these government activities have an estimated overall impact of more than \$3.7 billion on Connecticut's economy each year and support over 18,700 jobs throughout the state.

# CHAPTER 5 – THE IMPACT OF BUSINESS AND NONPROFIT MARITIME ACTIVITIES IN CONNECTICUT ON OUTPUT AND EMPLOYMENT

---

This chapter estimates the impact of maritime activities of private sector employers (defined as nongovernmental employers, or for-profit businesses and nonprofit organizations) in Connecticut, including relevant activities with the industries that are generally excluded in maritime impact analyses.<sup>67</sup>

Connecticut's maritime private sector employers range in size from small one-person proprietors working in aquaculture in Long Island Sound (LIS) to Electric Boat, which employs thousands of workers in the Groton and New London area making submarines for the U.S. Navy. It also includes multinational firms handling shipping, insurance or finance for waterborne commerce around the world as well as nonprofits educating visitors on the state's maritime history, protecting the maritime environment, and researching maritime topics.

However, many maritime-related activities are performed by private sector employers also engaged in non-maritime activity, such as retail chains that sell fishing supplies among their other products or insurance companies that offer boat or other property coverage along with home, automobile or other coverage. This multifaceted dimension of the activities of many companies in the state has often resulted in their maritime activity being excluded from reports on Connecticut's maritime industry and the impacts associated with their maritime component have generally been overlooked even in comprehensive reports on the state's maritime industry.

The key findings in this chapter are:

- Maritime-related activities by private sector employers in the state are estimated to generate over \$9.7 billion annually, including direct effects of \$5.2 billion, indirect effects of \$1.7 billion, and induced effects of \$2.9 billion.<sup>68</sup>
  - This includes businesses and nonprofits in industries classified as full maritime industries as well as those with maritime activities but not in an industry generally

---

<sup>67</sup> See Appendix A for information about the data selection process for this chapter, and Appendix E for a literature review of economic impact analyses of Connecticut's maritime industry.

<sup>68</sup> In an impact analysis, interdependencies can occur when the direct effect on production of an industry observed exogenously by the analyst is included by the model when accounting for the indirect effects required for the production from another industry. To limit double-counting from these interdependencies, the estimates for the direct activity originally specified for each of the maritime industries is adjusted by the model's observed local requirements from the other maritime activities. The result is an estimated decrease of \$2.5 billion of total impact on output when compared to the impact estimate that does not address double-counting.

classified as maritime. The latter employers represent 37% of the total estimated impact on output.

- Maritime activities by private sector employers generated over 49,000 jobs annually.
- Most of the output and employment generated in Connecticut by maritime activities is related to some form of production, with contributions from businesses and nonprofits involved in logistics and transportation, retail and wholesale trade, and construction.
- The impact of maritime activities by businesses and nonprofits are spread across the state, with approximately 14% of the impact on output being generated from private sector employers' activities in the three deepwater port districts, and 86% of the impact on output produced from activities along Long Island Sound (including in Fairfield County) or the Connecticut River shorelines.

## The Components of Connecticut's Business and Nonprofit Maritime Activities

Across Connecticut, private sector employers are actively involved in the maritime industry. This ranges from establishments in recreational maritime activities, such as boating or fishing, to establishments working on international seaborne commerce. Even when these businesses and nonprofits do not spend the majority of their time on maritime activities, they should be included when analyzing the industry.

This section will first discuss businesses and nonprofits whose primary work relates to maritime activities. Then it will explore how businesses and nonprofits traditionally not classified as part of the industry are part of the state's maritime industry.

### *Maritime-Specific Industries*

Many businesses in Connecticut focus on maritime-related activities and are classified into maritime-specific industries based on the North American Industry Classification System (NAICS). These industries include both business-to-business and consumer-focused activities as well as businesses that provide goods and services locally, nationally, and globally. The six four-digit NAICS industries and five six-digit NAICS industries involved directly in maritime-specific activities in Connecticut can be aggregated into: aquaculture and fishing; ship and boat building and sales; and waterborne transportation.

**Aquaculture and Fishing.** With its location on LIS, which allows easy access to the fishing stocks in the Atlantic Ocean, Connecticut's commercial fishing industry is an important part of the state's maritime industry.<sup>69</sup> Within the agricultural industry, the Aquaculture industry (NAICS 1125) includes finfish and shellfish farming as well as finfish hatcheries, while Fishing (NAICS

---

<sup>69</sup> Recreational fishing industries are not included as part of Aquaculture and Fishing as defined by NAICS codes. The employment associated with recreational fishing, such as the sales of bait and tackle or operation of fishing charters, is part of various industries, such as Sporting Goods Stores (NAICS 451110) or Marinas (NAICS 713930). The tourism impacts of recreational fishing are reviewed in Chapter 6.

1141) includes finfish and shellfish fishing in their natural habitats. There are also businesses in the state involved in processing fish and seafood (NAICS 3117) and supplying wholesale and retail markets (NAICS 424460 and 445220, respectively).

In 2016, the crop harvest recorded by the Connecticut Department of Agriculture's Bureau of Aquaculture included oysters valued at almost \$18 million and hard clams valued over \$11 million.<sup>70</sup> Most of the aquaculture and fishing firms in the state are small, family-owned companies, with potential new firms facing barriers to entry (including state and federal permitting fees).

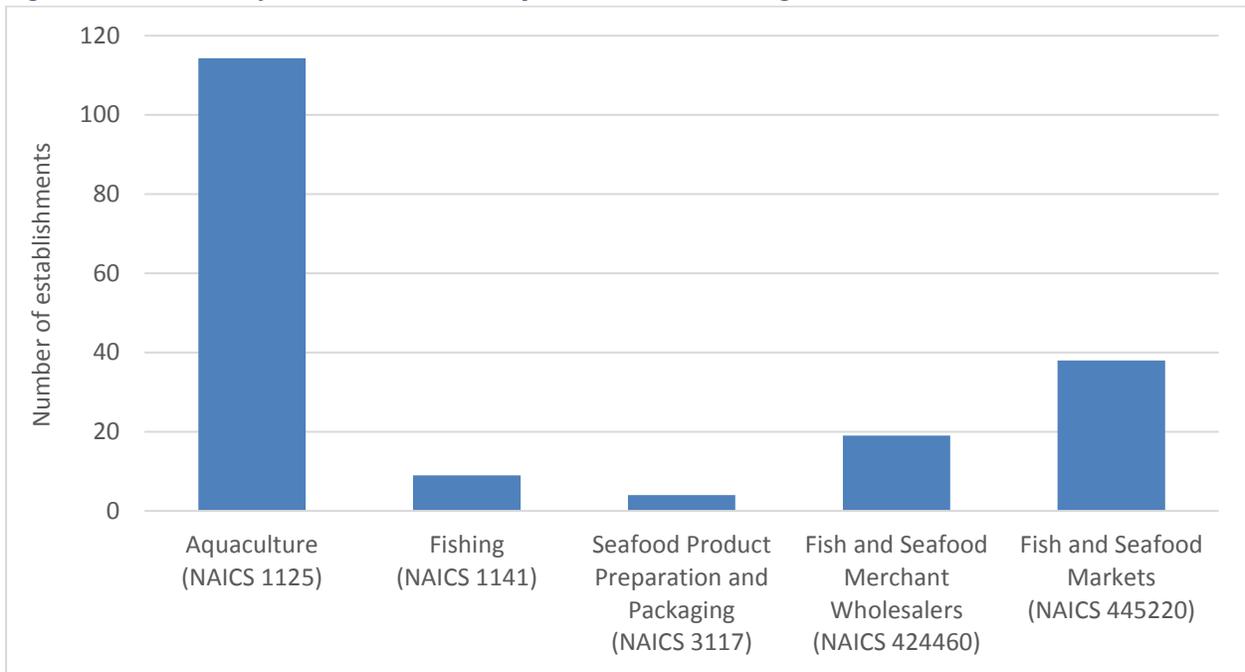
In 2017, there were over 180 establishments in Connecticut involved in the five industries related to aquaculture and fishing (Figure 5.1).<sup>71</sup> These firms had over 700 employees (Figure 5.2). Although these measures suggest the average aquaculture and fishing business in Connecticut has fewer than four employees, there is considerable variance within this group, with Aquaculture firms tending to be smaller while companies involved in wholesale and retail fish and seafood sales tending to have more employees.

---

<sup>70</sup> Information obtained via email data request to Connecticut Department of Agriculture Bureau of Aquaculture. For a list of all data contacts, see Appendix A.

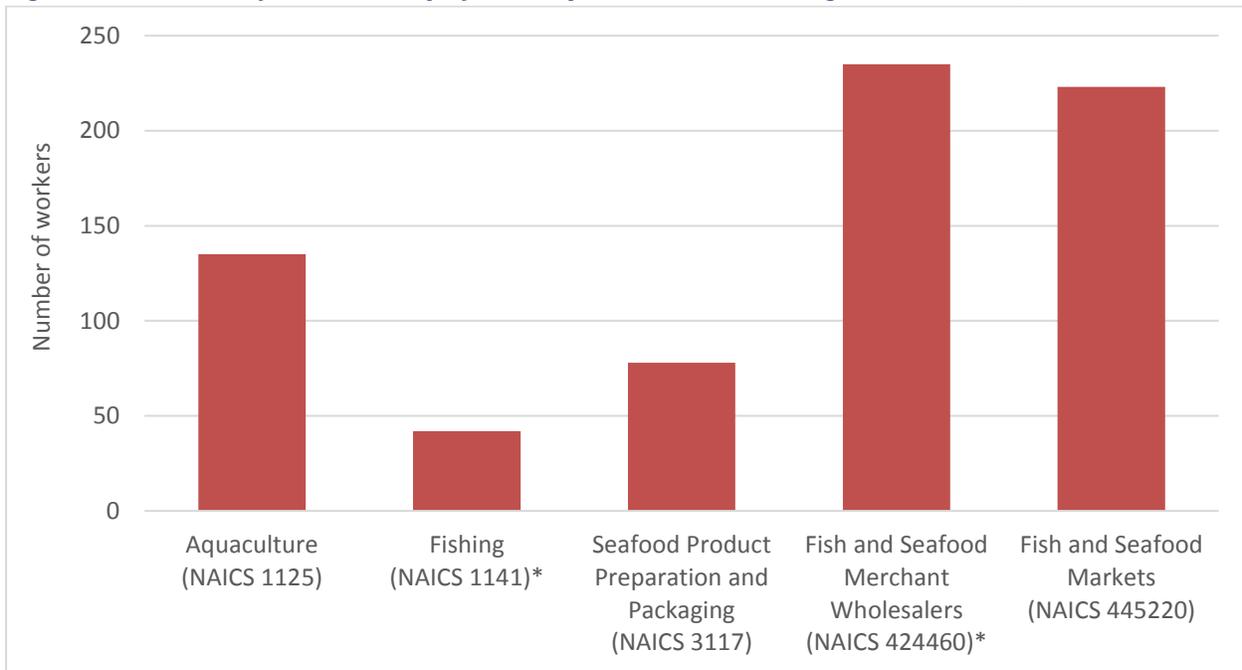
<sup>71</sup> Source: U.S. Department of Labor Bureau of Labor Statistics (BLS), Quarterly Census of Employment and Wages (QCEW). BLS limits some data availability in the QCEW to protect confidentiality and reduce identifiability of respondent companies. Due to this data suppression, some employment calculations by industry were estimated based on employment in other industries, business lists, media reports, and relevant websites. Those industries for which employment was estimated are identified in this report.

Figure 5.1: Number of Establishments in Aquaculture and Fishing in Connecticut, 2017



Sources: BLS QCEW; CERC calculations.

Figure 5.2: Number of Workers Employed in Aquaculture and Fishing in Connecticut, 2017



Sources: BLS QCEW; CERC calculations.

Note: \* includes industries with data suppressed by BLS and therefore estimated by CERC.

Average weekly wages for employees in the state’s Aquaculture and Fishing industries in 2017 ranged from \$505 per week in Fish and Seafood Markets to \$830 in Aquaculture to \$1,446 in Shellfish Fishing (a subset of NAICS 1141).<sup>72</sup> However, these are average annual employment totals and average wages and so, like other agriculture industries, employment may be higher during specific months (e.g., during the harvest) and not reflected in total employment data as calculated by the state or federal government. This industry also makes use of subcontractors and day laborers, who may be counted as part of other industries.

**Ship and Boat Building and Sales.** Connecticut’s ship and boat building industry includes companies that produce both commercial and recreational vessels. One of the largest of these firms is General Dynamics Electric Boat (EB), which is headquartered and has its primary manufacturing site in Groton and has a facility for design and engineering in New London. EB’s principal business is to build and maintain the U.S. Navy submarine fleet, including nuclear submarines; the company also does work on Navy surface ships and provides general support for Navy nuclear programs.<sup>73</sup> As such, EB is an important employer in the state and among the top five employers in Groton.<sup>74</sup> It is expected to grow dramatically in the coming years as the U.S. Navy modernizes and replenishes

<sup>72</sup> BLS QCEW.

<sup>73</sup> Information obtained from EB website.

<sup>74</sup> Information from CERC Town Profile of Groton, 2016.

its submarine fleet. Together with Newport News Shipbuilding, the only other private manufacturer building nuclear submarines for the Navy, EB expects to deliver two submarines a year for the foreseeable future.<sup>75</sup> EB is also the lead contractor for a new class of nuclear submarines that is expected to start construction in 2021 and to go into service in 2031.<sup>76</sup> This will result in increasing employment at its Connecticut (and other) facilities.

This industry also includes boat dealers (NAICS 441222), who sell recreational vessels to Connecticut residents and others. Over 1,100 boats were sold in the state in 2017, a decline from previous years. Boat registrations in the state have also dropped;<sup>77</sup> in 2016 Connecticut ranked 33<sup>rd</sup> in the number of registered boats, a drop from ranking 32<sup>nd</sup> in 2015 and 31<sup>st</sup> in 2014.<sup>78</sup> According to the U.S. Coast Guard, less than 1% of all recreational vessels registered in the United States were registered in Connecticut.<sup>79</sup> While the state had one of the highest tax rates on boat sales in recent years, leading to purchasers taking delivery of and registering vessels out-of-state,<sup>80</sup> a recent cut in the tax rate may help stem the declines.<sup>81</sup>

In 2017, there were 70 establishments in the Ship and Boat Building and Boat Dealer industries in Connecticut (Figure 5.3). Together, they had over 10,000 employees (Figure 5.4), and most worked for Electric Boat.

---

<sup>75</sup> Julia Bergman, "EB's workforce surpasses 16,000, a number not seen in nearly 25 years," *The Day* 2018 January 22. <https://www.theday.com/article/20180122/NWS09/180129847>.

<sup>76</sup> Stephen Singer, "\$850 Million. Nearly 2,000 Jobs. Electric Boat Looks To Expand Its Groton Shipyard," *Hartford Courant* 2018 October 22. <https://www.courant.com/business/hc-biz-electric-boat-expansion-20181011-story.html>.

<sup>77</sup> Susan Haigh, "Connecticut Boat Dealers Seeing Effects of Tax Cut," Associated Press 2018 May 16. <https://www.usnews.com/news/best-states/connecticut/articles/2018-05-16/connecticut-boat-dealers-seeing-effects-of-tax-cut>.

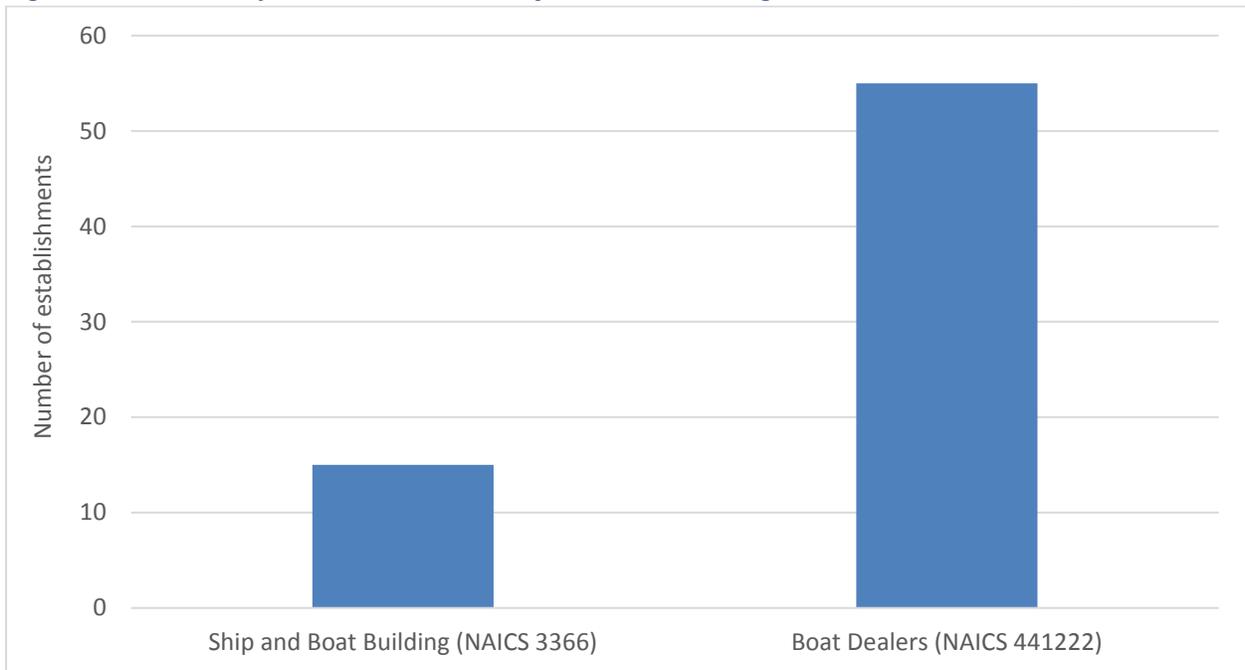
<sup>78</sup> "Recreational Boating and Vessel Taxation," presentation by the Connecticut Marine Trades Association (CMTA) to the Connecticut Commission on Fiscal Stability and Economic Growth, 2018.

<sup>79</sup> *U.S. Coast Guard 2016 Recreational Boating Statistics*, <https://www.uscgboating.org/library/accident-statistics/Recreational-Boating-Statistics-2016.pdf>

<sup>80</sup> "Recreational Boating and Vessel Taxation" presentation by CMTA.

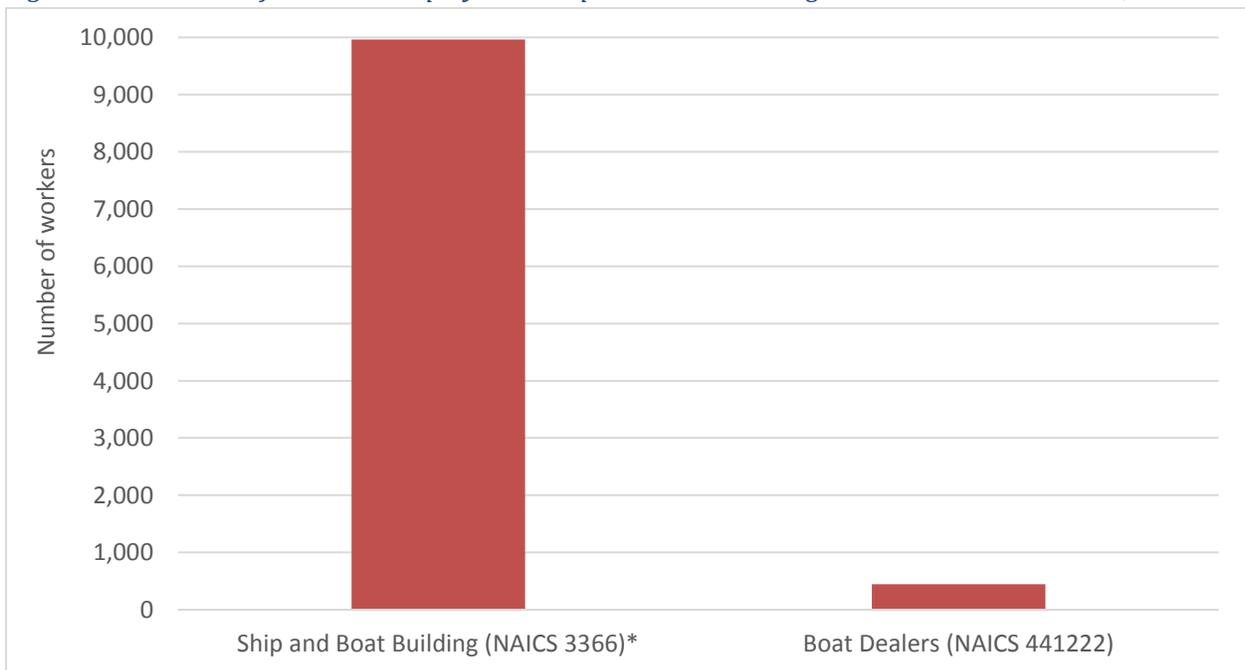
<sup>81</sup> Haigh, "Connecticut Boat Dealers Seeing Effects of Tax Cut."

Figure 5.3: Number of Establishments in Ship and Boat Building and Sales in Connecticut, 2017



Sources: BLS QCEW; CERC calculations.

Figure 5.4: Number of Workers Employed in Ship and Boat Building and Sales in Connecticut, 2017



Sources: BLS QCEW; CERC calculations.

Note: \* includes industries with data suppressed by BLS and therefore estimated by CERC.

**Waterborne Transportation.** The third group of maritime-specific industries in Connecticut move people and goods by water on LIS and the Connecticut River. Many of the companies in these industries are based in New London and include the ferries between Connecticut and Long Island, Block Island, or Fishers Island (Sea, Coastal, and Great Lakes Transportation; NAICS 4831).<sup>82</sup> Also based in New London and other locations on the LIS and the Connecticut River are a number of companies that offer day cruises, fishing charters, or longer duration waterborne adventures for residents and visitors (Scenic and Sightseeing Transportation, Water; NAICS 487210).

Recreational marinas and yacht clubs (NAICS 713930) along LIS and the Connecticut River are also included in waterborne transportation industries in Connecticut. These marinas have recently begun offering new services, such as boat rental by the hour or day, which will likely affect the number of boat registrations in the state.

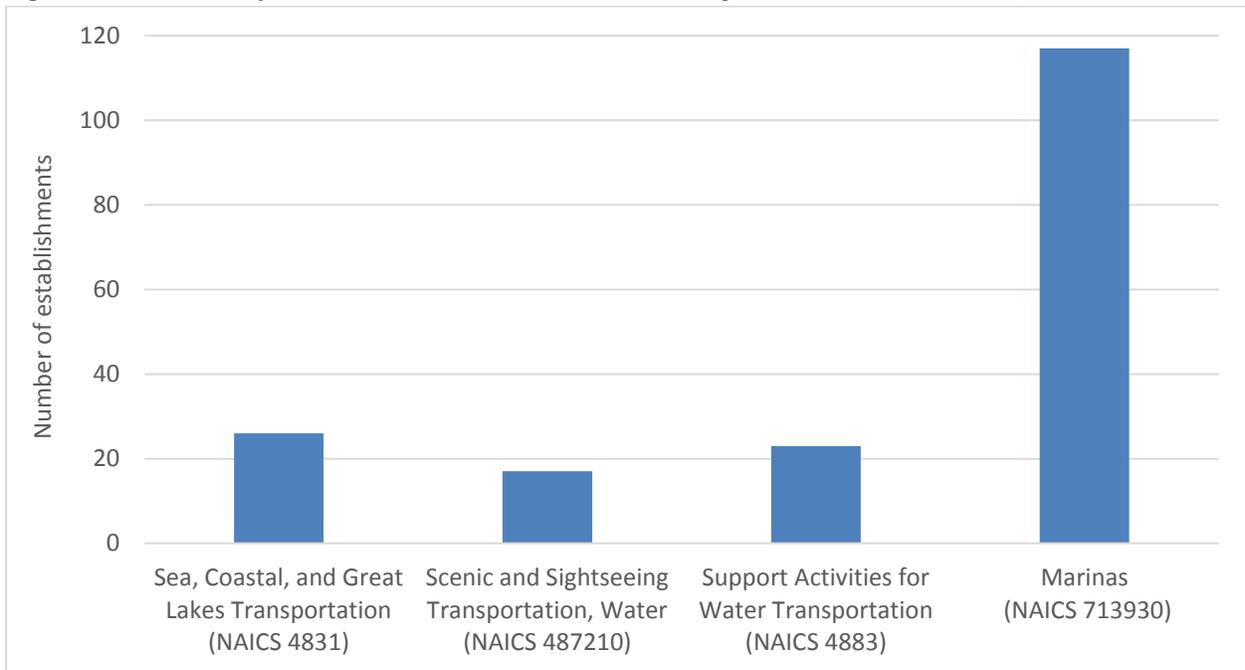
Waterborne transportation in Connecticut also includes the terminal operators that manage and conduct port and harbor operations at the state's deepwater ports as well as companies that provide services such as marine cargo handling and navigational assistance to ships (Support Activities for Water Transportation; NAICS 4883).

In 2017, there were more than 180 establishments in Connecticut involved in waterborne transportation of people and goods (Figure 5.5). Almost two-thirds of these businesses are the marinas on the state's waterfront. Marinas also employed over half of the workers in waterborne transportation in Connecticut, with over 1,200 workers in 2017 of out more than 2,200 in these industries. There were also over 750 workers employed in Sea, Coastal, and Great Lakes Transportation, the industry that includes the various ferries operating in the state.

---

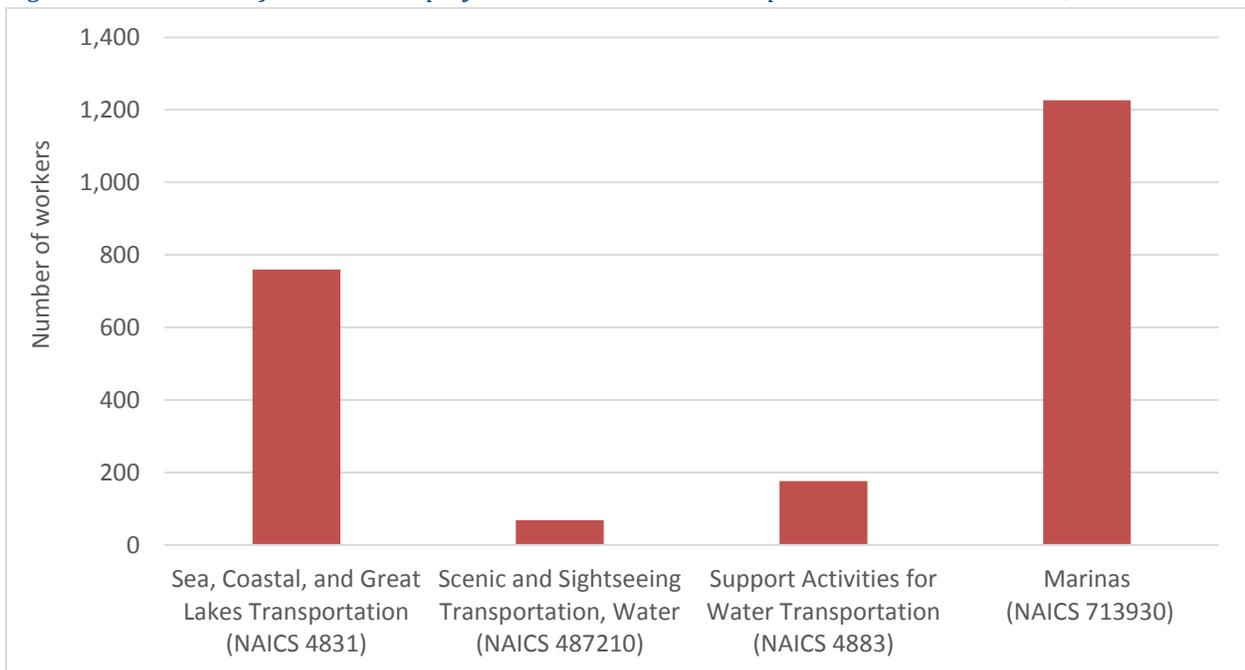
<sup>82</sup> More information about ferry systems in Connecticut is in Chapter 3. Ferries operated by the state on the Connecticut River were discussed in the previous chapter.

Figure 5.5: Number of Establishments in Waterborne Transportation in Connecticut, 2017



Sources: BLS QCEW; CERC calculations.

Figure 5.6: Number of Workers Employed in Waterborne Transportation in Connecticut, 2017



Sources: BLS QCEW; CERC calculations.

### *Partial Maritime Industries*

In addition to the industries above that are clearly engaged in maritime activities in the state, many businesses are involved – either completely or in part – in maritime activities, although their principal work classifies them in non-maritime industries. Work in legal, architectural, insurance and finance firms, for example, may touch maritime issues (such as insurance for boats or design and construction of maritime facilities) but their primary functions are much wider than solely maritime concerns and, therefore, they are usually not included as such.

Reviewing membership lists from maritime-related organizations, including the Connecticut Maritime Association (CMA)<sup>83</sup> or the Connecticut Marine Trade Association (CMTA)<sup>84</sup> demonstrates how many of these non-maritime firms are actively involved in maritime issues in the state. These firms include companies located in Stamford and in Fairfield County involved in aspects of the commercial or cargo shipping industries as well as companies throughout Connecticut such as insurance agencies that insure boats, banks that provide loans for purchasing waterborne vessels, and retail stores that sell gear used in maritime activities.

Almost 50 industries (as defined by three-digit NAICS codes) were identified as having some involvement in maritime-related activities through a review of business lists, membership lists of various maritime-related organizations, and exhibitor lists at maritime-related events.<sup>85</sup> This represents over half of all industries (Figure 5.7). While not all employment within these industries is maritime-related, this demonstrates the span of the maritime industry with respect to the overall Connecticut economy. Businesses and nonprofit organizations in these industries are important components of Connecticut’s maritime economy, generating jobs and output directly related to maritime interests, and should be included in discussions of the maritime industry and its concerns. More information about the types of businesses and nonprofits that make up the Connecticut maritime industry is provided below.

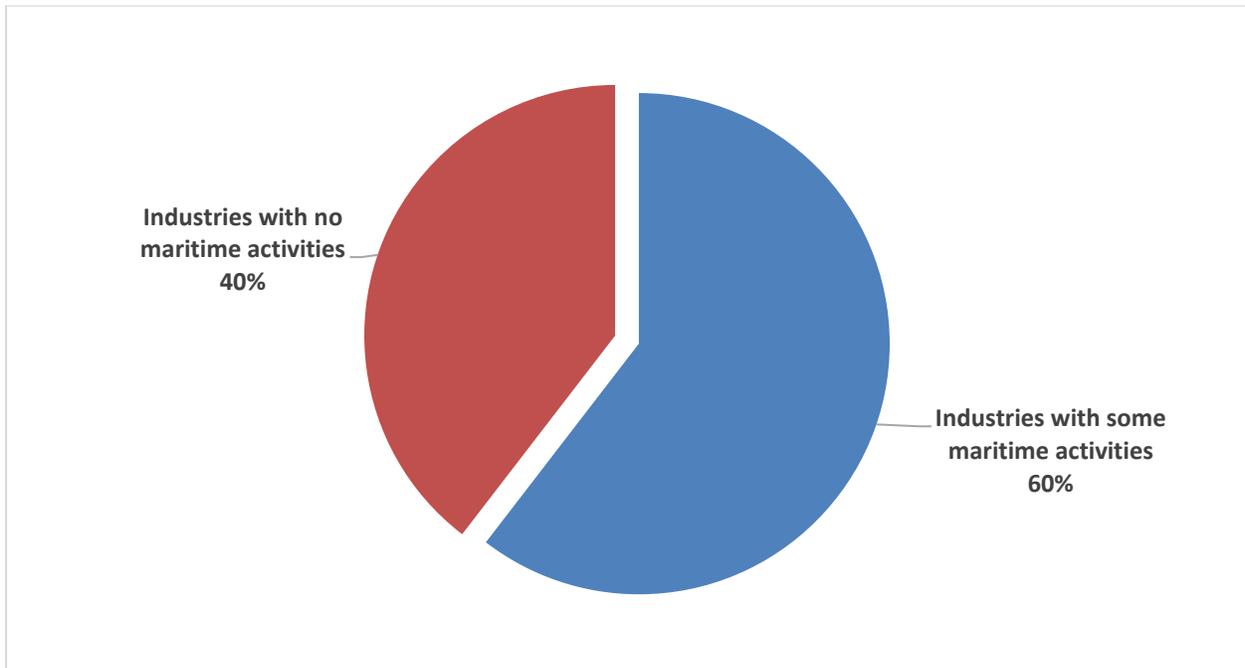
---

<sup>83</sup> Membership list was provided by CMA.

<sup>84</sup> Membership list was retrieved from CMTA website (<http://ctmarinetrades.org/find-member/>).

<sup>85</sup> For more information about the process used to identify businesses and nonprofit organizations involved in the maritime industry in Connecticut, along with a list of the specific industries identified as part of the overall maritime industry, see Appendix A. The review of business lists did not result in any maritime-related businesses or nonprofit organizations in the following sectors: Mining, Quarrying, and Oil and Gas Extraction (NAICS 21); Utilities (NAICS 22); and Management of Companies and Enterprises (NAICS 55). Organizations included in Public Administration (NAICS 92) were discussed in the previous chapter.

Figure 5.7: Percent of Connecticut Industries by Three-Digit NAICS Code with Some Maritime Activities, 2017



Source: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; CERC calculations.

**Agriculture, Forestry, Fishing and Hunting (NAICS 11).** In addition to the Aquaculture and Fishing industries discussed above, this sector also contains an industry for Support Activities for Agriculture and Forestry. This industry includes taxidermy shops that make sport fishing trophies and other support services for Aquaculture and Fishing.

**Construction (NAICS 23).** Activities included in the Construction sector ranged from site preparation to additions and repair to existing structures and includes residential, commercial, and industrial properties. This sector, therefore, includes companies doing physical construction on buildings, commercial and recreational docks, utility systems, and other infrastructure along the maritime coasts and in response to maritime concerns (such as coastal resiliency). Multiple businesses from within each of the industries in this sector are members of the maritime organizations identified above or explicitly identified as maritime on business lists.

**Manufacturing (NAICS 31-33).** In addition to the seafood product preparers and packagers as well as the ship and boat builders discussed above, a number of manufacturers are included on the membership lists of the maritime organizations. Maritime manufacturers in Connecticut produce maritime paint, navigation systems, plastics, and other materials used by recreational or industrial consumers. One company of note manufactures custom fishing rods and lures.

**Wholesale Trade (NAICS 42).** Among the companies involved in wholesale trade in Connecticut's maritime industry are a number of ship brokers and ship and boat supply dealers, including businesses specifically selling equipment and electronics for use on boats and ships. Many companies in this sector are clustered in Fairfield County, identifying the greater Stamford area as an important node in Connecticut's maritime industry.

**Retail Trade (NAICS 44-45).** The retail trade sector includes companies not classified as "Boat Dealers" who are selling personal watercraft, diving equipment, and the equipment needed to supply and maintain maritime watercraft. This sector also includes companies, including big box retail stores as well as small neighborhood shops, that sell fishing tackle and supplies directly to consumers along with other, non-maritime goods.

**Transportation and Warehousing (NAICS 48-49).** Along with the water transportation industries discussed above that are maritime-specific, there are a number of other industries in this sector involved in maritime activities. These include shipping agents and other companies who are concentrated in Fairfield County and provide import and export services for commodities moving through Connecticut's deepwater ports. This industry also includes businesses moving goods to and from the deepwater ports via truck, rail, or pipeline as well as Warehousing and Storage businesses where commodities and goods are temporarily held during the import or export process.

**Information (NAICS 51).** The Information sector includes companies publishing periodicals about the maritime industry for both recreational and commercial audiences as well as companies managing online directories. In addition, there is at least one company in the state offering credit card processing that specifically names marinas among businesses served.

**Finance and Insurance (NAICS 52).** With Connecticut's global positioning as a leader in finance and insurance, it is natural that there are a number of companies in the state performing these activities that are engaged in maritime-related services to various degrees. Among these are companies providing finance, banking, insurance and other services for the global commodities trade along with companies that provide recreational boat insurance and financing. While many of the companies serving commercial maritime interests are located in Stamford and wider Fairfield County, finance and insurance companies serving individuals' maritime needs are located throughout the state.

**Real Estate and Rental and Leasing (NAICS 53).** While much of this sector concerns the sale and leasing of real estate, it also includes companies that rent or lease vehicles. Thus, the maritime activity of the leasing and renting of boats, canoes, and other recreational vessels for use on LIS or the Connecticut River is part of the maritime industry.

**Professional, Scientific, and Technical Services (NAICS 54).** This sector includes a number of different technical businesses that serve the maritime industry in Connecticut. Included among them are attorneys, media and public relations companies, environmental consultants, and

logistics firms providing services to both local and global maritime shippers. Also in this sector are divers, oceanographers, freight traffic consultants, and naval architects located mostly along LIS and in Connecticut River towns.

**Administrative and Support and Waste Management and Remediation Services (NAICS 56).** This sector includes a range of businesses providing services to commercial maritime interests, such as shipping and port agents, ship owners and operators, and export management. In addition, this sector includes companies operating LIS and Connecticut River cruises for tourists and residents.

**Educational Services (NAICS 61).** The educational institutions involved in Connecticut's maritime industry include both for-profit and nonprofit organizations.<sup>86</sup> Among these are companies offering sailing and boating classes and nonprofits providing information and instruction about safety on the water. Also, in this sector are maritime-related programs offered at colleges and universities in the state, including coastal or marine science programs at Mitchell College (New London) and Sacred Heart University (Fairfield) as well as a semester-long program offered by Williams College and Mystic Seaport Museum. Other nonprofit universities in the state also offer marine science concentrations, minors, or classes within other majors, taking advantage of their location on the Connecticut River or LIS.

**Health Care and Social Assistance (NAICS 62).** While much of this sector is focused on various facets of the health care industry that did not appear on the maritime business lists, there are some social assistance organizations with maritime-related programs and services.

**Arts, Entertainment, and Recreation (NAICS 71).** In addition to the marinas discussed above, this sector has a range of different businesses and nonprofit organizations related to Connecticut's maritime industry. This includes major attractions such as the Mystic Aquarium and the Mystic Seaport Museum, the Maritime Aquarium at Norwalk, and the Connecticut River Museum. Also in this sector are a number of fishing charters and yacht and beach clubs operating primarily in LIS but also along the Connecticut River.

**Accommodation and Food Services (NAICS 72).** This sector includes several inns and resorts along the LIS shoreline that have marinas as part of their facilities. In addition, there are a number of hotels and restaurants whose locations along the river and LIS shorelines and near other maritime attractions serve as important draws for consumers – both residents and tourists.

**Other Services (NAICS 81).** Among the various repair and maintenance businesses in this sector are both big and small companies located on LIS and the Connecticut River that repair and customize the boats and ships. This sector also includes a number of nonprofit organizations, such as charitable organizations involved in promoting and protecting the state's maritime heritage or

---

<sup>86</sup> Public schools, including magnet high schools and universities, with maritime-related programs were discussed in Chapter 4.

environment as well as membership organizations, ranging from maritime industry groups such as the CMTA and CMA to shoreline chambers of commerce that promote maritime businesses and attractions to yacht clubs that operate as civic and social organizations.

### The Impacts of Business and Nonprofit Maritime Activities in Connecticut<sup>87</sup>

The total estimated impact of all private sector employers’ maritime activities was \$9.751 billion on output in 2017 (Table 5.1). This impact reflects an estimate of annual maritime-related activity by for-profit businesses and nonprofit organizations in the state, from any industry or classification, and so includes impacts from both maritime-specific industries as well as partial maritime industries.<sup>88</sup> It also includes the impacts of businesses and nonprofit organizations in the port districts, as discussed in Chapter 3. The impact on output of all private sector employers’ maritime activities includes:

- Direct effects of \$5.2 billion, which represent the sales and changes in inventory activities of maritime-related employers;
- Indirect effects of \$1.7 billion, which result from the increased production by companies in the state due to purchases by the companies and nonprofits for their maritime-related production; and
- Induced effects of \$2.9 billion, which result as labor income received by employees of these businesses and nonprofits along with employees of the indirectly impacted establishments ripples through the wider economy as household spending.

*Table 5.1: Impacts of Business and Nonprofit Maritime Activities on Output, Employment, and Value Added by Type of Effect, 2017*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018 \$)</b>
<b>Total</b>	<b>\$9,751</b>	<b>49,170</b>	<b>\$5,671</b>	<b>\$4,000</b>
Direct	\$5,200	21,013	\$2,735	\$2,088
Indirect	\$1,674	8,481	\$1,031	\$696
Induced	\$2,878	19,676	\$1,905	\$1,216

Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

The maritime activities of these businesses and nonprofit organizations are estimated to have generated over 49,000 jobs, of which over 8,400 were through indirect effects and almost 19,700 were through induced effects. The total estimated value added was an estimated \$5.7

<sup>87</sup> See Appendix B for more information about the impact analysis methodology and a glossary of terms.

<sup>88</sup> The impacts in this chapter are based on the employment in the industries discussed above. They do not include those generated by visitors to the state’s maritime tourism and recreation attractions, which will be explored in the next chapter.



billion. This value added is a measure of the wealth created in the state’s economy due to private sector employers’ maritime activities. Labor income, a component of value added, due to maritime-related activities by businesses and nonprofits was an estimated \$4.0 billion in 2017, with over half of this labor income resulting from direct effects.

### *Impacts by Type of Activity*

The impacts of the maritime-related activities of businesses and nonprofit organizations on the state can be examined by the type of work the private sector employers do. As shown in Table 5.2, an estimated \$6.9 billion of the total impact on output was due to organizations involved in production. This includes agriculture, aquaculture and manufacturing as well as professional and technical consulting, recreation, and accommodation. Production generated over 70% of the total impact from businesses and nonprofits’ maritime activities. Of the \$6.9 billion in total impact generated by companies involved in production, almost 46% was due to indirect effects (\$1.2 billion) and induced effects (\$2.0 billion) combined.

*Table 5.2: Impact of Maritime-related Businesses and Nonprofits in Connecticut on Output by Type of Effect and Activity, 2017*

	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<i>(Mil 2018 \$)</i>				
<b>Total</b>	<b>\$9,751</b>	<b>\$5,200</b>	<b>\$1,674</b>	<b>\$2,878</b>
Production (NAICS 11; 31-33; 51-81)	\$6,874	\$3,719	\$1,159	\$1,996
Logistics and transportation (NAICS 48-49)	\$1,683	\$864	\$336	\$483
Retail and wholesale (NAICS 42-45)	\$1,003	\$512	\$150	\$340
Construction (NAICS 23)	\$192	\$105	\$29	\$58

Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

The second largest share of impact by maritime activity was due to logistics and transportation firms and organizations, which generated an estimated \$1.7 billion in total impact on Connecticut’s output, while retail and wholesale produced over \$1 billion of impact. Construction generated an impact estimated at \$192 million. Most of the total impacts were produced by direct effects. All industry groups had larger induced effects than indirect effects.

Private sector employers involved in production also generated the largest share of employment from maritime-related activity (Table 5.3). Of the more than 35,500 jobs generated by businesses and nonprofits involved in production, over 5,900 were due to indirect effects and 13,600 were due to induced effects. Logistics and transportation private sector employers were estimated to have produced over 6,250 jobs in Connecticut, while retail and wholesale generated more than 6,000 jobs. Construction firms produced over 1,250 jobs. As with the impacts on output, logistics and transportation, retail and wholesale, and construction employers all created more jobs through induced than indirect effects.



*Table 5.3: Impact of Maritime-related Businesses and Nonprofits in Connecticut on Employment by Type of Effect and Activity, 2017*

	<b>Total Impact on Employment</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Total</b>	<b>49,170</b>	<b>21,013</b>	<b>8,481</b>	<b>19,676</b>
Production (NAICS 11; 31-33; 51-81)	35,561	16,055	5,903	13,603
Logistics and transportation (NAICS 48-49)	6,255	1,314	1,633	3,308
Retail and wholesale (NAICS 42-45)	6,089	2,926	788	2,375
Construction (NAICS 23)	1,266	717	157	391

Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

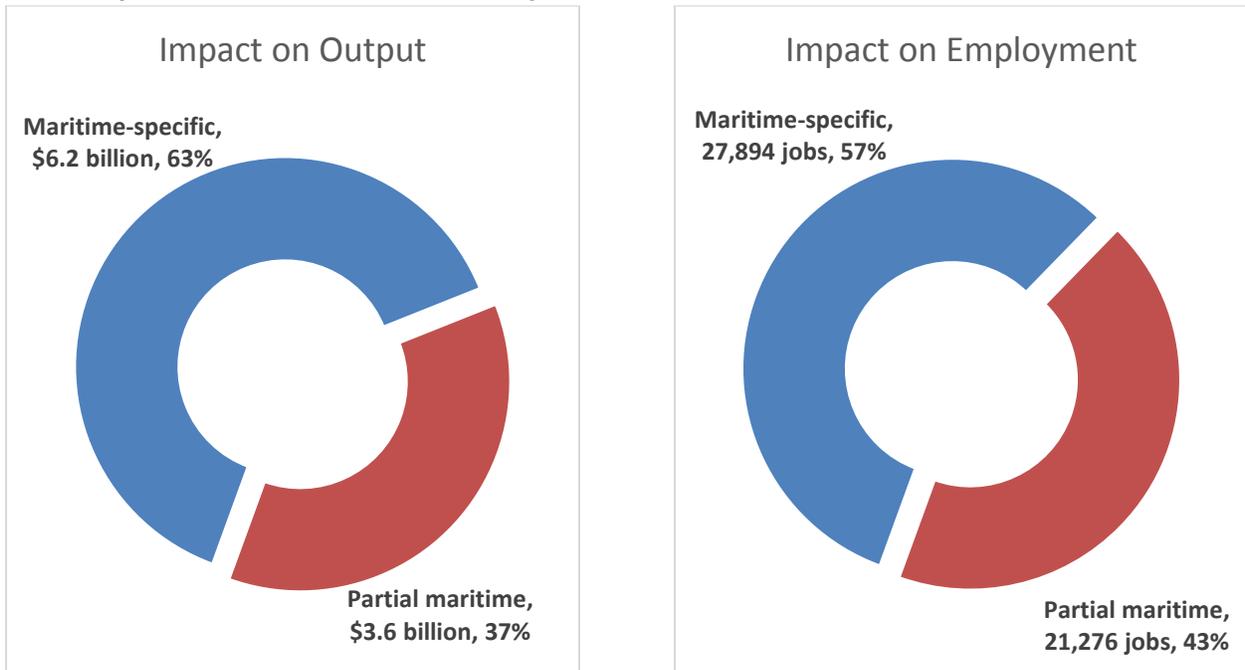
### *Impacts for Maritime-Specific versus Partial Maritime Industries*

Most prior economic impact analyses of Connecticut’s maritime industry have focused on the employment and output generated from the maritime-specific industry codes, such as Aquaculture (NAICS 1125) or Ship and Boat Building (NAICS 3366), overlooking the impacts of other companies and nonprofit organizations involved in maritime-related activities.

As shown in Figure 5.8, these non-maritime-specific industries are important contributors to the state’s maritime industry and its impact on the Connecticut economy. This study estimates that 37% of the impact on output from maritime activities in the state derives from businesses and nonprofits in industries only partially considered “maritime,” such as insurance, finance, and others. This represents an estimated \$3.6 billion of the total estimated impact of \$9.8 billion. Similarly, these partial maritime industries generated over 21,000 jobs, or 43% of the total impact on employment in the maritime industry. These findings show the importance of capturing these “partially maritime” businesses and nonprofits when discussing the industry as a whole.



Figure 5.8: Total Impacts of Business and Nonprofit Maritime Activities on Output and Employment by Amount of Involvement in Maritime Industry, 2017



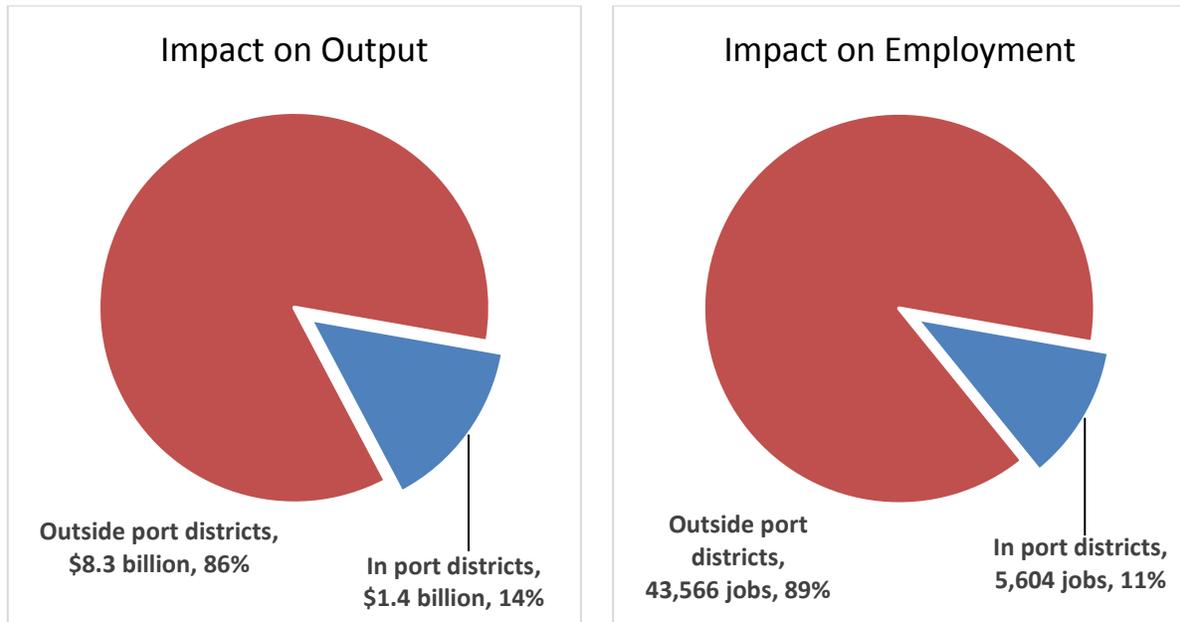
Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

#### Impacts Generated Statewide and from Activity in Port Districts

As discussed in Chapter 3, the port districts in New Haven and New London tend to be highly concentrated with maritime-related establishments, while the much larger (geographically) Bridgeport Port District has a smaller share of maritime-related businesses among its total establishments. Together, the maritime-related businesses and nonprofits in the three deepwater port districts generated an estimated \$1.4 billion in total output in 2017, which was 14% of the total impact generated from maritime activities by private sector employers across the state (Figure 5.9).<sup>89</sup> Similarly, of all jobs produced by maritime-related private activities, over 5,600 were estimated to be from businesses and non-profits in the port districts and over 43,500 were from businesses and non-profits outside the port districts. This demonstrates the importance of the three deepwater port districts as well as the wider maritime industry throughout the state.

<sup>89</sup> The total impact of the port districts as discussed here excludes impacts generated from government activities in those districts.

Figure 5.9: Impact of Maritime-related Businesses and Nonprofits in Port Districts and Connecticut, 2017



Sources: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

Note: Impacts exclude impacts generated from government activities in those districts.

## Conclusion

For-profit businesses and nonprofit organizations involved in maritime activity across the state are important parts of the Connecticut economy. While some businesses are clearly involved in and classified as a maritime industry – including those focused on fishing, aquaculture, boats and ship manufacturing and sales, marinas, and waterborne transportation – there are many businesses and nonprofits in industries not classified as “maritime” that also contribute to the state’s maritime industry. Maritime-related activities of non-maritime industries, in sectors including insurance, finance, legal, public relations, accommodation, and food services, have traditionally been excluded in other economic studies of Connecticut’s maritime industry. Yet, as demonstrated, there are many establishments across the state that are important contributors of maritime activities.

Together, private sector employers in maritime-specific and partial maritime industries in Connecticut generated an estimated annual impact on the state’s economy of over \$9.75 billion and over 49,000 jobs. While much of these impacts are due to activities on LIS and the Connecticut River, including businesses and nonprofits in the three deepwater port districts, maritime-related activities in other parts of the state contribute substantially to these impacts.

# CHAPTER 6 – THE IMPACT OF RECREATION AND TOURISM MARITIME ACTIVITIES IN CONNECTICUT ON OUTPUT AND EMPLOYMENT

---

Connecticut has a variety of maritime-related attractions and events that bring tourists to the state and provide opportunities for state residents who might otherwise spend their vacations out of state. Spending at maritime and tourist attractions has impacts on the state’s economy that include employment at those attractions as well as at restaurants, hotels, and other venues. As observed in the previous chapters, these direct impacts ripple through the state’s economy, creating additional activity across the state and in nearly all industry sectors.

This chapter provides an overview of maritime-related recreation and tourism activities in Connecticut, ranging from one-time events and attractions to year-round opportunities. This overview includes information about which activities tourists engage in during their visits. It then provides estimates of the impacts of spending by visitors to the state’s maritime attractions and events.

The key findings in this chapter are:

- Connecticut has a number of maritime and tourism attractions that draw hundreds of thousands of visitors each year. The visitors to these various attractions include state residents – who, in many cases, choose to enjoy Connecticut attractions rather than offerings in other states – and residents of other states and countries, who may visit non-maritime attractions as well.
- Spending by visitors to recreation and tourism maritime activities in Connecticut is estimated to generate almost \$1.2 billion annually. This spending also generates more than 10,000 jobs each year.<sup>90</sup>

## The Components of Connecticut’s Recreation and Tourism Maritime Activities

Recreation and tourism are important drivers of the Connecticut economy. While the state does not track the total number of tourists in the state, it does aggregate attendance numbers for over 50 major attractions through the VISION Visitor Index.<sup>91</sup> The attractions included in the

---

<sup>90</sup> The impacts of the employment at the events and attractions was discussed in Chapter 4 (for government activities and impacts) and Chapter 5 (for business and nonprofit activities and impacts), and much of the impact discussed in this chapter is likely duplicative of those impacts. As such, the totals from this chapter should not be added to those of the previous chapters to avoid double-counting the impacts.

<sup>91</sup> Information about the VISION Index is available on the website of CT DECD Office of Tourism at <https://www.ct.gov/cct/cwp/view.asp?a=2128&Q=564126&PM=1>. The VISION Index and other research by

VISION Index include notable maritime locations such as the Essex Steam Train & Riverboat Ride, the Maritime Aquarium at Norwalk, the Mystic Aquarium, the Mystic Seaport Museum, and the Submarine Force Museum.<sup>92</sup> In 2017, the VISION Visitor Index showed that over 6.47 million people visited maritime and non-maritime attractions.<sup>93</sup>

The VISION Index research also includes a regular intercept study that provides demographic information on the visitors. The most recent study available, from Summer 2017, suggests that most visitors to the attractions are Connecticut residents, although parties with out-of-state visitors tended to spend more than in-state visitors on items such as hotels or other lodgings, transportation, meals, recreation and shopping.<sup>94</sup>

Another study published by CT DECD was based on a survey of Connecticut's visitors in 2013.<sup>95</sup> Of the over 500 visitors surveyed, most were traveling in Connecticut for leisure purposes, and over three quarters used their own vehicle to do so.<sup>96</sup> Compared to the findings of the more recent VISION Index, this earlier study found that over 80% of those surveyed were from out-of-state, and the average spending per trip was lower for all visitors (both in-state and out-of-state residents) than in 2017.<sup>97</sup>

This survey data also provided detailed information on what the travelers did in the state while on their trips, and several of the activities mentioned were related to the state's maritime industry. For example, over 10% of the visitors in the state visited a beach while on their trip (Table 6.1). Historic sites and museums, which both include maritime-related sites, were also utilized by 8.1% and 6.6% of travelers, respectively. In addition to the activities included in the 2013 survey, other maritime recreation and tourism activities in Connecticut included annual industry conferences, retail exhibitions, cruise ship visits and rides in LIS, and public events at museums and historical sites devoted to the state's maritime legacy.

---

the Office of Tourism includes Connecticut residents who visit these sites, in addition to visitors from outside the state.

<sup>92</sup> [https://www.ct.gov/cct/lib/cct/tourism/visionattendance2015/vision\\_overview.pdf](https://www.ct.gov/cct/lib/cct/tourism/visionattendance2015/vision_overview.pdf)

<sup>93</sup> <https://www1.ctdol.state.ct.us/lmi/businessrends.asp#majoratt>.

<sup>94</sup> [https://www.ct.gov/cct/lib/cct/tourism/visionintercepts/vision\\_2017\\_ct\\_3\\_summer\\_summary.pdf](https://www.ct.gov/cct/lib/cct/tourism/visionintercepts/vision_2017_ct_3_summer_summary.pdf). Other findings of note were that almost all of the visitors from outside Connecticut who were surveyed said they had been to a Connecticut destination previously, and most of those surveyed were satisfied with their time in Connecticut.

<sup>95</sup> [https://www.ct.gov/cct/lib/cct/tourism/outreach2015/connecticut\\_-\\_tns\\_traveler\\_profile\\_2013-final\\_022615.pdf](https://www.ct.gov/cct/lib/cct/tourism/outreach2015/connecticut_-_tns_traveler_profile_2013-final_022615.pdf). For this report, "travelers" are defined as both in-state and out-of-state residents who travel over 50 miles or stay overnight.

<sup>96</sup> Ibid.

<sup>97</sup> Ibid.

*Table 6.1: Travelers to Connecticut Participating in Water-Related Activities, 2013*

Activity	Percentage of respondents participating
Beach	10.3%
Historic sites/ churches	8.1%
Museums	6.6%
Nature travel/ ecotouring	3.5%
Wildlife viewing	2.9%
Fishing	1.3%
Sailing	0.8%
Motorboat/ jetski	0.5%
Waterskiing	0.2%
Scuba/snorkeling	0.1%

Source: CT DECD 2013 Traveler Profile Research, produced by H2R Market Research in 2015.<sup>98</sup>

Examples of the various attractions in Connecticut are discussed below. This discussion is not intended to be comprehensive, but, rather, to give an overview of the various types of maritime recreation and tourism activities that are part of Connecticut’s maritime industry.

### *Festivals, Conferences, Exhibitions, Cruises and Other Events*

Connecticut plays host to a range of maritime events throughout the year. Most of these activities take place in communities along LIS, although there are a few notable exceptions.

**Festivals and Activities.** Some of the largest maritime recreation and tourism festivals in the state occur in New London. These include *Sailfest*, a three-day summer event that includes fireworks, live music, vendors, ships for water cruises, and other attractions. Over 300,000 people visit the event each year; in 2016 this included tourists from 45 states.<sup>99</sup> New London also hosts the annual *Connecticut Maritime Heritage Festival*, which takes place over five days and includes tours of visiting ships, live music, and, in 2018, a “Maritime Career Opportunities Expo” for high school students to learn about maritime careers and jobs.<sup>100</sup> Tens of thousands of people visit the festival each year. There was also a *Thames River Quest* started in 2018 where participants competed to answer questions about Downtown New London Waterfront Park, Fort Griswold, and Fort Trumbull. This game included free trips on the Thames River Water Taxi that links the sites mentioned above.<sup>101</sup>

Due to its location on the Connecticut River, a number of festivals and similar activities take place in Hartford. This includes the *Dragon Boat and Asian Festival* and the *Head of the*

<sup>98</sup> Survey respondents could indicate they participated in more than one activity. Only participation in water-related activities are shown in this table. This report is available at <https://www.ct.gov/cct/cwp/view.asp?a=2128&Q=564126&PM=1>.

<sup>99</sup> Information obtained via telephone interview, site visit, and documentation provided by representative from New London Port Authority.

<sup>100</sup> <http://ctmaritimefest.com/festivalinformation/>

<sup>101</sup> <https://www.thamesriverheritagepark.org/quests/>

**Riverfront Regatta**, a rowing competition for various skill levels. Hartford also sees occasional visits from replicas of historic trading or exploratory ships including the **Niña and Pinta** in 2017 and the **Onrust** in 2018. Hartford has traditionally hosted the annual **Hartford Boat Show** although in 2019 it will move to Mohegan Sun. There are also boat shows in other towns in Connecticut throughout the year that host vendors and attract thousands of prospective buyers. As discussed in the previous chapter, over 1,100 boats were sold in Connecticut in 2017,<sup>102</sup> and boat dealers employ over 440 people in the state.<sup>103</sup>

The annual three-day **Sea Music Festival** is offered by the Mystic Seaport Museum during the summer. It is focused on the “music of the sea” and includes concerts with performers from around the world as well as workshops, demonstrations, and a conference for scholars.<sup>104</sup>

As the headquarters for the Connecticut Maritime Association (CMA) and the location of many international shipping and financing companies, Stamford hosts the annual **CMA Conference** that brings industry experts from around the world to Fairfield County. In 2018, there were an estimated 2,500 attendees.<sup>105</sup> The **U.S. Coast Guard Academy Commencement** also draws a significant portion of its attendees from outside Connecticut since students come from across the country.

As discussed in Chapter 3, the ports of Bridgeport and New London are home to several **passenger ferry companies**, which transport riders between Connecticut and Long Island, NY, Block Island, RI, and Fishers Island, NY. The largest companies, the Bridgeport & Port Jefferson Steamboat Company and the Cross Sound Ferry (in New London), each transport approximately 1 million riders per year. They also offer special tours or excursions to other visitor attractions in the state (and the wider New England region), and the Cross Sound Ferry conducts summer cruises around lighthouses in LIS.

There are a number of other ferries and **waterborne tours** in Connecticut. Several companies, for example, offer short excursions around the Thimble Islands leaving from Branford. The Mystic Whaler leaves New London with cruises ranging from a few hours along the coast to multi-day, overnight excursions, while boats on the Connecticut River offer a variety of cruises out of Hartford, Middletown, and Haddam. Some of these cruises include special attractions such as live music or opportunities to see eagles, ospreys, or other birds and wildlife. There are also a number of fishing charter and party boats leaving out of various harbors along the state’s Long Island Coast,

---

<sup>102</sup> Susan Haigh, “Connecticut Boat Dealers Seeing Effects of Tax Cut,” Associated Press 2018 May 16. <https://www.usnews.com/news/best-states/connecticut/articles/2018-05-16/connecticut-boat-dealers-seeing-effects-of-tax-cut>.

<sup>103</sup> U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages. Impacts from boat sales were included in Chapter 5.

<sup>104</sup> <https://www.mysticseaport.org/event/sea-music-festival/>

<sup>105</sup> <https://www.maritime-executive.com/corporate/cma-s-annual-shipping-conference-starts-march-12#gs.OBi0q6E>

including more than 30 boats that are members of the Connecticut Charter and Party Boat Association.<sup>106</sup>

In addition, **cruise ships** occasionally make stops at the Port of New London. In 2018, the Hebridean Sky made a stop in New London after leaving from New York City with over 100 passengers. While this was the first international cruise ship to visit New London in several years, the domestic Grande Mariner has annually made stops at the port. It brings approximately 90 riders each year, with the length of stay varying from day trips to multiple nights.<sup>107</sup>

### *Beaches, Museums and Other Attractions*

In addition to the special attractions listed above, Connecticut's maritime industry includes year-round recreation and tourism opportunities. For example, there are 73 **beaches** in Connecticut that fall under the authority of either the state or a local government.<sup>108</sup> As seen in Table 6.1, these beaches are a popular attraction for both state residents and visitors from out-of-state and, while most of their use is likely during the warmer months, many have year-round access. The most popular state beach, Hammonasset Beach State Park in Madison, has over 1 million visitors per year.<sup>109</sup> While the associated impacts on businesses in the state of these beach visitors may be low due to guests bringing their own food or supplies with them, they produce government revenues, such as parking fees for out-of-state visitors, among other benefits.

Many towns and cities along LIS or the Connecticut River also have **docks or marinas** operated by the local government or a private company, with some towns having multiple facilities. At these locations, residents and visitors can rent or store boats and related equipment. Many also include restaurants and offer maintenance and repair services. Some towns and cities also have **town- or city-owned islands** and provide ferries or water taxi services between the islands and the shore. In Bridgeport, for example, 25,000 residents and visitors were taken by water taxi from the city to Pleasure Beach in Fiscal 2017.<sup>110</sup> Greenwich also has a ferry that takes guests to two town-owned islands or on a two hour "cruise to nowhere."<sup>111</sup>

The state's maritime-related **museums and aquariums** include a number of offerings in Mystic, such as the Mystic Seaport Museum and the Mystic Aquarium. In 2017, the Seaport Museum recorded almost 250,000 visitors,<sup>112</sup> while the aquarium reported almost 719,000 visitors in

---

<sup>106</sup> <http://www.ctsportfishing.com/boats.html#tabs-5>

<sup>107</sup> Information obtained via telephone interview, site visit, and documentation provided by representative from New London Port Authority.

<sup>108</sup> [http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental\\_health/BEACH/032217CTREGULATEDBEACHES2016pdf.pdf?la=en](http://portal.ct.gov/-/media/Departments-and-Agencies/DPH/dph/environmental_health/BEACH/032217CTREGULATEDBEACHES2016pdf.pdf?la=en).

<sup>109</sup> CT DEEP website, <https://www.ct.gov/deep/cwp/view.asp?A=2716&Q=325210>.

<sup>110</sup> City of Bridgeport FY 2017-2018 Adopted General Fund Budget. [https://www.bridgeportct.gov/filestorage/341650/341652/342544/2017\\_2018\\_Proposed\\_Budget\\_4.7.17.pdf](https://www.bridgeportct.gov/filestorage/341650/341652/342544/2017_2018_Proposed_Budget_4.7.17.pdf)

<sup>111</sup> <https://www.greenwichct.gov/641/Ferry-Service>

<sup>112</sup> <https://www.mysticseaport.org/wp-content/uploads/2017-Annual-Report.pdf>

2016.<sup>113</sup> Located nearby is also the Submarine Force Library and Museum, which was initially established by Electric Boat but later donated to the U.S. Navy. In addition to various artifacts and documents, the museum also offers the opportunity to tour the USS Nautilus, a former working submarine on site. Also in New London are the Custom House Maritime Museum, operated by the New London Maritime Society (NLMS), and the future home of the U.S. Coast Guard Museum (which is currently in the planning stages).

The NLMS also manages three *lighthouse* stations in the New London harbor area, and there are a number of other lighthouses along the state's shoreline that draw state residents and out-of-state visitors. In addition to the waterborne lighthouse tours mentioned above, some lighthouses and their grounds are also open for visitors year-round or during special events.

Outside New London County are a number of other maritime attractions in the state. One of the largest is the Maritime Aquarium at Norwalk, which hosted over 477,000 visitors in 2017.<sup>114</sup> The Connecticut River Museum in Essex offers permanent exhibits about the river as well as river cruises and other programming. Also in Essex, visitors can ride the Essex Steam Train & Riverboat, where the return trip is by boat on the river.

Other smaller and more *general interest historical sites* also play host to part of the tourism and recreational attractions of the state's maritime industry. The New Haven Museum, for example, has exhibits concerning the city's maritime history, including a special gallery on the Amistad. A replica of the Amistad ship is part of Connecticut's Freedom Trail at its homeport in New Haven, although it regularly visits other parts of the state including New London. At the cove at Wethersfield, the Wethersfield Historical Society offers a maritime exhibit in a former export warehouse.

## The Impacts of Recreation and Tourism Maritime Activities in Connecticut<sup>115</sup>

The total estimated annual impact of recreation and tourism maritime activities in Connecticut on output was \$1.170 billion in 2017 (Table 6.2).<sup>116</sup> This impact represents an estimate of visitors to the state and in-state residents participating in maritime-related events and attractions. The impact on output includes:

---

<sup>113</sup> [http://www.mysticaquarium.org/wp-content/uploads/2017/11/SEA-RESEARCH-FOUNDATION-INC.\\_990-PUBLIC-TAX-RETURN-ATTACHMENTS\\_CLIENT-COPY-V1-PUBLIC-INSPECTION-COPY\\_2016.pdf](http://www.mysticaquarium.org/wp-content/uploads/2017/11/SEA-RESEARCH-FOUNDATION-INC._990-PUBLIC-TAX-RETURN-ATTACHMENTS_CLIENT-COPY-V1-PUBLIC-INSPECTION-COPY_2016.pdf)

<sup>114</sup> The Maritime Aquarium 2016 & 2017 Annual Report, [https://issuu.com/maritimeaquarium/docs/annual\\_report\\_2016\\_\\_17\\_copy](https://issuu.com/maritimeaquarium/docs/annual_report_2016__17_copy).

<sup>115</sup> As noted at the outset of this chapter, a portion of the impacts presented here were also captured in the previous chapters. See Appendix B for more information about the impact analysis methodology and a glossary of terms.

<sup>116</sup> This estimate was based on 5 million visitor days in Connecticut, split between both state residents and out-of-state visitors. See Appendix A for more information about the data used in this section.

- Direct effects of \$566 million, which represent spending by visitors to the state and state residents at maritime attractions and events;<sup>117</sup>
- Indirect effects of \$235 million, which result from the increased production by companies in the state due to spending by visitors to the state and state residents at maritime attractions and events; and
- Induced effects of \$370 million, which resulted as labor income received as a result of the direct and indirect effects ripples through the wider economy as household spending.

*Table 6.2: Impacts of Recreation and Tourism Maritime Activities on Output, Employment, and Value Added by Type of Effect, 2017*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018 \$)</b>
<b>Total</b>	<b>\$1,170</b>	<b>10,090</b>	<b>\$719</b>	<b>\$501</b>
Direct	\$566	6,296	\$326	\$253
Indirect	\$235	1,247	\$147	\$89
Induced	\$370	2,547	\$247	\$159

Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

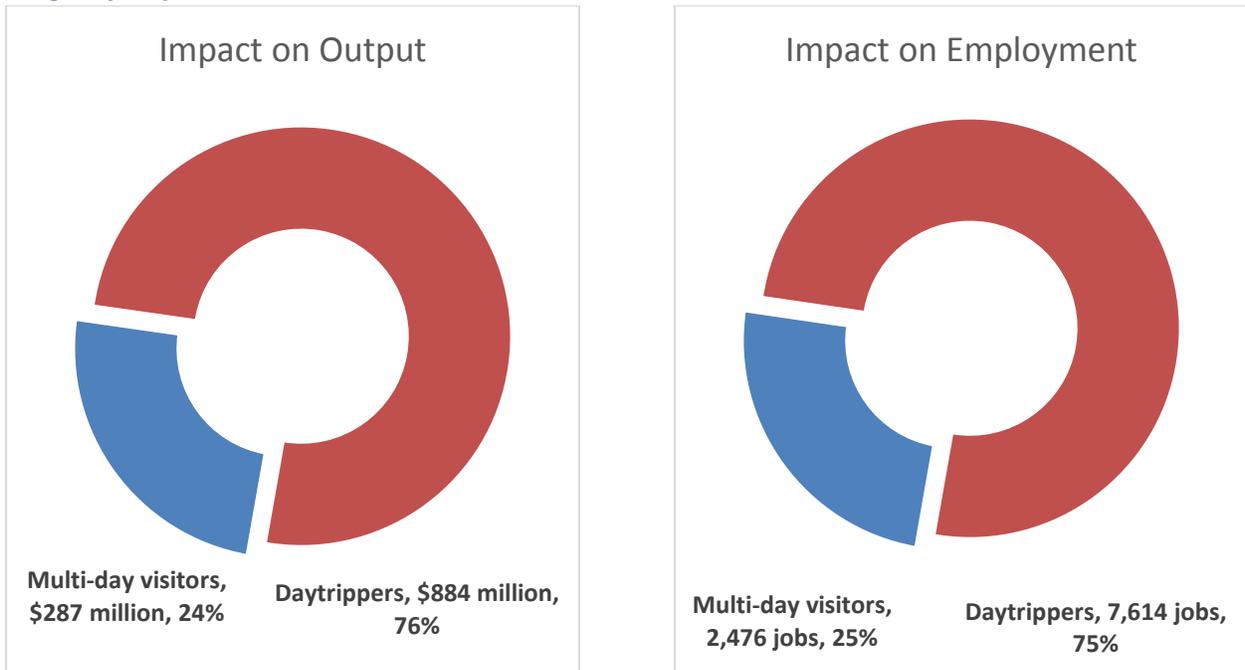
Recreation and tourism maritime activities in the state are estimated to have generated over 10,000 jobs in 2017. Most of these jobs were created through direct effects; an additional 1,200 jobs were generated via indirect effects and over 2,500 jobs via induced effects. Total estimated value added in the state due to recreation and tourism spending was an estimated \$719 million, of which labor income accounted for an estimated \$501 million.

### *Impacts by Length of Stay*

While overnight or multi-night guests to the state’s attractions may spend more per person during a trip visiting the state’s maritime recreation and tourism than one-day visitors do, the much larger share of daytrippers, or those who do not stay overnight during their outing, contributes more to the economic impact. Three-quarters of the total impacts on output and employment (\$884 million and 7,614 jobs, respectively) were produced by daytrippers, while multi-day visitors generated the remaining one-quarter of impacts (Figure 6.1).

<sup>117</sup> Note that direct effects do not equal total spending by the visitors. As discussed in Appendix A, visitors were estimated to spend over \$865 million on recreation/ entertainment, restaurants/ other food, shopping, transportation, and accommodations. However, some of these dollars do leave the state (as do some indirect and induced effects), which results in lower direct effects compared to total spending.

Figure 6.1: Impacts of Recreation and Tourism Maritime Activities on Output and Employment by Length of Stay, 2017

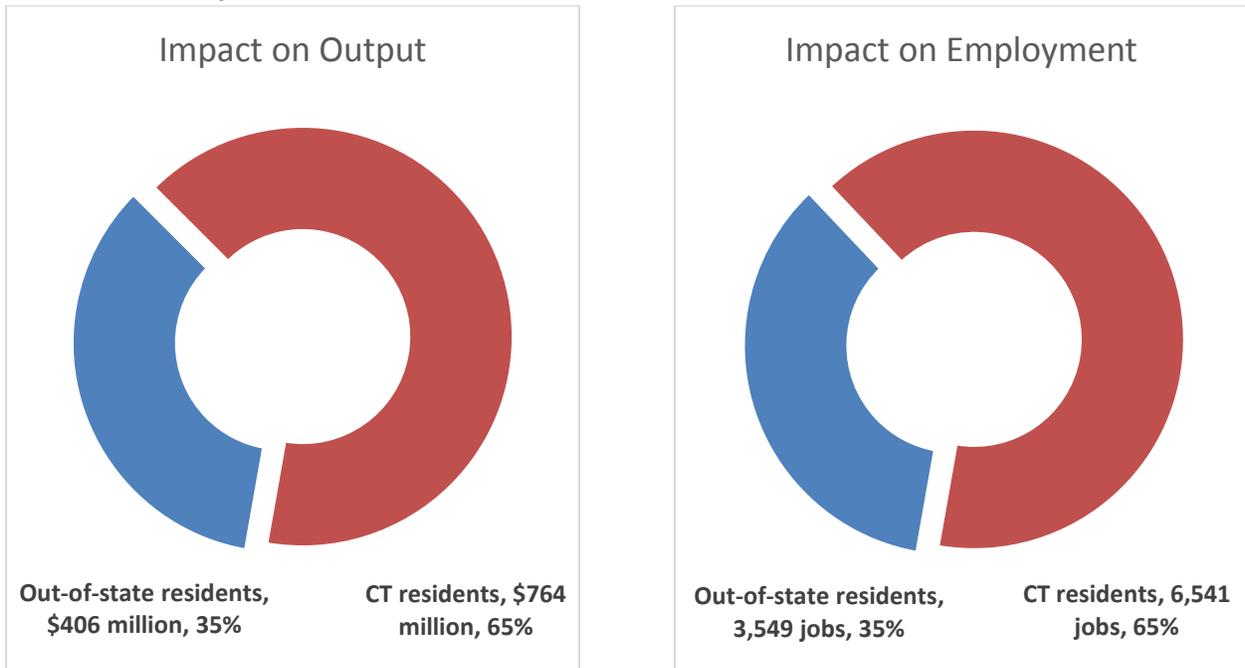


Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

### Impacts of In-State versus Out-of-State Visitors

Maritime recreation and tourism activities attract both in-state and out-of-state attendees, and Connecticut residents generate more of the economic impact of recreation and tourism activities than do out-of-state attendees. In 2017, of the \$1.17 billion in total impact on output, an estimated \$764 million, or 65%, was due to state residents participating in the state’s maritime recreation and tourism activities (Figure 6.2). Out-of-state residents generated \$406 million, or 35% of the total impact on output. Connecticut residents generated over 6,540 jobs, or 65% of total jobs, while spending by out-of-state residents generated almost 3,550 jobs.

Figure 6.2: Impacts of Recreation and Tourism Maritime Activities on Output and Employment by In-state versus Out-of-state Residents, 2017

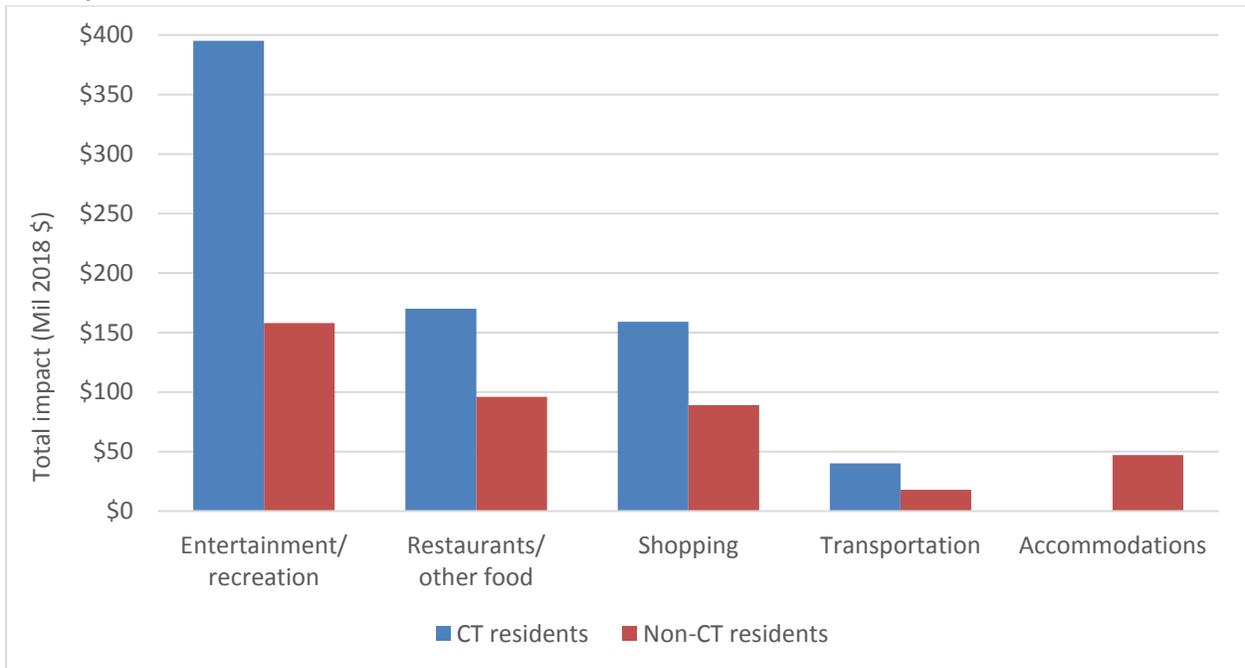


Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

### Impacts by Activity

Almost half of the total impact on output from recreation and tourism spending was generated on entertainment or recreation activities in 2017 (Figure 6.3). This category of spending represented an estimated \$553 million, or 47%, of the total impact. Spending on food – regardless of whether the food was purchased at a restaurant, grocery store, or other location – generated approximately 23% of the total output generated through recreation and tourism maritime activities, while spending on shopping generated 21% of the total output. Spending on transportation and accommodations each generated less than 5% of total output.

Figure 6.3: Total Impact of Recreation and Tourism Maritime Activities on Output by Activity and State of Residence, 2017



Sources: Connecticut Department of Labor Employer Search; D&B Hoovers; review of maritime-related business lists and websites; IMPLAN 2016 model; CERC calculations.

## Conclusion

Connecticut’s recreation and tourism maritime activities attract millions of visitors each year. This includes both state residents, who may choose to visit one of Connecticut’s attractions rather than a nearby out-of-state maritime attraction (e.g., Cape Cod, MA, or Newport, RI), and out-of-state residents, including international visitors. The spending of these visitors creates an estimated annual impact of almost \$1.2 billion in output. The spending also supports over 10,000 jobs each year in Connecticut.

# APPENDIX A – DATA SOURCES

---

The data used in this analysis came from a wide range of sources, including contacts within the local port authorities themselves.

## Interviews and/or Data Providers

CERC and the CPA would like to thank the following individuals and organizations for their assistance with data collection for this project:

- Jay Baird and Frank Vannelli, Logistec
- Justin Ballott, Bridgeport & Port Jefferson Ferry
- Kathleen Burns, Connecticut Marine Trades Association
- David Carey, CT Department of Agriculture, Bureau of Aquaculture
- Lea Catherman, Bridgeport Regional Aquaculture School
- Stewart Chute, CT Department of Public Health
- Jeb Cooke, Fishers Island Ferry
- Greg Debrule, Black Hawk Fishing Boat
- Don Frost, Connecticut Maritime Association
- Bill Gash, Connecticut Maritime Coalition
- Joe Gilbert, Empire Fisheries
- CDR Maureen Johnson, U.S. Coast Guard
- Mark Jones, Submarine Base New London
- TJ Karbowski, Rock and Roll Charters
- Martha Klimas, Bridgeport Port Authority
- Eric Knott, City of Stamford Harbormaster
- Richard MacMurray and Stanley Mikus, Cross Sound Ferry
- Barbara Neff, New London Port Authority/ Neff Productions
- Edward O'Donnell, U.S. Army Corps of Engineers
- Amy Perry, Thames River Water Taxi
- David Pohorylo, New England Shipping Company
- Philip Scarrozzo, CT Department of Transportation, Bureau of Public Transportation
- Judi Sheffele and Jon Abbott, New Haven Port Authority
- Geoffrey Steadman, consultant
- Brian Thompson, CT Department of Energy and Environmental Protection
- Janene Vandi, University of Connecticut Avery Point
- Richard Warren, O&G Industries

CERC and the CPA would also like to thank exhibitors and/or attendees at the following events, who shared information on their organizations' operations and the maritime industry:

- CMA Conference, Stamford
- Connecticut Maritime Coalition Board meeting, Bridgeport
- Hartford Boat Show, Hartford
- Osprey/Eagle Cruise, Connecticut River Expeditions

## Data Collection Process by Chapter

Due to the various facets of the maritime industry and the need to capture and utilize diverse sets of data for each part of the industry, data collection for this report was different for each chapter. After data collection, the data (either employee counts or dollars of spending) were used as initial inputs into the IMPLAN models, as discussed in Appendix B. Data collection for each chapter occurred via the following methods:

### *Chapter 2 – The Impact of the Commodities Moving Through Connecticut Ports and Stamford Harbor on Output and Employment*

Data on foreign trade through Connecticut's deepwater ports was obtained from WISERTrade<sup>118</sup> for 2014 to 2017. This data included the amount of exports and imports that passed through the state's ports. Exports were differentiated to note those that originated in Connecticut and those that originated in other states. For the impact analysis, only exports that originated in the state were used. Likewise, for the import data, only the impact of the imports that stayed in Connecticut for further production or sales were estimated. For exports and imports, all traded commodities were identified at the two-digit Harmonized System (HS)<sup>119</sup> and mapped as commodities into the production functions and final demand requirements in the IMPLAN model.

Data on domestic trade through the deepwater ports and Stamford Harbor was obtained from the U.S. Army Corps of Engineers (USACE) Waterborne Commerce Statistics Center. The calculations for the impacts of domestic trade were based on the volume of goods moved domestically via these harbors. The USACE data did not include the amount of domestic cargo received that remained within the state or for the shipments out that originated in Connecticut. The methodology for domestic impacts, therefore, assumed that the shares of Connecticut-originated or

---

<sup>118</sup> WISERTrade is one of the leading sources of international trade data. More information about WISERTrade can be found on its website at <http://www.wisertrade.org>.

<sup>119</sup> HS codes are the internationally-accepted and internationally-used system for classifying traded products and commodities. In use since 1988, the HS breaks products down into at least four digits, with the first two digits indicating the section of the code (e.g., 01-05 for Animal & Animal Products) and the following digits indicating more specific categories within those sections.

-destined domestic trade was the same as for Connecticut exports or imports for the same commodity type.

Because the USACE data does not include the value of the commodities, the 2016 values from foreign trade data were used as proxies to estimate the value of the volume reported in the USACE data by commodity at the 2-digit HS code level. This estimation procedure provided the dollar estimates needed as inputs for the IMPLAN model. The benchmarking of the domestic data to the 2016 values observed in the international data mitigated concerns about potential changes in the commodity mixes that would affect commodity valuations in the foreign data but not be observable in the WISERTrade data. This approach also mitigated the differences in commodity categorizations between the WISERTrade and the USACE data.

### *Chapter 3 – The Impact of Connecticut Ports’ Maritime Activities on Output and Employment and Appendix D – The Impact of Non-Maritime Employers in Connecticut Port Districts*

The data collection process used for Chapter 3 and Appendix D started with obtaining maps showing the borders of the three deepwater port districts. After the borders were identified, Google Maps was used to identify the employers within those districts.<sup>120</sup> Because some businesses may have closed or opened between the time when the Google Maps Street View imaging was conducted and when this data was collected, the data should be considered a point-in-time estimate. The maps were supplemented by tours of New Haven and New London port districts guided by local port authority personnel and in-person and telephone interviews with knowledgeable parties included in the list above. Based on these tours and interviews, as well as reviews of industry functions, businesses were classified as either “maritime” or “non-maritime.”

After all establishments were identified and their employee counts determined, NAICS industry codes were obtained via D&B Hoovers or the State of Connecticut Department of Labor – Search for Employers (<https://www1.ctdol.state.ct.us/lmi/empsearch.asp>) to classify establishments in their appropriate industry groupings for analysis. For employers that were not listed in these standardized databases, company websites or other online sources were used to determine employee counts or industries. Finally, employment for establishments that still could not be determined was estimated based on the NAICS code.

### *Chapter 4 – The Impact of Government Maritime Activities in Connecticut on Output and Employment*

Impacts for federal or state agencies were based on the number of employees working on maritime-related activities as shown in Table 4.1 and Table 4.2 in Chapter 4. As noted there, these employment counts were obtained directly from representatives of those agencies, when available. If employment totals were not available directly from the agencies, they were obtained from the agencies’ websites, D&B Hoovers, or the Connecticut Department of Labor Employer Search. Similarly, the impacts for the three marine high schools were based on employment data obtained

---

<sup>120</sup> These counts do not include commercial residential complexes or parking structures or lots.

from the school or from Connecticut State Department of Education School Profiles and Performance Reports.

State grants to businesses and nonprofits, including the DECD and DOL programs mentioned in the chapter, were not included in this section of the report. Federal and state pass-through funds to other governments were included for employment in the agency that received the funds. The effects of these funding streams, which allow organizations to hire personnel or invest in their properties, do produce impacts on the state's economy, and these impacts were captured in Chapter 5 and Chapter 6 of this analysis.

Local government impacts were based on budgeted operating expenditures by department or program area related to police, fire, public works, and recreation and parks for Fiscal 2017 to 2018, if available. Activities that were specifically not maritime-related, such as expenditures for a municipal transfer station or airport, were excluded from the spending totals. To adjust for the fact that maritime-related activities were only a portion of the responsibilities of the relevant departments, only a share of the adjusted totals was included in the analysis calculations, with this share based on actual maritime spending in Connecticut municipal budgets as follows:

- For police departments, 4% of the budget was assumed to be for maritime-related police activities;
- For fire departments, 1.4% of the budget was assumed to be for maritime-related fire activities;
- For public works departments, 7.4% of the budget was assumed to be for maritime-related activities; and
- For recreation and parks departments, 25% of the budget was assumed to be for maritime-related activities.

Any budgeted expenditures for specific harbor or dock management programs or activities outside these four agencies were fully included in the town or city's total maritime spending. In addition, local or regional public health departments are responsible for collecting beach water samples for environmental health concerns. To include the costs of this, one-quarter of a sanitarian's time was also included for each town or city. The impacts for the three marine-focused public high schools were based on staffing data obtained directly from the schools either via email or via the annual Profile and Performance Reports produced by the Connecticut Department of Education.<sup>121</sup>

These impacts are a conservative estimate of the government maritime activities in the State of Connecticut. Since the federal and state impacts are based on employment, they exclude effects from consultants and contractors (with the exception of the naval base) as well as the local spending by cadets at the USCGA during their time in the state. There are also additional and likely

---

<sup>121</sup> <http://edsight.ct.gov/SASPortal/main.do>.

smaller local government spending streams on maritime activities outside the core agencies (Police, Fire, Recreation and Parks, and Public Works) included in the analysis. Further, because this study focused on ongoing maritime activities in the state, one-time investments such as the recent reconstruction of Norwalk Visitors' Docks or the ongoing preparations for potential dredging of the New Haven harbor are not included.

### *Chapter 5 – The Impact of Business and Nonprofit Maritime Activities in Connecticut on Output and Employment*

The employment figures that formed the basis of the impact analysis in Chapter 5 were obtained from the U.S. Bureau of Labor Statistics (BLS) Quarterly Census of Employment and Wages (QCEW) for average annual employment by NAICS code for 2017. In addition to industries that were directly involved in maritime activities, such as Ship or Boat Building (NAICS 3366) or Marinas (NAICS 713930), inclusion of additional industries was based on the presence of businesses and nonprofit organizations in those industries on at least one list of maritime industry organization members or maritime-related businesses. Membership lists reviewed included:

- Connecticut Marine Trades Association
- Connecticut Maritime Association
- Connecticut Maritime Coalition
- Connecticut Charter & Party Boat Association
- National Marine Distributors Association
- North American Marine Environment Protection Association

Business lists reviewed included:

- American Sailing Association – certified sailing schools
- Connecticut Department of Energy and Environmental Protection – fishing license vendors and bait shops
- Connecticut Office of Tourism – marinas
- Connecticut Office of Tourism – Open House Day participants
- East Coast Shellfish Growers Association – members, hatcheries and nurseries
- EduMaritime – sailings schools
- Guidestar.org – charities in Connecticut
- National Oceanic and Atmospheric Administration – dealer permit holders
- U.S. Food and Drug Administration Interstate – Certified Shellfish Shippers List

All maritime-related businesses and nonprofit organizations identified within the Bridgeport, New Haven and New London port districts as part of the data collection for Chapter 3 were also included in the review of business lists and membership organizations as described above.

After these businesses and nonprofit organizations and their NAICS industry codes were identified, the industry codes were divided into three groups:

1. “Maritime-specific industries” were those industries (at the four- or six-digit NAICS code level) that were almost completely associated with the state’s maritime industry on either LIS or the Connecticut River. While some businesses in these industries may have been active with regard to boating or fishing on the state’s lakes, for example, the assumption is that most of their employment and output related to maritime. These industries also tended to be members of multiple business organizations or appeared on more than one business list and were also often included in other impact analyses of the state’s maritime industry.

The maritime-specific industries for this report were:

- Aquaculture (NAICS 1125)
- Fishing (NAICS 1141)
- Seafood Product Preparation and Packaging (NAICS 3117)
- Ship and Boat Building (NAICS 3366)
- Fish and Seafood Merchant Wholesalers (NAICS 424460)
- Boat Dealers (NAICS 441222)
- Fish and Seafood Markets (NAICS 445220)
- Sea, Coastal, and Great Lakes Transportation (NAICS 4831)
- Scenic and Sightseeing Transportation, Water (NAICS 487210)
- Support Activities for Water Transportation (NAICS 4883)
- Marinas (NAICS 713930)

The average annual employment in these industries, as provided in the QCEW, were included in the impact analysis in Chapter 5. The exception for this was employment in Ship and Boat Building, which was suppressed due to federal data regulations. Employment in this industry was, therefore, estimated from the number of suppressed jobs in the three-digit NAICS industry, assuming the share of establishments in Ship and Boat Building (of 17 establishments in NAICS 336, 15 establishments were in NAICS 3366) represented the same share of employment.

2. “Partial maritime industries” were those industries typically not associated with a maritime function but that had businesses or nonprofit organizations that participated in maritime-related activities or services. For example, the membership of the Connecticut Maritime Association, a Connecticut-based organization that represents international shipping and trade interests, includes a number of finance, insurance, data, public relations, and legal firms. Since maritime-related work is only part of what these firms do, their effects are typically not captured in an economic impact analysis of the maritime industry, although they are an important part of the industry.

By three-digit NAICS code, the following industries were identified as partial maritime industries and included as such in this report:

- Support Activities for Agriculture and Forestry (NAICS 115)
- Construction of Buildings (NAICS 236)
- Heavy and Civil Engineering Construction (NAICS 237)
- Specialty Trade Contractors (NAICS 238)
- Paper Manufacturing (NAICS 322)
- Petroleum and Coal Products Manufacturing (NAICS 324)
- Chemical Manufacturing (NAICS 325)
- Plastics and Rubber Products Manufacturing (NAICS 326)
- Fabricated Metal Product Manufacturing (NAICS 332)
- Machinery Manufacturing (NAICS 333)
- Computer and Electronic Product Manufacturing (NAICS 334)
- Electrical Equipment, Appliance, and Component Manufacturing (NAICS 335)
- Miscellaneous Manufacturing (NAICS 339)
- Merchant Wholesalers, Durable Goods (NAICS 423)
- Wholesale Electronic Markets and Agents and Brokers (NAICS 425)
- Motor Vehicle and Parts Dealers (NAICS 441)
- Electronics and Appliance Stores (NAICS 443)
- Building Material and Garden Equipment and Supplies Dealers (NAICS 444)
- Food and Beverage Stores (NAICS 445)
- Gasoline Stations (NAICS 447)
- Sporting Goods, Hobby, Musical Instrument, and Book Stores (NAICS 451)
- Miscellaneous Store Retailers (NAICS 453)
- Nonstore Retailers (NAICS 454)
- Truck Transportation (NAICS 484)
- Transit and Ground Passenger Transportation (NAICS 485)
- Scenic and Sightseeing Transportation (NAICS 487)
- Support Activities for Transportation (NAICS 488)
- Warehousing and Storage (NAICS 493)
- Publishing Industries (except Internet) (NAICS 511)
- Data Processing, Hosting, and Related Services (NAICS 518)
- Other Information Services (NAICS 591)
- Credit Intermediation and Related Activities (NAICS 522)
- Securities, Commodity Contracts, and Other Financial Investments and Related Activities (NAICS 523)
- Insurance Carriers and Related Activities (NAICS 524)
- Rental and Leasing Services (NAICS 532)
- Professional, Scientific, and Technical Services (NAICS 541)
- Administrative and Support Services (NAICS 561)

- Waste Management and Remediation Services (NAICS 562)
- Educational Services (NAICS 611)
- Social Assistance (NAICS 624)
- Performing Arts, Spectator Sports, and Related Industries (NAICS 711)
- Museums, Historical Sites, and Similar Institutions (NAICS 712)
- Amusement, Gambling, and Recreation Industries (NAICS 713)
- Accommodation (NAICS 721)
- Food Services and Drinking Places (NAICS 722)
- Repair and Maintenance (NAICS 811)
- Religious, Grantmaking, Civic, Professional, and Similar Organizations (NAICS 813)

A share of the average annual employment in these industries was included in the economic impact analysis to represent their partial involvement in the state’s maritime industry. Adjusting that share would affect the results of the impact analysis, so, for this report, it was set at a conservative value (1.5% for all industries) based on maritime-related employment within sampled industries.

3. “Non-maritime industries” are those industries which did not appear on any of the business or membership lists related to the maritime industry that were collected as part of this project. While businesses in these industries may be involved in some way with maritime-related activities, their exclusion was due to the lack of evidence of such work and maintains a conservative approach to this economic impact analysis.

As noted, no jobs in the non-maritime industries were included in the analysis in Chapter 5.

### *Chapter 6 – The Impact of Recreation and Tourism Maritime Activities in Connecticut on Output and Employment*

The impact analysis for Chapter 6 was based on a number of sources, including telephone calls or email exchanges with representatives from various maritime tourism attractions in the state, websites for maritime tourism attractions, publicly-available reports, and data from the Connecticut Department of Economic and Community Development (DECD) Office of Tourism Research, the Connecticut Department of Labor, the American Hotel and Lodging Association (AHLA), and ValuePenguin.com.

As a first step, the total number of visitors to various major maritime attractions in Connecticut was obtained from the attractions’ websites or via telephone calls or email requests to representatives of the attraction or its sponsoring organization. These attractions were:

- Hammonasset Beach State Park
- Ferries between Connecticut, Long Island, and other locations
- Maritime Aquarium at Norwalk
- SailFest

- CMA Conference
- U.S. Coast Guard Academy
- Cruise ship visits
- Connecticut Maritime Heritage Festival
- Lighthouse cruises departing from New London
- Hartford Boat Show
- Norwalk Boat Show
- Essex Boat Show
- Mystic Seaport Museum
- Connecticut River Museum
- Maritime Aquarium at Norwalk
- Pleasure Beach water taxi

Based on the total annual visitors to these attractions as well as other identified maritime attractions in the state,<sup>122</sup> maritime recreation and tourism activities in Connecticut were estimated at 5 million visitor days.<sup>123</sup> This conservative estimate of maritime recreation and tourism visits (compared to data available from DECD and AHLA) is consistent with the approach used throughout this analysis.<sup>124</sup>

To estimate overall spending of these visitors, information about the activities of visitors to the state was obtained from reports produced by CT DECD, including the Summer 2017 VISION Index and Intercept Survey and the 2013 Traveler Profile Research, prepared by H2R Market Research for DECD and published in 2015,<sup>125</sup> as well as the AHLA. The total estimated visitors to the state's maritime attractions was then divided into four categories: multi-day visits from non-

---

<sup>122</sup> Attempts were made to collect attendance figures from other maritime attractions not listed here.

<sup>123</sup> Using visitor days, rather than visitors, compensates for the likelihood that some visitors patronized more than one maritime attraction during their visit, thus limiting double-counting their spending.

<sup>124</sup> Other sources of data explored as potential bases for this analysis were the total number of visitors to major state attractions as counted through DECD's VISION Index and the number of hotel nights used in the state. The VISION Index is a regular assessment of the number of tourists in Connecticut based on visitors to a range of major attractions. This report is done by Witan Intelligence, Inc. for DECD and its tourism partners throughout the state. The Summer 2017 report estimated that there were 6.6 million visitors to Connecticut in 2016. Among the attractions included in the Index's data collection were the Maritime Aquarium at Norwalk, the Mystic Aquarium, the Mystic Seaport Museum, and the Submarine Force Museum. The Summer 2017 VISION Index, the most recent available, can be retrieved at

[https://www.ct.gov/cct/lib/cct/tourism/visionattendance2017/vision\\_index\\_2017\\_ct\\_3\\_summer.pdf](https://www.ct.gov/cct/lib/cct/tourism/visionattendance2017/vision_index_2017_ct_3_summer.pdf), and an overview of the VISION Index can be retrieved at

[https://www.ct.gov/cct/lib/cct/tourism/visionattendance2015/vision\\_overview.pdf](https://www.ct.gov/cct/lib/cct/tourism/visionattendance2015/vision_overview.pdf). The sources for the hotel room nights included DECD data that was based on data from Smith Travel

(<https://www.ct.gov/cct/cwp/view.asp?a=2128&Q=564126&PM=1>) and AHLA data for the State of Connecticut ([https://www.ahla.com/sites/default/files/2017-01/State\\_Facts\\_CT\\_2017.pdf](https://www.ahla.com/sites/default/files/2017-01/State_Facts_CT_2017.pdf)).

<sup>125</sup> This report is online at [https://www.ct.gov/cct/lib/cct/tourism/outreach2015/connecticut\\_-\\_tns\\_traveler\\_profile\\_2013-final\\_022615.pdf](https://www.ct.gov/cct/lib/cct/tourism/outreach2015/connecticut_-_tns_traveler_profile_2013-final_022615.pdf). It is based on data gathered by TNS Travels America via interviews with travelers in the state, and it includes both state residents and non-Connecticut residents.

Connecticut residents who stayed in hotels; multi-day visits from non-Connecticut residents who stayed in non-hotel accommodations; single day visits from non-Connecticut residents; and Connecticut residents.

Spending by these visitors was then calculated based on spending totals for lodging, shopping, recreation, transportation, and meals, as identified in the Summer 2017 VISION data. The VISION data also provided different spending levels for visitor parties with state residents and non-Connecticut residents, and the total spending was adjusted by the average length of a trip, which was also used in the spending estimates. Several of the spending categories were further broken down using data from the 2013 Traveler Profile Research and ValuePenguin.<sup>126</sup>

Utilizing these data points, it was estimated that the 5 million visitors in Connecticut had total spending on maritime-related recreation and tourism activities of almost \$866 million annually. This total then had margins for retail trade applied by the IMPLAN model, which reduced the spending amounts upon which the estimated impacts in Chapter 6 were based.

---

<sup>126</sup> <https://www.valuepenguin.com/average-cost-vacation>

## APPENDIX B – OVERVIEW OF IMPLAN METHODOLOGY AND GLOSSARY OF TERMS

---

The goal of this analysis is to understand the full impact on Connecticut's economy from the state's maritime industry. The activities associated with this industry range from operations of the Connecticut Port Authority and operations at the four major deepwater ports and harbors (Bridgeport, New Haven, New London, and Stamford) to government entities including the Submarine Base at New London, the U.S. Coast Guard Academy, and the University of Connecticut campus at Avery Point to large- and small-scale businesses, such as Electric Boat, marinas, and ship financing and insurance, and nonprofits.

This appendix briefly summarizes the IMPLAN model used for this analysis as well as the technical specifications. It includes a glossary of impact analysis terms.

### IMPLAN Modeling

The IMPLAN economic impact model was used by CERC to develop economic impact estimates for each of the chapters. The geography used for developing the estimates of these impacts was the State of Connecticut, and the analysis in each chapter was developed using a unique model. These analyses were designed to present an understanding of the contribution of each dimension of the state's maritime activities to the state's economy. An aggregate summary of the entire maritime industry was developed to account for the double-counting of impacts among the government, business, and nonprofit sectors. The methodology applied to address this double counting is summarized below. The aggregate estimate of the maritime activity across the state can serve as a baseline against which changes and improvements to the state's maritime industry can be examined.

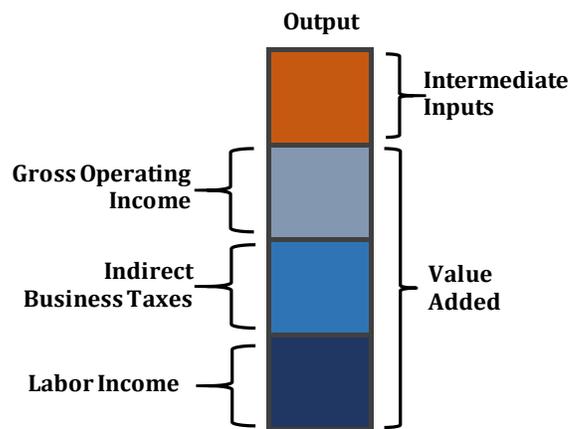
The IMPLAN economic impact model is a comprehensive input-output industry model with a full social accounting matrix to reflect changes in final demand. The industry input-output industry structure is based on up to 536 industry production functions that are unique for each region. The social accounting matrix includes nine household income levels and estimates of the total regional income represented for each household income level. The model also includes state and federal institutions and their revenue levels. These include federal military and non-military and public enterprise activity and state and local government education, non-education and investment activities. The government institutions and the households each have unique expenditure patterns that reflect the purchases of the goods and services each requires.

While the IMPLAN model includes a full set of information related to the domestic and foreign exports and imports moving into a region, the impacts include only the estimated share of the inputs produced inside the region. This structure ensures a conservative but accurate

assessment of the impact. When necessary to address unique features of the economic activity being modeled, CERC modifies an industry’s production function or metrics that define the industry’s activities or adds new industries. Because of the unique inputs associated with the maritime industry, some adjustments were made to various production functions for this analysis.

As a comprehensive input-output model, IMPLAN provides estimates of impacts on the regional economy using a number of different economic measures. The most comprehensive measure IMPLAN uses is output, a measure of sales and inventories changes over a given timeframe. As can be seen in Figure B.1, output includes intermediate inputs and value added. Intermediate inputs are goods and services used by a region’s businesses in production. By definition, intermediate inputs do not go into the region’s final demand. Value added, the difference between the sales generated by an industry and the cost of production, is also referred to as Gross Regional Product (GRP). GRP represents the contribution of the production process on the final demand or the market price of a good or service.

*Figure B.1: Components of Output in IMPLAN Model*



The components of GRP or value added include labor income, gross operating income, and indirect business taxes. Labor income is the sum of employee compensation (i.e., wages and salaries including benefit contributions) and proprietor income (i.e., economic returns to business or property owners). Indirect business taxes include the resources extended toward payment of levies collected by government entities for taxes (except payroll and income) and fees related to operation. Lastly, gross operating income is the residual not paid into operational activities and includes profits, capital investment, rents, and other related incomes.

Once an IMPLAN model is built for a specified region, the full economic impact from a given activity can be estimated for the region. In most cases, the initial economic activity is classified as the direct effects that are specified by the analyst.

The IMPLAN model then estimates the secondary effects from those direct effects as they ripple through the regional economy. In the IMPLAN model, these secondary effects are identified as the indirect and induced effects. The indirect effects capture subsequent inter-industry spending and feedback mechanisms that result from supply chain linkages across the initially impacted sectors and commodities as specified in the production functions. The induced effects capture iterative rounds of spending associated with changes in income that accrue to the nine household groups differentiated by income levels and spending patterns specified by the model.

When working with a regional model that completely encompasses the geography of a state, the model can also internalize the spending patterns associated with the state and local governments. The result of this internalization is an increase in the induced effects as not only household spending, but state and local government spending is also accounted for. The models used in this report include the inclusion of the state and local government spending in the multipliers and thus in the impacts estimated.

Due to the input/output structure of the IMPLAN model and the requirements of this analysis, the economic activity associated with some of the maritime industries identified in Chapter 5 as well as the interaction between the activities specified in the aggregate among the tourism, government and all maritime models used in Chapters 4, 5, and 6 can be included more than once. In Chapter 5, this would happen when the inputs associated with an employment count from one industry would be produced locally from one of the other industries specified as a maritime or partial maritime industry. This interindustry activity would be double-counted in a simple aggregate of the impacts observed in each model's summary (i.e., if the totals across the chapters were summed). For example, if the local police department in a town on Connecticut's shoreline purchased a boat from a dealer in the state, the spending would appear in both Chapter 4 and Chapter 5. Similarly, business spending and tax payments for maritime activities fund government maritime activities and would, therefore, likely contribute to impacts in both chapters as well.

Estimating procedures were developed to address these issues. To adjust for the double-counting associated with government spending and taxes, an estimated share of the taxes generated by the observed activity from maritime businesses and by maritime tourist activity was removed from the impacts. The share removed represented the share of state and local government expenditures on maritime activity that was accounted for in the government model. To address the double-counting associated with the interindustry activity in Chapter 5 and across Chapters 4, 5, and 6, the production content by commodity and the local industries that produced that content was taken into account to estimate a new set of inputs that could be used to remove the double counting. This adjustment reduced the combined total impacts by 23% to the total maritime impact presented.

## Glossary of Impact Analysis Terms

**Activity** – a summary term to reflect all maritime-related events or businesses that result in some economic effect on employment or output in the State of Connecticut. These activities may be conducted by private businesses or individuals, nonprofit organizations, or public-sector agencies.

**Direct Effect** – the measure of the initial or immediate economic activity defined as the sum of the total or a part of the change in output due to a specified change in a region’s economy. These measures can include employment, labor income, revenues or costs. The direct effect that is reported by the IMPLAN model takes into account the regional industrial profile, and estimates of out-of-region purchases that would directly affect the immediate activity are removed from the direct effect estimate reported by the model.

**Employment** – initial employment estimates were collected directly from companies or agencies or business list providers or were estimated based on other available data. Direct, indirect, and induced employment estimates derived from the IMPLAN model are based on the total full-time and part-time jobs associated with the production. This more comprehensive measure provides a better link into the social accounting matrix that observes household income changes.

**Employment Compensation** – the measure of salaries and wages and the benefit packages associated with payments for labor to employees.

**Indirect Effect** – the change in a region’s economic activity that is associated with the input of regional goods and services required to meet the change in production observed in the direct activity. The inter-industry purchases identified in the industry production function developed by the input-output methodology serves as the basis for the summary measures of the regional indirect effects for all economic measures present in the IMPLAN model. The inter-industry linkages are based on the regionally specified production functions that identify the share in production of each of the 536 commodities in the model. As such they are the estimates of the value of the inputs (goods and services) needed from the regional industries to support the level of activity specified in the initial observed change (direct effect).

**Induced Effect** – the change in the regional economy due to the change in the spending of income associated with the production observed in the direct effect and estimated in the indirect effect. These spending estimates are based on nine different household income levels used in the social accounting matrix of the IMPLAN model.

**Labor Income** – this includes both the income of employees paid by others as well as income earned by an establishment’s proprietor(s).

**Output** – measures the value of production by a business or industry. In an IMPLAN analysis output includes total sales and inventory changes.

**Proprietor Income** – the IMPLAN model’s estimate of all income generated by an activity or in an industry that is associated with non-employee business or property owners. Along with employee compensation it is reported as labor income in an IMPLAN analysis.

**Region** – the area for which impacts are measured. For this analysis, the region is the State of Connecticut.

**Secondary Effects** – the sum of indirect and induced effects. As such they are the additional economic impact to the immediate activity that is estimated by the IMPLAN model. The secondary effects exclude the immediate activity or the direct effect.

**Value Added** – the part of the total increase in production or output that is associated with the generation of new wealth in a region. For an impact analysis such as this, value added includes employee compensation, proprietors’ incomes, indirect business taxes, profits, and other profit types of income. Value added is the amount of the total sales that has not been generated by the purchase of goods and services used in production. A regional impact analysis removes any value adding activity that leaves the specified region.

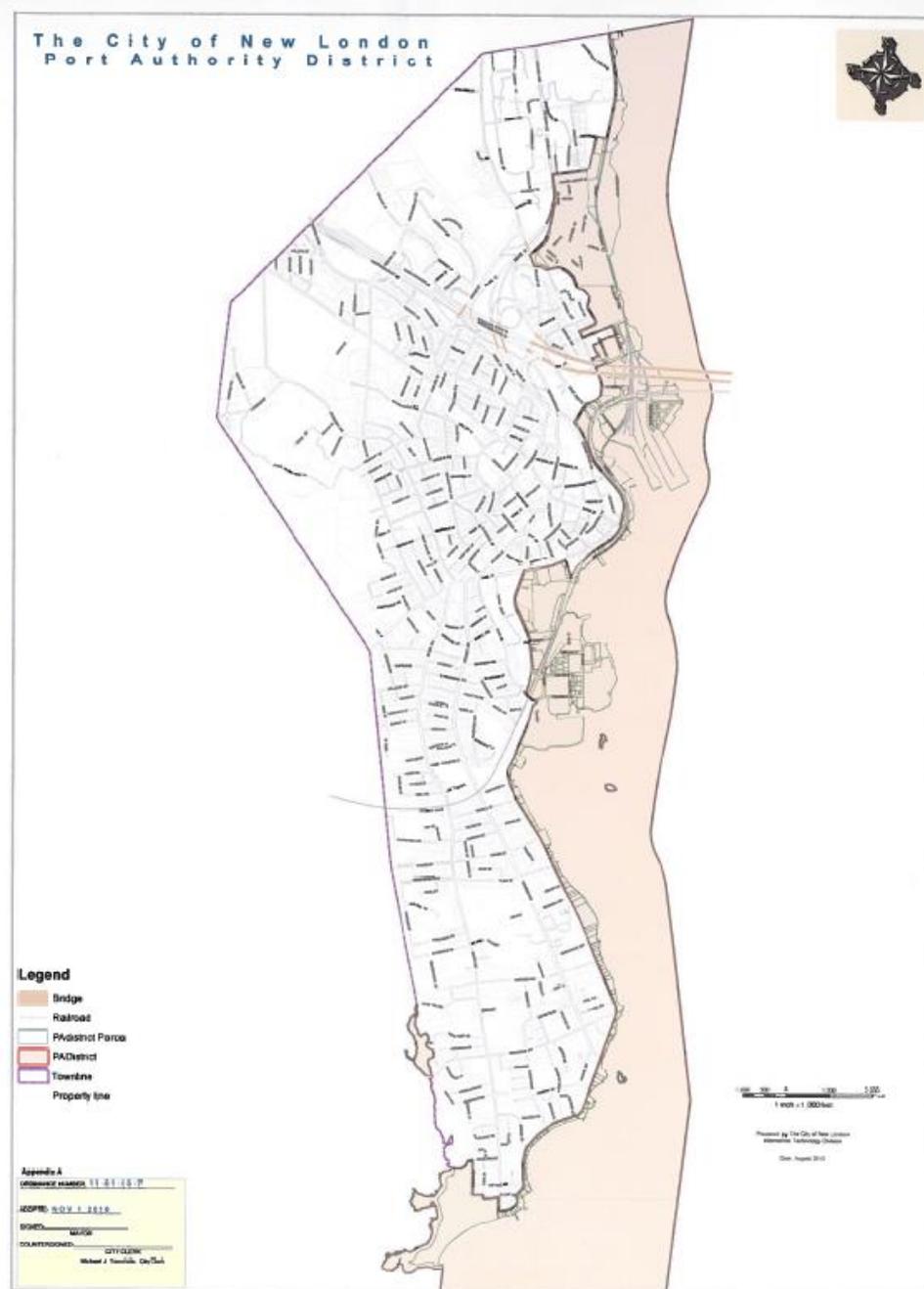


Figure C.2: New Haven Port Authority District Boundaries



Source: Port of New Haven Strategic Land Use Plan, May 2007.  
<https://www.newhavenct.gov/civicax/filebank/blobdload.aspx?blobid=25012>

Figure C.3: New London Port Authority District Boundaries



Source: City of New London Port Summary, December 1, 2014.  
[http://www.ct.gov/ecd/lib/ecd/New\\_London\\_Port\\_Authority\\_Part\\_1.pdf](http://www.ct.gov/ecd/lib/ecd/New_London_Port_Authority_Part_1.pdf).

# APPENDIX D – THE IMPACT OF NON-MARITIME EMPLOYERS IN CONNECTICUT PORT DISTRICTS ON OUTPUT AND EMPLOYMENT

---

As discussed in Chapter 3, most of the businesses and other employers in Connecticut's three port districts are not maritime-related. These other employers range across industries and include companies that sell directly to the public as well as to other businesses; there are also government agencies and nonprofit organizations in these port districts. While some of these employers may have located in the port district initially to be close to a port's infrastructure or labor force (for example, restaurants serving people working in the area), others may have chosen the location due to the convenient interstate access that all three ports offer or because property prices were attractive.

The impact these non-maritime employers have on Connecticut as their activity ripples through the state's economy from direct effects into the indirect and induced creates impacts similar to the maritime businesses in Chapter 3. This chapter explores the economic activity generated by the non-maritime employers in the port districts, as their impacts on output, value added and employment ripple through the state's economy.

The key findings in this chapter are:

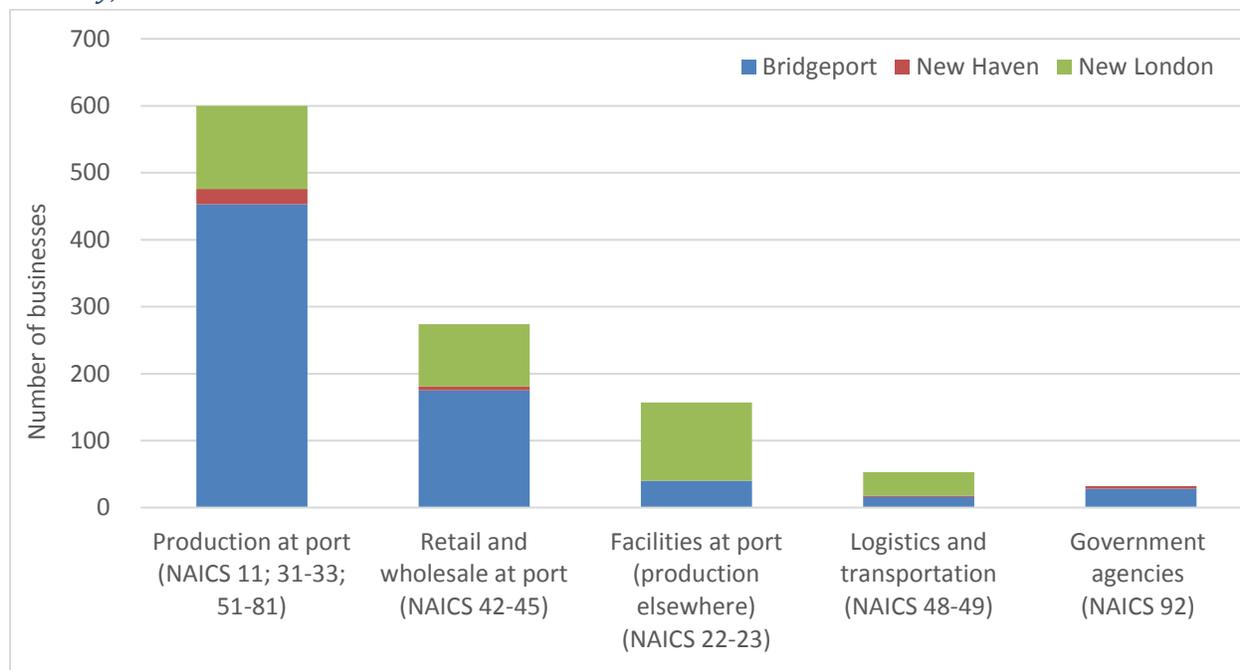
- The total estimated impact in 2017 from the non-maritime employers in Connecticut's ports was \$5.8 billion in output, which included direct effects of \$3.1 billion, indirect effects of \$909 million, and induced effects of \$1.7 billion. Almost 29,000 jobs were estimated to be generated to support this activity.
- Non-maritime employers in the Bridgeport port district had the biggest impact on output of the three districts. This estimated impact was \$5.3 billion, followed by \$239 million for New Haven and \$203 million for New London.
- Connecticut's port districts in Bridgeport, New Haven and New London differ substantially in the amount of employment in each of them and their relative geographic size. The three port districts also differ in the types of industrial and commercial businesses nonprofit organizations, government agencies, and residential properties within them. These unique attributes affect the impact each port district makes on the state's economy and the type of businesses the impacts touch.

## The Non-Maritime Components of Connecticut's Port Districts

There were over 1,100 non-maritime establishments in the three port districts in 2017 (Figure D.1). Most of these businesses were in Bridgeport (712), the largest district. New London

had the second largest share of non-maritime establishments (369), while New Haven, the most compact of the three districts, had 35 establishments.

*Figure D.1: Non-Maritime Employers in Bridgeport, New Haven and New London Port Districts by Industry, 2017*



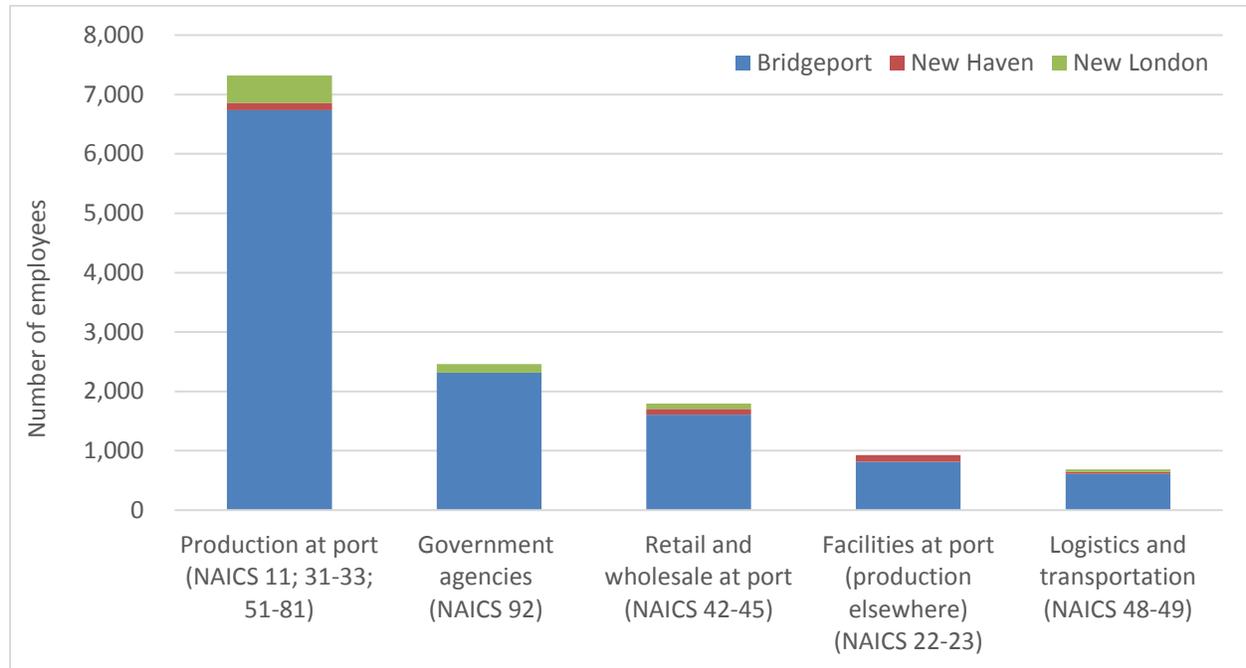
Source: D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; CERC calculations.

Most of the non-maritime establishments in the three port districts in 2017 were involved in production within the district. This included manufacturing firms such as printers and furniture makers as well as companies that provide services such as banks, education, health care, or accommodation and food services. Especially in the Bridgeport district, this industry grouping also included many small churches as well as business incubators, artist galleries, and trade schools. The second largest industry group within the three port districts was retail and wholesale. This included plumber and lumber supply companies, scrap metal dealers, automobile sales, gas stations, and large and small grocery stores, especially in Bridgeport. There were 157 companies with facilities in the port districts who did their production elsewhere, such as construction firms, and 53 companies that worked in logistics and transportation. Bridgeport’s port district also contained a sizable share of city government offices, along with some federal and state agencies.

Due to the much larger geographic size of the Bridgeport district, it contained most of the almost 14,000 non-maritime jobs in the three deepwater port districts (Figure D.2). However, while employment in production in the port districts was still the largest industry grouping, government

was the second-largest group. Retail and wholesale employment dropped to third largest, primarily due to the number of small corner grocers or automobile dealers.

*Figure D.2: Non-Maritime Employment in Bridgeport, New Haven and New London Port Districts by Industry, 2017*



Source: D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; CERC calculations.

### The Impacts of Non-Maritime Employers in Connecticut’s Port Districts

The total estimated impact on output of non-maritime employers in Connecticut’s ports was \$5.755 billion in 2017 (Table D.1).<sup>127</sup> This impact represents the activity that occurred in the state due to the non-maritime employers in the port district and includes:

- Direct effects of \$3.149 billion, which represent the increase in sales and inventories at the non-maritime establishments;
- Indirect effects of \$909 million, which result from the increased production by companies in the state due to purchases by the non-maritime establishments; and
- Induced effects of \$1.697 billion, which result from household spending as labor income received by employees of the establishments in the port districts and the indirectly affected

<sup>127</sup> This analysis does not include the fiscal or other impacts of single- or multi-family residential housing or parking lots or garages. As mentioned in Chapter 1, these homes and businesses may provide a small economic impact, especially due to maintenance or construction.

establishments rippled through the wider economy, along with the iterative impact of this induced household spending.

*Table D.1: Impacts of Non-Maritime Employers in Port Districts on Output, Employment, Value Added and Labor Income by Type of Effect, 2017*

	<b>Output (Mil 2018 \$)</b>	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018\$)</b>
<b>Total</b>	<b>\$5,755</b>	<b>28,941</b>	<b>\$3,429</b>	<b>\$2,315</b>
Direct	\$3,149	13,190	\$1,764	\$1,236
Indirect	\$909	4,108	\$538	\$357
Induced	\$1,697	11,643	\$1,127	\$722

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Across Connecticut, non-maritime employers in the port districts are estimated to have generated almost 29,000 jobs in 2017, including almost 13,200 jobs through direct effects and over 15,700 jobs through indirect and induced effects. Value added, or output minus the cost of all intermediate inputs, was over \$3.4 billion in 2017, and labor income, a component of value added that includes employee compensation and proprietors' income, was over \$2.3 billion.

#### *Impacts by Port Districts*

Looking at the impact on total output by port district emphasizes the Bridgeport district's large physical size, with establishments in that district producing an estimated \$5.3 billion in output in 2017 (Table D.2). This is 92% of the total impact on output that was produced by non-maritime employers in the three districts. Establishments in the New Haven district generated the second largest share of output, followed by those in the New London district.

*Table D.2: Impacts of Non-Maritime Employers in Port Districts on Output by Type of Effect and Port, 2017*

<i>(Mil 2018 \$)</i>	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Connecticut total</b>	<b>\$5,755</b>	<b>\$3,149</b>	<b>\$909</b>	<b>\$1,697</b>
Bridgeport	\$5,313	\$2,921	\$838	\$1,554
New Haven	\$239	\$122	\$40	\$77
New London	\$203	\$107	\$31	\$66

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Non-maritime employers in the Bridgeport port district also produced most of the employment, value added, and labor income compared to the other two districts in 2017 (Table D.3). Establishments in the New Haven district produced the second largest shares of value added and labor income despite having the smallest impact on employment.

*Table D.3: Total Effect of Non-Maritime Employers in Port Districts on Employment, Value Added and Labor Income by Port, 2017*

	<b>Employment</b>	<b>Value Added (Mil 2018 \$)</b>	<b>Labor Income (Mil 2018 \$)</b>
<b>Connecticut total</b>	<b>28,941</b>	<b>\$3,429</b>	<b>\$2,315</b>
Bridgeport	26,553	\$3,145	\$2,124
New Haven	1,042	\$149	\$102
New London	1,346	\$134	\$90

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

### *Impacts by Types of Activity*

Non-maritime employers with production in the port district generated an estimated \$3.5 billion in output in 2017, the largest share of output by type of activity within the three port districts (Table D.4). Examples of these employers are manufacturing companies, banks, and schools. Of this output, almost \$2 billion was due to direct effects. Establishments with their facilities in the port district but that do much of their work elsewhere, such as construction firms, produced the second largest amount of total output, an estimated \$1 billion, while retail and wholesale companies generated an estimated \$635 million in output.

*Table D.4: Impact of Non-Maritime Employers in Port Districts on Output by Type of Effect and Activity, 2017*

	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<i>(Mil 2018 \$)</i>				
<b>Total</b>	<b>\$5,755</b>	<b>\$3,149</b>	<b>\$909</b>	<b>\$1,697</b>
Logistics and transportation	\$85	\$42	\$15	\$27
Production at port	\$3,502	\$1,982	\$627	\$894
Retail and wholesale at port	\$635	\$324	\$97	\$214
Facilities at port (production elsewhere)	\$1,012	\$521	\$137	\$354
Government agencies	\$521	\$280	\$33	\$208

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

Employers with production in the port districts also generated the largest share of employment (16,296; Table D.5), although this was only 56% of total employment produced, whereas these industries generated 61% of output. Government agencies generated the second largest share of employment (4,039), with much of this due to direct effects, whereas

establishments with facilities at the port but production elsewhere produced more jobs through indirect and induced effects.

*Table D.5: Impact of Non-Maritime Employers in Port Districts on Employment by Type of Effect and Activity, 2017*

	<b>Total Impact on Employment</b>			
	<b>Total</b>	<b>Direct</b>	<b>Indirect</b>	<b>Induced</b>
<b>Total</b>	<b>28,941</b>	<b>13,190</b>	<b>4,108</b>	<b>11,643</b>
Logistics and transportation	655	382	88	186
Production at port	16,296	7,305	2,875	6,115
Retail and wholesale at port	3,816	1,814	509	1,492
Facilities at port (production elsewhere)	4,136	1,230	460	2,445
Government agencies	4,039	2,459	176	1,404

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

### *Impacts by Port Districts and Types of Activity*

Of the three port districts, the largest impact on Connecticut's output in 2017 was generated by employers with production in the Bridgeport district (Table D.6). These establishments created an estimated \$3.3 billion in output, which was over 57% of all output generated by the non-maritime employers in all three districts. No other industry grouping within one district was estimated to create an impact of over \$1 billion in output in 2017.

*Table D.6: Impact of Non-Maritime Employers in Port Districts on Total Output by Port and Activity, 2017*

	<b>Total Impact on Output</b>			
	<b>Total</b>	<b>Bridgeport</b>	<b>New Haven</b>	<b>New London</b>
<b>Total</b>	<b>\$5,755</b>	<b>\$5,313</b>	<b>\$239</b>	<b>\$203</b>
Logistics and transportation	\$85	\$69	\$10	\$6
Production at port	\$3,502	\$3,321	\$55	\$126
Retail and wholesale at port	\$635	\$573	\$20	\$42
Facilities at port (production elsewhere)	\$1,012	\$858	\$154	\$0
Government agencies	\$521	\$491	\$0	\$30

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

The employers conducting their production in the Bridgeport port district also produced the largest share of total employment (15,175, or 52% of all employment created by non-maritime businesses in the three port districts; Table D.7). Bridgeport government agencies, Bridgeport companies with their locations in the port district but who do production elsewhere, and

Bridgeport retail and wholesale firms in the district produced the second, third, and fourth largest shares of total employment.

*Table D.7: Impact of Non-Maritime Employers in Port Districts on Total Employment by Port and Activity, 2017*

	<b>Total Impact on Employment</b>			
	<b>Total</b>	<b>Bridgeport</b>	<b>New Haven</b>	<b>New London</b>
<b>Total</b>	<b>28,941</b>	<b>26,553</b>	<b>1,042</b>	<b>1,346</b>
Logistics and transportation	655	533	35	58
Production at port	16,296	15,175	284	837
Retail and wholesale at port	3,816	3,437	93	221
Facilities at port (production elsewhere)	4,136	3,600	536	0
Government agencies	4,039	3,808	0	231

Source: Data provided by local and state port authorities; D&B Hoovers; Connecticut Department of Labor Employer Search; Google Maps Street View; IMPLAN 2016 model; CERC calculations.

## Conclusion

Most of the employers in Connecticut’s three deepwater port districts are not directly involved in maritime-related activities. Rather, most are engaged in manufacturing or services such as banking, education, or food services. There are also a number of grocery stores and other retail establishments in the port districts, along with some general government operations. These non-maritime employers generated an estimated impact of \$5.8 billion on output in Connecticut and almost 29,000 jobs in 2017. Bridgeport, with the largest port district geographically, produced most of the impact on output and employment that resulted from non-maritime employers in the port districts.

## APPENDIX E – LITERATURE REVIEW OF CONNECTICUT MARITIME IMPACT ANALYSES

---

Industry impact analyses conducted within the last ten years have found that the maritime industry generates a total impact on output in Connecticut of between \$5 billion and \$6.8 billion. These impacts also supported tens of thousands of jobs as they rippled through the state’s economy.

This appendix provides an overview of past impact analyses of Connecticut’s maritime industry, with a summary table of the studies shown in Table E.1. A number of these reports were part of a wider analysis of the national maritime industry, and both the national reports and Connecticut-specific studies typically defined the maritime industry by capturing discrete maritime functions such as marinas, boat dealers, ship building, and other functions. These reports usually did not include the impacts of government maritime activities, such as U.S. Navy or Coast Guard installations or local or state government management of maritime amenities and services, which are important dimensions of the Connecticut maritime industry. These reports also did not account for many maritime activities that are undertaken by companies that were not classified in a discrete set of maritime industry classifications.

Studies of the economic impacts of discrete parts of the state’s maritime industry, including shipbuilding and repairing, tourism, and the deepwater ports at Bridgeport, New Haven, and New London, have also been undertaken. These reports also found substantial contributions from those discrete activities on the state’s economy.

### Comprehensive Maritime Industry Studies

The most recent maritime impact analysis for Connecticut was published in 2018 by the **National Oceanic and Atmospheric Administration** (NOAA) Office for Coastal Management in 2018,<sup>128</sup> following up on a national level report published by NOAA the previous year.<sup>129</sup> These reports defined the “ocean economy” as employment in six sectors in shoreline counties: marine construction; living resources; offshore mineral extraction; ship and boat building; tourism and recreation (in shore-adjacent zip codes); and marine transportation (Figure E.1). To estimate the activity and impacts of the ocean economy at the national, regional, and state levels, NOAA used data from three sources:

---

<sup>128</sup> National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management. 2018. *NOAA Report on the U.S. Ocean and Great Lakes Economy: Regional and State Profiles*. Charleston, SC: Office for Coastal Management. Both reports are available at <http://coast.noaa.gov>.

<sup>129</sup> National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management. 2017. “NOAA Report on the U.S. Ocean and Great Lakes Economy.” Charleston, SC: NOAA Office for Coastal Management.

Table E.1: Summary of Maritime Industry Studies

Author or Sponsor of Report	Year Published / Year(s) of Data	Definition of Maritime Industry	Full Impact of Maritime Activity Estimated?	Number of Jobs in Industry / Total Impact on Employment	Output Generated by Industry Alone <sup>130</sup> / Total Impact on Output
<b>Comprehensive Maritime Industry Studies</b>					
<b>NOAA</b>	2018 / 2015, 2017	6 sectors, including approximately 50 six-digit NAICS codes, in coastal counties	No	51,870 / NA	\$4.6 billion / NA
<b>NOEP</b>	2016 / 2013	6 sectors, including 21 industries in coastal counties	No	50,410 / NA	\$4.2 billion / NA
<b>Connecticut Sea Grant</b>	2013 / 2010	7 sectors following U.S. Department of Commerce definition of maritime industry	Yes	NA / 39,846	NA / \$6.8 billion
<b>CMC</b>	2010 / 2007, 2008	5 sectors	Yes	13,996 / 30,582	NA / \$5.0 billion
<b>CERC</b>	2000 / 1997	4 sectors, including 90 four-digit SIC codes	Yes	12,225 / 18,268	\$2.6 billion / \$2.1 billion
<b>Partial Studies of Maritime Industry</b>					
<b>NMMA</b>	2018 / NA	Recreational boating	Yes	NA / 7,313	NA / \$1.3 billion
<b>MARAD</b>	2015 / 2013	2 six-digit NAICS codes (Ship Building and Repairing & Other Support Activities for Water Transportation)	Yes	9,030 / 22,000	\$1.1 billion / \$2.4 billion
<b>Maritime Aquarium at Norwalk</b>	2008 / 2007	Activities at aquarium	Yes	39 / 235	\$9.1 million / \$25.4 million
<b>Mitchell College</b>	2008 / 2007	Cruise ship visits to New London	No	NA / NA	NA / NA
<b>CCEA</b>	2001 / 2000-2035	Activities of deepwater ports	Yes	NA / 27,000	NA / \$1.9 billion

<sup>130</sup> All dollar-denominated amounts in this appendix are nominal figures and so not adjusted for inflation.



- National Ocean Watch (ENOW), which is generated by NOAA’s Office for Coastal Management;
- U.S. Department of Labor (DOL) Bureau of Labor Statistics’ (BLS) Quarterly Census of Employment and Wages (QCEW); and
- U.S. Department of Commerce (DOC) Bureau of Economic Analysis’ (BEA) GDP by State.

As with several other reports discussed in this literature review, this analysis only provided estimates of the jobs in and output from the ocean economy. The NOAA study did not include estimates of secondary economic activity generated by the indirect or induced effects associated with businesses in the ocean economy.

*Figure E.1: Ocean Economy as Defined by NOAA*

- Living Resources
  - Finfish Farming and Fish Hatcheries (NAICS 112511)
  - Shellfish Farming (NAICS 112512)
  - Other Aquaculture (NAICS 115219)
  - Finfish Fishing (NAICS 114111)
  - Shellfish Fishing (NAICS 114112)
  - Other Marine Fishing (NAICS 114119)
  - Seafood Product Preparation and Packaging (NAICS 311710)
  - Fish and Seafood Markets (NAICS 445220)
- Marine Construction
  - Other Heavy and Civil Engineering Construction (NAICS 237990)
- Marine Transportation
  - Deep Sea Freight Transportation (NAICS 483112)
  - Coastal and Great Lakes Freight Transportation (NAICS 483113)
  - Deep Sea Passenger Transportation (NAICS 483112)
  - Coastal and Great Lakes Passenger Transportation (NAICS 483114)
  - Port and Harbor Operations (NAICS 488310)
  - Marine Cargo Handling (NAICS 488320)
  - Navigational Services to Shipping (NAICS 488330)
  - Other Support Activities for Water Transportation (NAICS 488390)
  - Search, Detection, Navigation, Guidance, Aeronautical and Nautical System and Instrument Manufacturing (NAICS 334511)
  - General Warehousing and Storage (NAICS 493110)
  - Refrigerated Warehousing and Storage (NAICS 493120)
  - Farm Product Warehousing and Storage (NAICS 493130)
- Offshore Mineral Resources
  - Construction Sand and Gravel Mining (NAICS 212321)
  - Industrial Sand Mining (NAICS 212322)
  - Crude Petroleum and Natural Gas Extraction (NAICS 211111)
  - Natural Gas Liquid Extraction (NAICS 211112)
  - Drilling Oil and Gas Wells (NAICS 213111)
  - Support Activities for Oil and Gas Operations (NAICS 213112)
  - Geophysical Exploration and Mapping Services (NAICS 541360)

- Ship and Boat Building
  - Boat Building and Repair (NAICS 336612)
  - Ship Building and Repair (NAICS 336611)
- Tourism and Recreation
  - Boat Dealers (NAICS 441222)
  - Full Service Restaurants (NAICS 722511)
  - Limited Service Eating Places (NAICS 722513)
  - Cafeterias (NAICS 722514)
  - Snack and Nonalcoholic Beverage Bars (NAICS 722515)
  - Hotels (except Casino Hotels) and Motels (NAICS 721110)
  - Bed and Breakfast Inns (NAICS 721191)
  - Marinas (NAICS 713930)
  - RV Parks and Recreational Camps (NAICS 721211)
  - Scenic and Sightseeing Transportation, Water (NAICS 487210)
  - Sporting and Athletic Goods Manufacturing (NAICS 339920)
  - Scenic and Sightseeing Transportation, Other (NAICS 487990)
  - Sports and Recreation Instruction (NAICS 611620)
  - Recreation Goods Rental (NAICS 532292)
  - Amusement and Recreation Services Not Elsewhere Classified (NAICS 713990)
  - Zoos and Botanical Gardens (NAICS 712130)
  - Nature Parks and Other Similar Institutions (NAICS 712190)

Source: NOAA Office of Coastal Management, “Frequent Questions: Economics: National Ocean Watch (ENOW) Data,” <https://coast.noaa.gov/data/digitalcoast/pdf/enow-faq.pdf>.

NOAA estimated that Connecticut’s ocean economy employed almost 51,900 people, or 3.1% of the state’s private sector employment in 2017. The largest share of this employment was in the tourism and recreation activities, which represented 72.5% of the jobs. However, they also found that the relatively low wages in this sector resulted in an average annual wage of just over \$40,000 for the entire ocean economy in the state, well below the state’s overall average wage. The study also found that two of the six sectors of the ocean economy, ship and boat building and marine transportation, had average wages above the state’s overall average.

The NOAA report also noted that the ocean economy generated \$4.6 billion, or 1.8%, of the state’s GDP. GDP growth in these industries was faster than GDP growth overall in the state and nation. NOAA also found that the state ranked 15<sup>th</sup> nationally for employment in the ocean economy and 14<sup>th</sup> nationally in GDP.

The ***National Ocean Economics Program*** (NOEP) at Middlebury Institute of International Studies at Monterey (in California) publishes periodic reviews of state coastal economies.<sup>131</sup> It uses a similar definition of the ocean economy as NOAA and data from a variety of public sources. While it also does not include indirect and induced effects when calculating total employment or GDP, it

---

<sup>131</sup> Kildow, Judith T., Charles S. Colgan, Pat Johnston, Jason D. Scorse, and Maren Gardiner Farnum, “State of the U.S. Ocean and Coastal Economies: 2016 Update,” National Ocean Economics Program at Middlebury Institute of International Studies at Monterey. Available at <http://www.oceaneconomics.org/download/>.



does consider population trends in coast areas (defined as counties within the Coastal Zone Management Program) and data on commercial fisheries.

NOEP estimated that Connecticut's ocean economy included more than 50,400 jobs in 2013, a 4.3% increase from over 44,600 jobs in 2010. This was the 8<sup>th</sup> largest increase among the 30 states included in the coastal economy and well above the national coastal economy average employment increase of 3.2%. Connecticut also saw a slight increase in the GDP produced by its coastal economy, from \$4.239 billion in 2010 to \$4.243 billion in 2013.

An earlier report by *Connecticut Sea Grant*, published in 2013, found that the state's maritime industry generated \$6.8 billion in total output in 2010, of which almost \$5.9 billion was generated in the four coastal counties. The total impact on the state included over \$4 billion in value added along with almost 40,000 jobs. The largest share of impacts accrued in New London County (\$3.3 billion), followed by Fairfield County (\$1.4 billion), New Haven County (\$523 million), and Middlesex County (\$88 million). This report defined the maritime industry as including, but not limited to, "Commercial fishing, Seafood product preparation and packaging, Ship building and repairing, Boat building, Transport by water, Scenic and sightseeing transportation and support activities for transportation, and Amusement and recreation activities."<sup>132</sup>

A 2010 report for the *Connecticut Maritime Coalition (CMC)* by Apex Companies and FXM Associates also examined the economic contributions of maritime and maritime-dependent industries to the Connecticut economy, as well as the impact of dredging projects – or, conversely, the failure to maintain navigable waterways – on the state's economy.<sup>133</sup> It defined the industry as five distinct groups: water-borne cargo industries, water-dependent non-cargo industries, recreation and tourism, educational institutions, and governance. Water-borne cargo industries included large shipping companies, port authorities and terminal operators, as well as the "transactional" business sector that facilitates regional, national and international commerce. Water-dependent non-cargo industries included ferry services, towboat services, cruise ships and larger boat repair facilities. The governance sector included state and municipal governments as well as the U.S. Army Corps of Engineers (USACE).

The CMC study also factored in the increased costs of construction, manufacturing, fuel, and other inputs were these materials not able to be brought in via the ports, as well as the traffic congestion and transportation impacts for the state if adequate dredging and port maintenance did

---

<sup>132</sup> Pomeroy, Robert S., Nataliya Plesha, and Umi Muawanah, "Valuing the Coast: Economic Impacts of Connecticut's Maritime Industry." A report by Connecticut Sea Grant, March 2013. Available at <https://seagrant.uconn.edu/2013/03/22/valuing-the-coast-economic-impacts-of-connecticuts-maritime-industry/>.

<sup>133</sup> Apex Companies, LLC and FXM Associates, "Economic Impact Study of Maritime Industries in Connecticut," Prepared for the Connecticut Maritime Coalition, Inc., and the Connecticut Department of Economic and Community Development, February 2010. Available at [http://www.ctmaritime.com/final\\_conn\\_maritime\\_report\\_051810.pdf](http://www.ctmaritime.com/final_conn_maritime_report_051810.pdf).

not occur. The report also cited heavily to a June 2008 study by USACE on dredging needs in Long Island Sound.

According to the CMC study, the total impact of Connecticut's maritime-dependent industries, including consumers of raw materials transported via ship, totaled over \$5 billion in 2007. It accounted for more than 30,000 jobs, approximately \$1.7 billion in household income, and \$2.7 billion in state GDP. The study also estimated that maritime industries annually account for over \$56 million in taxes paid to local communities, \$54 million in state tax revenues, and over \$224 million in federal tax revenues. The report also cited average wages within Connecticut's maritime-dependent industries at nearly \$63,000 per year per job in 2007, higher than the statewide average wage of \$55,000 in 2007.

The CMC study team interviewed local businesses, trade groups, public sector officials, and others with knowledge and expertise within the maritime industries of Connecticut about the likely impacts to their business if dredging were implemented. Stakeholders in cargo and non-cargo industries anticipated increases in their businesses from 5% to 30%, while recreation and tourism stakeholders indicated potential increases from 10% to 50%. The study also utilized data from a 2008 survey by USACE, which indicated that lack of effective maintenance and dredging could cost the Connecticut economy \$726 million in business output, 4,800 jobs, and \$256 million in household income annually by 2012 and over \$1.5 billion in business output, over 10,000 jobs, and \$550 million in household income annually by 2037.

In 2000, the **Connecticut Economic Resource Center (CERC)** measured the impacts of the maritime industry in Connecticut in 1997, as defined by four major industry groups: marine recreation, maritime transportation, commercial fishing, and maritime manufacturing and services.<sup>134</sup> Within each of these components was a collection of 4-digit SIC industries that included both industries directly involved in maritime activities (such as Marinas, Deep Sea Foreign Transportation of Freight, Ship Building and Repairing, and Animal Aquaculture) as well as industries partially involved in maritime activities (including Gasoline Service Stations, Amusement and Recreation, Transportation Services, Special Trade Contractors, and Packaged Frozen Foods). Notably, this report indicated that it excluded maritime industries such as operations for the U.S. Naval Base, as well as some suppressed transportation data.

Using an input/output model, the maritime industry was estimated by CERC to have generated more than 18,000 jobs in 1997, representing 0.9% of the state's total jobs. The output generated by the maritime industry that year was over \$2 billion, or 0.97% of the state's economy. The maritime industry itself was estimated to include 349 businesses, accounting for a total of 12,225 jobs, \$553 million in payroll, and \$2.6 billion in sales in 1997. While recreation accounted for the largest number of businesses (203), manufacturing and sales was by far the largest contributor to direct jobs (8,927), payroll (\$419 million), and sales (\$1.6 billion). The report

---

<sup>134</sup> Connecticut Economic Resource Center, "The Maritime Industry in Connecticut," July 2000.

indicated that the maritime industry is highly seasonal and constitutes a critical component of the economy of coastal communities. Data from the Bureau of Economic Analysis was used to estimate the economic impacts.

## Partial Studies of Maritime Industry

There have been several recent impact analyses of specific facets of the maritime industry. Research by the **National Marine Manufacturers Association (NMMA)** found that recreational boating in Connecticut generated an annual impact of over \$1.3 billion in output due to direct, indirect, and induced effects.<sup>135</sup> It also supported 7,300 jobs through direct and indirect effects and almost 540 businesses.

A study by the **Maritime Administration (MARAD)**, which is part of the U.S. Department of Transportation, measured the economic impact of the U.S. shipbuilding and repairing industry for 2013.<sup>136</sup> The industry was defined as activities in two NAICS codes: NAICS 336611, Ship Building and Repairing, as well as part of NAICS 488390, Other Support Activities for Water Transportation.

MARAD found that Connecticut was the fourth-largest state in private sector direct employment in the shipbuilding and repair industry, with 9,030 jobs, and labor income from shipbuilding, which was almost \$975 million. The total economic activity in Connecticut generated from shipbuilding and repair (including direct, indirect, and induced impacts) was 22,000 jobs, \$1.8 billion in labor income, and \$2.4 billion in GDP.

In 2008, AMS Consulting LLC produced an impact analysis of the **Maritime Aquarium at Norwalk**.<sup>137</sup> This report found that the aquarium generated almost \$42 million in annual impacts on Connecticut due to both visitor spending and aquarium purchasing and payroll. The aquarium also supported almost 400 jobs across the state through direct and indirect effects, while the estimated fiscal impact of the aquarium was over \$1.1 million through sales and use taxes, personal income taxes, hotel occupancy taxes, liquor taxes, and gasoline taxes.

A study conducted by the **Mitchell College** Department of Professional Studies examined the effect of passengers from seven cruise ships during stops in New London in 2007.<sup>138</sup> The findings were based on surveys conducted of downtown businesses. The results indicated that

---

<sup>135</sup> National Marine Manufacturers Association, *Recreational Boating Connecticut: An American Pastime & Economic Engine*, 2018.

<sup>136</sup> Maritime Administration (MARAD), *The Economic Importance of the U.S. Shipbuilding and Repairing Industry*, November 2015. Available at [https://www.marad.dot.gov/wp-content/uploads/pdf/MARAD\\_Econ\\_Study\\_Final\\_Report\\_2015.pdf](https://www.marad.dot.gov/wp-content/uploads/pdf/MARAD_Econ_Study_Final_Report_2015.pdf).

<sup>137</sup> AMS Consulting LLC, "The Maritime Aquarium at Norwalk," January 20, 2008. Available at <https://www.maritimeaquarium.org/reports>.

<sup>138</sup> Blake, Laura and Elizabeth English, "Impact of Cruise Ship Passengers on Local Merchants in New London, CT," Mitchell College, Department of Professional Studies, January 28, 2008.

75.8% of businesses noted at least some increase in sales due to cruise ship visits, with 27.6% rating the increase as “significant.” 96.4% of merchants were interested in having more cruise ships visit, and 51.9% were willing to adjust their business operations to accommodate tourists. The most important things merchants thought the city could do to welcome tourists included improving aesthetics (66.7%), improving the information center (53.8%), and scheduling events (51.9%) to coincide with cruise ship arrivals.

The *Connecticut Center for Economic Analysis (CCEA)* published an impact analysis of the state’s deepwater ports in 2001.<sup>139</sup> This report estimated the annual impacts through direct, indirect, and induced effects of the ports from 2000 to 2035. The data came from surveys of port operators and users regarding employment, taxes, sales, and degree of port dependency; however, the data collected was supplemented with employment-level data from IMPLAN because the survey response rate was low. The study does not include impacts of oil deliveries from the Buckeye Pipeline; inspectors, safety, legal, cleanup, financial, or other intermediaries; environmental damage; or lost business due to decreased economic competitiveness.

The CCEA study found that the average annual change attributable to the ports included over \$1.9 billion in Gross Regional Product<sup>140</sup> and more than 27,000 jobs. The annual impacts also included almost \$2.7 billion in personal income and \$297 million in average annual state and local tax revenue attributable to the ports and port-dependent industries. Moreover, the report found that, if the ports were absent, businesses that were greatly dependent on the ports would close or leave the state, while businesses slightly dependent on the ports would face higher costs and likely reduce production. Consumers, on the other hand, would face congestion, commuting delays, and higher prices for petroleum products.

## Conclusion

The analyses summarized here demonstrate the value of Connecticut’s maritime industry, showing that the industry generates tens of thousands of jobs and billions of dollars in output. Many of these studies only considered the impacts of private sector employment and ignored government activity. This narrow focus excluded the impacts of the federal military installations in Connecticut as well as the roles the state and, especially, local governments played in the maritime industry. Further, many impact analyses defined the maritime industry using a specific set of industry classification codes. This did not capture activity by companies and nonprofit organizations that were involved in maritime activities but not in the specified industry codes.

---

<sup>139</sup> Carstensen, Fred V., Lott, William F., McMillen, Stan, and Shrestha, Hemanta. “The Impact of Connecticut’s Deepwater Ports: An IMPLAN and REMI Analysis.” Connecticut Center for Economic Analysis, University of Connecticut, May 23, 2001.

<sup>140</sup> Gross Regional Product is Gross Domestic Product measured at the regional level.