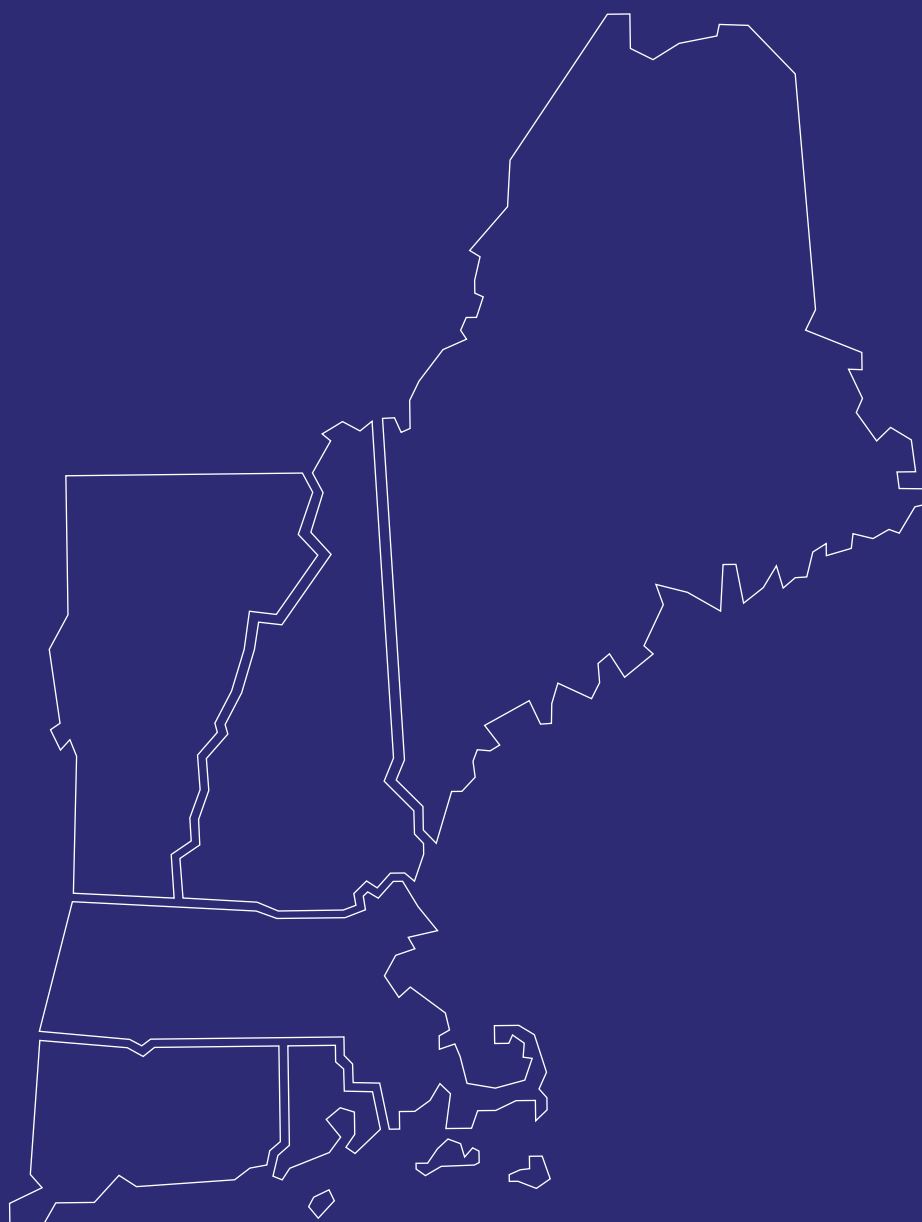

THE ECONOMIC IMPACT OF THE DEFENSE CLUSTER IN **NEW ENGLAND**

MAY 2023



SENEDIA
The Alliance for Defense Tech, Talent, and Innovation

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The Economic Impact of the Defense Cluster in New England

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The views and opinions of the author expressed herein do not state or reflect those of Bryant University. The author has exercised due and customary care in conducting this research to ensure the quality of the analysis and report. The author assumes no liability for any loss resulting from errors, omissions, or misrepresentations made by others.

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EXECUTIVE SUMMARY

The Defense Cluster is a vital and important contributor to the economy of New England. It drives innovation and pioneering technology advancements that create and support high-paying jobs and foster economic growth and prosperity.

This data-driven report presents a comprehensive assessment of the economic impact of the Defense Cluster on the New England economy and its constituent states. The term “Defense Cluster” encompasses all defense-related activities including both the Private Defense Industry (defense contractors) and the Military Defense Infrastructure, which includes civilian employees working for the Department of Defense (DoD), active-duty military personnel (Army, Navy, Marine Corps, Air Force, Space Force), and U.S. Coast Guard and National Guard personnel.

This report draws upon information and data from multiple publicly available sources including the DoD, the Department of Homeland Security (DHS), USASPENDING, the U.S. Bureau of Economic Analysis, and the U.S. Bureau of

Labor Statistics. The Impact Analysis for Planning (IMPLAN) tool is also utilized to prepare this report.

The New England private defense industry received \$178.3 billion from 2020 to 2022 in funding from DoD/DHS contracts. For this period, 8,089 private companies in New England received prime DoD/DHS contracts. The total value of New England defense contracts (inflation-adjusted) increased from an average of \$38.7 billion per year in 2008-2010 to \$59.4 billion per year in 2020-2022, which indicates a growth of 54 percent in the region compared to a growth of 38 percent in the United States. New England’s defense contracts are growing at a faster rate than the national average, making it a major contributor to the U.S. defense market and to the regional economy.

In 2022, the New England Defense Cluster supported:

407,523
Jobs

5.5%
of region's employment

- 407,523 jobs, which accounts for 5.5 percent of the region's employment.

\$40.3
Billion income

6.6%
of region's income

- Generated \$40.3 billion in income for households that represents 6.6 percent of the total income generated in the region.

\$119.1
Economic output

9.2%
of region's GDP

- The creation of \$119.1 billion in economic output, representing 9.2 percent of the region's Gross Domestic Product.

Defense Cluster Economic Impact by state is detailed below.

Defense Cluster Total Economic Impact, New England, 2022

Impact	Employment FTE*		Labor Income		Output (GDP)	
	Count	%State	\$Billion	%State	\$Billion	%State
Connecticut	130,097	7.8%	\$13.7	10.0%	\$40.0	12.5%
Maine	47,473	7.4%	\$3.5	9.2%	\$8.4	10.0%
Massachusetts	139,102	3.8%	\$15.2	4.6%	\$48.6	7.1%
New Hampshire	47,392	6.9%	\$4.3	8.6%	\$12.5	12.0%
Rhode Island	34,068	6.9%	\$3.0	8.9%	\$7.6	10.7%
Vermont	9,390	3.1%	\$0.6	3.5%	\$2.0	4.9%
New England	407,523	5.5%	\$40.3	6.6%	\$119.1	9.2%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

Note: FTE denotes full-time equivalent jobs

The New England Defense Cluster has a strong multiplier effect and economic linkages with other sectors in the region. For instance, payroll income from the defense sector is spent and re-spent in other sectors of the economy, generating the so-called “economic multiplier” effects.

In New England, every 100 direct jobs created in the private defense industry support an additional 102 jobs in other sectors of the region's economy via the multiplier effect. On a state-by-state basis, every 100 Defense jobs support an additional:

- **125 Jobs in Massachusetts**
- **99 Jobs in Maine**
- **98 Jobs in Connecticut**
- **91 Jobs in Rhode Island**
- **83 Jobs in Vermont**
- **72 Jobs in New Hampshire**

² When the Defense Cluster makes payments to providers of goods and services, it generates inter-industry impacts -- also known as indirect impacts -- which occur as subsequent rounds of purchases that generate more employment, income, and output in other industries. Also, there are induced effects, which refer to the broader impact on the economy resulting from the spending of labor income generated by the Defense Cluster's direct and indirect impacts. This spending stimulates the economy, inducing the creation of additional jobs, income, and output in the region.

INTRODUCTION

The term “Defense Cluster” encompasses all defense-related activities including both the Private Defense Industry (defense contractors) and the Military Defense Infrastructure, which includes civilian employees working for the Department of Defense (DoD), active-duty military personnel (Army, Navy, Marine Corps, Air Force, Space Force), and Coast Guard and National Guard personnel. This report draws upon information and data from multiple publicly available sources including the DoD, the Department of Homeland Security (DHS), USASPENDING, the U.S. Bureau of Economic Analysis, and the U.S. Bureau of Labor Statistics. In addition, this analysis also utilizes the Impact Analysis for Planning (IMPLAN) tool to measure the economic impact of the Defense Cluster in New England.

The DoD has awarded billions of dollars in contracts to private contractors to perform defense-related work in New England. According to USAspending.gov³, from 2020 to 2022, the DoD and DHS awarded over 360,000 prime and over 38,000 sub-award contracts to 8,089 private defense contractors in the New England region, totaling an average of \$59.4 billion per year (inflation-adjusted)

In New England, there is broad representation of the major prime defense contractors including²:

- Raytheon Technologies, which includes, Raytheon Missiles & Defense, Raytheon Intelligence & Space, Pratt & Whitney and Collins Aerospace
- General Dynamics, which includes GD Electric Boat, GD Information Technology, GD Mission Systems, and GD Bath Iron Works;
- L3 Technologies, which includes L3 Ocean Systems. L3 KEO, L3 Water Systems;
- Lockheed Martin, which includes Sikorsky Aircraft.

The military defense infrastructure also creates jobs and generates income in the region. In 2022, New England's Military Defense Infrastructure employed 74,412 individuals, including 23,650 DoD civilians, 15,420 active-duty military personnel in the Army, Navy, Marine Corps, Air Force, Space Force, and U.S. Coast Guard, and 35,342 National Guard members.

The Defense Cluster contributes to the economy in three ways. First, it directly employs military and civilian personnel and purchases goods and services from companies, which results in impacts on the economy such as increased employment, income, and spending (including technical and engineering services, construction, etc.). This is referred to as the **direct impact**.

Second, the Defense Cluster's payment to providers of goods and services generates impacts through subsequent rounds of input purchases such as employee wages, equipment, rents, and raw materials. These subsequent rounds of purchases lead to additional employment, income, and output in the economy, which is known as inter-industry impacts or the **indirect impact**.

Third, the Defense Cluster's direct and indirect impacts generate household income that is spent in other sectors leading to **induced effects** on the economy. This spending further stimulates the private sector inducing the creation of additional jobs, income, and output in the region.

³This is a publicly accessible website mandated by the Federal Funding Accountability and Transparency Act of 2006.²

⁴There have been several mergers and acquisitions in the U.S. defense industry in recent years, many with impacts in New England. Some notable examples include Raytheon Technologies (2019), which includes, Raytheon Missiles & Defense, Raytheon Intelligence & Space, Pratt & Whitney and Collins Aerospace, Harris Corporation and L3 Technologies (2019), and Lockheed Martin and Sikorsky Aircraft (2015).

To measure the economic impact of the Defense Cluster in New England, this report uses IMPLAN (Impact Analysis for Planning), an economic analysis tool that considers inter-industry relationships to estimate the effects of economic activities related to the Defense Cluster. Appendix A provides additional information about the data and methods utilized to determine the total economic contribution of the Defense Cluster in the Economy of New England.

This report provides an overview of the economic impact of the Defense Cluster for all six New England states along with

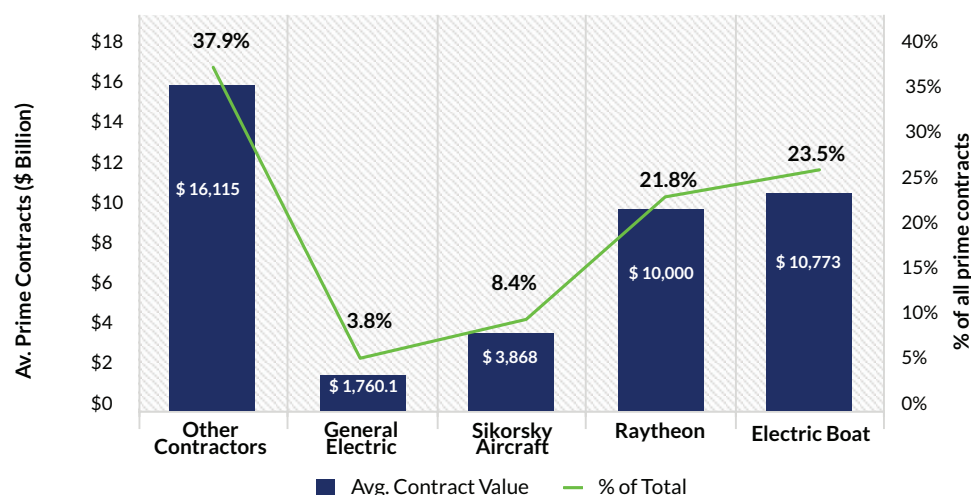
a summary for the entire region. Given the significant year-to-year fluctuations in defense contract dollars granted to states due to political and economic reasons, including COVID related impacts, the analysis and discussion utilize a three-year average (2020-2022) to provide a more accurate and robust assessment of the impact of the private defense industry. It is important to note that the total economic impact and IMPLAN estimates in this report pertain to the calendar year 2022. Refer to the Appendix for further details on the data and methodologies used in the report.

NEW ENGLAND

Private Defense Contracts

The New England Defense Industry received \$45.9 billion in DoD/DHS contracts in 2022, \$66.1 billion in 2021, and \$66.3 billion in 2020. From 2020 to 2022, 8,089 private companies in New England received prime DoD/DHS contracts. Electric Boat, a subsidiary of General Dynamics, received an average of \$10.8 billion per year in prime defense contracts, Raytheon Technologies received \$10 billion per year, Sikorsky Aircraft Corp. received \$3.9 billion per year, and General Electric received \$1.8 billion per year.⁵ These corporations together account for 62 percent of all prime defense contracts awarded to companies in New England during this period.⁶

Top Defense Contractors, Prime Contracts, Annual Average 2020-2022 New England



Source: Data from USASPENDING.org

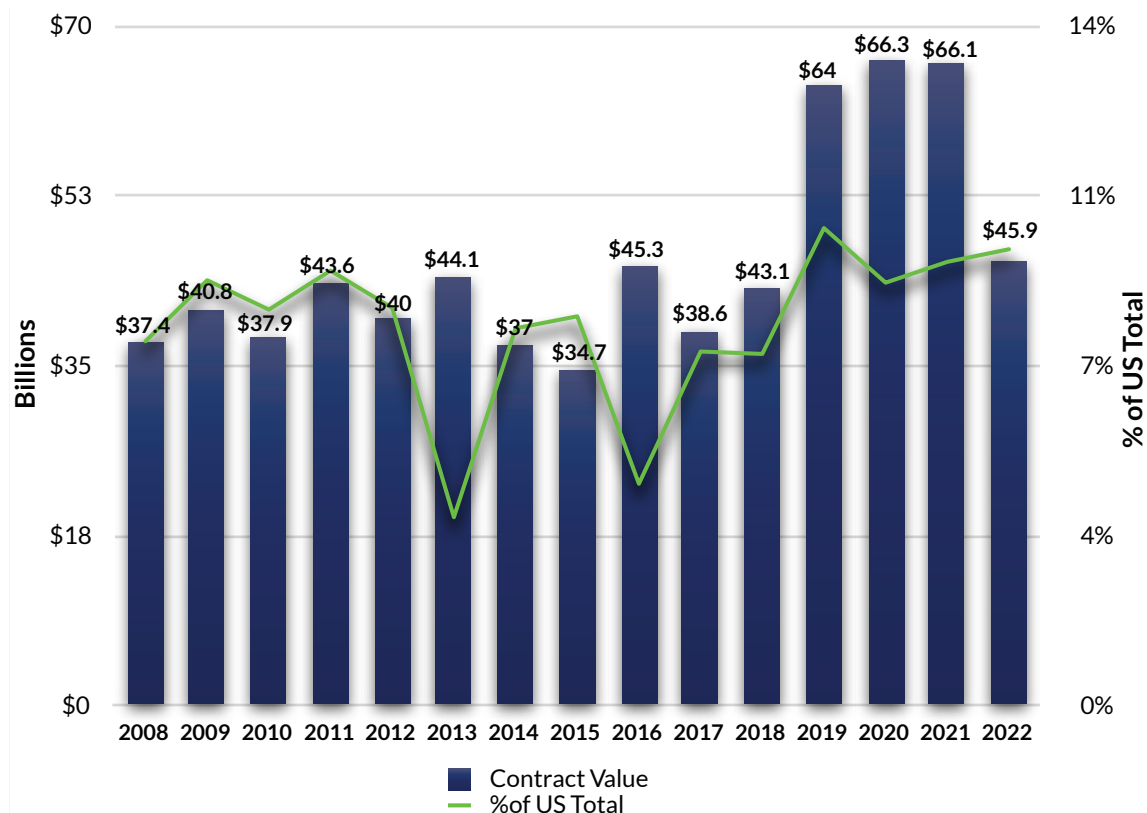
The defense contracts awarded by the DoD/DHS to New England-based businesses and organizations represented 9 percent of all defense contracts issued in the United States from 2020 to 2022, compared to an average of 8 percent from 2008 to 2010. The total value of defense contracts (inflation-adjusted) increased from an average of \$38.7 billion in 2008-

2010 to \$59.4 billion in 2020 to 2022 in New England, which indicates a growth of 54 percent in the region compared to a growth of 38 percent in the U.S. as a whole. **New England's defense contracts are growing at a faster rate than the national average, making it a major contributor to the U.S. defense market and the regional economy.**

⁵These figures are inflation-adjusted. From 2020 to 2022, Modernatx, Inc. received an average of \$2.7 billion in DoD contract to perform work in Massachusetts. This figure is included in "other contractors" with

⁶Prime contracts require work by subcontractors including many small businesses.

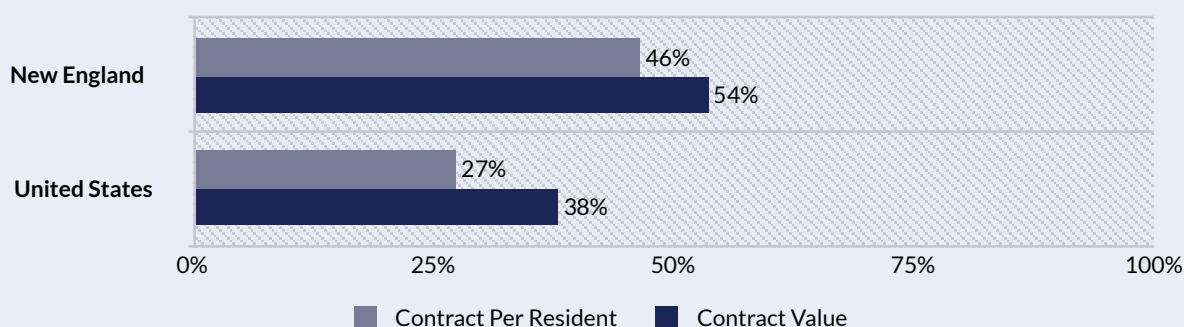
Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022 New England



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$).

Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID impacts.. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

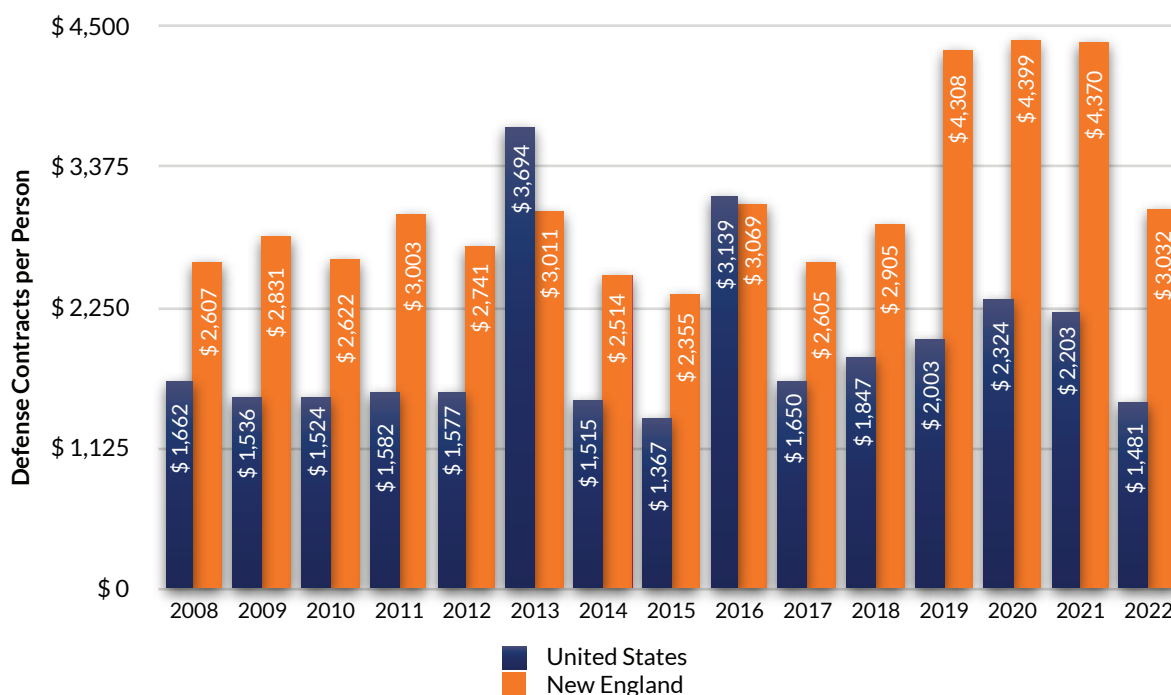
Change in DoD/DHS Contract Value (Inflation-adjusted), Average 2008-2010 to Average 2020-2022 New England



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$).

From 2020 to 2022, New England received an average of \$3,934 per capita in DoD/DHS contracts, significantly higher than the national average of \$2,003. From 2008-2010 to 2020-2022, per capita defense contract awards increased 46 percent in New England compared to a 27 percent increase nationwide, which further emphasizes the region's strong defense economic impact.

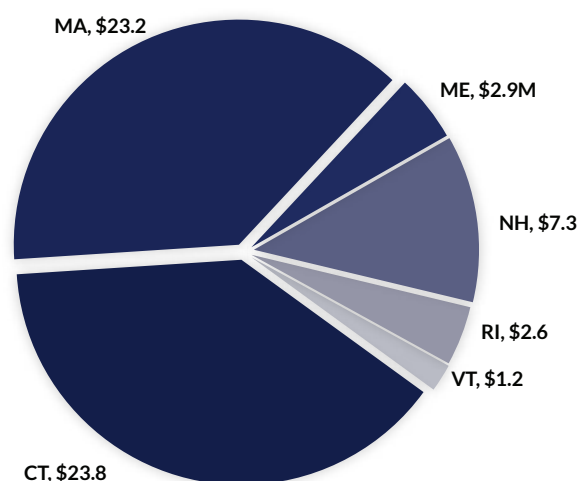
Defense Contracts per capita (Inflation-adjusted), FY 2008 to FY 2022, New England



Source: USASPENDING.org; All values are adjusted for inflation (2022 US Dollars).

From 2020 to 2022, prime and sub-award contracts averaged (inflation-adjusted) \$23.8 billion in Connecticut, \$23.2 billion in Massachusetts, \$7.3 billion in New Hampshire, \$2.9 billion in Maine, \$1.2 billion in Vermont, and \$913 million in Rhode Island. Of note, contract dollars are reported in the state of performance as classified by the DoD, but not all work is necessarily executed in the state that received the award. This analysis estimates that a significant portion of the defense contracts awarded to Electric Boat and thereby reported to their headquarters in Connecticut, are actually executed in Rhode Island, amounting to an average of \$1.7 billion per year from 2020 to 2022. With this adjustment, the amount of defense contracts performed in Rhode Island totals \$2.6 billion per year during this period.

Prime and Sub-award Defense Contracts, Annual Average 2020–2022 Inflation-adjusted, \$ Billion, New England

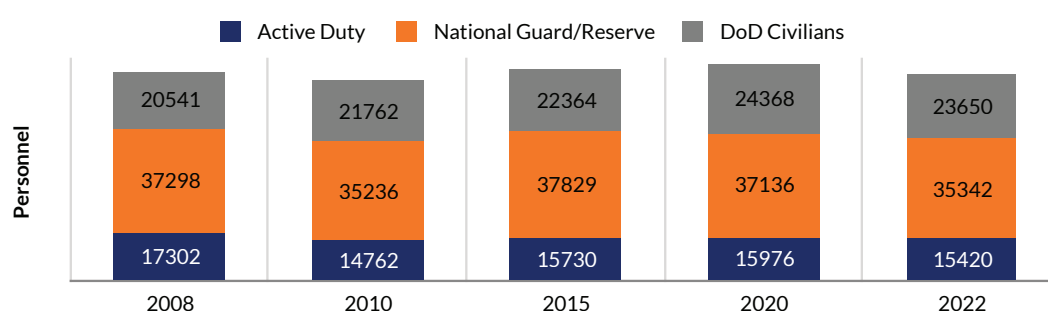


Source: Data from the USASPENDING.

The Military Defense Workforce

In 2022, New England's Military Defense Infrastructure employed 74,412 individuals, including 23,650 civilians employed by the DoD, 15,420 active-duty military and U.S. Coast Guard personnel, and 35,342 National Guard members. Between 2008 and 2022, the number of active-duty military personnel decreased by 10.9 percent, the number of National Guard members decreased by 5.2 percent, and the number of DoD civilians grew by 15.1 percent.

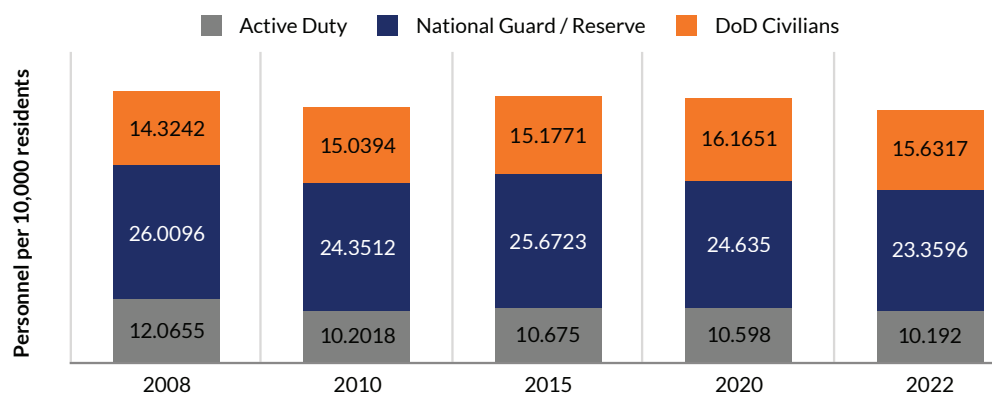
Employment in the Military Defense Infrastructure, New England



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, New England employed 10 active-duty military personnel per 10,000 residents and 16 DoD civilians per 10,000 residents. These figures are lower than the national average of 35 active-duty military personnel per 10,000 residents and 21 DoD civilians per 10,000 residents (See Appendix B, Table A4 for national data). Both New England and the United States have an average of 23 National Guard members per 10,000 residents.

Employment in the Military Defense Infrastructure per 10,000 residents, New England



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in New England has a strong multiplier effect and economic linkages with other sectors in the region. Every 100 direct jobs created in the Private Defense Industry supports another 102 jobs via the multiplier effect in the New England economy. In 2022, the Defense Cluster's total economic impact in New England includes:

- **407,523 jobs** representing **5.5 percent of the region's employment**. Of these, 218,615 are direct jobs and 188,908 are indirect or induced jobs. These figures include:

327,423

workers supported

by defense contracts including 161,764 civilians employed by defense contractors and 165,659 indirect and induced jobs supported by the private defense industry.

80,100

jobs supported

by the military defense infrastructure, including 56,850 FTE activity-duty military, National Guard Members, and DoD civilians as well as 23,250 induced jobs.

- The generation of **\$40.3 billion** in income for households including \$33.3 billion from the private defense industry and \$7.0 billion from the Military Defense Infrastructure. The Defense Cluster supported **6.6 percent of the total income** generated in the region.
- The production of **\$119.1 billion in economic output** (Gross Domestic Product) including \$90.5 billion from the private defense industry and \$29.6 billion from the Military Defense Infrastructure. The Defense Cluster contributed **9.2 percent of the total** economic output produced in the region.

Defense Cluster Total Economic Impact, New England, 2022

Impact	Employment FTE*		Labor Income		Output (GDP)	
	Count	%State	\$Billion	%State	\$Billion	%State
Connecticut	130,097	7.8%	\$13.7	10.0%	\$40.0	12.5%
Maine	47,473	7.4%	\$3.5	9.2%	\$8.4	10.0%
Massachusetts	139,102	3.8%	\$15.2	4.6%	\$48.6	7.1%
New Hampshire	47,392	6.9%	\$4.3	8.6%	\$12.5	12.0%
Rhode Island	34,068	6.9%	\$3.0	8.9%	\$7.6	10.7%
Vermont	9,390	3.1%	\$0.6	3.5%	\$2.0	4.9%
New England	407,523	5.5%	\$40.3	6.6%	\$119.1	9.2%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

Note: FTE denotes full-time equivalent jobs

The Defense Cluster significantly impacts job creation, income, and output across every New England state. In 2022 the total economic impact includes:

Jobs

130,097 <i>Jobs in Connecticut</i>	47,473 <i>Jobs in Maine</i>	139,102 <i>Jobs in Massachusetts</i>
47,392 <i>Jobs in New Hampshire</i>	34,068 <i>Jobs in Rhode Island</i>	9,390 <i>Jobs in Vermont</i>

130,097 jobs or 7.8 percent of employment in Connecticut, 47,473 jobs or 7.4 percent of employment in Maine, 139,102 jobs or 3.8 percent of employment in Massachusetts, 47,392 jobs or 6.9 percent of employment in New Hampshire, 34,068 jobs or 6.9 percent of employment in Rhode Island, and 9,390 jobs or 3.1 percent of employment in Vermont.

Income

\$13.7 <i>Billion in Connecticut</i>	\$3.5 <i>Billion in Maine</i>	\$15.2 <i>Billion in Massachusetts</i>
\$4.3 <i>Billion in New Hampshire</i>	\$3.0 <i>Billion in Rhode Island</i>	\$600 <i>Million in Vermont</i>

Labor income totaling \$13.7 billion in Connecticut (10 percent of the state's income), \$3.5 billion in Maine (9.2 percent of the state's income), \$15.2 billion in Massachusetts (4.6 percent of the state's income), \$4.3 billion in New Hampshire (8.6 percent of the state's income), \$3.0 billion in Rhode Island (8.9 percent of the state's income), and \$600 million in Vermont (3.5 percent of the state's income);

Output

\$40 <i>Billion in Connecticut</i>	\$8.4 <i>Billion in Maine</i>	\$48.6 <i>Billion in Massachusetts</i>
\$12.5 <i>Billion in New Hampshire</i>	\$7.6 <i>Billion in Rhode Island</i>	\$2 <i>Billion in Vermont</i>

Output totaling \$40 billion in Connecticut (12.5 percent of the state's output), \$8.4 billion in Maine (10 percent of the state's output), \$48.6 billion in Massachusetts (7.1 percent of the state's output), \$12.5 billion in New Hampshire (12.0 percent of the state's output), \$7.6 billion in Rhode Island (10.7 percent of the state's output), and \$2 billion in Vermont (4.9 percent of the state's output).

The New England Defense Cluster has a strong multiplier effect and economic linkages with other sectors in the region. For instance, payroll income from the defense sector is spent and re-spent in other sectors of the economy, generating the so-called “economic multiplier” effects.⁷ In New England, every 100 direct jobs created in the private defense industry supports an additional 102 jobs in other sectors of the region’s economy via the multiplier effect. On a state-by-state basis, every 100 jobs support an additional:

- **125 Jobs in Massachusetts**
- **99 Jobs in Maine**
- **98 Jobs in Connecticut**
- **91 Jobs in Rhode Island**
- **83 Jobs in Vermont**
- **72 Jobs in New Hampshire**

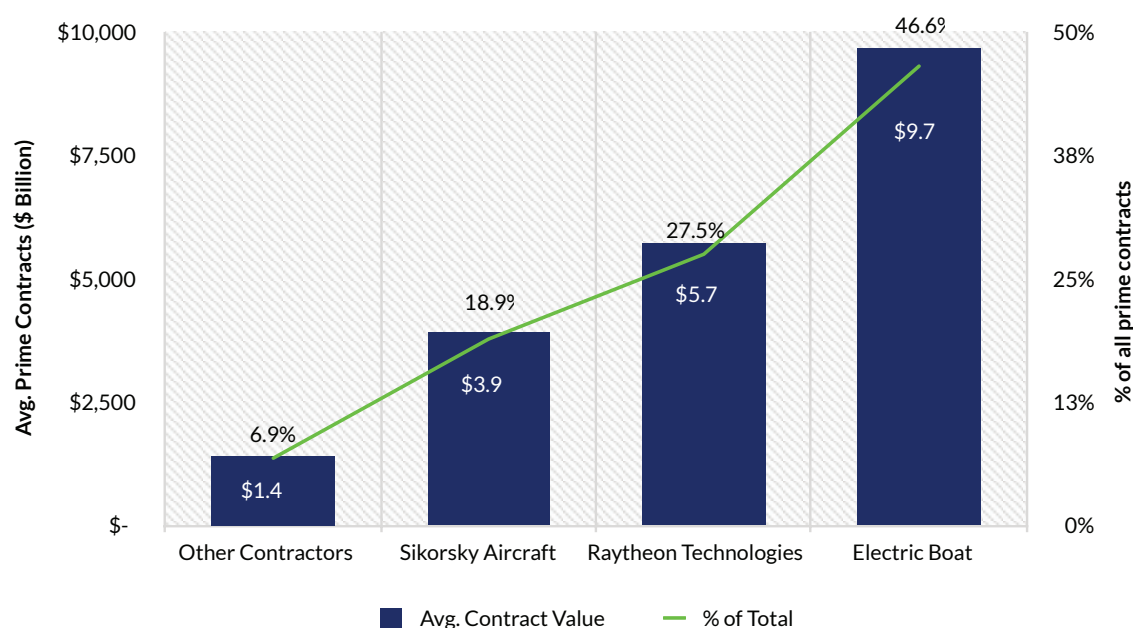
⁷When the Defense Cluster makes payments to providers of goods and services, it generates inter-industry impacts -- also known as **indirect impacts** -- which occur as subsequent rounds of purchases that generate more employment, income, and output in other industries. Also, there are **induced effects**, which refer to the broader impact on the economy resulting from the spending of labor income generated by the Defense Cluster’s direct and indirect impacts. This spending stimulates the economy, inducing the creation of additional jobs, income, and output in the region.

CONNECTICUT

Private Defense Contracts

The Defense Industry in Connecticut received \$22.6 billion in DoD/DHS contracts in 2022, \$21.5 billion in 2021, and \$27.4 billion in 2020. From 2020 to 2022, 1,613 private Connecticut companies received prime DoD/DHS contracts. Electric Boat, a subsidiary of General Dynamics, received an average of \$9.7 billion per year in prime defense contracts, Raytheon Technologies received \$5.7 billion per year, and Sikorsky Aircraft received \$3.9 billion per year. These three corporations together account for 93 percent of all prime defense contracts awarded to Connecticut during this period.⁸

Top Defense Contractors, Prime Contracts, Annual Average 2020 – 2022, CT

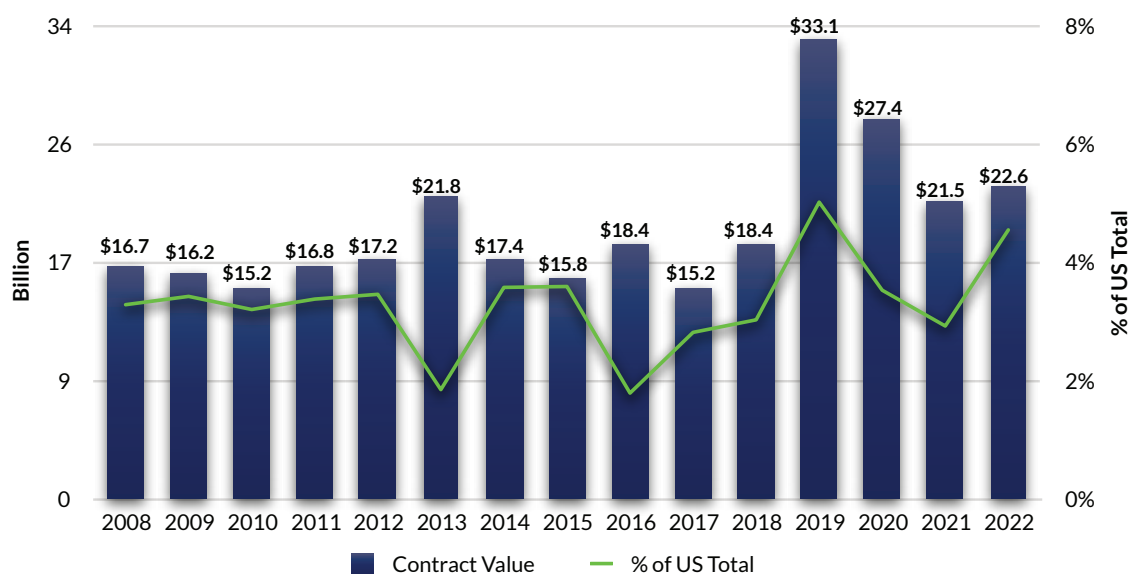


Source: USASPENDING.org.

The defense contracts awarded by the DoD/DHS to Connecticut contractors represented 3.7 percent of all defense contracts issued in the United States from 2020 to 2022, compared to an average of 3.3 percent from 2008 to 2010. The total value of defense contracts (inflation-adjusted) increased from an average of \$16 billion in 2008-2010 to \$23.8 billion in 2020-2022 in Connecticut, indicating a growth of 48 percent in the state.

⁸ Prime contracts require work by subcontractors including many small businesses.

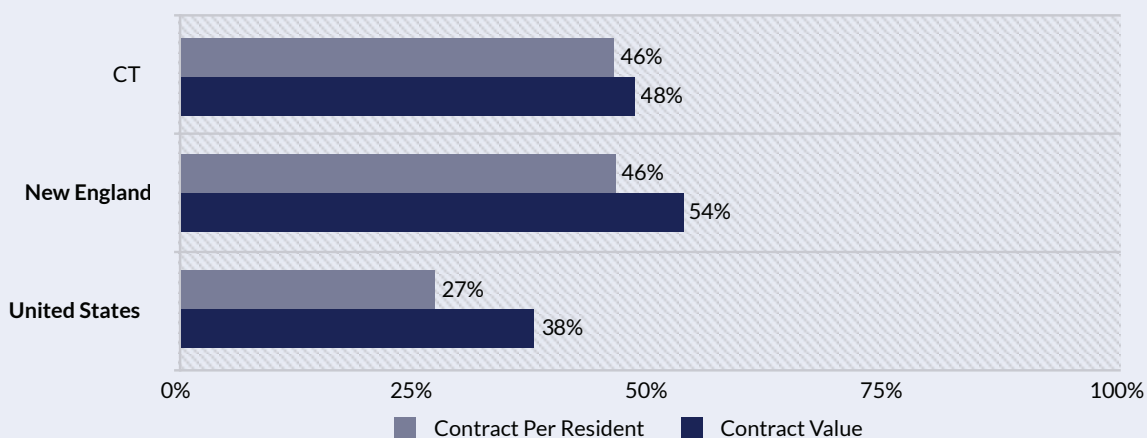
Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022, CT



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID related impacts. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

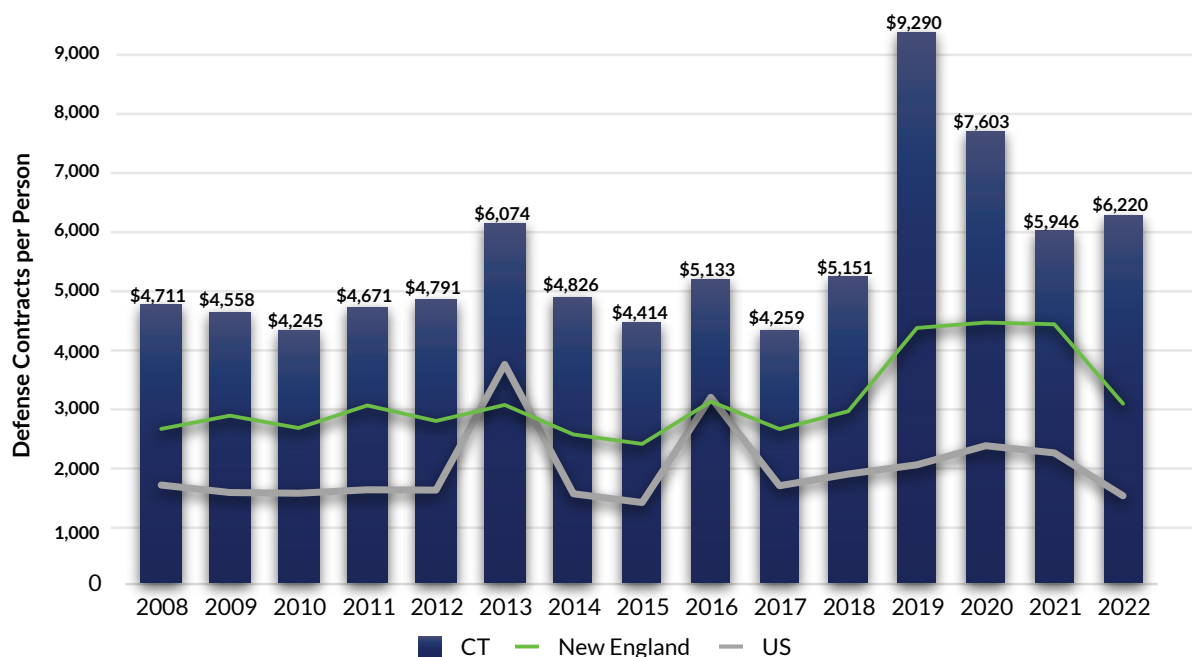
Change in DoD/DHS Contract Value (Inflation-adjusted), Average 2008-2010 to Average 2020-2022, CT



Source: USASPENDING.org; Values are adjusted for inflation (2022 US\$).

From 2020 to 2022, Connecticut received an average of \$6,590 per capita in DoD/DHS contracts. From 2008-2010 to 2020-2022, per capita defense contract awards increased 46 percent Connecticut.

Defense Contracts Per Person (Inflation-adjusted), FY 2008 to FY 2022, CT

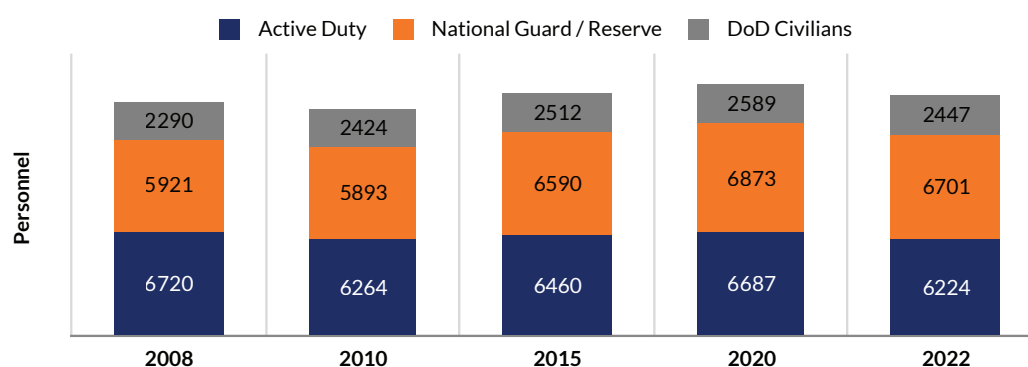


Source: USASPENDING.org; Values are adjusted for inflation (2022 US\$).

The Military Defense Workforce

In 2022, Connecticut's Military Defense Infrastructure employed 15,372 individuals, including 6,224 active-duty military personnel from the Army, Navy, Marine Corps, Air Force, Space Force, and U.S. Coast Guard, 6,701 National Guard members, and 2,447 civilians employed by the Department of Defense (DoD). Between 2008 and 2022, the number of active-duty military personnel decreased by 7.4 percent, while the number of National Guard members increased by 13.2 percent, and the number of DoD civilians grew by 6.9 percent.

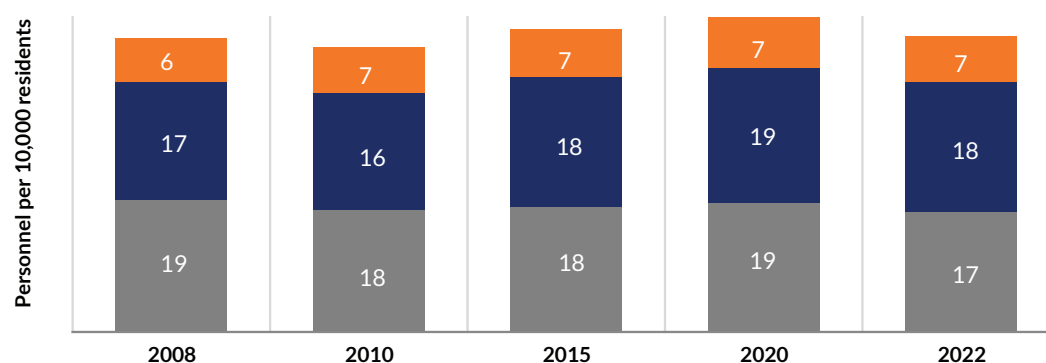
Employment in the Military Defense Infrastructure, CT



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, Connecticut employed 17 active-duty military personnel per 10,000 residents, 18 National Guard members per 10,000 residents, and 7 DoD civilians per 10,000 residents.

Employment in the Military Defense Infrastructure per 10,000 residents, CT



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in Connecticut has strong economic linkages with other sectors in the state. Every 100 direct jobs created in the Private Defense Industry supports another 98 jobs via the multiplier effect in the Connecticut economy. In 2022, the Defense Cluster's total economic impact in Connecticut includes:

- **130,097 jobs**, which represents **7.8 percent of the state's employment**. Of these, 69,120 are direct jobs and 60,978 are indirect or induced jobs. These figures include:

115,506

workers supported

by defense contracts including 58,215 civilians employed by defense contractors and 57,291 indirect and induced jobs supported by the defense industry.

14,591

jobs supported

by the military defense infrastructure, including 10,905 FTE activity-duty military and DoD civilians as well as 3,687 induced jobs.

- The generation of **\$13.7 billion in labor income** for households including \$12.4 billion from the private defense industry and \$1.3 billion from the Military Defense Infrastructure. The Defense Cluster supported 10 percent of the total income generated in the state.
- The generation of **\$40 billion in economic output** (State's Gross Domestic Product) including \$33.1 billion from the private defense industry and \$6.9 billion from the Military Defense Infrastructure. The Defense Cluster contributed **12.5 percent of the total output** produced in the state.

Defense Cluster Total Economic Impact, CT, 2022

Impact	Employment (FTE)*	Labor Income (\$ billion)	Output -GDP (\$ billion)
Private Defense Industry	115,506	\$12.4	\$33.1
Direct	58,215	\$7.7	\$20.6
Induced + Indirect	57,291	\$4.7	\$12.5
Military Defense Infrastructure	14,591	\$1.3	\$6.9
Direct	10,905	\$1.0	\$6.2
Induced**	3,687	\$0.3	\$0.7
Total Defense Cluster	130,097	\$13.7	\$40.0
% of Statewide Economy	7.8%	10.0%	12.5%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

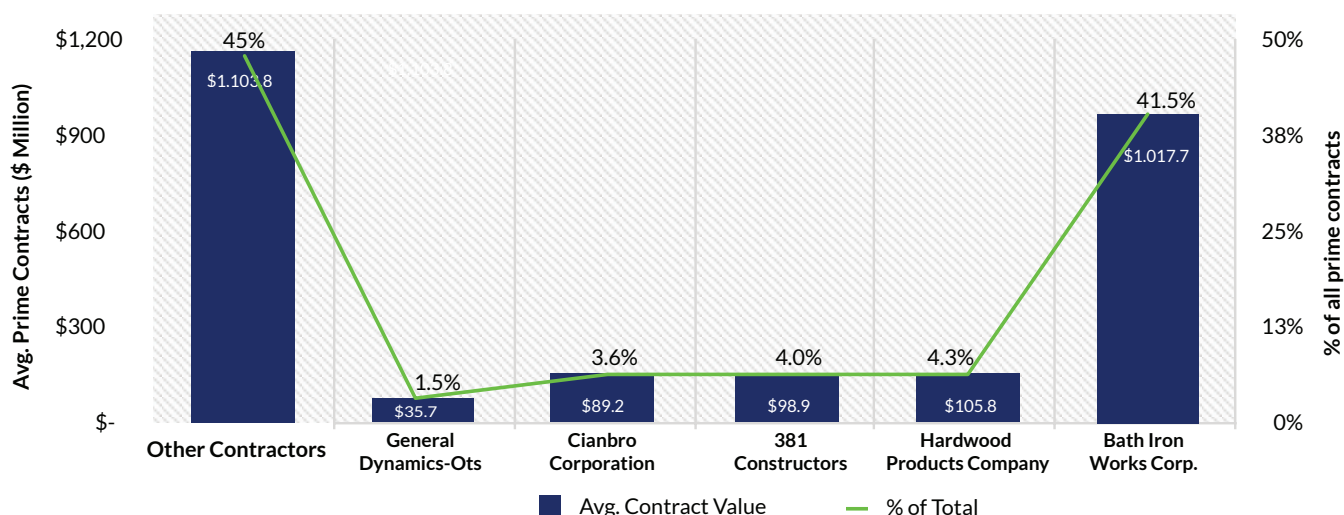
Notes: * FTE denotes full-time equivalent jobs; ** No indirect effect is generated by military employment.

MAINE

Private Defense Contracts

The Defense Industry in Maine received \$2.8 billion in DoD/DHS contracts in 2022, \$2.7 billion in 2021, and \$3.3 billion in 2020. From 2020 to 2022, 924 private Maine companies received prime DoD/DHS contracts. Bath Iron Works, a subsidiary of General Dynamics, received an average of \$1 billion per year in prime defense contracts, Hardwood Products received \$106 million per year, 381 Construction received \$99 million per year, Cianbro received \$89 million per year, and General Dynamics received \$36 million per year.⁹ These corporations together account for 55 percent of all prime defense contracts awarded to Maine during this period.¹⁰

Top Defense Contractors, Prime Contracts, Annual Average 2020 – 2022, ME



Source: USASPENDING.org.

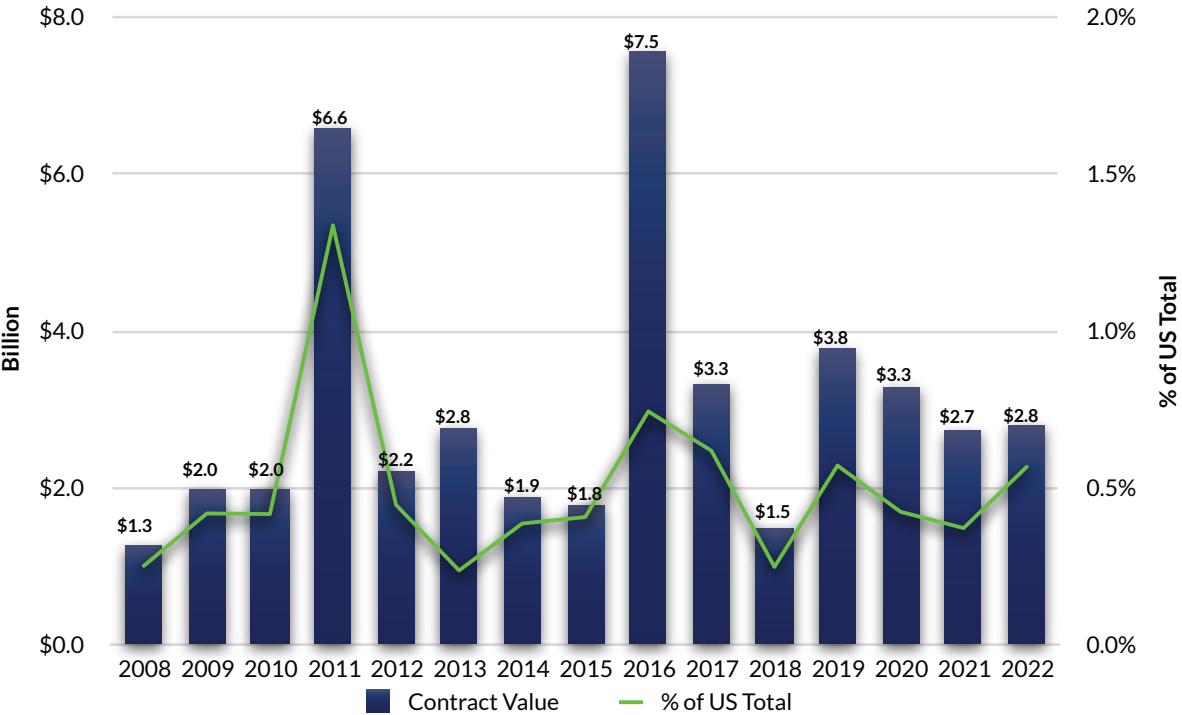
The defense contracts awarded by the DoD/DHS to Maine contractors represented 0.5 percent of all defense contracts issued in the United States from 2020 to 2022, compared to an average of 0.4 percent from 2008 to 2010. The total value of defense

contracts (inflation-adjusted) increased from an average of \$1.7 billion in 2008 to 2010 to \$2.9 billion in 2020-2022 in Maine. From 2008-2010 to 2020-2022, defense contracts increased 68.7 percent in Maine.

⁹ Martin's Point Health Care received \$392 million per year from 2020 to 2022 in DoD contracts to perform work in Maine. This figure is included in "other contractors". Raytheon Technologies' Pratt & Whitney's North Berwick Aero Systems facility located in Maine produces parts for commercial and military engines and employs approximately 2,200 employees. As noted, DoD contract dollars are often reported in the state of contract award, not necessarily performance. DoD contracts for this Maine facility are reported as part of Pratt & Whitney Headquarters in Connecticut.

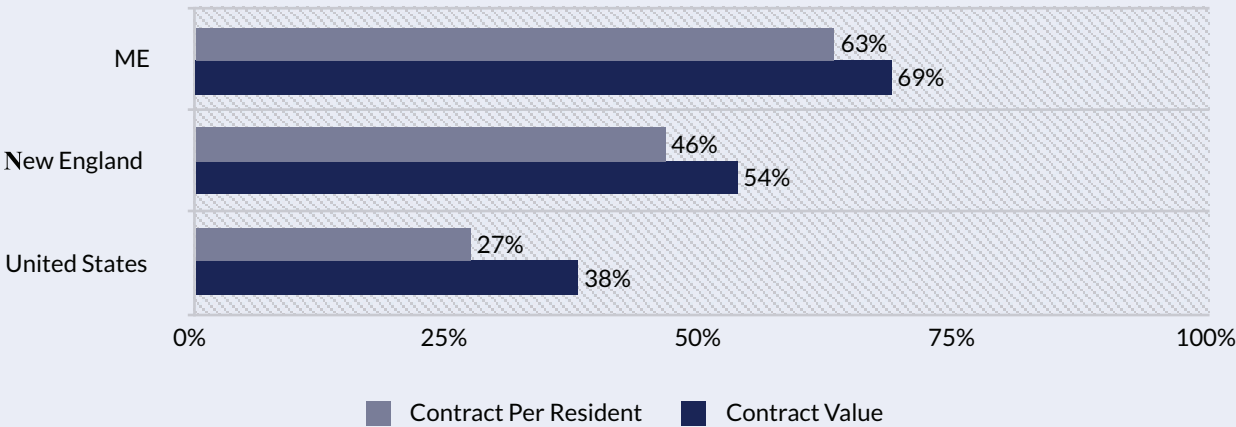
¹⁰ Prime contracts require work by subcontractors including many small businesses.

Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022, ME



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$).
Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID related impacts. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

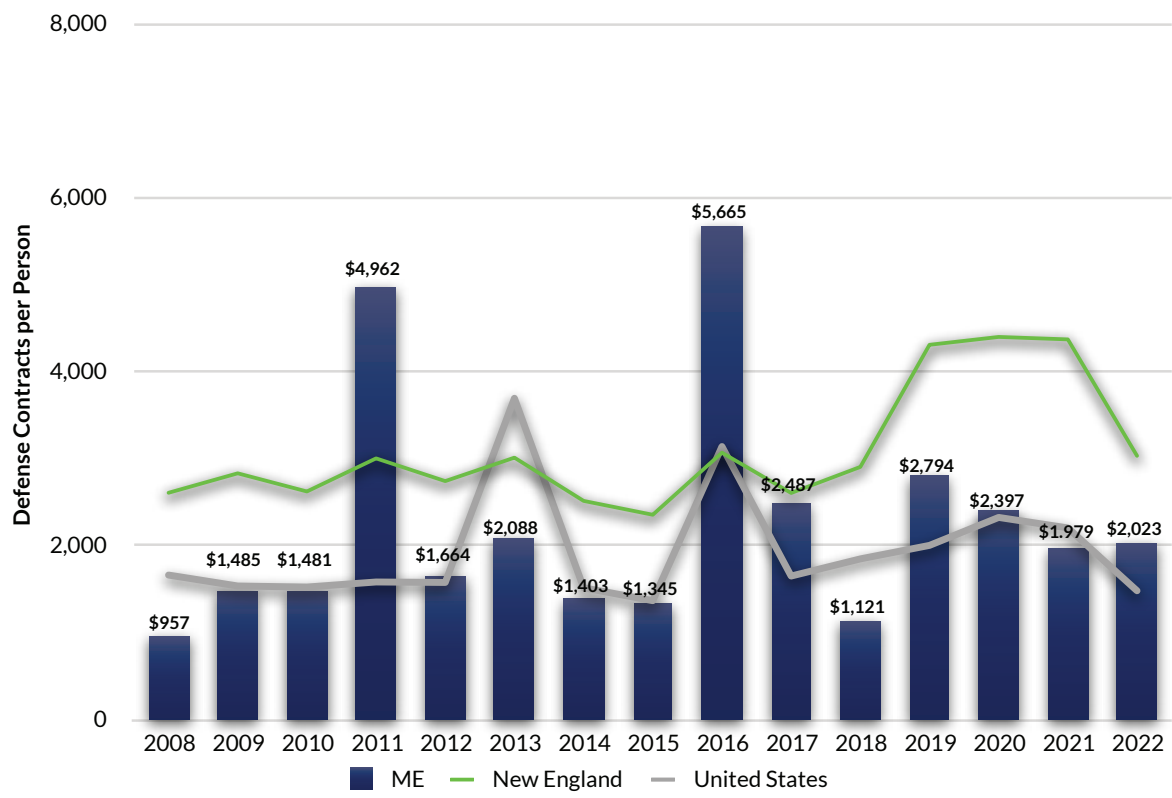
Change In DoD/DHS Contract Value, (Inflation-Adjusted)
Average 2008-2010 To Average 2020-2022, ME



Source: USASPENDING.org; Values are adjusted for inflation (2022 US \$)

From 2020-2022, Maine received an average of \$2,133 per capita in DoD/DHS contracts. From 2008 to 2022, per capita defense contract awards in Maine increased 63 percent.

Defense Contracts Per Person, FY 2008 to FY 2022, ME

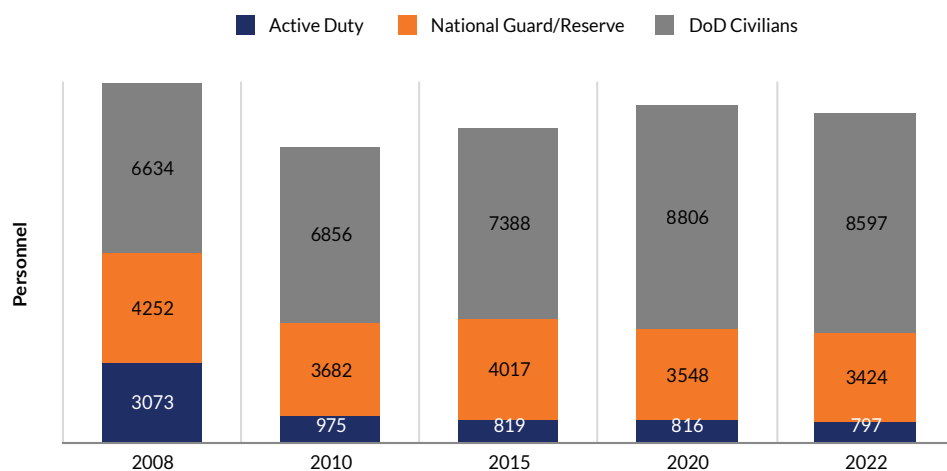


Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

The Military Defense Workforce

In 2022, Maine's Military Defense Infrastructure employed 12,818 individuals, including 797 active-duty military personnel from the Army, Navy, Marine Corps, Air Force, Space Force, and U.S. Coast Guard, 3,424 National Guard members, and 8,597 civilians employed by the Department of Defense (DoD). Between 2008 and 2022, the number of active-duty military personnel decreased 74.1 percent, the number of National Guard members decreased 19.5 percent, and the number of DoD civilians increased 29.6 percent.

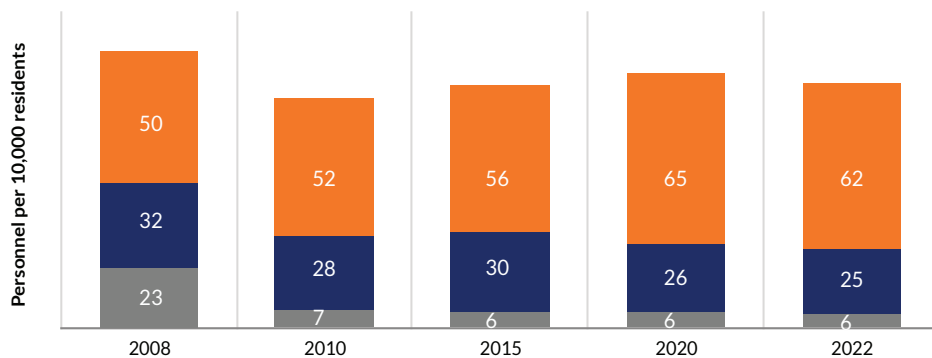
Employment in the Military Defense Infrastructure, ME



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, Maine employed 6 active-duty military personnel, 25 National Guard members, and 62 DoD civilians per 10,000 residents.

Employment in the Military Defense Infrastructure per 10,000 Residents, ME



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in Maine also has strong economic linkages with other sectors in the state. Every 100 direct jobs created in the Private Defense Industry supports another 99 jobs via the multiplier effect in the Maine economy. In 2022, the Defense Cluster's total economic impact in Maine includes:

- **47,473 jobs**, which represents **7.4 percent of the state's employment**. Of these, 27,963 are direct jobs and 19,510 are indirect or induced jobs. These figures include:

22,783

workers supported

by defense contracts including 11,428 civilians employed by defense contractors and 11,354 indirect and induced jobs supported by the defense industry.

24,691

jobs supported

by the military defense infrastructure, including 16,535 FTE activity-duty military and DoD civilians as well as 8,156 induced jobs.

- The generation of **\$3.5 billion in income** for households including \$1.5 billion from the private defense industry and \$2.0 billion from the Military Defense Infrastructure. The Defense Cluster supported **9.2 percent of the total income** generated in the state.
- The generation of **\$8.4 billion in economic output** (State's Gross Domestic Product) including \$4.8 billion from the private defense industry and \$3.5 billion from the Military Defense Infrastructure. The Defense Cluster contributed **10 percent of the total output** produced in the state.

Defense Cluster Total Economic Impact, Maine, 2022

Impact	Employment (FTE)*	Labor Income (\$ billion)	Output -GDP (\$ billion)
Private Defense Industry	22,783	\$1.5	\$4.8
Direct	11,428	\$0.8	\$2.7
Induced + Indirect	11,354	\$0.7	\$2.2
Military Defense Infrastructure	24,691	\$2.0	\$3.5
Direct	16,535	\$1.6	\$2.1
Induced**	8,156	\$0.4	\$1.4
Total Defense Cluster	47,473	\$3.5	\$8.4
% of Statewide Economy	7.4%	9.2%	10.0%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

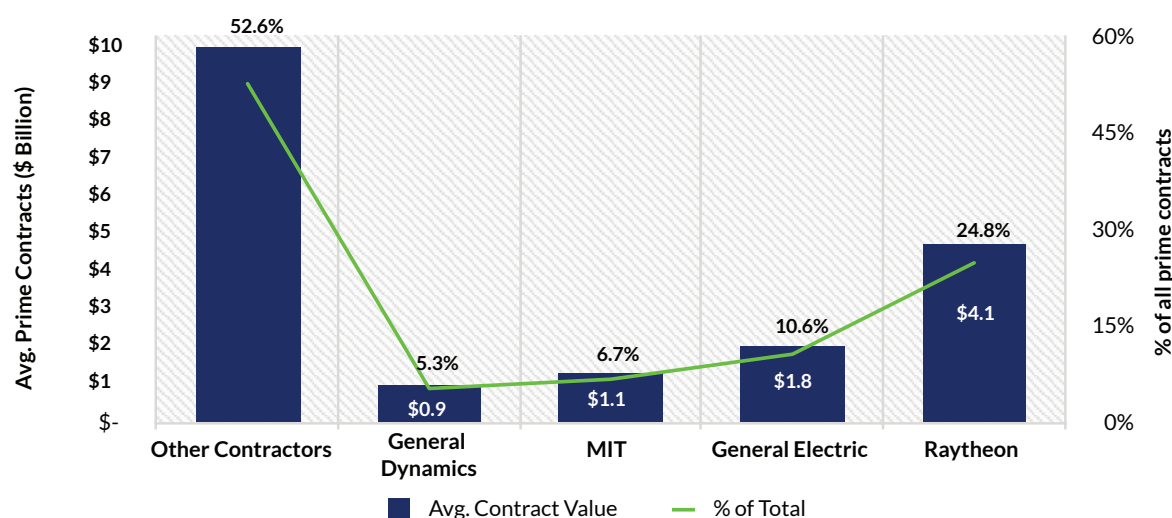
Notes: * FTE denotes full-time equivalent jobs; ** No indirect effect is generated by military employment.

MASSACHUSETTS

Private Defense Contracts

The Defense Industry in Massachusetts received \$16 billion in DoD/DHS contracts in 2022, \$28.5 billion in 2021, and \$25.1 billion in 2020. From 2020 to 2022, 3,047 private Massachusetts companies received prime DoD/DHS contracts. Raytheon received an average of \$4.1 billion per year in prime defense contracts, General Electric received \$1.8 billion per year, the Massachusetts Institute of Technology (MIT) received \$1.1 billion per year, and General Dynamics received \$0.9 billion per year.¹¹ These corporations together account for 47 percent of all prime defense contracts awarded to Massachusetts during this period.¹²

Top Defense Contractors, Prime Contracts, Annual Average 2020–2022, MA



Source: USASPENDING.org.

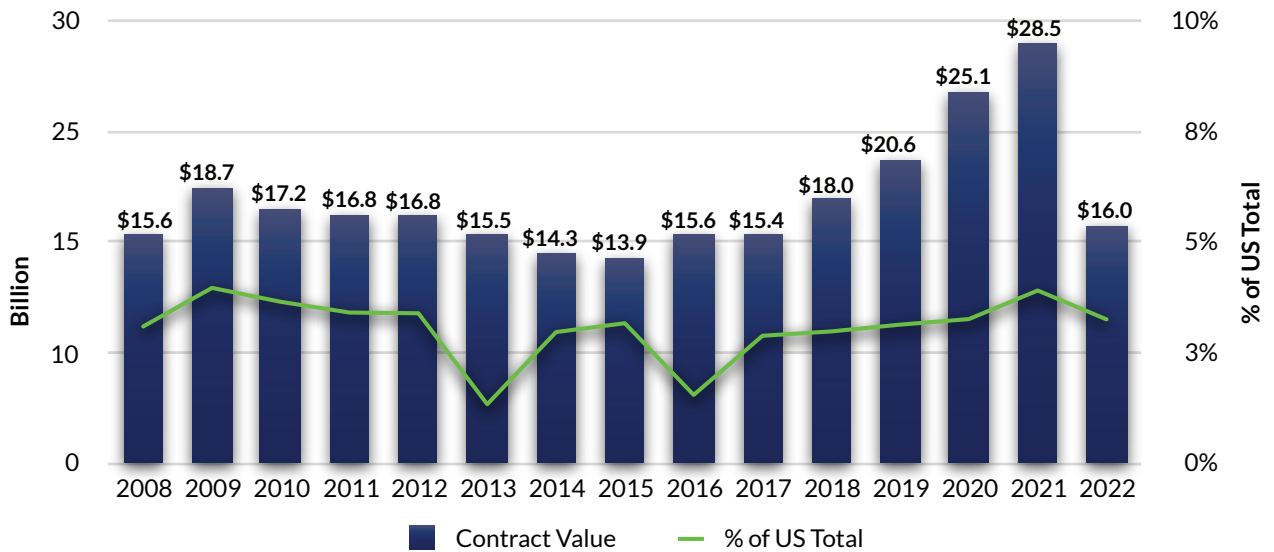
The defense contracts awarded by the DoD/DHS to Massachusetts contractors represented 3.5 percent of all defense contracts issued in the United States from 2020 to 2022, compared to an average of 3.6 percent from 2008 to 2010. The total value of defense contracts (inflation-adjusted) increased

from an average of \$17.1 billion in 2008-2010 to \$23.2 billion in 2020-2022 in Massachusetts. From 2008-2010 to 2020-2022, defense contracts increased 35 percent in Massachusetts.

¹¹From 2020 to 2022, Modernatx, Inc. received an average of \$2.7 billion in DoD contract to perform work in Massachusetts. This figure is included in "other contractors"

¹² Prime contracts require work by subcontractors including many small businesses.

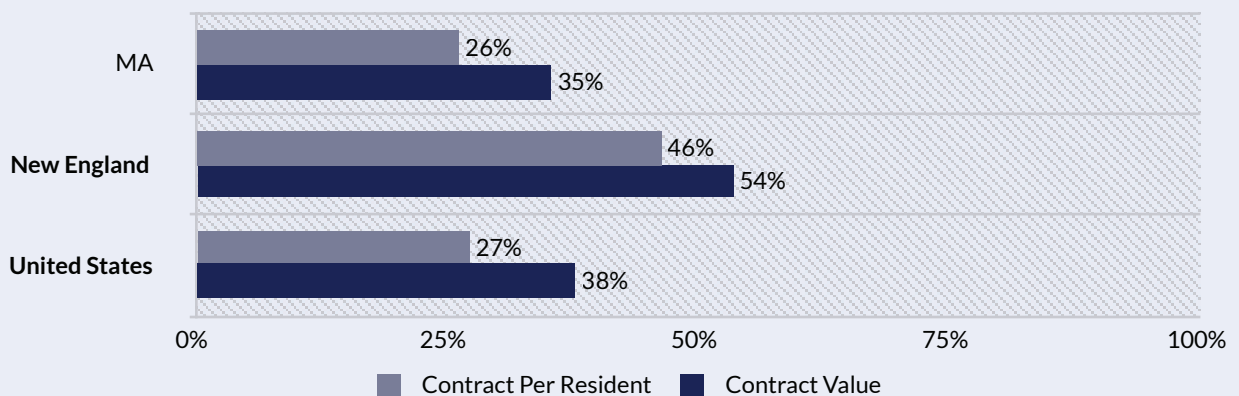
Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022, MA



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID related impacts. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

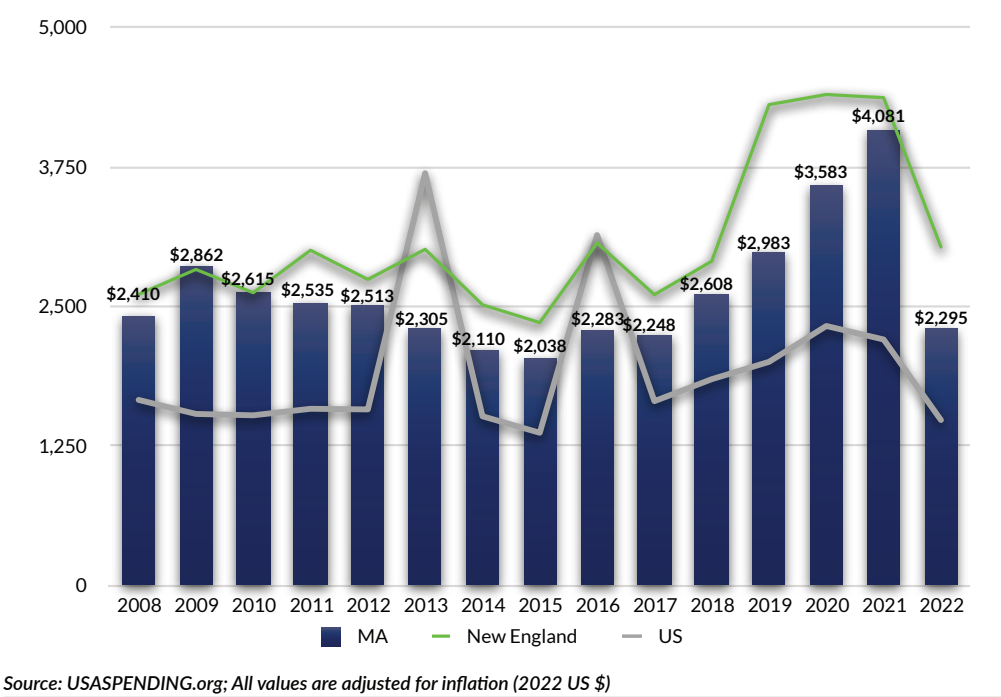
Change in DoD/DHS Contract Value (Inflation-adjusted), Average 2008-2010 to Average 2020-2022, MA



Source: USASPENDING.org; Values are adjusted for inflation (2022 US \$)

From 2020-2022, Massachusetts received an average of \$3,320 per capita in DoD/DHS contracts. From 2008 to 2022, per capita defense contract awards in Massachusetts increased 26 percent.

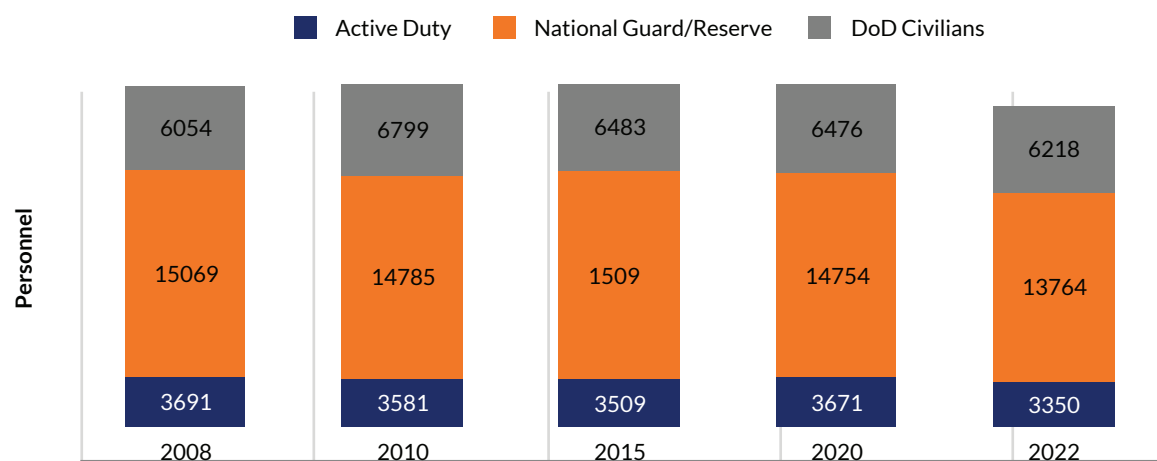
Defense Contracts Per Person, FY 2008 to FY 2022, MA



The Military Defense Workforce

In 2022, Massachusetts's Military Defense Infrastructure employed 23,332 individuals, including 3,350 active-duty military personnel from the Army, Navy, Marine Corps, Air Force, Space Force, and U.S. Coast Guard, 13,764 National Guard members, and 6,218 civilians employed by the DoD. Between 2008 and 2022, the number of active-duty military personnel decreased by 9.2 percent, the number of National Guard members decreased 8.7 percent, and the number of DoD civilians increased 2.7 percent.

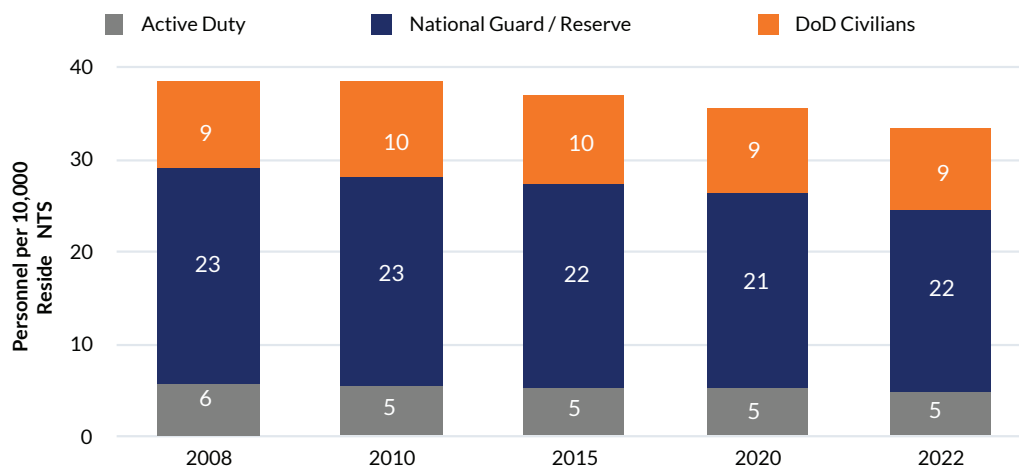
Employment in the Military Defense Infrastructure, MA



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, Massachusetts employed 5 active-duty military personnel, 20 National Guard members, and 9 DoD civilians per 10,000 residents.

Employment in the Military Defense Infrastructure per 10,000 residents, MA



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in Massachusetts also has strong economic linkages with other sectors in the state. Every 100 direct jobs created in the Private Defense Industry supports another 99 jobs via the multiplier effect in the Massachusetts economy. In 2022, the Defense Cluster's total economic impact in Massachusetts includes:

- **139,102 jobs**, which represents **3.8 percent of the state's employment**. Of these, 67,196 are direct jobs and 71,907 are indirect or induced jobs. These figures include:

119,548

workers supported

by defense contracts including 53,040 civilians employed by defense contractors and 66,509 indirect and induced jobs supported by the defense industry.

19,554

jobs supported

by the military defense infrastructure, including 14,156 FTE activity-duty military and DoD civilians as well as 5,398 induced jobs.
- The generation of **\$15.2 billion in income** for households including \$13.4 billion from the private defense industry and \$1.8 billion from the Military Defense Infrastructure. The Defense Cluster supported **4.6 percent of the total income** generated in the state.
- The generation of **\$48.6 billion in economic output** (State's Gross Domestic Product) including \$36.2 billion from the private defense industry and \$12.4 billion from the Military Defense Infrastructure. The Defense Cluster contributed **7.1 percent of the total output** produced in the state.

Defense Cluster Total Economic Impact, Massachusetts, 2022

Impact	Employment (FTE)*	Labor Income (\$ billion)	Output -GDP (\$ billion)
Private Defense Industry	119,548	\$13.4	\$36.2
Direct	53,040	\$7.5	\$21.3
Induced + Indirect	66,509	\$6.0	\$14.9
Military Defense Infrastructure	19,554	\$1.8	\$12.4
Direct	14,156	\$1.4	\$11.3
Induced**	5,398	\$0.4	\$1.1
Total Defense Cluster	139,102	\$15.2	\$48.6
% of Statewide Economy	3.8%	4.6%	7.1%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

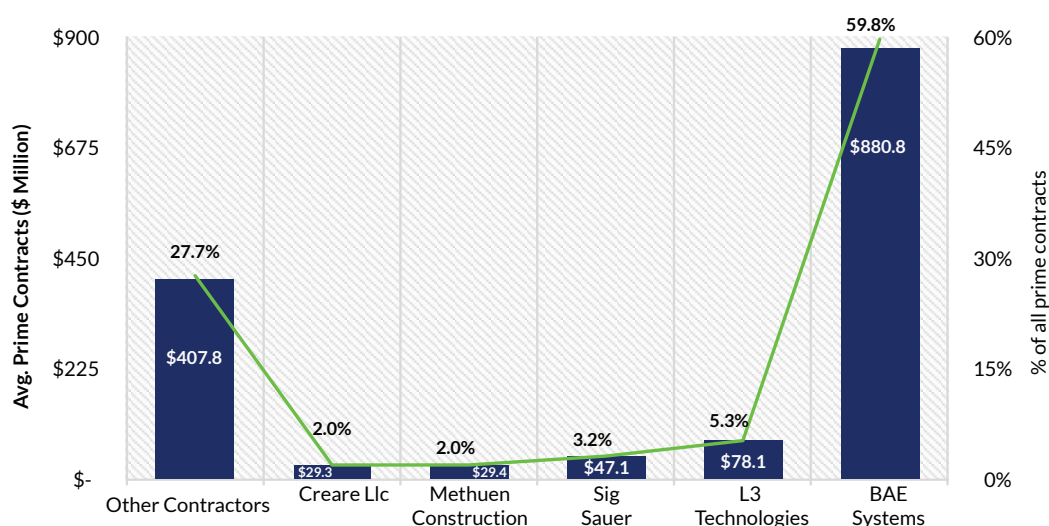
Notes: * FTE denotes full-time equivalent jobs; ** No indirect effect is generated by military employment.

NEW HAMPSHIRE

Private Defense Contracts

The Defense Industry in New Hampshire experienced a significant increase in DoD/DHS contracts in the early 2020s, receiving \$7.9 billion in 2020, \$11 billion in 2021 and \$3.1 billion in 2022. From 2020 to 2022, 845 private New Hampshire companies received prime DoD/DHS contracts. BAE System received an average of \$881 million per year in prime defense contracts, L3 Technologies received \$78 million per year, Sig Sauer received \$47 million per year, and Methuen Construction and Creare LLC each received \$29 million per year. These corporations together account for 72 percent of all prime defense contracts awarded to New Hampshire during this period.¹³

Top Defense Contractors, Prime Contracts, Annual Average 2020–2022, NH

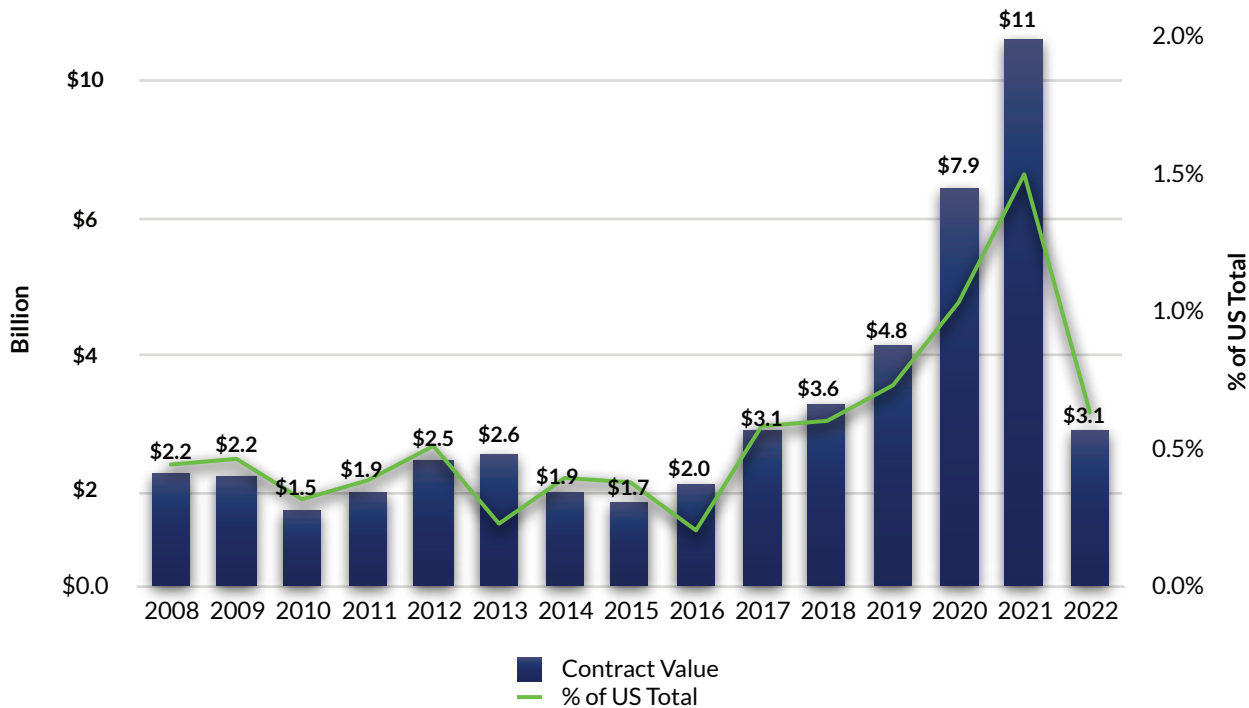


Source: USASPENDING.org.

The defense contracts awarded by the DoD/DHS to New Hampshire contractors represented an average of 1.1 percent of all defense contracts issued in the United States from 2020 to 2022, compared to an average of 0.4 percent from 2008 to 2010. The total value of defense contracts (inflation-

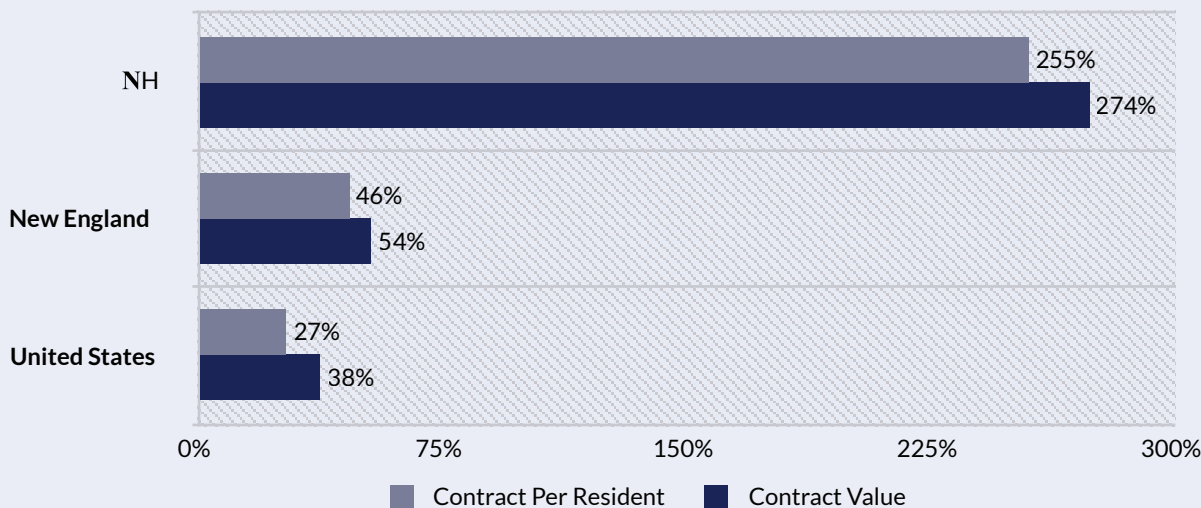
adjusted) increased from an average of \$2.0 billion in 2008-2010 to \$7.3 billion in 2020-2022 in New Hampshire. From 2008-2010 to 2020-2022, defense contracts increased 274 percent in New Hampshire.

Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022, NH



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)
Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID related impacts. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

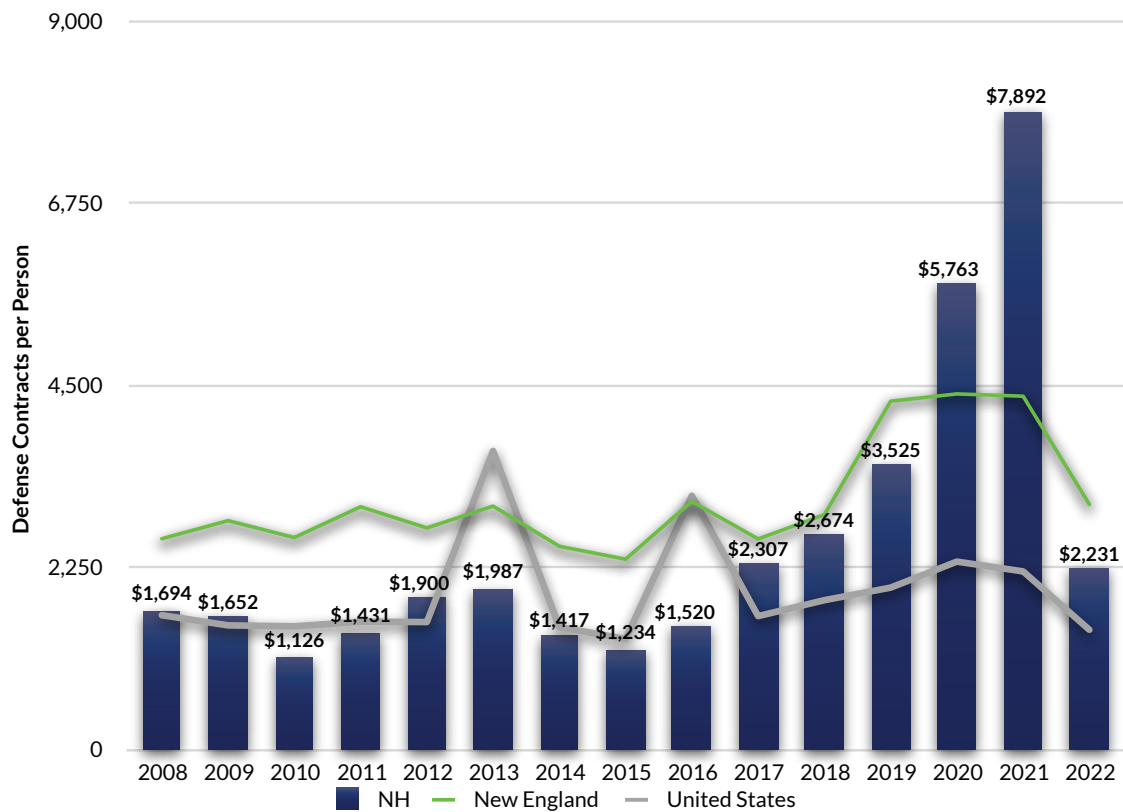
Change in DoD/DHS Contract Value, (Inflation-Adjusted)
Average 2008-2010 to Average 2020-2022, NH



Source: USASPENDING.org; Values are adjusted for inflation (2022 US \$)

From 2020-2022, New Hampshire received an average of \$5,295 per capita in DoD/DHS contracts, higher than the average of \$3,032 in New England and \$2,003 nationwide. From 2008 to 2022, per capita defense contract awards in New Hampshire increased 255 percent.

Defense Contracts Per Person, FY 2008 to FY 2022, NH

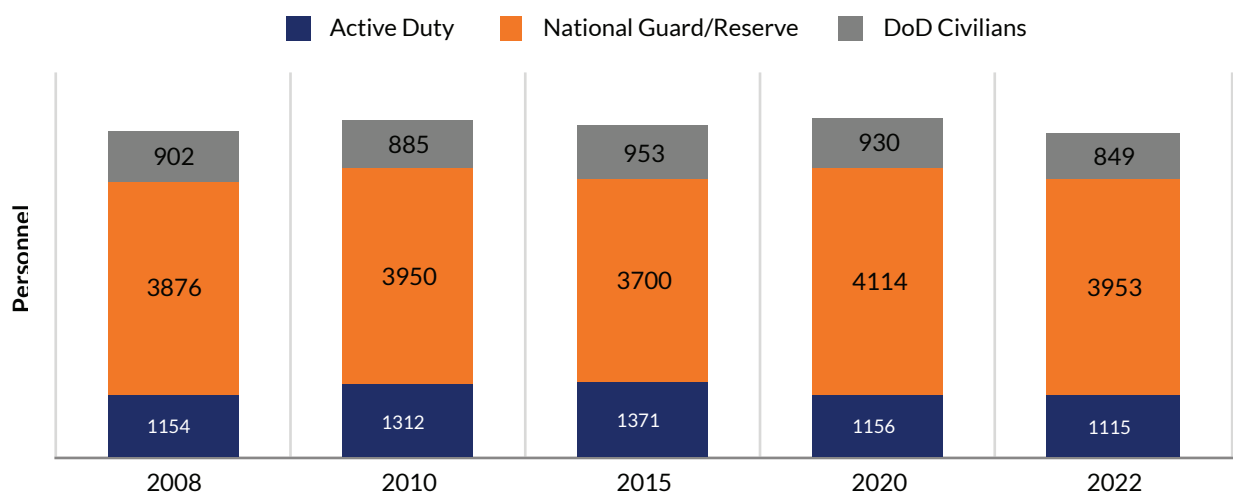


Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

The Military Defense Infrastructure

In 2022, New Hampshire's Military Defense Infrastructure employed 5,917 individuals; including, 1,115 active-duty military personnel from the Army, Navy, Marine Corps, Air Force, Space Force, and U.S. Coast Guard, 3,953 National Guard members, and 849 civilians employed by the Department of Defense (DoD). Between 2008 and 2022, the number of active-duty military personnel decreased 3.41 percent, the number of National Guard members increased 2 percent, and the number of DoD civilians decreased 5.9 percent.

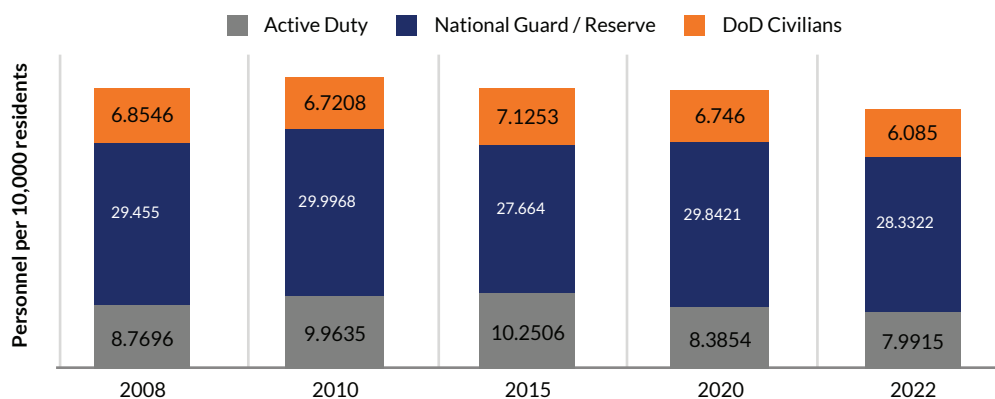
Employment in the Military Defense Infrastructure, NH



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, New Hampshire employed 8 active-duty military personnel, 28 National Guard members, and 6 DoD civilians per 10,000 residents.

Employment in the Military Defense Infrastructure Per 10,000 Residents, NH



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in New Hampshire has economic linkages with other sectors in the state. In New Hampshire, every 100 direct jobs created in the Private Defense Industry supports another 72 jobs via the multiplier effect. In 2022, the Defense Cluster's total economic impact in New Hampshire includes:

- A total of **47,392 jobs**, which represents **6.9 percent of the state's employment**. Of these, 28,428 are direct jobs and 18,964 are indirect or induced jobs. These figures include:

43,240

workers supported

by defense contracts including 25,147 civilians employed by defense contractors and 18,093 indirect and induced jobs supported by the defense industry.

4,152

jobs supported

by the military defense infrastructure, including 3,282 FTE activity-duty military and DoD Civilians as well as 871 induced jobs.

- The generation of **\$4.3 billion in income** for households including \$4.0 billion from the private defense industry and \$0.3 billion from the Military Defense Infrastructure. The Defense Cluster supported **8.6 percent of the total income** generated in the state.
- The generation of **\$12.5 billion in economic output** (State's Gross Domestic Product) including \$10.5 billion from the private defense industry and \$2.1 billion from the Military Defense Infrastructure. The Defense Cluster contributed to **12 percent of the total output** produced in the state.

Defense Cluster Total Economic Impact, New Hampshire, 2022

Impact	Employment (FTE)*	Labor Income (\$ billion)	Output -GDP (\$ billion)
Private Defense Industry	43,240	\$4.0	\$10.5
Direct	25,147	\$2.5	\$6.8
Induced + Indirect	18,093	\$1.5	\$3.7
Military Defense Infrastructure	4,152	\$0.3	\$2.1
Direct	3,282	\$0.2	\$1.9
Induced**	871	\$0.1	\$0.2
Total Defense Cluster	47,392	\$4.3	\$12.5
% of Statewide Economy	6.9%	8.6%	12.0%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

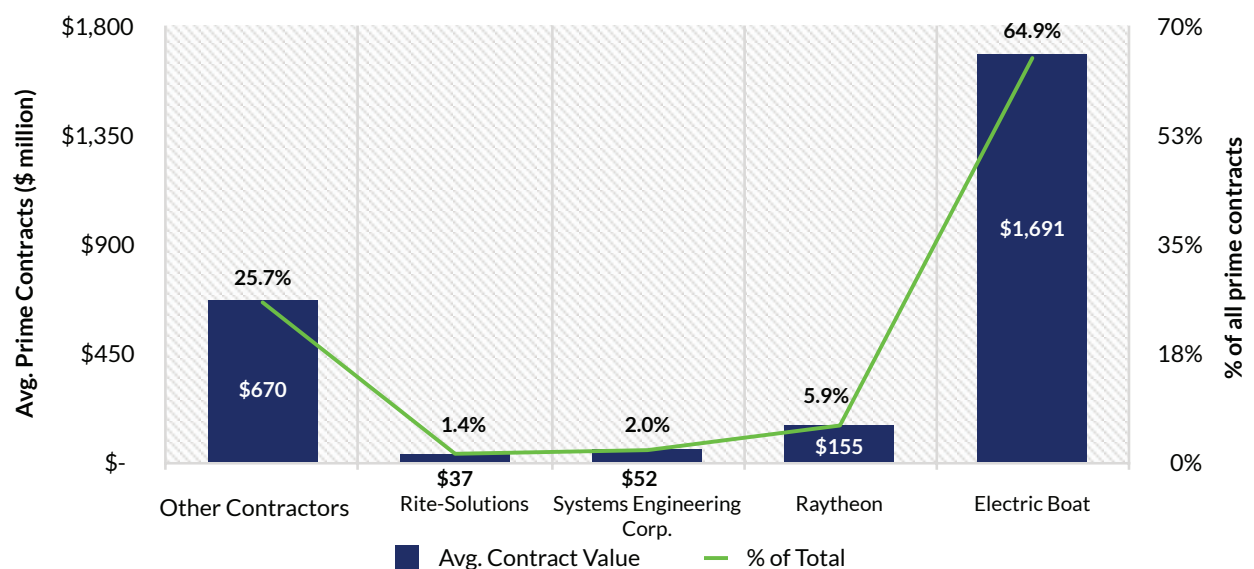
Notes: * FTE denotes full-time equivalent jobs; ** No indirect effect is generated by military employment.

RHODE ISLAND

Private Defense Contracts

The Defense Industry in Rhode Island received \$2.7 billion in DoD/DHS contracts in 2022 and in 2021 and \$2.5 billion in 2020. From 2020 to 2022, 1,161 private Rhode Island companies received prime DoD/DHS contracts. Electric Boat is estimated to have performed \$1.7 billion of defense work per year, Raytheon received an average of \$155 million per year in prime defense contracts, Systems Engineering received \$52 million per year and Rite-Solutions received \$37 million per year during this period. Electric Boat's strong presence in Rhode Island has been marked by significant investments in the construction of facilities at the Quonset Point facility to support construction of Columbia Class submarines and the continued production of Virginia Class submarines. These corporations together account for 74 percent of all prime defense contracts awarded to Rhode Island during this period.¹⁴

Top Defense Contractors, Prime Contracts, Annual Average 2020–2022, RI



¹⁴ Prime contracts require work by subcontractors including many small businesses.

The defense contracts awarded by the DoD/DHS to Rhode Island contractors including Electric Boat work performed in the state represented an average of 0.4 percent of all defense contracts issued in the United States from 2020 to 2022, compared to an average of 0.3 percent from 2008 to 2010. The total value of defense contracts (inflation-adjusted) increased from an average of \$1.4 billion in 2008-2010 to \$2.6 billion in 2020-2022 in Rhode Island. From 2008-2010 to 2020-2022, defense contracts increased 85 percent in Rhode Island. The significant increase in defense work in Rhode Island is mostly due to an increase in work performed by Electric Boat at Quonset Point.

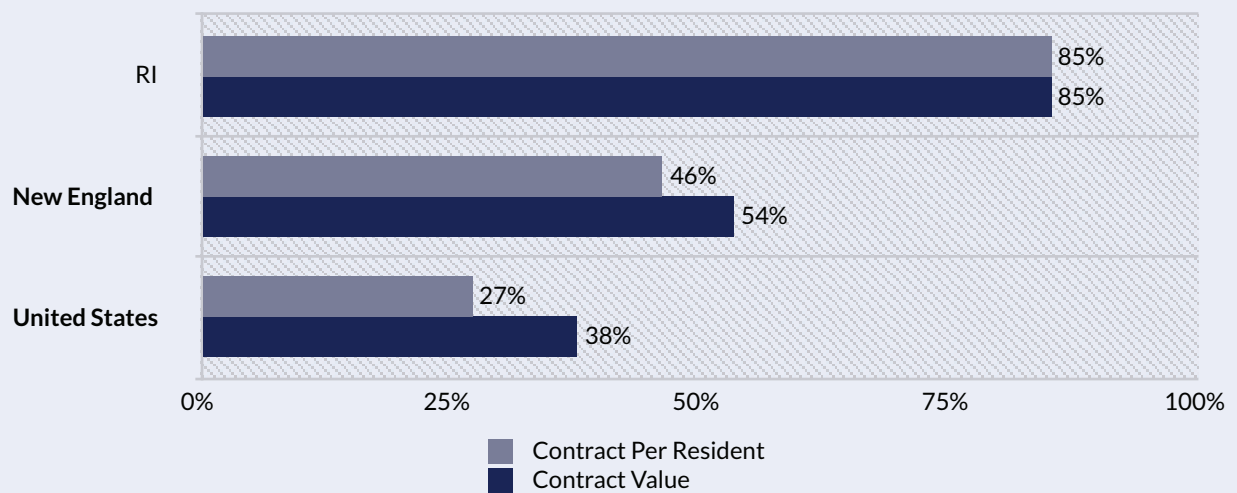
Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022, RI



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID related impacts. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

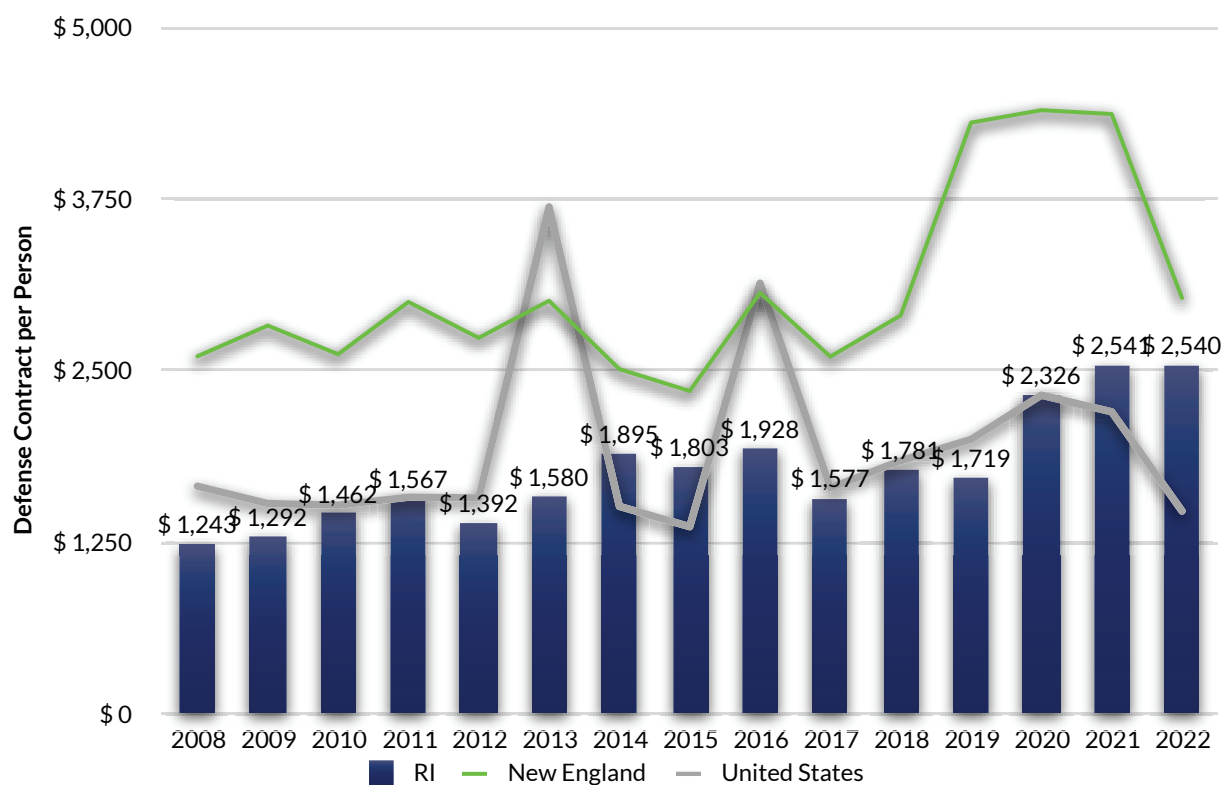
Change In DoD/DHS Contract Value, (Inflation-Adjusted) Average 2008-2010 to Average 2020-2022



Source: USASPENDING.org; Values are adjusted for inflation (2022 US \$)

During 2020 to 2022, Rhode Island received or performed an average of \$2,268 per capita in DoD/DHS contracts. From 2008 to 2022, per capita defense contract awards in Rhode Island increased 85 percent.

Defense Contracts Per Person, FY 2008 to FY 2022, RI

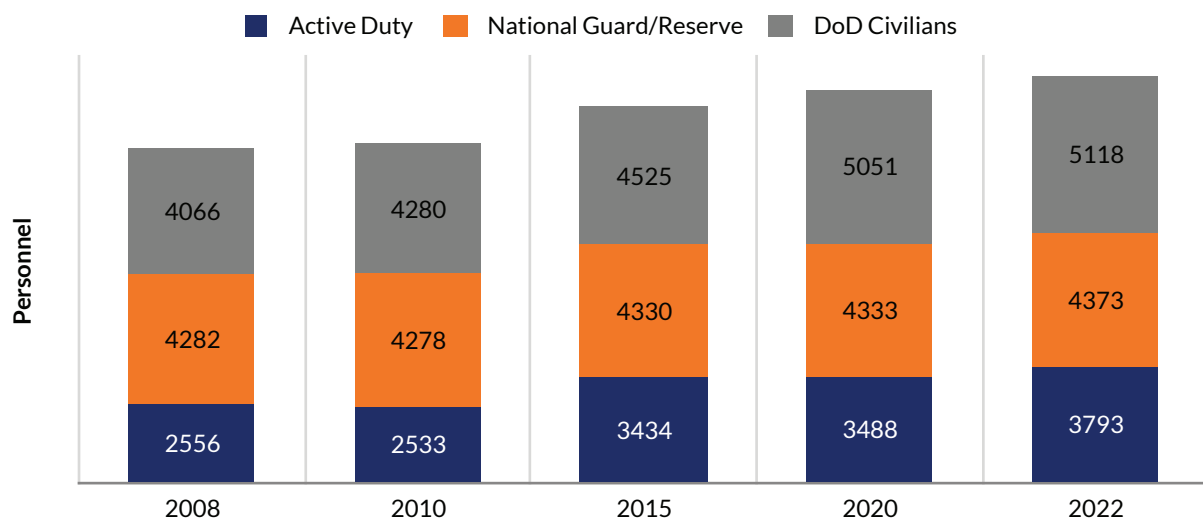


Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

The Military Defense Workforce

In 2022, Rhode Island's Military Defense Infrastructure employed 13,284 individuals; including, 3,793 active-duty military personnel from the Army, Navy, Marine Corps, Air Force, Space Force, and U.S. Coast Guard, 4,373 National Guard members, and 5,118 civilians employed by the Department of Defense (DoD). Between 2008 and 2022, the number of active-duty military personnel increased 48.4 percent, the number of National Guard members increased 2.1 percent, and the number of DoD civilians increased 25.9 percent.

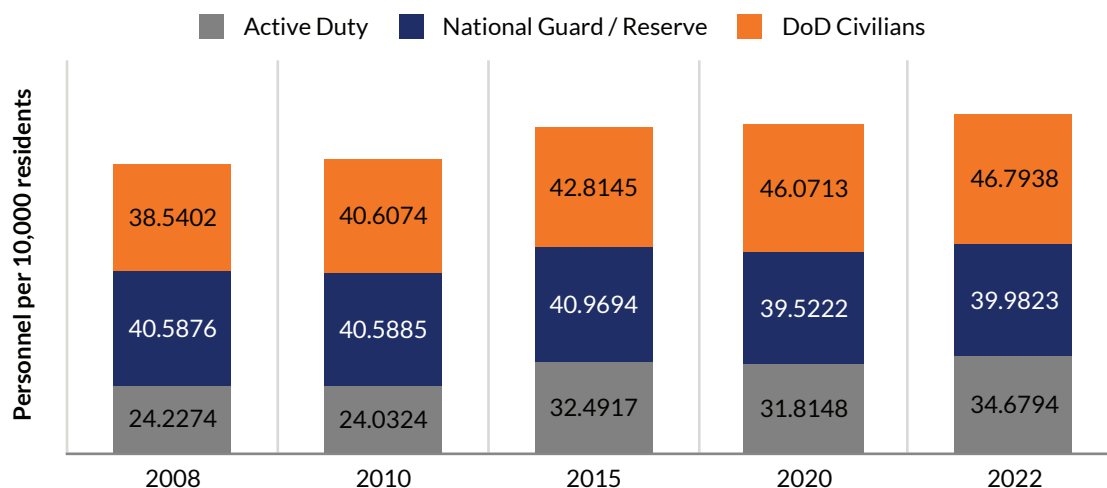
Employment in the Military Defense Infrastructure, RI



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, Rhode Island employed 35 active-duty military personnel, 40 National Guard members, and 47 DoD civilians per 10,000 residents.

Employment in the Military Defense Infrastructure per 10,000 Residents, RI



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in Rhode Island has strong economic linkages with other sectors in the state. In Rhode Island, every 100 direct jobs created in the Private Defense Industry supports another 91 jobs via the multiplier effect. In 2022, the Defense Cluster's total economic impact in Rhode Island includes:

- **34,068 jobs**, which represents **6.9 percent of the state's employment**. Of these, 20,318 are direct jobs and 13,750 are indirect or induced jobs. These figures include:

19,035

workers supported

by defense contracts including 9,949 civilians employed by defense contractors and 9,086 indirect and induced jobs supported by the defense industry.

15,033

jobs supported

by the military defense infrastructure, including 10,369 FTE activity-duty military and DoD civilians as well as 4,664 induced jobs.

- The generation of **\$3.0 billion in income** for households including \$1.5 billion from the private defense industry and \$1.5 billion from the Military Defense Infrastructure. The Defense Cluster supported **8.9 percent of the total income** generated in the state.
- The generation of **\$7.6 billion in economic output** (State's Gross Domestic Product) including \$4.1 billion from the private defense industry and \$3.5 billion from the Military Defense Infrastructure. The Defense Cluster contributed to **10.7 percent of the total output produced in the state**.

Defense Cluster Total Economic Impact, Rhode Island, 2022

Impact	Employment (FTE)*	Labor Income (\$ billion)	Output -GDP (\$ billion)
Private Defense Industry	19,035	\$1.5	\$4.1
Direct	9,949	\$0.9	\$2.5
Induced + Indirect	9,086	\$0.6	\$1.7
Military Defense Infrastructure	15,033	\$1.5	\$3.5
Direct	10,369	\$1.2	\$2.7
Induced**	4,664	\$0.3	\$0.8
Total Defense Cluster	34,068	\$3.0	\$7.6
% of Statewide Economy	6.9%	8.9%	10.7%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

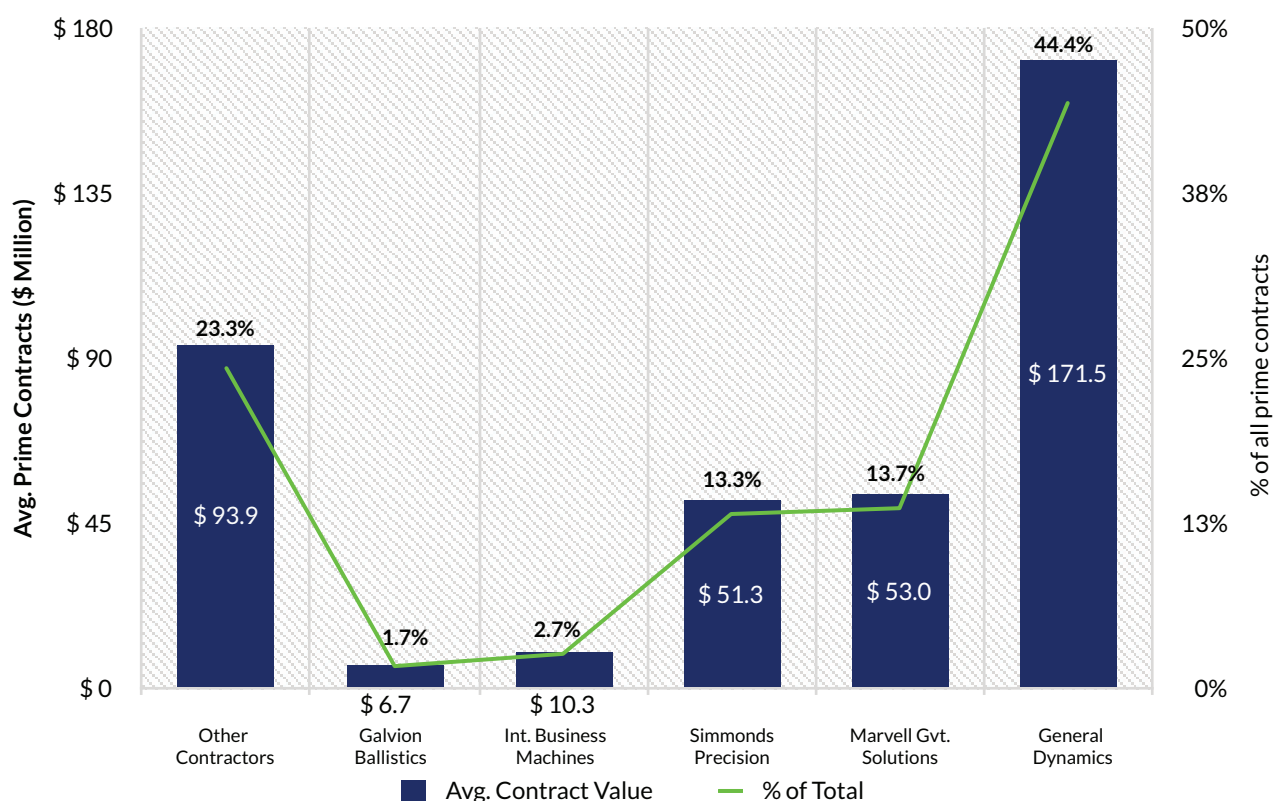
Notes: * FTE denotes full-time equivalent jobs; ** no indirect effect is generated by military employment.

VERMONT

Private Defense Contracts

The Defense Industry in Vermont received \$627 million in DoD/DHS contracts in 2022, \$1.3 billion in 2021, and \$1.7 billion in 2020. From 2020 to 2022, 499 private Vermont companies received prime DoD/DHS contracts. General Dynamics received an average of \$172 million per year in prime defense contracts, Marvell Government Solutions received \$53 million per year, Simmonds Precision received \$51 million per year, International Business Machines received \$10 million per year, and Galvion Ballistics received \$7 million. These corporations together account for 76 percent of all prime defense contracts awarded to Vermont during this period.¹⁵

Top Defense Contractors, Prime Contracts, Annual Average 2020 – 2022, VT

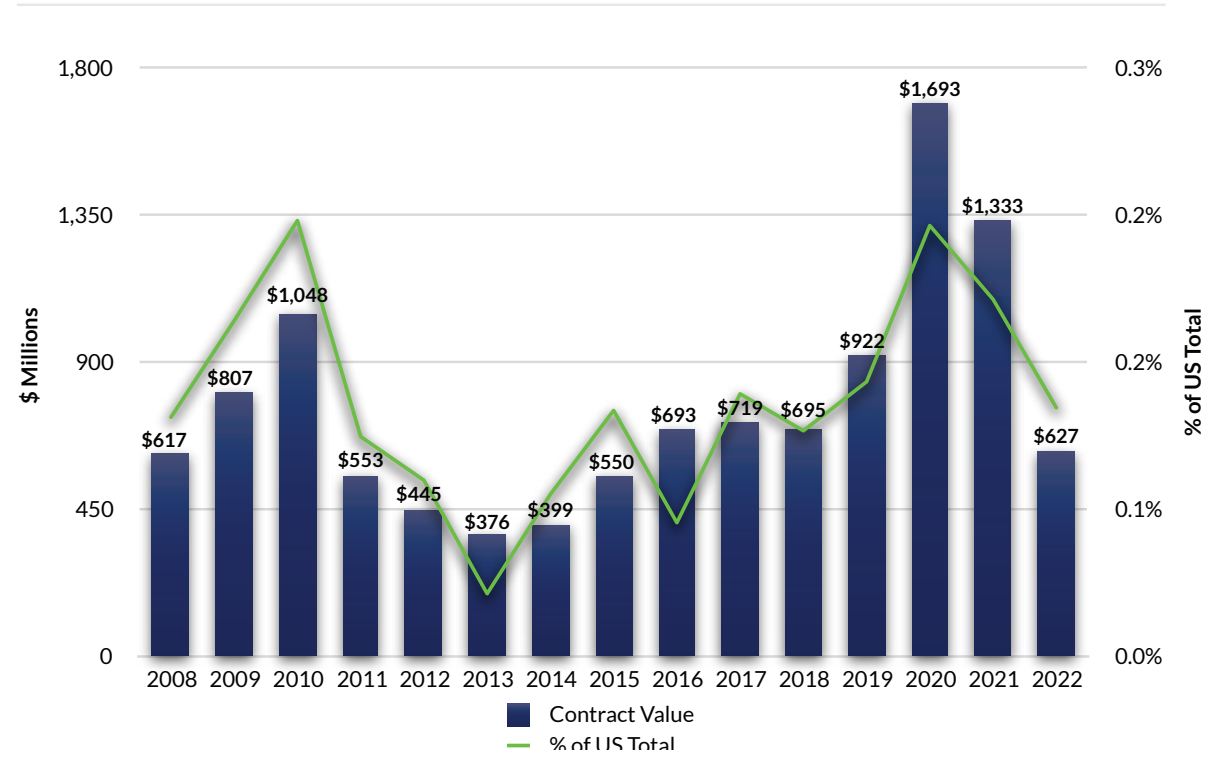


Source: USASPENDING.org.

The defense contracts awarded by the DoD/DHS to Vermont contractors represented an average of 0.2 percent of all defense contracts issued in the United States from 2020 to 2022, which is the same rate observed from 2008 to 2010. The total value of defense contracts (inflation-adjusted) increased from an average of \$800 million in 2008-2010 to \$1.2 billion in 2020-2022 in Vermont. From 2008-2010 to 2020-2022, defense contracts increased 48 percent in Vermont.

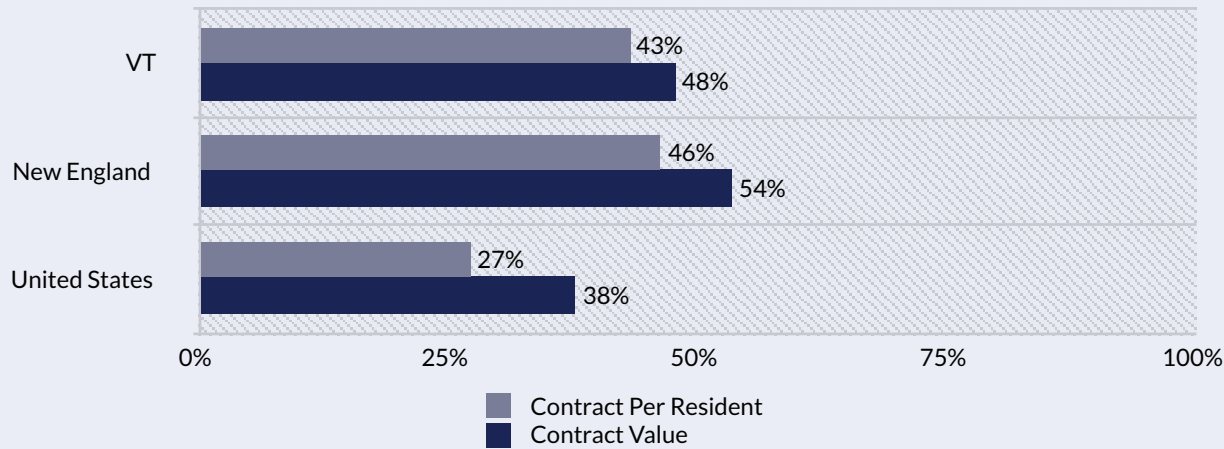
¹⁵ Prime contracts require work by subcontractors including many small businesses.

Defense Contracts (Inflation-adjusted), FY 2008 to FY 2022, VT



Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)
Note: There are significant variations in year-to-year defense contract awards due to political and economic reasons, including COVID related impacts. This report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment.

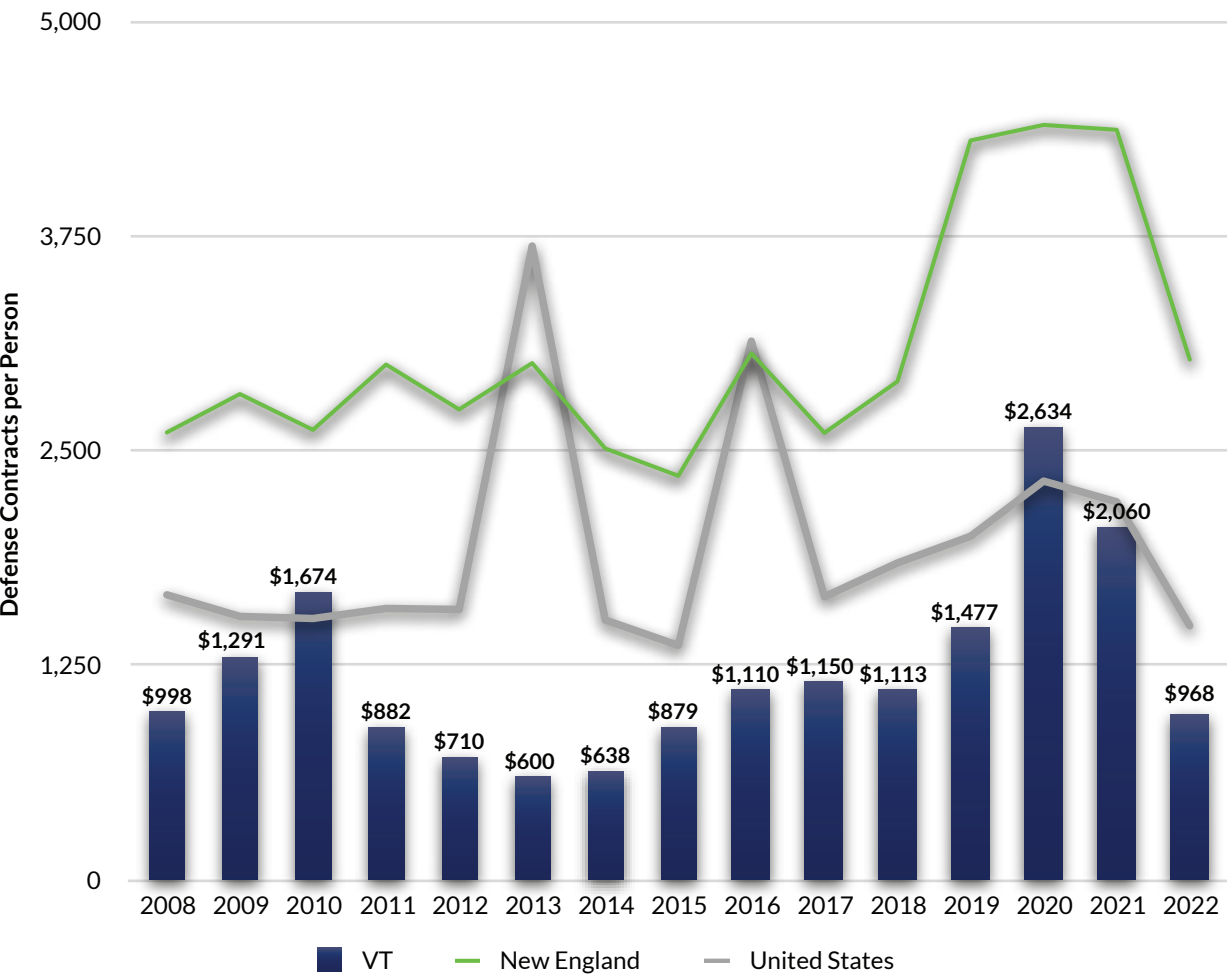
Change In Dod/Dhs Contract Value, (Inflation-Adjusted) Average 2008-2010 to Average 2020-2022, VT



Source: USASPENDING.org; Values are adjusted for inflation (2022 US \$)

From 2020 to 2022, Vermont received an average of \$1,887 per capita in DoD/DHS contracts, which is lower than the average of \$3,032 in New England and \$2,003 nationwide. From 2008 to 2022, per capita defense contract awards in Vermont increased 43 percent.

Defense Contracts Per Person, FY 2008 To FY 2022, VT

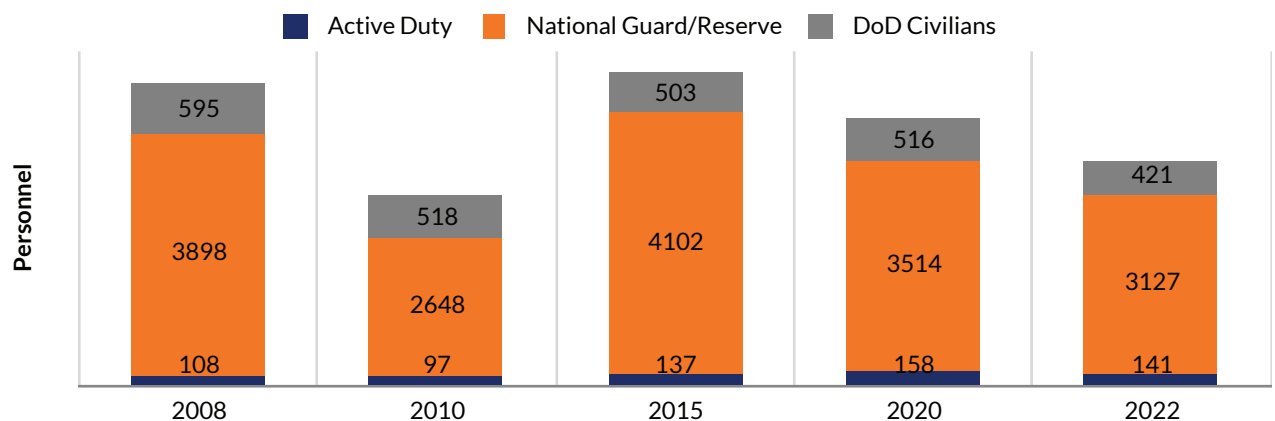


Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

The Military Defense Workforce

In 2022, Vermont's Military Defense Infrastructure employed 3,689 individuals, including 141 active-duty military personnel from the Army, Navy, Marine Corps, Air Force, and U.S. Coast Guard, 3,127 National Guard members, and 421 civilians employed by the Department of Defense (DoD). Between 2008 and 2022, the number of active-duty military personnel increased 30.6 percent, the number of National Guard members decreased 19.8 percent, and of DoD civilians decreased 29.2 percent.

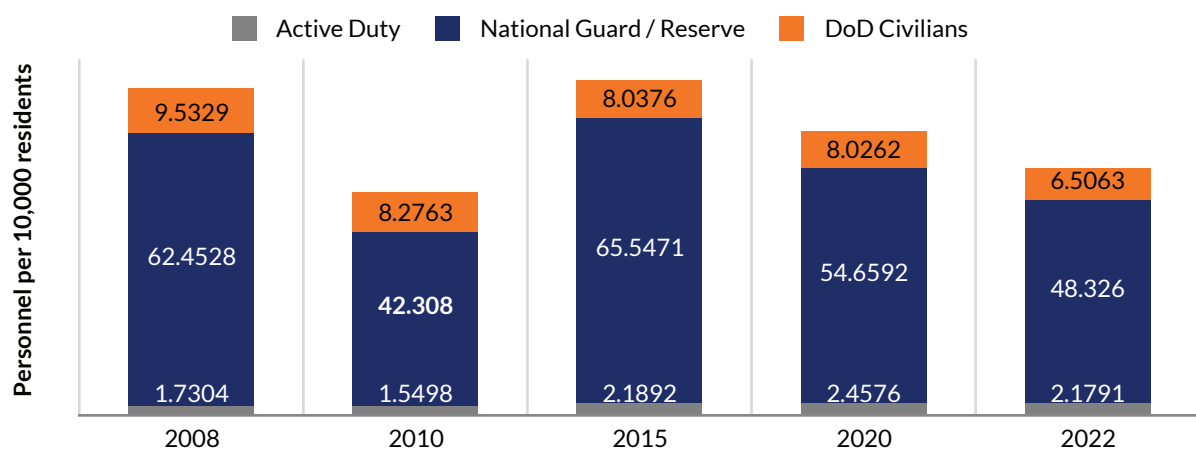
Employment in the Military Defense Infrastructure, VT



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

In 2022, Vermont employed 2 active-duty military personnel, 48 National Guard members, and 7 DoD civilians per 10,000 residents.

Employment in the Military Defense Infrastructure Per 10,000 Residents, VT



Sources: DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

Defense Cluster Total Economic Impact

The Defense Cluster in Vermont has strong economic linkages with other sectors in the state. In Vermont, every 100 direct jobs created in the Private Defense Industry supports another 83 jobs via the multiplier effect. In 2022, the Defense Cluster's total economic impact in Vermont includes:

- **9,390 jobs**, which represents **3.1 percent of the state's employment**. Of these, 5,590 are direct jobs and 3,800 are indirect or induced jobs. These figures include:

7,311

workers supported

by defense contracts including 3,986 civilians employed by defense contractors and 3,325 indirect and induced jobs supported by the defense industry.

2,079

jobs supported

by the military defense infrastructure, including 1,064 FTE activity-duty military and DoD civilians as well as 475 induced jobs.

- The generation of **\$600 million in income** for households including \$500 million from the private defense industry and \$100 million from the Military Defense Infrastructure. The Defense Cluster supported **3.5 percent of the total income** generated in the state.
- The generation of **\$2.0 billion in economic output** (State's Gross Domestic Product) including \$1.8 billion from the private defense industry and \$200 million from the Military Defense Infrastructure. The Defense Cluster contributed to **4.9 percent of the total output** produced in the state.

Defense Cluster Total Economic Impact, Vermont, 2022

Impact	Employment (FTE)*	Labor Income (\$ billion)	Output -GDP (\$ billion)
Private Defense Industry	7,311	\$0.5	\$1.8
Direct	3,986	\$0.3	\$1.1
Induced + Indirect	3,325	\$0.2	\$0.6
Military Defense Infrastructure	2,079	\$0.1	\$0.2
Direct	1,604	\$0.1	\$0.1
Induced**	475	\$0.0	\$0.1
Total Defense Cluster	9,390	\$0.6	\$2.0
% of Statewide Economy	3.1%	3.5%	4.9%

Source: Author's compilation using data from the USASPENDING, DoD, DHS, and IMPLAN.

Notes: * FTE denotes full-time equivalent jobs; ** No indirect effect is generated by military employment.

APPENDIX A

Multiplier Analysis

The Defense Cluster employs military and civilian personnel and purchases goods and services from local companies, resulting in direct impacts on the state's economy such as increased employment, income, and local company spending (including construction, etc.). This is known as the **direct impact**.

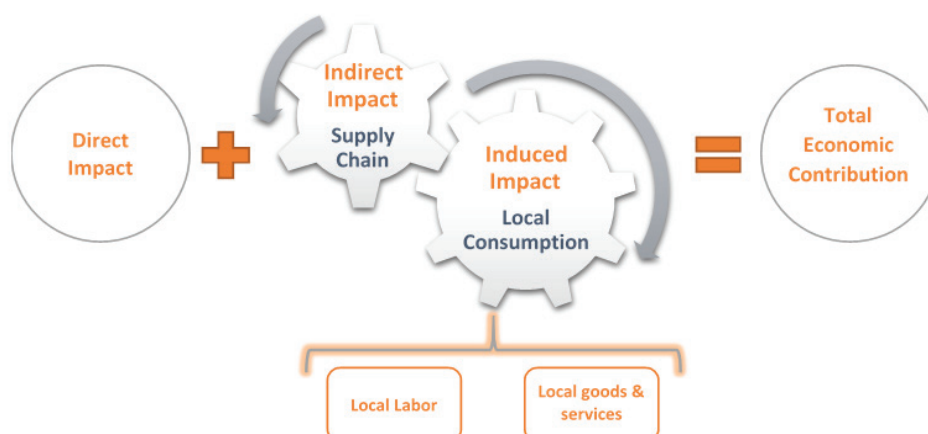
The Defense Cluster also has **backward linkages** to businesses that provide inputs and services needed to support its operations, and **forward linkages** to other economic sectors where Defense Cluster employees spend their income. The total economic contribution of the Defense Cluster to the economy must include its direct job, income, and output creation as well as the backward and forward linkages that are traced via **multiplier effects**, which are called **indirect** and **induced impacts**.

The Defense Cluster's payment to providers of goods and services creates

indirect impacts through subsequent rounds of input purchases such as employee wages, equipment, rents, and raw materials. These subsequent rounds of purchases lead to additional employment, income, and output in the economy, which is known as inter-industry impacts or the **indirect impact**.

The Defense Cluster's direct and indirect impacts generate income that is spent in the private sector, leading to **induced effects** on the economy. This spending further stimulates the private sector and induces the creation of additional jobs, income, and output in the state.

Multiplier Effect



In this report, the economic impact of the Defense Cluster in New England is determined using IMPLAN (Impact Analysis for Planning). IMPLAN is an economic analysis tool that considers inter-industry relationships to estimate the effects of economic activities related to the Defense Cluster. IMPLAN is a widely used economic impact software model that was first designed in 1976 as an economic impact modeling system under the direction of the Forest Service unit of the United States Department of Agriculture. Additional information about IMPLAN is available at: <http://www.implan.com>. This report focuses on three metrics produced by IMPLAN:

- **Employment:** the total number of Full Time Equivalent (FTE) jobs supported in the economy.
- **Labor Income:** the total income paid to employees that results from activities in the Defense Cluster.
- **Output (Value Added):** the total value or contribution to Gross Domestic Product (GDP) made by the Defense Cluster.

Input to the IMPLAN Model

a. Private Defense Industry (Defense Contractors)

The value of DoD/DHS contracts executed in a particular year is subject to limitations. First, some contracts are executed over several years; thus, the contract face amount reported for a specific fiscal year may not reflect the actual spending in the state/region in that fiscal year. Second, the DoD/DHS report contract awards based on “place of performance,” however, contractors, might execute part of the work in facilities outside the state/region recorded as place of performance.

Conversely, contracts recorded outside of a state/region might actually be executed in the state/region. There are also significant variations in year-to-year contract awards due to political and economic reasons.

To mitigate these issues, this report utilizes a 3-year average (from 2020 to 2022) of all prime and sub-award defense contracts as input to produce the economic impact assessment of the Private Defense Industry on the economy of New England. The average defense contract figures fed into IMPLAN are by 6-digit NAICS, thus the data capture the complex and widespread impact of defense operations by economic sector.

Private defense contract data are from the Department of Defense (DoD) and Department of Homeland Security (DHS) and are reported in Tables A1, A2 and A3. The figures provided in the body of this report represent the projected economic impact in the year 2022.

b. The Military Defense Workforce

The Military Defense Infrastructure includes the personnel and economic impact of civilian employees working for the Department of Defense (DoD), U.S. Coast Guard personnel, National Guard personnel, and active-duty military personnel in the Army, Navy, Marine Corps, Air Force, and Space Force. The number of personnel in the National Guard is adjusted by a factor of one third to account for the fact that a significant proportion of National Guard personnel work part time. Military personnel data reported in Table A4 are from the DoD Active-Duty Master File, Reserve Common Components Personnel Data System (RCCPDS) File

APPENDIX B

TABLES

Table A1: Prime and Sub-Award Contracts Issued By the DoD and the DHS (\$ Million), (Inflation-adjusted, 2022 US \$)

Fiscal Year	Connecticut	Massachusetts	Maine	New Hampshire	Rhode Island ¹	Vermont	New England	United States
2008	\$16,702	\$15,591	\$1,274	\$2,229	\$1,312	\$617	\$37,390	\$505,304
2009	\$16,235	\$18,653	\$1,975	\$2,175	\$1,363	\$807	\$40,778	\$471,177
2010	\$15,195	\$17,173	\$1,967	\$1,483	\$1,542	\$1,048	\$37,944	\$471,328
2011	\$16,761	\$16,765	\$6,592	\$1,890	\$1,653	\$553	\$43,640	\$492,960
2012	\$17,223	\$16,750	\$2,209	\$2,517	\$1,469	\$445	\$40,007	\$494,837
2013	\$21,839	\$15,479	\$2,774	\$2,638	\$1,667	\$376	\$44,113	\$1,167,399
2014	\$17,353	\$14,275	\$1,867	\$1,891	\$1,999	\$399	\$36,978	\$482,357
2015	\$15,841	\$13,852	\$1,787	\$1,651	\$1,903	\$550	\$34,696	\$438,481
2016	\$18,374	\$15,588	\$7,547	\$2,043	\$2,034	\$693	\$45,308	\$1,014,122
2017	\$15,226	\$15,428	\$3,322	\$3,115	\$1,663	\$719	\$38,570	\$536,561
2018	\$18,412	\$17,957	\$1,502	\$3,624	\$1,879	\$695	\$43,103	\$603,785
2019	\$33,129	\$20,565	\$3,760	\$4,796	\$1,814	\$922	\$63,974	\$657,582
2020	\$27,351	\$25,067	\$3,269	\$7,944	\$2,454	\$1,693	\$66,308	\$770,506
2021	\$21,544	\$28,528	\$2,726	\$10,950	\$2,681	\$1,333	\$66,086	\$731,542
2022	\$22,555	\$16,026	\$2,803	\$3,113	\$2,679	\$627	\$45,874	\$493,651

Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

¹ Includes estimates of defense contract work performed by Electric Boat at the Quonset Point facility in Rhode Island.

**Table A2: Prime and Sub-Award Contracts issued by the DoD and the DHS,
% Of United States Total**

Fiscal Year	Connecticut	Massachusetts	Maine	New Hampshire	Rhode Island ¹	Vermont	New England
2008	3.3%	3.1%	0.3%	0.4%	0.3%	0.1%	7.4%
2009	3.4%	4.0%	0.4%	0.5%	0.3%	0.2%	8.7%
2010	3.2%	3.6%	0.4%	0.3%	0.3%	0.2%	8.1%
2011	3.4%	3.4%	1.3%	0.4%	0.3%	0.1%	8.9%
2012	3.5%	3.4%	0.4%	0.5%	0.3%	0.1%	8.1%
2013	1.9%	1.3%	0.2%	0.2%	0.1%	0.0%	3.8%
2014	3.6%	3.0%	0.4%	0.4%	0.4%	0.1%	7.7%
2015	3.6%	3.2%	0.4%	0.4%	0.4%	0.1%	7.9%
2016	1.8%	1.5%	0.7%	0.2%	0.2%	0.1%	4.5%
2017	2.8%	2.9%	0.6%	0.6%	0.3%	0.1%	7.2%
2018	3.0%	3.0%	0.2%	0.6%	0.3%	0.1%	7.1%
2019	5.0%	3.1%	0.6%	0.7%	0.3%	0.1%	9.7%
2020	3.5%	3.3%	0.4%	1.0%	0.3%	0.2%	8.6%
2021	2.9%	3.9%	0.4%	1.5%	0.4%	0.2%	9.0%
2022	4.6%	3.2%	0.6%	0.6%	0.5%	0.1%	9.3%

Source: USASPENDING.org

1 Includes estimates of defense contract work performed by Electric Boat at the Quonset Point facility in Rhode Island.

Table A3: Prime and Sub-Award Contracts issued by the DoD and the DHS (\$), Per Capita, \$, (Inflation-adjusted, 2022 US \$)

Fiscal Year	Connecticut	Massachusetts	Maine	New Hampshire	Rhode Island ¹	Vermont	New England	United States
2008	\$4,711	\$2,410	\$957	\$1,694	\$1,243	\$988	\$2,607	\$1,662
2009	\$4,558	\$2,862	\$1,485	\$1,652	\$1,292	\$1,291	\$2,831	\$1,536
2010	\$4,245	\$2,615	\$1,481	\$1,126	\$1,462	\$1,674	\$2,622	\$1,524
2011	\$4,671	\$2,535	\$4,962	\$1,431	\$1,567	\$882	\$3,003	\$1,582
2012	\$4,791	\$2,513	\$1,664	\$1,900	\$1,392	\$710	\$2,741	\$1,577
2013	\$6,074	\$2,305	\$2,088	\$1,987	\$1,580	\$600	\$3,011	\$3,694
2014	\$4,826	\$2,110	\$1,403	\$1,417	\$1,895	\$638	\$2,514	\$1,515
2015	\$4,414	\$2,038	\$1,345	\$1,234	\$1,803	\$879	\$2,355	\$1,367
2016	\$5,133	\$2,283	\$5,665	\$1,520	\$1,928	\$1,110	\$3,069	\$3,139
2017	\$4,259	\$2,248	\$2,487	\$2,307	\$1,577	\$1,150	\$2,605	\$1,650
2018	\$5,151	\$2,608	\$1,121	\$2,674	\$1,781	\$1,113	\$2,905	\$1,847
2019	\$9,290	\$2,983	\$2,794	\$3,525	\$1,719	\$1,477	\$4,308	\$2,003
2020	\$7,603	\$3,583	\$2,397	\$5,763	\$2,326	\$2,634	\$4,399	\$2,324
2021	\$5,946	\$4,081	\$1,979	\$7,892	\$2,541	\$2,060	\$4,370	\$2,203
2022	\$6,220	\$2,295	\$2,023	\$2,231	\$2,540	\$968	\$3,032	\$1,481

Source: USASPENDING.org; All values are adjusted for inflation (2022 US \$)

¹ Includes estimates of defense contract work performed by Electric Boat at the Quonset Point facility in Rhode Island.

Table A4: Employment in the Military Defense Infrastructure

State / Military Branch	Personnel					Personnel per Capita				
	2008	2010	2015	2020	2022	2008	2010	2015	2020	2022
Connecticut										
Active Duty	6,720	6,264	6,460	6,687	6,224	19.0	17.5	18.0	18.6	17.2
National Guard/ Reserve	5,921	5,893	6,590	6,873	6,701	16.7	16.5	18.4	19.1	18.5
DoD Civilians	2,290	2,424	2,512	2,589	2,447	6.5	6.8	7.0	7.2	6.7
Military Defense Infrastructure	14,931	14,581	15,562	16,149	15,372	42.1	40.7	43.4	44.9	42.4
Massachusetts										
Active Duty	3,691	3,581	3,509	3,671	3,350	5.7	5.5	5.2	5.2	4.8
National Guard/ Reserve	15,069	14,785	15,090	14,754	13,764	23.3	22.5	22.2	21.1	19.7
DoD Civilians	6,054	6,799	6,483	6,476	6,218	9.4	10.4	9.5	9.3	8.9
Military Defense Infrastructure	24,814	25,165	25,082	24,901	23,332	38.4	38.3	36.9	35.6	33.4
Maine										
Active Duty	3,073	975	819	816	797	23.1	7.3	6.2	6.0	5.8
National Guard/ Reserve	4,252	3,682	4,017	3,548	3,424	32.0	27.7	30.2	26.0	24.7
DoD Civilians	6,634	6,856	7,388	8,806	8,597	49.9	51.6	55.6	64.6	62.1
Military Defense Infrastructure	13,959	11,513	12,224	13,170	12,818	104.9	86.7	92.0	96.6	92.5
New Hampshire										
Active Duty	1,154	1,312	1,371	1,156	1,115	8.8	10.0	10.3	8.4	8.0
National Guard/ Reserve	3,876	3,950	3,700	4,114	3,953	29.5	30.0	27.7	29.8	28.3
DoD Civilians	902	885	953	930	849	6.9	6.7	7.1	6.7	6.1
Military Defense Infrastructure	5,932	6,147	6,024	6,200	5,917	45.1	46.7	45.0	45.0	42.4

Table A4: Employment in the Military Defense Infrastructure

State / Military Branch	Personnel					Personnel per Capita				
	2008	2010	2015	2020	2022	2008	2010	2015	2020	2022
Rhode Island										
Active Duty	2,556	2,533	3,434	3,488	3,793	24.2	24.0	32.5	31.8	34.7
National Guard/ Reserve	4,282	4,278	4,330	4,333	4,373	40.6	40.6	41.0	39.5	40.0
DoD Civilians	4,066	4,280	4,525	5,051	5,118	38.5	40.6	42.8	46.1	46.8
Military Defense Infrastructure	10,904	11,091	12,289	12,872	13,284	103.4	105.2	116.3	117.4	121.5
Vermont										
Active Duty	108	97	137	158	141	1.7	1.5	2.2	2.5	2.2
National Guard/ Reserve	3,898	2,648	4,102	3,514	3,127	62.5	42.3	65.5	54.7	48.3
DoD Civilians	595	518	503	516	421	9.5	8.3	8.0	8.0	6.5
Military Defense Infrastructure	4,601	3,263	4,742	4,188	3,689	73.7	52.1	75.8	65.1	57.0
New England										
Active Duty	17,302	14,762	15,730	15,976	15,420	12.1	10.2	10.7	10.6	10.2
National Guard/ Reserve	37,298	35,236	37,829	37,136	35,342	26.0	24.4	25.7	24.6	23.4
DoD Civilians	20,541	21,762	22,364	24,368	23,650	14.3	15.0	15.2	16.2	15.6
Military Defense Infrastructure	75,141	71,760	75,923	77,480	74,412	52.4	49.6	51.5	51.4	49.2
United States										
Active Duty	1,058,587	1,119,341	1,127,466	1,205,253	1,172,058	34.8	36.2	35.2	36.4	35.2
National Guard/ Reserve	770,581	787,526	783,472	783,608	751,179	25.3	25.5	24.4	23.6	22.5
DoD Civilians	647,886	720,306	691,024	731,092	710,590	21.3	23.3	21.5	22.1	21.3
Military Defense Infrastructure	2,477,054	2,627,173	2,601,962	2,719,953	2,633,827	81.5	84.9	81.1	82.0	79.0

