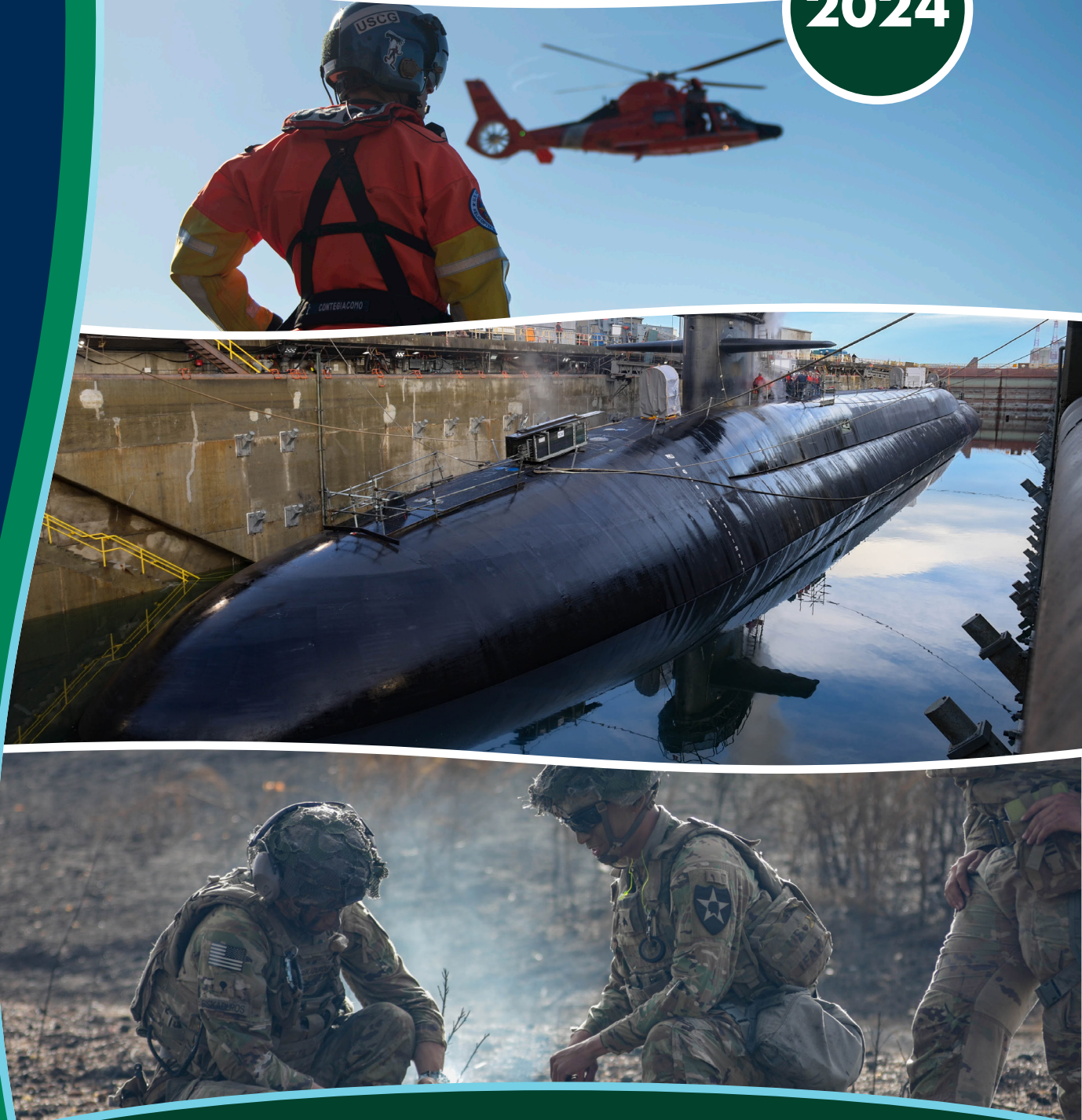


Washington Statewide Defense Economic Impact Study

2024



PREPARED FOR:

The Legislative Committee on Economic Development and International Relations
on behalf of the Washington State Legislature

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Executive Summary

As the home of six military installations, over 100,000 personnel, over 185,000 military family members, over 525,000 veterans and retirees, and numerous private contractors, Washington gains significant tangible and intangible benefits from defense activities. Commissioned by the Washington State Legislature through the Legislative Committee on Economic Development and International Relations, this study presents an economic impact analysis of Washington's military and defense sector, along with a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of the State's major installations. Matrix Design Group, Inc. (Matrix), in partnership with The Roosevelt Group, SCJ Alliance, and RAH AEC (hereby known as the Matrix team), was selected to conduct the study. The economic impact analysis employs the IMPLAN model to estimate the total (direct, indirect, and induced) economic effects attributable to the various defense spending flows, including personnel compensation, contracts, grants, Department of Defense (DoD) Impact Aid, and pensions and transfers to veterans and retirees. While there is no industry-wide standard as far as which spending flows to include and which metrics to report, the Matrix team has found, through multiple efforts across the nation, the spending flows and metrics used in this report to be the most consistent and informative. The Matrix team conducted a statewide analysis of the entire military and defense sector and separate analyses for each of Washington's major installations: Joint Base Lewis-McChord (JBLM), Fairchild Air Force Base, Naval Station Everett, Naval Air Station Whidbey Island, and Naval Base Kitsap/Naval Magazine (NAVMAG) Indian Island. In addition, the U.S. Coast Guard (USCG) was the subject of its own statewide analysis. **Consistent with prior analyses of Washington, the results highlight the military and defense sector's substantial contribution to the economic growth and vitality of the State.** Furthermore, the SWOT analysis emphasized Washington's indispensable contributions to our national defense while helping to elucidate some of the challenges service members face regarding housing, childcare, and spouse employment.

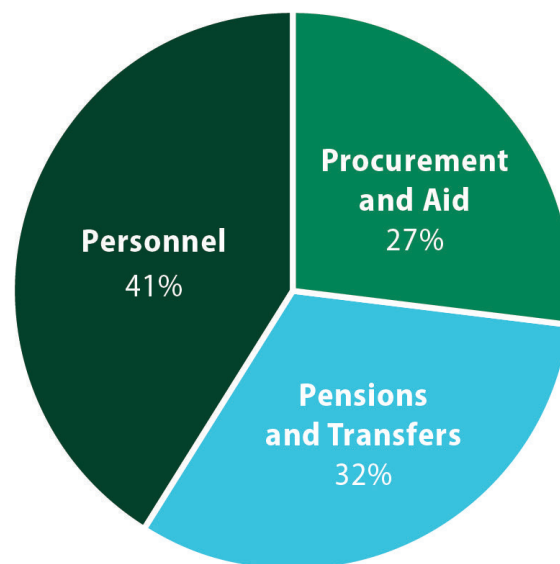
Defense spending in Washington totaled \$27.2 billion in Fiscal Year (FY) 2023 (all fiscal years referenced in this report are the federal fiscal year, which occurs from October 1 to September 30). By a wide margin, personnel compensation (including basic allowance for housing [BAH] and basic allowance for subsistence [BAS]) were the largest sources of defense expenditures, amounting to \$11.2 billion. Pensions, disability compensation, and medical, educational, and other transfer payments to the State's veterans and retirees represented another major spending flow, totaling \$8.7 billion. The remaining spending came in the form of procurement, grants, and impact aid, at \$7.3 billion; this was mostly in the form of DoD contracts, which support private industry suppliers and are vital to maintaining installations' operations.

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DoD procurement also includes more than \$138 million of United States Army Corps of Engineers (USACE) civil works expenditures, which support construction and maintenance of hydroelectric dams, dredging, and other vital projects.

Defense spending directly supported thousands of jobs, not only in the military, but also in the industries that provide goods and services to the DoD and the service member community. As this spending rippled through the economy, it stimulated business-to-business transactions in the supply chain and household spending of labor income, respectively referred to as indirect and induced effects (for more detail, see the “Methodology” section). The direct, indirect, and induced effects of defense spending are reflected in the totals featured in Table 1. **Overall, defense expenditures supported 254,904 jobs in FY23, representing over 5% of total statewide employment. Further, about 4% of gross state product (GSP) — equal to \$30.9 billion — was connected to the defense economy.** The military and defense sector’s contribution to Washington’s GSP is greater than that of agriculture, clean technology, forest products, life sciences and global health, maritime, and tourism.¹

Figure 1. Direct Defense Expenditures in Washington by Spending Flow, FY23



Source: Department of the Treasury; Bureau of Economic Analysis; National Center for Veterans Analysis and Statistics; DoD Office of the Actuary; National Association of Federally Impacted Schools
Note: Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

¹ This comparison is based on the economic impacts for sectors other than military and defense provided at the Washington State Department of Commerce website.

Table 1. Defense-Related Employment and Gross State Product Impacts in Washington

SPENDING FLOW	EMPLOYMENT	VALUE ADDED TO GSP
Personnel	147,094	\$16.5B
Procurement & Aid	41,386	\$6.6B
Pensions & Transfers	66,424	\$7.8B
Total	254,904	\$30.9B

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals.
Impacts reported in 2024 dollars.

Table 2. Economic Impacts of Major Military Installations and USCG in Washington

ENTITY	EMPLOYMENT	VALUE ADDED TO GSP
Fairchild Air Force Base	7,776	\$778.4M
Joint Base Lewis-McChord	78,890	\$9.0B
Naval Air Station Whidbey Island	14,297	\$1.7B
Naval Base Kitsap & Naval Magazine Indian Island	63,381	\$6.8B
Naval Station Everett	6,748	\$622.8M
U.S. Coast Guard (Statewide)	3,358	\$385.3M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals.
Impacts reported in 2024 dollars.

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Table 2 presents the economic impacts stemming from Washington's major installations and the USCG. As the largest installation, JBLM was the leading producer of direct, indirect, and induced employment and GSP. In total, it accounted for 78,890 jobs and contributed approximately \$9 billion to the State's economy. Naval Base Kitsap and nearby Naval Magazine Indian Island also generated significant economic value for the State. Together, the two installations were responsible for 63,381 jobs and \$6.8 billion of economic impact. Naval Air Station Whidbey Island yields significant dividends for Island County and the rest of the State. In total, 14,297 jobs and \$1.7 billion of GSP were attributable to this installation's activities. USCG activities across the State accounted for 3,358 jobs and added over \$385 million to Washington's GSP.

Using the comprehensive SWOT framework, our engagements with installations across the State identified and highlighted the intrinsic strengths of Washington's military installations.

The analysis also uncovered the potential weaknesses, areas for growth, and possible threats facing the installations. Bases throughout Washington benefit from their strategic location on the West Coast, which enables them to offer operational support and expeditionary capability into the Pacific area of operations. Installations have become intertwined with their local communities, boasting a significant number of impactful community partnerships throughout the State. The training areas and facilities are another significant benefit, allowing for the conduct of large-scale training exercises across all services.

The analysis revealed some consistent challenges that Washington's service members and installations face. Multiple installations found that housing costs were a significant burden on service members. Childcare was another concern, with installations citing the lack of affordability and availability as a stressor for service member families. Aging infrastructure was a significant issue at several installations, threatening operations. Lastly, environmental concerns regarding the proliferation of per- and polyfluoroalkyl substances (PFAS) chemicals hamper several bases.

Despite the identified weaknesses, there are a plethora of opportunities for Washington's installations. Multiple installations have begun utilizing enhanced use leases to expand revenues or in-kind services to commercial enterprises. There are numerous opportunities for expansion of military facilities at several bases as well, allowing for potential expansion of the military presence in Washington. Military infrastructure investment is ongoing across Washington.

The threats to Washington's military installations require additional resources and solutions. The threats center on environmental concerns such as chemical proliferation and noise pollution as well as limited space for physical expansion. Contamination by PFAS and related chemicals threatens several installations. Other installations, such as Naval Station Everett, have no further room to expand in the event of additional missions.

Overall, these engagements highlighted the symbiotic relationship between Washington and its military installations, which not only provides significant economic benefit to the State, but also contributes irreplicable capabilities to the Nation's defense.

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Introduction

In January 2024, Matrix Design Group, Inc. (Matrix), in partnership with The Roosevelt Group, SCJ Alliance, and RAH AEC, was retained by the Washington State Legislature through the Legislative Committee on Economic Development and International Relations to conduct an economic impact analysis of Washington's military and defense sector, along with a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis of the State's major installations. This study follows a series of earlier economic impact analyses. Most recently, the South Sound Military and Communities Partnership (SSMCP) completed an economic impact analysis of the Joint Base Lewis-McChord (JBLM) region in 2023. The Matrix team expanded on this prior study by performing a comprehensive, statewide economic impact analysis of defense spending in Washington and isolating the economic contributions of each major installation.

The findings underscore the key role that the military and defense sector play in Washington's economy. In Fiscal Year (FY) 23, the State was the site of \$27.2 billion of direct defense expenditures. This initial round of expenditures, which occurred primarily on behalf of the State's major installations, over 100,000 personnel, approximately 525,000 veterans and retirees, and numerous private contractors, spurred additional spending by businesses and consumers. Accounting for its first- (direct), second- (indirect) and third- (induced) order effects, defense spending supported 254,898 jobs and \$22.3 billion of labor income while adding \$30.9 billion to Washington's gross state product (GSP) and \$1.8 billion to state and local tax revenues.

For the SWOT analysis, the Matrix team conducted in-person engagements with key leaders and subject matter experts at each of Washington's major installations. Installation-specific findings are detailed in appendices to this report and were used to identify overall recommendations for actions state leadership can take to promote Washington's military missions, thereby enhancing our nation's security, supporting the quality of life of service members, and reaping the associated economic benefits of defense activity.

Methodology

The Matrix team acquired data on defense expenditures from an array of authoritative sources. The study primarily employs estimates from FY23 — the most current available data at the time of writing.¹ The federal expenditures examined encompass the federal military (active-duty, Reserve, and DoD civilians), National Guard, and the U.S. Coast Guard (USCG). To produce the most accurate, comprehensive analysis possible, the Matrix team aimed to capture all defense-related spending flows. These included DoD and USCG contracts and grants performed in Washington; compensation (including basic allowance for housing (BAH) and basic allowance for subsistence (BAS) for active-duty, National Guard, and Reserve personnel; pensions, disability payments, and medical and educational transfers to veterans and retirees; and DoD Impact Aid. Importantly, the Matrix team consulted Washington's installations to validate the publicly available procurement and personnel data. The specific public data sources used to complete the economic impact analysis are listed below:

- **U.S. Bureau of Economic Analysis:** This U.S. Department of Commerce agency provides data on military and federal civilian employment and compensation for states, counties, and metro areas.
- **U.S. Department of the Treasury:** Through USAspending.gov, the Department of the Treasury offers detailed data on federal procurement. Critically, the grants and contracts are categorized by the North American Industry Classification System (NAICS), place of performance, and awarding agency.
- **Defense Manpower Data Center (DMDC):** This is the central source for identifying, authenticating, authorizing, and providing information on personnel during and after their affiliation with the DoD.
- **National Center for Veterans Analysis and Statistics:** This Department of Veterans Affairs clearinghouse provides statistics on the veteran population and pension and transfer payments.
- **DoD Office of the Actuary:** Congressional district- and state-level military retiree and pension data are presented in biennial reports issued by this entity.
- **National Association of Federally Impacted Schools:** This nonprofit organization furnishes data on DoD Impact Aid to individual school districts.

Research has consistently demonstrated that federal defense expenditures stimulate additional rounds of spending by businesses and consumers, thereby supporting jobs and spurring growth in seemingly unrelated industries. Economists have developed models to estimate the total impact of defense spending as it ripples through the economy, commonly referred to as the multiplier effect. Specifically, these models quantify the direct, indirect, and induced effects of spending. Direct effects refer to the initial round of impacts resulting from expenditures on behalf of the federal military, National Guardsmen, Coast Guardsmen, veterans, and retirees. These first-order effects consist of the immediate changes in employment, wages, and output caused by defense spending in the industries in which they occur. Hence, defense spending's direct effects do not merely materialize as DoD jobs and compensation; they also extend to the industries that perform

¹ Personnel compensation estimates are from the 2022 calendar year, but this period overlaps with FY23.

defense procurement activities and provide medical, educational, and other services to veterans, as well as the school districts supported by DoD Impact Aid. Indirect, or second-order, effects result from business-to-business transactions in the supply chain. In the case of the defense economy, these effects primarily occur when private contractors and installations purchase goods and services used in the production process, otherwise referred to as intermediate inputs. Finally, household spending by defense personnel, veterans, and employees of defense contractors and the companies that form the defense supply chain generates induced, or third-order, effects. Taxes, savings, and commuter income, otherwise known as “leakages,” are removed before these impacts are calculated.

This study uses the industry-standard IMPLAN input-output model to estimate the direct, indirect, and induced effects of defense spending on four outcome variables: Employment, Labor Income, State and Local Taxes, and Value Added to gross state product. GSP is a subnational analogue to gross domestic product (GDP). In technical terms, Value Added is the difference in value between total output, defined as the gross value of an industry’s financial transactions, and intermediate inputs. It is considered a more valid indicator of economic impact than total output, which double counts the value of the goods and services used in the production process. The formula for GSP, which is generalizable to other geographic levels, is below:

$$\mathbf{GSP = C + I + G + (X-M)}$$

Consumption spending by individuals on goods and services

Intermediate expenditures by businesses and individuals

Government spending

Exports (gross value)

Imports (gross value)

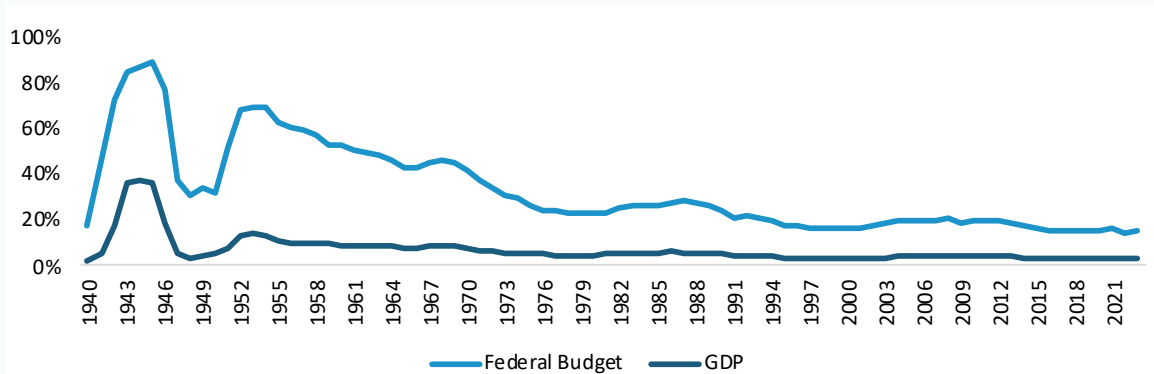
This study presents results from a statewide model that provides a comprehensive analysis of the economic impacts associated with Washington’s military and defense sector. The statewide model is complemented by a series of more granular analyses that quantify the impacts stemming specifically from defense spending at each of Washington’s major installations: JBLM, Fairchild Air Force Base (AFB), Naval Station (NS) Everett, Naval Air Station (NAS) Whidbey Island, and Naval Base (NB) Kitsap/Naval Magazine (NAVMAG) Indian Island. This study also presents a statewide analysis of the USCG. To capture economic impacts that extend beyond the County in which the installation is located, the models leverage IMPLAN’s multiregional input-output (MRIO) capabilities. By utilizing data on interregional commodity trade and commuting flows, the MRIO method ensures that installations are credited for all the economic activity that they generate, regardless of where in the State it occurs.

The Matrix team also conducted a SWOT assessment of each installation. To collect the information needed for the SWOT analysis, a series of engagements was facilitated in April 2024 with key leaders, community representatives, and subject matter experts at each installation. Each engagement was a candid and non-attributional conversation designed to elicit opportunities for state leadership to build upon their previous successes supporting Washington’s military missions and to target new areas for future advancement.

Trends in National Defense Spending

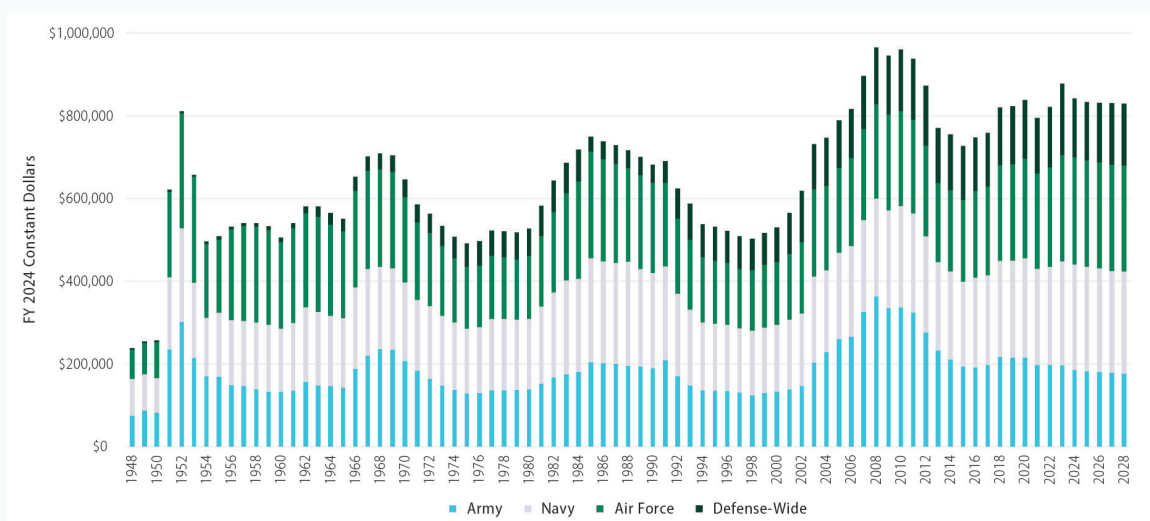
Defense spending's share of the federal budget is near an all-time low (see Figure 2). **In 2023, 15% of federal dollars were allocated to the DoD.** Since the mid-2010s, this figure has barely fluctuated. Not surprisingly, the federal budget placed the highest priority on national defense during World War II. From 1943 to 1945, 85% to 90% of all federal spending was directed toward defense activities. After declining markedly in the immediate postwar years, defense spending rose sharply in relation to the federal budget starting in 1951 — the first full year of American involvement in the Korean War. Since then, defense spending's relative importance has steadily declined, although this trend has been interrupted by the Vietnam War, the War on Terror, and other conflicts. In part due to the unprecedented economic expansion that the U.S. witnessed following World War II, defense spending has consistently accounted for less than 10% of GDP since the 1950s. At its peak, this figure reached 37% in 1944 and 1945.

Figure 2. Defense Spending as a Share of Federal Spending and GDP



Source: U.S. Department of the Treasury

While defense spending has not kept pace with the rest of the federal budget and U.S. economy, it remains high in relation to historical levels. Inflation-adjusted spending levels by service appear in Figure 3. In 2023, total spending amounted to more than \$877 billion. The Air Force was the largest beneficiary of these funds, receiving \$256.4 billion, followed by the Navy and the Army. By contrast, in the latter half of the previous century, it was common for real annual defense spending to fall below \$600 billion. Defense spending reached its most recent peak in 2008, when it totaled \$966 billion.

Figure 3. Real Defense Expenditures by Branch of Service, 1948-2023

Source: Department of Defense National Defense Budget Estimates for FY24

National Security Policy Overview

In 2022, the Department of Defense (DoD) released its most recent National Defense Strategy (NDS), the Secretary of Defense's preeminent guidance document on how the U.S. should address significant geopolitical challenges. The NDS declares that securing the Indo-Pacific region, specifically protecting the U.S. homeland and preventing the People's Republic of China (PRC) from gaining dominance, is the country's most pressing, consequential defense issue. Strategic competition with the PRC is a constantly evolving challenge which requires the U.S. military to coordinate across domains to project power and defend the American way of life while also promoting peace throughout the Indo-Pacific region. Washington is an integral part of fulfilling and supporting these critical defense missions. The military installations and surrounding communities in Washington have long been critical to the United States' response to evolving threats, and harnessing their capabilities is necessary to successfully implement the goals set forth in the NDS.

The NDS outlines four defensive priorities: defending the homeland, deterring strategic attacks, deterring aggression, and building a resilient joint force and defense ecosystem. The DoD's strategy emphasizes the importance of partnerships with the private sector to maintain technological preeminence, as it is widely understood that should the U.S. homeland be attacked by adversaries, it would likely occur through cyberattacks and new weapons systems in the hypersonic, space, and artificial intelligence sectors. The NDS firmly articulates that effective deterrence of such attacks, and actors like the PRC, necessitates an Integrated Deterrence strategy, which would build an enduring American advantage by seamlessly coordinating strengths across land, maritime, space and cyber domains as well as regional theaters.

Washington's military installations and its dedicated citizens provide tremendous support to the DoD in its efforts to integrate defensive efforts across domains. Naval Base Kitsap (NBK) is a major power-projection platform for the Navy and one of the largest of Washington's six military installations. NBK hosts the first

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unmanned underwater vehicle (UUV) squadron at Keyport and Nimitz-class aircraft carriers from Bremerton, as well as strategic submarines and weapons facilities. This makes NBK the only naval base of its kind capable of supporting such a range of diverse strategic missions. The critical assets located at NBK enable the U.S. to maintain a powerful naval presence in the Indo-Pacific region. The diverse capabilities of NBK exemplify the goals of the NDS's Integrated Deterrence program and can serve as a model for other bases around the country. The NDS, along with recent budgets released by the Department of Defense, make it clear that modernizing our strategic deterrent is the top priority for the DoD. Given that China is expanding its strategic deterrence, the development of the Columbia-class submarine will replace the older Ohio-class ballistic missile submarines (SSBNs) at NBK. Washington State will be at the forefront of this most critical strategic deterrent.

Enabling this strategic deterrent requires a robust maintenance capability. The NDS asserts that effective deterrence relies on continued American preeminence, resiliency, and strength, thus highlighting the importance of maintaining Puget Sound Naval Shipyard and Intermediate Maintenance Facility's (PSNS & IMF) dry docks, which are utilized not only to conduct vital ship and submarine repairs, but also as the only location on the West Coast where Nimitz-class aircraft carriers can be stationed. PSNS is critical to maintaining the readiness of the Navy's capabilities in and around Washington State and the West Coast. At a time of significant budget constraints, the Department of Defense needs to maintain the capabilities it currently has in a condition of readiness to match the threat.

Washington also houses JBLM, a mobilization platform for the Army and Air Force in the U.S.'s Indo-Pacific region. JBLM's location and co-location of deployed Air Force and Army assets make it a unique joint force enabler. JBLM utilizes its capabilities to deploy forces anywhere in the Indo-Pacific theater more quickly than other locations in the United States. Further, the relatively close proximity of the Yakima Training Center provides a quick and robust training capability for the Army, which enables it to remain ready to support the fight when the need arises.

Further, the NDS highlighted the need for the United States to be able to compete with near-peer adversaries. Some of the challenges in countering near-peer adversaries have been highlighted in the war in Ukraine. The use of complex electronic warfare capabilities has been a hallmark of Russia's counter offensive in Ukraine. Naval Air Station Whidbey Island (NASWI) is the Navy's premier naval aviation installation in the Pacific Northwest and is home to all Navy tactical electronic warfare squadrons flying the EA-18G Growler. NASWI is also home to a range of Maritime Patrol and Reconnaissance aircraft. These capabilities are critical to detecting and deterring our adversaries. Moreover, the ability to train on these complex weapons systems near their home stationed installation is essential to readiness. The capabilities at NASWI are key to achieving success in the NDS.

One of the main pillars of the National Security Strategy (NSS), released by President Biden in 2022, is to maintain a peaceful Arctic, especially as the PRC attempts to increase its influence in the region. Washington State's Coast Guard is well equipped with polar-class icebreakers to expand patrol into the Arctic and advance U.S. strategy. The State's Coast Guard currently provides homeland security and defensive support to four neighboring states and patrols the entirety of the Pacific Ocean.

In promoting a free and open Indo-Pacific, the NDS states, "We will expand our regional diplomatic, development, and economic engagement, with a particular focus on Southeast Asia and the Pacific Islands." Washington is a hub of trade between the U.S. and countries in the Indo-Pacific. The State manages \$134 billion worth of imports and exports each year and is active within the Asia-Pacific Economic Cooperation

(APEC), often hosting meetings for the intergovernmental forum and leading the group's mission to promote free trade. Both the NDS and the NSS emphasize that successfully competing with a growing PRC requires the U.S. to be a leader in both innovating new defensive technologies and maintaining free and prosperous trade with allies.

Strengthening Washington's strategic importance is its bipartisan and senior Congressional delegation. Notably, Representatives Adam Smith (D) and Marilyn Strickland (D) sit on the House Armed Services Committee, with the former serving as the Ranking Member. Rep. Rick Larsen (D) serves as the Ranking Member on the House Transportation and Infrastructure Committee, while Rep. Cathy McMorris-Rodgers (R) acts as the Chair of the House Energy & Commerce Committee. Representatives Derek Kilmer (D) and Dan Newhouse (R) serve on the House Appropriations Committee. Rep. Newhouse also serves on the 118th Congress' Select Committee on the Chinese Communist Party. Senator Maria Cantwell (D) serves as the Chair of the Senate Commerce Committee and is a leading voice on Coast Guard and Arctic issues. Finally, Senator Patty Murray (D) acts as the Chair of the Senate Committee on Appropriations while serving on the subcommittees for Defense, Homeland Security, and Military Construction & Veterans Affairs. These committee assignments afford Washington State a coveted opportunity to regularly influence national security policy, the DoD, and spending priorities in the National Defense Authorization Act (NDAA), defense appropriations, and military construction legislation. This type of support is vital to maintaining Washington State's critical role in projecting U.S. power in the Indo-Pacific region.

The fundamental tenets of the NDS are supported by the range of military installations and capabilities on those installations within Washington. The strategic location of the State and the capabilities at each installation play an important and direct role in addressing the needs highlighted in the NDS.

Literature Review

A key step in examining the defense industry's impact in Washington State is to assess and compare similar studies in other states and localities. The Matrix team conducted a comprehensive review of the defense economic impact studies conducted for Idaho, California, Utah, Alabama, Louisiana, North Carolina, Virginia, and Florida. The comparison focused on the data sources, methodologies, inputs used, and outputs reported for each study. Notably, Matrix conducted the Virginia and Florida studies. After review, it is apparent that there is no industry-wide standard as far as which spending flows to include and which metrics to report. For example, some studies analyze only National Guard spending, while other studies do not include the Coast Guard. Most studies use the IMPLAN modeling program, though a few use Regional Economic Models, Inc. (REMI) PI+ — an alternative economic model distinguished by its forecasting capabilities.

- The **Idaho Military Division Economic Impact Study**, published in July 2021, analyzed the role of the Idaho Military Division, which includes the Idaho Army National Guard (IDARNG), Idaho Air National Guard (IDANG), select military construction (MILCON) projects, and a few other components, using data supplied by the Idaho Military Division. This study did not include any active-duty, Coast Guard, or veteran benefits spending flows in its analysis. The study used IMPLAN to estimate economic impacts, and reported the employment, tax, and economic impacts on the state economy (though the study does not specify whether its measure of economic impact is the value added or output).

Washington Statewide Defense Economic Impact Study

- The **California Statewide National Security Economic Impacts Study**, published in October 2022, analyzed a broad spectrum of “national security” spending flows beyond strictly defense, including all Department of Defense, Department of Homeland Security, and Department of Veterans Affairs expenditures, plus some Department of Energy spending. The California study used IMPLAN and reported statewide total output (rather than value added), employment, and tax impacts of national security activity.
- **Utah’s Defense Economy: Economic Impacts and Industry Trends**, published in August 2021, analyzed spending flows related to Utah’s military installations, the Reserve, ROTC, recruiting, the Utah National Guard, veteran pensions and other services, retiree pensions, and Department of Defense and Department of Veterans Affairs contracts and grants. This analysis used the REMI model and reported economic impacts to GDP (analogous to value added), employment, and taxes. The study reported statewide total impacts and statewide impacts for each component of spending.
- The **Military and Aerospace Impact on the State of Alabama** study, published in January 2023, analyzed the impacts of military installations, SBIR/STTR grants, the USCG, the Alabama National Guard, and aerospace industry activity across the state and in specific regions around military installations. This study used the IMPLAN model and reports output, employment, and payroll (labor income) impacts, as well as contractor industry analysis.
- The **Military Economic Impact Analysis for the State of Louisiana** study, published in October 2021, analyzed the impact of military installation expenditures (including payroll, operations expenditures, and construction), DoD and USCG contracts performed in the state, and military retiree pensions. The study used the IMPLAN model and reports statewide and regional output, employment, labor income, and tax impacts.
- The **Military Economic Impact on North Carolina** study, published in October 2022, analyzed the impacts of military payroll expenses (including active-duty, National Guard, Reserve, and USCG), DoD contracts, and veteran pensions and benefits. The study used the REMI model and reports employment, personal income, and gross state product (analogous to value added) impacts across the state.
- The **Florida Military & Defense Economic Impact** study, authored by Matrix and planned to be released in 2024, analyzed the economic impact of active-duty, National Guard, and Reserve personnel compensation, DoD and USCG contracts and grants, and veteran and retiree pensions and benefits. The study used the IMPLAN model and reports statewide and regional impacts in terms of value added, employment, labor income, and taxes.
- The **Virginia Military Factbook**, authored by Matrix and planned to be released in 2024, follows the same methodology employed in the Florida study.

The Matrix team integrated best practices from these varied approaches with our own analytical and military expertise to produce a robust and rigorous assessment of the economic impact of defense activity in the State of Washington.

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Washington Military Installations



Joint Base Lewis-McChord

Located just South of Tacoma, JBLM is the Department of Defense's premier military installation on the West Coast. It is one of the largest and most important military installations in the Pacific Northwest. It was established in 2010 through the merger of Fort Lewis and McChord Air Force Base. JBLM hosts units from all branches of the U.S. military, including the Army, Air Force, Navy, Marines, and Special Operations Command. It serves as a strategic deployment and logistics hub for military operations in the region.

The 62nd Airlift Wing is the senior Air Force unit on JBLM and provides significant combat airlift capabilities via C-17 Globemasters. JBLM also hosts the Western Air Defense Sector and a number of other elements. The 2nd Infantry Division, 7th Infantry Division, and I Corps Headquarters are among the major Army units stationed at JBLM. 1st Special Forces Group is also headquartered at JBLM.

JBLM is strategically located in the Puget Sound region, allowing for rapid deployment and logistical support to military operations within the Pacific theater. The base plays a critical role in joint and multinational training exercises, fostering interoperability. Units from JBLM conduct extensive joint exercises annually.

JBLM encompasses more than 400,000 acres and is one of the largest DoD installations in the world. The installation also administers the Yakima Training Center. More than 110,000 personnel and their families are assigned to JBLM. In addition, the installation's facilities include airfields, training areas, barracks, administrative buildings, medical facilities, and support services.



Fairchild Air Force Base

Situated near Spokane in eastern Washington, Fairchild AFB is a critical Air Force installation specializing in air mobility, aerial refueling, and strategic airlift missions. The base is home to the 92nd Air Refueling Wing, operating KC-135 Stratotanker aircraft for in-flight refueling of U.S. and allied aircraft. Fairchild AFB supports global mobility operations, providing rapid airlift capabilities for personnel, equipment, and supplies. The base also hosts the 141st Air Refueling Wing of the Washington Air National Guard, contributing to both federal and state missions.



Naval Station Everett

Naval Station Everett, located in Everett, Washington, was commissioned in 1994 and is one of the Navy's newest installations. Positioned about 25 miles north of Seattle on Puget Sound, the base provides strategic access to the Pacific Ocean while benefiting from the natural protection of the Olympic Peninsula.

The base features a modern port capable of accommodating various Navy vessels, including aircraft carriers and guided-missile destroyers. It supports fleet readiness through maintenance, training, and logistical services. Key facilities include deep-water berths, maintenance areas, administrative offices, medical clinics, and family housing.

Naval Base Everett's primary mission is to serve as a homeport for Navy ships, ensuring they are prepared for deployment and sustained operations. The base has housed significant vessels such as the USS Abraham Lincoln (CVN-72) and several Arleigh Burke-class destroyers.

Strategically, the base enhances the Navy's presence in the Pacific theater, providing a platform for power projection and rapid response. It also plays a vital role in the local community, contributing to the economy and fostering strong community relations through engagement and support initiatives.



Naval Air Station Whidbey Island

Located on Whidbey Island in Puget Sound, NAS Whidbey Island is a key naval aviation installation specializing in electronic warfare and maritime patrol missions. The installation houses multiple squadrons of EA-18G Growler electronic warfare aircraft, which provide airborne electronic attack capabilities to support ground and naval forces. NAS Whidbey Island also hosts P-8 Poseidon maritime patrol aircraft, which conduct anti-submarine warfare, intelligence, surveillance, and reconnaissance missions. The Electronic Attack Wing, U.S. Pacific Fleet (VAQ) is headquartered at NAS Whidbey Island, overseeing electronic warfare operations in the Pacific theater. The base plays a critical role in electronic warfare training and operations, supporting both Navy and joint forces.



Naval Base Kitsap

Naval Base Kitsap is located on the Kitsap Peninsula, across Puget Sound from Seattle. Naval Base Kitsap is one of four major installations comprising Navy Region Northwest. At over 12,000 acres, it is the largest naval installation in Navy Region Northwest. The base is home to several tenant commands, including the Trident nuclear submarine base at Bangor, Naval Hospital Bremerton, and Naval Base Kitsap-Bremerton. The Bangor submarine base hosts a fleet of Ohio-class ballistic missile submarines (SSBNs) and provides support for Trident II D-5 missiles. Naval Base Kitsap-Bremerton is home to a variety of surface ships, including aircraft carriers and destroyers, and provides support services for these vessels.



Naval Magazine Indian Island

Naval Magazine Indian Island is located near Port Hadlock in Jefferson County along Puget Sound. The installation is home to a deep-water ammunition pier and a conventional ordnance storage site and is responsible for the receipt, storage, and issue of conventional munitions to Navy, joint, and allied vessels. At 2,700 acres, the island is host to a wealth of cultural and natural resources as well as a variety of wildlife.



USCG Base Seattle

While not a DoD military installation, Coast Guard District 13 plays a vital role in maritime security and search and rescue operations across the Pacific Northwest. Headquartered in Seattle, District 13 includes Sector Puget Sound, which oversees Coast Guard activities in Washington's inland waters, including Puget Sound and the Strait of Juan de Fuca. District 13 includes elements stationed at Naval Station Everett, an air station at Port Angeles, and a maritime force protection unit at Naval Base Kitsap-Bangor, and Sector Puget Sound includes numerous outlying stations throughout Washington. USCG District 13 has more than 3,000 active-duty and Reserve personnel and operates 21 cutters, 132 boats, and 11 aircraft. These military installations contribute significantly to national defense, support military readiness and training, and play integral roles in the security of the Pacific Northwest and beyond.

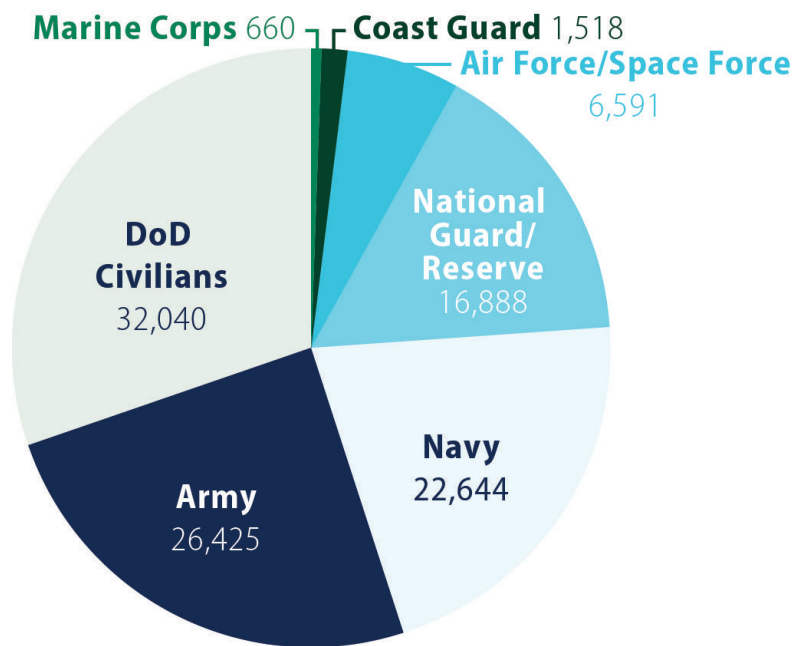


Personnel Compensation Analysis

As of September 2023, Washington was home to nearly 107,000 defense personnel.

Over 32,000 of those personnel were DoD civilians, a category that encompasses all service branches, as well as the DoD's fourth estate (i.e. DoD civilians not associated with a particular branch). Among active-duty military personnel stationed in Washington, the Army and Navy had the most representation, with 26,245 and 22,644 service members, respectively. JBLM is home to the vast majority of Army personnel in the region, while Navy personnel are most heavily concentrated at Naval Base Kitsap and Naval Station Everett. Additionally, 16,888 personnel belonged to the National Guard or Reserve, while the Air Force and Space Force population consisted of 6,591 personnel. The Coast Guard and Marine Corps also had a presence in the State, accounting for a combined 2,178 personnel.

Figure 4. Washington Defense Personnel Counts, September 2023

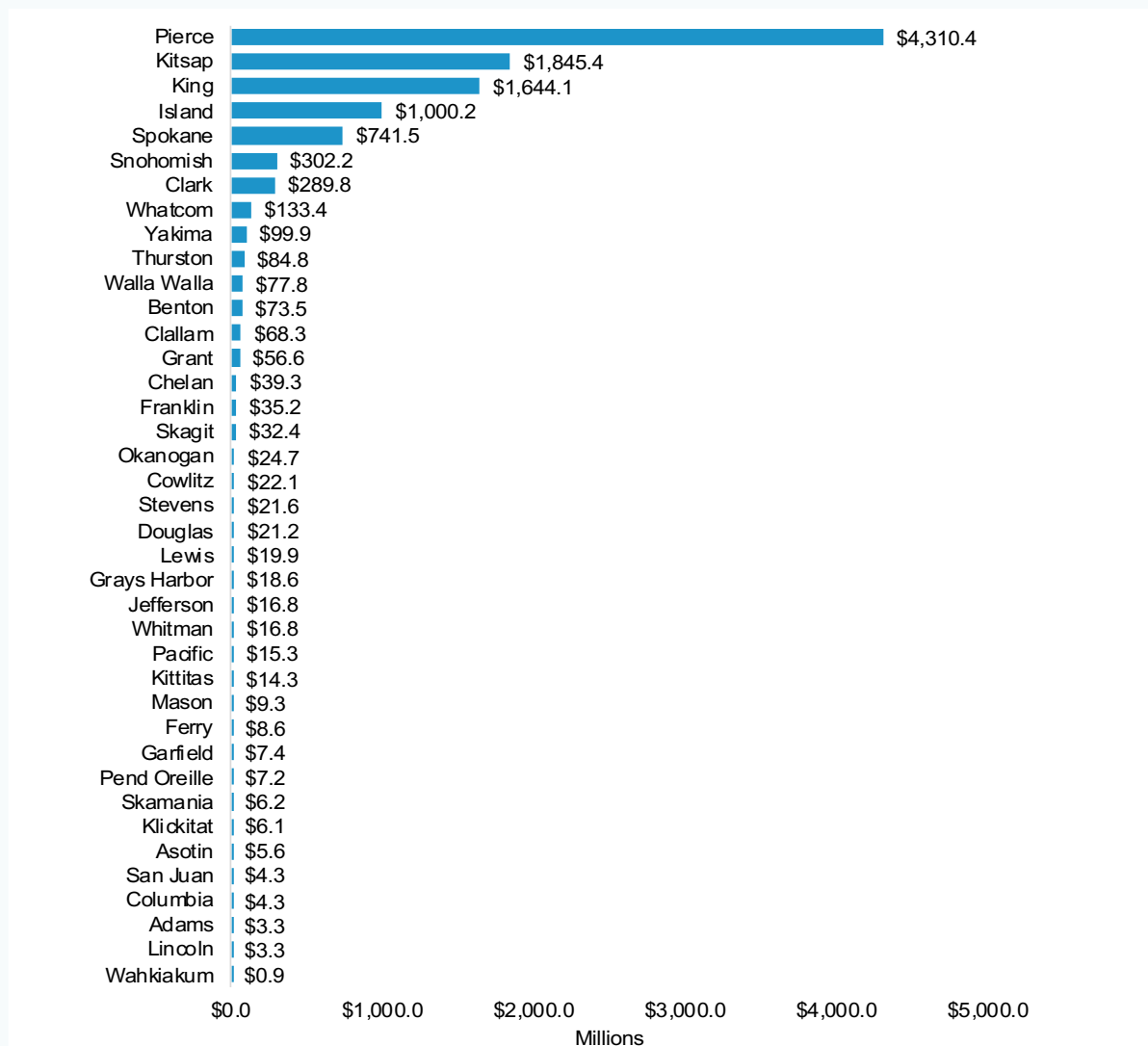


Source: Defense Manpower Data Center

The most recent estimate of total defense personnel compensation in Washington is \$11.2 billion.

Figure 5 presents county-level estimates of personnel compensation. This geographic variation is especially important to understand because personnel compensation is the spending flow that is the most significant driver of economic growth. Compensation directed to Pierce County, where most JBLM personnel reside, amounted to \$4.3 billion, far exceeding the sums received by personnel in other counties. Personnel compensation also totaled over \$1 billion in Kitsap, King, and Island Counties. Other notable beneficiaries of personnel compensation were Spokane County (\$741.5 million), Snohomish County (\$302.2 million), and Clark County (\$289.8 million).

Figure 5. Total Defense Personnel Compensation by County, 2022

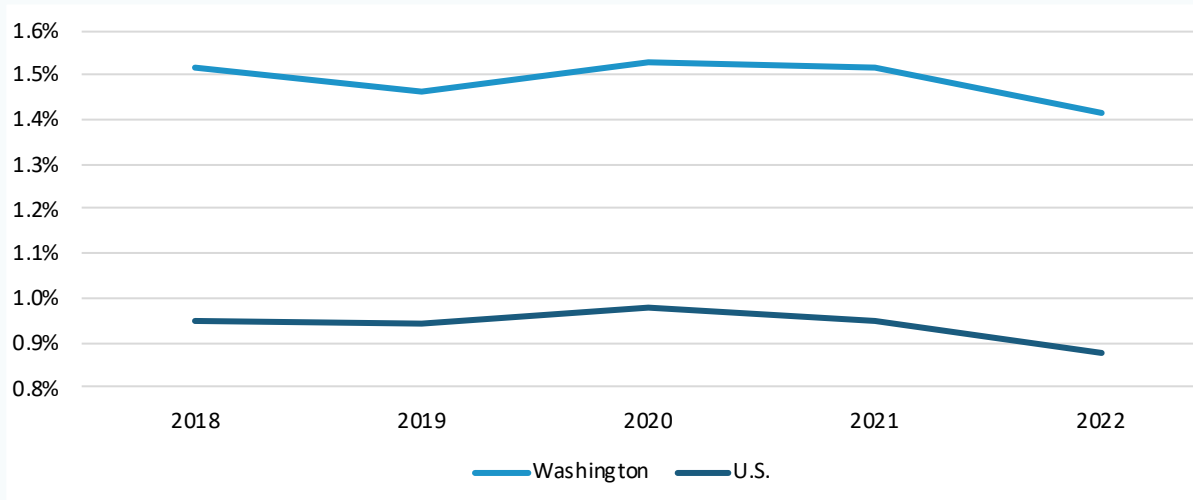


Source: Bureau of Economic Analysis; Defense Manpower Data Center

Note: At the time of writing, the most current available compensation data were from 2022, but the estimates presented in the figure were adjusted for inflation to 2023 dollars. Compensation estimates pertain to DoD civilians, active-duty and Reserve personnel, and Coast Guardsmen. Although these estimates do not factor in National Guardsmen, the IMPLAN models account for National Guard employment and compensation.

Figure 6 offers insight into how the size of the military has changed relative to the economy as a whole over time. In Washington, the military's share of total employment has declined marginally since 2018, from 1.5% to 1.4%. This trend, which was mirrored at the national level, coincided with a decline in the U.S.'s involvement abroad. **Consistently, the military has represented a larger share of the workforce in Washington than in the rest of the nation, highlighting the pivotal role that the State plays in promoting national security.**

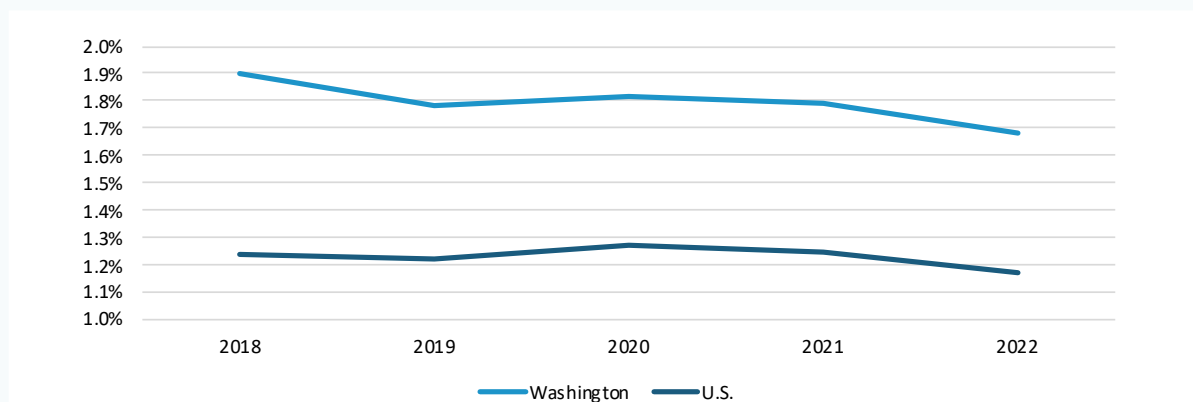
Figure 6. Military's Share of Total Employment, 2018-2022



Source: Bureau of Economic Analysis

Similarly, the military's share of compensation received by all workers in Washington has regularly exceeded national levels. In 2022, the military accounted for 1.7% of total compensation in Washington, compared to 1.2% nationally. Amid economic diversification and a reduction in American involvement in the Middle East, this percentage has declined marginally over time, both nationally and in Washington.

Figure 7. Military's Share of Total Compensation, 2018-2022

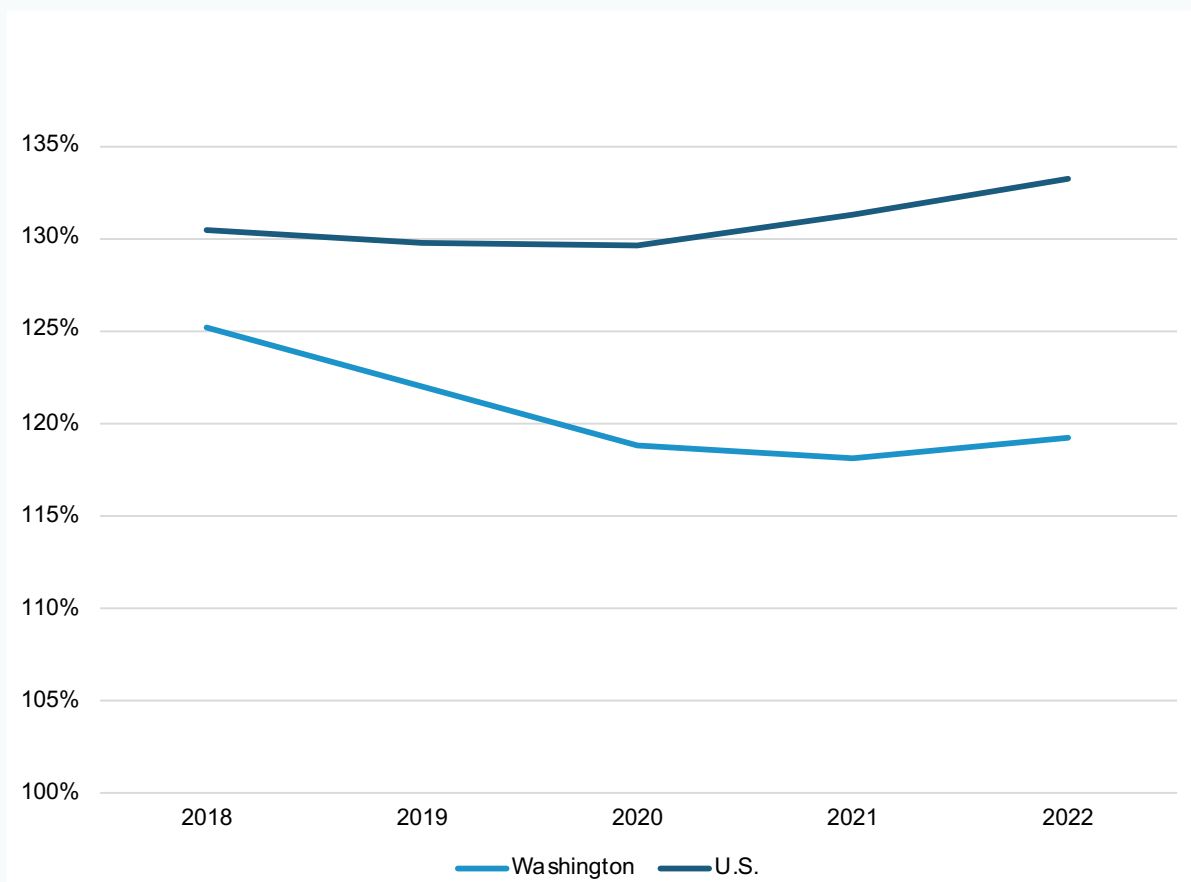


Source: Bureau of Economic Analysis

Washington Statewide Defense Economic Impact Study

Figure 8 compares average earnings for the military and general population. Ratios greater than 100% indicate that the average military member outearned the average employee in the entire workforce, while ratios less than 100% indicate the opposite. Both nationally and in Washington specifically, average compensation has consistently been higher for service members than for other occupations. In Washington, compensation for the average service member represented 119% of the equivalent sum for the general population. Because Washington residents enjoy relatively high incomes, the national ratio was higher, at 133%. Despite widening at the national level, the compensation gap between Washington's military and general population has decreased since 2018.

Figure 8. Ratio of Average Compensation for the Military and General Population, 2018-2022



Source: Bureau of Economic Analysis

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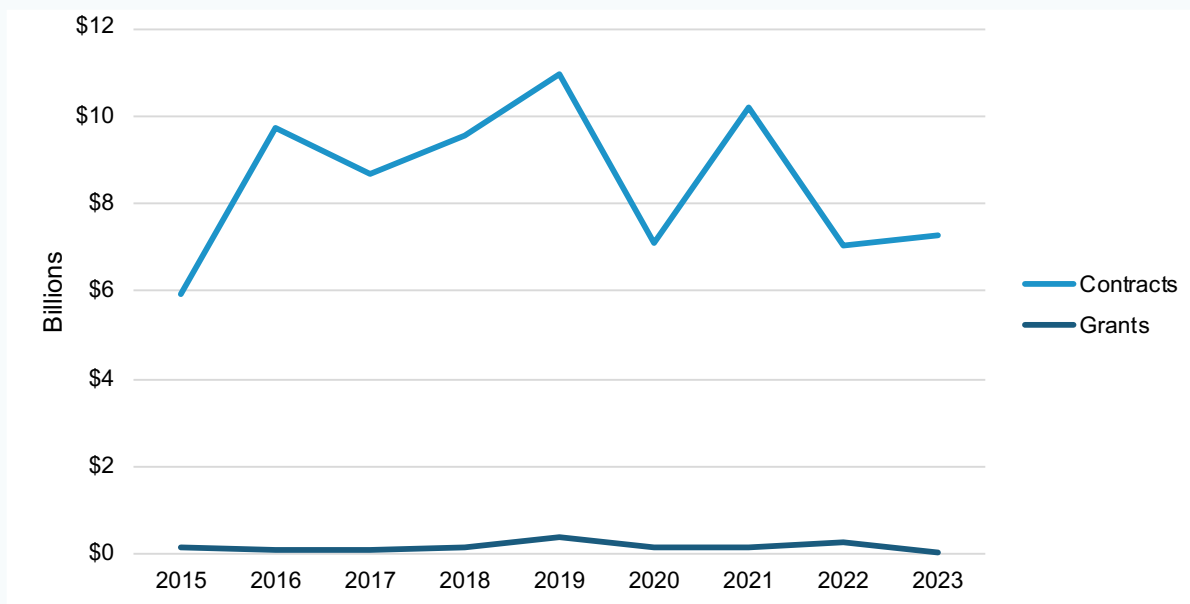
Procurement Analysis

This section presents a detailed analysis of DoD and USCG procurement performed in Washington, with a particular emphasis on the State's major defense industries and firms. DoD procurement includes spending by the United States Army Corps of Engineers (USACE) on civil works, such as hydro-electric dams. The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. Detailed descriptions of each NAICS industry can be found at the U.S. Census Bureau website. After examining statewide prime procurement activity, the analysis highlights the 10 counties where defense-related prime contract work was most heavily concentrated in FY23: Douglas County, Island County, King County, Kitsap County, Klickitat County, Pierce County, Skagit County, Snohomish County, Spokane County, and Whitman County. It concludes by utilizing subaward data to estimate the amount of defense-related work that was imported into and exported out of Washington.

Statewide

In FY23, Washington received \$7.3 billion in prime defense contracts, \$50.7 million in prime defense grants, and \$34.7 million in DoD Impact Aid (see Figure 9). Of those defense contracts, \$138 million are attributable to USACE civil works efforts, including \$62 million for the construction, maintenance, and repair of dams. Since FY15, these sums have fluctuated significantly, with annual contract spending ranging from \$6 billion to \$10.9 billion. Contracts exceeded or nearly reached \$10 billion in three fiscal years (FY16, FY19, and FY21), before declining markedly. Likewise, after peaking at \$386.3 million in FY19, annual grants more than halved. The volatility of procurement spending in the State suggests that the military and defense sector's economic impacts vary widely from year to year.

Figure 9. Prime Defense Procurement Performed in Washington, FY15-FY23

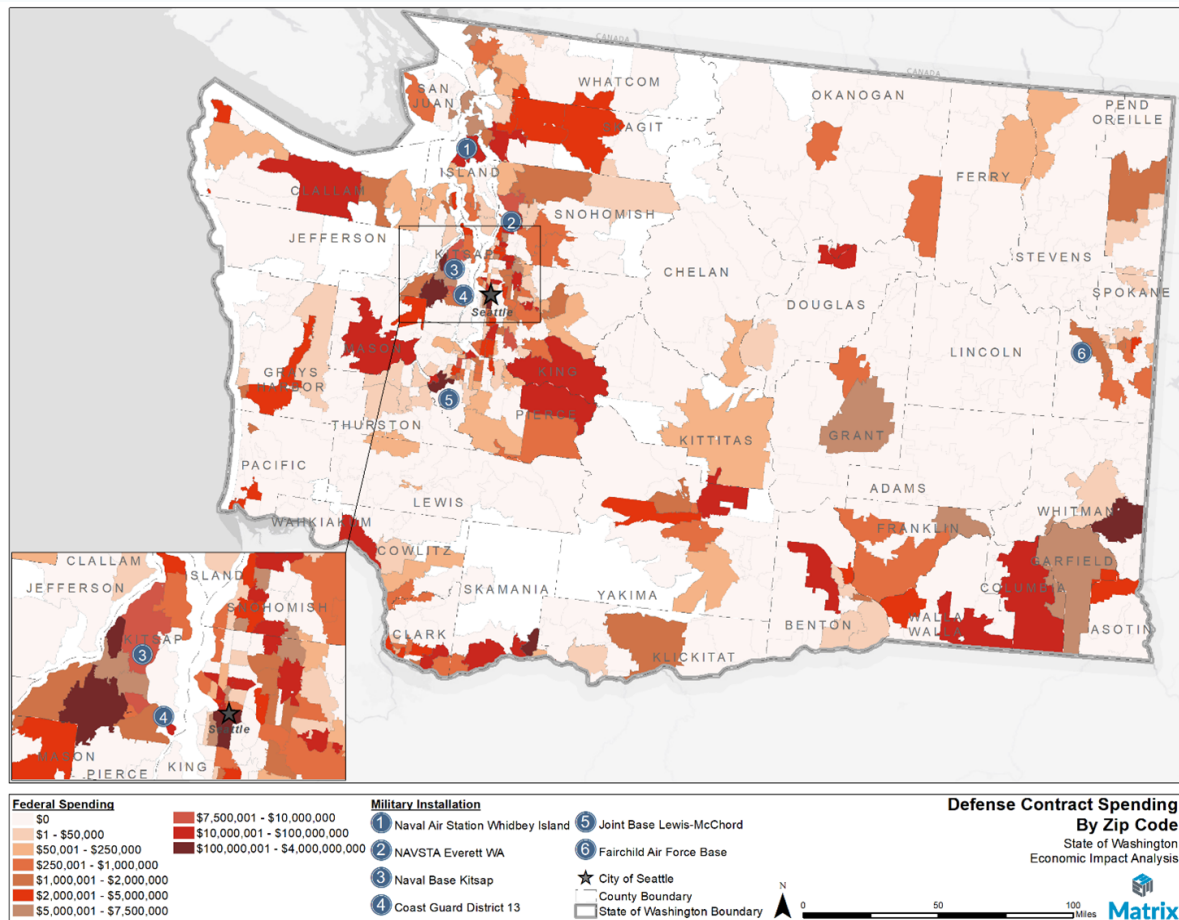


Source: Department of the Treasury

Note: Values are current (FY15 to FY23) dollars and include all DoD and USCG contracts and grants.

Figure 10 disaggregates the \$7.3 billion of prime defense contracts performed in Washington to the zip code level, where darker shades denote higher levels of expenditures. As expected, this spending overwhelmingly occurred in the communities that contained or were located near installations. **Contracts flowing to Pierce County, the home of JBLM, were valued at \$616.5 million. Over \$4.3 billion was injected into neighboring King County, the site of a major Boeing production complex and airfield.** The spending was primarily directed to the western and southern regions of King County. Prominent installations are also located in Kitsap, Island, Snohomish, and Spokane Counties, which respectively saw \$1.1 billion, \$136.5 million, \$316.5 million, and \$75.7 million of defense contract spending. Several regions were major beneficiaries of defense contract spending despite the absence of a nearby installation, including central Clallam County, central and southern Grays Harbor, central Klickitat County, eastern Whitman County, northern Douglas County, and southern Walla Walla County. **As local economies are connected via commodity trade and commuting flows, each of Washington's over 600 zip codes benefits from the work of defense contractors, regardless of whether any procurement activities are performed there.**

Figure 10. Prime Defense Procurement Performed in Washington, FY15-FY23

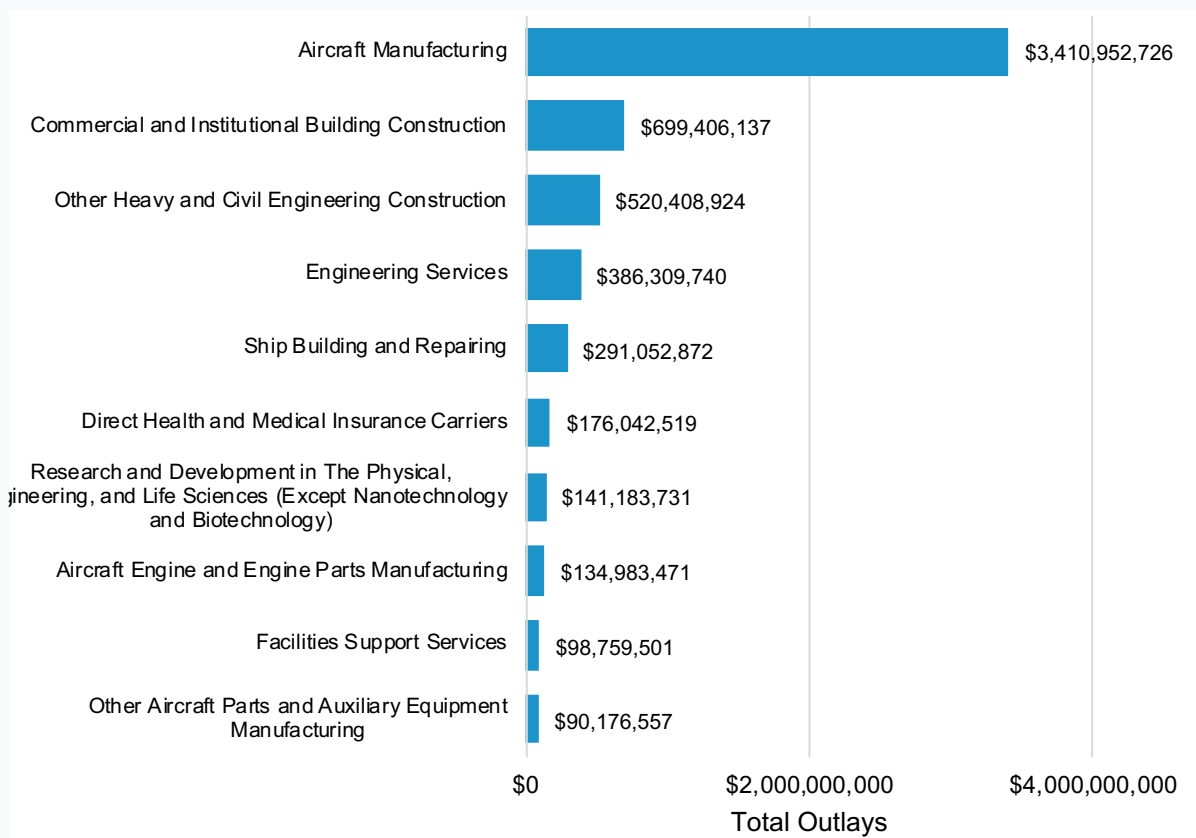


Source: Department of the Treasury

Washington Statewide Defense Economic Impact Study

Washington's top 15 defense industries are identified in Figure 11. The State's defense sector was dominated by Aircraft Manufacturing in FY23. This finding is not surprising given that Boeing has a major presence in Washington. Over \$3.4 billion in prime contracts were performed there, representing nearly half of all defense contract dollars that flowed into the State. **Further, this sum exceeded the total amount awarded to the next 33 largest industries combined.** The second-largest industry, Commercial and Institutional Building Construction, was the beneficiary of almost \$700 million in federal contracts. An additional six industries were supported by federal contracts totaling at least \$100 million. **Aircraft Manufacturing's dominance suggests that it is indispensable to the State's defense economy, driving a large share of the job creation and economic growth stemming from procurement.**

Figure 11. Top Defense Industries in Washington, FY23

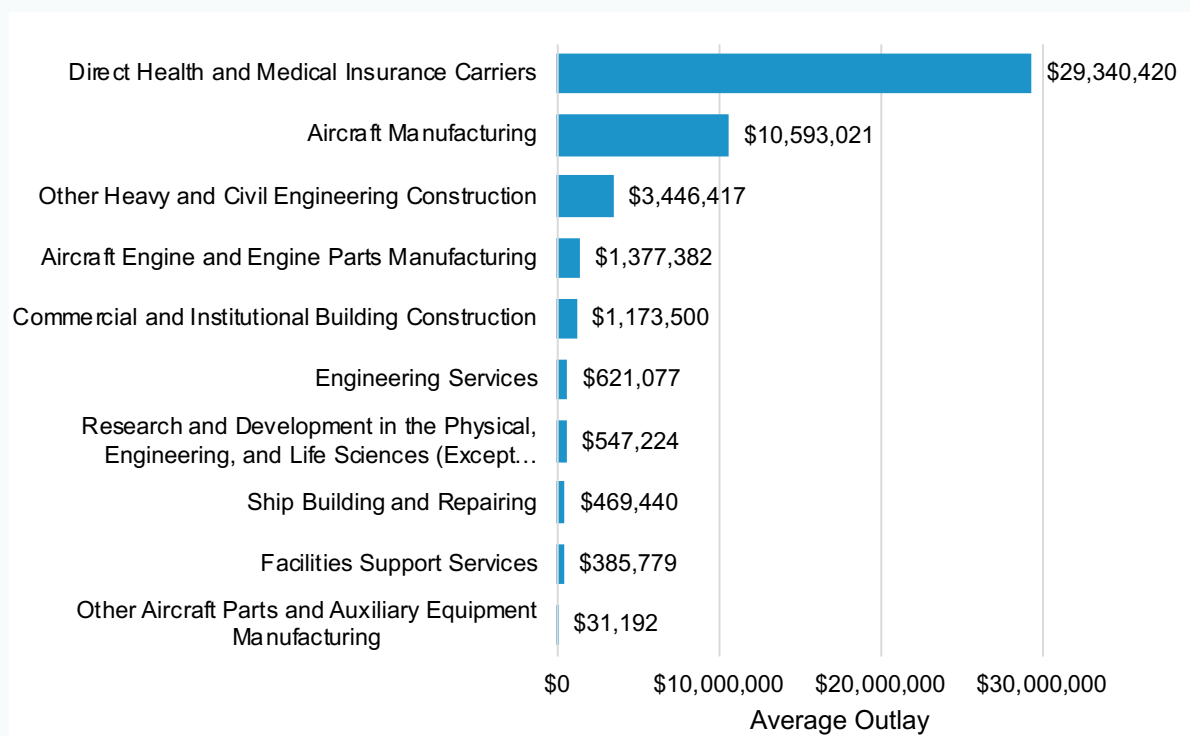


Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

The average prime defense contract performed in Washington equaled \$111,621 in FY23. However, across Washington's top defense industries, this value varied significantly (see Figure 12). The typical award in FY23 ranged from about \$31,200 for Other Aircraft Parts and Auxiliary Equipment Manufacturing to \$29.3 million for Direct Health and Medical Insurance Carriers. The average contract awarded to the Aircraft Manufacturing industry was significantly smaller than the latter sum, but at about \$10.6 million, it was still sizeable, especially in comparison to the other industry averages. Awards were also generally generous to firms specializing in Other Heavy and Civil Engineering Construction, with the average contract totaling over \$3.4 million. Average contract values also exceeded \$1 million in the Aircraft Engine and Engine Parts Manufacturing and Commercial and Institutional Building Construction industries.

Figure 12. Average Contract Value for Washington's Top Defense Industries, FY23



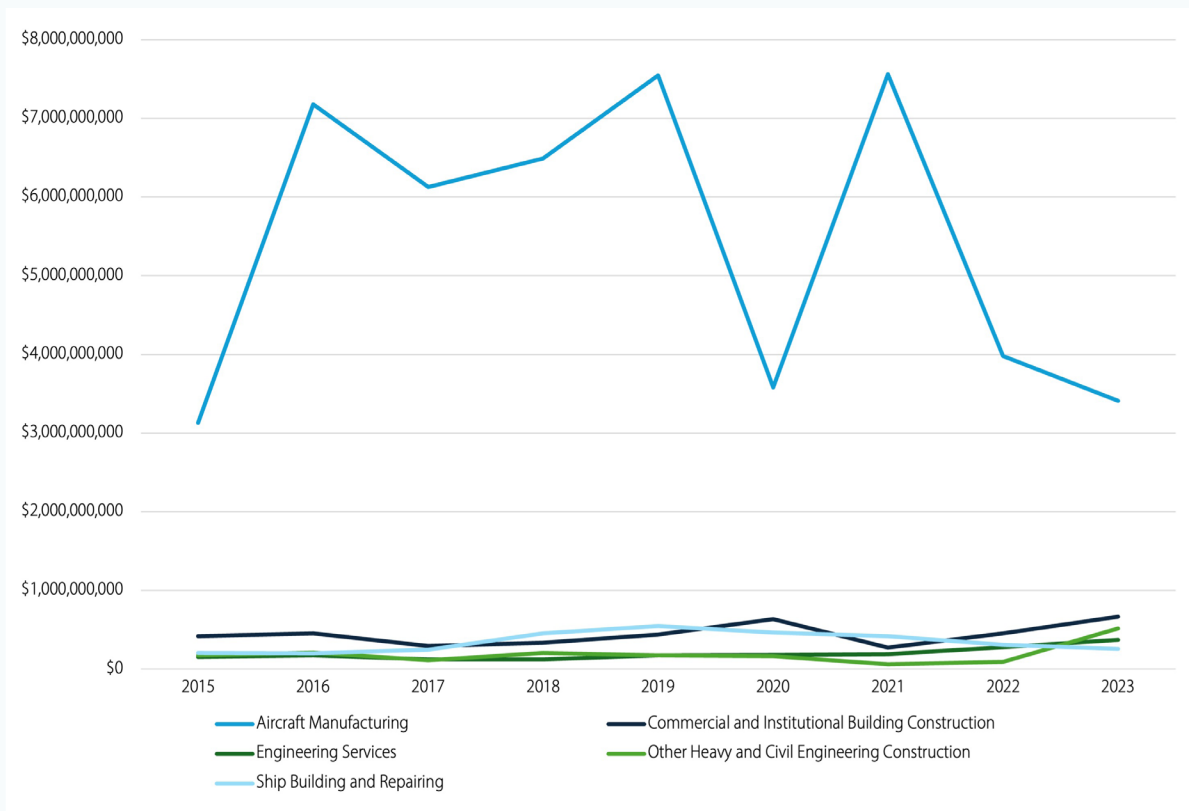
Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Washington Statewide Defense Economic Impact Study

Federal outlays to Washington's major defense industries have experienced significant volatility from year to year (see Figure 13). **Most notably, although Aircraft Manufacturing has consistently been the largest industry, the total amount awarded to it has widely ranged from \$3.1 billion in FY15 to \$7.6 billion in FY21.** As such, the industry's impacts on employment and GSP have likely fluctuated considerably over time. In two other fiscal years (2016 and 2019), the Aircraft Manufacturing industry was the beneficiary of over \$7 billion in federal contracts. These peaks have typically been followed by sharp declines in spending. For example, from FY21 to FY22, procurement directed to the industry fell by 47%, and it continued to decrease through FY23. Amid this decline, several other industries have experienced notable growth, especially Commercial and Institutional Building Construction and Other Heavy and Civil Engineering Construction. Between FY21 and FY23, the former industry experienced a 142% increase in procurement, compared to 717% for the latter industry.

Figure 13. Procurement Awarded to Washington's Top Defense Industries, FY15-FY23



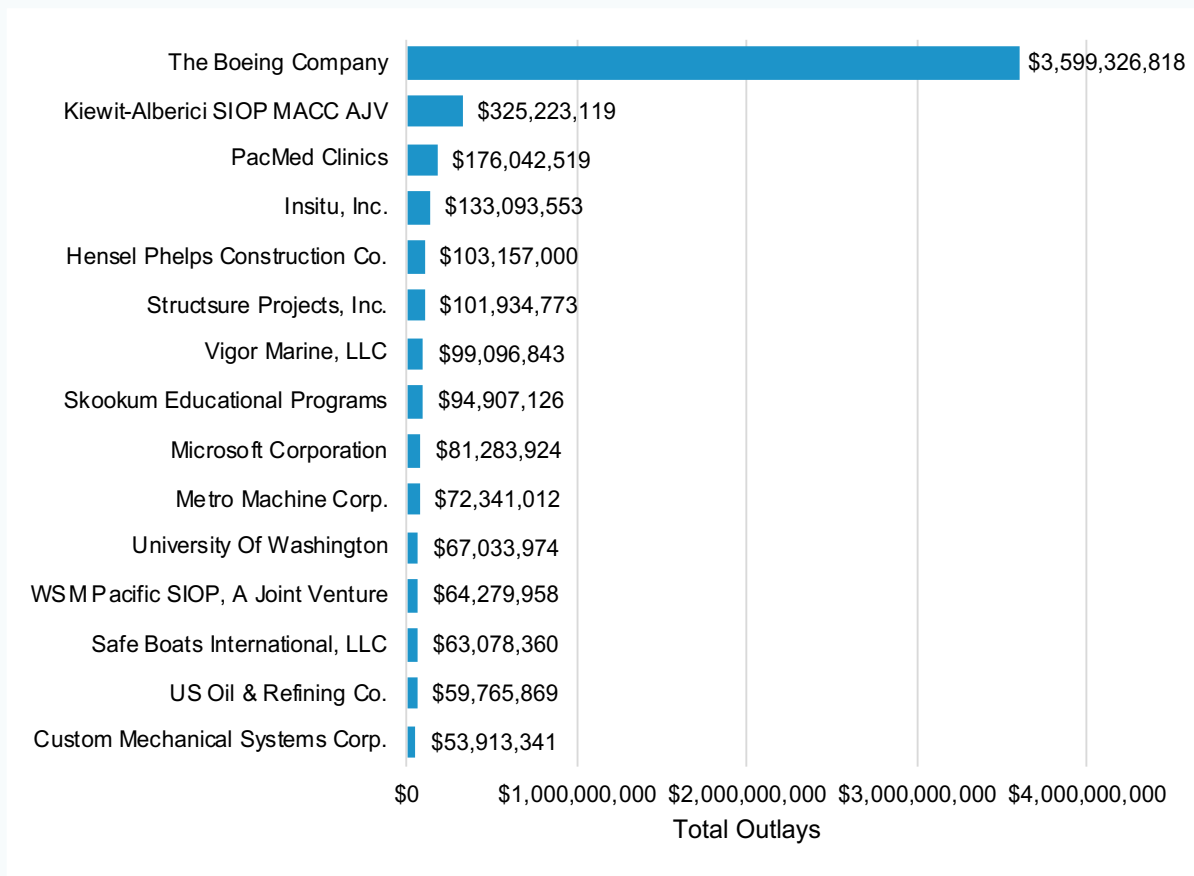
Source: Department of the Treasury

Note: Values are current (FY15 to FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Figure 14 ranks Washington's top 15 defense contractors by total amount awarded in FY23. **As expected, Boeing received the most federal funds of any firm in the State (\$3.6 billion) by a wide margin.**

This sum was over 11 times larger than the amount received by the next-largest contractor, Kiewit-Alberici SIOP MACC AJV. This firm, which specializes in Heavy and Civil Engineering Construction, was awarded over \$325 million. PacMed Clinics was the recipient of all \$176 million injected into the Direct Health and Medical Insurance Carriers industry. Other notable beneficiaries of defense spending included Amazon (\$47.1 million) and Microsoft (\$81.3 million).

Figure 14. Top Defense Contractors in Washington, FY23



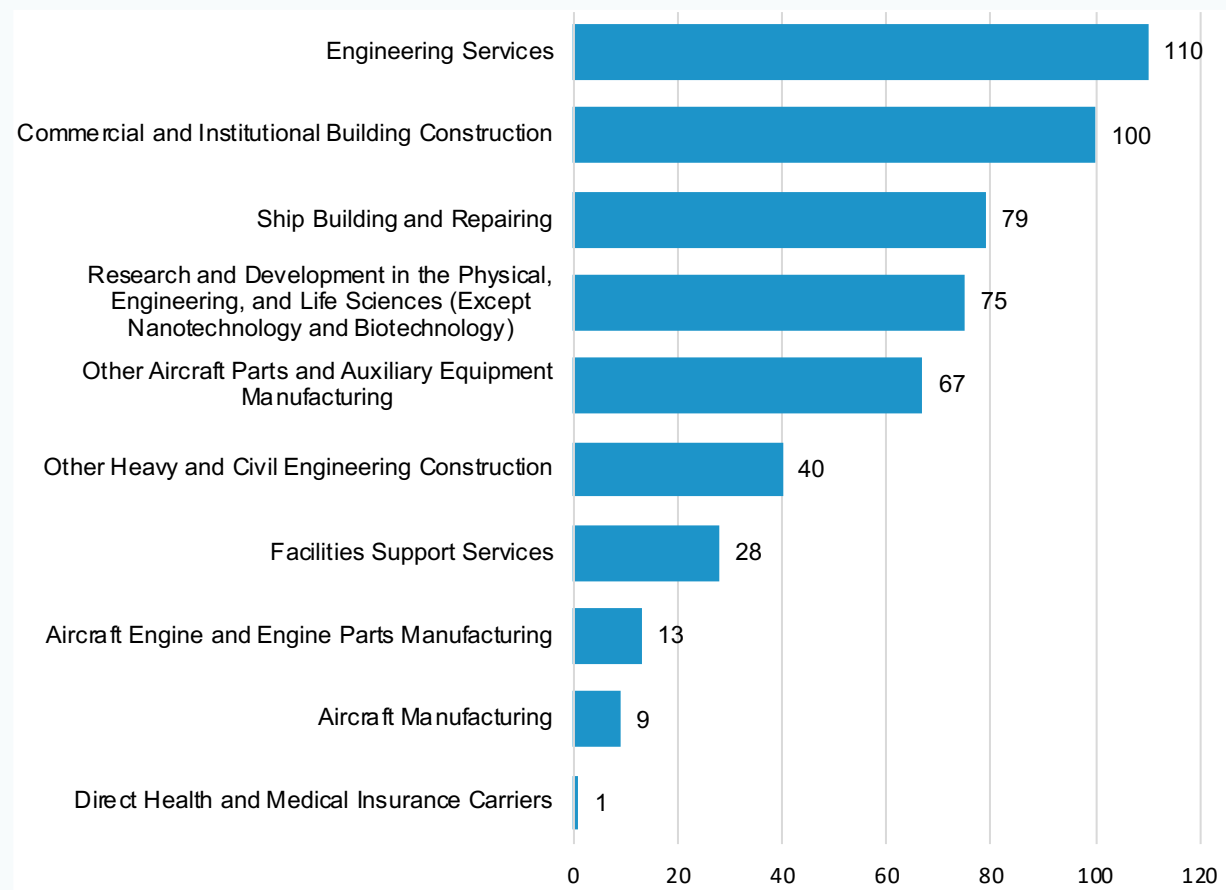
Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

The resiliency of Washington's military installations is determined, in part, by the diversity of the industries that serve them. The fewer suppliers an installation relies on for a particular good or service, the more likely it is to face challenges or setbacks in the event a business providing it becomes defunct. The same

is true for the defense industrial base as a whole. Figure 15 displays the number of federal contractors in each of Washington's major defense industries, thereby shedding light on the vulnerability of the State's defense economy. Engineering Services featured the most contractors (110) in FY23, followed closely by Commercial and Institutional Building Construction (100). Considering how integral Commercial and Institutional Building Construction is to Washington's defense economy, it is encouraging that it ranks among the State's most diverse industries. By contrast, the State's largest industry — Aircraft Manufacturing — consisted of just nine federal contractors in FY23. Contracts were awarded to fewer than 15 firms in two other industries — Aircraft and Engine Parts Manufacturing and Direct Health and Medical Insurance Carriers.

Figure 15. Number of Defense Contractors in Washington's Top Defense Industries, FY23

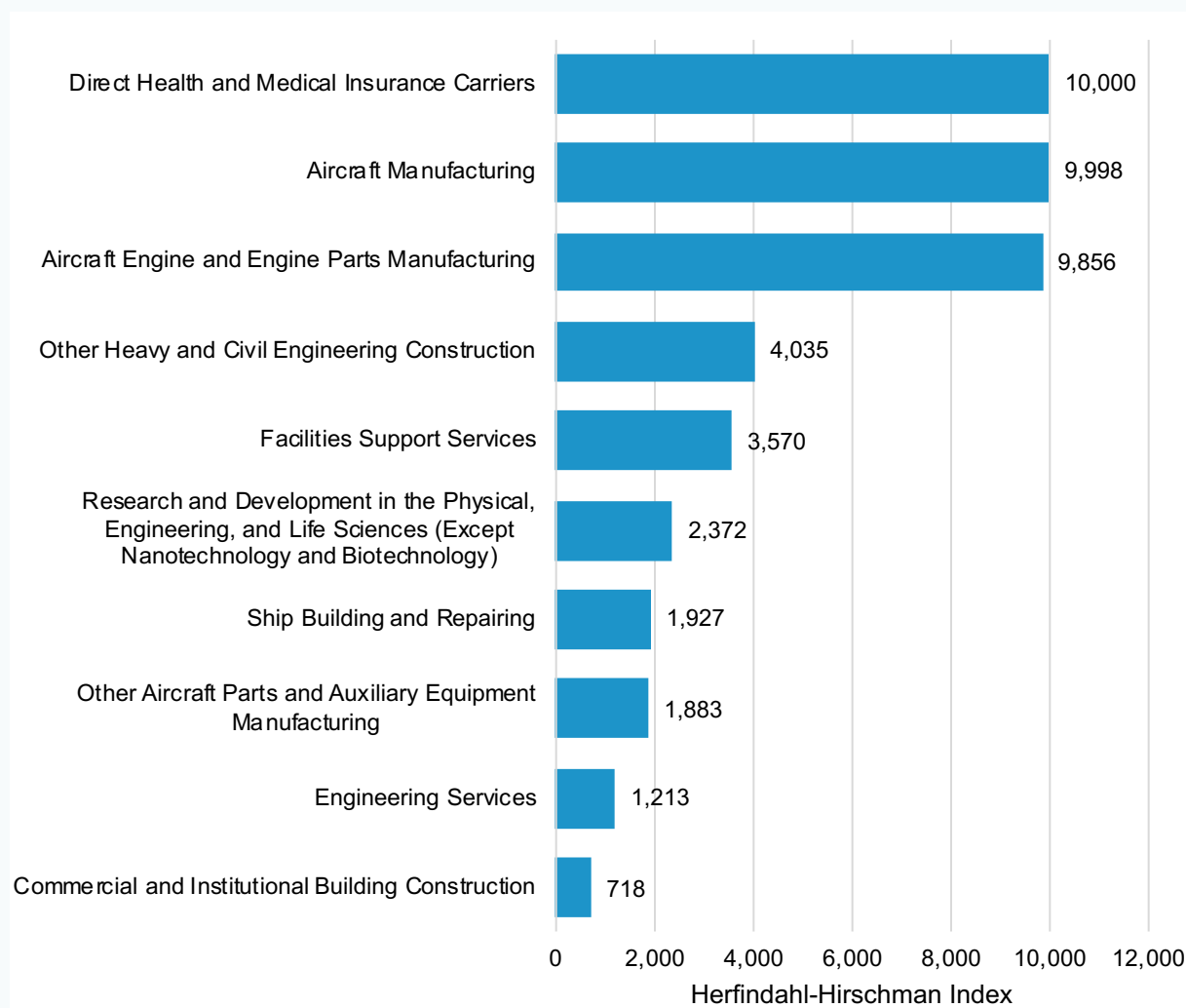


Source: Department of the Treasury

Note: Values were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Figure 16 presents an alternative measure of industry diversity: the Herfindahl-Hirschman Index (HHI).¹ The HHI ranges from nearly zero to 10,000, with higher scores indicating a more concentrated market. Typically, a competitive market is said to have an HHI below 1,500. **The results suggest that Washington's most concentrated defense industries were Direct Health and Medical Insurance Carriers, Aircraft Manufacturing, and Aircraft and Engine Parts Manufacturing.** On the other hand, the industries with moderate or high levels of competition included Research and Development in the Physical, Engineering, and Life Sciences (Except Nanotechnology and Biotechnology); Ship Building and Repairing; Other Aircraft Parts and Auxiliary Manufacturing; Engineering Services; and Commercial and Institutional Building Construction.

Figure 16. Market Concentration in Washington's Top Defense Industries, FY23



Source: Department of the Treasury

Note: Higher Herfindahl-Hirschman Index values indicate higher levels of market concentration.

¹ The HHI measures an industry's degree of market concentration. In this case, it is calculated by squaring the share of federal contracts received by each firm in an industry (expressed as a whole number) and then summing the resulting values.

Douglas County

While no installations are located in Douglas County, it served as the place of performance for contracts and grants valued at \$53.5 million in total (see Table 3), including \$7.2 million from USACE civil works. Contracts were the source of 81% of these funds. As of FY23, 30 defense industries were active in the County, consisting of 38 firms.

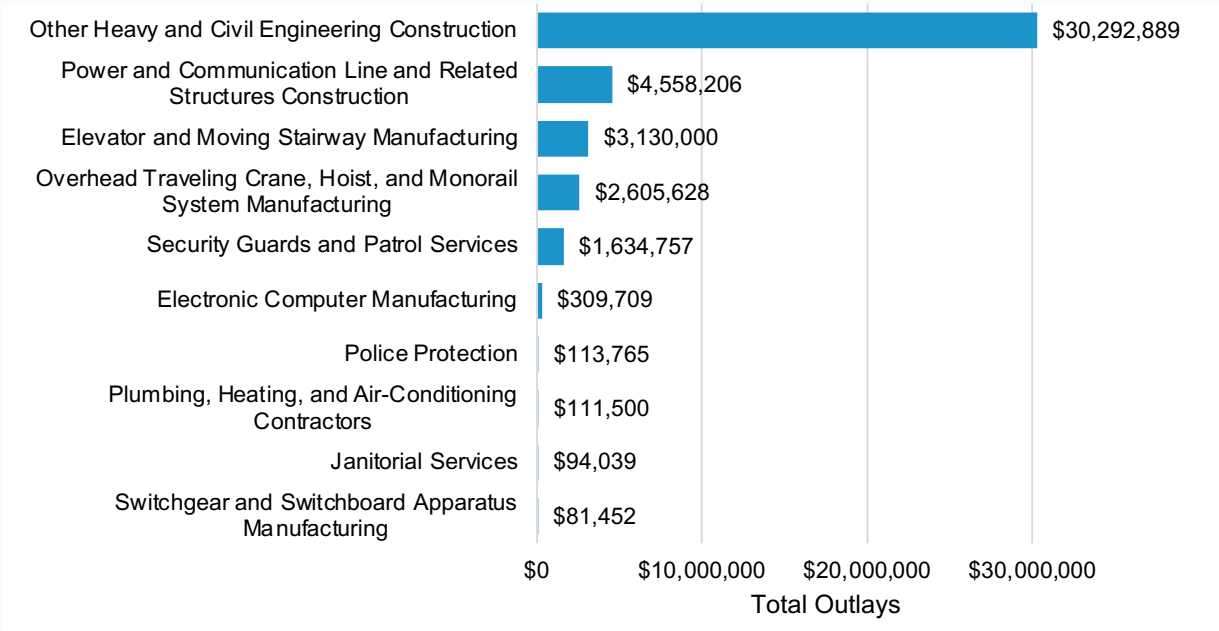
Figure 17 displays federal outlays to Douglas County’s 10 largest defense industries. The Other Heavy and Civil Engineering Construction industry was pivotal to the County’s defense economy, securing \$30.3 million of contracts. Other major industries included Power and Communication Line and Related Structures Construction; Elevator and Moving Stairway Manufacturing; Overhead Traveling Crane, Hoist, and Monorail System Manufacturing; and Security Guard and Patrol Services. Contracts awarded to these industries were worth \$4.6 million, \$3.1 million, \$2.6 million, and \$1.6 million, respectively. An additional \$1.2 million was distributed across 25 other industries.

Table 3. Douglas County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$43.4M
Value of Federal Defense Grants	\$10.1M
Number of Defense Industries	30
Number of Defense Contractors	38

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

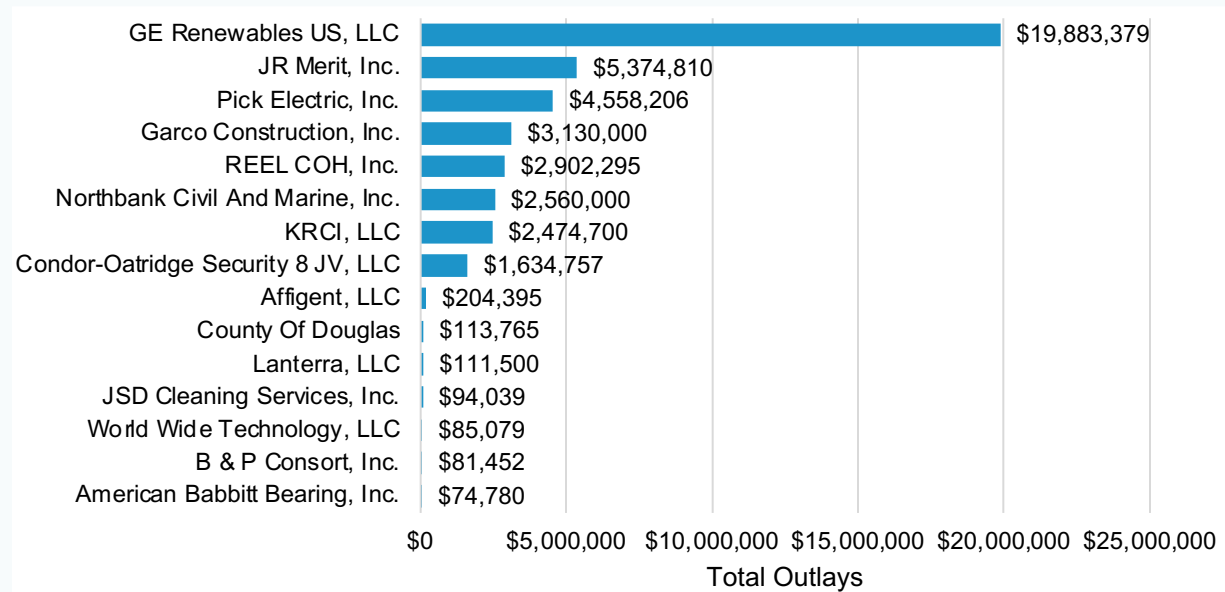
Figure 17. Top Defense Industries in Douglas County, FY23



Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Douglas County's major defense contractors are identified in Figure 18. Defense contract spending in the County mostly occurred on behalf of GE Renewables US, LLC, which was the beneficiary of \$19.9 million. Considerable sums flowed to several other firms, including JR Merit, Inc.; Pick Electric, Inc.; and Garco Construction, Inc. Awards to 30 firms were valued at less than \$1 million.

Figure 18. Top Defense Contractors in Douglas County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Island County

Over \$137 million of federal defense procurement was performed in Island County, which features NAS Whidbey Island (see Table 4). This funding came almost exclusively in the form of contracts, which include \$1 million from USACE civil works. The County’s defense economy consisted of 54 industries and 99 contractors.

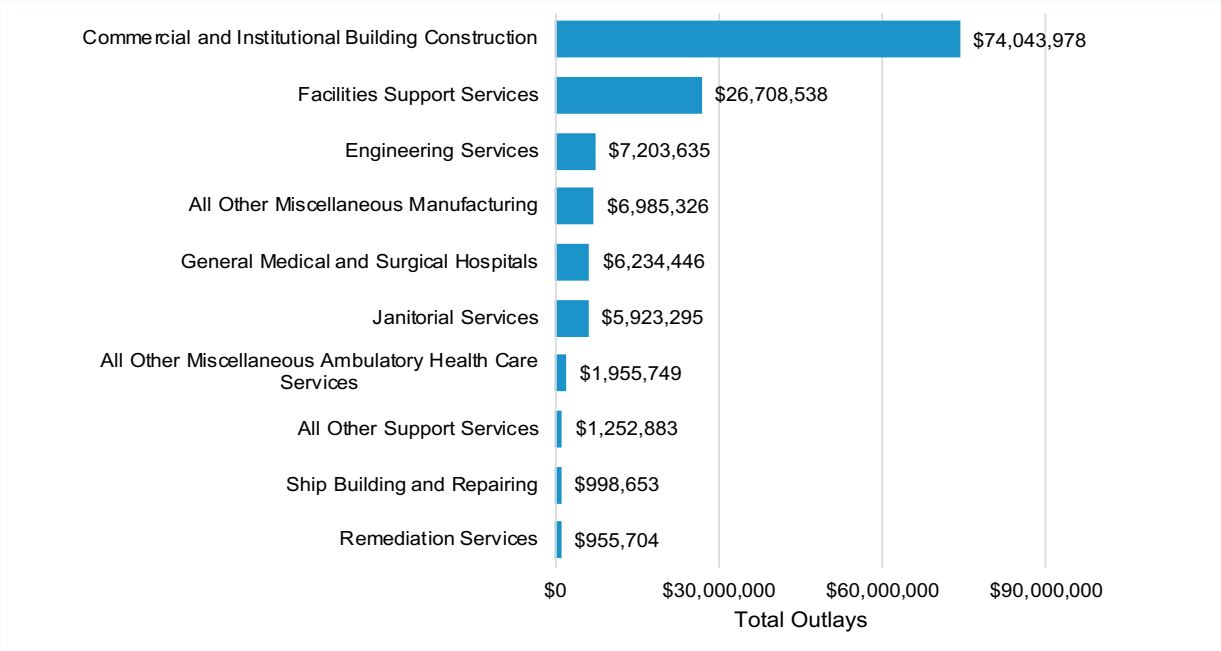
Figure 19 shows that 74% of defense contract spending in Island County supported just two industries: Commercial and Institutional Building Construction and Facilities Support Services. Outlays to the former industry totaled over \$74 million, compared to \$26.7 million for the latter. Awards to four industries ranged from \$5.9 million to \$7.2 million: Engineering Services, All Other Miscellaneous Manufacturing, General Medical and Surgical Hospitals, and Janitorial Services. An additional \$9.4 million in contract spending was divided across the County’s remaining industries.

Table 4. Island County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$136.5M
Value of Federal Defense Grants	\$0.79M
Number of Defense Industries	54
Number of Defense Contractors	99

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

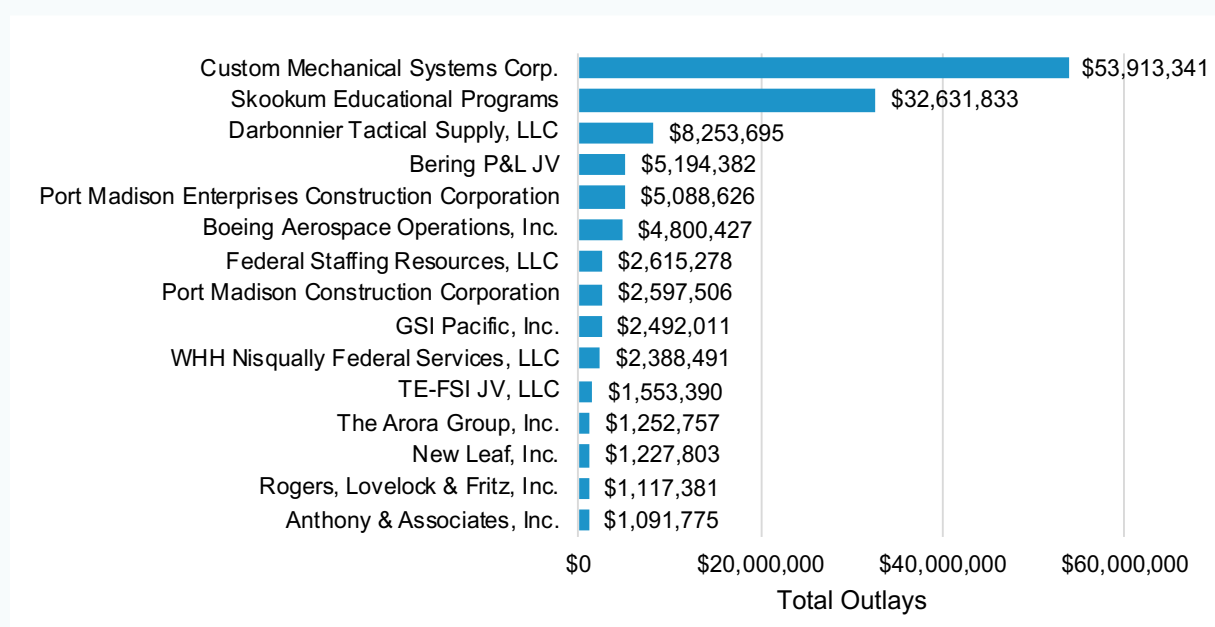
Figure 19. Top Defense Industries in Island County, FY23



Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Island County's two most prominent defense contractors were Custom Mechanical Systems Corp., which works in the Commercial and Institutional Building Construction industry, and Skookum Educational Programs, a firm providing Facilities Support Services (see Figure 20). Their contracts totaled \$86.5 million, which represented over 63% of federal contract spending that occurred in the County. Darbonnier Tactical Supply, LLC, which produces military equipment, gear, apparel, and accessories, received \$8.3 million, making it the third-largest contractor. A pair of firms in the Commercial and Building Construction industry — Bering P&L JV and Port Madison Enterprises Construction Corporation — were each the beneficiary of over \$5 million. On average, the remaining 93 firms were each awarded about \$337,800.

Figure 20. Top Defense Contractors in Island County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

King County

King County was the leading site of defense procurement in the State, serving as the place of performance for \$4.4 billion of contracts and \$53.7 million of grants (see Table 5), including \$18.4 million from USACE civil works. Its defensive activities were wide ranging, spanning 250 industries. For context, this figure represents about a quarter of all six-digit NAICS industries. Moreover, 500 firms were awarded prime contracts. Although King County is not home to any major installations, it borders Pierce County, where JBLM is located, and is the site of major Boeing operations.

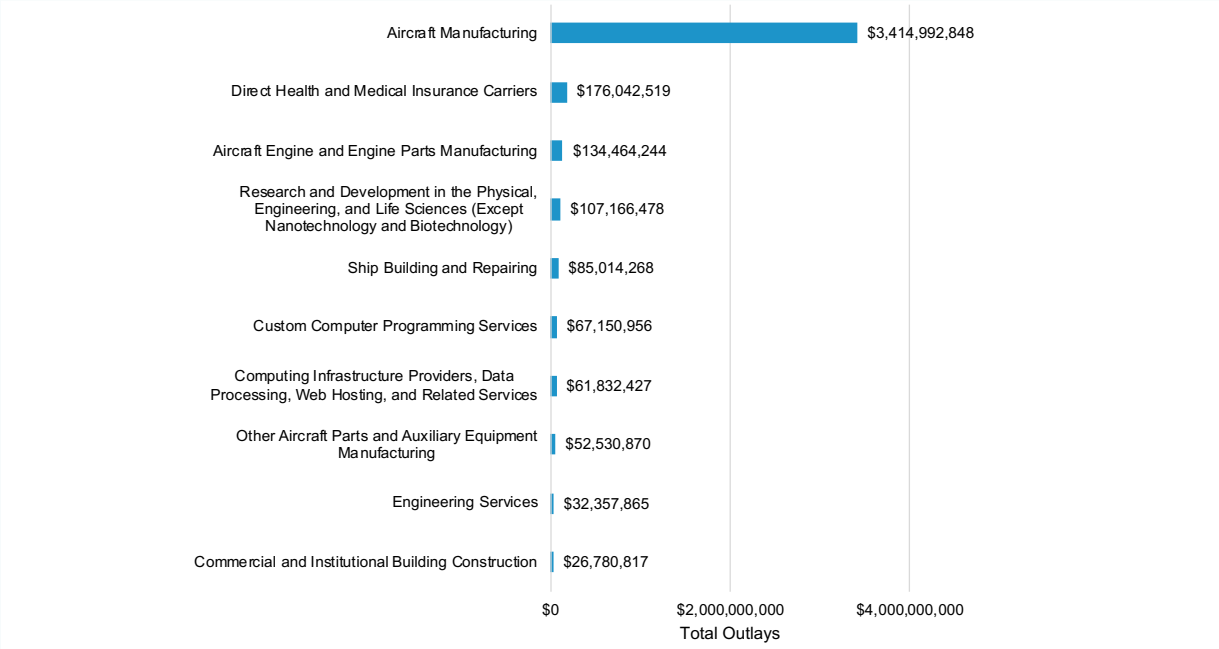
As Figure 21 demonstrates, the Aircraft Manufacturing industry is central to King County's defense activities. It was awarded over \$3.4 billion in FY23, a sum that represented nearly 80% of all contract spending that occurred in the County. Contracts performed by three other industries exceeded \$100 million: Direct Health and Medical Insurance Carriers; Aircraft Engine and Engine Parts Manufacturing;

Table 5. King County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$4.4B
Value of Federal Defense Grants	\$53.7M
Number of Defense Industries	250
Number of Defense Contractors	500

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

Figure 21. Top Defense Industries in King County, FY23

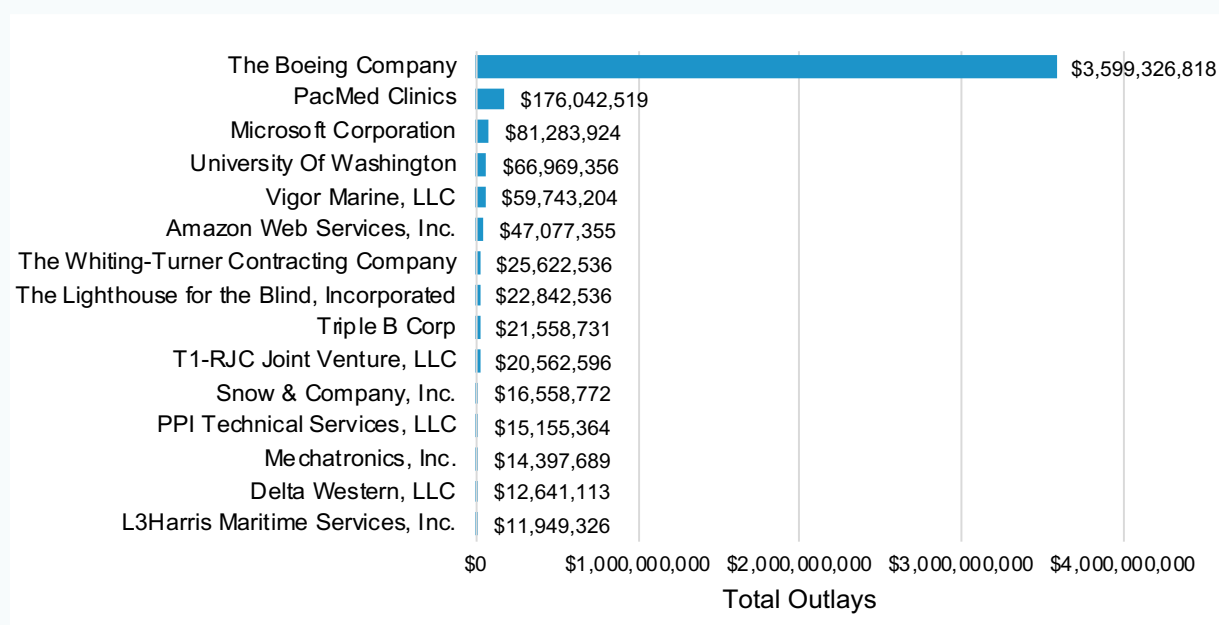


Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

and Research and Development in the Physical, Engineering, and Life Sciences (Except Nanotechnology and Biotechnology). The remaining \$565.3 million was distributed across 252 industries. Sixteen of those industries collected over \$10 million, including Ship Building and Repairing; Custom Computer Programming Services; and Computing Infrastructure Providers, Data Processing, Web Hosting and Related Services.

Boeing was King County's leading defense contractor, securing \$3.6 billion in federal contracts in FY23 (see Figure 22). This sum was over 20 times larger than the amount collected by the second-largest contractor. Firms other than Boeing received nearly \$800 million in total. Over half of those funds were awarded to just five firms: PacMed Clinics; Microsoft Corporation; the University of Washington; Vigor Marine, LLC; and Amazon Web Services, Inc.

Figure 22. Top Defense Contractors in King County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Kitsap County

The presence of Naval Base Kitsap in Kitsap County attracts significant procurement activity (see Table 6). About \$1.1 billion of prime contracts were performed in the County, while prime grants amounted to an additional \$3.4 million. The DoD and USCG rely on Kitsap County for a wide array of goods and services, as evidenced by the 261 industries that were awarded contracts in FY23. These industries consisted of 666 firms.

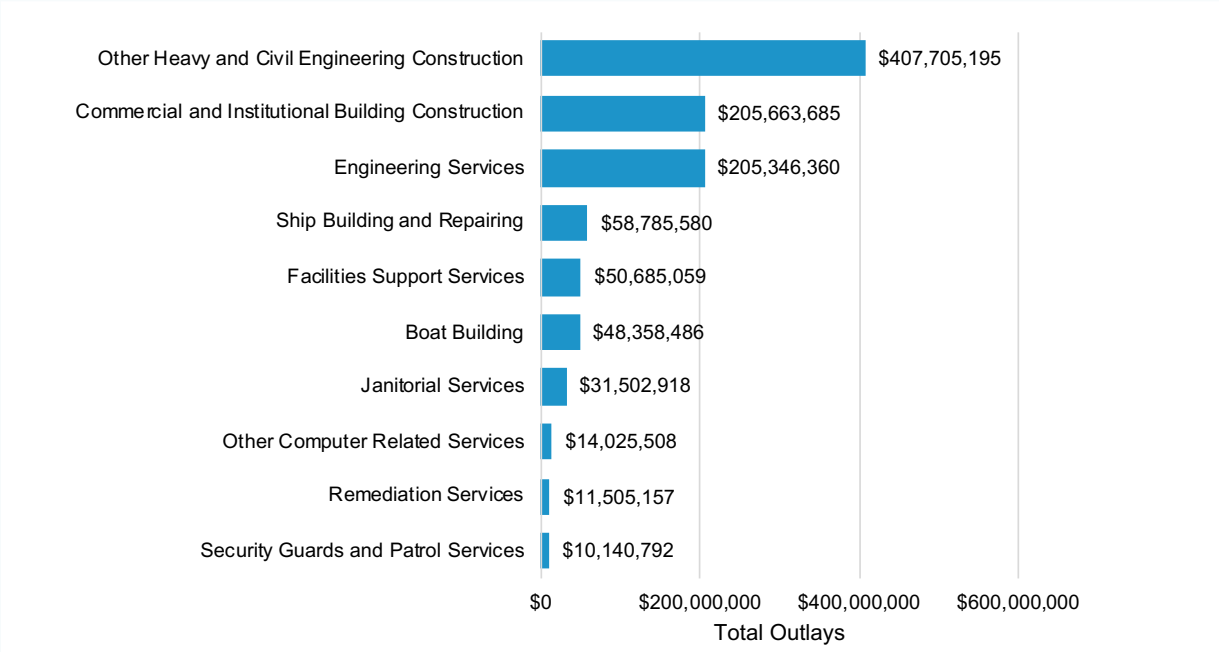
Figure 23 documents the reliance of Kitsap County’s defense economy on three industries: Other Heavy and Civil Engineering Construction, Commercial and Institutional Building Construction, and Engineering Services. Nearly \$408 billion supported the Other Heavy and Civil Engineering industry, while the latter two industries each received over \$205 million. These three industries accounted for 72% of the prime contract spending that flowed into the County. The remaining industries were each awarded \$1.2 million, on average.

Table 6. Kitsap County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$1.1B
Value of Federal Defense Grants	\$3.4M
Number of Defense Industries	261
Number of Defense Contractors	666

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

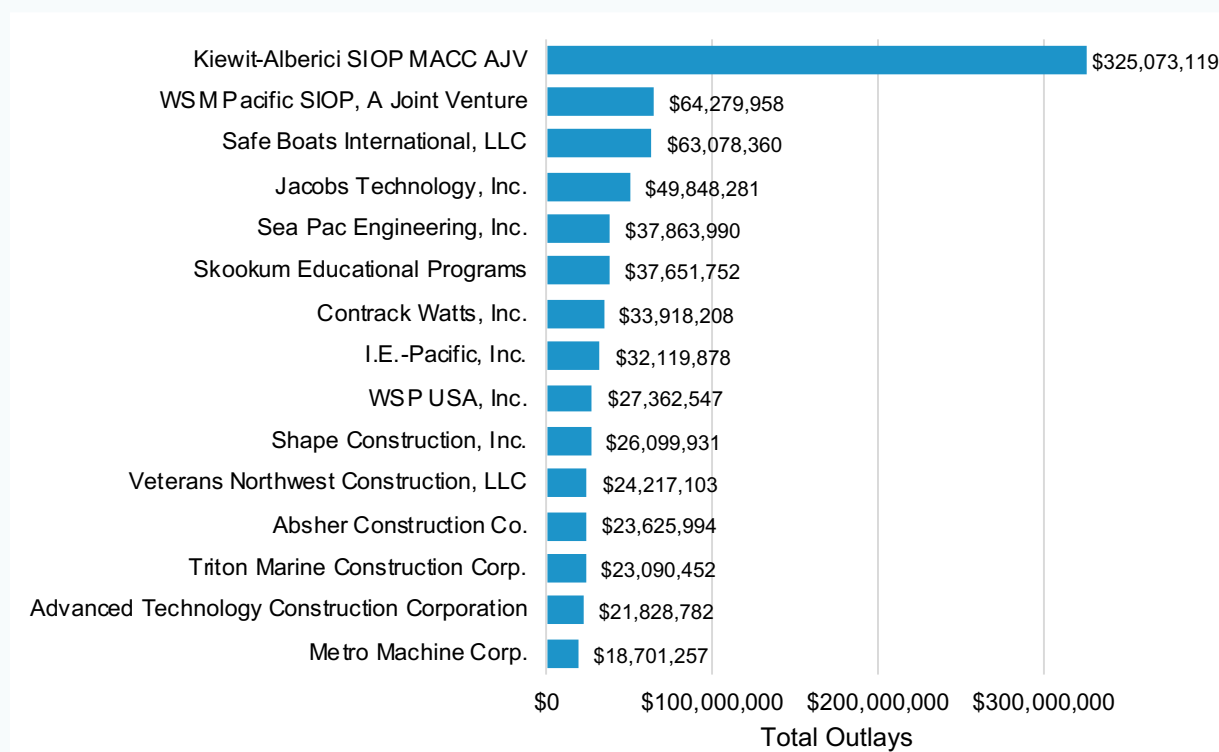
Figure 23. Top Defense Industries in Kitsap County, FY23



Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

The largest beneficiary of defense contracts in Kitsap County was Kiewit-Alberici SIOP MACC AJV, which specializes in infrastructure upgrades and repairs at Navy shipyards and facilities (see Figure 24). This firm received over \$325 million, far exceeding the \$64.3 million awarded to the second-largest contractor (WSM Pacific SIOP, A Joint Venture). Along with WSM, Safe Boats International was awarded over \$60 million. Sizeable sums were directed to several other firms, including Jacobs Technology, Inc. and Sea Pac Engineering, Inc.

Figure 24. Top Defense Contractors in Kitsap County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Klickitat County

Defense contractors have a sizable presence in Klickitat County, even though it is not home to any installations. In FY23, prime contracts performed in the County summed to \$134 million (see Table 7), including \$86 thousand from USACE civil works. The funds supported 22 industries and nine contractors.

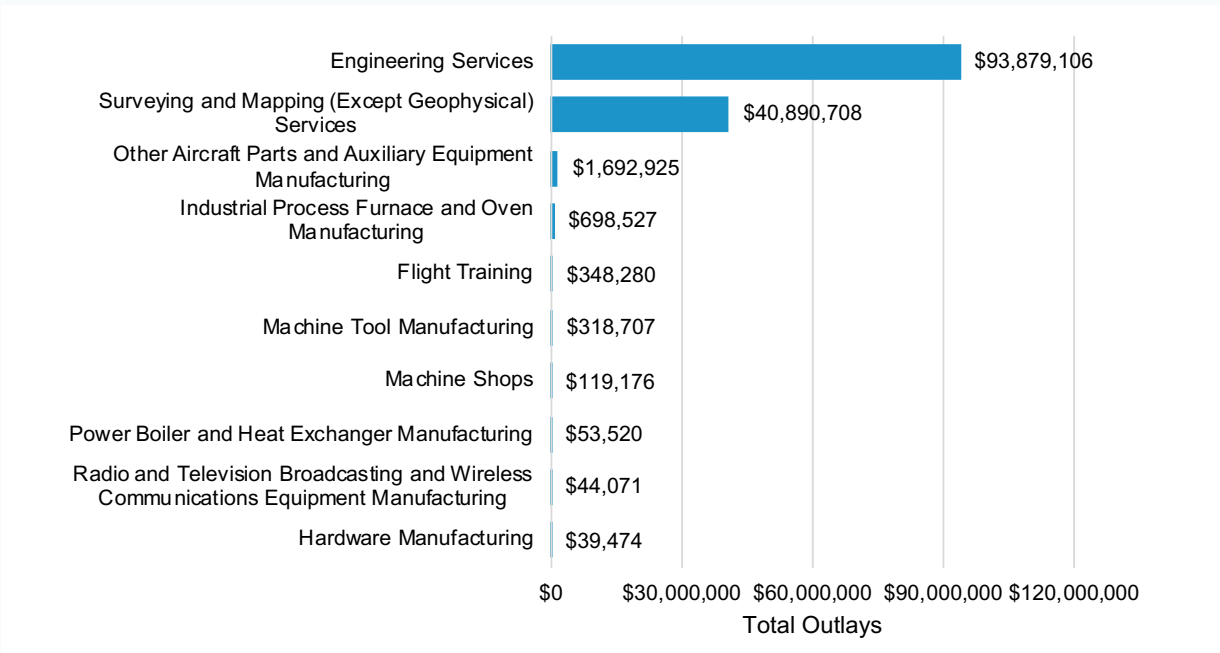
Figure 25 reveals that prime contracts performed in Klickitat County almost exclusively supported two industries: Engineering Services and Survey and Mapping (Except Geophysical) Services. Nearly \$94 million was directed to the former industry, while the latter industry was the beneficiary of nearly \$40.9 million. Except for Other Aircraft Parts and Auxiliary Equipment Manufacturing, the other industries each received less than \$1 million.

Table 7. Klickitat County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$134.0M
Value of Federal Defense Grants	\$0
Number of Defense Industries	22
Number of Defense Contractors	9

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

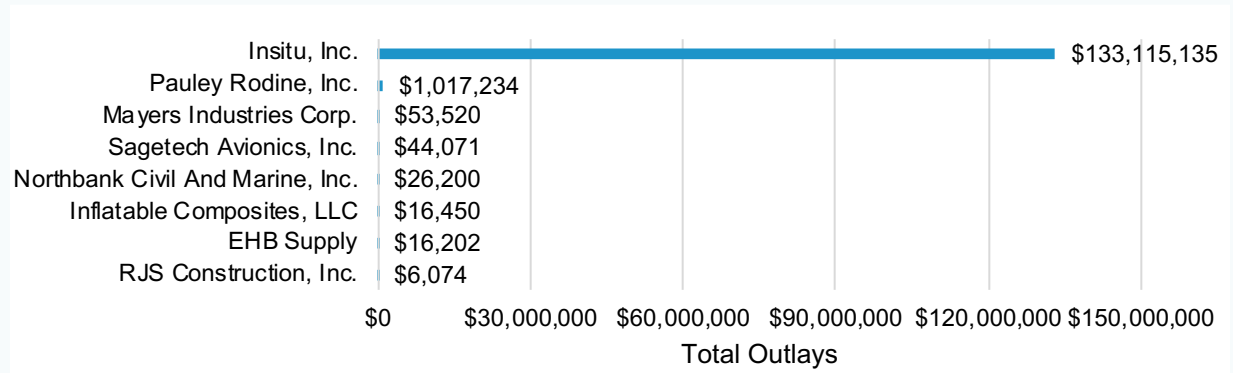
Figure 25. Top Defense Industries in Klickitat County, FY23



Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Klickitat County's defense economy is driven almost entirely by Insitu, Inc., a wholly owned subsidiary of Boeing that specializes in unmanned aerial systems (see Figure 26). Its contracts totaled over \$131.1 million in FY23. Pauley Rodine, Inc., which manufactures industrial ovens and other items, was the only other contractor to receive more than \$1 million. Awards to other contractors ranged from \$6,074 to \$53,520.

Figure 26. Top Defense Contractors in Klickitat County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Pierce County

As the home of JBLM, Pierce County is a hub of defense activity. Federal procurement data reinforce this fact, showing that \$622 million of contracts and \$11.3 million of grants flowed into the County in FY23 (see Table 8), including \$281 thousand from USACE civil works. DoD and USCG contract spending supported 229 industries and 533 contractors.

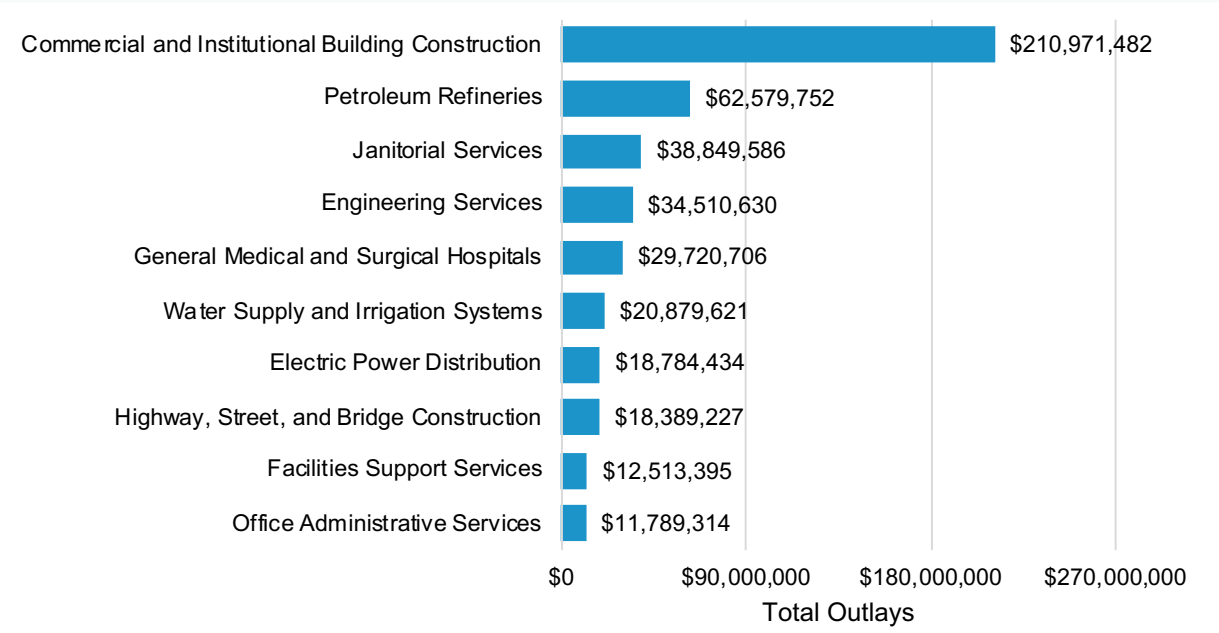
Figure 27 shows that 41% of defense contract spending, or \$211 million, supported Commercial and Institutional Building Construction, the County’s largest defense industry. Numerous other industries were instrumental to the County’s defense economy, including Petroleum Refineries, Janitorial Services, Engineering Services, General Medical and Surgical Hospitals, and Water Supply and Irrigation Systems. These five industries were awarded a combined \$186.5 million — about \$24.4 million less than the sum received by the County’s top industry. Over 220 other defense industries had a presence in the County, collecting \$224.5 million of procurement.

Table 8. Pierce County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$622.0M
Value of Federal Defense Grants	\$11.3M
Number of Defense Industries	229
Number of Defense Contractors	533

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

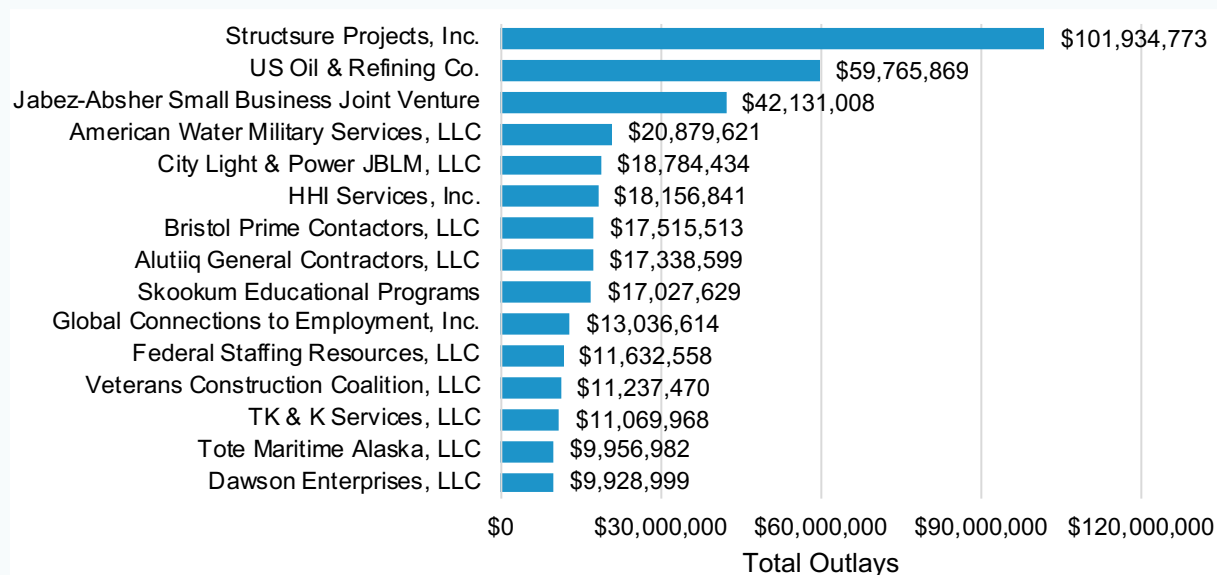
Figure 27. Top Defense Industries in Pierce County, FY23



Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Several major defense contractors are based in Pierce County (see Figure 28). Most notably, FY23 contracts totaled \$101.9 million to StructSure Projects, Inc., \$59.8 million to US Oil and Refining Co., and \$42.1 million to Jabez-Abscher Small Business Joint Venture. Over 540 firms providing an array of goods and services accounted for the remaining \$418.2 million, with total awards to 10 of them exceeding \$10 million.

Figure 28. Top Defense Contractors in Pierce County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Skagit County

Skagit County borders Island and Snohomish Counties, both of which are home to major naval installations. Accordingly, defense industries have a major presence in the County, which was the site of \$53.5 million of defense contracts (including \$4.6 million from USACE civil works) and \$1.5 million of federal grants in FY23 (see Table 9). Defense contracts supported 24 firms across 23 industries.

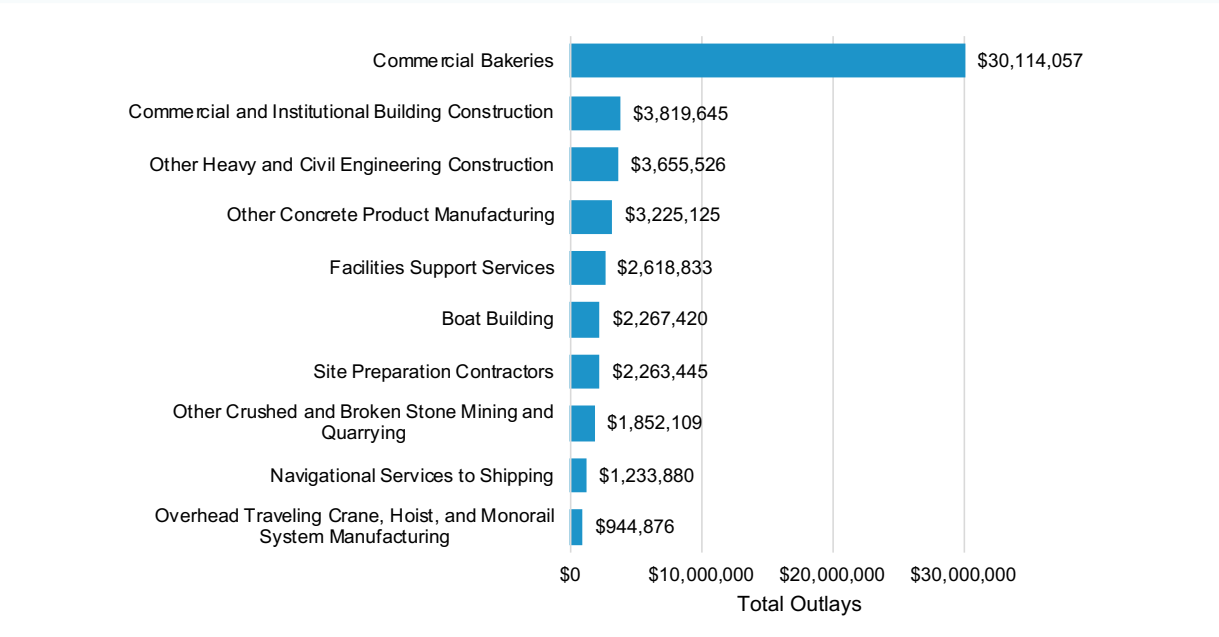
Commercial bakeries represented Skagit County’s largest defense industry. Its federal contracts amounted to \$30.1 million, which accounted for over 56% of the contract spending that occurred in the County (see Figure 29). The total amount awarded to the second-largest industry, Commercial and Institutional Building Construction, was significantly lower, at \$3.8 million. Two other industries were tasked with over \$3 million of contract work: Other Heavy and Civil Engineering Construction and Other Concrete Product Manufacturing. The final \$12.7 million was split among 19 industries.

Table 9. Skagit County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$53.5M
Value of Federal Defense Grants	\$1.5M
Number of Defense Industries	23
Number of Defense Contractors	24

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

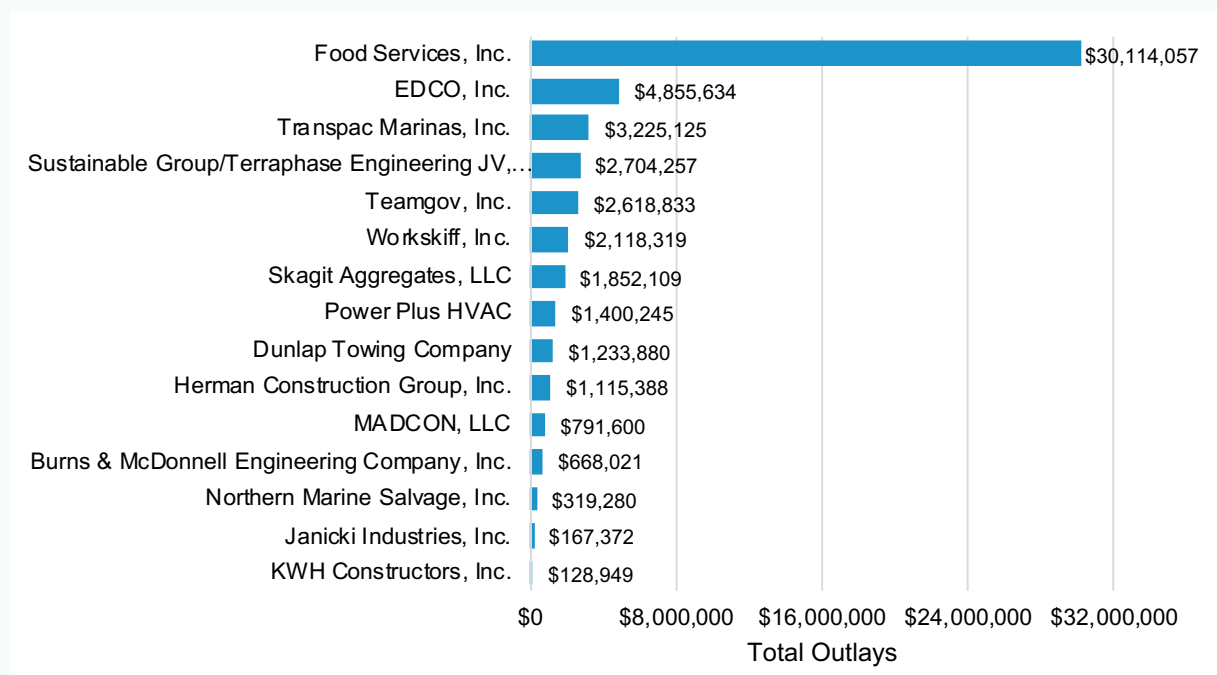
Figure 29. Top Defense Industries in Skagit County, FY23



Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Consistent with the data presented above, Food Services, Inc. was Skagit County's largest federal contractor (see Figure 30). Contracts awarded to this firm totaled \$30.1 million. Other major contractors included EDCO, Inc. and Transpac Marinas, Inc. Both firms, which received a combined \$8.1 million, were classified as part of the Other Concrete Product Manufacturing Industry. The remaining \$15.3 million of federal procurement was distributed among 21 contractors, with the largest sums going to Sustainable Group/Terraphase Engineering JV, LLC; Teamgov, Inc.; and Workskiff, Inc.

Figure 30. Top Defense Contractors in Skagit County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Snohomish County

Snohomish County, which features Naval Station Everett, enjoys a thriving base of defense industries and contractors. In FY23, federal defense contractors received \$317.7 million to provide goods and services in Snohomish County (see Table 10), including \$6.4 million from USACE civil works. An additional \$350,000 funded defense grants. The DoD and USCG relied on 121 industries, consisting of 154 contractors, to perform defense-related work in the County.

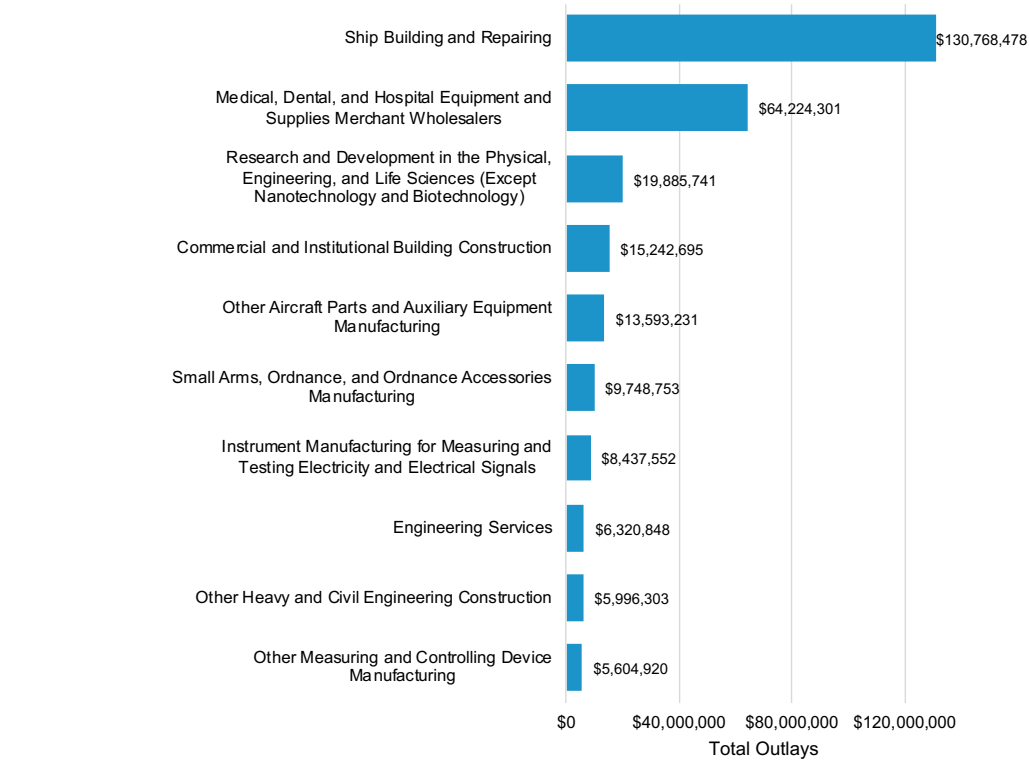
Figure 31 shows that the federal government’s investments disproportionately supported two industries: Ship Building and Repairing and Medical, Dental, and Hospital Equipment and Supplies Merchant Wholesalers. Respectively,

Table 10. Snohomish County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$317.7M
Value of Federal Defense Grants	\$0.35M
Number of Defense Industries	121
Number of Defense Contractors	154

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

Figure 31. Top Defense Industries in Snohomish County, FY23

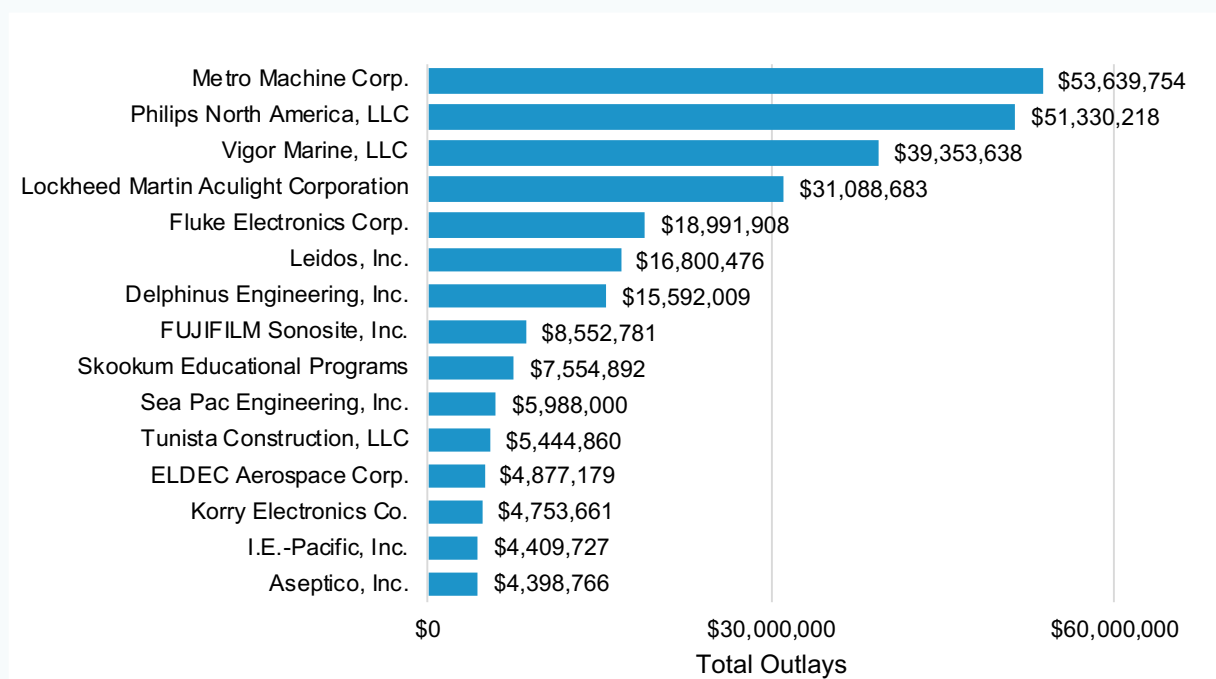


Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

these industries performed \$130.8 million and \$64.2 million of procurement. Defense-related work totaling \$122.7 million was executed across nearly 120 other industries. The largest beneficiaries, which collected between \$13.6 million and \$19.9 million, included Research and Development in the Physical, Engineering, and Life Sciences (Except Nanotechnology and Biotechnology); Commercial and Institutional Building Construction; and Other Aircraft Parts and Auxiliary Equipment Manufacturing.

As mentioned above, 154 firms were retained to perform defense-related work in Snohomish County in FY23 (see Figure 32). The average firm was awarded \$2.1 million. The County's major firms included Metro Machine Corp.; Philips North America, LLC; Vigor Marine, LLC; and Lockheed Martin Aculight Corporation (see Figure 32). Each of these firms received between \$31.1 million and \$53.6 million in federal funding. Other notable awardees were Fluke Electronics Corp.; Leidos, Inc.; and Delphinus Engineering, Inc. Their contracts totaled \$19 million, \$16.8 million, and \$15.6 million, respectively.

Figure 32. Top Defense Contractors in Snohomish County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Spokane County

Fairchild Air Force Base and the industries that serve it stimulate significant federal investment in Spokane County. Nearly \$76 million of defense contracts were performed in the County in FY23 (see Table 11), including \$3.3 million from USACE civil works. The County was not the beneficiary of any new defense grants.

As Figure 33 shows, the Commercial and Institutional Building Construction industry is at the core of Spokane County's defense sector. Contracts awarded to this industry totaled \$27.5 million, which represented about 36% of all contract work performed in the County. Federal investment in the Other

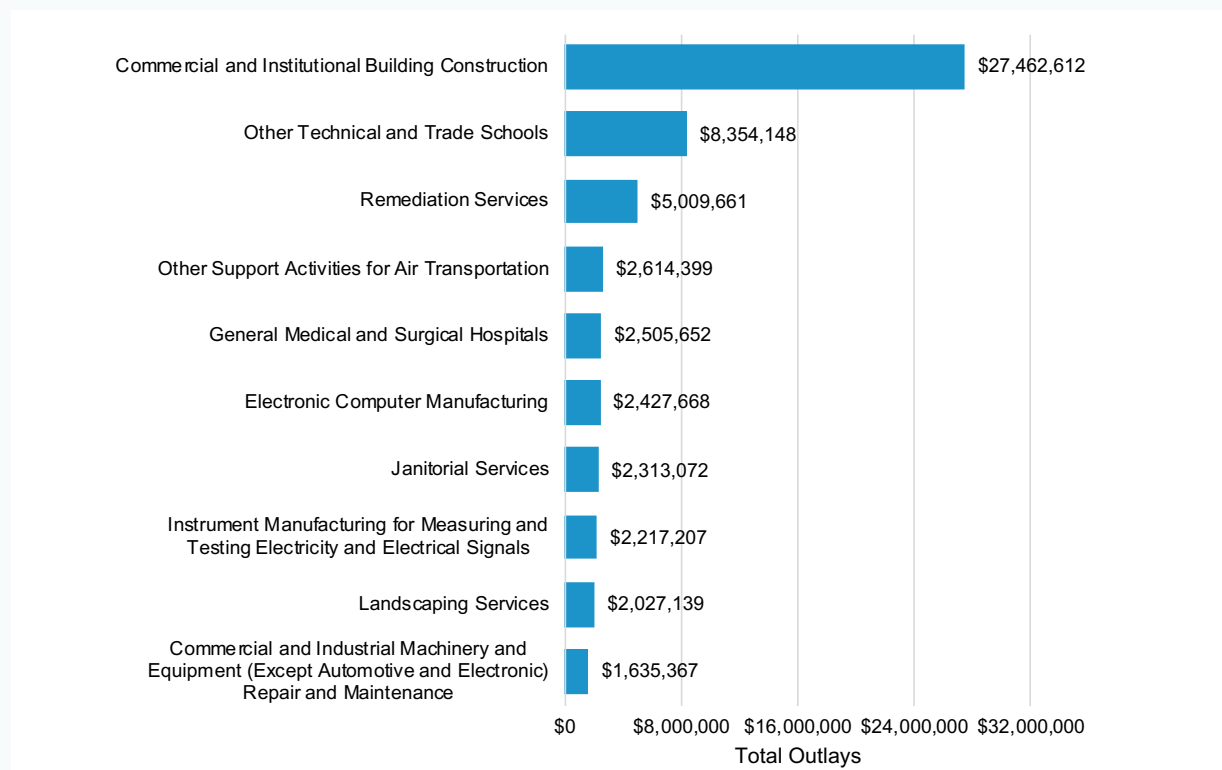
Table 11. Spokane County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$75.8M
Value of Federal Defense Grants	\$0
Number of Defense Industries	164
Number of Defense Contractors	262

Source: Department of the Treasury

Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

Figure 33. Top Defense Industries in Spokane County, FY23



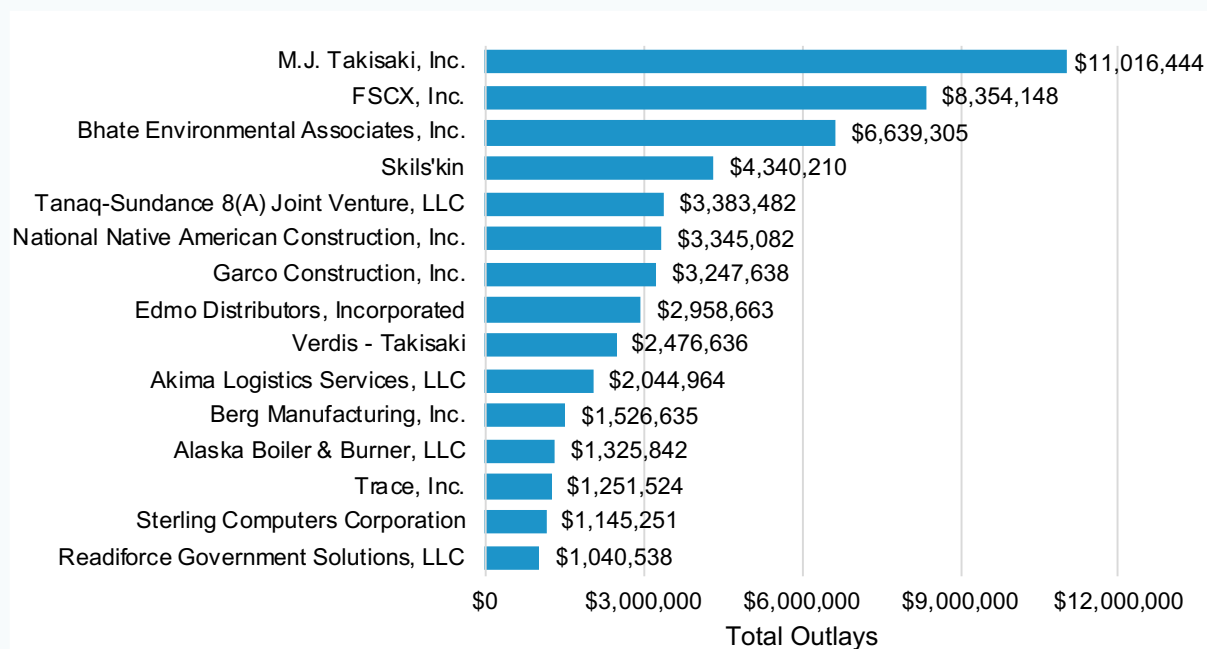
Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Technical and Trade Schools and Remediation Services industries was also significant, totaling \$8.4 million and \$5 million, respectively.

M.J. Takisaki, Inc., a construction company with offices in Spokane and Seattle, secured over \$11 million of federal procurement in FY23, making it Spokane County's preeminent defense contractor (see Figure 34). FSCX, Inc., which provides operations and training services to the military, also had a major presence in the County, performing \$8.4 million of procurement. The DoD also relied heavily on Bhate Environmental Associates, which was tasked with \$6.6 million of contract work.

Figure 34. Top Defense Contractors in Spokane County, FY23



Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Whitman County

Despite not being the home of any installations, Whitman County was the site of \$109.1 million of defense contract spending (including \$84 thousand from USACE civil works) and \$10.1 million of defense grant spending (see Table 12). Defense contracts supported 10 industries. This work was divided among nine contractors.

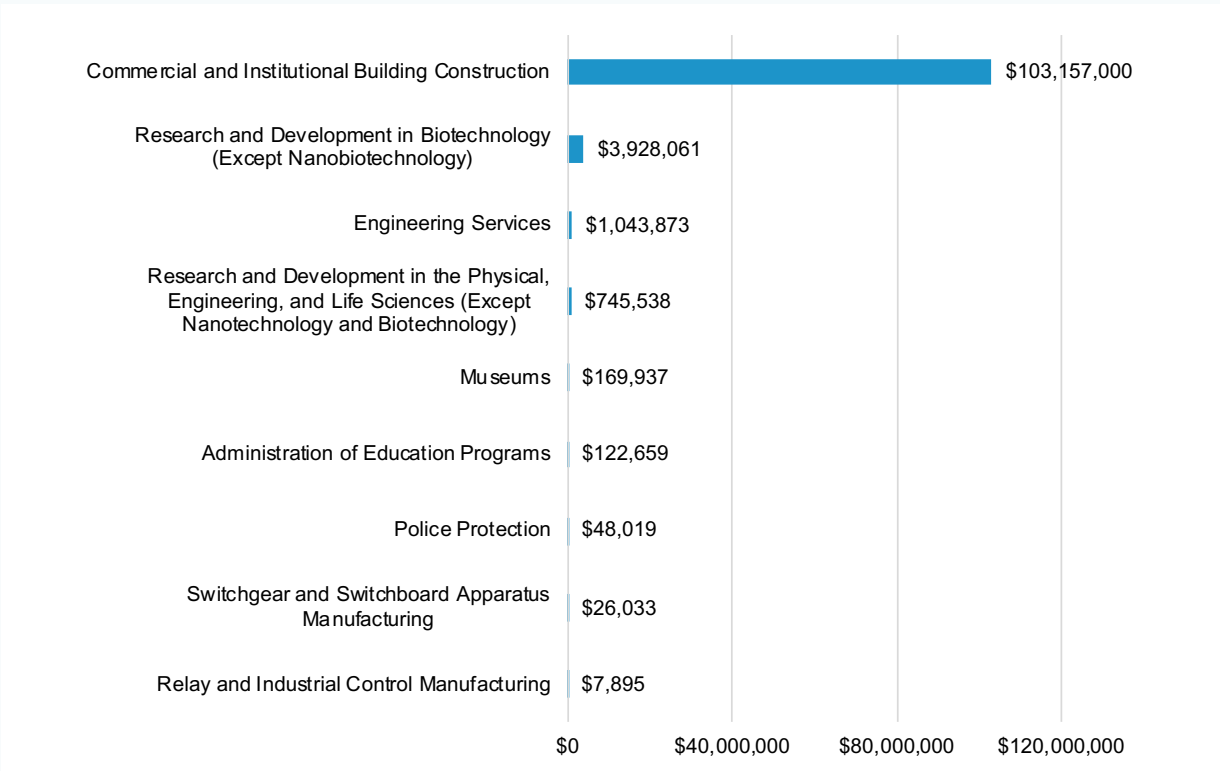
Figure 35 highlights the Commercial and Institutional Building Construction industry's status as the cornerstone of the County's defense economy. In FY23, this industry was the beneficiary of \$103.2 million in federal procurement. The federal government also invested sizeable sums in the County's

Table 12. Whitman County Prime Procurement Overview, FY23

VARIABLE	VALUE
Value of Federal Defense Contracts	\$109.1M
Value of Federal Defense Grants	\$10.1M
Number of Defense Industries	10
Number of Defense Contractors	9

Source: Department of the Treasury
Note: Values, which include negative obligations, are current (FY23) dollars and were computed using prime awards from the Department of Defense and U.S. Coast Guard.

Figure 35. Top Defense Industries in Whitman County, FY23

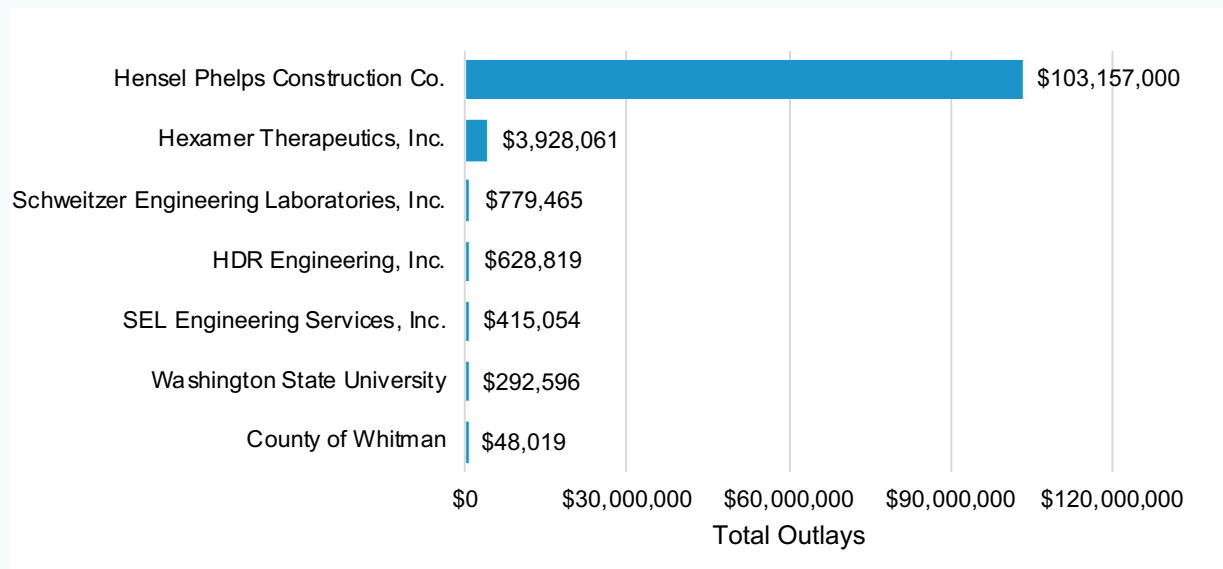


Source: Department of the Treasury
Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Research and Development in Biotechnology (Except Nanobiotechnology) and Engineering Services industries, which collected nearly \$5 million in total. The six other industries represented in the figure were awarded between \$7,900 and \$170,000.

Whitman County's top contractor was Hensel Phelps Construction Co., which received over \$103 million (see Figure 36). Procurement on behalf of Hexamer Therapeutics, Inc., a company renowned for its vaccine research, totaled \$3.9 million, making it the County's second-largest contractor. The remaining \$2.2 million was spread across five different contractors, including the County itself.

Figure 36. Top Defense Contractors in Whitman County, FY23



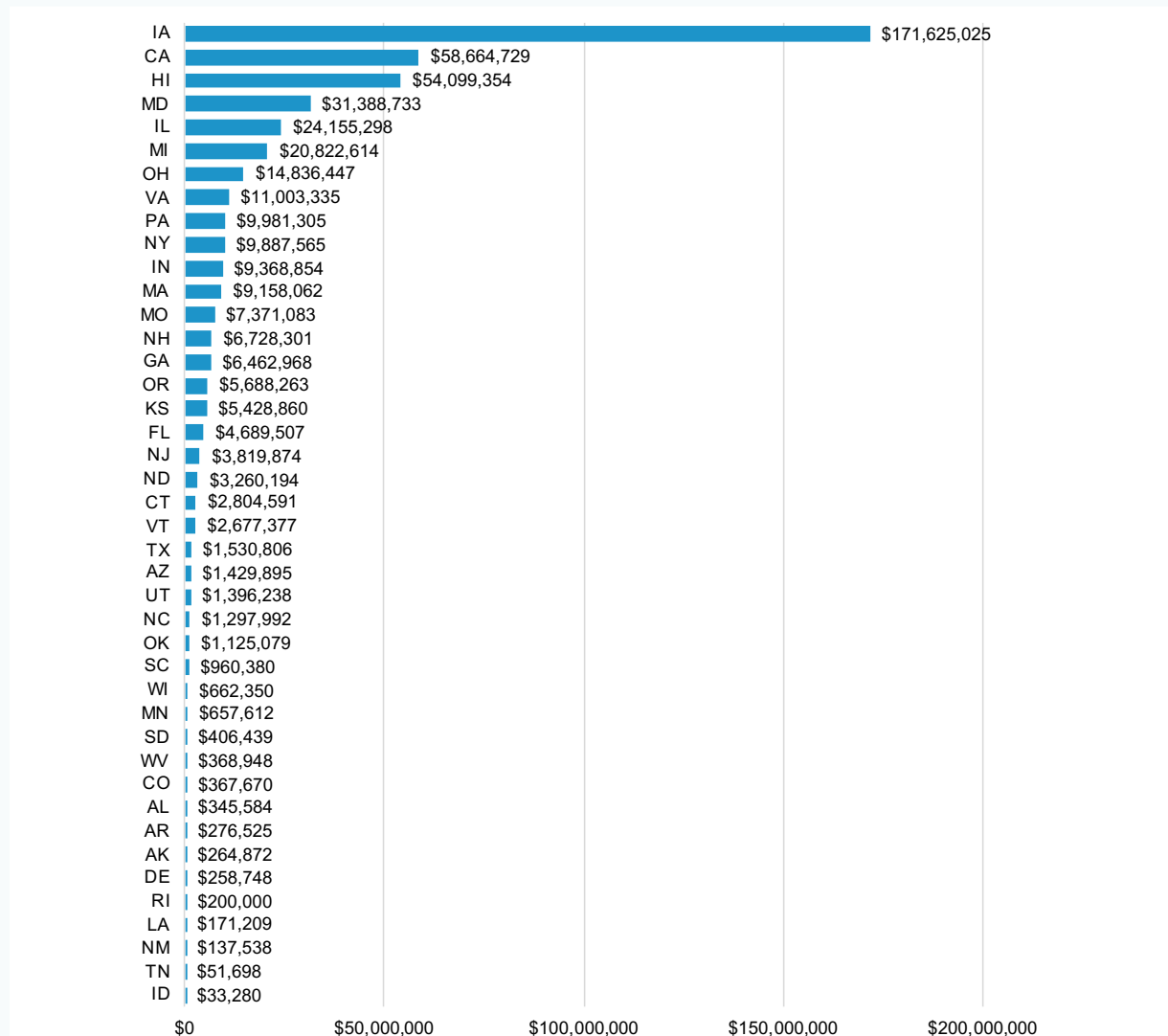
Source: Department of the Treasury

Note: Values are current (FY23) dollars and were computed using all prime contracts awarded by the Department of Defense and U.S. Coast Guard.

Subawards

Prime contractors and grant recipients commonly rely on subcontractors and subgrantees located out of state to execute defense-related work. ***In FY23, Washington-based prime awardees exported \$488.5 million to firms and other organizations that operated outside the state, highlighting the far-reaching impacts of Washington's defense sector.*** Figure 37 ranks states based on the total value of subawards received from Washington. Somewhat surprisingly, subawards to Iowa far exceeded those to any other state. In total, Washington contractors and grant recipients spent \$171.6 million on work performed there. Significantly, Washington also transferred \$58.7 million to California and \$54.1 million to Hawaii. Five other states were the beneficiaries of subawards exceeding \$10 million: Maryland, Illinois, Michigan, Ohio, and Virginia.

Figure 37. Subawards Exported Out of Washington by State, FY23

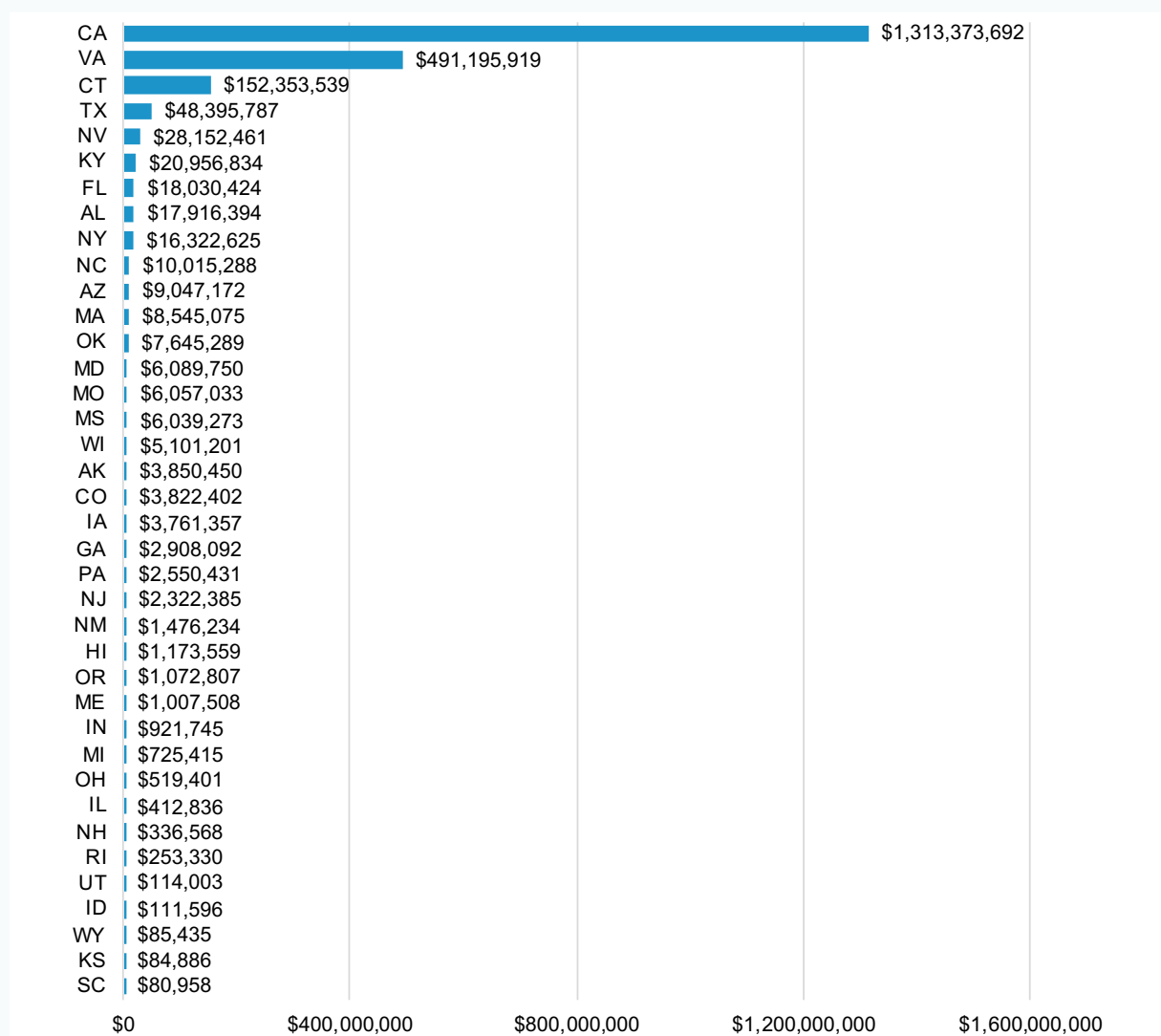


Source: U.S. Department of the Treasury

Note: Values, which include negative obligations, are current (FY23) dollars and were computed using all Department of Defense and U.S. Coast Guard subawards performed outside Washington but with a prime place of performance inside the State.

Conversely, contracts and grants valued at \$2.6 billion were injected into Washington from prime contractors and grant recipients based in other states (see Figure 38). ***This sum significantly exceeded the \$488.5 million of subcontracts and subgrants exported out of Washington, implying that Washington was a net importer of DoD and USCG subawards.*** California was Washington's predominant source of subawards, accounting for about half of the total imported sum (\$1.3 billion). Washington's other major benefactors included Virginia (\$491.2 million) and Connecticut (\$152.4 million). Subawards from 35 other states ranged from about \$81,000 to \$48.4 million.

Figure 38. Subawards Imported into Washington by State, FY23



Source: U.S. Department of the Treasury

Note: Values, which include negative obligations, are current (FY23) dollars and were computed using all Department of Defense and U.S. Coast Guard subawards performed in Washington but with a prime place of performance outside the State.

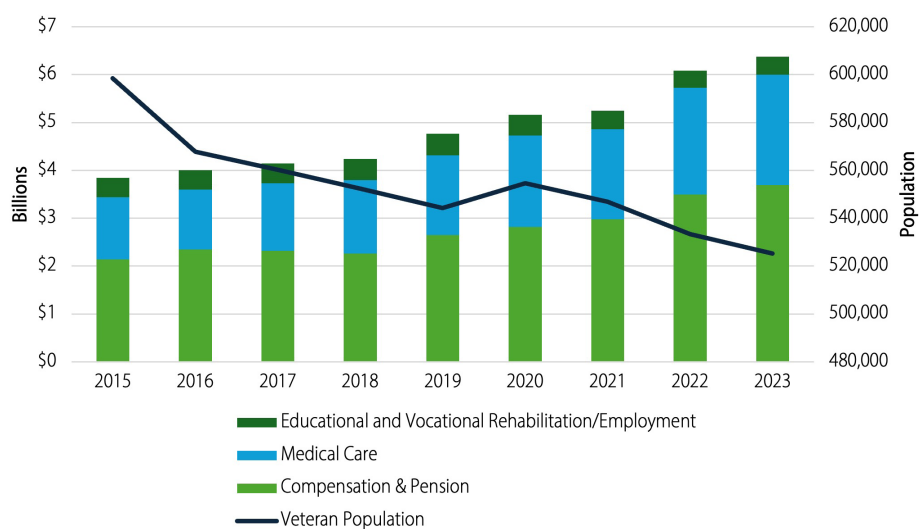


Pensions and Transfers Analysis

Department of Veterans Affairs and DoD pension and transfer payments to the 525,343 veterans (including 72,916 retirees) residing in Washington totaled \$6.4 billion in FY23 (see Figure 39).

Compensation and pension payments equaled \$3.7 billion, accounting for 58% of all VA expenditures. These benefits are generally available to military retirees, disabled veterans, and their survivors. Medical benefits totaled \$2.3 billion, while \$380.5 million was spent on educational and vocational assistance. **Since FY15, even as the veteran population has fallen by over 73,000, total VA expenditures in the State have increased by 66%, thereby outpacing the cumulative rate of inflation (28.6%).** Taken together, these findings imply that the average benefit has become more generous over time. The increase in VA expenditures has been driven by sharp rises in compensation and pension payments, as well as medical benefits. Between FY15 and FY23, compensation and pension payments grew from \$2.1 billion to \$3.7 billion. This coincided with a \$999.3 million increase in medical payments, from \$1.3 billion to \$2.3 billion. Despite rising costs, educational and vocational assistance has decreased since FY19, when it reached \$450.7 million. This decline, which is reflective of national trends, can be attributed to the fact that fewer service members are transitioning out of the service today than in previous years.

Figure 39. VA Pension and Transfer Payments to Washington Veterans, FY15-FY23



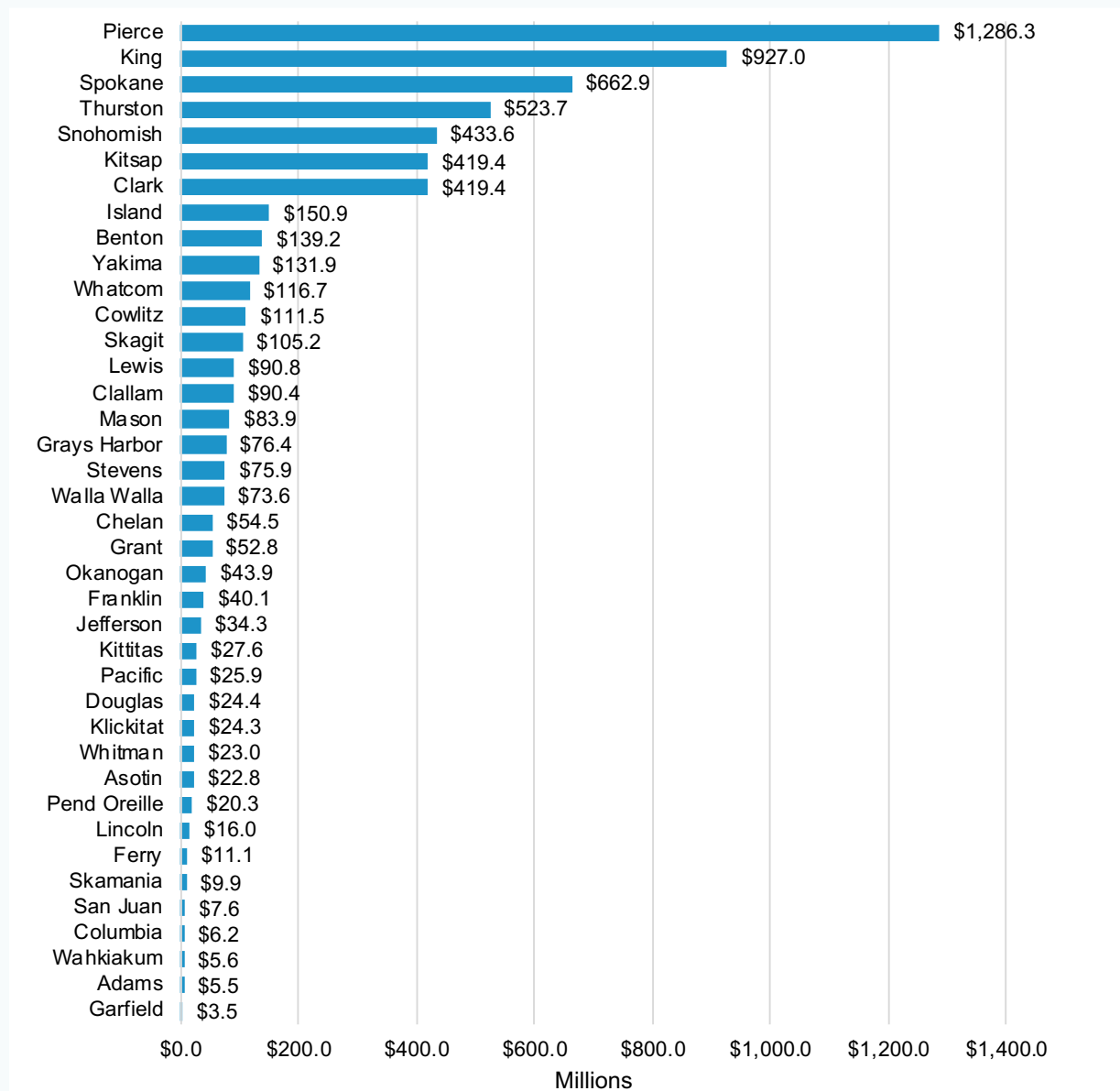
Source: National Center for Veterans Analysis and Statistics

Note: Values are current (FY15 to FY23) dollars.

Washington Statewide Defense Economic Impact Study

Figure 40 presents county-level estimates of VA pension and transfer payments for FY23. **Just four counties accounted for more than half of VA expenditures, suggesting that this spending's economic impacts are likely to be geographically concentrated.** Nearly \$1.3 billion was injected into Pierce County, making it the leading recipient of such payments. As the site of \$927 million of expenditures, King County was the second-largest beneficiary of VA spending, followed by Spokane County (\$662.9 million) and Thurston County (\$523.7 million). Expenditures in Snohomish, Kitsap, and Clark Counties fell within the narrow range of \$419.4 million to \$433.6 million. Pension and transfer payments in the rest of the State ranged from \$3.5 million in Garfield County to \$150.9 million in Island County.

Figure 40. Total VA Pension and Transfer Payments by County, FY23

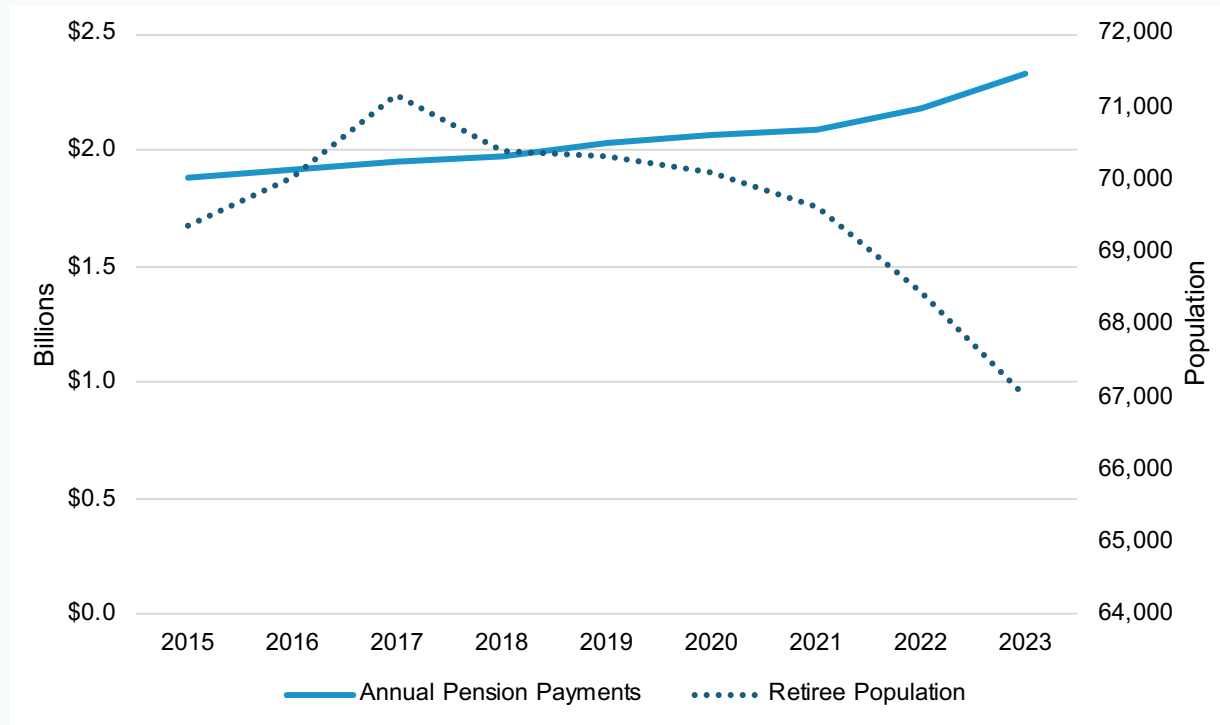


Source: National Center for Veterans Analysis and Statistics

Note: Values are current (FY23) dollars.

As of early 2023, Washington was home to 67,000 military retirees (see Figure 41). **Their total pensions amounted to \$2.3 billion annually.** Reflecting the high inflation that impacted the U.S. from 2021 to 2023, retiree pensions, which are subject to cost-of-living adjustments, rose by \$245 million during this period. In previous years, the increases were more modest, averaging \$42.3 million annually. **The growth in retiree pensions has coincided with a 6% total decline in the retiree population since 2017.**

Figure 41. Total Retiree Pension Payments and Population in Washington, 2015-2023



Source: DoD Office of the Actuary

Note: Values are current (2015 to 2023) dollars. Retirees not receiving payments are excluded from population totals.



Statewide Impact Analysis

Direct Defense Spending

The most current available estimate of total annual defense expenditures is \$27.2 billion (see Table 13). In 2023, personnel compensation was the predominant source of expenditures, with approximately \$11.2 billion distributed among Washington's over 100,000 service members and civilian workers. An additional \$8.7 billion was injected into the State in the form of pensions and transfers to veterans and retirees, thereby fueling household spending. The value of defense procurement and aid was relatively similar, at \$7.3 billion. This category includes not only contracts and grants, but also \$34.7 million in DoD Impact Aid, which plays a vital role in supporting school districts in areas where service members and their children are highly concentrated.

Table 13. Direct Defense Expenditures
in Washington

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$7.3B
Personnel	\$11.2B
Pensions & Transfers	\$8.7B
Total	\$27.2B

Source: Department of the Treasury; Bureau of Economic Analysis; National Center for Veterans Analysis and Statistics; DoD Office of the Actuary; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Economic Impacts

Defense spending had significant direct effects on Washington’s economy. As Table 14 shows, direct defense jobs, which are occupied by DoD and USCG personnel and defense contractor employees, accounted for most of the employment impact. Indirect and induced impacts were also sizeable, highlighting the well-documented ripple effect of defense spending in the economy. These second- and third-order effects are the result of business-to-business transactions and household spending, respectively. Federal procurement, assistance, and payrolls directly supported 157,494 jobs in the DoD, USCG, and private sector. An additional 97,409 jobs resulted from direct defense spending’s indirect and induced effects. ***In total, then, Washington’s economy featured 254,904 defense-related jobs, meaning that over 5% of statewide employment was connected to the defense economy.*** An identical share of statewide labor income was attributable to the military and defense sector.

Defense spending’s critical role in promoting the State’s economic health and growth is also evident in the results. ***Consumer spending, business investments, and exports stimulated by these expenditures contributed \$30.9 billion to Washington’s gross state product, which equaled about 4% of the State’s economy.*** Defense spending also helped finance the operations of the State and its local governments, generating \$1.8 billion in sales, property, and other taxes.

Table 14. Defense-Related Economic Impacts in Washington

IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED TO GSP	STATE & LOCAL TAXES
Direct	157,494	\$15.2B	\$16.9B	\$261.1M
Indirect	9,115	\$822.5M	\$1.4B	\$120.7M
Induced	88,295	\$6.3B	\$12.5B	\$1.4B
Total	254,904	\$22.3B	\$30.9B	\$1.8B

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 15 highlights the critical role that personnel play in driving the defense economy. **The \$11.2 billion that personnel received in compensation added \$16.5 billion to Washington's GSP.** Additionally, via their direct, indirect, and induced effects, federal payrolls supported 147,094 jobs, produced \$14 billion of labor income, and increased state and local tax revenues by \$727.1 million. On a dollar-per-dollar basis, the other spending flows contributed to GSP at a lower rate. Still, the impacts were considerable, as evidenced by procurement and aid's \$6.6 billion contribution to GSP, which in turn generated 41,386 jobs, nearly \$4 billion of labor income, and \$407.6 million of state and local tax revenue. As the model assumes that a share of pension payments is saved by recipients, the \$8.7 billion received by veterans and retirees added \$7.8 billion to GSP, primarily via induced effects. Over 66,000 jobs, \$4.4 billion of labor income, and \$690.1 million in state and local tax revenue resulted from this economic activity.

Table 15. Defense-Related Economic Impacts by Spending Flow in Washington

SPENDING FLOW	EMPLOYMENT	LABOR INCOME	VALUE ADDED TO GSP	STATE & LOCAL TAXES
Personnel	147,094	\$14.0B	\$16.5B	\$727.1M
Procurement & Aid	41,386	\$3.9B	\$6.6B	\$407.6M
Pensions & Transfers	66,424	\$4.4B	\$7.8B	\$690.1M
Total	254,904	\$22.3B	\$30.9B	\$1.8B

Source: IMPLAN

Note: Impacts are reported in 2024 dollars. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

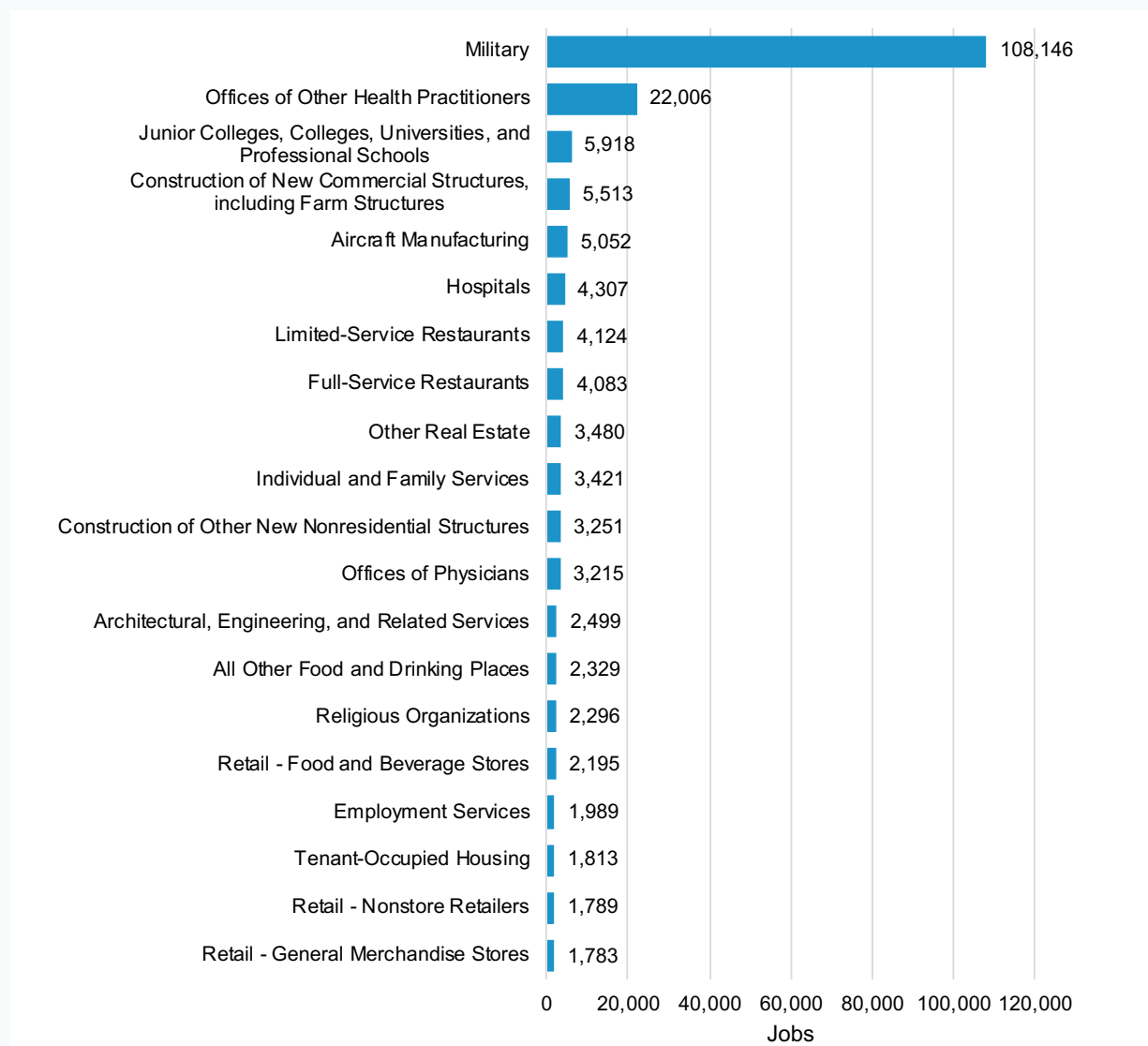
Washington Statewide Defense Economic Impact Study

Figure 42 leverages the IMPLAN model results to identify the industries with the most defense-related jobs.

Significantly, approximately 147,000, or 58%, of these jobs were in industries other than the military, highlighting defense spending's sweeping economic impacts. Largely due to the State's substantial population of VA benefit recipients, Offices of Other Health Practitioners accounted for over 22,000 jobs, making it the largest non-military industry by defense-related employment. DoD and USCG spending generated a significant number of jobs in several other industries, namely Junior Colleges, Colleges, Universities, and Professional Schools; Construction of New Commercial Structures, including Farm Structures; Aircraft Manufacturing; Hospitals; Limited-Service Restaurants; and Full-Service Restaurants.

Overall, 68% of Washington's industries experienced additional employment due to the impact of defense spending.

Figure 42. Top Industries by Defense-Related Employment Impacts in Washington



Source: IMPLAN

Note: Impacts include direct, indirect, and induced jobs.

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Military Installation and U.S. Coast Guard Analysis

Fairchild Air Force Base

Federal expenditures in support of Fairchild Air Force Base totaled \$556.2 million (see Table 16). Defense contracts and grants amounted to \$77.8 million, of which \$2.1 million was DoD Impact Aid. Personnel compensation accounted for the remaining \$478.4 million.

Fairchild Air Force Base's total effects on employment, labor income, GSP, and state and local taxes are presented in Table 17. The economic impacts of Fairchild Air Force Base reverberate throughout not only Spokane County but the rest of the State as well. The installation's operations were supported by 5,448 DoD personnel and employees of federal contractors. As defense expenditures rippled through the economy, they generated an additional 2,328 jobs, meaning 7,776 jobs were ultimately due to the installation's presence. On average, these workers received nearly \$84,000 in labor income. Fairchild Air Force Base added \$778.4 million to GSP. For context, Spokane County's economy was valued at \$38.5 billion. Additionally, the installation accounted for \$41.6 million in state and local tax revenues.

Table 18 provides separate economic impact estimates for the two spending flows that power Fairchild Air Force Base: personnel and procurement. The findings demonstrate that the personnel who support the operations of Fairchild Air Force Base are the driving force behind its economic impact. Nearly 89% of the installation's employment impact stemmed from personnel. Similarly, personnel accounted for 90% and 81% of the installation's GSP and tax impacts, respectively.

Table 16. Fairchild Air Force Base
Direct Spending, FY23

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$77.8M
Personnel	\$478.4M
Total	\$556.2M

Source: Department of the Treasury; Bureau of Economic Analysis; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Table 17. Fairchild Air Force Base Economic Impacts

IMPACT TYPE	DIRECT	INDIRECT	INDUCED	Total
Employment	5,448	125	2,203	7,776
Labor Income	\$514.0M	\$9.3M	\$129.2M	\$652.5M
Value added to GSP	\$508.3M	\$16.2M	\$253.9M	\$778.4M
State and Local Taxes	\$6.8M	\$1.8M	\$33.1M	\$41.6M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 18. Fairchild Air Force Base Economic Impacts by Spending Flow

IMPACT TYPE	PERSONNEL	PROCUREMENT	Total
Employment	6,906	870	7,776
Labor Income	\$596.3M	\$56.2M	\$652.5M
Value added to GSP	\$697.9M	\$80.5M	\$778.4M
State and Local Taxes	\$33.9M	\$7.8M	\$41.6M

Source: IMPLAN

Note: Impacts are reported in 2024 dollars.

Joint Base Lewis-McChord

Approximately \$6.6 billion was injected into Washington's economy due to the presence of Joint Base-Lewis McChord (see Table 19). Nearly \$5.9 billion came in the form of compensation received by personnel, with another \$683 million in the form of procurement and aid, including \$15.1 million in DoD Impact Aid.

Washington's economy benefits significantly from the presence of Joint Base Lewis-McChord (see Table 20). The installation was responsible for 78,890 jobs, over 26% of which were "spin-off" jobs that resulted from business-to-business transactions and household spending. These workers received \$7.6 billion of labor income. Overall, JBLM generated \$9 billion of economic impact. Notably, this activity was concentrated in Pierce and Thurston Counties, whose economies were collectively valued at approximately \$83 billion. This economic activity added nearly \$421 million to state and local tax revenues.

JBLM's economic impacts were overwhelmingly derived from its workforce. Indeed, personnel compensation supported 72,848 jobs while contributing \$8.3 billion to Washington's GSP (see Table 21). The latter finding implies that nearly 27% of Washington's defense economy was attributable to JBLM personnel. Over 6,000 workers, mostly in Pierce and Thurston Counties, owed their jobs to procurement, which also generated \$681.4 million of GSP and nearly \$62 million in state and local tax revenue.

Table 19. Joint Base Lewis-McChord
Direct Spending, FY23

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$682.9M
Personnel	\$5.9B
Total	\$6.6B

Source: Department of the Treasury; Bureau of Economic Analysis; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Table 20. Joint Base Lewis-McChord Economic Impacts

IMPACT TYPE	DIRECT	INDIRECT	INDUCED	Total
Employment	56,985	1,024	20,881	78,890
Labor Income	\$6.2B	\$86.4M	\$1.3B	\$7.6B
Value added to GSP	\$6.1B	\$150.6M	\$2.7B	\$9.0B
State and Local Taxes	\$69.6M	\$17.1M	\$334.1M	\$420.9M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 21. Joint Base Lewis-McChord Economic Impacts by Spending Flow

IMPACT TYPE	PERSONNEL	PROCUREMENT	Total
Employment	72,848	6,042	78,890
Labor Income	\$7.2B	\$470.1M	\$7.6B
Value added to GSP	\$8.3B	\$681.4M	\$9.0B
State and Local Taxes	\$359.0M	\$61.8M	\$420.9M

Source: IMPLAN

Note: Impacts are reported in 2024 dollars.

Naval Station Everett

Table 22 reveals that spending in support of Naval Station Everett amounted to \$610.2 million. Procurement and aid directed to the installation and the surrounding community totaled \$317 million, including \$123 thousand in DoD Impact Aid. Personnel compensation exceeded \$293 million.

As Table 23 shows, Naval Station Everett directly supported the employment of 5,246 personnel and contract workers. The installation's indirect and induced economic impacts accounted for an additional 1,503 jobs, primarily in Snohomish County. Overall, then, 6,748 jobs were the result of installation-related spending. The \$623 million that Naval Station Everett added to the economy stemmed, in large part, from the \$487 million of labor income that workers spent in the local economy. Naval Station Everett generated almost \$29 million in state and local tax revenue.

Naval Station Everett's economic impacts were mostly attributable to personnel (see Table 24). Indeed, of the 6,748 jobs accounted for by the installation, over 5,000 were the product of personnel compensation. However, the \$622.8 million total contribution to GSP was more evenly split between personnel and procurement, with the latter accounting for nearly 40% of the installation's economic value. Moreover, procurement generated \$15 million in state and local tax impacts, compared to \$13.9 million for personnel.

Table 22. Naval Station Everett
Direct Spending, FY23

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$317.0M
Personnel	\$293.2M
Total	\$610.2M

Source: Department of the Treasury; Bureau of Economic Analysis; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Table 23. Naval Station Everett Economic Impacts

IMPACT TYPE	DIRECT	INDIRECT	INDUCED	Total
Employment	5,246	433	1,070	6,748
Labor Income	\$383.6M	\$38.1M	\$65.4M	\$487.0M
Value added to GSP	\$424.4M	\$62.5M	\$135.9M	\$622.8M
State and Local Taxes	\$6.8M	\$5.1M	\$17.1M	\$28.9M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 24. Naval Station Everett Economic Impacts by Spending Flow

IMPACT TYPE	PERSONNEL	PROCUREMENT	Total
Employment	5,019	1,730	6,748
Labor Income	\$337.3M	\$149.7M	\$487.0M
Value added to GSP	\$377.7M	\$245.1M	\$622.8M
State and Local Taxes	\$13.9M	\$15.0M	\$28.9M

Source: IMPLAN

Note: Impacts are reported in 2024 dollars.

Naval Air Station Whidbey Island

Naval Air Station Whidbey Island attracted \$1.4 billion of federal expenditures to Washington (see Table 25). Personnel compensation represented 86% of this spending. The remaining \$163.6 million came in the form of procurement and aid, including \$7.3 million in DoD Impact Aid.

Table 26 underscores the significant economic value that NAS Whidbey Island generates for Washington. In 2023, it supported 14,297 jobs and generated \$1.5 billion of labor income. These effects were overwhelmingly direct in nature, highlighting the critical role of DoD personnel and federal contractor employees in the local economy. Defense spending's first-order impacts on GSP were also significant, equaling \$1.3 billion. By spurring business-to-business purchases in the supply chain and household spending on goods and services, defense expenditures added another \$5.5 million and \$413.8 million to GSP, respectively. Mainly due to its induced effects, defense spending accounted for \$73.7 million of state and local tax revenue.

Table 27 demonstrates that federal payrolls were responsible for the bulk of NAS Whidbey Island's economic impact. Personnel compensation supported 13,205 jobs, which generated \$1.4 billion of labor income, while contributing \$1.6 billion to GSP and \$67 million in state and local tax revenue. Procurement also stimulated significant economic activity, accounting for the remaining 1,093 defense-related jobs, \$108.2 million of labor income, \$130 million of economic impact, and \$6.7 million in state and local tax revenue.

Table 25. Naval Air Station Whidbey Island Direct Spending, FY23

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$163.6M
Personnel	\$1.2B
Total	\$1.4B

Source: Department of the Treasury; Bureau of Economic Analysis; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Table 26. Naval Air Station Whidbey Island Economic Impacts

IMPACT TYPE	DIRECT	INDIRECT	INDUCED	Total
Employment	10,725	41	3,531	14,297
Labor Income	\$1.3B	\$3.2M	\$183.8M	\$1.5B
Value added to GSP	\$1.3B	\$5.5M	\$413.8M	\$1.7B
State and Local Taxes	\$11.3M	\$0.6M	\$61.8M	\$73.7M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 27. Naval Air Station Whidbey Island Economic Impacts by Spending Flow

IMPACT TYPE	PERSONNEL	PROCUREMENT	Total
Employment	13,205	1,093	14,297
Labor Income	\$1.4B	\$108.2M	\$1.5B
Value added to GSP	\$1.6B	\$130.0M	\$1.7B
State and Local Taxes	\$67.0M	\$6.7M	\$73.7M

Source: IMPLAN

Note: Impacts are reported in 2024 dollars.

Naval Base Kitsap and Naval Magazine Indian Island

As spending associated with Naval Base Kitsap and Naval Magazine Indian Island occurs in overlapping counties, this analysis presents combined findings for the two installations. Approximately \$5.6 billion in defense spending was directed to Naval Base Kitsap and Naval Magazine Indian Island (see Table 28). Personnel compensation accounted for \$4.4 billion, whereas procurement and aid totaled \$1.2 billion (including \$13.1 million in DoD Impact Aid).

Over 61,000 jobs, most of which were located Kitsap, Jefferson, and Mason Counties, resulted from the operations of Naval Base Kitsap and Naval Magazine Indian Island (see Table 29). These workers received nearly \$6 billion of labor income. The economic activity attributable to the two installations, which helped generate over \$295 million in state and local tax revenue, was valued at \$6.8 billion. For context, the gross regional product (GRP) of Kitsap, Jefferson, and Mason Counties was \$21.3 billion.

Table 30 further supports the notion that personnel are the engine behind the installations' economic impacts. Of the over 61,000 jobs tied to Naval Base Kitsap and Naval Magazine Indian Island, 85% were attributable to personnel compensation and spending in the economy. Similarly, personnel, who generated \$5.1 billion of labor income, contributed \$5.8 billion to GSP, compared to \$1 billion for procurement. The installations' tax impacts were also primarily the result of personnel.

Table 28. Naval Base Kitsap and Naval Magazine Indian Island
Direct Spending, FY23

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$1.2B
Personnel	\$4.4B
Total	\$5.6B

Source: Department of the Treasury; Bureau of Economic Analysis; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Table 29. Naval Base Kitsap and Naval Magazine Indian Island Economic Impacts

IMPACT TYPE	DIRECT	INDIRECT	INDUCED	Total
Employment	45,869	527	14,708	61,104
Labor Income	\$5.1B	\$37.3M	\$777.4M	\$5.9B
Value added to GSP	\$5.0B	\$61.3M	\$1.7B	\$6.8B
State and Local Taxes	\$47.8M	\$5.6M	\$241.8M	\$295.2M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 30. Naval Base Kitsap and Naval Magazine Indian Island Economic Impacts by Spending Flow

IMPACT TYPE	PERSONNEL	PROCUREMENT	Total
Employment	51,955	9,149	61,104
Labor Income	\$5.1B	\$830.5M	\$5.9B
Value added to GSP	\$5.8B	\$1.0B	\$6.8B
State and Local Taxes	\$242.5M	\$52.7M	\$295.2M

Source: IMPLAN

Note: Impacts are reported in 2024 dollars.

U.S. Coast Guard

This study analyzes the economic impact of the USCG across the entire State of Washington, which has a large presence in Seattle and operates at approximately 20 locations statewide. The USCG was the recipient of \$299 million in federal expenditures (see Table 31). Personnel costs totaled nearly \$180 million, and procurement amounted to approximately \$120 million.

As Table 32 shows, USCG activities across the State generated 3,358 jobs in total. These jobs generated \$305.4 million of labor income and thus helped account for \$385.3 million of economic value. The businesses and workers who benefited from defense spending, either via direct, indirect, or induced means, paid \$19.5 million in state and local taxes.

Despite representing a small share of Washington's defense population, Coast Guard personnel and contract workers generated considerable economic impacts, as documented in Table 33. Specifically, they accounted for 2,419 jobs, \$223.9 million of labor income, \$264 million of GSP, and \$11.7 million in state and local taxes. The remaining impacts stemmed from procurement.

Table 31. U.S. Coast Guard
Direct Spending (Statewide)

SPENDING FLOW	EXPENDITURES
Procurement & Aid	\$119.4M
Personnel	\$179.6M
Total	\$299.0M

Source: Department of the Treasury; Bureau of Economic Analysis; National Association of Federally Impacted Schools

Note: Values are current (2023) dollars. Due to rounding, spending flows may not sum to total expenditures. Procurement & Aid includes DoD and USCG contracts and grants, as well as DoD Impact Aid.

Table 32. U.S. Coast Guard Economic Impacts (Statewide)

IMPACT TYPE	DIRECT	INDIRECT	INDUCED	Total
Employment	2,337	157	863	3,358
Labor Income	\$230.5M	\$14.3M	\$60.7M	\$305.4M
Value added to GSP	\$239.6M	\$24.1M	\$121.6M	\$385.3M
State and Local Taxes	\$3.4M	\$2.1M	\$14.0M	\$19.5M

Source: IMPLAN

Note: Due to rounding, estimates for direct, indirect, and induced impacts may not sum to totals. Impacts are reported in 2024 dollars.

Table 33. U.S. Coast Guard Economic Impacts by Spending Flow (Statewide)

IMPACT TYPE	PERSONNEL	PROCUREMENT	Total
Employment	2,419	939	3,358
Labor Income	\$223.9M	\$81.5M	\$305.4M
Value added to GSP	\$264.0M	\$121.4M	\$385.3M
State and Local Taxes	\$11.7M	\$7.8M	\$19.5M

Source: IMPLAN

Note: Impacts are reported in 2024 dollars.

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Military Spouse Employment Analysis

Military spouses play a vital role in defense communities across the nation, whether by providing support to their service members, raising children, having careers, volunteering, or numerous other unquantifiable ways. This study specifically aims to measure the economic impact of military spouse employment. Unfortunately, detailed data at the installation level is not available, so this study used statewide estimates from the DoD's 2022 Demographics Report and a number of assumptions. With a 52.4% marriage rate ¹ among active-duty service members in Washington, a 21% unemployment rate among military spouses ², and 57,838 active-duty service members across Washington ³, ***we estimate about 23,943 working military spouses. These spouses, working in a variety of industries, contribute an estimated \$935 million to Washington's GSP (on top of the \$30.9 billion impact of defense activity).*** Building upon Washington's efforts thus far to expand license reciprocity and other opportunities for military spouses will enable more to achieve their career goals, thereby increasing quality of life for military families, attracting more DoD investment, and reaping more economic benefit from defense activity in the future.

¹ 2022 Demographics Interactive Profile of the Military Community

² <https://www.defense.gov/News/Feature-Stories/Story/Article/3558394/military-spouses-to-gain-more-job-ops-thanks-to-growing-employment-partnership>

³ According to DMDC, as of September 2023



State Approaches to Military Engagement

Key to encouraging DoD investment and enhancing service member quality of life is having a robust military engagement organization at the state level that can advocate for transition, education, and employment assistance as well as full benefits and healthcare. Different states have different approaches to conducting their military affairs, but the states with some of the most defense activity have a common trait: a centralized organization composed of military and defense subject matter experts that reports to the Governor and communicates directly with installation leadership.

California

The State of California created the Governor's Military Council in 2013 to protect California's military installations and operations amid ongoing DoD budget cuts and to leverage changes in federal military strategy to position the state to continue innovation and leadership in its military missions. The Council provides insight and guidance to state leaders who are developing a strategy to support and grow military operations in the Golden State. Council members are appointed by the Governor and include bipartisan representatives from both houses of the State Legislature, retired military personnel with leadership experience at California installations and other individuals with relevant experience, the Adjutant General of California, the Secretary of the California Department of Veterans Affairs, the Director of the Governor's Office of Business and Economic Development, and the Director of the Governor's Office of Planning and Research. Its functions include:

- Articulating the unique value of California's military bases, national security installations, defense companies, and workforce to policy makers and the general public;
 - Improving the operating environment for military bases, national security operations, veterans and their families, and the defense industrial base, including small businesses and educational and research facilities in the state, serving as a primary point of contact on behalf of the state of California for these activities;
 - Identifying important policy decisions that federal, state, and local governments can make to strengthen military/national security functions in California;
 - Empowering local military base support organizations throughout the state that are supporting installations;
 - Advising and reporting to the Governor and Legislature on strategic actions to accomplish the Council's purpose; and
 - Performing any other duties to advance the Council's purpose or as directed by the Governor.
-

Connecticut

The State of Connecticut established its Office of Military Affairs (OMA) in 2007 within its Department of Economic and Community Development (DECD). The OMA promotes and coordinates statewide activities that enhance the quality of life of personnel from all branches of the military and their families and to expand the military and homeland security presence in the state. The OMA has four missions:

- Coordinate efforts to prevent the closure or downsizing of Naval Submarine Base New London
- Support Connecticut's military families and enhance their quality of life
- Advocate for Connecticut's defense industry
- Encourage the retention of established military and defense industry missions and the relocation of new ones to the state
- Serve as liaison to the Connecticut congressional delegation on defense and military issues

The OMA is led by an Executive Director who reports directly to the Office of the Governor. The OMA is active within the Association of Defense Communities

Florida

Florida has long had a military engagement organization operating at the state level, which it recently reorganized to create the Office of Military and Defense within the Florida Department of Commerce (FloridaCommerce). The Office of Military and Defense engages with Florida's military and defense communities to streamline business and economic development efforts, provide further support for Florida's military families, and protect military installations. Florida also has the Florida Defense Alliance, which serves as an overall advisory body for the defense-related activity of FloridaCommerce. The Florida Defense Alliance is a grassroots consortium of representatives of defense-related organizations including government, defense industry, economic development organizations, and other interested parties who come together in order to protect, promote, and enhance the military value of Florida's installations and missions.

Virginia

The Commonwealth of Virginia has a Secretary of Veterans and Defense Affairs who reports directly to the Governor and oversees four lines of effort concerning state/military relations. First is the Department of Veterans Services, whose mission is to serve Virginia's veterans, Guardsmen, Reservists, and their family members by ensuring they receive timely transition, employment and education assistance, benefits, health care and long-term care, and the recognition they have earned through service to our nation and the Commonwealth. Second, the Secretariat serves as the primary liaison for the Commonwealth to the United States Department of Defense and its military communities and hosts a quarterly Virginia Military Advisory Council of all the state's installation commanders and key community stakeholders. Third, the Secretary oversees the Virginia Department of Military Affairs (DMA), whose mission is to effectively integrate military and homeland defense capabilities into applicable state operations (including the Virginia Militia and Virginia Army and Air National Guard). Fourth, the Secretariat oversees the Veterans Services Foundation (VSF), which provides supplemental funding to programs, services, and initiatives of the Department of Veteran Services when state and federal resources are unavailable.

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Conclusion

Defense spending in Washington contributes nearly \$31 billion to the State's economy, which is about 4% of GSP. The total impact generates over 250,000 jobs across 68% of Washington's industries. These impacts extend far beyond installation boundaries as service member and veteran spending and procurement dollars ripple through the economy into every corner of Washington. With incomparable access to the Pacific theater and a variety of training environments, Washington is vital to our nation's defense and power projection capabilities. State leadership has a prime opportunity to extend its longstanding record of defense support to attract additional missions, enhance service member quality of life, and promote the defense economy, thereby contributing significantly to our national defense while reaping the economic benefits for the residents of Washington.



Appendix:

INSTALLATION ENGAGEMENT REPORTS

Appendix: Installation Engagement Reports

The following appendix contains reports for each engagement between the Matrix team and installation leadership and subject matter experts. The recommendations and analysis in this report are based on these engagements, and they do not necessarily reflect the observations or recommendations of the Legislative Committee on Economic Development and International Relations.

Fairchild Air Force Base

Date Conducted: April 17, 2024

Participants

- Jeff Johnson, MSG Deputy Commander
- Kevin Towhig, Honorary Commander, Previous Chair of Forward Fairchild
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Dave Houge, Matrix Design Group
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AEC

Identified Strengths

- **Quality of life:** The surrounding area has great outdoor activities, weather, and lots of entertainment in the City's downtown. It is a desirable place for people to retire and stay after their military service.
- **Good training environment:** Good flying weather prevails from April to October, and the Military Operating Area (MOA) over central Washington (managed by NAS Whidbey Island) provides lots of airspace. Multiple training environments (mountain, tropical, etc.) exist for Survival, Evasion, Resistance, and Escape (SERE) training, and airspace is generally uncrowded.
- **Relevant missions:** Fairchild AFB hosts over 6,000 students per year for SERE school. Additionally, the installation has two refueling wings – a key capability for the Air Force.
- **Location:** Fairchild AFB's geographic location on the West Coast allows for long-range logistics support operations for the Pacific area of operations. The increased focus on the Pacific area of operations in the past several years heightens the importance of Fairchild's mission, safeguarding against potential reduction or closure.
- **Community partnerships:** Fairchild AFB has multiple mutually beneficial agreements with its surrounding communities:
 - Forward Fairchild organization – the supporting community-military organization
 - IGSA for a local firing range paid for by the DoD and built by the community – enhances capabilities for unit training
 - Utility partnership with Bonneville Power Administration
 - Cooperation with the local Medical Lake School District, including working to developing a teacher compact
 - Strong partnership with Medical Lake Fire since the installation's founding

Identified Weaknesses

- **Childcare:** There is a large shortage of childcare providers, especially on the installation because providers frequently get certified through the installation and DoD processes, then leave for higher pay. A shortage of infant care also exists, especially in the neighboring community.
- **Housing:** Both affordability and availability of housing are weaknesses, though both have stabilized since the COVID-19 pandemic, and BAH has increased. Some issues exist with coordinating and constructing further development.
- **Encroachment:** Encroachment is a constant, unavoidable concern for military installations, particularly those heavily based upon aircraft missions. Since Fairchild AFB is located near a major metropolitan area, encroachment will be a factor to consider in the future.
- **PFAS chemicals:** Fairchild AFB pays for Airway Heights to use Spokane water and to treat Airway Heights water for PFAS. The installation needs assistance from Washington's Department of Ecology to explore a new source of water for Airway Heights.
- **Installation access points:** Only one installation gate is open 24 hours a day due to Security Forces manning issues. Another gate is in the process of being upgraded to 12 hours a day. Thorpe Road is in disrepair, and two DCIP packages were not approved to fund repairs. Direct Congressional funding is being sought.
- **Jet fuel supply:** There is not enough jet fuel in the Columbia basin to sustain installation operations, and there is no rail siding at Fairchild AFB to deliver fuel. There is a pipeline solution to bring fuel from Montana, but it is a long process and there is no redundancy to insulate that supply from any problems.

Identified Opportunities

- **EUL:** The Spokane Fire Department wants to build a fire station and training center on Fairchild AFB. This will further improve the already excellent working relationship between the local emergency medical services departments and the installation and provide greater capabilities to fire services on the installation and in the surrounding communities.
- **Available space:** Fairchild AFB has significant room for mission expansion and is projected to gain additional personnel and missions. These include the relocation of the downtown Navy Operations Support Center, possible National Reconnaissance Office expansion, and 125 to 130 projected additional Aircrew Flight Equipment (AFE) personnel.
- **MILCON projects:** Fairchild AFB excelled in demolishing unneeded or uninhabitable buildings but now has significant unfunded MILCON requirements to provide replacement spaces.
 - Base Operations Facility demolition and rebuild; currently \$55 million funded and intended to be under contract by August 2024.
 - Logistics Readiness Flight (LRF) building for KC-135 parts
 - Command Squadron and Finance building renovation
 - Civil Engineer complex renovation

Threats

- **Wind turbines:** There is currently a plan to install wind turbines northwest of Fairchild AFB that would significantly impact flight patterns. Although SB 6225 is in development — it would mandate a 15- to 20-mile buffer zone for these turbines around military installations — the wake turbulence from Fairchild aircraft could still interfere with the turbines.
- **Encroachment:** Local and state political agendas create challenges for encroachment mitigation. Additionally, mobile homes in the installation's Accident Potential Zone (APZ) create potential risk for the residents living in the APZ and the long-term success of the base and its mission. The density of these residential units in the APZ creates an encroachment to the base, and funding is required to relocate residents from the mobile home park.
- **PFAS:** Traces of the chemicals found in firefighting foam used at Fairchild AFB have been detected in local groundwater. The AF has installed water filtration systems that purify well water of any contaminants at numerous locations north and east of the installation and continues to monitor groundwater for contamination there.

Installation-Specific Recommendations

- **Support DCIP or other funding solutions for the Thorpe Road gate:** Installation access points are critical infrastructure needed for installation operations. The State should explore what support the Congressional delegation or other entities can provide in securing funding to repair Fairchild AFB's Thorpe Road access points. Assistance in coordinating a proposal for DCIP or Defense Access Roads (DAR) funding through a local community may be helpful. If grant funding is unachievable, requesting MILCON funding may also be a solution.
- **Explore possible MILCON solutions for jet fuel supply infrastructure:** If Fairchild AFB can improve its infrastructure for jet fuel supply through MILCON projects, the installation and State Congressional Delegation should work together to program those projects through Federal appropriations.

Joint Base Lewis-McChord

Date Conducted: April 24, 2024

Participants

- COL Kent Park, Garrison Commander, JBLM
- Timothy Coffey, Deputy Chief of Staff (Garrison), JBLM
- Steve Selman, Lead Management and Program Analyst
- James Rolph, Office of the Lieutenant Governor
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Matt Herrmann, The Roosevelt Group
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AECC

Identified Strengths

- **Strategic and joint services mission set:** The presence of McChord Field and the two airlift units (the 62nd Airlift Command and the 446th Airlift Wing [AF Reserve]) allows for rapid deployment of troops, equipment, and humanitarian aid to the Pacific Rim and beyond. The C-17 Globemaster is well suited to provide airlift to equipment stationed at JBLM, including the Stryker attack vehicle used by the 7th Infantry Division and the personnel of the 1st Special Forces Group and 2nd Ranger Battalion.
- **Blue Star Families organization:** Blue Star Families is an excellent local partner for the installation, providing food resiliency to service members. It also has ties to Starbucks, which has shown a desire to participate with spouses and veterans.
- **Community partnerships:** JBLM has strong relationships with the area's surrounding communities and tribal entities.
- **Projections for growth:** JBLM is expected to grow in personnel and strategic significance due to the continuing focus on Pacific Command (PACOM) operations. Several missions have been added to JBLM over the past several years.
- **Strategic location:** JBLM provides strategic proximity to the Pacific Rim, making it ideal for deployments to the Asia-Pacific region. The Port of Tacoma is a deep-water port just 18 miles from the installation and has a direct rail line from the logistics center within JBLM.
- **Medical care:** Madigan Army Medical Center is one of the largest military hospitals on the West Coast and is a Level 2 trauma center in the region. The hospital has 205 beds and includes specialty clinics, surgical care, adult and pediatric primary care clinics, a 24-hour emergency department, and a variety of other clinical care services. These services are complemented by the American Lake Veterans Administration Medical Center in Lakewood that treats veterans and their dependents.

- **High quality of life:** Service members regularly point to the high living standard and can choose from urban, suburban, or rural living options. There are ample opportunities for recreation, and entertainment options abound in cities like Tacoma, Olympia, and Puyallup. There are good schools both on the installation and in the communities surrounding JBLM. The installation is sought after as a retirement location, and many support groups exist in the region for military dependents and retirees.
- **Infrastructure independence:** JBLM is self-sufficient, with its own wastewater treatment plant, water system, police force, grocery store, backup power generators, and airport. Power is supplied underground via Tacoma Power lines.

Identified Weaknesses

- **Housing affordability and availability:** Housing is currently the number one challenge for JBLM. There is not enough affordable or available housing to meet the needs of the installation's current population, and there is limited developable land around the installation. Additionally, BAH is not sufficient to cover service members' needs if they are able to find housing. Landlords are incentivized to raise their rates to correspond with BAH, which hurts affordability for non-military locals. While new barracks projects are in development, the current barracks are at 80% capacity and need to be at 90% before serious consideration for additional construction will be made. The installation also estimates that there is a shortage of 860 homes on the installation, and the current partner, Liberty Military Housing (LMH), is not interested in further construction beyond the 212 new units that are projected to be complete by 2027.
- **Critical redundancy:** There is currently a single feed for power to the installation. This is being corrected with microgrids, and there is a study for green hydropower on the installation, but the lack of redundancy will be a significant weakness in installation resiliency until corrected.
- **Childcare availability:** There is enough space in existing childcare centers to serve the current population, but staffing is unavailable to operate the centers at capacity. Part of this problem seems to be a pay issue, but there are also cumbersome state regulations to opening new childcare centers that limit entrepreneurial solutions.
- **Quality-of-life issues:**
 - Spousal employment is a regular problem, especially regarding licensure reciprocity and compacts. While progress is being made, the results have not been seen yet.
 - The area's high cost of living is impacting service members' food security and transportation security. Military members receive no Cost-of-Living Allowances (COLA) while DoD civilian employees receive 30% COLA, further adding to discrepancies.
 - Food resources at the state level are considerable but are at capacity.
 - High numbers of Family Advocacy Program (FAP) cases exist, and financial hardships are cited as one of the leading causes of these cases.
 - Traffic congestion is significant as 140,000 cars per day use Interstate 5, which bisects JBLM. As the traffic grows heavier, it is more challenging to access the installation for service members, contractors, and service providers. Expansion of I-5 has been undertaken during the past decade, but there is a limit to the ability to accommodate the additional lanes needed to address demand.

- **Medical provider shortages:** There is a significant shortage of medical providers for the installation, which is exacerbated by the closing of local Navy hospitals. The hiring process is at least somewhat to blame, with some hiring taking 240 days to fulfill. This has caused long wait times for service members to receive medical appointments.
- **Development encroachment:** Residential, commercial, and industrial developments in and around JBLM put more people and businesses in proximity to this active military base. When housing developments are too close to the military boundary, it impacts the ability of units to train and maneuver without causing noise, light, and air impacts on those residences. Complaints inevitably increase. Businesses built within the Accident Potential Zone along the end of the runway increase the potential for property damage or loss of human life in an accident. Lakewood and Yelm are two examples of cities working to limit additional development adjacent to the base.
- **Endangered species:** Numerous species are either threatened or listed as endangered by the U.S. Fish and Wildlife Service, including the Taylor's checkerspot butterfly, Mazama pocket gopher, streaked horned lark, Western bluebird, salmon, and Puget Sound steelhead. These species must be protected, and the impacts on their habitat must be carefully managed. JBLM staff spend substantial time, effort, and resources to maintain landscapes that support these species. Many of the landscapes are adjacent to active training or operational areas.

Identified Opportunities

- **EULs and/or IGSA for housing:** There are multiple possibilities to alleviate JBLM's housing concerns including an EUL or IGSA solution. JBLM is also considering privatized barracks and a possible additional housing partner to provide more housing supply. All are reasonable options, but any plan should be executed deliberately and with the cooperation of the local communities.
- **Mission growth:** As the closest location to the Pacific theater within the continental United States, JBLM is a strong candidate for additional military mission growth. It is certain that if space can be found, there will be growth on JBLM.
- **Washington Military Alliance reconstitution:** With significant challenges between JBLM and its surrounding communities in aspects of housing, childcare, and quality of life, there is an opportunity to revive a formal partnership organization such as the defunct Washington Military Alliance. Reenergizing this partnership would create a forum to holistically address the issues experienced by the installation.
- **DoD Impact Aid for schools:** Schools in the JBLM area have only received 40% of authorized Impact Aid over the past decade and are federally underfunded (nationwide, Impact Aid has not been fully funded since 1969, which means many school districts do not receive their full funding payments; rather, they receive a portion of their full funding payments in accordance with a formula that determines relative need). Releasing additional Impact Aid will assist these school districts in providing for JBLM-assigned families. This is especially important as JBLM is a compassionate reassignment location with a significant population of exceptional family member program (EFMP) children.

Threats

- **PFAS:** Traces of the chemicals found in firefighting foam used at McChord Field were detected in a small number of wells in 2016. These wells were shut down. Water treatment systems to remove PFOS and PFOA have been installed. Since treatment began, finished water test results have been below the Environmental Protection Agency lifetime health advisory levels. The water system was privatized in October 2021.
- **Cost of living:** Rental housing costs and rapidly increasing home values have far outpaced the increases in BAH and pay. Gas prices are among the highest in the United States. The April 2024 median sales price in Pierce County was \$565,000, up 7.6% over the previous year. In Thurston County, the single-family median sale price was \$512,400, up 4.6%. Even when pay is increased 5.2%, the highest amount in 20 years, both the median sales price and the annual increase make it very difficult to enter the housing market.
- **Regional growth:** As the Puget Sound region urbanizes and grows, there will be more pressures that come with that growth. Residents may not be aware of the presence of the military base and may not be comfortable with loud noises, flashes of light, and helicopter and aircraft flights that come with training activities. Residents might be less tolerant of military material shipments on Washington highways, ports, and airports.

Installation-Specific Recommendations

- **Support funding for power redundancy:** While progress is being made to increase JBLM's power redundancy, the State should assist where possible, including in support of local DCIP proposals or advocacy for MILCON funding.
- **Support Impact Aid funding requests:** As JBLM is a major installation and a location for compassionate reassignment for children with special requirements for education and health, the school systems that support the installation should be ready candidates for Department of Education Impact Aid. The State should lend support to any applications for this aid as necessary.
- **Explore solutions for medical services shortages:** Although JBLM has a major military medical facility, its ability to provide services for the installation's population and support other, neighboring installations such as NAS Whidbey Island is limited by a shortage of providers. Additionally, USCG Base Seattle has identified shortages of Tricare-accepting physicians, particularly dentists, in local communities, which further exacerbates the problem of providing timely medical care. No immediate solutions to this problem are apparent. Because of the scale of the problem, affecting multiple installations within the greater Seattle-Tacoma area, the State should consider a limited study to determine the most effective methods to grow the population of military medical providers and/or incentivize local medical providers to more readily accept Tricare, which will lower the burden of care for JBLM's military hospital.

Naval Air Station (NAS) Whidbey Island

Date Conducted: April 23, 2024

Participants:

- CAPT Eric Hanks, Installation Commanding Officer
- CDR Jason Ray, Public Works Officer
- Kelly Wrightson, Admin Supervisor
- Brian Tyhuis, CPLO
- CDR Daniel Hutton, FRCNW Executive Officer
- CDR Sean Stein, TUSC-PAC Executive Officer
- CAPT Jeremy Pyles, Naval Health Clinic Oak Harbor Executive Officer
- Francis Bagarella, Admin Officer
- CWO-4 Joseph Figarelle, CNATTU Whidbey Island MO/TO
- Wendy Hermendorfer, Admin/Personnel Office
- Mike Welding, Public Affairs Officer
- James Lins, N5 (Installation Program Integrator)
- Willie Molden, DeCA
- Russ Byrd, Regional CPLO
- Anna Whalen, NBK CPLO
- James Rolph, Office of the Lieutenant Governor
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Matt Herrmann, The Roosevelt Group
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AEC
- Matt Arney, The Roosevelt Group

Identified Strengths

- **Community partnerships:** NAS Whidbey Island has strong relationships with the area's surrounding communities and tribal entities. These relationships include the following:
 - A NAS Whidbey Island Task Force in the government of the City of Oak Harbor
 - Regular community leader forums with the local elected officials of Mount Vernon, Burlington, Anacortes, San Juan Islands, Port Townsend, Coupeville, and Oak Harbor along with state and federal elected leaders
 - A state delegation that regularly visits the installation
 - A yearly tribal council engagement
 - A culture of collaboration and trust between the installation, community, and Navy Region
 - Frequent support (30 to 40 per year) to civilian search and rescue missions
- **Strategic location and missions:** The Pacific Northwest in general is essential to the nation's Pacific operations. NAS Whidbey Island has unique capabilities for surveillance and access of the Eastern Pacific and is perfectly suited geographically for low-density aircraft.
- **Northwest Training Range Complex (NWTRC):** The NWTRC provides unique training opportunities with airspace, water space and terrestrial properties tailored to meet the readiness requirements of Navy units homeported in the Pacific Northwest region. It hosts various attributes including an Electronic Warfare training capability used by student and fleet EA-18G aircrew. NWTRC training areas may also serve the needs of other regional DoD forces and various transient units from around the County.
- **Defense Community Compatibility Account:** The DCCA is a relatively new program administered through the Washington Department of Commerce and provides funding for civilian-military land use projects. The local school district leveraged this program for matching funds for Office of Local Defense Community Cooperation (OLDCC) grants.
- **Private 5G network around airfield:** This network is a DoD pilot program that allows for more efficient aircraft maintenance. It is highly beneficial and should be expanded.
- **Ongoing resiliency study:** The installation has an ongoing resiliency study for water systems that will help it maintain critical infrastructure related to the water supply.
- **Barracks renovation:** A current special project exists to renovate installation barracks. The project is projected to be funded through FY23-25 at \$88 million.

Identified Weaknesses

- **Medical service availability:** NAS Whidbey Island is currently experiencing a healthcare shortage due to the lack of healthcare both on the installation and in the immediate area around the installation. The installation has a 12-bed outpatient clinic at Ault Field to provide some services, but hiring providers is difficult due to the location. The closest military hospital is located on JBLM. Travel to this hospital is not reimbursed, causing further hardships on service members who must travel for care. This is the co-number one issue for the installation, tied with childcare availability.
- **Childcare availability:** There is not enough space in existing childcare centers to serve the current population of the installation, and a lack of staffing further exacerbates the situation. Although the Washington Department of Veterans Affairs has a program to address childcare shortages, the need for more childcare is still a huge concern on the installation. This is the co-number one issue for the installation, tied with medical service availability.
- **Housing:** Housing options are limited around the installation (current military housing occupancy rates of 96% to 97%), and BAH is not sufficient to cover service members' needs if they are able to find housing. Landlords are incentivized to raise their rates to correspond with BAH, which hurts affordability for non-military locals.
- **Infrastructure redundancy and resiliency:**
 - The sources for electrical service to NAS Whidbey are power cables that run over the water east of Deception Pass Bridge. There are on-installation diesel generators for short-term power needs, but this presents a resiliency challenge should the power lines near the bridge be damaged.
 - All utilities are provided to the installation through similarly nonredundant means.
 - Water infrastructure is limited on the installation, with all water treated off post and brought in via pipeline. The installation itself has no large-scale water storage.
- **Sewer infrastructure:** Wastewater treatment for Ault Field occurs at a facility on north Whidbey Island separate from wastewater treatment for Seaplane Base just east of the City of Oak Harbor. Following the completion of a new treatment plant, the City of Oak Harbor turned the Seaplane Base Lagoon Wastewater Treatment Plant (WWTP) over to the Navy in 2019. Upgrades and new permits may be required in the future for the Seaplane Base Lagoon WWTP. The Ault Field WWTP is operating on an administrative extension while upgrades are considered. It is estimated that upgrades at the Ault Field WWTP might cost upwards of \$50 million.
- **Spousal employment:** The lack of spousal employment opportunities has significantly impacted the installation, causing some service member retention challenges. Washington is highly involved in this issue and has made efforts in licensure compacts to help solve this problem and provide an active, effective spouse liaison officer in the Washington Department of Veterans Affairs. Nevertheless, more steps should be taken to solve this problem.
- **PFAS challenges:** NAS Whidbey Island has a significant PFAS challenge and has spent significant time and resources both investigating and treating PFAS contamination. Although significant progress has been made, further efforts will be required, which will be best accomplished through a coordinated response between the installation and its surrounding community.
- **Expansion space:** There is limited space available on NAS Whidbey Island for mission expansion, restricting the long-term operational flexibility of the installation.

Identified Opportunities

- **Triton control station assignments:** The MQ4 Triton system is replacing the current EP-3 system. This provides an opportunity for retraining the current operators and support systems of the EP-3 to operate the MQ4.
- **Wastewater treatment plant:** The installation's current WWTP is in the existing Seaplane Base. This plant was administered under civilian control until 2019 when it was released after a new civilian plant was built. It might be possible for the Navy to partner in control and use of the City's plant and, if funding could be acquired to complete the necessary connections, all wastewater infrastructure could be consolidated.

Threats

- **Community litigation:** Litigation filed against the Navy proposes to crucially limit or prevent critical flight training at Navy property in the Coupeville community. Depending on the outcome of the litigation, it could negatively impact operations at Outlying Landing Field (OLF) Coupeville, which is a Field Carrier Landing Practice (FCLP) facility with significant training value to the wider Navy.
- **Environmental concerns:** Earthquakes are a concern for the installation, particularly due to the lack of redundancy for road, power, and utilities infrastructure. Seasonal wildland fire risk can be high at the Naval Weapons Systems Training Facility (NWSTF) in Boardman, Oregon, which can negatively impact military training missions and threaten surrounding agricultural lands.
- **Airspace intrusions:** There are currently numerous proposals for wind turbine development projects both on and offshore. Companies are proposing to construct projects that may encroach on air and water spaces historically used to support military training and readiness activities. Mechanisms exist for vetting energy projects within the DoD to ensure compatibility and minimize negative impacts.

Installation-Specific Recommendations

- **Support funding for wastewater treatment plant consolidation:** Combining NAS Whidbey Island's wastewater treatment system with the nearby civilian plant makes sense if both parties are amenable to the concept. If a funding solution is the only barrier to this action, the State should assist where possible, including supporting a local DCIP or DCCA proposal or advocating for MILCON funds.
- **Conduct a spousal licensure gap analysis:** Military spousal licensure reciprocity is a major topic concerning quality of life in military families. While it is clear that Washington has acted to provide solutions to this problem, the State could fund an analysis of the practices and legislation of other states across the nation to determine if more can be done to further serve the interests of working military spouses and to help Washington lead the way on this issue.
- **Explore solutions for medical services shortages:** JBLM has the closest major military medical facility, but its ability to provide services for NAS Whidbey Island's population (and others) is limited by a shortage of providers. Additionally, USCG Base Seattle has identified shortages of Tricare-accepting physicians, particularly dentists, in local communities, which further exacerbates the problem of providing timely medical care. No immediate solutions to this problem are apparent. Because of the scale of the problem, affecting multiple installations within the greater Seattle-Tacoma area, the State should consider a limited study to determine the most effective methods to grow the population of military medical providers and/or incentivize local medical providers to more readily accept Tricare, which will lower the burden of care for JBLM's military hospital.

Naval Magazine Indian Island

Date Conducted: April 22, 2024

Participants:

- CDR Todd Galvin, Installation Commander
- J. Overton, Deputy Navy Region Northwest Public Affairs Officer
- Bill Kalina, Installation Environmental Manager
- Julianne Leinenveber Installation Public Affairs Officer
- Russ Byrd, Regional CPLO
- Alison Satter, NBK CPLO
- Anna Whalen, NBK CPLO
- James Rolph, Office of the Lieutenant Governor
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Matt Herrmann, TRG
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AEC

Identified Strengths

- **Installation facilities and capabilities:** As the only deep-water ordnance facility on the West Coast with no access restrictions, the crown jewels of the installation are a 1,650-foot-long pier and the Department of Defense's largest container crane called "Big Blue." Multiple ordnance storage buildings, aka magazines, most dating back to the base's origins, allow the storage of military ordnance and provide for the safe and efficient handling of ordnance. Multiple other funded projects will take place over the next five to seven years to further improve the installation's pier pilings and to remove and replace old seaplane ramps.
- **Record of environmental excellence:** NAVMAG Indian Island has been recognized multiple times for environmental sustainability for its ongoing efforts to protect and enhance local ecosystems. The Secretary of the Navy and the Commander, Navy Installations Command have previously selected NAVMAG Indian Island for awards for its efforts to raise awareness and improve development notification processes for archaeological and cultural resources.
- **Strong partnerships with community and tribes:** NAVMAG Indian Island regularly provides community group tours of the base, coordinates emergency-response exercises with Jefferson County, and hosts tribal shellfish seeding and traditional plant gathering on the marine shoreline per tribal negotiations. Personnel have hosted Earth Day beach cleanups and tree-planting with Boy Scout troops, as well as research and restoration projects with federal and state agencies, Native American tribes, and environmental nonprofit organizations. The Olympic Squadron, a group of local retired Navy aviators, acts as a valuable, unofficial community support organization.
- **BAH adjustment:** The area's BAH was recently adjusted to match Port Angeles, a significant increase that has helped installation personnel afford housing around the installation.

Identified Weaknesses

- **Housing:** The nature of the activities that occur at NAVMAG and the need to maintain a sufficient safety setback from the explosive arc means that housing does not exist on installation. The cost of housing in nearby Port Townsend or Port Ludlow is high as they are sought-after retirement areas. Most personnel look to the cities of Shelton, Sequim, Silverdale, or Poulsbo to find a more affordable place to live and shop. These places require a 45-minute to 1.5-hour drive. The remoteness makes filling civilian position challenging.
- **Infrastructure and redundancy:** Because there is no rail access to NAVMAG Indian Island, all traffic, including supplies and munitions, must be trucked in or come via water. Local power outages do occur due to severe weather; however, power generators at each major building provide sufficient electricity to maintain operations for the duration of the events.
- **Aging facilities and cultural sites:** Many buildings on the installation date back to World War II, and multiple others are eligible or already included on historical registries. Additionally, many cultural sites are present throughout the island. These situations create issues in building, renovating or repurposing space and generate needs for demolition funding.

Identified Opportunities

- **IGSA opportunities:** Despite a strong series of partnerships, there are no IGSA in place at NAVMAG Indian Island. Establishing IGSA with surrounding communities would formalize existing good relationships and possibly provide paths to solving space issues on the installation.
- **Export environmental successes:** NAVMAG Indian Island is already well known for making significant improvements to the shoreline and tidelands along Indian Island. These successes can be shared and replicated at other DoD facilities.

Threats

- **Increased development:** Washington and Puget Sound are growing rapidly while Jefferson County grew by 12.5% from 2010 to 2020. An additional 15,000 people are expected to move into the County by 2045, increasing the county total to 48,000.
- **Pier refurbishment:** NAVMAG Indian Island's critical piers need regular replacement and refurbishment to continue operating. This process is made more difficult by the presence of endangered species during certain times of the year.
- **Environmental concerns:** Drier summers have increased the threat of wildfires in the surrounding areas.

Installation-Specific Recommendations

- **Support funding for critical redundancy:** Infrastructure resiliency is a significant priority throughout the Department of Defense. The State can assist NAVMAG Indian Island's infrastructure redundancy efforts by supporting relevant DCIP proposals or advocating for MILCON funds if necessary.

Naval Base Kitsap/Puget Sound Naval Shipyard & Intermediate Maintenance Facility

Date Conducted: April 22, 2024

Participants:

- CAPT John Hale, Installation Commander
- Gina Meloy, Naval Undersea Warfare Center (NUWC) Keyport Contract Dept.
- Karen Smith, NUWC Keyport Contracts Dept.
- John Williams, NUWC Keyport Comptroller
- Darcy Jenne, NUWC Keyport Public Affairs
- Katy Crabtree, Naval Base Kitsap Public Affairs
- Levi Preston, NBK Public Affairs
- Sarah N. Davis, NBK Protocol & Executive Assistant
- Joshua Sandvig, Defense Health Agency (DHA)
- Kirsten Krumvieda, NBK Installation Programs Integrator
- Dave Faulk, NBK Public Works
- Mark Fontenot, Puget Sound Naval Shipyard & Intermediate Maintenance Facility (PSNS & IMF)
- Ben Crosby, Strategic Weapons Facility Pacific (SWFPAC) Operations
- Jarrel Coy, PSNS & IMF Deputy Comptroller
- Roger Wood, Navy Region Northwest (NRNW) N1 Director
- Danielle Maclean, NRNW N1
- Kenneth Rogers, PSNS & IMF Business and Strategic Planning Manager
- Jason Mathis, NBK-Bremerton Public Works
- Kaylan O'Connor, NBK N5B
- Casey Reed, NBK N9
- Michael Simpson, PSNS & IMF
- James Cook, PSNS & IMF Deputy Executive Director
- Russ Byrd, Regional Community Planning & Liaison Officer (CPLO)
- Alison Satter, NBK CPLO
- Anna Whalen, NBK CPLO
- James Rolph, Office of the Lieutenant Governor
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Matt Herrmann, TRG
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AEC

Identified Strengths

- **Various career opportunities:** NBK comprises five locations in Kitsap County including NBK-Bangor, NBK-Bremerton, NBK-Keyport, NBK-Manchester, and NBK-Jackson Park. NBK has multiple Special Areas in Washington State including operations in the Hood Canal and the counties of Kitsap, Jefferson, Mason, and Clallam. NBK is home to 80 tenant commands, including Commander, Navy Region Northwest; Commander, Submarine Group 9; Commander, Carrier Strike Group 3; Naval Facilities Engineering Command Northwest; Naval Undersea Warfare Center Keyport; and PSNS & IMF. This workforce includes military service members, civilian employees, and contract workers. Spanning more than 12,000 acres across the Kitsap Peninsula, NBK supports a diverse range of strategic missions, including all types of submarines, Nimitz-class aircraft carriers, PSNS & IMF, and defense fueling. NBK is also the home of several Research, Development, Testing & Evaluation commands that ensure the Navy's technological advantage. In addition to the more skilled professions on NBK, there are supportive services that add other various civilian and military career opportunities. Those include jobs in morale, welfare, and recreation; food service; retail; customer service; facility and landscaping maintenance; and childcare.
- **Significant shipyard facilities:** Established in 1891, Bremerton's PSNS & IMF is equipped with dry docks, repair shops, and advanced facilities for maintenance, modernization, and repair of naval vessels, including nuclear-powered submarines and aircraft carriers. It is the only Navy shipyard in the world that is approved to recycle nuclear-powered submarines.
- **Skilled, generational workforce:** Workers at PSNS & IMF have been repairing and retrofitting ships for over 130 years, with some families having five generations of workers. PSNS & IMF employs more than 14,000 highly skilled people with specialized expertise in shipbuilding, repair, and maintenance. Other skilled, generational workers include NBK-Bangor's workers who train, berth, and repair submarines and the Naval Undersea Warfare Center's workers on NBK-Keyport who research and develop unmanned undersea vehicle and torpedoes. The workforce also includes engineers, technicians, and support staff. These positions are, for the most part, well paid and have excellent benefits, which makes it easy for a worker to spend an entire career at NBK.
- **Longstanding collaborations and partnerships:** Repairing and retrofitting ships is a long and complex endeavor that requires many partnerships and trust to succeed. Both unionized PSNS & IMF personnel and active-duty Navy service members work to execute a wide variety of these large-scale projects. While there is no formal community-support organization, NBK leadership regularly meets with community leaders, and collaboration on land use planning and transportation needs occurs regularly. NBK's installation commander is also a non-voting member of the Kitsap Regional Coordinating Council and military liaison to the Gorst Coalition.

Identified Weaknesses

- **Aging infrastructure:** The shipyard at NBK-Bremerton has been there for over 130 years. NBK-Keyport was established in 1914, and NBK-Bangor and NBK-Manchester have been operating since World War II. There have been numerous large military projects to update the installation, but some utility infrastructure, like wastewater systems, is aging, requiring continuous maintenance and upgrades. Other facilities require seismic upgrades or HVAC improvements to realize high utilization. Older infrastructure can also lead to inefficiencies and higher operational costs. At least nine culverts along the Shelton-Bangor-Bremerton Navy Railroad are scheduled to be replaced to improve fish passage under the railroad.
- **No room for expansion:** PSNS & IMF is bound on the east side by water and on all other sides by the City of Bremerton. When a facility or building needs to be taken offline and rehabilitated, there is no room to transfer those operations to another on-site location while that building is upgraded. There are complex logistics involved in moving large vessels in and out of the shipyard, and there is limited flexibility on where these vessels can be put if one facility is out of service.
- **Childcare shortage:** There is a critical shortage of childcare providers and facilities in Kitsap County, and this shortage is also found at NBK. The CDC at NBK-Bangor is currently closed for construction, and staffing of the existing CDC is an ongoing challenge. Once construction at NBK-Bangor is complete, CDCs will barely meet current requirements for military families — there will still be a shortage. NBK currently has an extensive waitlist of children of active-duty service members for CDC care. The CDCs no longer provide space for federal civilian childcare unless that family is experiencing unique circumstances. Employees must find childcare in the community, and the community at large is unable to fulfill the needs of the workforce.
- **Critical workforce:** There are workforce shortages across critical industries throughout NBK, particularly among engineers and marine industry professionals. Although this shortage may be due, in part, to pay (in particular, federal engineering salaries do not compare favorably to private-sector engineering pay), there is also an argument to be made that there is no affordable housing for new residents to move to the area for available jobs.
- **Cost and supply of housing:** Anecdotal evidence suggests there is not enough affordable housing to meet the needs of the installation's current population.

Washington Statewide Defense Economic Impact Study

- **Active-duty service members:** NBK review of 2024 rental availability and affordability to meet current active-duty housing needs suggests that personal preference (location, housing type) plays a significant role in this perception. Quantifying the availability and affordability concerns is complicated by the absence of a real-time authoritative source capable of accurately calculating rental unit vacancy rates and median rents by home type in NBK's Military Housing Area. Active-duty BAH rates are reviewed and adjusted annually to account for year-over-year housing cost changes. BAH calculations look at median rents and average utility cost by housing type to determine housing cost. Data are collected on local units listed as available for rent during the period of March to July of each year. This data collection is taken at the height of the permanent-change-of-station season, when the market is most active because of military moves. These data inform BAH rate-setting decisions. Mortgage payments are not used in the computation, which are distinct and fluctuate based on additional factors. BAH, by design, is not intended to cover 100% of housing costs. NBK contributes to the BAH data collection but does not control the actual rate setting; the BAH program is run by the Office of the Secretary of Defense. The BAH data collection process addresses active-duty housing requirements only and does not assess broader civilian housing needs and requirements.
- **Federal civilian employees/non-active duty:** NBK has heard that the private land around NBK installations has become more difficult to develop and thus housing is more expensive to construct. There is a high cost of living in Kitsap County, which typically exceeds the national average. This compounds the economic strain on the workforce. There are reports that landlords are incentivized to raise their rates to correspond with BAH, which hurts affordability for non-military locals, but NBK does not have data to support that finding.
- **Subject to sea level rising:** Per the Department of Defense Regional Sea Level Rise Database, some infrastructure around the NBK installations may need to be updated to address sea level rise and impacts from storm surges. There may be military construction projects to add climate resiliency into installations. Some of the projects to address sea level rise, storm surges, and other such events may require coordination with adjacent local jurisdictions as these concerns are shared on- and off-base, and some solutions may not be successful without this joint coordination.

Identified Opportunities

- **New Joint Land Use Study (JLUS):** The installation last completed a JLUS in 2015. Given the recent trends in housing and developable land, there is an opportunity to conduct a new JLUS, or a supplemental study, to determine solutions to ongoing problems involving land allocation. The new JLUS could also collaborate with the installation development plan scheduled to be conducted in FY25. There is federal Office of Local Defense Community Cooperation funding available to local jurisdiction to conduct planning studies if there is a military-nexus.
- **Additional partnerships:** PSNS & IMF leadership is seeking industry and workforce collaboration with Olympic College to help educate and train the next group of shipyard workers. Washington State University is partnering with Olympic College in Bremerton by offering engineering programs that provides students with the scientific and technical foundation needed to be an electrical or mechanical engineer, particularly with a focus on PSNS & IMF. Additionally, the Washington Autonomous Vehicle Council (WAVC) is seeking a partnership with the Navy, which could bring an autonomous vehicle hub nearby. All these partnership possibilities could positively affect the workforce of NUWC Keyport, PSNS & IMF, and other NBK tenant commands.
- **Expansion and modernization:** NBK is analyzing projects to accommodate the new vessels of the Navy including the new Ford-class aircraft carriers (to replace the Nimitz class) and the new Columbia-class submarines (to replace the Ohio class). The Navy is preparing an Environmental Impact Statement to upgrade NBK-Bremerton's waterfront infrastructure as part of the Shipyard Infrastructure and Optimization Program (SIOP).
- **Jurisdictional Collaboration:** Support and encourage collaboration between federal and local projects to address sea level rise and other effects of climate change. For example, the City of Annapolis, its local County, and its local military base identified a project that the community would benefit from, but which would not be successful if the shoreline projects did not extend into military property. Through this study, the City, County, and military are going forward to complete all their projects around the same time (to have the shoreline protected). This takes significant planning and effort over multiple agencies to be successful, but it is a monumental opportunity.

Threats

- **Workforce challenges:** The shipbuilding industry across the country is facing ongoing challenges from the aging workforce and the skill gap of new employees. Retaining skilled workers has been difficult in several locations due to competition from other industries, particularly in an urbanized setting like Bremerton and central Kitsap County.
- **Encroachment:** Incompatible development in Dabob Bay threatens the missions of the installation. Additionally, the Navy coordinated with the Washington Department of Natural Resource to establish easements on tidal lands to help reduce incompatible development that could conflict with Navy operations. There is also little regulation regarding underwater vehicles and hydrophones placement, which can be incompatible with Navy operations.

Installation-Specific Recommendations

- **Support workforce initiatives and training partnerships between industry and PSNS & IMF:** Shipbuilders across the nation are struggling with workforce shortages, making it more critical that the Seattle-Tacoma area be able to supply a locally trained and skilled workforce for PSNS & IMF. The installation is already exploring possibilities for workforce development that would be made more effective by direct cooperation with the State. A specific study may also assist in determining the causes of the workforce shortages and best possible solutions.
- **Assist land management efforts:** NBK recognizes an opportunity to support the local defense communities to update their land use studies including an update to the JLUS and, possibly, a military installation resiliency review and analysis. The State should involve itself in these processes to best understand how to be an effective partner to the base in a way that will maximize both the base's operations and the economic development of the region.

Naval Station Everett

Date Conducted: April 25, 2024

Participants:

- CAPT Stacey Wuthier, Installation Commanding Officer
- CDR Dillon Jackson, Installation Executive Officer
- LCDR Robert Berry, Installation Operations Officer
- CDR Carl Clemencich, Public Works Officer
- Deryck Gorman, N9 Installation Fleet & Family Readiness Director
- Chad Rotzien, N5 Installation Programs Integrator
- Rima Blackwell, Facilities Management Director
- Russ Byrd, Regional Community Planning Liaison Officer
- Glynis Casey, Community Planning Liaison Officer
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Matt Herrmann, TRG
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AEC
- Matt Arney, CAS-EM, LLC

Identified Strengths

- **Modern facilities:** NSE was designed to support U.S. Navy surface ships and Coast Guard assets and is the most modern shore installation in the U.S. Established in 1994 with the strong support of Everett's local community, it has a small campus feel and is walkable. NSE supports a multiplatform mission supporting many types of surface ships: aircraft carriers, frigates, destroyers, smaller Coast Guard vessels, and large carrier-sized supply ships. NSE is the homeport of six guided-missile destroyers (DDG) and one guided-missile cruiser (CG), two U.S. Coast Guard vessels, and is designated as the preferred future homeport for the first group of Constellation-class frigates (FFG).
- **Strategic location:** NSE is one of two deep-water Navy ports on the West Coast, and its location in the northwestern corner of the United States allows quick response to the Arctic and Pacific Rim. A significant number of support buildings at NSE are in Smokey Point, 11 miles north near Marysville. Facilities at Naval Support Complex (NSC) Smokey Point include a commissary, a Navy Exchange, a college, and other services. Public-private venture (PPV) housing projects are programmed for 88 new units at Smokey Point.
- **Community partnerships:** NSE is committed to working with local government, tribes, and partner agencies in compatible development, natural resource management, and emergency response, and NSE continues active pursuit of projects and partnerships through the REPI and the DCIP. A key focus of leadership is sustaining a ready force through strategic budget choices that support warfighters and building partnerships to utilize and support the Washington Clean Fuel Standard.
- **Fire and Emergency Services (FES) mutual aid agreement:** NSE is a beneficiary of a mutual aid agreement for FES with its surrounding communities. The installation usually finds itself on the receiving end of the mutual support as opposed to providing the support.
- **Local manufacturing:** Vigor Shipyards, Boeing, and many other well-established tech companies employ tens of thousands of highly skilled Washingtonians who manufacture ships and systems needed by the U.S. Navy. Vigor Marine operates a floating dry dock in Seattle and has been awarded a contract to accomplish repairs and alterations of the USS Barry, one of the guided-missile destroyers homeported at NS Everett.

Identified Weaknesses

- **Housing availability and affordability:** Everett is located just north of Seattle and is within the Seattle metropolitan area, which results in a high cost for housing, food, and transportation. There is generally a shortage of housing, and what housing is available is not affordable to the service member population.
- **Childcare shortages:** There is a shortage of childcare providers and facilities in the area. The NSE facility has a capacity of 160 children but a current waitlist of 26. Recently, the largest waitlist was 125 students awaiting placement in a childcare center.

Identified Opportunities

- **CDH Program:** NSE has had limited success with small-scale CDH providers, including finding ways to meet stringent DoD certifications for childcare so that service members can utilize fee assistance when paying for CDH care. Nontraditional childcare methods such as this are very promising methods to increase childcare supply.
- **New home construction:** Eighty-eight new homes are planned to be built at NSC Smokey Point, which helps fill the gap of 153 homes that a 2021 housing market analysis estimated were needed.
- **U.S. Navy growth:** NSE has been identified as the preferred future West Coast homeport for Constellation-class frigates, subject to National Environmental Policy Act (NEPA) analysis. The Navy began the environmental analysis process in October 2023, with completion estimated in the fall of 2024. The proposed action is to homeport 12 new FFGs over the course of 10 years, use existing waterfront facilities to support vessel berthing, construct new upland training and support facilities, and station approximately 2,900 military personnel and their dependents at NSE. During this period, the 10 currently homeported guided-missile destroyers and guided-missile cruisers and associated personnel would depart NSE. Two Coast Guard vessels and associated personnel are expected to remain at NSE for the foreseeable future. At the conclusion of the 10-year period, a total of 14 vessels will be homeported at NSE.
- **“Team Everett” initiatives and other partnerships:** Multiple pathways to additional partnerships exist which could benefit both the NSE and its surrounding communities. These include successful DCIP grant applications, IGSA for de-icing services, and a mutual assistance agreement or IGSA to use a local pool for federal training.

Threats

- **Incompatible Development:** Increased vessel traffic and/or increased density brings civilians closer to unauthorized areas. The increase of in-water and upland traffic levels can bring security concerns and build pressure to modify operations.

Installation-Specific Recommendations

- **Assist growth management efforts:** NSE is on the brink of a possible expansion that could lead to new military mission growth and further economic development for its surrounding communities. To best understand how to be an effective partner to the base in a way that will maximize both the base’s operations and the economic development of the region, the State should keep itself apprised of the installation’s growth management plan.

US Coast Guard Base Seattle

Date Conducted: April 25, 2024

Participants:

- CDR Sawyer Mann, Chief, Resource Division
- CDR Ken Burgess, Installation Executive Officer
- LCDR Mark Allen, Installation Comptroller
- James Rolph, Office of the Lieutenant Governor
- Charlie Perham, Matrix Design Group
- Brad Johnson, Matrix Design Group
- Nick Melfi, Matrix Design Group
- Matt Herrmann, TRG
- Dan Penrose, SCJ Alliance
- Dave Newkirk, RAH AEC

Identified Strengths

- **Local schools:** The school system surrounding USCG Base Seattle is generally known to be of very good quality, providing a draw for service members with children.
- **Community partnerships:** USCG Base Seattle has very strong community partnerships, particularly with local law enforcement with whom the base conducts incident command center training and a variety of drills and other cross-training. The base also maintains a good relationship with local tribal organizations.

Identified Weaknesses

- **Cost and supply of housing:** There is not enough affordable or available housing to meet the needs of the installation's current population, and there is limited developable land around the installation to build more housing. Also, BAH is not sufficient to cover service members' needs if they can find housing. Landlords are incentivized to raise their rates to correspond with BAH, which hurts affordability for non-military locals.
- **Healthcare shortage:** USCG Base Seattle depends on its surrounding community for some medical care, particularly dental care. The installation has found that not enough surrounding physicians and dentists accept Tricare, hurting its population's ability to access healthcare efficiently.
- **Lack of childcare:** There is no CDC on USCG Base Seattle, forcing Guardsmen assigned to the base to utilize private childcare. This is mitigated by the fact that most Guardsmen do not live on USCG Base Seattle but still represents a shortage of a key service. The base is pursuing a CDC in its homeporting plan.

Identified Opportunities

- **Base expansion project:** USCG Base Seattle is currently executing a base expansion project which will allow it to accommodate three additional polar security cutters. In addition to receiving new missions, this process is an opportunity for the base to gain more land for additional support services.
- **Available warehouse space:** USCG Base Seattle has an underutilized warehouse that could be renovated for additional use. There is concern that, if no action is taken, the warehouse will be added to the National Register of Historic Places, limiting the possibilities for which it could be utilized.

Threats

- No distinct threats were identified for USCG Base Seattle.

USCG-Specific Recommendations

- **Support efforts to fund a CDC on USCG Base Seattle:** Childcare shortages are one of the top identified concerns in this study, including at USCG Base Seattle, which does not have a local military CDC. The State should coordinate with the base's active pursuit of funding for a CDC. This support would most likely consist of Washington Congressional Delegation actions to fund the construction through the appropriations process.
- **Support the installation's land acquisition efforts:** USCG Base Seattle is ready to receive new missions that will benefit the local communities around it. Unfortunately, they will need to acquire additional land to house any new missions. The State should assist the base in acquiring new land to support this effort and seize the economic benefits new missions will provide.
- **Explore IGSA solutions for USCG Base Seattle's underutilized warehouse:** IGSAs, particularly EULs, are flexible, effective tools to help installations and communities find mutually beneficial solutions to underutilized DoD land and space. While the USCG, as a Department of Homeland Security entity, cannot utilize the standard IGSA process, the State should partner with the installation and nearby localities to see what similar solutions could be viable. A successful deal would allow for the installation's underutilized warehouse to be fully utilized by a public or private entity and perhaps include an in-kind consideration agreement allowing the installation access to further land for expansion.
- **Explore solutions for medical services shortages:** JBLM has the closest major military medical facility, but its ability to provide services for USCG Base Seattle's population (and others) is limited by a shortage of providers. Additionally, USCG Base Seattle has identified shortages of Tricare-accepting physicians, particularly dentists, in local communities, which further exacerbates the problem of providing timely medical care. No immediate solutions to this problem are apparent. Because of the scale of the problem affecting multiple installations within the greater Seattle-Tacoma area, the State should consider a limited study to determine the most effective methods to grow the population of military medical providers and/or incentivize local medical providers to more readily accept Tricare, which will lower the burden of care for JBLM's military hospital.

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Appendix:

ACRONYMS

ACRONYM	DEFINITION
AFB	Air Force Base
ANG	Air National Guard
ARNG	Army National Guard
BAH	Basic Allowance for Housing
BAS	Basic Allowance for Subsistence
BEA	Bureau of Economic Analysis
CPLO	Community Planning & Liaison Officer
DCIP	Defense Community Infrastructure Program
DMDC	Defense Manpower Data Center
DoD	Department of Defense
FY	Fiscal Year
GDP	Gross Domestic Product
GRP	Gross Regional Product
GSP	Gross State Product
IGSA	Intergovernmental Support Agreement
JBLM	Joint Base Lewis-McChord
JLUS	Joint Land Use Study
MILCON	Military Construction
MRIO	Multi-Region Input-Output

ACRONYM	DEFINITION
NAICS	North American Industry Classification System
NASWI	Naval Air Station Whidbey Island
NAVMAG	Naval Magazine
NBK	Naval Base Kitsap
NDAA	National Defense Authorization Act
NDS	National Defense Strategy
NRNW	Navy Region Northwest
NSE	Naval Station Everett
NSS	National Security Strategy
OLDCC	Office of Local Defense Community Cooperation
PFAS	Per- and Polyfluoroalkyl Substances
PSNS & IMF	Puget Sound Naval Shipyard & Intermediate Maintenance Facility
SIOP	Shipyards Infrastructure Optimization Program
SSMCP	South Sound Military and Community Partnership
SWOT	Strengths, Weaknesses, Opportunities, and Threats
USACE	United States Army Corps of Engineers
USCG	U.S. Coast Guard

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