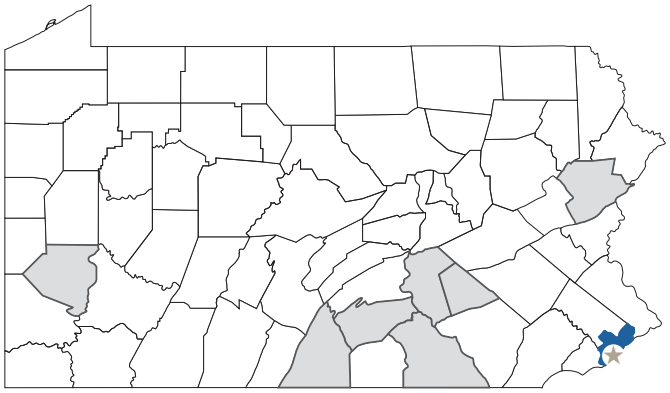
PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



THE NAVY YARD ANNEX

PHILADELPHIA

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THE NAVY YARD ANNEX

This report is part of the Pennsylvania Military Community Enhancement Commission-sponsored study of the economic impacts of Pennsylvania's military and defense installations. The aim of the project is to aid the Commission and the Commonwealth of Pennsylvania in understanding the economic and strategic value of its major military installations regionally and nationally, as well as their ties to surrounding communities and Pennsylvania industry.

INTRODUCTION

The Philadelphia Naval Shipyard closed in 1996 as a result of Base Realignment and Closure (BRAC) and much of the Navy Yard was redeveloped into a campus that currently houses more than 150 private companies in the office, industrial, manufacturing, and research and development sectors. Nevertheless, the Navy Yard is still home to several essential and thriving U.S. Navy tenants that make up what is now called the **Navy Yard Annex.**

The Navy owns nine distinct parcels of land and 49 dispersed buildings throughout the 1,200-acre Navy Yard complex. The Navy retains 163 acres of that acreage, along with 108 submerged acres used for ship work on the Delaware River and Reserve Basin. The Navy Yard Annex shares a commander with two other Navy installations in Pennsylvania — Naval Support Activity Philadelphia and Naval Support Activity Mechanicsburg.

The Navy Yard Annex's largest tenants are:

- **Naval Surface Warfare Center, which provides technical expertise for naval machinery research and development, in-service engineering and fleet support, and machinery cybersecurity**
- **Naval Foundry and Propeller Center, a branch of the Norfolk Navy Shipyard, which designs, manufactures, and repairs propellers for the Navy**
- **Naval Facilities Engineering Command Mid-Atlantic, Pennsylvania Public Works Department, which provides maintenance and repair of facilities, roads, and utilities, and construction management and oversight for Navy installations in the state**
- **Naval Inactive Ships Maintenance Facility Detachment, which stores, preserves, and dismantles decommissioned naval vessels** ✪

BACKGROUND & HISTORY

The Navy's continuing presence at the Philadelphia Navy Yard is only the latest chapter in a long history of Navy activity in southeastern Pennsylvania. Philadelphia was one of the nation's earliest centers for Navy operations and warship construction. Downtown Philadelphia became home to the nation's first federal naval shipyard, which was founded in 1801 and operated for nearly seven decades along Federal Street. Navy shipbuilding operations consolidated to their current waterfront location in the 1870s and continued operation as both a Navy Station and Naval Shipyard into the 1990s. Peak activity at the Navy Yard came during World War II when an estimated 40,000 workers were employed there. During the war, the shipyard produced two of the largest surface combatants ever produced: the battleships New Jersey and Wisconsin. In 1944, a pilot plant to produce uranium isotopes was constructed at the shipyard to support the ongoing work of the Manhattan Project.[1]

The shipyard shifted away from new ship construction following the war. The shipyard concentrated on ship overhauls and maintenance. The last new ship completion at the Philadelphia Navy Yard was the command ship USS Blue Ridge (LCC-19), commissioned in 1970.

The first BRAC Commission in 1988 recommended closure of the Philadelphia Naval Hospital, which was part of the Philadelphia Naval Complex and located adjacent to the Navy Yard in South Philadelphia. The 1991 BRAC Commission recommended the closure of both the Naval Station and Naval Shipyard located at the Philadelphia Navy Yard. When the 1991 BRAC Commission released its final recommendations, the shipyard employed 7,371 workers and had an estimated economic impact on the Philadelphia region of over 34,000 jobs.[2]

The 1991 BRAC Commission recommended that major parts of the Philadelphia Naval Shipyard be closed, but "preserved for emergent requirements." The subsequent 1995 BRAC round did not sustain the need to preserve parts of the shipyard, facilitating a full shutdown of shipyard operations. In 1995, the Philadelphia Naval Station was decommissioned. The mandated closure of the Naval Shipyard was delayed by the timeline required to complete existing work, in-

Entrance to The Navy Yard, where the U.S. Navy's continuing presence is only the latest chapter in a long history of Navy activity in southeastern Pennsylvania.
Image courtesy of U.S. Navy

TABLE 1

MAJOR CHANGES – THE NAVY YARD ANNEX[4]

BRAC 1988	Recommended closure of Philadelphia Naval Hospital.
BRAC 1991	Recommended closure of both the Naval Station and the Philadelphia Naval Shipyard. The part of the shipyard inside the Controlled Industrial Area was to be "preserved" while the remainder of the complex not occupied by the Navy Surface Warfare Center, Naval Foundry and Propeller Center, Inactive Ships Maintenance Facility, or other small support detachments was to be turned over to the City of Philadelphia.
1993	Last operations of Philadelphia Naval Hospital transferred.
BRAC 1995	Did not sustain the recommendation of the 1991 Commission that part of the Naval Shipyard be maintained in a 'preserved' status; recommended closure.
	Recommended closing Naval Surface Warfare Center, Carderock Division Detachment, Annapolis, and relocating to other technical activities, including Naval Surface Warfare Center, Carderock Division Detachment, Philadelphia.
1995	Naval Station Philadelphia closed; operations of propeller shop and caretaker functions transferred to the Norfolk Navy Shipyard.
1996	Navy Shipyard Philadelphia closed.
2000	PAID signed the deed on behalf of the City of Philadelphia for all non-Navy-retained property at the League Island Complex, which was placed under the control of the PIDC for development as a privately owned industrial park.
2001	Remaining structures of former Philadelphia Naval Hospital demolished.
BRAC 2005	Recommended relocating the Norfolk Naval Shipyard Detachment, Naval Sea Systems Command Shipbuilding Support Office ship repair function to Norfolk Naval Shipyard.
2015	The Naval Surface Warfare Center Philadelphia Division stood up as an independent command; formerly operated as a division of the as Naval Ship Systems Engineering Station – Carderock Division.

cluding overhauls of the aircraft carriers USS Forrestal (CV-59) and USS Kennedy (CV-67), which was completed in 1995.

In 1996, the Philadelphia Naval Shipyard was closed, but the Navy Yard maintained operations of the Navy Surface Warfare Center — Carderock Division, which assumed the role as host for 24 naval activities that continued operation at the Navy Yard. The shipyard's propeller division remained in operation as a branch of the Norfolk Naval Shipyard and continued operations in Philadelphia, along with the Navy's Inactive Ships Maintenance Facility, which continued to use the Navy Yard's inner basin for the storage of retired naval vessels.

In 2000, the Philadelphia Authority for Industrial Development (PAID) acquired nearly 1,000 acres of federal property, signing a deed on behalf of the City of Philadelphia for all non-Navy-retained property. The non-profit Philadelphia Industrial Development Corporation (PIDC) — which uses PAID as a vehicle for carrying out its investment and development mission — was charged with conversion and reuse of the property as a privately owned industrial park.[3] Remaining Navy activities continued to operate on federal property within the Navy Yard campus. The Navy Yard is now home to about 13,000 employees, including approximately 2,800 employed by the U.S. Navy. More than 2,300 U.S. Navy employees are estimated to be Pennsylvania residents. ✪

ECONOMIC IMPACT

This economic impact analysis quantifies the potential impact on employment and economic output of all federal activities located at the Philadelphia Navy Yard. This could be interpreted as the result if these activities were disestablished or relocated outside of Pennsylvania. The IMPLAN model was used to estimate the total economic impact of each tenant including direct, indirect, and induced impacts that accrue within Pennsylvania. Direct impacts are the employment and spending associated with federal tenants at the Navy Yard, while indirect impacts, sometimes called intermediate impacts, are generated by the supply chain requirements and linkages of the activity being analyzed. Induced economic impacts derive from the spending patterns of employees and service members. Major federal tenants at the Navy Yard provided data on the employment of installation tenants in 2016; results reflect 2016 economic impact.

The total economic impacts of the federal activities at the Philadelphia Navy Yard are broken down by direct, indirect, and induced sources. These economic impacts for the City of Philadelphia and the State of Pennsylvania are summarized below (see Table 2).

- **Overall, federal activities at the Philadelphia Navy Yard generate 5,085 jobs within Pennsylvania, and over $410 million in labor income annually.**

TABLE 2

ECONOMIC IMPACT SUMMARY – THE NAVY YARD ANNEX

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
CITY OF PHILADELPHIA	Direct Effect	2,362	$ 210,630,032	$ 267,767,827	$ 608,026,774
	Indirect Effect	1,282	$ 115,851,806	$ 172,927,290	$ 258,138,173
	Induced Effect	1,041	$ 59,627,063	$ 99,798,544	$ 158,726,140
	Total Effect	4,686	$ 386,108,901	$ 540,493,662	$ 1,024,891,087

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
PENNSYLVANIA TOTAL	Direct Effect	2,363	$ 210,630,032	$ 267,767,827	$ 608,026,774
	Indirect Effect	1,516	$ 131,894,618	$ 195,846,429	$ 310,836,351
	Induced Effect	1,206	$ 68,311,256	$ 113,837,906	$ 184,410,800
	Total Effect	5,085	$ 410,835,906	$ 577,452,163	$ 1,103,273,925

Source: University of Pittsburgh Center for Social and Urban Research, 2018

TABLE 3

TOP 10 INDUSTRIES AFFECTED – THE NAVY YARD ANNEX

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
363	**Ship building and repairing**	1,098	$ 103,204,498	$ 113,968,255	$ 281,032,289
456	**Scientific research and development services**	1,092	$ 103,016,947	$ 139,797,568	$ 287,526,471
440	**Real estate**	206	$ 6,135,046	$ 42,152,954	$ 53,669,922
464	**Employment services**	174	$ 6,846,486	$ 9,534,511	$ 12,258,439
454	**Management consulting services**	139	$ 12,522,809	$ 12,075,204	$ 18,711,230
230	**Nonferrous metal foundries**	132	$ 11,159,428	$ 14,212,767	$ 34,906,709
501	**Full-service restaurants**	131	$ 2,840,182	$ 3,191,319	$ 6,165,830
460	**Marketing research and all other miscellaneous professional, scientific, and technical services**	131	$ 7,879,886	$ 6,881,132	$ 10,409,976
482	**Hospitals**	117	$ 9,298,023	$ 10,289,762	$ 17,942,421
395	**Wholesale trade**	111	$ 10,191,809	$ 18,492,361	$ 28,690,593

Sector reflects IMPLAN industry category; Source: University of Pittsburgh Center for Social and Urban Research, 2018

- **4,686 of these jobs, and $386 million in labor income annually, are estimated to be generated within the City of Philadelphia.**

- **Federal activities at the Philadelphia Navy Yard represent $1.1 billion in economic output and generate $577 million in Gross Regional Product (GRP), or value-added production, within Pennsylvania each year.**

Note that these results reflect only the economic impacts generated by federal activities at the Philadelphia Navy Yard that accrue within the State of Pennsylvania. The Navy Yard is located within the Philadelphia metropolitan region, which extends into parts of Maryland, New Jersey, and Delaware. Metropolitan areas are defined by the level of commuting flows and integration across counties. Commuting pattern data estimates that 13% of jobs located within the City and County of Philadelphia are filled by workers with residences outside of Pennsylvania.[5] Economic impacts of commuting workers that accrue in other states are not captured here.

The direct, indirect, and induced economic impacts are spread across industries. While the employees of federal tenants at the Philadelphia Navy Yard are predominantly federal civilian employees, the actual operations of most tenants mirror the activity of civilian industries. The civilian employment of each tenant organization was characterized in this analysis as a private sector industry that most closely matched its operations. Table 3 highlights the top 10 industries impacted as estimated by the IMPLAN model. Highest on the list are shipbuilding and repair, and scientific research and development services. ✪

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at The Navy Yard Annex. Strengths and weaknesses include attributes, assets, or factors that are internal to the installation. Threats are external factors that are harmful to, or create vulnerabilities for, the installation. Opportunities offer ways to mitigate threats and weaknesses and/or reinforce and expand on the installation's strengths. The SWOT analysis is summarized in Table 4, and aspects of the analysis are described throughout the following two sections.

The Navy Yard Annex's major tenants continue to perform critical work for the U.S. Navy. Their competitive advantages include: unique mission sets; vital assets, including workforce; and location.

The tenants provide a mix of technical services for naval ships. This includes repair and maintenance, supply chain optimization, and other services. In addition, the Naval Foundry manages production of specialized parts and technologies. In a recent assessment, the Economy League of Greater Philadelphia describes the Navy Yard as having "one-of-a-kind, critical assets required for Navy operations worldwide."[6] In the case of the Naval Surface Warfare Center (NSWC), those assets include 107 test facilities. Moreover, NSWC benefits from a skilled and experienced workforce with training in advanced science, engineering, and manufacturing. According to the center's leadership, NSWC staff have "boots on deck" on every single ship in the Navy every year. This expertise was called upon after two recent and tragic accidents involving Navy ships: NSWC staff evaluated the condition of the ships involved, provided technical assistance on repair, advised on transport back to the U.S., and identified equipment available within the Navy supply chain to do major repair.

TABLE 4

SWOT THEMES – THE NAVY YARD ANNEX

STRENGTHS	WEAKNESSES
• Unique Mission Sets • Location • Vital Assets, including Workforce	• Force Protection • Lack of Visibility
OPPORTUNITIES	**THREATS**
• Force Protection Planning • Partnerships • Expanded Local Defense Group	• Shortages of Some Specialized Workers

One of 32 decommissioned ships at the Naval Inactive Ships Maintenance Facility.
Image courtesy of U.S. Navy

NSWC faces few challenges in either retention or recruitment. Annual attrition rates at the center average only 6%, and most personnel separations result from retirements. The center is growing; it hired 316 new staff in 2016 and 416 new staff in 2017. Its personnel count (government and contract) is expected to increase by 1,000 by FY2020, a result of "strong and sustained demand" for NSWC services, which apply to every type of ship in the Navy.

The Naval Foundry and Propeller Center is the only center that designs, manufactures, and repairs propellers and propulsors for the Navy and its customers. As with the NSWC, the center expects to see an expansion in personnel in the near future. It is the largest public-owned foundry and propeller shop in the country.[7] Its capabilities span from developing casting instructions to making patterns and molds to producing centrifugal castings for nuclear submarines and surface ships. The center has 75 years of experience making propellers and uses specialized, state-of-the-art equipment to work on all types of surface and sub-surface craft.

The Naval Inactive Ships Maintenance Facility Detachment is one of just three inactive ship on-site maintenance facilities; the other two are located in Hawaii and Washington (state). The Philadelphia facility currently houses 32 decommissioned ships, far more than the number of ships at the other locations, and five crafts, e.g. barges. The facility has contributed greatly to the Navy's ability to reduce its inactive ship inventory, whether through sales to friendly foreign navies, donations toward the preservation of naval history, or dismantling and recycling. The Navy Yard is a uniquely good place to store ships — for scrapping or shipping out — because of relatively low salinity in the Delaware and Schuylkill Rivers.

South Philadelphia is an ideal location not just because of the salinity of its water, however. CBRE Research recently named Philadelphia one of three emerging global logistics hubs in the nation.[8] The Economy League of Greater Philadelphia identifies local military infrastructure and a strong supply chain for military procurement as part of what Philadelphia has to offer, as well as a strategic location on the eastern seaboard.[9] Moreover, its transportation infrastructure for deployment and mobilization is extensive, including multiple airports, highways with direct access to major warehouse facilities, a UPS hub, and various types of rail.[10]

Additionally, the stable and skilled workforce described above is aided by a strong workforce pipeline and large pool of educated workers. Greater Philadelphia boasts a number of research and higher education institutions and an increasingly educated workforce.

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Recent trends suggest that Philadelphia is emerging as a "brain magnet," that is, young people with college degrees are moving to the city and, in turn, attracting businesses, as well.[n] Despite the strong workforce pipeline and pool overall, NSWC would benefit from a larger supply of certain skilled occupations, including trained welders, heavy duty power engineers, and trained cybersecurity professionals. But these are shortages that are not unique to NSWC and are affecting other regions, sectors, and industries, as well. ✪

NAVY YARD ANNEX & THE PHILADELPHIA REGION

The U.S. Navy has a strong relationship with PIDC, a non-profit economic development corporation that serves as the Annex's (and Naval Support Activity Philadelphia's) Local Defense Group. PIDC was established in 1958 and took over development and management of the Navy Yard after the closure of the shipyard in the late 1990s.

With the support of the Pennsylvania Military Community Enhancement Commission (PMCEC), PIDC was very engaged with state and federal representatives leading up to the 2005 BRAC round. Its activities included: coordinating representatives' visits to facilities; contracting and/or authoring economic impact research, a SWOT analysis, and a case statement about the retention of military facilities in Philadelphia; and participating in BRAC summits at the federal and state level. In recent years, PIDC has worked in conjunction with the Economy League of Greater Philadelphia and Econsult Solutions — with the support of PMCEC — to produce SWOT analyses and economic impact analyses of the Department of Defense in the Philadelphia region.

PIDC operates as a master developer for the PAID-owned land parcels co-located with the Navy Yard Annex. It has attracted numerous employers to the site, including major facilities for Urban Outfitters. It continues to market land and buildings, and the site has also been considered as one possible location for the Amazon HQ2 solicitation process.

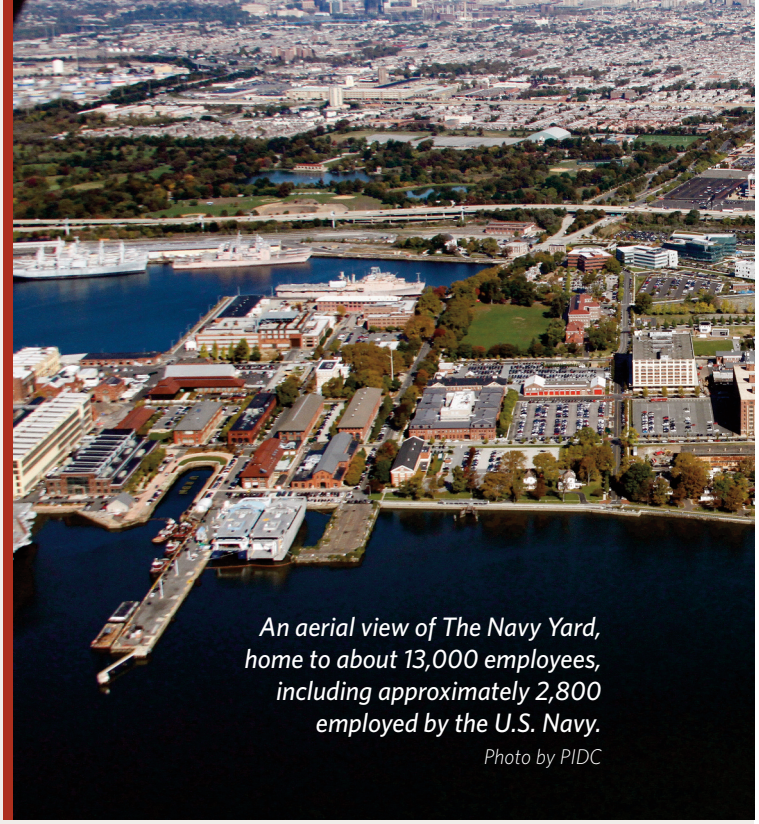
The open layout of the Navy Yard and the fact that the U.S. Navy's property is dispersed throughout the campus presents force protection challenges and requires PIDC and the U.S. Navy to cooperate on land use, services, and utilities. PIDC owns most of the roads on the complex and the small number of Navy-owned roads also allow public access. The Navy negotiated an easement with PIDC for a walkway along the water, which is now open for public enjoyment. To improve security, PIDC recently received a grant through

PMCEC to install security cameras at key locations near Navy-owned facilities. PIDC provides all utilities to the U.S. Navy except gas. For its part, the Navy owns a firehouse on the campus and has a mutual service agreement with PIDC; Navy firefighters are often first responders at the Navy Yard, which benefits both the federal and non-federal tenants there.

The Annex's largest tenant, NSWC, is particularly engaged with the surrounding community. The number of millennials working there has recently surpassed the number of baby boomers, resulting in a workforce that is active in schools and the community in new ways. The center has a number of partnerships with the city and state, industry, and colleges/universities, such as Drexel University, Villanova University, Morgan State University, and Penn State University. Those partnerships include research collaborations, internship programs, and recruitment programs. In 2017, NSWC hosted 20 local high school students as part of the Navy-wide Science and Engineering Apprenticeship Program, through which interns gain exposure to Navy research and technology and engage in mentored research projects.[12] Additionally, NSWC awards 51% of total contracts to local small businesses — the highest percentage of all the warfare centers — thanks to an in-house small business advocate and regular industry days.

Penn State University's involvement at the Navy Yard goes back to 2005, when the University began working on energy efficiency there, supported by the U.S. Department of Energy and the Commonwealth of Pennsylvania. In response to job growth at the Navy Yard, Penn State recently appointed a director of academic programs for Penn State at the Navy Yard. The director will oversee the expansion of academic programming and research opportunities. Additionally, Penn State Great Valley launched an MBA program at the Navy Yard, with evening classes for professionals.[13]

Operations underway at the Naval Foundry and Propeller Center, the only center that designs, manufactures, and repairs propellers and propulsors for the Navy and its customers.
Photo from Naval Foundry and Propeller Center Facebook page



An aerial view of The Navy Yard, home to about 13,000 employees, including approximately 2,800 employed by the U.S. Navy.
Photo by PIDC

LOOKING FORWARD

Moving ahead, Navy Yard Annex leadership will benefit from long-term force protection planning that considers Navy tenants' dispersion throughout a public and growing campus. Leadership should also consider pursuing new partnerships and strengthening existing ones, including those that would improve visibility in desired ways.

- *Force Protection Planning: The Navy owns nine distinct parcels scattered throughout the public Navy Yard complex, each with limited access and other security measures. Unlike many of Pennsylvania's other installations, however, there are no perimeter fences or secure front gates. As Navy Yard Annex leadership plans for the protection of its workforce, facilities, and equipment, it must consider PIDC's plans to take on more tenants and PIDC's desire to locate multi-unit housing on the campus.*[14]

- *Partnerships: Some Navy Yard Annex tenants have strong relationships with local schools and higher education institutions, which aids in recruitment and research & development efforts. Leadership might consider furthering recruitment efforts by engaging with Philadelphia Works, formerly the Philadelphia Workforce Investment Board, as well. Research & development work might be enhanced by pursuing an idea that some installation personnel have raised — a STEM Center at the Navy Yard.*

- *Visibility: Despite the strong partnerships that are already in place, the Navy Yard Annex's importance to the local economy and to key Naval missions is not well understood in the surrounding community. Greater awareness about local economic impact and about tenants' cutting edge engineering, technology, manufacturing, and cybersecurity work could be beneficial for recruitment and research efforts, and deepen local and political support.*

- *Expanded Local Defense Group: As a large economic development corporation, PIDC operates somewhat differently as a Local Defense Group than other places in the state; it might consider boosting its engagement by working to raise the profile of its Navy tenants, including on its website, for example. A dedicated Local Defense Group will be all the more important as the Navy's workforce grows and as PIDC continues to attract new tenants.* ✪

Notes

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[2] Ron Hess et al., *The Closing and Reuse of the Philadelphia Naval Shipyard*, National Defense Research Institute, RAND, 2001, 9

[3] Pennsylvania Base Development Committee, *Pennsylvania Military Installations Reference Manual*, March 2009

[4] Defense Base Closure and Realignment Commission, *2005 Defense Base Closure and Realignment Commission Report*, vol. 2, 2005; *1995 Report to the President*, 1995; *1993 Report to the President*, 1993; Pennsylvania Military Community Enhancement Commission, *2015 Annual Report*; Pennsylvania Base Development Committee, *Pennsylvania Military Installations Reference Manual*, March 2009

[5] Compiled from U.S. Census Bureau, 2009–2013 5-Year American Community Survey Commuting Flows data, last revised May 10, 2017, *census.gov/data/tables/time-series/demo/commuting/commuting-flows.html*

[6] Economy League of Greater Philadelphia, "The Military and Greater Philadelphia: Strengths, Weaknesses, Opportunities, & Threats" (PowerPoint, 2015)

[7] "Naval Support Activity Mechanicsburg, Naval Support Activity Philadelphia, Philadelphia Naval yard Annex: Base Guide 2016–17," 2016

[8] CBRE Group, Inc, "Philadelphia Expected to Emerge as Global Logistics Hub over the Next Decade," November 23, 2015

[9] Economy League of Greater Philadelphia, "The Military and Greater Philadelphia: Strengths, Weaknesses, Opportunities, & Threats" (PowerPoint, 2015)

[10] Economy League of Greater Philadelphia, "The Military and Greater Philadelphia: Strengths, Weaknesses, Opportunities, & Threats" (PowerPoint, 2015)

[11] Campus Philly, "Retaining College Talent and Spurring Job Growth," March 2015

[12] Kiera J. Anderson and Matt Leonard, "NSWC Philadelphia Awards Top Science and Engineering Apprenticeship Program (SEAP) Interns," September 8, 2017, *navsea.navy.mil/Media/News/Article/1305238/nswc-philadelphia-awards-top-science-and-engineering-apprenticeship-program-sea*

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This report is part of a larger study of the economic and community impacts of Pennsylvania's military and defense installations. Visit the Pennsylvania Military Community Enhancement Commission's website at www.dced.pa.gov/pmcec to see other installation-specific reports and a statewide report.

University of Pittsburgh Center for Social & Urban Research
3343 Forbes Ave., Pittsburgh, PA 15260 | 412-624-5442 | www.ucsur.pitt.edu

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THE NAVY YARD ANNEX

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