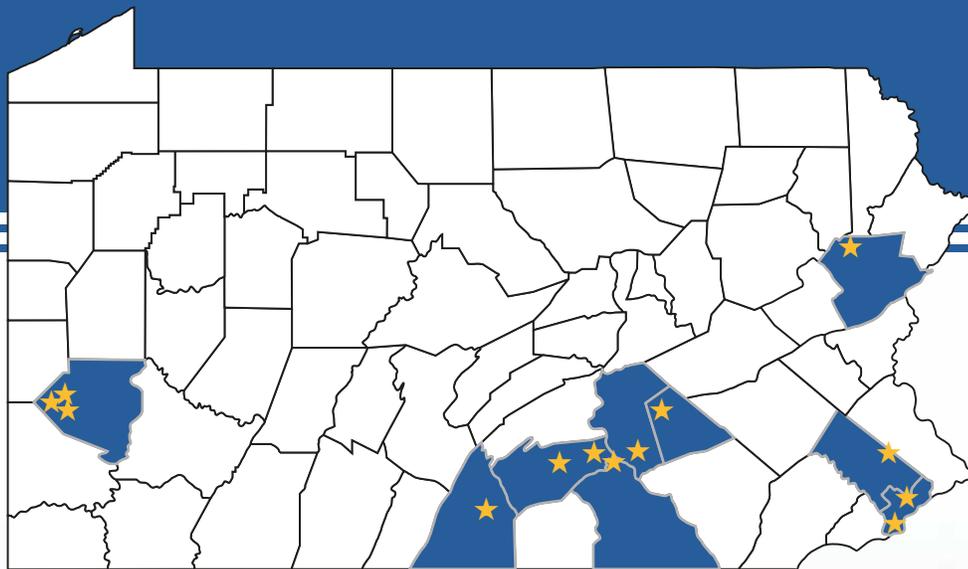




A COMPREHENSIVE ASSESSMENT OF

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS





About the Pennsylvania Military Community Enhancement Commission (PMCEC):

The Pennsylvania Military Community Enhancement Commission is working to move Pennsylvania’s military installations and organizations into prominent positions of strength through efficiency and effectiveness as the services have been scaling back the size of the military. Through local development, research, information gathering, working with our congressional delegation, and investment into infrastructure, PMCEC takes positive preemptive actions to demonstrate the Commonwealth’s commitment to our nation’s warfighters and the Pennsylvania men and women who support them. Individual installation reports are available at www.dced.pa.gov/pmcec.



About the University of Pittsburgh Center for Social and Urban Research (UCSUR):

The University of Pittsburgh Center for Social and Urban Research, established in 1972, provides research support infrastructure and training; conducts original research in focused areas, including urban impact analysis, regional development, and survey methodology; and enhances access to local and national policy-relevant data. Find more information at www.ucsur.pitt.edu.

TEAM PENNSYLVANIA

Working. Together.

This report was produced by the University of Pittsburgh Center for Social and Urban Research (UCSUR) and financed by a grant from the Pennsylvania Military Community Enhancement Commission, Pennsylvania Department of Community and Economic Development, with additional funding support from Team PA.

July 2018

The report was prepared by:

Sabina Deitrick, Ph.D., University of Pittsburgh Center for Social and Urban Research

Christopher Briem, University of Pittsburgh Center for Social and Urban Research

Colleen Cain, Ph.D., University of Pittsburgh Center for Social and Urban Research

Erik R. Pages, Ph.D., EntreWorks Consulting

Francesca Baisden, University of Pittsburgh Graduate School of Public and International Affairs

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COMMONWEALTH OF PENNSYLVANIA MILITARY COMMUNITY ENHANCEMENT COMMISSION

Pennsylvania has proudly supported our military and defense sector throughout our nation's history, and this deep partnership continues today. Since our nation's inception, Pennsylvania's diverse set of installations — from bases to depots to educational institutions — has demonstrated an ability to transform and lead in the face of changing demands and technological advances. Today, over 56,000 active duty service members, reservists of all branches, Army and Air National Guard members, and Department of Defense civilian employees work in Pennsylvania. These service members and civilian employees hail from all parts of the state.

The report estimates the economic and employment impacts of Pennsylvania's major military installations. The work finds that our military and defense operations contribute almost \$11 billion to the state's economy each year, and their work is vital to our communities, the Commonwealth, and the nation. In 2016, over \$4 billion of labor income for Pennsylvania workers was generated by our major military installations.

The Pennsylvania Military Community Enhancement Commission (PMCEC), which I am honored to chair, is charged with supporting our military bases, their missions, and the jobs they provide for Pennsylvanians. We seek to assist these installations so that they can best perform their critical missions, but we also support them because they are good neighbors to communities across the state.

We commissioned this study through the University of Pittsburgh's Center for Social and Urban Research to assess the impact of Pennsylvania's military installations on surrounding economies and communities. This rigorous analysis comprehensively examines the state's major military installations. It characterizes Pennsylvania's current military sector, demonstrates the sector's economic and community impacts, and examines the importance of these major installations across the Commonwealth.

The report contains many promising findings. Pennsylvania is home to a large and diverse military presence that enhances our national security and brings critical skills and jobs to the state economy. Pennsylvania has been an excellent military partner in the past, and the report offers many useful recommendations on how we can build even stronger partnerships in the future. Toward that end, the commissioners and I look forward to using the results of this important study to build on the strengths of our state's defense sector and realize the opportunities that our military installations and personnel create for the Commonwealth.

Sincerely,

Mike Stack

Lieutenant Governor

Chairman, Pennsylvania Military Community Enhancement Commission

A COMPREHENSIVE ASSESSMENT OF

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



Pennsylvania residents serve in all branches and services of the U.S. military.

EXECUTIVE SUMMARY

Pennsylvania plays a vital role in supporting America's military and defense infrastructure. From Pittsburgh to Philadelphia, the state's military installations support a diverse set of activities that are critical components of our nation's military infrastructure, including logistics, distribution, advanced manufacturing, electronics, leadership education, and refueling and repair.

Pennsylvania is the workplace of more than 56,000 Department of Defense (DoD) employees, including civilians, active duty service members, reservists of all branches, and Army and Air National Guard members. Civilians make up 90% of Pennsylvania's full-time DoD workforce.

This research estimated the total impacts of Pennsylvania's major military installations on the state's economy. Through direct, indirect, and induced effects, Pennsylvania's major military installations generated \$4 billion in labor income and \$11 billion in total economic output in 2016, resulting in 55,000 full-time equivalent jobs in the state. Typically, each installation is among the largest and most established employers in its county and a major source of high-quality jobs for Pennsylvania workers.

Each installation has its own competitive assets and challenges, and collectively Pennsylvania's major military installations share several important characteristics:

- **The ability of the state's installations to recruit and retain career federal workers over many decades is a critical competitive advantage and a major strength. DoD is an "employer of choice" across Pennsylvania.**
- **Local Defense Groups represent a major strength to enhance Pennsylvania's military installations, regionally and statewide, and a critical opportunity for promoting each installation's importance and impact to public officials and other stakeholders.**

- **Mutually beneficial installation-community partnerships and outreach efforts are critical strengths that also create opportunities for recruitment, community integration, and shared resources at both regional and state levels.**

- **State and local officials have worked hard to enhance local installations, but support for Pennsylvania's military sector has been inconsistent across installations and over time.**

- **Pennsylvania has proven strength in defense logistics and the defense industrial base.**

Pennsylvania's military sector is critical to national security and to the state's economic competitiveness, yet its importance is not widely understood. The state can more effectively promote and enhance Pennsylvania's military sector by:

- **Ensuring continued competitiveness of Pennsylvania's defense workforce;**

- **Boosting the Local Defense Group network and its capacity;**

- **Strengthening the advocacy role of the Pennsylvania Military Community Enhancement Commission; and**

- **Building on areas of strategic competitive advantage in defense logistics and the defense industrial base. ★**

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The research team appreciates the involvement of the installations' leadership and key personnel, as well as members of Local Defense Groups, who took time to speak with us, provide tours, and share economic data.

We would also like to thank Charles F. McLaughlin, Director for Commonwealth Relations, and Paul A. Supowitz, Vice

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Finally, the team would like to thank the many staff members at the University Center for Social and Urban Research (UCSUR) who have been critical components of our work: Laurel Person Mecca and Kevan Schultz of UCSUR's Qualitative Data Analysis program; Donna King and Greg Six of our administrative staff; Anna Aivaliotis for her editing; and Elizabeth Monk for her GIS expertise. From the Graduate School of Public and International Affairs, Francesca Baisden provided important research assistance.

This report was designed by Jennifer McNulty at StudioLuxe in Pittsburgh.

INTRODUCTION & BACKGROUND

Pennsylvania plays a vital role in supporting America's military. The military presence in Pennsylvania is critical to our national security, but also to Pennsylvania's economic competitiveness and strength. Yet, the importance of Pennsylvania's military and defense sector is not widely recognized across the state.

The University of Pittsburgh Center for Social and Urban Research (UCSUR) engaged in a year-long study to analyze and understand the economic and community impacts of Pennsylvania's military and defense installations. The purpose of the project is to aid Pennsylvania in understanding the economic and strategic value of its military installations regionally and nationally and the critical ties these installations have to the surrounding communities and to Pennsylvania industry. The project provides decision support resources that will assist state and local policy makers and other stakeholders in promoting the value of Pennsylvania's military installations. The project evaluated major Pennsylvania installations for the following:

- **Economic impacts**
- **Competitive strengths**
- **Local and community partnerships**
- **Industry connections**

Pennsylvania's military installations serve diverse roles and are located across the state (*see Figure 1*). Western Pennsylvania is home to the 911th Airlift Wing and the 171st Air Refueling Wing, which provide critical airlift and refueling capabilities as members of the U.S. Air Force Reserve and Pennsylvania Air National Guard (PaANG), respectively.¹ The nearby 316th Sustainment Command (Expeditionary) of the U.S. Army Reserve specializes in logistics support. In Central Penn-

sylvania: the 193rd Special Operations Wing of the PaANG excels in psychological operations; Fort Indiantown Gap provides extensive training as headquarters of the state's Army National Guard; and officers travel from all over to the Army War College & Carlisle Barracks for leadership education. The region also is home to installations with expertise in logistics and distribution for the Department of Defense (DoD), including Defense Distribution Center Susquehanna, Naval Support Activity Mechanicsburg, and Letterkenny Army Depot. In the eastern part of the state, Tobyhanna Army Depot and Naval Support Activity Philadelphia are extensions of that logistics corridor. The 111th Attack Wing (PaANG) supports remotely piloted aircraft operations. Finally, the Navy Yard Annex in Philadelphia carries out critical missions for the U.S. Navy. >>

PENNSYLVANIA'S MAJOR MILITARY INSTALLATIONS

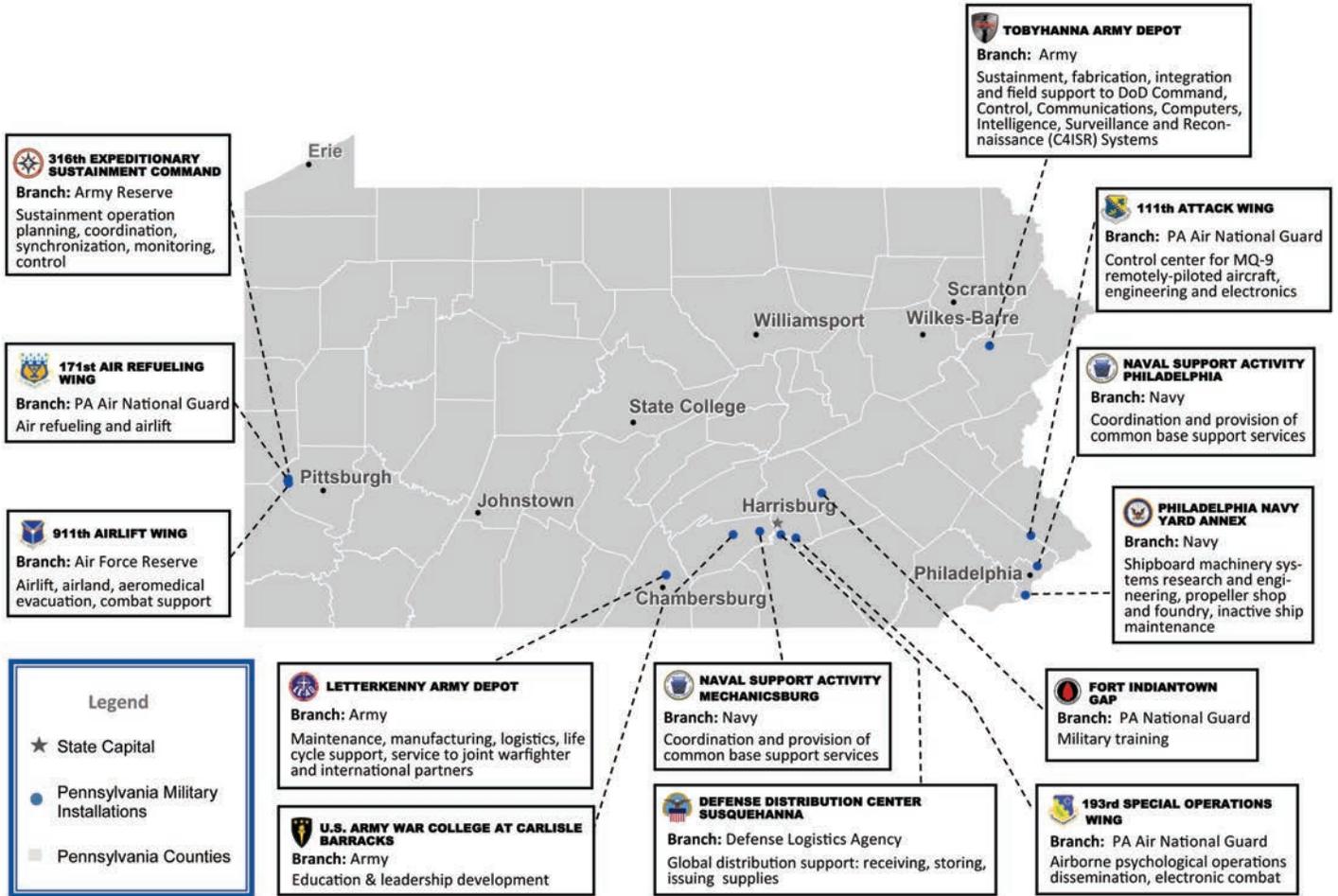
911th Airlift Wing, Pittsburgh International Airport
171st Air Refueling Wing, Pittsburgh International Airport
316th Sustainment Command (Expeditionary), Coraopolis
Letterkenny Army Depot, Chambersburg
The Army War College & Carlisle Barracks, Cumberland County
Naval Support Activity, Mechanicsburg
Defense Distribution Center Susquehanna, New Cumberland
193rd Special Operations Wing, Harrisburg International Airport
Fort Indiantown Gap, Pennsylvania National Guard
Tobyhanna Army Depot, Monroe County
111th Attack Wing, Horsham²
Naval Support Activity, Philadelphia
Navy Yard Annex, Philadelphia

¹ See Appendix A for a list of acronyms.

² The 111th Attack Wing was not the subject of an in-depth installation study, but it is one of the state's military installations and included in the economic impact analysis. More information about the Wing appears in a sidebar.

FIGURE 1

MILITARY INSTALLATIONS IN PENNSYLVANIA



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

CONTEXT

This report examining the critical impacts of the military in Pennsylvania is underway as DoD is assessing new approaches to managing and financing “the business of national defense.” As part of this process, DoD and military officials are rethinking the funding and support of military installations and other parts of DoD’s real estate portfolio. These efforts are driven by tight budgets and DoD analysis that identifies as much as 22% of current military base capacity in excess of current strategic requirements. The public side of these debates has focused largely on the prospects of a new round of military base closures under the Base Realignment and Closure (BRAC) process. Every state with a military presence seeks to prepare for this process and make a compelling case for why local bases should remain open or be expanded.³ The BRAC Commission’s recommendations have both harmed and benefitted Pennsylvania installations.⁴ While it is still unclear whether Congress will approve a new BRAC round or a related process, analysts expect debates on how to “rightsize” military infrastructure to continue in 2018 and beyond.

METHODS

This project employed a combination of qualitative and quantitative research methods to examine the impact of Pennsylvania’s major military installations.⁵ Between March and September 2017, the research team visited each of the installations and conducted interviews with key stakeholders. These formed the basis of a Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis conducted for 12 major installations. The “Critical Areas” section of this volume reflects statewide common themes that arose from the individual SWOT analyses.

For each installation, the research team also collected economic data that was analyzed through an impact model, IMPLAN, to estimate economic impacts of each installation in both the state and the installation’s home county. These results demonstrate the critical role our military installations play in the state’s economy.⁶ ★

³ Previous BRAC rounds occurred in 1988, 1991, 1993, 1995, and 2005. For background on the BRAC process, see Else, “Military Base Closures.”

⁴ See Appendix B for a brief history of the military in Pennsylvania and Appendix C for a detailed timeline of the state’s BRAC history.

⁵ See Appendix D for further details on methodology.

⁶ There are 12 reports with a specific SWOT analysis and impact study for each installation. These may be found at www.dced.pa.gov/pmcec and ucsur.pitt.edu/pa_military_2018.php.

MILITARY SERVICES IN PENNSYLVANIA TODAY

Pennsylvania's strategic location is the workplace of over 56,000 Department of Defense (DoD) employees, including full-time civilian workers, active duty service members, reservists of all branches, and Army and Air National Guard members (see Table 1). This section examines who makes up Pennsylvania's vital military workforce.

We begin with a discussion of full-time DoD personnel, which includes both civilian employees and active duty personnel. In 2017, full-time DoD civilian and active duty personnel totaled 26,117 workers in the state.

Pennsylvania's full-time DoD employment stands out in many ways, both within our state and across the nation. Pennsylvania's military operations are largely

TABLE 1

Department of Defense Civilian Employment and Active Duty and Reserve Service Members in Pennsylvania, 2017

23,537 DoD CIVILIAN EMPLOYEES			2,580 ACTIVE DUTY			30,244 NATIONAL GUARD & RESERVE		
Army	8,018	34.1%	Army	961	37.2%	Army National Guard	15,514	51.3%
Navy	6,549	27.8%	Navy	690	26.7%	Army Reserve	7,526	24.9%
Marine Corps	20	0.1%	Marine Corps	379	14.7%	Navy Reserve	868	2.9%
Air Force	1,008	4.3%	Air Force	223	8.6%	Marine Corps Reserve	1,379	4.6%
DoD Activities	7,942	33.7%	Coast Guard	327	12.7%	Air National Guard	3,848	12.7%
						Air Force Reserve	996	3.3%
						Coast Guard Reserve	113	0.4%

Includes full- and part-time employees/members; Source: Compiled by University of Pittsburgh Center for Social and Urban Research from Defense Manpower Data Center data. As of September 30, 2017.

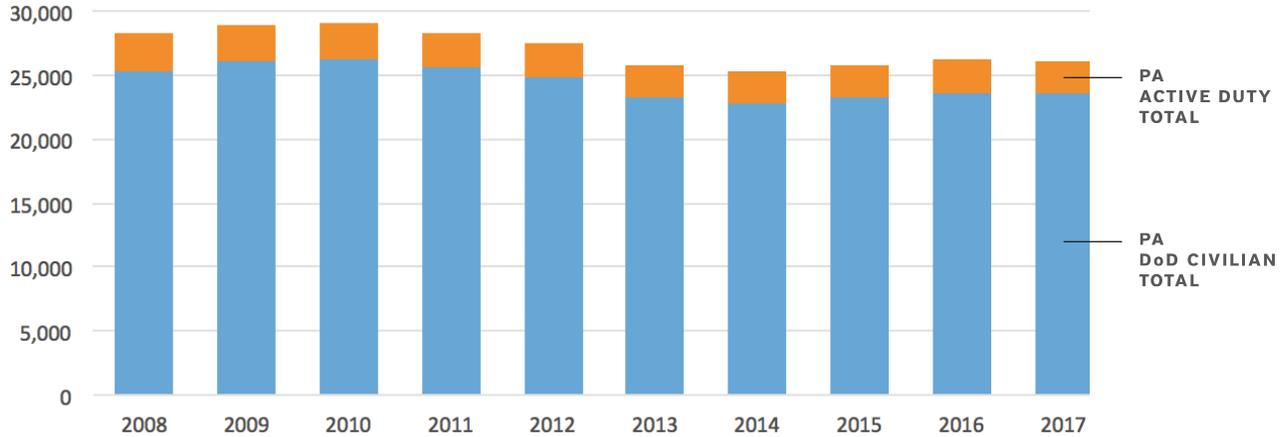
focused on the business side of the defense sector, home to a diverse mix of industrial, logistics, and other military operations. Pennsylvania's military workforce is different from most other states because the state does not host a large active duty military base; the workforce is characterized by a high concentration of civilian employees and a relatively small number of active duty personnel. Consider the following statistics:

- In 2017, Pennsylvania's full-time civilian DoD employment totaled 23,537 workers, while full-time military personnel totaled 2,580 (see Figure 2).
- Civilians make up 90% of Pennsylvania's full-time DoD workforce, compared to 38.2% across the U.S. When we compare Pennsylvania to other states, it ranks third, behind just Indiana and Maine, for the highest proportion of civilian employees among the full-time DoD workforce (see Table 2).

>>

FIGURE 2

Full-Time Civilian & Military Department of Defense Personnel in Pennsylvania, 2008-2017



Source: Compiled by University of Pittsburgh Center for Social and Urban Research from Defense Manpower Data Center data. As of September 30, 2017.

TABLE 2

States Where Civilians Comprise the Largest Share of Total DoD Employment, 2017⁷

	ACTIVE DUTY SERVICE	DoD CIVILIAN EMPLOYEES	TOTAL FULL-TIME DoD WORKFORCE	% CIVILIAN
INDIANA	963	10,877	11,840	91.9%
MAINE	811	7,789	8,600	90.6%
PENNSYLVANIA	2,580	23,537	26,117	90.1%
WEST VIRGINIA	197	1,735	1,932	89.8%
IOWA	248	1,431	1,679	85.2%
MICHIGAN	2,088	9,155	11,243	81.4%
MINNESOTA	597	2,286	2,883	79.3%
OHIO	6,793	25,510	32,303	79.0%
UTAH	3,979	14,876	18,855	78.9%
VERMONT	168	574	742	77.4%
U.S. TOTAL	1,119,873	693,684	1,813,557	38.2%

Source: Compiled by University of Pittsburgh Center for Social and Urban Research from Defense Manpower Data Center data. As of September 30, 2017.

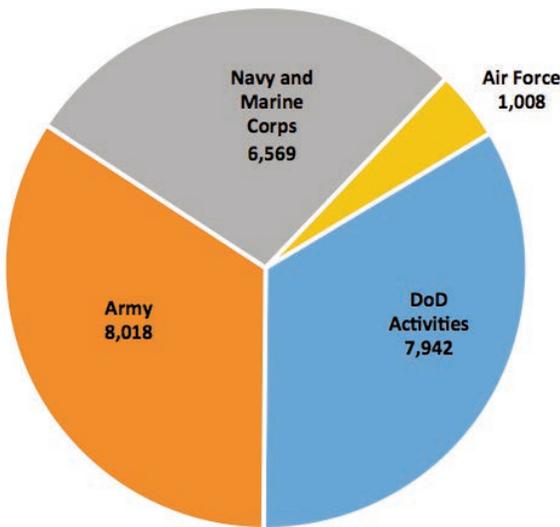
<< Pennsylvania’s DoD workforce comprises all service branches, along with what are called “4th Estate” defense organizations, such as the Defense Logistics Agency (DLA), located in New Cumberland. 4th Estate organizations are joint operations that fall directly under DoD and support all military branches and combatant commanders in all theaters of operations. In Pennsylvania, the civilian DoD workforce is closely divided among the Army (34.1%), 4th Estate (33.7%), and Navy (27.8%) (see Figure 3).

DoD is one of the largest employers in Pennsylvania and often among the largest employers in the counties where military installations are found. These

concentrated employment centers are complemented by other DoD employment, including National Guard and reserve facilities, military recruiting activities, Reserve Officers' Training Corps detachments at Pennsylvania’s colleges and universities, and other defense activities located throughout the state. Altogether, DoD was the 7th largest employer in Pennsylvania in 2017 (see Table 3).⁸

The economic impact of these positions in the state will be analyzed in the following section. Most critically, when civilian DoD jobs are combined with active duty military service members, the total DoD payroll amounted to \$2.5 billion in Pennsylvania in 2015.⁹

FIGURE 3
Pennsylvania Department of Defense Civilian Personnel, by Branch, 2017



Source: University of Pittsburgh Center for Social and Urban Research from Defense Manpower Data Center data. As of September 30, 2017.

TABLE 3
Largest Employers in Pennsylvania, 2nd Quarter 2017

- 1 **Wal-Mart Associates**
- 2 **University of Pennsylvania**
- 3 **City of Philadelphia**
- 4 **U.S. Postal Service**
- 5 **Penn State University**
- 6 **Giant Food Stores Inc.**
- 7 **U.S. Department of Defense**
- 8 **School District of Philadelphia**
- 9 **UPMC Presbyterian Shadyside***
- 10 **PNC Bank**

*Includes only Oakland and Shadyside campuses;
Source: Pennsylvania Department of Labor, Center for Workforce Information and Analysis.

⁷ Pennsylvania ranked 10th in the nation in the number of full-time civilian DoD employment in 2017. Governing. “Military Active-Duty Personnel, Civilians by State.”

⁸ In 2017, the U.S. federal government was the state’s largest employer with 62,410 federal civilian jobs.

⁹ U.S. Department of Defense, Office of Economic Adjustment, “Defense Spending.”

RESERVE FORCES

Pennsylvania also supports reserve components of all military services and the U.S. Coast Guard. Reserve components of federal military services, along with the Pennsylvania Army National Guard and Pennsylvania Air National Guard, have a longstanding presence across the state. The number of Pennsylvanians in our reserve forces stands out in several ways:

- **Pennsylvania’s National Guard membership ranks 2nd highest in the country, after Texas** (see Table 4).
- **Pennsylvania’s total number of reserve forces, including National Guard, ranks 4th in the nation, after California, Texas, and Florida.**
- **30,244 Pennsylvanians were in the reserve forces in 2017.**

Pennsylvania’s reservists make an impact throughout the state. The 28th Division of the Pennsylvania Army National Guard totals over 15,000 soldiers who are based at over 68 facilities (see Figure 4). Major units of the Pennsylvania Air National Guard include the 171st Air Refueling Wing operating out of the Pittsburgh International Airport, the 193rd Special Operations Wing based in Harrisburg, and the 111th Attack Wing at Horsham.

The Army Reserve has over 7,000 service members based out of 49 facilities within the state. The largest facilities are located at Fort Indiantown Gap, Philadelphia, and Coraopolis/Pittsburgh International Airport (see Figure 5). Navy Reserve operates four Navy Operational Support Centers (NOSCs) supporting Navy Reserve units in five locations: Avoca, Ebensburg, Erie, Harrisburg, and Lehigh Valley (Allentown).

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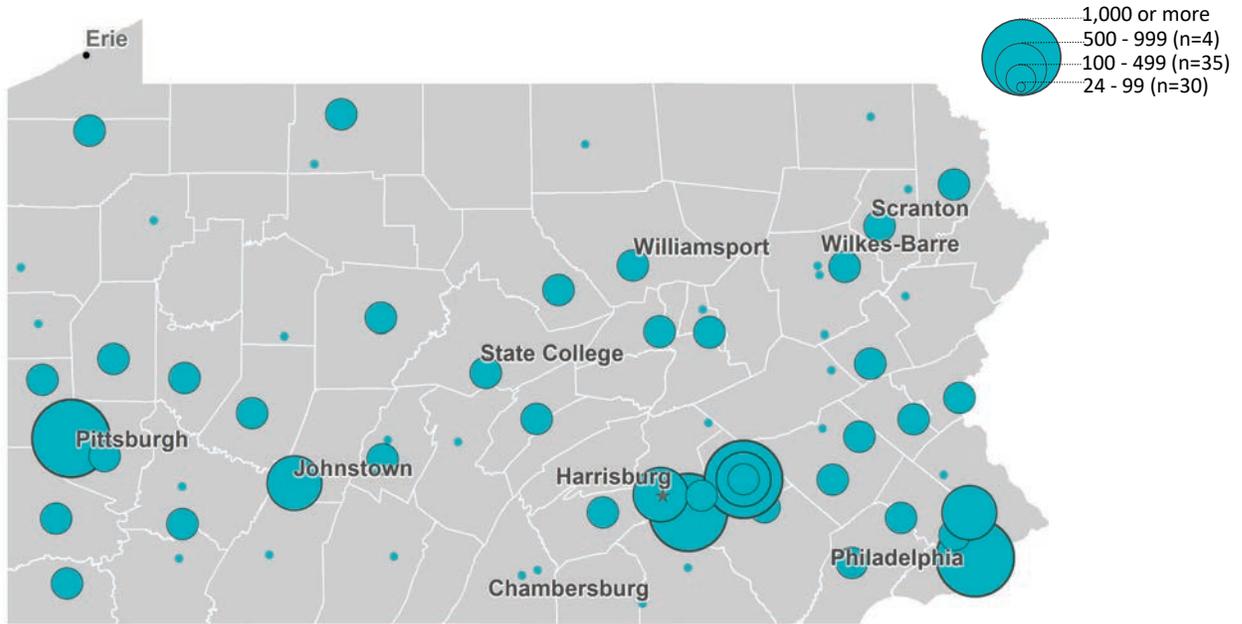
TABLE 4
Largest National Guard Membership by State, 2017

RANK		ARMY NATIONAL GUARD	AIR NATIONAL GUARD	NATIONAL GUARD TOTAL
1	TEXAS	17,519	3,269	20,788
2	PENNSYLVANIA	15,514	3,848	19,362
3	CALIFORNIA	14,242	4,509	18,751
4	OHIO	10,810	4,916	15,726
5	NEW YORK	10,082	5,571	15,653
6	GEORGIA	11,049	2,690	13,739
7	INDIANA	11,637	1,831	13,468
8	MINNESOTA	10,913	2,041	12,954
9	ILLINOIS	9,836	3,011	12,847
10	TENNESSEE	9,438	3,302	12,740

Source: Compiled by University of Pittsburgh Center for Social and Urban Research from Defense Manpower Data Center data. As of September 30, 2017.

FIGURE 4

Pennsylvania National Guard Members Assigned to Units and Facilities, by Location*



*Active guard reserve members are included in this number; As of September 30, 2016
 Source: Created by University of Pittsburgh Center for Social and Urban Research, 2018

FIGURE 5

Largest National Guard Locations in Pennsylvania



*Active guard reserve members are included in this number; As of September 30, 2016
 Source: National Guard Bureau; Created by University of Pittsburgh Center for Social and Urban Research, 2018

<<

The Marine Corps operates at each Navy Reserve NOSC and at an independent Marine Corps Reserve Center in North Versailles (Allegheny County). The Air Force Reserve operates the 911th Airlift Wing at the Pittsburgh International Airport.

Together, the DoD civilian, reserve, and active duty workforces create significant economic impacts, as we show in the next section. 🌟



The Horsham Air Guard Station is located north of Philadelphia on the former Willow Grove Naval Air Station-Joint Reserve Base. The installation is home to the 111th Attack Wing of the PA Air National Guard, elements of the 28th Division of the PA Army National Guard, and other interagency tenants.

As a result of the 2005 BRAC, the Naval Air Station was decommissioned and all air operations ceased by 2011. The installation greatly downsized and only 220 out of 1,100 acres are now in use.

The base is located in proximity to major metropolitan areas, including Washington, DC and New York City. The site includes 28 acres of flat concrete surface that was an emergency staging area during Superstorm Sandy. It also has additional space for training and other uses.

In 2013, the National Guard Bureau authorized the 111th to establish a ground-control station for the MQ-9 Reaper – a remotely piloted aircraft – at Horsham Air Guard Base. The installation is now home to one of 12 centers supporting global Unmanned Aerial Vehicle (UAV) operations, which began in 2016 and continue to be supported mostly by mobilized Air National Guard service members.

ECONOMIC IMPACT OF MILITARY OPERATIONS IN PENNSYLVANIA

The major military installations in Pennsylvania represent over 90% of Department of Defense (DoD) employment and payroll within the state. Operations at each installation typically represent one of the largest employers within the counties where they are located. Major military installations are complemented by significant defense contracts being awarded to Pennsylvania firms and dispersed DoD and Pennsylvania National Guard operations throughout the state.

This section includes:

- An analysis of the total economic impacts of the major military installations in Pennsylvania; and
- A summary of other DoD impacts in Pennsylvania, including contracting and military retirees.

MAJOR MILITARY INSTALLATIONS

The IMPLAN model was used to estimate the total economic impact of 13 major military installations in Pennsylvania. The IMPLAN model estimates the direct,

indirect, and induced impacts that accrue within Pennsylvania because of activity generated by the state's military installations. Taken together, the total economic impact of Pennsylvania's military installations is estimated. Direct impacts are the employment and spending associated with all operations located at these installations, while indirect impacts, sometimes called intermediate impacts, are generated by the supply chain requirements of operations at each location. Induced economic impacts derive from the spending patterns of employees and service members. The analysis uses primary data on employment, payroll, and expenditures for the 2016 federal fiscal year provided by staff at each installation.

This economic impact analysis quantifies the cumulative impact on employment, economic output, and value added production generated by operations at these installations.¹⁰ Total cumulative impact of major military installations in Pennsylvania, including direct, indirect, and induced effects include:¹¹

- Over 55,000 full-time equivalent jobs, which added over \$4 billion in labor income annually

TABLE 5
Total Economic Impact – Major Military Installations in Pennsylvania

IMPACT TYPE	EMPLOYMENT	LABOR INCOME*	VALUE ADDED*	OUTPUT*
Direct Effect	27,821	\$ 2,693	\$ 4,189	\$ 6,964
Indirect Effect	10,339	\$ 694	\$ 1,054	\$ 1,889
Induced Effect	16,926	\$ 803	\$ 1,354	\$ 2,312
TOTAL EFFECT	55,085	\$ 4,190	\$ 6,596	\$ 11,164

* In millions of dollars.

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

¹⁰ See Appendix D for a detailed discussion on the IMPLAN model.

- \$11 billion in economic output annually
- \$6.6 billion in value added production (or Gross Regional Product) annually (see Table 5)

Table 6 summarizes the estimated economic impact for each of Pennsylvania’s major military installations. The results here reflect the total economic impacts that accrue within Pennsylvania resulting from the ongoing operations at each of these installations.¹²

>>

TABLE 6

Economic Impact Summary^a – Major Pennsylvania Military Installations

		TOTAL EMPLOYMENT	LABOR INCOME ^b	VALUE ADDED ^b	ECONOMIC OUTPUT ^b
Tobyhanna Army Depot	U.S. Army	8,306	\$ 541	\$ 948	\$ 2,221
Letterkenny Army Depot	U.S. Army	6,645	\$ 439	\$ 818	\$ 2,049
Naval Support Activity Philadelphia	U.S. Navy	7,533	\$ 654	\$ 865	\$ 1,293
Naval Support Activity Mechanicsburg	U.S. Navy	8,371	\$ 667	\$ 920	\$ 1,207
Defense Logistics Agency Susquehanna	DoD	7,626	\$ 571	\$ 804	\$ 1,165
Philadelphia Navy Yard	U.S. Navy	5,085	\$ 411	\$ 578	\$ 1,103
Fort Indiantown Gap	PA National Guard	4,641	\$ 357	\$ 565	\$ 733
U.S Army War College	U.S. Army	2,868	\$ 230	\$ 434	\$ 522
171st Air Refueling Wing	PA Air National Guard	1,178	\$ 106	\$ 238	\$ 316
911th Airlift Wing	U.S. Air Force Reserve	1,024	\$ 76	\$ 156	\$ 217
193rd Special Operations Wing	PA Air National Guard	851	\$ 61	\$ 135	\$ 179
111th Attack Wing	PA Air National Guard	687	\$ 57	\$ 97	\$ 108
316th Expeditionary Sustainment Command	U.S. Army Reserve	271	\$ 19	\$ 40	\$ 51
	TOTAL	55,085	\$ 4,190	\$ 6,596	\$ 11,164

^aEconomic impact summary includes total of direct, indirect, and induced impacts estimated with the IMPLAN Model; ^bIn millions

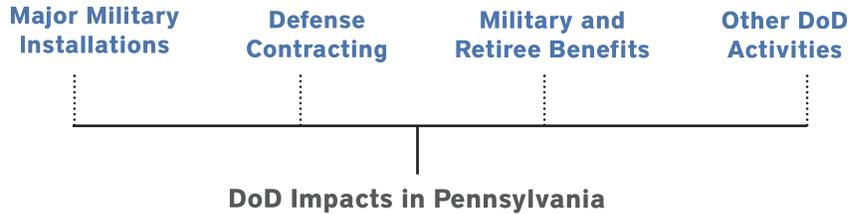
Source: University of Pittsburgh Center for Social and Urban Research, 2018

¹¹ These results can be interpreted as the potential loss if an installation were to be disestablished and all of its tenant activities were shut down or relocated outside of Pennsylvania.

¹² Not included are economic impacts that are generated outside of Pennsylvania either due to indirect supply-chain purchases or the spending of workers who commute from residences in other states.

FIGURE 6

Sources of Department of Defense Impacts in Pennsylvania



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OTHER DoD IMPACTS IN PENNSYLVANIA

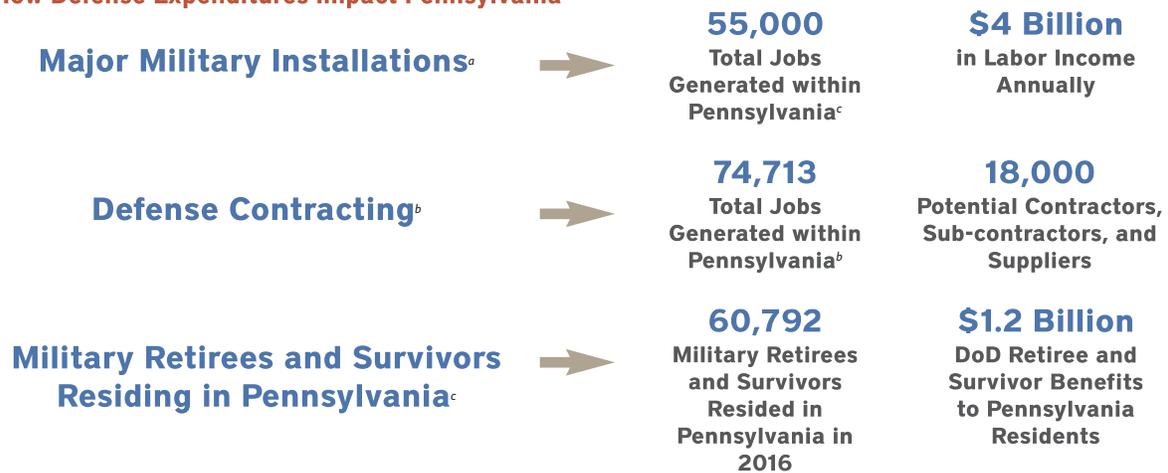
The economic impacts generated by major military installations are only part of the total economic impact DoD generates within the state. Outside of the major installations, each of the military services and independent DoD agencies, along with the Pennsylvania National Guard, maintain a distributed presence across the state, including regional armories, Reserve Officers’

Training Corps detachments, and military recruiters. In addition, Pennsylvania industries are among the largest recipients of defense contracts in the nation, and the state is home to more than 60,000 military retirees and survivors who receive monthly DoD benefits.

While this report analyzes the impacts of Pennsylvania’s major military installations, other research has assessed the impact of defense contracting across the state. (See Figures 6 & 7). The DoD Office of Eco-

FIGURE 7

How Defense Expenditures Impact Pennsylvania



Sources: a) University of Pittsburgh Center for Social and Urban Research; b) Fourth Economy and Thomas P. Miller & Associates, “Mapping,” 2016; c) U.S. Department of Defense, Office of the Actuary, “Statistical Report,” 2017.

¹³ U.S. Department of Defense, Office of the Actuary, “Statistical Report,” 47.

conomic Adjustment (OEA) estimated that a total \$10.2 billion of defense-related federal contracts were awarded to Pennsylvania firms in 2015. Combined with a cumulative \$2.5 billion in defense payrolls, the \$12.7 billion cumulative defense spending for 2015 made Pennsylvania the 6th largest recipient of defense expenditures by the OEA estimates.¹³

In a second study done in 2016, the total economic impact of defense-related contracting was estimated by

Fourth Economy, under contract to the Pennsylvania Department of Community and Economic Development (DCED). Their work quantified the size of both prime and subprime contractors in the DoD supply chain and modeled the indirect and induced economic impacts of those defense contracts. Table 7 presents both economic impacts of Pennsylvania’s major installations from this report and Fourth Economy’s estimated economic impacts of defense contract activity. ☆

TABLE 7
Summary of DoD-Related Economic Impacts in Pennsylvania

	DIRECT JOBS	INDIRECT JOBS	INDUCED JOBS	TOTAL JOBS
Impacts of Major Military Installations ^a	27,821	10,339	16,926	55,085
Pennsylvania Defense Contracts ^b	32,973	17,190	24,550	74,713

^a University of Pittsburgh Center for Social and Urban Research calculations.

^b Fourth Economy and Thomas P. Miller & Associates, “Mapping,” 2016.

Military Retirees in Pennsylvania

In 2016, Pennsylvania was home to 51,760 military retirees and 9,032 military survivors (spouses of deceased military retirees) receiving benefits from the DoD. Collectively, military retirees and survivors receive over \$100.3 million in monthly retirement and survivor benefits, over \$1.2 billion annually. The economic impact generated by military retirees and survivors are in addition to the economic impacts estimated here of Pennsylvania’s major military installations.

Source: U.S. Department of Defense, Office of the Actuary, “Military Retirement System.”

CRITICAL AREAS

Pennsylvania's military installations are in part defined by their diversity, with missions that range from logistics and supply to leadership education to refueling and repair. Despite these differences, several critical areas share relevance across the installations — areas that deserve attention by those interested in building on the sector's strengths, enhancing its connections, and expanding its presence in the state.

The Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis for each of Pennsylvania's major military installations identified common themes across the state. Understanding these is critical to enhancing and strengthening Pennsylvania's military installations. The statewide themes detailed in this section are:

WORKFORCE:

Recruiting and Retaining Skilled Defense Workers

LOCAL DEFENSE GROUPS:

Supporting and Promoting Installations

COMMUNITY CONNECTIONS:

Building Lasting Ties between Installations and Communities

SIZE, ENCROACHMENT, & FORCE PROTECTION:

Addressing Challenges

STATE & FEDERAL PARTNERSHIPS:

Sustaining Support

WORKFORCE:

Recruiting and Retaining Skilled Defense Workers

As we have seen, Pennsylvania employs 23,537 civilian defense workers. This is a critical workforce. Each of Pennsylvania's major military installations supports a unique mission that depends on this core of specialized federal workers that would be difficult to recruit and retain elsewhere. And, unlike other states, where military presence is primarily made up of active duty service members who routinely transfer to new locations after short tours, most of Pennsylvania's career federal employees are workers who have chosen to live in Pennsylvania and remain there throughout their careers. The tenure of these workers allows for an accumulation of knowledge and skills that benefit both installation missions and Pennsylvania's communities.

The federal workforce in Pennsylvania is among the Department of Defense's (DoD) most highly specialized workforces:

- **Army depots at Tobyhanna and Letterkenny, along with the Naval Surface Warfare Center in Philadelphia, are home to major concentrations of skilled workers in difficult to recruit areas of science, technology, engineering, and math (STEM) fields.**
- **The Naval Support Activities at Philadelphia and Mechanicsburg, along with the Defense Distribution Center Susquehanna, support a wide range of specialized management, logistics, and transportation functions vital to DoD Combatant Commands worldwide.**
- **The Army War College at Carlisle depends upon a staff of faculty and researchers who have built up specialized expertise in fields that directly support Army missions.**

The ability of each of these installations not only to recruit, but also to retain career federal workers over many decades is a critical competitive advantage and a major strength for Pennsylvania's military infrastructure.

In most Pennsylvania communities, the local military installation is an “employer of choice.” Pennsylvania workers have a strong desire to work for the military, and, once hired, remain loyal and hardworking, with long tenure and minimal turnover.

While Pennsylvania has traditionally been a good place to recruit and retain federal workers, the state is not immune to the larger economic and demographic pressures that will affect the DoD workforce in coming years. In 2015, the Office of Personnel Management estimated that more than a third of current federal employees will be eligible to retire by 2020.¹⁴ As national labor market conditions tighten, especially as the pace

of Baby Boomer retirements accelerates, the value of the accumulated human capital at each of these installations will become ever more critical to maintaining readiness across DoD.

As tighter labor markets affect all employers, DoD will face ever-greater competition for workers in the future. Sustaining the quality jobs that make up the DoD workforce in Pennsylvania should be one of the highest priorities of the state’s overall workforce development efforts. Virtually all the jobs located at Pennsylvania’s major military installations provide high paying and high skill career opportunities in in-demand occupations. Further, local installations are each significant employers of veterans, providing essential post-service career opportunities for younger and older veterans. State workforce development efforts should be integrated with the workforce development efforts at each of Pennsylvania’s major military installations>

The Air Guard and Reserve: Vital to Retaining Military Pilots

In addition to federal civilian retirement trends, other problem areas are also emerging. The Air Force is currently experiencing a shortage of qualified pilots due to multiple factors, including increased hiring in the civilian aviation sector. The shortage of pilots has been described as a crisis impacting military readiness.

Pennsylvania is home to three active wings of the U.S. Air Force Reserve (AFR) and Pennsylvania Air National Guard (PaANG). The 171st Air Refueling Wing (PaANG) and 911th Airlift Wing (AFR) are co-located at the Pittsburgh International Airport, and the 193rd Special Operations Wing (PaANG) is co-located at the Harrisburg International Airport. The operational squadrons of each of these wings are primarily comprised of reserve pilots who have chosen to continue their military careers in the reserve or guard. The location of these units in close proximity to major civilian airports is a recruiting advantage as reserve and guard pilots can work in the private sector. In addition, these locations near major urban areas provide better career opportunities for military spouses and the families of these pilots.

¹⁴ FedWeek, “GAO Sees Potential,” February 22, 2017.

LOCAL DEFENSE GROUPS:

Supporting and Promoting Installations

Each of Pennsylvania's military installations faces issues and challenges that a partnership organization can help to address. These partnership organizations are Local Defense Groups (LDGs) that work with military installations and their stakeholders on critical issues affecting both installations and the community. The Pennsylvania Military Community Enhancement Commission (PMCEC) has played a major role in helping to establish a network of LDGs through local economic development organizations and their partners (see Figure 8). Some LDGs focus on one military installation, and other regional groups provide a single point of support for multiple installations. Pennsylvania's LDGs include:

- **Blue Ribbon Task Force (Tobyhanna Army Depot)**
- **Lebanon County LDG (Fort Indiantown Gap)**
- **Franklin County Area Development Corporation/Team Letterkenny (Letterkenny Army Depot)**
- **Military Affairs Council of Western Pennsylvania (911th Airlift Wing, the 171st Air Refueling Wing, and the 316th Sustainment Command-Expeditionary)**
- **Philadelphia Industrial Development Corporation (Navy Yard Annex and Naval Support Activity Philadelphia)**
- **Cumberland York Area LDG (Carlisle Barracks/Army War College, Naval Support Activity Mechanicsburg, and Defense Distribution Center Susquehanna)**

The SWOT analysis demonstrated that LDGs are one of the state's critical assets in promoting military establishments. LDGs aid installations in establishing

and strengthening community connections and advocating for the installation at the local, state, and even federal levels. They assist local businesses seeking to identify and secure potential contracts at area installations and share information about installations with key stakeholders and elected officials. LDGs involvement in communities and regions extends the work of PMCEC in direct ways with local stakeholders and defense communities. Specifically, LDGs in Pennsylvania have worked across these important issues:

- **Mutual support agreements**
- **Shared services**
- **Joint land use planning**
- **Planning to address and alleviate encroachment issues**
- **Community-military partnerships**
- **Workforce development partnerships**
- **Base efficiency improvements**
- **Military value promotion**¹⁵

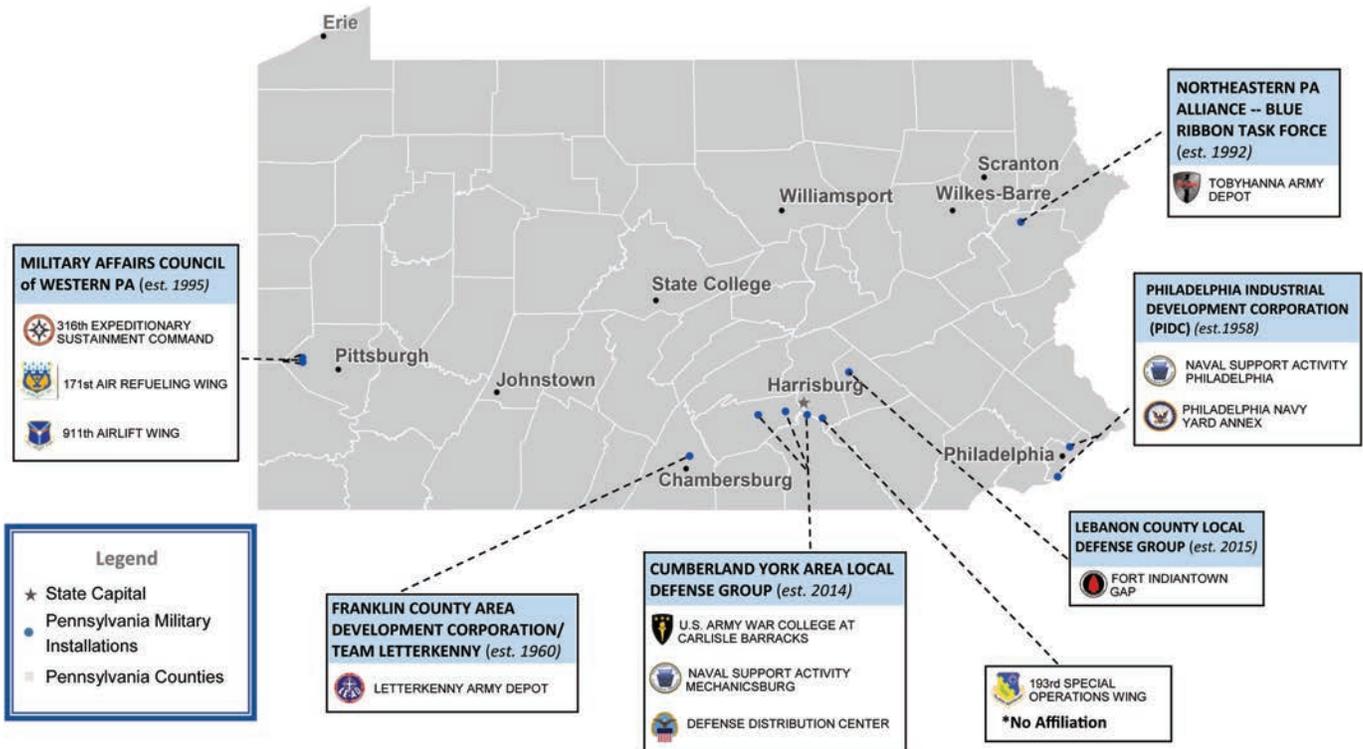
The first Pennsylvania LDGs were created in response to the Base Realignment and Closure (BRAC) process and the threat of closure. The Military Affairs Council of Western Pennsylvania (MACWPA) originated as an organization whose purpose was to advocate for the 911th Airlift Wing threatened by a BRAC. MACWPA began in 1995 and has continued to work on behalf of military installations in Western Pennsylvania. The Blue Ribbon Task Force is a partnership organized to support Tobyhanna Army Depot within a larger regional economic development organization, the Northeastern Pennsylvania Alliance (NEPA). NEPA organized the Blue Ribbon Task Force in 1992 to support Tobyhanna Army Depot in the 1995 BRAC process.

Their success continues and serves as a model for other LDGs. The Cumberland York Area Local Defense Group (CYALDG) is much newer but is mak-

¹⁵ Association of Defense Communities, "State of Support."

FIGURE 8

LOCAL DEFENSE GROUPS AFFILIATED WITH MILITARY INSTALLATIONS IN PENNSYLVANIA



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

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ing strides toward demonstrating the impacts and perceptions of its installations. It recently released a report on the impacts of the three installations it supports: Army War College/Carlisle Barracks, Defense Distribution Center Susquehanna, and Naval Support Activity Mechanicsburg.¹⁶ Philadelphia Industrial Development Corporation (PIDC) is unusual among Pennsylvania's LDGs in that its primary relationship with the Navy Yard is as a manager of private redevelopment efforts. Some LDGs, such as Team Letterkenny, are heavily involved in economic and workforce development partnerships surrounding an installation. Among the installations studied for this report, only the 193rd Special Operations Wing was lacking an LDG.

LDGs benefit from the financial support of PMCEC and local stakeholders. PMCEC has a grant program for LDGs that can be used to enhance their military installations in many ways. Examples include:

- **Joint Land Use Planning at Letterkenny Army Depot with Franklin County Area Development Corporation/Team Letterkenny**
- **Strategic Positioning Plan, Cumberland York Area LDG**
- **Purchase of land to prevent encroachment at Tobyhanna Army Depot, NEPA Blue Ribbon Task Force**

The LDG model and LDGs themselves represent a significant opportunity for promoting Pennsylvania's military installations and enhancing their strengths regionally and statewide. Pennsylvania's LDGs can engage in peer-to-peer learning through PMCEC and enhance their capabilities. LDGs are incredibly important advocates and allies in the face of inconsistent state and federal support, another critical area covered at the end of this section.

COMMUNITY CONNECTIONS:

Building Lasting Ties between Installations and Communities

The third critical area for Pennsylvania's military and defense installations is community connections.

Installations benefit from strong community partnerships and outreach efforts that enhance the installations as well as the community. They are critical strengths of the state's military infrastructure and create many opportunities at both regional and state levels. This section categorizes the many different forms of community connections and partnerships across the state's major military installations, including:

- **Shared services agreements**
- **Education and workforce development partnerships**
- **Public or volunteering events**

SHARED SERVICES AGREEMENTS

Shared services agreements are partnerships between an installation and a government body or public authority to provide services or share resources,¹⁷ and they represent strengths and opportunities. They create cost savings for both parties and form the basis for other types of mutually beneficial partnerships. Such intergovernmental support agreements with state or local governments are important tools for creating lasting relationships between installations and communities, and have been possible since 2013, under the National Defense Authorization Act for Fiscal Year 2013.¹⁸ A number of Pennsylvania's installations have memorandums of understanding or similar agreements with community partners, such as local utilities and services. Examples of a variety of shared services agreements across installations include:

¹⁶ The CYALDG has promoted the installations in many ways, including a Strategic Positioning Plan, funded through PMCEC. (Michael Baker & Associates, "Strategic.")

¹⁷ National Conference of State Legislatures, "Shared Services Agreements."

¹⁸ National Conference of State Legislatures, "Preparing for Duty," 28.

- The 171st Air Refueling Wing and the 911th Airlift Wing in the Greater Pittsburgh region and the 193rd Special Operations Wing in Harrisburg are co-located and work closely with international airports, which means shared services and resources, such as runways and fuel storage. It also means joint participation on airport authorities and committees, forging important relationships and input on planning and other efforts.

- The 193rd Special Operations Wing has a cooperative agreement for joint support with the airport firefighters for emergency response and flight emergencies. It has joint trainings with local fire departments, including the Dauphin County fire department and emergency management team that includes both military and civilian firefighters. Naval Support Activity Mechanicsburg is a part of the Tookany/Tacony Frankford Watershed Partnership, which is focused on storm water management.

- Naval Support Activity Mechanicsburg is a part of the Tookany/Tacony Frankford Watershed Partnership, which is focused on storm water management.

EDUCATION AND WORKFORCE DEVELOPMENT PARTNERSHIPS

Educational partnerships are vital for Pennsylvania’s military installations and for regional workforces, creating opportunities for students and workers and a prepared labor force for installations. Pennsylvania’s military installations have created connections to educational institutions, from the secondary school level through professional and graduate-level training. Many installations sponsor partnerships with nearby colleges and universities that are a source of strength for the regional economy and an important community resource. In some cases, employees/members can take advantage of on-site classes or tailored courses hosted by local colleges and universities. Examples include:



Pennsylvania Air National Guardsmen with the 171st Air Refueling Wing's Fire Protection Flight participate in an annual training exercise at the Pittsburgh International Airport, one of many examples of installation-community partnerships in Pennsylvania. Photo by Staff Sgt. Allyson L. Manners

- In 2017, the Naval Surface Warfare Center, a Philadelphia Navy Yard Annex tenant, 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. Additionally, the center's partnerships with nearby colleges include research collaborations and internship and recruitment programs.

- Letterkenny Army Depot in Chambersburg, the 193rd Special Operations Wing, and Tobyhanna Army Depot partner with local Career Technical Education Centers and several post-secondary and technical schools in surrounding communities. These links assist with tailored recruitment and training efforts.

These examples show that more can be done. In each installation community in Pennsylvania, there exists an opportunity for local partnerships for skilled worker training. At Letterkenny, for example, a 2016 Joint Land Use Study recommended that the

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Chambersburg Area School District, local universities, and the depot work on partnerships on avionics, electronics, and munitions technical skills training to maintain and expand the necessary skilled workforce.¹⁹

PUBLIC OR VOLUNTEER EVENTS

Events and outreach present installations with opportunities to boost community integration, visibility, and even workforce recruitment efforts. Many of Pennsylvania's installations regularly host events, and most are involved with local charitable organizations. Examples include:

- **At the 316th Sustainment Command (Expeditionary) in the Greater Pittsburgh region, events and outreach programs ensure regular interaction with veterans, retirees, and survivors. Those include parades, Veteran's Day events, and an annual Armed Forces Day event that brings veterans organizations, families of 316th personnel, and the public onto the installation.**
- **In Carlisle, the U.S. Army Heritage and Education Center sponsors annual Army Heritage Days, a themed weekend living history event that features reenactors from all eras. The event is open to the public and, in 2017, drew an estimated 10,300 visitors, the highest number ever recorded.**
- **In 2017, the 911th Airlift Wing at the Pittsburgh International Airport celebrated the return of its "Wings over Pittsburgh" free air show after a six-year hiatus; the show attracted thousands of spectators.²⁰**

Through shared services agreements, education and workforce development partnerships, and events and outreach, Pennsylvania's military installations and their surrounding communities experience mutual benefits. These connections represent strengths for the installations and opportunities for visibility, workforce recruitment, community integration, shared costs and resources, and cooperation on issues such as local zoning, planning, and traffic.

¹⁹ Martin and Martin, Inc. "Letterkenny."

²⁰ Russell, "Wings over Pittsburgh."

Where's the Housing?

Few Pennsylvania installations maintain on site housing units today, with a few exceptions, due to two driving forces. With such a large civilian DoD workforce and small active duty presence, most employees of Pennsylvania's military installations do not live in military housing, but live in nearby communities. The U.S. military has also been moving out of the housing business for the past 20 years, under the Military Housing Privatization Initiative. The exception is Fort Indiantown Gap, where temporary housing is provided for training units on site. For the rest of Pennsylvania's installations, civilian employees, reservists, and Guard members typically live in nearby communities and not on bases.

Defense Distribution Center Susquehanna exemplifies both trends. In 2015, 140 family housing units were on site, all built before 1960. That year, the installation demolished two WWII-era, multi-family buildings* and will demolish the remaining 124 units in 2018. Other single-family units housing officers on site are being moved to the private market.

The U.S. Army War College provides another example of this dynamic. At the War College, on-base housing, like most Army housing, has been privatized and leased via a public-private partnership and a 50-year lease. Housing on base is available for both staff and students, with over 250 housing units on campus, but a large number of students and all staff live off-post. In addition, all international students in-residence at the War College reside off-base, giving both students and their dependents, who are enrolled at local schools, additional opportunities for cultural exchange and learning.

* Source: U.S. Department of Defense, "Family Housing."



Fort Indiantown Gap hosts Pathfinder Course, 2018. National Guard leadership at the Gap has demonstrated innovative joint land use planning and partnerships in its approaches to encroachment.. Photo by Pennsylvania National Guard

SIZE, ENCROACHMENT, & FORCE PROTECTION:

Addressing Challenges

Across the U.S., state and local land use planning affects military installation operations, testing, training, and missions. Land use regulations can affect what DoD categorizes as **encroachment**. Encroachment occurs when new development and urbanization create incompatible land, air, water, and other resource use that conflicts with an installation's training and testing missions.²¹ For military installations, encroachment can result in restructuring or loss of operations.

Installations in Pennsylvania have encountered a number of encroachment issues, including night trainings, parachute drops, zoning issues, and land ownership. Though common across the country, encroachment challenges in Pennsylvania differ from those found at large training bases across the U.S. Generally, Pennsylvania's military installations have a relatively small footprint and are constrained by their size in terms of future expansion. The advantages, however,

also stem from these same circumstances. Because of their locations, many installations have had to deal with encroachment issues for some time and — with the benefit of key stakeholders, community partners, and LDGs — have developed successful strategies related to encroachment.

Pennsylvania installations have successfully faced the challenges of land encroachment and force protection with creative strategies that can be replicated. Critical in these adjustments have been:

- Leadership and partnership with LDGs and key community stakeholder engagement
- Innovative solutions to encroachment challenges
- Clear communication and collaboration with local officials and key planning stakeholders

Another important benefit for the state is the role PMCEC has played in many installations' efforts to work successfully with LDGs, other stakeholders, and local planning officials on encroachment issues. One clear strategy has been supporting Joint Land Use Planning.

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²¹ National Conference of State Legislatures, "Working with State Legislatures."

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National Guard leadership at Fort Indiantown Gap (FTIG) has demonstrated innovative joint land use planning and partnerships in its approaches to encroachment. Challenged with encroachment issues of light, aircraft and small arms noise, airspace, and aircraft safety, FTIG recognized the critical role that compatibility planning would play in its current and future missions. Through the Lebanon County Planning Department, Dauphin County, and four surrounding townships, FTIG and its partners developed the FTIG Joint Land Use Study (JLUS) in 2015 to build consensus and coordination with local officials and guide planning and future development through a military compatibility area overlay district.²² The JLUS outlines areas for understanding, collaboration, and actions with community and state stakeholders to guide development and protect FTIG's current and future military missions, and to promote information and communications with local planning officials.

Through the JLUS, FTIG has been successful in using compatibility tools, including those from the Army Compatible Use Buffer (ACUB) Program, to enhance land conservation to protect critical training areas. Most recently, through \$4 million from this program and partnerships with the Ward Burton Wildlife Foundation and the Nature Conservancy, a conservation easement will protect the DeHart Reservoir and Property, a pristine site covering 8,200 acres adjacent to the installation. Through this, FTIG was able to protect training areas that are critical for nighttime helicopter training, while aiding a local partner, Capital Region Water, in preserving the natural habitat.

Additionally, FTIG leadership has creatively dealt with space constraints by developing capabilities that require less open space (e.g. virtual training) and focusing on supporting existing core capacities. In recent years, FTIG has focused on force protection and was able to secure federal funds to build a new security perimeter, to be completed in 2018 or 2019.

Letterkenny Army Depot also completed a JLUS in 2016, led by the Franklin County Area Development Corporation (FCADC) and supported by PMCEC. The

JLUS aimed to encourage cooperative land use planning between Letterkenny and its surrounding communities and address incompatible land uses in open discussions between the installation and the community. Franklin County's population is growing faster than the state average, and the need to coordinate land use has become increasingly important.

Tobyhanna Army Depot has also benefited from close partnerships to address potential encroachment issues. The Northeast Pennsylvania Alliance and the LDG, the Blue Ribbon Task Force, with PMCEC support, jointly led a regional effort to purchase a small 40-acre parcel of land adjacent to the depot in 2015.²³ This property had been open to commercial development, which many feared would encroach on current depot operations. Thanks to this land purchase, the site is now secured, providing an even larger buffer for Tobyhanna's activities.

Other Pennsylvania installations share border roads with the public, with minimal security features, or have public thru-traffic that lacks perimeter fencing. Some installations have a single entry and exit point, compounding security issues. The U.S. Navy presence at the Navy Yard is an extreme example, with several buildings dispersed throughout a public campus with no main security gate. These also can benefit from stakeholder engagement and LDG-engaged initiatives:

- **In Western Pennsylvania, the 171st Air Refueling Wing and the 911th Airlift Wing are neighboring installations, but no road connects the two and each has only one way on and off its respective base, which is a force protection concern. Fortunately, leaders and the LDG are discussing a potential connector road, which would address some of these issues, improving access and opening new avenues for shared resources, including space.**
- **At the nearby 316th Sustainment Command (Expeditionary), the public can currently freely enter or drive through the site. To improve security and reduce thru-traffic, a new fence will soon run the perimeter of the installation.**

²² Lebanon County Planning Department, "Fort Indiantown Gap Joint Land Use Study," 1. See also Lebanon County Planning Department, "Fort Indiantown Gap Background." Federal funding was obtained through the Office of Economic Adjustment, DoD, with local support.



A DLA Troop Support Flag Room embroiderer lets DLA Foreign Policy Advisor Dolores Brown sign a presidential flag in-the-making during a visit to NSA Philadelphia in 2015. Photo by Ed Maldonado

As we have seen, Pennsylvania installations are using creative approaches to combat encroachment issues and improve force protection. With assistance from PMCEC and critical partnerships with LDGs, planning officials, and key stakeholders, installation planning with communities is crucial to addressing encroachment issues and developing solutions that benefit communities' economic development, residents' quality of life, and installations' missions.

STATE & FEDERAL PARTNERSHIPS:

Sustaining Support

State officials have recognized the importance of Pennsylvania's military and its impacts by investing to enhance local installations and by creating PMCEC, but there is room for increased state support.

PMCEC was established in 2014 and builds on previous state organizations focused on the mission of enhancing partnerships between the U.S. military and the residents of Pennsylvania. Four Pennsylvania leg-

islators and the Lieutenant Governor (board chair) are members of the 17-person commission. PMCEC has made numerous investments to create and sustain LDGs across the state, support research and advocacy, and prevent encroachment.

Nevertheless, state support for Pennsylvania's military sector is inconsistent across installations and over time. Although a few installations touted strong relationships with elected representatives and the benefits those relationships have afforded, many are hungry for a closer relationship with state and federal elected officials. In some cases, the physical location of an installation places it at a disadvantage politically. When an installation is part of multiple congressional or state districts, the workforce and installation impacts are dispersed, sometimes leading to less engagement by elected officials and weaker ties. **But as this report demonstrates, the military sector is important to even those districts without a major installation. Reservists, National Guard members, veterans, and retirees live throughout the state, and Pennsylvania-based defense contractors also have a considerable economic impact.**

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²³ O'Boyle, "Tobyhanna Army Depot Purchases."

²⁴ Despite a request from the Governor for \$819,000.

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The state has an opportunity to be more consistent in its response to commissioned studies and strategic planning. Previous work on the state's logistics corridor, which we discuss in the next section, provides an example of the type of effort that should lead to state action. To its credit, the state's role in consistently supporting its military installations became more formalized when it added a line item for PMCEC within the Department of Community and Economic Development's budget in FY2016–17. But PMCEC's budget is limited and saw a decrease from \$798,000 to \$550,000 between FY2016–17 and FY2017–18.²⁴

Moreover, Pennsylvania's federal delegation lacks clout when it comes to matters of national defense or funding. The state's congressional delegation does not hold leadership posts on key committees. In 2018, two Congressmen are retiring from districts where installations are located, resulting in a loss of seats on the House Armed Services Committee, and the House Appropriations Committee. This turnover among the delegation presents an opportunity for PMCEC and LDGs to concentrate efforts in building interest and support for the state's installations among new elected officials.



State Support for Military Installations

Over the past decade, more states have created organizations similar to PMCEC. At present, 35 states operate military affairs organizations, and a large number of these groups (45%) were created in the past six years as concern over the volatility of defense budgets and military spending has grown. In addition, concern about future proposals to close or realign military bases has further bolstered the case for state efforts to support military installations.

States can build closer military-community ties in multiple ways to support military installations and investments to enhance infrastructure or quality of life for service members and military base personnel.* The creation of support organizations like PMCEC is the most common state strategy. Five states also manage Commander's Councils (i.e., advisory bodies composed of the commanders of a state's local military bases and facilities). These groups offer another venue where military leaders and community representatives can share ideas on how to best support local military missions and improve relations between bases and nearby communities.

A growing number of states have created programs to support local investments in new infrastructure or other means to enhance military value. These investments typically address areas where development encroaches on the military mission, such as the purchase of private land adjacent to a firing range or airfield. Other investments may help enhance morale, welfare, and recreation programs at local bases or support joint training and education efforts.

In recent years, many states have increased investments to support the development of Local Defense Groups (LDGs) and to build closer ties between local governments and key military facilities, as exemplified by PMCEC and LDGs in Pennsylvania. At present, 43% of states, including Pennsylvania, make local investments of this type.**

* Association of Defense Communities, "State of Support," 3. For background, see National Conference of State Legislatures, "Preparing for Duty."

** "State of Support," 11.

ENHANCING PENNSYLVANIA'S DEFENSE SECTOR: AREAS OF STRATEGIC COMPETITIVE ADVANTAGE

Pennsylvania's multifaceted support for America's military services includes two distinct clusters of support for operating forces worldwide:

- 1. Pennsylvania's well-developed commercial logistics and transportation industries tie directly to several Pennsylvania military installations that are critical parts of the nation's defense logistics infrastructure.**
- 2. Pennsylvania is home to a significant portion of the nation's defense industrial base; a crucial part of the defense industrial base includes the organic depot-level installations that are concentrated in Pennsylvania.**

Enhancing the capacity of these two core defense clusters will require continued investment and dedicated support from state and local governments. As each of the major installations will need to continue adapting to new challenges and missions, Pennsylvania state government can play a vital role in guaranteeing that these installations continue their missions into the future.

EXTENDING LOGISTICS INFRASTRUCTURE & SERVICES

Many of the installations profiled in this report share several areas of strong competitive advantage. They have a desirable location near other major military facilities — especially major air bases and naval shipyards — with easy access to major ports and transportation nodes, and in proximity to major metro areas across the East Coast. They also benefit from a skilled workforce with strong commitment to working for the

military or the federal government. While these advantages pertain to most installations in Pennsylvania, they are especially relevant in the logistics, distribution, and warehousing sectors where the state's military assets link closely to extensive and growing private sector capabilities.

Many of Pennsylvania's military installations have a core focus on logistics and distribution. This is especially true in Central Pennsylvania where Defense Distribution Center Susquehanna, Naval Support Activity Mechanicsburg (NSAM), Letterkenny Army Depot, and Fort Indiantown Gap collectively represent an especially large cluster of facilities with a primary focus on logistics (Susquehanna and NSAM) and related industries. In Northeast Pennsylvania, Tobyhanna Army Depot also hosts strong logistics capabilities. Finally, the air facilities located in Western Pennsylvania have the potential to contribute to a stronger statewide air logistics presence.

The potential to develop these logistics-focused assets has been understood for some time. For example, a 2003 state-sponsored analysis by the DuPuy Institute identified the potential to create an "agile port" at the Philadelphia Naval Shipyard and a Logistics Center of Excellence focused in Central Pennsylvania.²⁵ A related 2004 DuPuy Institute study presented additional details on how to create this Logistics Corridor of Excellence, and included recommendations for state government, installation commanders, and other stakeholders, such as higher education institutions. Finally, a 2009 study commissioned by the Pennsylvania Base Development Committee also advocated for the creation of a Logistics Corridor of Excellence building on key industry assets located in Central Pennsylvania and elsewhere.²⁶

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²⁵ The DuPuy Institute, "Examination," 29.

²⁶ Pennsylvania Base Development Committee, "PA 2020." This committee was a predecessor to the Pennsylvania Military Community Enhancement Commission.



Pennsylvania is home to a significant portion of the nation's defense industrial base; Letterkenny Army Depot is scheduled to produce 929 of these RG31s through 2020.

Image courtesy of Letterkenny Army Depot

<< The 2004 DuPuy Institute logistics report boldly stated, “Pennsylvania is the DoD ‘Supply Chain’ state.”²⁷ That claim was true in 2004, and it is even more appropriate today. Pennsylvania continues to serve as a core logistics hub for the U.S. military, just as it has for decades. But today, this military-focused logistics expertise can be paired with an equally impressive set of business and education capabilities focused on the logistics, distribution, and warehouse sectors. Over the past decade, key regions of Pennsylvania have become major centers for new private sector investments and new developments in how to effectively manage and support complex global supply chains.

Pennsylvania’s logistics, distribution, and transportation sector has increased rapidly in the past decade. The regions surrounding, I-78 and I-81 have grown at an especially rapid pace, and new jobs have followed. To give one example, the concentration of logistics jobs in the Luzerne-Schuylkill County corridor on I-81 is now nearly 2.5 times higher than the U.S. average.²⁸ According to a 2017 CBRE study, the Lehigh Valley ranked number two in the world for logistics market growth,²⁹ and, across the I-78/I-81 Corridor, more than 26.3 million square feet of warehouse space has been occupied in the past two years.³⁰

Higher education institutions and workforce development agencies are developing new programs to train and prepare local residents for careers in these booming industries. Across Pennsylvania, regional workforce agencies, including those in the Lehigh Valley and Northeast Pennsylvania, operate industry partnerships focused on the transportation and logistics sectors. Several of these agencies also engage local K-12 systems and include relevant training in their career and technical education programs. For example, the Franklin County Career and Technical Education Center and the Franklin County Area Development Corporation have collaborated on efforts to help prepare residents for jobs at the nearby Letterkenny Army Depot, including a new welding training center. Penn State operates one of the country’s top ranked programs for supply chain training at the Smeal School’s Center for Supply Chain Research. Respected logistics and supply chain management training programs are also available at other colleges and universities across the state, several of which have close ties to or are located near major logistics-focused installations, including Harrisburg Area Community College, York College, Robert Morris University, Lehigh University, and the University of Pittsburgh.

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²⁷ *The DuPuy Institute, “Corridor,” 6.*

²⁸ *Pennsylvania Center for Workforce Information & Analysis, “Logistics and Transportation.”*

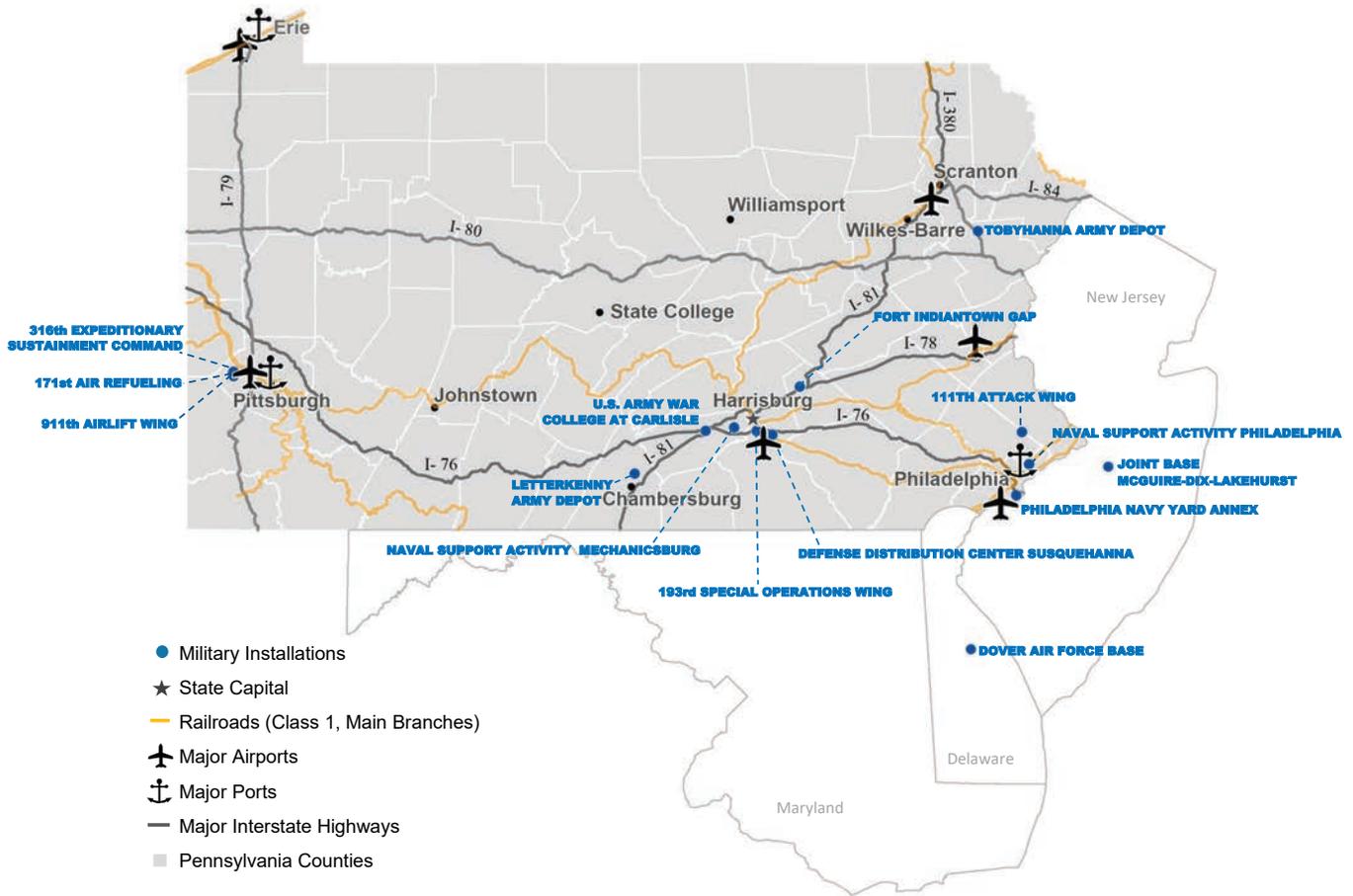
²⁹ *CBRE Group, Inc., “Pennsylvania’s Lehigh Valley.”*

³⁰ *“Northeast Pennsylvania Intelligence Report,” 16.*

FIGURE 9

PENNSYLVANIA TRANSPORTATION INFRASTRUCTURE

As Figure 9 shows, Pennsylvania has many transportation assets that correspond to a cluster of defense logistics activity. These assets include major highways I-81, I-76, and I-78, which bisect the state and serve as critical logistics corridors connecting the Northeast region to the Midwest and South. Philadelphia, Harrisburg, and Pittsburgh are all home to international airports, which serve as hubs for both passenger travel and air logistics. Rail networks also bisect the state, and major ports operate in Philadelphia, Pittsburgh, and Erie.



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

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This confluence of strong military installation capacities, large-scale private investment, and education and training resources suggest that the time is ripe for new strategies to develop the state's logistics-related capacities. While Pennsylvania has made recent progress in supporting the sector, the scale and scope of investment to build in-state logistics capabilities is far outpaced by other states and localities across the U.S.³¹

All of the assets identified in other states and regions exist today in Pennsylvania. In fact, the state's logistics-focused assets likely exceed those found in other states. Pennsylvania is home to dense population centers, transportation assets, and proximity to major markets, but it is also home to the nation's fastest growing centers for logistics investment. Pennsylvania contains one of the greatest concentrations of public sector logistics expertise at the state's core military installations.

SUPPORTING PENNSYLVANIA AND AMERICA'S DEFENSE INDUSTRIAL BASE

Pennsylvania is home to major industrial depots and related activities that are core components of DoD's organic industrial base. Pennsylvania plays a vital role in supporting these specialized installations and needs to work with each to maintain their ongoing competitiveness as centers of technical excellence supporting DoD and global military operations.

America's organic industrial base is the network of manufacturing arsenals, maintenance depots, and ammunition plants operated by each of the military services. In Pennsylvania, depot level activities include Army Depots at Letterkenny and Tobyhanna, a detachment of the Norfolk Navy Shipyard at the Philadelphia Navy Yard Annex, and supporting organizations within the Defense Logistics Agency (DLA) in New Cumberland, DLA's Troop Support Mission at Naval Support Activity Philadelphia (NSAP), and the Navy Supply Systems Command at NSAM and NSAP.

Each of these defense organizations provides ongoing support to operating forces worldwide. Depot-level activities provide maintenance and repairs beyond the capabilities of the operating units, including rebuild, overhaul, and extensive modification of equipment platforms, systems, and subsystems.³² Depot capabilities include:

- **Manufacture of cutting-edge defense systems for DoD and international allies**
- **Production of low-volume highly specialized systems**
- **Long-term maintenance and support of legacy systems that continue to be relied upon by each of the military services.**

These federal activities complement private sector defense industries by maintaining a flexible surge industrial capability that would not be economically viable to maintain in both periods of conflict and peace. Each of these depot-level operations have built up a technical expertise that relies on career federal civilian workers and contractors, most of which have made careers living and working within Pennsylvania. This technical and manufacturing workforce is an asset Pennsylvania needs to work with DoD to recruit, retain, and support through integration with educational and workforce development programs across the state.

Each of these operations continues to adapt to meet changing requirements within DoD and changing global circumstances. Much like the private sector, they must continue to expand their capabilities and be ready to adopt new missions. State resources should be focused on supporting these installations to ensure they remain competitive service providers within DoD. Sustained support of Pennsylvania's congressional delegation is essential for these depots and technical centers to continue to receive the federal support they need to continue their core missions. New investments are essential for these facilities to maintain their current capabilities and develop new technologies and competencies for future missions.

³¹ For background on logistics initiatives in other states, visit Appendix E.

³² Miller, "Defense Sustainment."

Support for depot-level activities is not a one-time investment. It must be maintained through periods of both high and low demand for the core services they provide. DoD budgets reflect scale of military operations worldwide and can vary significantly over the

long run. This support will become more important should there be a sustained decrease in the scale of conflicts the American military is actively engaged in, or in response to decreases in future DoD budgets. ★

Advanced Defense Research in Pennsylvania

Pennsylvania’s research universities and defense industries have longstanding partnerships with DoD, providing ongoing support to national and homeland security missions. These collaborations deliver world-class research across a diverse range of advanced technologies and are critical links in sustaining talent pipelines for workers in difficult to recruit science and technology fields. The largest defense technology programs within Pennsylvania include:

The Bettis Atomic Power Laboratory, located in West Mifflin (Allegheny County), founded in 1948 to support the development of nuclear power reactors for the U.S. Navy. Managed by the Bechtel Corporation, current contracts average just under \$1 billion annually and support approximately 3,000 workers specialized in the design, development, and testing of nuclear reactor plants for naval submarines and surface ships.

Penn State’s Applied Research Laboratory, a University Center of Excellence in naval science, systems engineering, and related technologies. The lab has an unmatched preeminence in power and energy systems for underwater, atmospheric, and space applications. In 2018, the lab’s contract was renewed for 10 years with potential cumulative value totaling \$2.1 billion.

The Software Engineering Institute (SEI), established in 1984 at Carnegie Mellon University. SEI is a Federally Funded Research and Development Center (FFRDC) – a nonprofit, public-private partnership that conducts research for the U.S. government. One of only 10 FFRDCs sponsored by DoD, the SEI conducts research and development in software engineering, systems engineering, cybersecurity, and many other areas. In 2015, SEI’s contract with DoD was renewed for five years with a potential cumulative value totaling \$1.7 billion.



Many of Pennsylvania’s military installations have a core focus on logistics and distribution, including DLA Distribution Susquehanna in New Cumberland.

Photo courtesy of DLA Distribution Public Affairs

RECOMMENDATIONS & CONCLUSIONS

Pennsylvania's major military installations are critical to national security and to Pennsylvania's economic competitiveness. They carry out a wide range of missions for the Department of Defense (DoD) and generate over 52,000 full-time jobs for Pennsylvania residents, as well \$4 billion in labor income annually. Over \$11 billion in total economic output annually is derived from these major military installations. Nevertheless, and in part due to the high proportion of civilian employees, many installations have limited visibility in the public eye, and the impact of the sector in general is not widely understood.

This report has demonstrated that:

- **The ability of the state's installations to recruit and retain career federal workers over many decades is a critical competitive advantage and a major strength. Continued investments to develop talent will be essential to retaining a strong military presence in Pennsylvania.**
- **Local Defense Groups (LDGs) play a crucial role in supporting and promoting Pennsylvania's military installations, but an expanded role and greater connections among LDGs would further benefit these installations.**
- **Mutually beneficial installation-community partnerships and outreach efforts are critical strengths that also create opportunities for recruitment, community integration, and shared resources, but capitalizing on those opportunities requires increased visibility and advocacy.**
- **Government officials have worked to enhance local installations, but support for Pennsylvania's military**

sector is inconsistent across installations and over time, presenting an opportunity for increased support.

- **The state's competitive advantages in supporting defense logistics and the defense industrial base provide DoD with a flexible industrial capacity to meet surge requirements in time of conflict; ensuring continued success will require greater state support and coordination efforts.**

As Pennsylvania works to build on the military sector's strengths, enhance its connections, and expand its presence, it should consider the critical areas above and take action toward the following recommendations:

- 1. Ensure continued competitiveness of Pennsylvania's defense workforce;**
- 2. Boost the Local Defense Group (LDG) network and its capacity;**
- 3. Strengthen the advocacy role of the Pennsylvania Military Community Enhancement Commission (PMCEC);**
- 4. Build on areas of strategic competitive advantage in defense logistics and the defense industrial base.**

ENSURE CONTINUED COMPETITIVENESS OF PENNSYLVANIA'S DEFENSE WORKFORCE

Pennsylvania military installations are often the largest area employer and collectively the DoD workforce is one of the largest employers in the state. Pennsylvania's future military competitiveness will depend on ensuring that regional workforces continue to meet the unique needs of Pennsylvania's major military in-

stallations. With a defense workforce predominantly comprised of federal civilian workers and contractors, the state will face greater competition for talent from private sector employers in coming decades. Moreover, many installations are projecting a wave of retirements that will further increase demand for new workers.

Workforce development professionals and education institutions should place high priority on growing workers and managers with the skills, capabilities, and interest in working at Pennsylvania's military installations. Pennsylvania must ensure that state and local workforce development initiatives are integrated with efforts to support Pennsylvania's major military installations. Specific recommendations include:

- **Advocate for a designated member of the Pennsylvania Workforce Development Board (WDB) to represent major military installations.** The WDB is the governor's principal private-sector policy advisor on building a strong workforce development system aligned with state education policies and economic development goals. Based on recommendations from PMCEC, a standing member of WDB representing the defense workforce will ensure strategic coordination and continuity of efforts to strengthen major military installations in the state.
- **Encourage LDGs to engage with local WDBs across Pennsylvania.** The state's Local Workforce Development System is based around 23 Local Workforce Development Areas, each with a WDB. Each LDG and corresponding WDB should have designated representatives appointed to each other's local boards. This cross-membership will promote greater integration of local workforce efforts toward the unique needs of individual installations and their major tenant commands.
- **Strengthen existing partnerships and build new relationships with higher education installations.** LDGs can expand their role as a primary link between regional colleges and universities and defense organizations.

New or expanded efforts could include the promotion of courses and training programs that support defense organizations, engagement with institution faculty to encourage application for federal research funding opportunities, and collaboration of campus veterans services offices with federal workforce recruiters.

- **Increase collaboration with the Pennsylvania Commission for Community Colleges.** Defense organizations within Pennsylvania have diverse workforce needs that require recruiting of workers across a broad spectrum of occupations. Pennsylvania's community colleges provide training opportunities that can align with workforce development programs at military installations. PMCEC and LDGs can work with community colleges to prioritize military installations as sites for distributed learning, align course offerings with needs of defense organizations, and promote Pennsylvania educational institutions as the providers of choice for advanced education of DoD employees and their families.
- **Link veterans and transitioning service members to job opportunities at DoD installations and organizations in Pennsylvania.** Veterans are a vital part of the civilian defense workforce, often with unique skills, and match closely the workforce needs of defense organizations located within Pennsylvania. A priority for workforce development efforts should include coordinating recruiting efforts to link transitioning service members with DoD hiring opportunities within Pennsylvania.

STRENGTHEN THE ADVOCACY ROLE OF THE PENNSYLVANIA MILITARY COMMUNITY ENHANCEMENT COMMISSION (PMCEC)

LDGs play a crucial role in the infrastructure of support for Pennsylvania's military installations, and that role should be expanded. They are the eyes and ears of

³³ The Workforce Innovation and Opportunity Act (WIOA) requires states to strategically align workforce development programs and foster regional collaboration. Commonwealth of Pennsylvania, Department of Labor and Industry, "WIOA."

<<

installations for many public officials. With diverse capacity, organization, and skills, LDGs have many success stories that should be shared among LDG partners.

Boosting Pennsylvania's LDG network would mean creating opportunities for peer learning and sharing of best practices across areas, including the critical areas found in this report. Building individual LDG capacity would allow groups to expand their roles and presence in a number of ways. Toward those ends, PMCEC could:

- **Improve communications, social media, and website. PMCEC has the potential to become the "go to" place for all defense-related information and data in Pennsylvania.**

- PMCEC's website and related materials should include data on the economic impact of military bases and the defense industry in Pennsylvania.

- PMCEC should expand its communications strategy through resources and projects on its website, including the many reports that the commission has supported.

- PMCEC should improve regular communication with local, state, and national media outlets like newspapers, radio, and TV.

- **Increase engagement with Pennsylvania's state and federal delegation, including:**

- Encouraging members of Pennsylvania's Congressional delegation to seek positions on major committees with jurisdiction over defense issues, such as the House and Senate Armed Services committees and key subcommittees of the House and Senate, such as Appropriations.

- Encouraging members of Pennsylvania's Congressional delegation to actively participate in informal groups, such as the House Military Depot, Arsenal, Ammunition Plant, and Industrial Facilities Caucus.

- Encouraging state legislators to create a military caucus with the state legislature to help further support the work of PMCEC and to advocate for local bases and defense-related industries.

- **Build the Commission's organizational capacity, by:**

- Creating internship opportunities with local higher education institutions, such as Penn State Harrisburg, to bolster staff capacity and aid with organizing and project development, such as social media development and expanding the LDG network.

- Clarifying roles and expectations of commissioners, including new commissioners, and identifying specific focus areas for additional activities.

- Providing consistent funding for PMCEC so that it can plan for short- and long-term projects and follow through on efforts and follow up on report findings.

- **Expand the visibility of LDGs across the state. PMCEC can take the lead, by:**

- Making PMCEC a shared space for reporting LDG successes and publications.

- Communicating LDGs initiatives and needs to federal and state delegations.

- Creating an annual Pennsylvania Military Update through LDGs with updated points on major accomplishments and policy changes for stakeholders and elected officials.

BUILD ON AREAS OF STRATEGIC COMPETITIVE ADVANTAGE IN DEFENSE LOGISTICS AND THE DEFENSE INDUSTRIAL BASE

Pennsylvania has clear competitive advantages in these two critical military sectors: Defense Logistics and the Defense Industrial Base. To ensure future competitiveness of Pennsylvania's defense sector, it must build on these advantages and coordinate efforts.

- **Make a Pennsylvania Logistics Center of Excellence a reality.** The Pennsylvania Department of Community and Economic Development (DCED), in collaboration with other key state agencies, should embrace a state transportation and logistics strategy to capitalize on these critical assets. There are several components in making this effort successful:

- Create a statewide logistics council, headed by industry leaders and key representatives from military installations, to promote the industry and address key growth challenges.
- Develop new research and analysis to understand the industry's impact statewide and in key regions.
- Sponsor networking events and other professional educational opportunities.
- Develop and promote training materials and curricula to encourage residents to consider careers in logistics in Pennsylvania's military.

- **Continue to support activities of the defense industrial base:**

- Use existing partnerships and groups, such as the statewide Partnership for Regional Economic Performance (PREP) network and the state's eight Procurement Technical Assistance Centers (PTAC), to help Pennsylvania companies become DoD contractors or subcontractors.
- Reconnect workforce development opportunities with LDGs and other components of Pennsylvania's workforce development system and community college networks.
- Expand the number of Industry Days tied to major military installations across the state to introduce local business owners to potential contract opportunities. Some facilities have or have had Industry Days; these should be a part of every installation — and LDG's — annual calendar of events. ★

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APPENDICES
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APPENDIX A. LIST OF ACRONYMS

AFR	Air Force Reserve
BEA	Bureau of Economic Analysis
BRAC	Base Realignment and Closure
DLA	Defense Logistics Agency
DoD	Department of Defense
FCADC	Franklin County Area Development Corporation
FTIG	Fort Indiantown Gap
GRP	Gross Regional Product
JLUS	Joint Land Use Study
LDG	Local Defense Group
LEED	Leadership in Energy and Environment
LIDA	Letterkenny Industrial Development Authority
MACWP	Military Affairs Council of Western Pennsylvania
NSAM	Naval Support Activity Mechanicsburg
NSAP	Naval Support Activity Philadelphia
OEA	Office of Economic Adjustment
PaANG	Pennsylvania Air National Guard
PIDC	Philadelphia Industrial Development Corporation
PMCEC	Pennsylvania Military Community Enhancement Commission
PREP	Partnership for Regional Economic Performance
PTAC	Procurement Technical Assistance Center
ROTC	Reserve Officers' Training Corps
SWOT	Strengths, Weaknesses, Opportunities, Threats
STEM	Science, Technology, Engineering and Math
UAV	Unmanned Aerial Vehicle

APPENDIX B.

THE MILITARY SERVICES IN PENNSYLVANIA: A BRIEF HISTORY

Pennsylvania's role supporting military services dates back to before the Revolutionary War. In 1755, Philadelphia postmaster Benjamin Franklin procured Conestoga Wagons for British General Edward Braddock's expedition against French forces in Western Pennsylvania. Philadelphia was one of the nation's earliest centers for Navy operations and warship construction, and military logistics depended on the Schuylkill Arsenal, later the Philadelphia Quartermaster Depot, since it began operations in 1800.

Today many of the major military installations within Pennsylvania are a legacy of the rapid expansion of the nation's military forces that began as the nation mobilized for entry into World War II. During peacetime, the U.S. had historically maintained only modest operating forces spread widely throughout the nation. Past contingencies, including the Spanish-American War and World War I, saw rapid expansions of military forces, but were matched by rapid and comprehensive demobilizations as soon as each conflict concluded. Depression era downsizing further decreased the size of the nation's military establishment in Pennsylvania as was true across the nation. One exception was the opening of the Philadelphia Naval Hospital, which took place in 1935 and was one of the last major military facilities constructed in Pennsylvania prior to World War II. On the eve of the war, few military forces, other than units of the Pennsylvania National Guard, were based in Pennsylvania.

During World War II, Pennsylvania experienced a vast expansion of military installations. Existing facilities, such as the Philadelphia Navy Shipyard, experienced unprecedented growth and employed over 47,000 workers at its peak in 1943. A vast support infrastructure for American military forces was created virtually from scratch, resulting in the commissioning or expansion of several major facilities in Pennsylvania. The Letterkenny Army Depot was commissioned at the onset of World II and served as a major ordnance depot through the war. The Valley Forge Military Hospital opened in 1943. The Tobyhanna Federal Reservation had been a U.S. Army artillery training facility since 1912, but expanded to become a major storage and support facility for the U.S. Army Air Forces during World War II. In addition, at least 10 new military airfields were set up across Pennsylvania by the U.S. Army Air Forces (USAAF) during the war and before the creation of the U.S. Air Force.

While demobilization after the war again saw the rapid downsizing or decommissioning of many of these facilities, the Cold War and the onset of the Korean War brought new deployments of military forces to Pennsylvania. Many smaller facilities across the state closed, but several of the major military installations expanded their missions in the decade after World War II. Though initially considered for closure following World War II, Tobyhanna was selected as the site for a major supply depot in 1951.

The Letterkenny Depot was designated as a permanent military installation in 1954 and became the home to major Army logistics operations. Also, in 1951, the U.S. Army War College relocated to Carlisle Barracks, which had previously served as an Army medical and training facility since 1918.

The Cold War generated new deployments of military units into Pennsylvania. To protect against strategic bombers, the Pittsburgh region was initially protected by three anti-aircraft battalions deployed in 1952. These were replaced later in the 1950s by Nike missile batteries with 13 separate sites surrounding the Pittsburgh region, an additional 12 sites across the Philadelphia metropolitan region. The Nike missile sites were eventually closed between 1961 and 1974 when the last operating sites were decommissioned.

Since 1988, several major military installations in Pennsylvania have seen major shifts in their missions as a result of the Base Realignment and Closure (BRAC) process. The former Philadelphia Naval Station and Philadelphia Naval Shipyard, both located at the Philadelphia Navy Yard, were closed because of recommendations of the 1991 and 1995 BRAC rounds. The former Naval Air Station Willow Grove, located in Horsham, was closed in the 2005 BRAC round. Smaller military installations were closed in other BRAC rounds, including the Navy Reserve Center in Altoona. BRAC-mandated realignments affected both Army Depots (Letterkenny and Tobyhanna). A more detailed history of the impact of the BRAC process on Pennsylvania military installations is available in Appendix C.

Several Pennsylvania's military installations continued to expand their roles in subsequent decades. The Defense Logistics Agency (DLA) established its headquarters at the Defense Distribution Center in Susquehanna, Pennsylvania. The Navy's Supply System Command located its headquar-

ters at the Naval Support Activity in Mechanicsburg. Army Depots at Tobyhanna and Letterkenny are vital parts of America's industrial base, charged with maintaining the nation's core military logistics capabilities, and are centers of technical excellence in crucial military electronics, missiles, and vehicle systems. A revitalized Navy Yard in Philadelphia continues to be home

to the Navy Surface Warfare Center Philadelphia, and the Naval Support Activity in northeast Philadelphia is a center for supporting all Naval Aviation logistics operations. Each of these ongoing operations, along with reserve and National Guard installations at Fort Indiantown Gap, Pittsburgh, Harrisburg, and Horsham, support combatant commanders around the world.

Recovering from Base Closure

While no community wants to see its local military installations closed or reduced in size, historical evidence suggests that most communities effectively recover from the impacts of such closings or realignments. Since 1988, DoD has relied on five rounds of the military base closure process to help reduce the size and scope of its military infrastructure. Over this time frame, DoD has closed or led a major realignment of bases in 120 communities.* These communities vary greatly, and the impact of base closings varies based on the nature of the local economy, the type of facilities affected, and the size of local job loss.

When affected by a military base closure, surrounding communities receive extensive federal support from relevant military services and from the Pentagon's Office of Economic Adjustment (OEA), which views base reuse and community redevelopment as a core mission. OEA provides grant funds and technical assistance to help local leaders organize, plan, and implement strategies that help reuse the closed facilities and identify new economic engines to replace lost jobs and businesses affected by local base closings.

Over the past several decades, these recovery processes have proved quite successful, and the list of base closure success stories is quite long. A recent study of communities affected by the 2005 round of base closures found few differences in economic performance between base closure communities and other U.S. communities.** Despite facing major economic shocks, most affected communities had been able to recover, plan for new economic development activities, and successfully invest in these new capacities.

Leaders in these communities report that the base redevelopment process takes time and patience. But they also note that a base closing is not an economic death sentence. Recovery and revitalization are not only possible; they are a common outcome of the process.

**U.S. Government Accountability Office, "Defense Infrastructure."*

****"Defense Infrastructure," 15-17.*

APPENDIX C.
TIMELINE OF MAJOR PENNSYLVANIA MILITARY
FACILITY REALIGNMENTS

YEAR	COUNTY	FACILITY/INSTALLATION
Pre-BRAC		
1961-74	Allegheny/Washington/Westmoreland	Pittsburgh Region Nike Missile Sites
1969	Dauphin	Olmstead Air Force Base
1956-71	Bucks/Chester/Delaware/Montgomery	Philadelphia Region Nike Missile Sites
1974	Chester	Valley Forge Military Hospital
Results of BRAC Rounds		
1988	Allegheny/Washington Franklin Monroe Philadelphia Philadelphia Westmoreland	Family Housing Letterkenny Army Depot Tobyhanna Army Depot Philadelphia Naval Hospital Tacony Warehouse Irwin Support Annex
1991	Bucks Franklin Philadelphia Philadelphia	Naval Air Development Center Warminster Letterkenny Army Depot Philadelphia Naval Shipyard Philadelphia Naval Station
1993	Blair Franklin Cambria Philadelphia Philadelphia Philadelphia Philadelphia Philadelphia Philadelphia Philadelphia	Naval Reserve Center Altoona Defense Distribution Depot, Letterkenny Naval/Marine Corps Air Facility, Johnstown (Planned) DLA Information Processing Center Navy Data Processing Center Aviation Supply Office Planning, Engineering for Repair and Alteration Center - Philadelphia Defense Industrial Supply Center Defense Personnel Support Center Defense Clothing Factory Defense Contract Management District Mid-Atlantic

Source: BRAC Commission Reports 1988-2005

RESULT

• Closed

• Disestablished and turned over to PaANG

• Closed

• Closed

• Closed

• Transferred supply and material-readiness mission from Bluegrass Army Depot (KY) to Letterkenny

• Transfer of communications-electronics mission from Bluegrass Army Depot (KY) to Tobyhanna

• Closed

• Closed

• Closed

• Realignment of the Naval Air Development Center Warminster; became part of the Naval Air Warfare Center, Aircraft Division, and were relocated to the Patuxent River Naval Air Station in Lexington Park, Maryland

• Transferred Systems Integration Management Activity to Rock Island Arsenal (IL)

• Closed but shipyard preserved for emergent requirements. Propeller facility, Naval Inactive Ships Maintenance Facility, and Naval Ship System Engineering Station retained

• Closed

• Closed

• DoD recommended reducing to a depot activity and placing it under the Tobyhanna Army Depot. BRAC Commission recommended that the defense distribution depot remain open, but the depot's artillery mission transferred to Anniston Army Depot (AL)

• Construction halted

• Closed

• Closed

• Closed, with functions, personnel, equipment, and support relocated to San Diego, Portsmouth, Virginia, and Newport News

• DoD recommended relocating the center to New Cumberland. BRAC Commission recommended keeping it open and located within the Aviation Supply Office compound in Philadelphia

• Relocated to the Aviation Supply Office compound in Philadelphia

• Closed

• Closed

YEAR	COUNTY	FACILITY/INSTALLATION
1995	Allegheny Allegheny	Charles E. Kelly Support Center Pittsburgh Air Reserve Station
	Bucks	Naval Command, Control and Ocean Surveillance Center, RDT&E Division Detachment, Warminster
	Bucks	Naval Air Warfare Center, Aircraft Division, Warminster
	Franklin	Defense Distribution Depot Letterkenny
	Franklin	Letterkenny Army Depot
	Lebanon/Dauphin	Fort Indiantown Gap
	Monroe	Tobyhanna Army Depot
	Montgomery	Naval Air Warfare Center, Aircraft Division, Open Water Test Facility, Oreland
	Philadelphia	Naval Air Technical Services Facility
	Philadelphia	Defense Industrial Supply Center
Philadelphia	Naval Aviation Engineering Support Unit	
Philadelphia	Philadelphia Naval Shipyard	
Philadelphia	Naval Surface Warfare Center, Carderock Division Detachment	
2005	Allegheny	U.S. Army Reserve Center, Coraopolis
	Allegheny Allegheny	Kelly Support Center Pittsburgh Air Reserve Station
	Berks	Navy-Marine Corps Reserve Center Reading
	Cambria	Marine Corps Reserve Center Johnstown (Cambria Regional Airport)
	Columbia/Union	U.S. Army Reserve Centers Bloomsburg and Lewisburg
	Cumberland	Naval Support Activity Mechanicsburg
	Delaware	Navy Crane Center Lester
	Various	Army Reserve Centers in Chester, Philadelphia, Horsham, Norristown and Army Reserve Organizational Maintenance Shop in Chester
Franklin	Letterkenny Army Depot	
Lackawanna	Serrenti U.S. Army Reserve Center, Scranton	

Source: BRAC Commission Reports 1988-2005

RESULT

- Consolidation of Army Reserve units onto 3 of 5 existing parcels.
 - DoD recommended deactivating the U.S. Air Force Reserve 911th Airlift Wing and closing the Pittsburgh Air Reserve Station. BRAC Commission recommended keeping 911th/reserve station open
 - Closed

 - Closed
 - Closed
 - Towed and self-propelled combat vehicle mission transferred to Anniston Army Depot (AL) and missile guidance system workload transferred to Tobyhanna Army Depot (PA)
 - Disestablished as a federal enclave, transferred to state to be maintained as reserve/guard training facility
 - McClellan AFB (CA) common-use ground communication/electronics maintenance work transferred to Tobyhanna
 - Closed

 - Closed
 - Closed
 - Closed
 - Previous BRAC recommendation to preserve the closed Philadelphia Naval Shipyard rescinded, leading to full transfer of site to local control
 - Following closure of Naval Surface Warfare Center, Carderock Division Detachment, Annapolis, Maryland, technical activities relocated to Naval Surface Warfare Center, Carderock Division Detachment, Philadelphia, Surface Weapons Center, Carderock Division, Carderock, Maryland, and the Naval Research Laboratory, Washington, D.C.
-
- HQ 99th Regional Readiness Command consolidated with a Northeast Regional Readiness Command Headquarters at Fort Dix, NJ
 - Closed
 - DoD recommended relocation of 911th Airlift Wing aircraft and closure of the air reserve station. BRAC Commission recommended retention of the 911th and that the air reserve station form the basis of a new regional Joint Readiness Center
 - Closed
 - Detachment of Marine Light Attack Helicopter Squadron 775 relocated to McGuire Air Force Base (NJ)
 - U.S. Army Reserve Centers in Lewisburg and Bloomsburg closed with operations transferred to a new Armed Forces Reserve Center in Lewisburg/Bloomsburg area
 - Relocated some functions to Richmond, VA, Defense Supply Center Columbus (OH), and DLA Ft Belvoir (VA), and disestablished others
 - Relocated to Norfolk Naval Shipyard (VA)
 - Relocated to a new Armed Forces Reserve Center at Willow Grove Joint Reserve Base

 - Relocated depot maintenance of tactical missiles to Letterkenny from Naval Weapons Station Seal Beach (CA), Red River Army Depot (TX), and Marine Corps Logistics Base Barstow (CA); consolidated Rock Island Arsenal's (IL) remaining Tactical Vehicle workload and capability at Letterkenny
 - Closed

YEAR	COUNTY	FACILITY/INSTALLATION
2005 (continued)	Monroe	Tobyhanna Army Depot
	Montgomery	Naval Air Station Willow Grove
	Philadelphia	Bristol U.S. Army Reserve Center, Philadelphia/Operational Maintenance Shop Philadelphia
	Philadelphia	Naval Support Activity Philadelphia
	Philadelphia	Navy Philadelphia Business Center
	Susquehanna	Defense Distribution Depot Susquehanna

Source: BRAC Commission Reports 1988-2005

RESULT

- Workloads from Naval Weapons Station Seal Beach (CA), Marine Corps Logistics Base Barstow (CA), and Red River Army Depot (TX) transferred to Tobyhanna; consolidation of supply, storage, and distribution functions – some relocation to Susquehanna Strategic Distribution Platform
 - Closed
 - Several reserve units relocated to an Armed Forces Reserve Center on the existing Bristol Veterans Memorial Reserve Center site
 - Human Resource Service Center-Northeast relocated to NSA Philadelphia
 - BRAC Commission recommended realigning Navy Philadelphia Business Center by relocating the Norfolk Naval Shipyard Detachment, Naval Sea Systems Command Shipbuilding Support Office ship repair function to Norfolk Naval Shipyard (VA)
 - Disestablished storage and distribution functions for tires, packaged petroleum, oils, lubricants, and compressed gases
-

APPENDIX D. METHODOLOGY

Site Visits

Between March and September 2017, members of the University of Pittsburgh research team visited each of the following installations and spoke with key local stakeholders. The Site Visit Timeline below details the dates of those visits.

Site visits consisted of a semi-structured group interview with installation personnel and a tour of the installation. Pennsylvania Military Community Enhancement Commission (PMCEC) members assisted in the process as liaisons to the installation and some participated in the interview.

2017 SITE VISIT TIMELINE

DATE	INSTALLATION
March 24	911th Air Force Reserve Airlift Wing
April 14	316th Expeditionary Sustainment Command
April 28	171st Air Refueling Wing
May 8	Fort Indiantown Gap
May 23	Defense Distribution Center Susquehanna
May 24	Army War College & Carlisle Barracks (including Dunham Health Clinic and Army Heritage and Education Center)
May 25	193rd Special Operations Wing
June 7	Letterkenny Army Depot
June 14	Tobyhanna Army Depot
September 20	Naval Support Activity Mechanicsburg
September 21	Naval Support Activity Philadelphia & Philadelphia Naval Yard Annex

In addition to the 12 installations that were part of the study, the team visited Horsham Air Guard Station, home of the 111th Attack Wing of the Pennsylvania Air National Guard, in September 2017.

The names and affiliations of the installation personnel that participated in our site visits are listed in the table below.

INSTALLATION INTERVIEWEES

LAST NAME	FIRST NAME	TITLE, POSITION, INSTALLATION
Adgie	Ken	Colonel, Deputy Commandant of Army War College
Bair	Andy	Command Sergeant, Force Support Squadron Superintendent, 171st
Baker, Jr.	Randy	Regional Facilities Operational Specialist, 99th Readiness Division, 316th
Belenky	Michael	Lieutenant, Commander of Dunham Health Clinic
Bey	John	Chief Master Sergeant, Finance Control Office Superintendent, 193rd
Bogdan	Karen	Lieutenant Colonel, Wing Executive Officer, 171st
Bonsell	Dawn	Distribution Public Affairs Officer, DLA Susquehanna
Botzum	Chris	Master Sergeant, Public Affairs Representative, 111th Attack Wing
Bryan	Kyle	Captain, Commander, NSAM, NSAP, Navy Yard
Cleaver	Chris	Press Officer, NSAM
Colussy	Scott	Major, Finance/Budget Officer, 171st
Crean	Peter	Colonel, Director of U.S. Army Heritage and Education Center
Diorisio	Cheryl	Chief of Staff, NSWC
Dove	Pam	Captain, Force Support Officer, 171st
Eissler	Howard	Colonel, Commander, 111th Attack Wing
Erickson	Dan	Lead Contracting Officer, 911th
Eungard	Brad	Colonel, Commander, DLA Susquehanna

Frisco, Jr.	Paul	Master Sergeant, Wing Command Chief, 111th Attack Wing
Garrett	Sue	Lieutenant Colonel, 193rd Support Group Commander
Goodwill	Mark	Colonel, Air Commander and Mission Support Group Commander, 171st
Griffin	William	Col, Vice Commander, 111th Attack Wing
Haas	Robert	Chief of Staff, Tobyhanna Army Depot
Hepner, Jr.	Robert	Colonel, Garrison Commander, Fort Indiantown Gap
Higgins	John	Captain, 171st
Hyland	Ray	Colonel, Maintenance Group Commander, 171st
Kerr	Carol	Doctor, Army War College Public Affairs Officer
Ketter	Jeremy	Major, Base Civil Engineer and Civil Engineer Squadron Commander, 171st
Kistler	Michael	Technical Director, Naval Surface Warfare Center
Knight	Leslie	Captain, Director of Personnel, 193rd
Knight	Perry	Distribution Chief of Staff, DLA Susquehanna
Laing	Marvin	Lieutenant Colonel, 193rd
Lee	James	Garrison Command Executive Officer, Army War College
Lemon	April	Technical Sergeant, Finance, 171st
Maddox	Edward Deacon	Colonel, Commander, Letterkenny Army Depot
Martini	Tia	Command Intern, Tobyhanna Army Depot
Mattis	Joe	Civil Engineer, 911th
McNulty	Frank	Master Sergeant, Base Contracting, 171st
Monk	Shawn	Senior Master Sergeant, Public Affairs, 171st
Montefour	Robert	Site Director, DLA Installation Support
Perrott	Chuck	Lieutenant, Deputy Mission Support Group Commander, 171st
Peterson	Gregory	Colonel, Depot Commander, Tobyhanna Army Depot
Schwartz	George	(former) BG, Assistant Adjutant General, PA National Guard
Scott	Alonzie	Enterprise Talent Manager, Naval Surface Warfare Center
Souders	Ken	Chief Master Sergeant, Health Systems Specialist, 193rd
Spencer	Francis	Captain, Naval Surface Warfare Center Philadelphia Commanding Officer
Stoler	Nadine	Chief of Staff, Letterkenny Army Depot
Umstead	Stacy	Distribution Deputy Chief of Staff, DLA Susquehanna
Vaas	Michael	Cmdr., Officer in Charge, NSAP
Van Epps	Norm	Human Resources, 911th
Waller	Cliff	Colonel, Conversion Expert, Maintenance, 911th
Walter	Ken	Command Executive Officer, 316th
Weisnicht	David	Deputy Base Operations Manager, Fort Indiantown Gap
Weyner	Jim	Lieutenant Colonel, Deputy Support Group Commander, 193rd
Zader	Brian	Finance Department Comptroller, 911th
Zardecki	Frank	Deputy Commander, Tobyhanna Army Depot

GENERAL TOPICS FOR DISCUSSION

1. Military Installation Planning

- Characteristics and strengths of installation
- Location of installation in line with its mission
- Amenities and infrastructure in the surrounding communities
- Civilian and contractor workforce
- Recent and possible future changes in mission'

2. Industrial Competitiveness and Business Opportunities

- Connection to Pennsylvania's industries
- Advantages over commands with similar missions/private sector competitors

3. Partnership Activities and Opportunities

- Recent and current partnerships with surrounding communities
- Potential opportunities to partner with local communities in future
- Local Defense Group

Qualitative Analysis

The research team audio-recorded interviews when permitted by installation leadership. With the aid of staff from the University of Pittsburgh Center for Social and Urban Research's (UCSUR) Qualitative Data Analysis Program, the team transcribed the interviews and analyzed the transcripts using the qualitative analysis software Atlas.ti. The analytic process involved the development of "codes" to categorize selections of text from each transcript by major themes. The team refined the list of codes to the following:

- Capabilities
- Community Integration
- Comparisons with Competing Units/Installations
- Discussions of BRAC
- Education
- Facility/Installation
- Funding/Finance
- Government/Elected Officials
- Housing
- Local Economy
- Location
- Personnel
- Recommendations/Future Needs/Wish list
- Unit Geographic Distribution

That process of categorization formed the basis of a Strengths, Weaknesses, Opportunities, Threats (SWOT) Analysis, whereby the researchers analyzed how these major themes fit into a SWOT matrix for each installation. Strengths and weaknesses include attributes, assets, or factors that are internal to an installation. Threats are external factors that are harmful to, or create vulnerabilities for, an installation. Opportunities offer ways to mitigate threats and weaknesses and/or reinforce and expand on an installation's strengths.

Economic Impact Analysis – IMPLAN

The IMPLAN (IMPact Analysis for PLANing) model was used to estimate the total economic impact of each of Pennsylvania's major military installations. The IMPLAN model is widely used in both the public and private sectors and is considered a standard for conducting economic impact analysis of both existing economic activities and alternative future scenarios. The company provides model software and updates state and county level data allowing clients to create customized estimates for specified projects. IMPLAN Version 3.1 and the Pennsylvania state data package was used for this analysis. The primary data used was information on Pennsylvania-based employment, payroll, and expenditures provided by the staff of each installation in response to a common request for information. UCSUR staff was responsible for using data provided to create a customized mode of activities at each installation.

Data used for this analysis included employment as of September 30, 2016 and payroll and expenditures for the 2015-16 federal fiscal year. Version 3.1 of the IMPLAN model includes 536 industry sectors based on the North American Industry Classification System (NAICS). Where available, data on all major tenants at each installation was included in this analysis, excluding those activities that are otherwise expected to be included in the IMPLAN estimates for indirect economic impacts. This would include tenants that provide goods and services that would otherwise be provided by the private sector.

While most workers are either federal civilian employees or military service members, the work done at many of Pennsylvania's military installations mirrors economic activity in the private sector. Where appropriate, economic activity at each installation was characterized by the civilian industries that most closely matched the type of goods and services produced by each installation's tenant commands. Several of the major military bases in Pennsylvania primarily support National Guard or reserve units. Where appropriate, adjustments were made to account for the part-time service of reserve and Guard members. Guidance for how to shape IMPLAN model scenarios for military installations was taken from IMPLAN documentation, specifically Working with Military Bases, Case Study: Examining Base Closure, available via the IMPLAN Pro Knowledge Base.

IMPLAN is a modified Input-Output (I/O) model. Standard I/O models map the flows of goods and services between industries and the household sector in a geographic region. The IMPLAN model also measures the economic relationships between government, industry, and household sectors for a more complete model of dollar flows within a regional economy. IMPLAN calculates three major types of economic impacts: Direct Impacts here are the economic activities at each installation characterized by federal employment, payroll, and expenditures; Indirect

Impacts are generated by the supply chain requirements and linkages that result from purchases of goods and services by federal activities at each installation. Indirect employment is sometimes called intermediate employment and includes federal contracting with civilian suppliers; and Induced impacts are generated by the spending by workers whose employment is linked to the economic activity generating direct impacts. Cumulatively, these three types of impact reflect the total economic impact a military installation has within its local region and across the state.

The results reflect the total economic impact of each respective military installation on the economy of Pennsylvania. This can be interpreted as the potential loss if an installation were to be disestablished, and all its tenant activities were to be shut down or relocated outside of Pennsylvania. The nature of military activities limit the amount of displacement that each installation has on other commercial activity in the state. Should any installation shut down or a major military organization move outside of Pennsylvania, the likely result is the loss of all economic activity generated by the installation. In this sense, military activities can be considered as part of the “traded” sector of a regional economy, which exports goods or services to a national market.

Results reported include the total employment impact of each military installation, and also estimates of both economic output and value added production. Each of these reflect the cumulative impact of direct, indirect, and induced economic impacts. Economic Output represents the amount of production in dollars recorded by economic entities within a region. This includes purchases of intermediate goods, plus value-added, or compensation and profit. Output can also be thought of as gross sales. Value added production is also called Gross Regional Product (GRP) and is analogous to the national concept of Gross Domestic Product. GRP equals the residual that is left over for compensation and profits after subtracting the value of all intermediate inputs from the gross sales value of an entity’s production or output.

Model inputs for employment and payroll were limited to workers with residences in Pennsylvania. Results reflect the economic activities of major military installations within the state and do not include additional impacts that accrue in neighboring states. These impacts out of state will result from the local spending of workers who commute to worksites in Pennsylvania from homes in other states, or the indirect impacts of supply chain purchases coming from contractors outside of Pennsylvania. Likewise, the economic impact of major military installations located outside of Pennsylvania is not estimated here.

Glossary of Selected Terms

Demand. Demand is the amount of goods and services demanded, or consumed, by the local region. Some demand is satisfied locally, some by imports. Demand differs from output in that only the proportion of demand that is usually supplied locally is added to local output. Demand is apportioned to local production by using the regional purchase coefficient.

Direct Employment. Direct employment means the jobs that are an integral part of a project or other economic activity that is being considered by an economic impact analysis. Direct changes are usually inputs into the model scenario and are also called exogenous changes, meaning that the values are determined outside the economic impact model.

Employment. Employment is a Bureau of Economic Analysis (BEA) concept that measures full-time and part-time jobs on a place-of-work basis, that is, in the economic region where the employer is located. Individuals may hold more than one job and, therefore, may be counted twice.

Value Added Production. Gross Regional Product (GRP) is analogous to the national concept of Gross Domestic Product, or value-added. GRP equals the residual that is left over for compensation and profits after subtracting the value of all intermediate inputs from the gross sales value of an entities production, or output.

Indirect Employment. Indirect employment means jobs that are created by the supply requirements and linkages of the project or other economic activity analyzed. Indirect employment is sometimes called intermediate employment.

Induced Employment. Induced employment means jobs that are created by the re-spending of wages by employees of the project being analyzed and employees of any secondary economic activity simulated by the project.

Multiplier (or Economic Multiplier). The multiplicative effect that an economic activity has due to the purchasing of goods and services as inputs (indirect impacts) and the spending of workers whose jobs are generated by direct or indirect economic activity (induced impacts), calculated as the ratio of total economic impact to direct economic impacts.

Output. Output represents the amount of production in dollars recorded by economic entities within a region. Output includes purchases of intermediate goods, plus value-added, or compensation and profit. Output can also be thought of as gross sales.

Gross Regional Product. See Value Added.

APPENDIX E. STATE LOGISTICS INITIATIVES

A number of U.S. states and regions have identified the transportation and logistics industry as a core cluster and have targeted investments and other resources to help build local capacities in these areas.³⁴ At the state level, both Georgia and South Carolina have been especially active on this front. Both states resemble Pennsylvania in that they have strong natural assets, such as ports and desirable locations. They also make conscious efforts to connect local military installations and assets into their statewide strategies.

In Georgia, the state's logistics-focused economic development strategies are coordinated by the Center of Innovation for Logistics. The Center has three focus areas: it helps local firms to better assess inbound and outbound logistics options; it promotes logistics-focused workforce development; and it invests in new logistics-related technologies. More generally, it helps promote the industry via an annual summit, regular newsletters, and networking events. In a related effort, the Georgia Ports Authority is also engaged in a program to build a statewide network of inland ports. Several locations in North Georgia are already operating, and new locations are being assessed. Potential future sites include locations in Middle Georgia, where local economic developers hope to capitalize on the area's robust logistics assets located in and around Warner Robins Air Force Base.³⁵ This effort includes a new initiative to expand logistics focused assets at the Middle Georgia Regional Airport.

South Carolina's strategy is spearheaded by SC Logistics, a public-private partnership based at the South Carolina Council of Competitiveness. The U.S. Economic Development Administration is funding this effort, and the partners recently published an analysis of the statewide impacts of the logistics sector.³⁶ This study identified more than 600 local firms in the logistics sector. As a group, these firms employ more than 113,000 people.

Georgia and South Carolina operate more developed programs, but they are not alone. Other states also view the logistics industry as a core economic development asset. In Washington and Mississippi, state education programs are focused on providing new certifications in transportation and logistics career fields and in opening these opportunities to veterans, among others.³⁷ Like Georgia, Virginia is also embracing the concept of inland ports, with one location operating in Winchester and others under consideration. In Richmond, community leaders are now developing a regional logistics strategy that links core local assets, such as the growing Port of Richmond and the logistics-related capacities at Fort Lee.³⁸ Finally, the State of New Jersey's latest economic development strategy specifically targets the transportation and logistics sectors as key drivers for future statewide economic growth.³⁹ The strategy notes that New Jersey is well situated to develop this sector thanks to its excellent location, dense population centers, and extensive transportation networks.

³⁴ For background, see Sheffi, "Logistics Clusters."

³⁵ Wilson and Company, Inc. and GKSF Global Research, "Freight Study."

³⁶ South Carolina Council on Competitiveness, "Logistics."

³⁷ Washington Department of Commerce, "Award Application"; Mississippi Department of Education, "2017 Transportation."

³⁸ Martz, "Virginia."

³⁹ Duvall et al., "Reseeding," 21-22.

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INDIVIDUAL INSTALLATION REPORTS



911th Airlift Wing
Pittsburgh International Airport



171st Air Refueling Wing
Pittsburgh International Airport



316th Sustainment Command (Expeditionary)
Coraopolis



Letterkenny Army Depot
Chambersburg



The Army War College & Carlisle Barracks
Cumberland County



Naval Support Activity
Mechanicsburg



Defense Distribution Center Susquehanna
New Cumberland



193rd Special Operations Wing
Harrisburg International Airport



Fort Indiantown Gap
Pennsylvania National Guard



Tobyhanna Army Depot
Monroe County



Naval Support Activity
Philadelphia

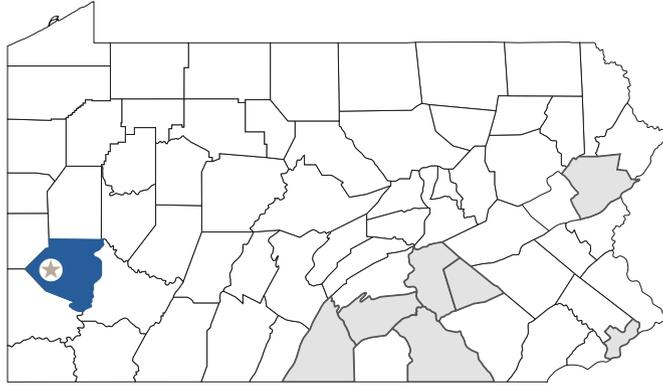


Navy Yard Annex
Philadelphia

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July 2018

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



911TH AIRLIFT WING

PITTSBURGH INTERNATIONAL AIRPORT / AIR FORCE RESERVE





911TH AIRLIFT WING

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 military installations regionally and nationally, as well as their ties to surrounding communities and Pennsylvania industry.

INTRODUCTION

The **911th Airlift Wing** of the Air Force Reserve is located in the borough of Coraopolis, approximately 20 miles from the City of Pittsburgh in Allegheny County, and is co-located with the Pittsburgh International Airport. The 911th Airlift Wing is part of the U.S. Air Force Reserve Command, and the wing is the principal Air Force Reserve unit located within Pennsylvania. The Air Force Reserve Command at the 911th includes military and civilian employees, many traditional reservists, and air reserve technicians. The installation covers 115 acres and contains 379,851 square feet of office and workspace.

In September 2016, Congress approved \$85 million to bring an Air Force squadron of eight C-17 cargo planes to the 911th Airlift Wing. The C-17s will replace the existing eight C-130 planes in the coming years, enabling the 911th to enhance and expand its capabilities and capacities into the future.

The upgrade means many changes for the 911th. The mission of the 911th will change as it converts to the C-17s and adds 192 permanent military and civilian workers, 137 of which will be full-time. With a project cost estimate of \$110 million, the transition to C-17s also represents an important addition of resources and economic activity coming into Allegheny County. ✪

BACKGROUND & HISTORY

The 911th Airlift Wing deploys as part of the Air Mobility Command. The 911th Airlift Wing contains the 911th Maintenance Group, 911th Mission Support Group, and 911th Airlift Wing Operations Group, among other support. The 911th recruits and trains Air Force Reserve personnel to provide airlift services, along with intra-theatre aeromedical evacuation. The 911th participates in joint service training exercises and supports active duty forces with airborne training initiatives.

The 911th began in 1943 on a former farm field near today's site of the Pittsburgh International Airport and served as a refueling stop for aircraft traveling across the country. Later, it emerged as a post-war reserve training center. Over the years, its mission has expanded, becoming a Military Airlift Group in 1967, with C-124 aircraft, and a Tactical Airlift Group in 1972, with C-123K aircraft. During the 1980s, the unit converted to C-130 aircraft. In 1992, the unit was renamed the 911th Airlift Group and, in 1994, became the 911th Airlift Wing.

The 911th has been nominated for closure under previous rounds of Base Realignment and Closure (BRAC), in 1995 and 2005. In 2012, it faced another attempt at closure during Congressional budget cuts.¹

In 1995, the Department of Defense (DoD) recommended inactivating the 911th and transferring the C-130 aircraft to Air Force Reserve units at Dobbins Air Force Base (AFB), Georgia, and Peterson AFB, Colorado.² Later that year, the BRAC Commission recommended keeping the 911th and reserve base open, reporting that “the base could accommodate all types of aircraft,” as well as provide low operating costs and expansion opportunities.³

In 2005, the DoD recommended closure of the 911th and relocation of the eight C-130s to Fort Bragg, North Carolina.⁴ Again, the BRAC Commission rejected the recommendation to close the base and recommended keeping the base open, with the installation forming the basis of a new Regional Joint Readiness Center. Co-located with the Greater Pittsburgh International Airport, the Regional Joint Readiness Center would provide military-civilian operations, homeland security, and community-based medical support to the DoD and the Department of Homeland Security National Incident Management Plan and the National Response Plan.⁵

During the 2005–06 period, the Military Affairs Council of Western Pennsylvania (MACWPA) sponsored the Joint Readiness Center Task Force, a public-private partnership that included a number of Western Pennsylvania organizations, universities, and government agencies. The task force began to develop the concept and identify the activities and functions of the Joint Readiness Center for the DoD and Department of Homeland Security. Despite strength in organizing and community support for the task force, the Joint Readiness Center was not funded. The Pittsburgh International Airport continues to maintain land for the center.

Though the 2005 BRAC was the most comprehensive round to date, the 911th survived and expanded in the following years. Despite the threat of closure, the strengths and capacity of the 911th and its military and civilian forces have prevailed over these efforts. ✪

ECONOMIC IMPACT

The 911th produces an important economic impact in Southwestern Pennsylvania and the state's overall economy. The IMPLAN model was used to estimate the total economic impact of the 911th Airlift Wing within Pennsylvania. The model estimates the direct, indirect, and induced impacts that accrue within Pennsylvania because of activity generated by the 911th. Direct impacts are the employment and spending associated with the 911th itself, while indirect impacts, sometimes called intermediate impacts, are generated by the supply chain requirements and industry linkages of the activity being analyzed. Induced economic impacts derive from the spending patterns of employees and service members. Adjustments were made to ac-

The 911th Airlift Wing has successfully moved to build the platform of the future with the emergence of the next generation C-17 air transport jets

count for employment and commuting patterns of both full-time staff in Coraopolis and assigned drilling reservists.

This economic impact analysis quantifies the cumulative impact on employment and economic output of the 911th. These results can be interpreted as the resulting economic impact if the 911th were to be either closed or relocated outside of Pennsylvania. Staff of the 911th provided economic data for the 2015–16 federal fiscal year; results reflect economic impact over that period. Personnel and employment data reflects September 30, 2016.

The 911th is an Air Force Reserve unit served by a mix of civilians, active duty service members, and traditional reservists who serve part-time throughout the

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U.S. Air Force C-130 Hercules from the 911th Airlift Wing flies over Pittsburgh

Photo courtesy of 911th Airlift Wing



<<

year and full-time during periods of mobilization or other extended orders to active duty. In 2016, the 911th had 375 civilian employees, including air reserve technicians, 54 active duty service members, and 1,197 currently serving reservists.⁶ Reservists include both traditional reservists, who serve on a part-time basis throughout the year or longer periods of mobilization, and air reserve technicians, who serve in a dual status as both reservists and full-time civilian employees. Approximately 80% of all personnel reside within Pennsylvania.

The economic impacts for Allegheny County and Pennsylvania are summarized in Table 1.

- Overall, the 911th Airlift Wing generated 1,024 full-time equivalent jobs and \$217 million in economic output in Pennsylvania.

- These jobs account for over \$76 million in labor income in Pennsylvania.
- An estimated \$155 million in Gross Regional Product (GRP), or value added production, is generated by the 911th in Pennsylvania.

The direct economic impacts of the 911th occur where operations are co-located at the Pittsburgh International Airport in Allegheny County, part of the Pittsburgh Metropolitan Statistical Area. Indirect economic impacts are also concentrated within Allegheny County due to the joint use of airport facilities. Along with induced impacts resulting from the spending patterns of workers, the economic impacts of 911th operations are concentrated within the Pittsburgh region, mostly within Allegheny County. These regional impacts include:

TABLE 1
ECONOMIC IMPACT SUMMARY – 911TH AIRLIFT WING

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
ALLEGHENY COUNTY	Direct Effect	525*	\$ 47,094,040	\$ 108,306,713	\$ 135,867,736
	Indirect Effect	172	\$ 11,868,663	\$ 17,711,610	\$ 31,323,941
	Induced Effect	299	\$ 15,562,409	\$ 26,150,800	\$ 43,063,113
	Total Effect	996	\$ 74,525,111	\$ 152,169,124	\$ 210,254,791
PENNSYLVANIA TOTAL	Direct Effect	525*	\$ 47,094,040	\$ 108,306,713	\$ 135,867,736
	Indirect Effect	186	\$ 12,907,863	\$ 19,667,774	\$ 35,524,056
	Induced Effect	313	\$ 16,376,030	\$ 27,537,287	\$ 45,729,668
	Total Effect	1,024	\$ 76,377,932	\$ 155,511,775	\$ 217,121,462

*Represents full-time equivalent employment including civilian employees and active duty service members, and an adjustment for the part-time service of traditional reservists/Guard members.

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

TABLE 2

TOP 10 INDUSTRIES AFFECTED – 911TH AIRLIFT WING

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
536	Federal government, military	245	\$ 23,211,157	\$ 68,440,968	\$ 68,440,972
408	Air transportation	141	\$ 12,454,146	\$ 22,418,599	\$ 49,967,817
535	Federal government, non-military	140	\$ 11,941,441	\$ 17,801,131	\$ 17,801,132
62	Maintenance and repair construction of nonresidential structures	38	\$ 2,305,773	\$ 2,867,965	\$ 6,175,516
503	All other food and drinking places	25	\$ 717,664	\$ 603,489	\$ 1,023,284
414	Scenic and sightseeing transportation and support activities for transportation	24	\$ 1,548,691	\$ 1,879,083	\$ 3,856,219
482	Hospitals	21	\$ 1,699,885	\$ 1,881,197	\$ 3,280,273
501	Full-service restaurants	20	\$ 426,291	\$ 478,994	\$ 925,447
440	Real estate	17	\$ 462,686	\$ 3,218,951	\$ 4,107,082
395	Wholesale trade	16	\$ 1,450,739	\$ 2,632,270	\$ 4,083,924

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

- **525 direct (full-time equivalent) jobs within Allegheny County. Along with indirect and induced effects, the 911th supports a total of nearly 1,000 jobs in Allegheny County. These jobs generate a total of \$74.5 million in labor income annually within the county.**

- **\$210 million in total economic output and \$152 million in value added production (Gross Regional Product) in Allegheny County.**

The direct, indirect, and induced economic impacts affect sectors of the state economy differently. Table 2 covers the top 10 industries impacted by spending at the 911th, as estimated by the IMPLAN

model. The largest impacts were on federal government (military and non-military) sectors, as well as air transportation. Most of the remaining industries affected by the 911th are locally serving industries, such as hospitals, restaurants, and real estate.

Additional impact due to the mobilization of traditional guard members is not directly included in this analysis. For many decades, national guard members and reservists were deployed on an irregular basis. Today, they are a core part of America’s overseas military presence. When traditional guard members and reservists are mobilized under Title 10 orders, the economic impact of spending by Pennsylvania-resident dependents are in addition to the impacts quantified here. 🌟

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at the 911th. 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 3 and aspects of the analysis are described throughout the following sections.

The conversion of the 911th to C-17s represents one of the major competitive strengths of the installation, as it transitions from tactical to strategic airlift. The new planes also mean physical expansion of the

installation and enlargement of the workforce to meet the needs of these considerably larger aircraft. With a wingspan 37 feet wider and 77 feet longer than the C-130 cargo plane, the C-17s are 25% larger than the C-130s. The new planes will require \$54 million to construct a new fuel hangar, \$22.8 million for a fuel hydrant system, and \$8.2 million to widen the taxiway.⁷ Funds have been secured to lease an additional 25 acres from the Pittsburgh International Airport to accommodate expansion. The work began in 2017, and completion is expected for the new planes' arrival in 2019.

The addition of C-17s at the 911th also positions the wing strongly against future closure attempts. No other C-17s will be located nearby, so this situates the 911th strategically. While C-130s were also at

TABLE 3

SWOT THEMES – 911TH AIRLIFT WING

STRENGTHS

- **C-17s and Positioning**
- **Location and Proximity to Pittsburgh Airport**

WEAKNESSES

- **Single Entry/Exit (Force Protection)**
- **Visibility**
- **Size**

OPPORTUNITIES

- **Expansion**
- **Connector Road**
- **Local Defense Group**
- **Cyber Security**
- **Airport and Community Partnerships**
- **Joint Readiness Center and Other Multi-Installation Initiatives**

THREATS

- **Airline Recruitment of Pilots**



Staff Sgt. Jacob Pekelnicky and Tech. Sgt. Joseph Preston, 911th Maintenance Squadron avionics specialists, stand atop the fuselage of one of the unit's equipped C-130 aircraft, while they replace a battery in the emergency locator transmitter June 19, 2013, at the Pittsburgh International Airport Air Reserve Station.

Photo by Senior Airman Joshua J. Seybert

Youngstown-Warren Air Reserve Station, the C-17s are located at Wright Patterson Air Force Base, Joint Base McGuire-Dix-Lakehurst, and the Westover Air Reserve Base, making a stronger competitive location for the 911th and the Pittsburgh area.

In addition, C-17s will require a differently skilled workforce, as the 911th will transition from tactical to strategic airlift needs. The new planes will require more aircraft maintenance workers and new technical staff, with new hires in loadmasters and pilots, and a reduction in other staff, such as flight engineers and navigators. The increase in the aircraft maintenance group will add over 100 full-time workers, plus pilots, loadmasters, and reservists. Though new workers will be recruited from outside the region for the startup of the C-17s, much of the 911th workforce will need to be built through local connections and training for new employees.

The 911th derives significant benefits from its location at the Pittsburgh International Airport. The air-

port has been critical in a number of arrangements with the 911th; the two cooperate on a number of shared agreements that improve delivery and are cost-effective. These collaborations also bring flexibility when needed. The 911th and airport have shared service agreements with fire services and other cost-effective partnerships in shared activities. It is worth noting here a threat related to the airport. Commercial airlines are facing a shortage of pilots nationwide and hiring at a rapid pace (and at a high pay rate), making it harder for the Air Force to retain full-time pilots. The advantage, however, of reservists and Guard pilots is that they can fly commercial, unlike active duty personnel. This delivers a cost-effectiveness for the 911th, as reservist pilots are less expensive.

Despite the fact that the 911th and the 171st Air Refueling Wing are neighboring installations, no road connects the two and each has only one way on and off its respective base, which is a force protection concern. Fortunately, a planned connector road will ad-

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dress some of these issues, improving access and opening new avenues for shared resources. The road is currently being designed and funds are being sought to make this improvement. With a direct link, the benefits would also accrue to the 171st, with better prospect of securing the KC-46A tankers it seeks to add in the next competitive round. The role of the Local Defense Group (LDG) in this improvement is discussed in the next section.

The location also has important land implications that can deflect encroachment issues. With 115 acres, the 911th is one of the smallest Air Force Reserve Stations, but the advantages of its airport location has played a critical role. In the 2005 BRAC, for instance, Pittsburgh International Airport offered the 911th 53 acres free of charge, and the airport location enabled the 911th to acquire another 25 acres to support the expansion of the installation with the C-17s.

Perhaps the biggest drawback to the small size of the base is having only one gate for entrance and exit. MACWPA, the region's LDG, has agreed with the installation's commander that this poses a serious force protection issue for base personnel and is working with the Allegheny County Airport Authority on a project to construct a second access gate. A second gate with inspection capability not only reduces the force protection risk, but also provides an entrance for commercial traffic to keep disruptions to normal traffic flow at the main gate to a minimum.

The relations with the airport also have important economic impacts. Co-location with the airport produces impacts within the air transportation sector and additional impacts in the regional medical and education services industries concentrated in the Pittsburgh region. While the weaknesses and threats to the 911th are far different from earlier years, the installation needs to continue to look forward and advance. ★



A loadmaster assigned to the 758th Operations Group watches as a heavy equipment load parachutes to the ground below during a tactical air drop training mission, October 19, 2014 over Cadiz, Ohio. Training missions of this sort are performed routinely to ensure combat readiness.

Photo by Senior Airman Joshua J. Seybert

THE 911TH & THE WESTERN PENNSYLVANIA COMMUNITY

MACWPA is the LDG of the 911th Airlift Wing, along with the two other installations in Coraopolis — the 316th Sustainment Command and 171st Air Refueling Wing. MACWPA is a model LDG in many ways. Since 1995, the MACWPA has played critical roles in the sustainment and advancement of these installations, and, importantly, in promoting the success and capabilities of the 911th in recent rounds of BRAC.

MACWPA creates continued opportunities in part because of its links and exposures to outside partnerships. The success of bringing the C-17s to the 911th demonstrates the importance of community involvement to the stability of the installation and the strength of MACWPA as a support organization and LDG. MACWPA, successful in past BRACs, moved proactively for the 911th to attract the larger aircraft and commitment from the Air Force and the Obama Administration.⁸

Maintaining a public face is a challenge for all of the Pittsburgh area installations, and MACWPA leads the way in promoting their presence to community and business stakeholders. It has embarked on redirecting some of the 911th's lack of public presence through recent initiatives, including the May 2017 Wings Over Pittsburgh Open House/Airshow. The event was discontinued six years ago, and MACWPA was critical in bringing it back to Western Pennsylvania. Wings Over Pittsburgh is a free air show that features U.S. Air

Force Thunderbirds and other airborne acts and ground displays.⁹ Wings Over Pittsburgh highlights the importance of the 911th to the broader regional population and demonstrates another important role for MACWPA.

Related to community partnerships is also the Air Force Community Partnership program, a recent initiative of the Air Force to forge formal ties between installations and community partners to find shared

values and mutual benefits.¹⁰

The partnership is an important source of information sharing and clearing the path for community-installation shared services and cost reductions.

One major goal for the Air Force Community Partnership is

the connector road. The 911th and the Community Partnership, along with MACWPA, have worked to address one weakness of the 911th and improve an airport asphalt perimeter road, with the goal to make this a connector road between the 911th Airlift Wing and the nearby 171st Air Refueling Wing. The road is on airport property and thus under the jurisdiction of the Federal Aviation Administration (FAA). Work on the project could not begin until the project received FAA approval, finalized in the spring of 2017. Project funds of an estimated \$18 million are needed for the full engineering design and are being sought in some sort of joint capacity. The access road project is also critical for the potential Joint Readiness Center, as it relies on connections — physical and otherwise — between the 911th and 171st. ✪

MILITARY AFFAIRS COUNCIL
of Western Pennsylvania (MACWPA)
A Model Local Defense Group
PRODUCTIVE • EFFECTIVE • STRONG

LOOKING FORWARD

The 911th Airlift Wing has successfully moved to build the platform of the future rather than maintaining that of the past with the emergence of the next generation C-17 air transport jets. This conversion will change the wing's mission and expand the physical size of the installation, the size of the workforce, and the types of workers on board. Many of the strengths of the 911th are related to this conversion and other opportunities that it can create.

- *The 911th has significantly expanded its capabilities through its mission change from a C-130 Hercules to C-17 Globemaster III strategic airlift. The effects on the Pittsburgh region and Pennsylvania economy will be realized through construction and greater numbers of technicians needed for the C-17s.*
 - *With support from MACWPA and the Air Force Community Partnership Program, the 911th is working with the 171st to build a connector road between the two installations, and a greater direct link to the Pittsburgh International Airport. Both the 911th and the 171st Air Refueling Wing will benefit from expanded joint capability and increased security. The project also tightens relations with the Pittsburgh International Airport and possible land expansions.*
 - *Pittsburgh International Airport is central to all strengths of the 911th. Though the Regional Joint Readiness Center — proposed by the 2005 BRAC Commission and critical in keeping the 911th in operation — remains unfunded, the airport continues to reserve land for the center. The opportunities remain for an expansion of interagency operations in support of such a mission.*
- *MACWPA can continue its important role in engaging other stakeholders, elected officials, and regional organizations to speak in one voice for the 911th, 171st, and 316th, as well as reaching out to Pennsylvania's Congressional delegation and others about the value and strength of these installations. Through the PMCEC, MACWPA can also work with other Pennsylvania LDGs on shared communications and coordinated common causes. Again, the key role of the MACWPA in forging partnerships and community support is a model for conveying strengths and developing opportunities. The MACWPA can point the way for other LDGs to demonstrate the impacts that their organizing and support have on the region and state.*
 - *MACWPA can continue working to integrate common issues across Western Pennsylvania installations and leveraging partnerships that can advance installations' missions. Possible opportunities include a state Logistics Center of Excellence — which would build a common orientation around the state's concentrated strength in transportation, distribution, and logistics — and a joint military cargo hub at the 911th and 171st. Both involve the Pittsburgh International Airport, as well as the network of regional training and educational institutions that can prepare workers for future jobs, including those arising from the C-17s. Particularly relevant to the hub concept is that the airport recently entered into an agreement with Qatar airlines for scheduled air cargo service to Doha,⁷¹ which could position the airport as a backup for primary military air hubs on the East Coast, including Dover and McGuire Air Force Bases. The joint cargo hub could alleviate congestion at East Coast hubs and potentially reduce costs with deployment overseas from Pittsburgh. The MACWPA and PMCEC could sponsor a study of the potential importance and cost savings of the joint cargo hub operations.*



A C-17 Globemaster III Aircraft Takes off from Aviano Air Base in Italy, October 10, 2017. The conversion of the 911th from C-130s to C-17s represents one of the major competitive strengths of the installation, as it transitions from tactical to strategic airlift.

U.S. Army Photo by Visual Information Specialist Paolo Bovo

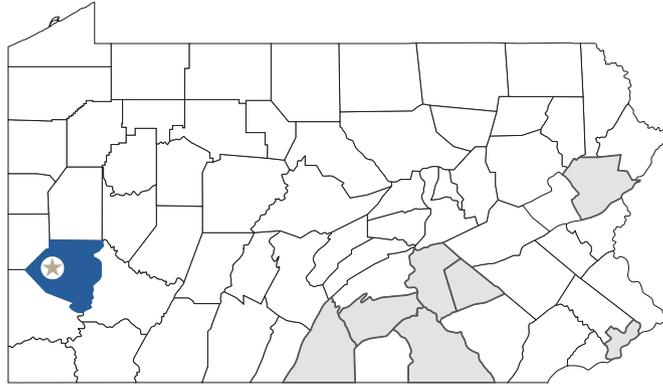
▪ *Cyber security represents an external area of opportunity for military units in the Pittsburgh region to partner with the FBI's National Cyber-Forensics and Training Alliance, based in Pittsburgh, Carnegie Mellon University, and the University of Pittsburgh. The 911th Communications Squadron has engaged in a number of partnerships and collaborations around*

cyber assurance, including joint training with the Computer Emergency Response Team division of Carnegie Mellon University's Software Engineering Institute.¹² The University of Pittsburgh's Institute for Cyber Law, Policy and Security, formed in 2017, is another potential collaborator. ☆

Notes

- ¹ Brian Bowling, "911th Airlift Wing in Moon Hopeful to Land Air Force C-17 Squadron," *Trib Live*. January 13, 2016.
- ² Defense Base Closure and Realignment Commission, *1995 Report to the President*, 1995
- ³ Defense Base Closure, 1995
- ⁴ Defense Base Closure and Realignment Commission, *2005 Defense Base Closure and Realignment Commission Report*, vol. 2, 2005, Q-48
- ⁵ The Dupuy Institute, "Regional Joint Readiness Center: A Value-Added Regional Resource," May 2005. See also "About the JRC," Joint Readiness Center Task Force, accessed January 17, 2018, sciencengines.com/jrc/About.htm
- ⁶ Traditional reservists serve a minimum of 24 days spread throughout the year in monthly drills, and an additional period of annual training ranging from 12 to 29 days. Civilians include Air Reserve Technicians who typically serve as federal civilian employees, but have dual status as reservists
- ⁷ Ed Blazina, "Obama Budget Includes Funds to Bring C-17 Planes to 911th Airlift," *Pittsburgh Post-Gazette*, February 10, 2016
- ⁸ Blazina, "Obama Budget"
- ⁹ Ed Blazina, "Large Weekend Crowds Expected for Air Show near Airport," *Pittsburgh Post-Gazette*. May 12, 2017
- ¹⁰ "Air Force Community Partnership Program," accessed January 12, 2018, community.af.mil/wg/airforcepartnerships
- ¹¹ Theresa Clift, "Pittsburgh Airport Paying Qatar Airways up to \$1.48M for Cargo Services," *Trib Live*, November 17, 2017
- ¹² "Cyber Lightning Exercise Helps Air National Guard and Air Force Reserve Units Learn and Test New Skills," Carnegie Mellon University, Software Engineering Institute, June 17, 2016

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



171ST AIR REFUELING WING

PITTSBURGH INTERNATIONAL AIRPORT / PA AIR NATIONAL GUARD





171ST AIR REFUELING WING

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 171st Air Refueling Wing (ARW), a Pennsylvania Air National Guard unit located at the Pittsburgh International Airport, provides in-flight air refueling for domestic and international combat and non-combat military missions. Additionally, the 171st ARW provides services such as air traffic control, global airlift, and weather support. The 171st is the largest Air National Guard tanker unit in the U.S. with 16 KC-135 Stratotankers; it has executed more Title 10 (Federal Active Duty) lines of alert than any other Wing in the country.¹ The installation saw its highest number of flying hours in 2016 and its operations tempo continues to rise.

The 171st ARW is made up of nearly 1,300 Guard members, 400 of whom are full-time base employees. The base operates 24 hours a day, every day of the year, and often receives military planes diverted due to weather, as it is the only East Coast Air National

MISSION: To provide in-flight refueling to the Department of Defense and NATO aircraft.

Guard base open at all times. The Wing is part of the Pennsylvania Task Force West, a joint Pennsylvania National Guard task force that responds to national disasters, civil disturbances, and national security events, and provides humanitarian relief. In 2016, for example, the 171st ARW Medical Group participated in an Innovative Readiness Training on the island of Kauai, Hawaii to provide medical, dental, and optometry care at no cost to patients in local communities.² Additionally, the Wing's Fatality Search and Rescue Team is regularly called upon within the state and beyond for chemical, biological, and similar exercises, or for recovery missions in contaminated locations. ⭐



A KC-135 aircraft with the 171st Air Refueling Wing refuels an F-15 aircraft.

Photo courtesy of 171st Air Refueling Wing Public Affairs

BACKGROUND & HISTORY

An Air National Guard unit has existed at the Pittsburgh Airport since 1947. Over the years, the unit has seen numerous changes in aircraft and missions. The unit began as the 146th and 147th Fighter Squadrons flying P-47 aircraft. In 1968, the unit was redesignated as the 171st Aeromedical Airlift Group, the first of its kind in the Air National Guard, responsible for transporting patients from locations in Vietnam to destination treatment hospitals.³ It was not until 1972 that the unit became the 171st Air Refueling Wing and transitioned to refueling aircraft.

The 171st was among the first units to respond after the 9/11 terrorist attacks in New York City, Washington D.C., and southwestern Pennsylvania,

providing aerial refueling to aircraft engaged in Combat Air Patrols over the eastern U.S. The Wing has actively participated in supporting several strategic and defensive missions (international and domestic) including Operations Desert Shield and Desert Storm, Allied Force, Enduring Freedom, Operation Noble Eagle, and Operation Iraqi Freedom, as well as relief efforts for Hurricanes Katrina, Sandy, and Maria.⁴

In 2014, the unit was one of five Air National Guard bases to compete for a dozen new KC-46A tankers from the Air Force. Although the Air Force awarded the planes to a different base, the 171st will be in the running for the next possible round of competition, in the mid-to-late 2020s.⁵ ✪

ECONOMIC IMPACT

This economic impact analysis quantifies the potential impact on employment and economic output of the Air National Guard activities located at Coraopolis. This could be interpreted as the result if the 171st were to be disestablished or transferred to another state and relocated outside of Pennsylvania. The IMPLAN model was used to estimate the total economic impact of the 171st within Pennsylvania. The IMPLAN model estimates the direct, indirect, and induced impacts that accrue within Pennsylvania because of activity generated by the 171st in Coraopolis.

Direct impacts are the employment and spending associated with the 171st itself, 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. Adjustments were made to account for employment and commuting patterns of both full-time staff in Coraopolis, and the part-time participation of assigned drilling (traditional) National Guard service members. Staff of the 171st provided economic data for the 2015–16 federal fiscal year; results reflect economic impact over that period.

The 171st is served by a mix of federal civilian employees, active duty service members, and traditional Guard members who serve part-time throughout the year and full-time during periods

of mobilization or other extended orders to active duty (see Table 1). Civilians include Air Guard Technicians who serve as federal civilian employees, but have dual status as National Guard service members. Traditional reservists serve a minimum of 24 days spread throughout the year in monthly drills, and an additional period of annual training ranging from 12 to 29 days. As of September 2017, full-time employment at the 171st includes a total 407 personnel, including a mix of active duty service members and federal civilian employees. An additional 877 traditional guardsmen are assigned to the 171st and support the unit throughout the year.

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TABLE 1

PERSONNEL SUMMARY – 171ST AIR REFUELING WING

PERSONNEL TYPE	#
Active Duty	112
Technicians	282
Guard Personnel Total	1,159
Drilling Guardsmen (other than technicians)	877
Civilian	13
TOTAL	1,284

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



A C-17 Globemaster III from the 167th Airlift Wing being refueled near Lake Erie by a KC-135 Stratotanker from the 171st Air Refueling Wing.

Photo courtesy of 171st Air Refueling Wing Public Affairs

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Table 2 is a summary of annual economic impacts for the 171st Air Refueling Wing broken down by direct, indirect, and induced sources.

- Overall, the 171st generated 1,178 jobs and a total of just under \$316 million in overall economic output. These jobs account for over \$106 million in labor income within Pennsylvania.

- The 171st generated over \$237 million in Gross Regional Product (GRP), or value-added production, to the economy of Pennsylvania.

The direct, indirect, and induced economic impacts are spread across industries. Table 3 highlights the top 10 industries impacted as estimated by the IMPLAN model. Federal government (military and non-military) sectors, as well as the air transportation industry, are most affected. ★



Airman 1st Class Breetaralyn Sloan, left, and Airman 1st Class Logan Noll, right, with the Pennsylvania Air National Guard 171st Air Refueling Wing's Vehicle Maintenance Shop perform regular scheduled maintenance on a truck March 5, 2016.

Photo by Staff Sgt. Ryan A. Conley

TABLE 2

ECONOMIC IMPACT SUMMARY – 171ST AIR REFUELING WING

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
ALLEGHENY-COUNTY	Direct Effect	583*	\$ 72,006,879	\$ 181,853,882	\$ 222,140,806
	Indirect Effect	150	\$ 10,487,828	\$ 15,965,317	\$ 26,588,715
	Induced Effect	417	\$ 21,718,972	\$ 36,495,037	\$ 60,099,664
	Total Effect	1,150	\$ 104,213,679	\$ 234,314,235	\$ 308,829,185
	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
PENNSYLVANIA TOTAL	Direct Effect	583*	\$ 72,006,879	\$ 181,853,882	\$ 222,140,806
	Indirect Effect	162	\$ 11,412,597	\$ 17,756,320	\$ 30,452,684
	Induced Effect	433	\$ 22,697,285	\$ 38,165,234	\$ 63,366,214
	Total Effect	1,178	\$ 106,116,761	\$ 237,775,435	\$ 315,959,702

*Represents full-time equivalent employment including civilian employees and active duty service members, and an adjustment for the part-time service of traditional reservists/Guard members; Source: University of Pittsburgh Center for Social and Urban Research, 2018

TABLE 3

TOP 10 INDUSTRIES AFFECTED – 171ST AIR REFUELING WING

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
536	Federal government, military	287	\$ 45,764,218	\$ 134,941,459	\$ 134,941,466
408	Air transportation	149	\$ 16,107,397	\$ 28,994,854	\$ 64,625,538
535	Federal government, non-military	148	\$ 10,799,449	\$ 18,377,465	\$ 23,021,229
503	All other food and drinking places	34	\$ 955,214	\$ 803,246	\$ 1,361,994
414	Scenic and sightseeing transportation and support activities for transportation	31	\$ 1,994,741	\$ 2,420,291	\$ 4,966,877
482	Hospitals	30	\$ 2,380,259	\$ 2,634,141	\$ 4,593,192
501	Full-service restaurants	27	\$ 578,221	\$ 649,708	\$ 1,255,276
502	Limited-service restaurants	23	\$ 436,347	\$ 1,076,384	\$ 1,870,027
440	Real estate	23	\$ 620,274	\$ 4,315,303	\$ 5,505,926
395	Wholesale trade	20	\$ 1,810,583	\$ 3,285,182	\$ 5,096,906

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

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at the 171st. 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 sections.

The 171st Air Refueling Wing's competitive strengths lie in two main areas: 1) specialized and in-demand equipment and 2) location, especially proximity to Pittsburgh International Airport. The installation also has many strong regional partnerships, which are described in the next section.

Specialized and in-demand equipment housed at the 171st is one of the Wing's strongest advantages. The 171st is home to 16 KC-135 Stratotanker aircraft, the military's workhorse plane for aerial refueling. The base has one of the U.S.'s largest concentrations of these aircraft, providing the 171st with an exceptional refueling capability. The 171st has a boom simulator and recently installed an aircraft simulator in which pilots can train. The latter is one of only 13 flight simulators for the KC-135, which is creating training opportunities on the installation; as many as six to ten crew members from other bases come to the 171st for three to five days each week to use the simulator. Its presence on the base also means that 171st pilots no longer need to travel twice a year to Milwaukee for training, saving time and money.⁶

The 171st is co-located with the Pittsburgh International Airport, and the two share a partnership and

TABLE 4

SWOT THEMES – 171ST AIR REFUELING WING

STRENGTHS

- **Specialized and In-Demand Equipment**
- **Location**
- **Partnerships**

OPPORTUNITIES

- **Connector Road**
- **New planes at Neighboring 911th**
- **Improved Visibility**

WEAKNESSES

- **Entry Control**
- **Limited Visibility**
- **Limited Space for Expansion**

THREATS

- **Airline Recruitment of Pilots**
- **Air Force Restructuring**



A KC-135 Stratotanker with the 171st Air Refueling Wing in Pittsburgh approaches for landing August 25, 2009.

Photo by Senior Master Sgt. Shawn Monk

mutually beneficial relationship. The partnership between the 171st and the airport is a financial strength for the installation, as their long-standing relationship and cost sharing efforts mean that the Wing does not have to own land and some equipment integral to its mission. The unit leases its land from the Allegheny County Airport Authority and uses airport runways and taxiways. The airport in turn benefits from increased runway usage, as the pay scale for tower controllers is based on the number of takeoffs and landings. This higher work rate and increased demand for controllers helps bring additional federal investments and resources to the airport. These funds have helped to counteract recent declines in airport demand, such as reduced travel after 9/11 and the effects of USAir closing its Pittsburgh hub operations. It is worth noting here a threat related to the airport, which is that commercial airlines are facing a shortage of pilots nationwide and hiring at a rapid pace (and at a high pay rate), making it harder for the National Guard to retain full-time pilots.

The location of the 171st, along with the fact that it operates 24/7, makes it a critical resource. Because Coraopolis is not located on the East Coast, the 171st is less constrained by congestion on busy East Coast air routes, and weather patterns also differ. If, for example, there is a large snow event in New England,

New England-based alert jets will divert to Coraopolis or the 171st will assume an additional alert line to cover the tasking. The alert mission is ideal for the 171st because planes can be anywhere from “Boston to Atlanta to Chicago to St. Louis in just over an hour,” according to installation leadership. Moreover, the Wing’s location is the “closest thing to the capital region that’s not the capital region.” So if Maryland’s Joint Base Andrews, home to another large tanker unit, could not operate due to weather or other constraints, the 171st is ideally situated to step in.

Some of the challenges facing the 171st have to do with its physical space. At 184 acres, the installation is relatively small with little room for expansion. Moreover, despite the fact that the 171st and the 911th Airlift Wing are neighboring installations, no road connects the two and each has only one way on and off its respective base, which is a force protection concern. Fortunately, a potential connector road would address some of these issues, improving access and opening new avenues for shared resources, including space. The road is currently being designed and funds are being sought to make this improvement. With a direct link, the 171st’s prospect of securing the KC-46A tankers in the next competitive round improves. More information on the connector road appears in the next section. ★

THE 171ST & THE PITTSBURGH REGION

The 171st excels in maintaining partnerships with service providers and law enforcement in surrounding communities. The installation has 39 buildings, 38 of which are located in Moon Township. The main gate is located in Findlay Township. The 171st has standing agreements with Heritage Valley Hospital in Sewickley, Pennsylvania, as well as with two local volunteer fire departments, which share grounds, equipment, and vehicles needed for training.⁷ The 171st partners with the City of Pittsburgh on an annual basis for a structural live burn event.

Fifty-five percent of personnel in the security forces squadron are active law enforcement officers, which has led to partnerships with the Federal Bureau of Investigation, the Drug Enforcement Agency, and the police departments of Findlay and Moon townships for training purposes.⁸ Some 171st ARW members are using a state-sponsored benefit (Act 165) to

complete an abbreviated municipal police officers' education course at Indiana University of Pennsylvania; the school even enacted a stand-alone program that works around Guard members' full-time employment and allows them to finish in less than four months (as opposed to a year in other programs).⁹

The Military Affairs Council of Western Pennsylvania (MACWPA) supports the 171st Air Refueling Wing, as well as the nearby 911th Airlift Wing and the 316th Sustainment Command. MACWPA is the Local Defense Group partner of the Pennsylvania Military Community Enhancement Commission. MACWPA's mission is to "Be the voice and an advocate for the military when it comes to forging local connections and overcoming regional challenges."¹⁰ MACWPA has successfully carried out its mission since 1995. In 2012, MACWPA was instrumental in preventing the removal of as many as four KC-135 aircrafts from the 171st as part of a proposed Air Force restructuring plan.¹¹ The



KC-135 aircraft parked on the ramp of the Pennsylvania Air National Guard's 171st Air Refueling Wing near Pittsburgh January 11, 2018.

Photo by Senior Master Sgt. Shawn Monk

Pennsylvania Air National Guardsmen with the 171st Air Refueling Wing's Fire Protection Flight participate in an annual training exercise at the Pittsburgh International Airport's Air Rescue and Firefighting facility, June 7, 2016.

Photo by Staff Sgt. Allyson L. Manners



organization remains vigilant in supporting its installations in anticipation of future rounds of Base Realignment and Closure (BRAC) and other threats.

The 171st recently became involved in the Air Force Community Partnership Program, a means through which Air Force installations can partner with community leaders to leverage their capabilities and resources toward reduced costs.¹² The Air Force created the Community Partnership Program in 2013, a concerted effort to invest in cultivating partnerships between installations and their local communities. While the 171st's entry into the Community Partnership Program is relatively new, it opens up the possibility for essential cost-saving benefits for the installation in the future.

One goal for the Air Force Community Partnership, along with MACWPA, is the aforementioned connector road between the 171st and the 911th Airlift Wing. The road would not only improve force protection and resource sharing, but would be critical for a potential new Regional Joint Readiness Center, a concept that arose from the 2005 BRAC process.¹³ The concept relies on connections — physical and otherwise — between the 171st and 911th. The center would provide military-civilian operations, homeland security, and community-based medical support to the

Department of Defense (DoD) and the Department of Homeland Security National Incident Management Plan and the National Response Plan.¹⁴ During the 2005–06 period, MACWPA sponsored the Joint Readiness Center Task Force, a public-private partnership that included a number of Western Pennsylvania organizations, universities, and government agencies. The task force began to develop the concept and identify the activities and functions of the Joint Readiness Center for the DoD and Department of Homeland Security. Despite strength in organizing and community support for the task force, the Joint Readiness Center was not funded. The Pittsburgh International Airport continues to maintain land for the center.

As part of its relationship with Pittsburgh International Airport, the 171st sits on the Pittsburgh Airport Area Chamber of Commerce's Military Relations Committee, which houses the Honorary Commander's Association. Recent restructuring has led to a greater emphasis on partnerships with local corporations and industries, including FedEx and universities. Participation on the Military Relations Committee connects the 171st to influential stakeholders that can be helpful during threats of BRAC or as the installation works with neighboring localities to address common issues related to zoning, planning, traffic, and the like. ★

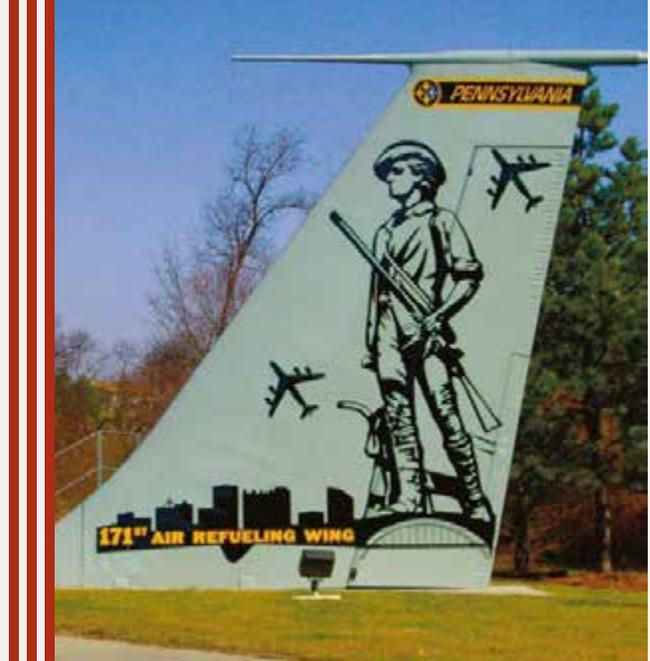
A decorated KC-135 vertical stabilizer sits on display at the main entrance gate of the 171st Air Refueling Wing.

Photo courtesy of 171st Air Refueling Wing Public Affairs

LOOKING FORWARD

Even as the 171st Air Refueling Wing's operations tempo continues to rise, several opportunities lie ahead, in the areas of connectivity, collaboration, and visibility.

- *The 171st, the 911th Airlift Wing, and MACWPA are working toward the creation of a connector road that would assist the installations in sharing storage space (specifically hangars), supplies, and equipment. Additional implications of the connector road include: availability of extra storage room for the 171st at the 911th; increased security for both installations; and improved coordination for a Joint Readiness Center.*
- *Boosting connectivity between the 171st and the 911th is all the more important in the face of upcoming changes at the 911th, which is preparing to transition to a fleet of C-17 planes in the coming months. Due to their existing collaboration, close proximity, and compatible missions, the 911th Airlift Wing's transition to C-17s will create new opportunities for the 171st as well. The 171st will be able to virtually link with the 911th in distributed mobility operations using its new flight simulator, thus expanding training capabilities. The 171st will be able to accomplish refueling training with the C-17s (not possible with the existing planes) and to use 911th's hangars as well.*
- *MACWPA can continue working to integrate common issues across Western Pennsylvania installations and leveraging partnerships that can advance installations' missions. One possible opportunity is a joint military cargo hub at the 171st and 911th. Particularly relevant to the hub concept is that the airport recently entered into an agreement with Qatar airlines for scheduled air cargo service to Doha,¹⁵ which could position*



the airport as a backup for primary military air hubs on the East Coast, including Dover and McGuire Air Force Bases. The joint cargo hub could alleviate congestion at East Coast hubs and potentially reduce costs with deployment overseas from Pittsburgh. MACWPA and PMCEC could sponsor a study of the potential importance and cost savings of the joint cargo hub operations.

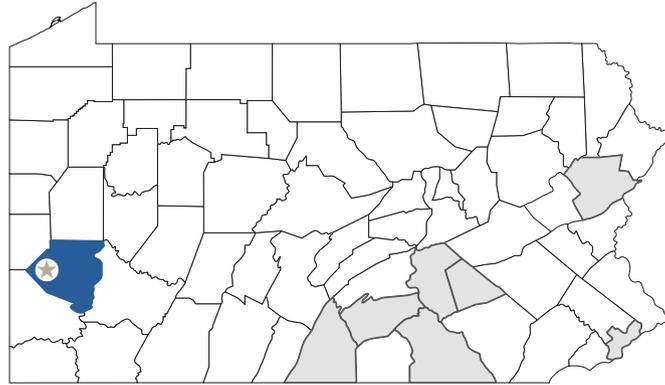
- *Leaders at the 171st are aware of the great potential of cyber security work at the installation and the necessity of knowing how to protect Air Force systems. In 2016, members of the 171st, along with the 911th, attended a three-day training exercise at Carnegie Mellon University on cyber defense techniques.¹⁶ The 171st should continue to explore and expand partnerships with federal agencies and with local universities that have strong programs in cyber security.*
- *While the 171st has many robust partnerships with local municipalities and universities, its overall community visibility, especially in regard to Pittsburgh, its largest neighbor, could be improved. For example, the nearby 911th Airlift Wing hosts an airshow event called "Wings over Pittsburgh," strengthening its community presence and involvement. Perhaps the 171st could participate in the airshow, host its own events, or broaden its media outreach in the future to increase awareness about the installation and its role in the Pittsburgh region. MACWPA can be helpful here as well, by continuing to engage stakeholders, elected officials, and regional organizations to speak in one voice for the installations in Western Pennsylvania, as well as reaching out to Pennsylvania's Congressional delegation and others about the value and strength of these installations. ☆*

Notes

- ¹ Col Gregg Perez and Col Mark Goodwill, "171st Air Refueling Wing," (PowerPoint Presentation, April 28, 2017)
- ² Kyle Brooks, "171st Medical Group Members Support Tropic Care," 171st Air Refueling Wing News, October 30, 2016
- ³ "History," 171st Air Refueling Wing, accessed January 12, 2018, 171arw.ang.af.mil/About-Us/History
- ⁴ "History"
- ⁵ Tom Fontaine, "Pennsylvania Air National Guard's 171st Air Refueling Wing to Seek New Tanker Planes," *Trib Live*, February 25, 2014
- ⁶ "Flight Simulator Ribbon Cutting at 171 ARW," 171st Air Refueling Wing News, May 11, 2017
- ⁷ Jodi Snyder, "171st Fire Emergency Services Flight Honors Local Fire Departments," 171st Air Refueling Wing News, March 6, 2016
- ⁸ According to the 171st, Active Law Enforcement Officers represent 55%, Detention, Corrections, or Parole Officers represent 13%, Current Students (University Level) represent 26%, and "Other" represents 6%
- ⁹ Michael Farriss, "171st ARW Security Force Members Earn Civilian Police Accreditation from IUP," 171st Air Refueling Wing News, March 1, 2017
- ¹⁰ "Mission and Vision," Military Affairs Council of Western Pennsylvania, accessed December 8, 2017, militaryaffairscouncilwesternpa.org/about/mission-and-vision
- ¹¹ Jenna Staul, "Military Coalition Calls for Moon Residents to Rally Behind 911th, 171st," *Robinson Patch*, March 5, 2012
- ¹² "Air Force Community Partnership Program," accessed January 12, 2018, community.apan.org/wg/airforcepartnerships
- ¹³ Defense Base Closure and Realignment Commission, *2005 Defense Base Closure and Realignment Commission Report*, vol. 1, 2005
- ¹⁴ The Dupuy Institute, "Regional Joint Readiness Center: A Value-Added Regional Resource," May 2005. See also "About the JRC," Joint Readiness Center Task Force, accessed January 17, 2018, sciencengines.com/jrc/About.htm
- ¹⁵ Theresa Clift, "Pittsburgh Airport Paying Qatar Airways up to \$1.48M for Cargo Services," *Trib Live*, November 17, 2017
- ¹⁶ "Cyber Lightning Exercise Helps Air National Guard and Air Force Reserve Units Learn and Test New Skills," Carnegie Mellon University, Software Engineering Institute, June 17, 2016

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PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



316TH SUSTAINMENT
COMMAND (EXPEDITIONARY)

CORAOPOLIS, ALLEGHENY COUNTY / ARMY RESERVE





316TH SUSTAINMENT COMMAND (EXPEDITIONARY)

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 316TH Sustainment Command (Expeditionary) is located at the McGarity Army Reserve Center in Coraopolis, Pennsylvania. The 316th is a Headquarters (HQ) element that crosses multiple states and specializes in logistics support to the warfighter. It has mission command of Army Reserve sustainment logistics units across nine states, from Maine to Pennsylvania. The command describes itself as “the U.S. Army’s first transformation-era modular ESC [Expeditionary Sustainment Command] unit,” responsible for providing command and control of sustainment units for theater commanders. The 316th has mobilized on a regular basis with deployments to Iraq and Kuwait in 2007–08, 2012–13 and 2016–17.¹

The 316th Sustainment Command “plans, coordinates, synchronizes, monitors and controls operational-level sustainment operations for the Army

service component commander, joint task force or joint force headquarters.”² In 2016, 72 full-time staff worked at the McGarity Army Reserve Center. These full-time personnel include a mix of active duty, Active Guard Reserve, and civilian technicians in addition to selected reserve members on other types of active duty orders.³ Civilian technicians are dual status personnel who are both federal civilian employees and reservists in the same billets. In addition, over 267 selected reserve soldiers (or “traditional reservists”) are assigned to units that are located at McGarity Army Reserve Center. ☆

STATESIDE MISSION:

To provide mission command of Army Reserve combat service support units (logistics).



BACKGROUND & HISTORY

The McGarity Army Reserve Center opened in October 2001 when the 99th Readiness Division (RD) relocated from the Charles E. Kelly support facility in Oakdale, Pennsylvania. At the time, the 99th RD was a two star command providing support for reserve units across 13 states in the northeastern U.S. The \$30 million McGarity Army Reserve Center was constructed in close proximity to the Pittsburgh International Airport and both the 171st Refueling Wing of the Pennsylvania Air National Guard and the 911th Airlift Wing of the Air Force Reserve.

The 2005 Base Realignment and Closure (BRAC) Commission Report recommended disestablishing the 99th RD, then located at Coraopolis, and consolidating reserve support functions at a new 99th RD at Joint Base McGuire-Dix-Lakehurst in New Jersey. In 2006, the McGarity Army Reserve Center in Coraopolis was designated as the headquarters location for the newly formed 316th Sustainment Command. Also resulting from the 2005 BRAC round, the Charles E. Kelly Support Facility in Oakdale, Pennsylvania, was closed.

Soldiers from the 316th Expeditionary Sustainment Command prepare their vehicles for a convoy mission. Convoy missions provide essential military supplies for soldiers on the battlefield.

Photo courtesy of U.S. Army Reserve

Army Reserve units remaining in Oakdale were relocated to the McGarity Army Reserve Center and the former support facility was sold by the General Services Administration in 2014. Branches of the Department of Defense (DoD) Commissary System and Army-Air Force Exchange System (AAFES) remained in Oakdale until relocated to Coraopolis, adjacent to the McGarity Army Reserve Center, and celebrated grand openings in 2014.

Currently, the HQ function of the 316th performs mission command and administrative support for over 89 subordinate units located at Army Reserve facilities in nine northeastern states. The 316th is a subordinate unit of the 377th Theater Sustainment Command, which oversees Army Reserve Combat Service Support units across 35 eastern states. Administrative support for the 316th is provided by the new 99th RD in New Jersey. In addition, the McGarity Army Reserve Center in Coraopolis supports staff and operations of the 99th RD, providing service to regional Army Reserve units.



ECONOMIC IMPACT

This analysis is specific to the impact of the 316th Sustainment Command HQ and assigned units located in Coraopolis. Not included is the impact of subordinate units of the 316th located elsewhere, which includes locations both inside and outside of Pennsylvania. Also excluded are other units or facilities of the Army Reserve, or Army National Guard located elsewhere in Pennsylvania. These other facilities may or may not be impacted by the location of the 316th Sustainment Command HQ in Coraopolis. The activity of the commissary and the exchange were included in the economic impact results presented here.

The IMPLAN model was used to estimate the total economic impact of the 316th HQ element within Pennsylvania. The IMPLAN model estimates the direct, indirect, and induced impacts that accrue within Pennsylvania because of activity generated by the 316th in Coraopolis. Direct impacts are the employment and spending associated with the 316th itself, 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. Staff of the 316th provided economic data for the 2015–16 federal fiscal year; results reflect economic impact over that period. Adjustments were made to account for employment and commuting patterns of both full-time staff in Coraopolis and assigned drilling reservists.

Table 1 is a summary of economic impacts for the 316th Sustainment Command broken down by direct, indirect, and induced sources.

- Overall, the 316th HQ generated 271 (full-time equivalent) jobs and \$51 million in overall economic output. These jobs produce over \$19 million in labor income annually within Pennsylvania.
- The 316th HQ generated an estimated \$39 million in Gross Regional Product (GRP), or value added production, to the economy of Pennsylvania.

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TABLE 1

ECONOMIC IMPACT SUMMARY – 316th SUSTAINMENT COMMAND (HQ), CORAOPOLIS, PA

IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
Direct Effect	126*	\$ 11,220,864	\$ 26,696,539	\$ 28,993,473
Indirect Effect	65	\$ 4,023,295	\$ 5,799,554	\$ 10,713,304
Induced Effect	80	\$ 4,163,189	\$ 7,000,698	\$ 11,624,960
Total Effect	271	\$ 19,407,348	\$ 39,496,791	\$ 51,331,739

*Represents full-time equivalent employment including civilian employees and active duty service members, and an adjustment for the part-time service of traditional reservists/Guard members. Source: University of Pittsburgh Center for Social and Urban Research, 2018

TABLE 2

TOP 10 INDUSTRIES AFFECTED – 316th SUSTAINMENT COMMAND (HQ), CORAOPOLIS, PA

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
536	Federal government, military	55	\$ 6,843,514	\$ 20,178,948	\$ 20,178,950
400	Retail - Food and beverage stores	46	\$ 2,359,512	\$ 3,115,046	\$ 4,756,943
535	Federal government, non-military	28	\$ 2,860,000	\$ 4,263,408	\$ 4,263,408
62	Maintenance and repair construction of nonresidential structures	22	\$ 1,311,603	\$ 1,631,397	\$ 3,512,845
473	Junior colleges, colleges, universities, professional schools	11	\$ 706,449	\$ 789,321	\$ 1,261,709
463	Facilities support services	7	\$ 298,529	\$ 491,560	\$ 1,096,744
482	Hospitals	6	\$ 447,058	\$ 494,741	\$ 862,688
440	Real estate	6	\$ 152,038	\$ 1,057,740	\$ 1,349,577
501	Full-service restaurants	5	\$ 113,021	\$ 126,995	\$ 245,361
502	Limited-service restaurants	4	\$ 78,594	\$ 193,877	\$ 336,827

Sector reflects IMPLAN industry category

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

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The direct, indirect and induced economic impacts are spread across industries. Table 2 highlights the top 10 industries impacted by activity at the 316th, as estimated by the IMPLAN model.

As Table 2 shows, in addition to the federal government and retail sectors, significant impacts are generated within the educational sector. This is a result of tuition assistance and post-9/11 GI Bill benefits used by many currently serving active duty and reserve soldiers. Educational expenditures are generally presumed to be beyond the normal consumption pattern of a typ-

ical workforce and have been included as distinct inputs in this analysis. Thus, the 316th HQ has a significant economic impact on local educational institutions, primarily institutions of higher education. Such induced impacts within the educational sector are both unusual and highly desirable.

Additional impact due to the mobilization of traditional reservists is not directly included in this analysis. For many decades, reservists were deployed on an irregular basis. Today, they are a core part of America's overseas military presence. The Army Reserve has

maintained a high operations tempo since September 2001, resulting in the mobilization of most serving traditional reservists to active duty on a recurring cycle. During these deployments, families and dependents of mobilized reservists remain in place and continue to spend money in the local economy. The spending of this active duty income within Pennsylvania during those periods of mobilization generates additional in-

duced economic impacts. The 316th has been mobilized in a recurring cycle over the last decade with overseas deployments to Iraq and Kuwait in 2007–08, 2012–13 and again in 2016–17. When traditional reservists are mobilized — either as individuals or as unit-scale mobilizations — the economic impact of spending by Pennsylvania-resident dependents are in addition to the impacts quantified here. ★

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at the 316th. 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 3 and aspects of the analysis are described throughout the following sections.

The 316th Sustainment Command (Expeditionary) benefits from updated facilities and an advantageous location. The McGarity facility was constructed at a cost of \$30 million and opened in October 2001 upon the relocation of the 99th RD from Oakdale, Pennsylvania. The current facilities in Coraopolis are some of the most modern Army Reserve facilities in Western Pennsylvania. In addition to providing space for the HQ elements of the 316th ESC, the facilities include staff and operations of the 99th RD providing support to regional Army Reserve units.

One such facility provides simulation training for small arms weapons systems. Further, a new fence will soon run the perimeter of the installation, which will improve security and reduce thru-traffic. Currently, the 316th is not a limited access installation and the public can freely enter or drive through.

The 316th is ideally located within the Pittsburgh metropolitan area. With 2.3 million people, the Pittsburgh region is the nation's 23rd largest metropolitan area and the 316th is currently the largest Army unit in the region, a region without any other operating forces of the U.S. Army. Unit leadership reports that there are minimal recruiting shortfalls in Western Pennsylvania.

Located in close proximity to the Pittsburgh International Airport, the 316th and the McGarity facility is well positioned for collaborative efforts with both the 911th Airlift Wing of the Air Force Reserve and the 171st Refueling Wing of the Pennsylvania Air National Guard. All three units — along with the Navy Operational Support Center — are collocated with, or adjacent to, the airport. Given this proximity, these units are well suited to support joint missions, including

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TABLE 3

SWOT THEMES – 316th SUSTAINMENT COMMAND (HQ), CORAOPOLIS, PA

STRENGTHS

- **Updated Facilities**
- **Advantageous Location**

WEAKNESSES

- **Force Protection**
- **Small Footprint**

OPPORTUNITIES

- **Expansion of Training Capabilities and Units**
- **Nearby Partnership Opportunities**

THREATS

- **Minimal Threat of Additional Army Reserve Reorganization**
- **Competition for Limited MILCON Funding**

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designated national security events in Western Pennsylvania or elsewhere. National security events are major federal government or public policy events that are considered nationally significant and may be designated by the President or his representative — the Secretary of Defense for Homeland Security.⁴ National security events, such as the 2009 G-20 Summit hosted in Pittsburgh, can require interagency and joint efforts across military services. Combined with the transportation access available at the airport, the joint military assets located in Pittsburgh can be made readily available to other regions on short notice.

Though HQ elements of the 316th have a relatively small footprint, the space available at the

McGarity site benefits Army Reserve units across Pennsylvania. The 316th HQ is the only Army Equipment Concentration Site in Southwestern Pennsylvania. Equipment Concentration Sites provide an important service of storing and maintaining excess equipment. Beyond Pittsburgh, the nearest Equipment Concentration Sites are located at Conneaut Lake — about 80 miles north of Pittsburgh and Fort Indiantown Gap — nearly 250 miles to the east. In 2017, the 99th RD created a new Maintenance Sustainment and Readiness Program at Equipment Concentration Sites to enhance training opportunities and capabilities of assigned soldiers. ⚙

The Tech. Sgt. Vernon McGarity U.S. Army Reserve Center, which houses the headquarters for the 316th Sustainment Command (Expeditionary).

Photo by Sabina Deitrick



316th & THE PITTSBURGH REGION

The 316th Sustainment Command engages with its surrounding community in a variety of ways. Events and outreach programs ensure regular interaction with veterans, retirees, and survivors. Those include parades, Veterans Day events, and an annual Armed Forces Day event that brings veterans organizations, families of 316th personnel, and the public onto the installation. Outreach takes a number of forms: veteran services, such as funerals; a survivor outreach service; and the Private-Public Partnership Office (P30) that works with surrounding communities and employers to assist soldiers (all services) with finding employment.

The 316th, along with the other major military installations in the Pittsburgh region, have benefited from sustained and long-term support by community leaders, especially the Military Affairs Council of Western Pennsylvania (MACWPA), the Local Defense Group partner of the Pennsylvania Military Community Enhancement Commission. MACWPA was founded in 1995 and was a strong force behind the retention of the Pittsburgh branches of the DoD commissary and AAFES Exchange, both of which operated at the Kelly Support Center in Oakdale. These facilities were slated for permanent closure when the Kelly Support Facility was closed, as recommended in the 2005 BRAC round.

Though initially set to close in 2009, the commissary and exchange remained open until 2011. The Pittsburgh region had an estimated 170,000 active duty, guard, reserve, retired and military personnel in the region, but there were no immediate plans for

opening a new commissary in the Pittsburgh region. In 2009, DoD announced final approval to construct a new commissary and exchange for Southwestern Pennsylvania, which opened in 2014. The project was coordinated through local governments and economic development agencies, which contributed funding and support. The commissary and exchange are located adjacent to the McGarity Army Reserve Center in Moon Township and, more than just a place to shop, it provides community integration opportunities with veterans/retired members.

MACWPA and other organizations tried to coordinate assets of the 316th, 911th, and 171st to form the basis of a potential new Regional Joint Readiness Center, a concept that arose from the 2005 BRAC process.⁵ The center would provide military-civilian operations, homeland security, and community-based medical support to the DoD and the Department of Homeland Security National Incident Management Plan and the National Response Plan.⁶ During the 2005–06 period, MACWPA sponsored the Joint Readiness Center Task Force, a public-private partnership that included a number of Western Pennsylvania organizations, universities, and government agencies. The task force began to develop the concept and identify the activities and functions of the Joint Readiness Center for the DoD and Department of Homeland Security. Despite strength in organizing and community support for the task force, the Joint Readiness Center was not funded. The Pittsburgh International Airport continues to maintain land for the center. ★

Army Reserve Soldiers from the 316th Expeditionary Sustainment Command conduct base defense drills during a simulated attack.

Photo courtesy of U.S. Army Reserve



LOOKING FORWARD

The 316th Sustainment Command HQ would benefit from expanding its training capabilities and taking full advantage of partnership opportunities stemming from proximity to nearby military assets and the airport.

- The 316th has the capacity to expand its training capabilities and the number of units that it houses. Although the 316th HQ faces competition for MILCON funds, its leadership continues to look for ways to purchase new property.
- The 316th is strategically located near the 911th Airlift Wing, the 171st Air Refueling Wing, and the Pittsburgh Inter-

national Airport. Their combined capacities for airlift, refueling, logistics support, and aircraft landing and storage make for a critical mass of backup and support assets in Western Pennsylvania. Working with these partners, the 316th could capitalize on its strengths as a logistics command to realize joint efforts such as the Regional Joint Readiness Center.

- MACWPA can continue to engage stakeholders, elected officials, and regional organizations to speak in one voice for the installations in Western Pennsylvania, as well as reach out to Pennsylvania's Congressional delegation and others about the value and strength of these installations. ☆

Notes

¹ "About Us," U.S. Army Reserve Official Website, accessed January 12, 2018, usar.army.mil/Commands/OperationalFunctional/377thTSC.aspx

² Pennsylvania Military Community Enhancement Commission, "Pennsylvania Military Community Enhancement Commission 2016 Annual Report," accessed December 8, 2017, dced.pa.gov/programs/pennsylvania-military-community-enhancement-commission

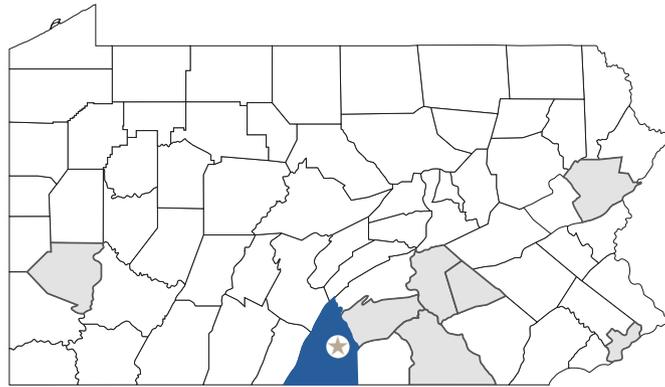
³ These include Active Duty for Training (ADT) and Active Duty for Special Work (ADSW) orders

⁴ Shawn Reese, "National Special Security Events: Fact Sheet," Congressional Research Service, January 25, 2017

⁵ Defense Base Closure and Realignment Commission, "2005 Defense Base Closure and Realignment Commission Report," vol. 1, 2005

⁶ The Dupuy Institute, "Regional Joint Readiness Center: A Value-Added Regional Resource," May 2005. See also "About the JRC," Joint Readiness Center Task Force, accessed January 17, 2018, sciencengines.com/jrc/About.htm

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



LETTERKENNY ARMY DEPOT

CHAMBERSBURG, FRANKLIN COUNTY





LETTERKENNY
ARMY DEPOT

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

As Letterkenny Army Depot celebrates its 75th anniversary, its primary purpose remains vital to the U.S. military: to maintain the skills and facilities necessary for a wartime surge. The depot is located on 18,668 acres adjacent to the Borough of Chambersburg and encompasses parts of Greene, Hamilton, and Letterkenny townships in Franklin County. The depot employs over 3,000 people, including government employees, military personnel, and private contractors.

Its main workload is three-fold:

1. Weapon systems overhaul and/or recapitalization — essentially rebuilding a system or vehicle so that it is like new

2. “Reset” of weapon systems — quicker and less comprehensive repairs but still returning a system or vehicle to serviceable condition, and

3. The development of new weapon systems

The depot currently supports the following weapon systems: Patriot, Avenger, RG-31, and Force Provider. Additionally, the depot performs various engineering tasks and provides inventory and storage support. Letterkenny Munitions Center is a major tenant of the depot, responsible for numerous tasks related to conventional ammunition and missiles, including maintenance, storage, and regional and global distribution. ★

MISSION: Letterkenny Army Depot develops and delivers materiel readiness for Air Defense forces of the U.S. and its international partners and builds combat power for combined and joint route clearance operations worldwide.

BACKGROUND & HISTORY

Letterkenny was established in 1941 as part of the War Department's plans to create 12 new ordnance depots to deal with a surge in war materiel. Letterkenny Township was chosen based on its established infrastructure and its location, which was close to — and a safe distance from — the eastern seaboard and Washington, D.C. The number of employees at the depot continued to grow even after WWII (6,5000 people in 1950), as did its vehicle storage and processing work. During the 1950s, the depot also began to work in electronics and guided missile maintenance, and in 1954 it became a permanent military installation. During the following decades, the depot morphed into the multi-faceted installation it is today, performing many functions related to supply, maintenance, and ammunition. Its missile-related mission was solidified in 1992, when the depot was chosen to be the center of Tactical Missile Systems in the Army, Navy, Air Force, and Marines. In the post-9/11 era, the depot has been heavily involved in retro-

fitting and resetting combat vehicles and recapping Patriot Missiles.¹

As a result of previous Base Realignment and Closure (BRAC) rounds, Letterkenny has seen changes — positive and negative — to its workload and mission. In 1995, the BRAC Commission realigned some of Letterkenny's workload to the Anniston Army Depot in Alabama, as well as to Tobyhanna Army Depot in Pennsylvania. It also expanded Letterkenny's storage and disassembly missions. Letterkenny Industrial Development Authority (LIDA) was created in response to BRAC changes and charged with redeveloping almost 1,500 acres turned over to the community as a result of the realignment. The authority continues to support the depot through a variety of agreements and even leases former military space to the depot.² In the most recent round of BRAC (2005), Letterkenny Army Depot gained from the process, which resulted in an expansion of missile maintenance operations and tactical vehicle work. ★

TABLE 1

MAJOR CHANGES – LETTERKENNY ARMY DEPOT³

BRAC 1995	<p>Recommended realignment of the towed and self-propelled combat vehicle mission to Anniston Army Depot, Alabama.</p> <p>Recommended transfer of the missile guidance/control system workload to Tobyhanna Army Depot, Pennsylvania, or to private sector commercial activities.</p> <p>Recommended expansion of conventional ammunition storage and tactical missile disassembly and storage missions, including munitions for all services.</p>
BRAC 2005	<p>Recommended expansion of missile maintenance operations by consolidating tactical missile workload from Red River Army Depot and Marine Logistics Center – Barstow, CA.</p> <p>Recommended expansion of tactical vehicle workload when missions transferred from Rock Island Arsenal.</p> <p>After missions moved to Letterkenny, the workforce increased by approximately 160.</p>

In July 2016, Letterkenny Army Depot rolled out the latest variant of the RG31, with improvements including engine and transmission upgrades, independent suspension, enhanced night visibility, and an armored gunner's hatch. The depot is scheduled to produce 929 of these RG31s through 2020.

Image courtesy of Letterkenny Army Depot



ECONOMIC IMPACT

The IMPLAN model was used to estimate the total economic impact of Letterkenny Army Depot within the state of Pennsylvania. The IMPLAN model estimates the direct, indirect, and induced impacts that accrue within Pennsylvania because of activity generated by depot operations and major tenants co-located at the installation. Direct impacts are the employment and spending associated with all operations located at the depot itself, 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.

This economic impact analysis quantifies the cumulative impact on employment, economic output, and value added production generated by operations at Letterkenny Army Depot. This could be interpreted as the result if the installation was disestablished, and all of its tenant commands relocated outside of Pennsylvania. Staff of Letterkenny Army Depot provided economic data for the 2015–16 federal fiscal year; results reflect economic impact over that period.

The majority of employees at the depot are full-time civilians who are a mix of permanent federal employees and contractors. The specialized nature of work performed by the depot is reflected in the IMPLAN inputs for this analysis; civilian workers were

TABLE 2
ECONOMIC IMPACT SUMMARY – LETTERKENNY ARMY DEPOT

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
FRANKLIN COUNTY	Direct Effect	2,881	\$ 241,239,385	\$ 507,506,489	\$ 1,460,589,845
	Indirect Effect	1,077	\$ 47,269,968	\$ 70,047,010	\$ 138,941,725
	Induced Effect	1,357	\$ 51,676,176	\$ 86,258,510	\$ 150,613,766
	Total Effect	5,315	\$ 340,185,529	\$ 663,812,009	\$ 1,750,145,336
PENNSYLVANIA TOTAL	Direct Effect	2,881	\$ 241,239,385	\$ 507,506,489	\$ 1,460,589,845
	Indirect Effect	1,869	\$ 117,291,885	\$ 175,985,628	\$ 353,737,820
	Induced Effect	1,894	\$ 80,838,273	\$ 134,121,735	\$ 234,184,207
	Total Effect	6,645	\$ 439,369,542	\$ 817,613,853	\$ 2,048,511,872

TABLE 3

TOP 10 INDUSTRIES AFFECTED – LETTERKENNY ARMY DEPOT

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
301	Electronic computer manufacturing	719	\$ 63,230,311	\$ 236,477,652	\$ 831,506,327
315	Search, detection, and navigation instruments manufacturing	715	\$ 63,017,091	\$ 103,800,184	\$ 246,892,247
293	Industrial truck, trailer, and stacker manufacturing	715	\$ 63,648,405	\$ 95,760,494	\$ 302,394,134
395	Wholesale trade	523	\$ 47,936,359	\$ 86,977,337	\$ 134,943,905
429	Satellite, telecommunications resellers, and all other telecommunications	328	\$ 25,050,733	\$ 25,843,031	\$ 41,046,907
416	Warehousing and storage	295	\$ 14,679,357	\$ 17,477,369	\$ 30,423,218
465	Business support services	224	\$ 9,805,253	\$ 9,149,163	\$ 13,836,590
501	Full-service restaurants	170	\$ 3,687,839	\$ 4,143,773	\$ 8,006,032
62	Maintenance and repair construction of nonresidential structures	163	\$ 9,899,550	\$ 12,313,253	\$ 26,513,812
461	Management of companies and enterprises	156	\$ 23,120,215	\$ 28,070,468	\$ 42,293,944

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

categorized as being employed in a composite mix of industry sectors. Table 2 is a summary of economic impacts in Franklin County and Pennsylvania as a whole, broken down by direct, indirect, and induced sources.

- Overall, Letterkenny Army Depot generated 6,645 jobs and over \$2 billion in overall economic output in 2016. These jobs generate over \$439 million in total labor income annually.
- Letterkenny Army Depot generated an estimated \$817 million in Gross Regional Product (GRP), or value added production, to the economy of Pennsylvania.

The economic impact of Letterkenny Army Depot within Pennsylvania reflects the broad range of operations at the installation. The industrial capacity of the depot incorporates repair, maintenance, and manufacturing capacity comparable to a diverse mix of civilian defense industries. This generates an economic impact across a similarly diverse range of industries. Table 3 highlights the top 10 industries impacted by Letterkenny Army Depot as estimated by the IMPLAN model. ★

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at Letterkenny Army Depot. 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 sections.

Letterkenny Army Depot benefits from two critical competitive strengths: capabilities and location. Letterkenny Army Depot’s capabilities stem from the vital functions that it performs for the military and the infrastructure and people in place to successfully carry

out those functions. Letterkenny Army Depot is one of just four depots/ammunitions plants that are part of the Army’s power-projection platform in the U.S. Its work to maintain equipment, facilities, and skills in times of diminished combat operations provides vital national surge capacity for the military.

Further, Letterkenny Army Depot’s skillsets and infrastructure — including storage, radar, test and diagnostic equipment — make Letterkenny a “go-to” place for developing new missile systems. The depot recently acquired a new mission as part of an Army pilot project. The depot will design and build a new short-range air defense system and its launch platform, the Multi-Mission Launcher (MML). The MML is designed to engage a variety of air threats, from cruise missiles to mortars.⁴ Compared to the typical process of contracting the work to a commercial original equipment

TABLE 4
SWOT THEMES – LETTERKENNY ARMY DEPOT

STRENGTHS

- **Capabilities**
- **Location**

WEAKNESSES

- **Aging Buildings**

OPPORTUNITIES

- **External Partnerships**
- **Increased Visibility**
- **Expanded Business and Logistics Cluster**

THREATS

- **Federal Budget Sequestration**
- **Privatization**

Letterkenny Army Depot operates a mission-specific weld test and training program through which welders are qualified to American Welding Society standards.

Image courtesy of Letterkenny Army Depot



manufacturer (OEM), the project is expected to save the Army time and money and will result in Army ownership of the intellectual property.

The depot continues to look for ways to upgrade its facilities, as many of its buildings were constructed in the 1940s and 1950s. For example, at the end of 2016, the depot broke ground on a new \$15 million component rebuild facility, which will allow it to centralize metal treatment facilities currently spread throughout the installation. The project is funded through the Army's military construction (MILCON) program and should be complete in 2018.

Letterkenny has been named a Center of Industrial and Technical Excellence (CITE) three times. In 2001, the Secretary of the Army recognized Letterkenny as the CITE for Air Defense and Tactical Missile Ground Support Equipment, in 2005 for Mobile Electric Power Generation Equipment, and in 2012 for Route Clearance Vehicles and PATRIOT Missile Recertification.⁵

The depot has been recognized with many awards, including ten Shingo Medallions for excellent work in specific areas such as the PATRIOT Missile Launcher

and Biological Integrated Detection Systems. During the 2005 BRAC process, Letterkenny was considered number one in Military Value for Tactical Wheeled Vehicles. The Secretary of the Army has also recognized Letterkenny for its environmental restoration and sustainability efforts.⁶

The depot's location in Chambersburg is ideal for a number of reasons. First, it combines a rural setting with close proximity to major population centers. The rural setting is necessary for the Munitions Center's ammunition storage, but the proximity to a multi-modal transportation network allows for convenient and efficient transportation of ammunition and equipment. The depot has direct access to the ports of Philadelphia and Baltimore, and rail lines link Letterkenny to Sunny Point, North Carolina, where missiles are shipped overseas. In addition to rail, the highway network accessible from the installation is extensive.

Second, the depot is part of a defense sector concentration that is critical to national defense as well as the economy of the region; the installation is situated

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within a 75 mile radius of Ft. Indiantown Gap, the Army War College, Naval Support Activity in Mechanicsburg, Defense Logistics Agency Susquehanna, and Fort Detrick in Maryland.

Third, these location advantages also aid the Letterkenny workforce. The skill sets in demand at the depot — from repair and fabrication specialties like avionics and electronics to information technology to logistics — exist in the surrounding area, as does a strong workforce pipeline through schools and training centers in the region, which is detailed further below.

The Washington, DC locality pay rate now applies to Chambersburg, which means that the depot uses the DC General Schedule scale. As with nearby Defense Logistics Agency Susquehanna, this is beneficial for recruitment efforts, but may be a double-edged sword in that it also increases the cost of doing business. Additionally, due to federal budget sequestration, the number of permanent employees

the depot can bring on is capped, and its ability to get Tables of Distribution and Allowances approved and funded is “frozen in time,” according to depot leadership. The depot has had to resort to large scale contracting as a result, and they have not been able to bring on administrative positions. Relying on contracting (or temporary employees) presents challenges in terms of keeping up skill sets and maintaining continuity, as it can take years to develop skillsets in some areas, such as electronics.

An additional threat, one that Letterkenny shares with other depots and logistics centers in Pennsylvania, is that of privatization of parts of its workload. Although this is an ongoing concern, recent debates at the federal level over the existing ban on A-76 competitions have made it more acute.⁷ A-76 competitions would allow private contractors to bid on work that federal employees are currently carrying out. ⚡



Using a high volume, low pressure paint gun, a depot painter sprays chemical agent resistant coating over an AN/TWQ-1 Avenger gunner's turret. Letterkenny's advanced paint mixing system reduces labor, cost, and waste. The materials used are at the lowest volatile organic compounds (VOC) that still meet the military specifications and are more environmentally friendly.

Image courtesy of Letterkenny Army Depot

Letterkenny is establishing an on-depot, four-year recapitalization program for the Patriot equipment belonging to the Netherlands — one of the United States' first foreign military sales Patriot partners. The program is one of the Army Materiel Command's strategic missions in support of global readiness.

Image courtesy of Letterkenny Army Depot



LETTERKENNY ARMY DEPOT & THE FRANKLIN COUNTY REGION

Letterkenny Army Depot's ties to local and regional schools and its partnerships with the Franklin County Area Development Corporation (FCADC) and LIDA serve to strengthen its workforce and facilities. FCADC was established in the late 1980s, and its affiliate "Team Letterkenny" actively serves as the depot's Local Defense Group.

The depot has several educational partnerships to assist in tailored recruitment and training efforts. Although Chambersburg has no local community college, the depot partners with Franklin County Career and Technology Center (a vocational high school) and several post-secondary and technical schools in surrounding communities, such as York College, Penn State University, Harrisburg Area Community College, and Hagerstown Community College. Further, FCADC recently constructed a welding training center that, among other things, will help with training employees of Bowhead, a depot contractor.

Turning to partnerships with the private sector is an especially attractive option in an environment in which federal MILCON funds are not guaranteed or take years to come through. Depot leadership, aided by the Pennsylvania Military Community Enhancement Commission, is currently working with LIDA on an innovative public/private partnership that could be a model for the state and across the Department of Defense (DoD). Using the Pennsylvania Keystone Opportunity Zone program, LIDA plans to attract a private developer to construct a new 700,000 square foot facility on post, which the Army will lease. The Keystone Opportunity Zone program encourages the development of specific underdeveloped and underutilized areas by eliminating certain state and local taxes. The partners expect the plan to result in cost savings for the Army along with a large, modern space with high ceilings and rail access. The project would consolidate work currently taking place in separate buildings and improve the depot's efficiency. ★

An air conditioning equipment mechanic tightens the bleeder cap on a Revision III Patriot cooling liquid electron tube (CLET).

Image courtesy of Letterkenny Army Depot



LOOKING FORWARD

Even as Letterkenny Army Depot stays focused on maintaining and building combat power for the U.S. and its international partners, its leadership is “making changes now that will ensure its relevance to the Army for decades to come and will ensure the U.S. remains the pre-eminent land force in the world.”⁸ As it looks to the future, the depot will benefit from continuing to strengthen external partnerships and visibility, and from pursuing expanded business and logistics cluster opportunities.

- *The depot’s partnerships with FCADC, LIDA, and local and state government are crucial to Letterkenny’s success. In particular, they are critical partners as Letterkenny addresses its aging buildings. Letterkenny leadership should also continue to engage with external partners in publicizing its work and achievements. From hosting high-level military personnel to preparing remarks for federal representatives to providing professional and well-organized facility tours, the importance of Letterkenny’s outreach and public awareness efforts should not be understated.*
- *Ten to twenty percent of the depot’s annual revenue comes from partnerships with OEMs to produce weapon systems, which partners like Raytheon, Lockheed Martin, and AAI then sell to foreign militaries. An increase in foreign military sales (FMS) at Letterkenny comes amidst expectations that the*

DoD market for FMS will grow,⁹ indicating that expansion in this market may be a promising opportunity for Letterkenny. The depot could also continue to build on organic industrial base work, as it has done with the multi-mission launcher pilot project.

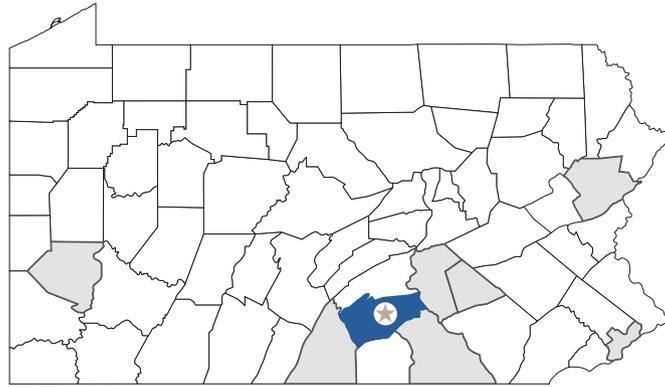
- *Installation leadership might consider re-vamping industry day in order to support contracting with local businesses and enhance community integration. In 2015, FCADC stated that part of its 2016 plan of action would be to “Avail applicable economic development resources to defense contractors seeking to do business with [Letterkenny Army Depot].”¹⁰ Given this priority, FCADC would be an interested and important partner.*
- *Building on groundwork laid in 2009,¹¹ Letterkenny is well-positioned to tap into a Pennsylvania Logistics Center of Excellence, which would build a common orientation around the state’s concentrated strength in transportation, distribution, and logistics. Such a center would support new education, training, and business development opportunities and could provide Letterkenny with enhanced opportunities to leverage its strategic reserve capacity supporting a global military force. Additionally, it could create opportunities to aid Letterkenny in making connections between its internal manufacturing and technological innovations and external supply chain, education, and local economic development resources.*



Notes

- ¹ All details in this paragraph come from: "History of Letterkenny," Letterkenny Army Depot, accessed January 5, 2018, letterkenny.army.mil/history.html
- ² Dan Cohen, "County Economic Development Director Underscores Challenges in Finding New Uses for Closed Bases," *Association of Defense Communities*, March 14, 2017
- ³ Defense Base Closure and Realignment Commission, *2005 Defense Base Closure and Realignment Commission Report*, vol. 2, 2005; *1995 Report to the President*, 1995; Pennsylvania Military Community Enhancement Commission, *2015 Annual Report*; Pennsylvania Base Development Committee, *Pennsylvania Military Installations Reference Manual*, March 2009
- ⁴ John Andrew Hamilton, "New Air Defense System Under Development Tested at WSMR," May 26, 2015, army.mil/article/149241/New_air_defense_system_under_development_tested_at_WSMR
- ⁵ "History of Letterkenny," Letterkenny Army Depot, accessed January 5, 2018, letterkenny.army.mil/history.html
- ⁶ "History of Letterkenny"
- ⁷ Mark Rockwell, "Will Trump and Mulvaney Bring Back A-76?" FCW, December 22, 2016
- ⁸ Deacon Maddox, "Letterkenny Army Depot," May 2017, (Unpublished letter to Congressional Representative)
- ⁹ "U.S. DoD Foreign Military Sales Market, Forecast to 2021," Frost & Sullivan, February 15, 2017, frost.com/sublib/display-report.do?id=K166-01-00-00-00
- ¹⁰ Franklin County Area Development Corporation, "2016... Embracing the Future. 2016 Annual Report," December 2016
- ¹¹ Pennsylvania Base Development Committee, "PA 2020, A Strategy for the future of the Military in the Commonwealth of Pennsylvania," 2009

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



CARLISLE BARRACKS & THE ARMY WAR COLLEGE

CARLISLE, CUMBERLAND COUNTY





CARLISLE BARRACKS & THE ARMY WAR COLLEGE

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 Garrison at **Carlisle Barracks** (Cumberland County, Pennsylvania) is home to the **U.S. Army War College** (USAWC) and the U.S. Army Heritage and Education Center (USAHEC). The Army's Dunham Medical Clinic is also located at the installation and serves as a regional medical center supporting Active Duty and retired service members across Central Pennsylvania.

USAWC is the Army's senior service college, the capstone in the continuum of training and education provided to competitively-selected senior career military officers in the grade of Lieutenant Colonel and Colonel. The majority of resident students are enrolled in a 10-month course that leads to a master's degree in strategic studies. Students include Active, Reserve, and Guard officers from all services. In addition, high-level government civilians and military International Fellows from 80 counties attend USAWC. Military officers and federal civilian employees also take part in USAWC's

Distance Education Program. Graduates of the two-year distance education program can earn a master's degree in strategic studies and meet Department of Defense (DoD) Joint Professional Military Education (JPME) requirements. Resident programs have almost 400 enrollees while 800 students are enrolled in distance education.

USAWC also serves as the Army's center for strategic analysis and general officer education. The Army Strategic Education Program was formalized in 2017 and runs Professional Military Education—both at Carlisle Barracks and as mobile training at major Army installations—for the entire population of Army general officers. Major programs include the Center for Strategic Leadership, which provides strategic wargaming exercises for senior Army leadership throughout the year; the Strategic Studies Institute; and the Peacekeeping and Stability Operations Institute.

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Other specialized short-term training programs hosted by USAWC include the Combined/Joint Force Land Component Commander Course (C/JFLCC) and the Nominative Leader Course (NLC). The C/JFLCC Course originated in 2003, directed by the U.S. Army Chief of Staff to build upon the positive lessons of Army and Marine Corps cooperation during overseas contingency operations. The NLC is a two-week course designed to prepare Command Sergeants Major (CSM) for duties as CSMs of major Army commands.

These education and research efforts are complemented by the co-location of the USAHEC at Carlisle Barracks. USAHEC supports the Army Heritage Museum as well as the USAWC Library and today incorporates the U.S Army Military History Institute. The Institute operates the Army's central historical archival repository, managing and executing the archival mission for historical materials pertaining to military and U.S. Army history and manages the Department of the Army's directed oral history programs: the Senior Officer Oral History Program and Division Command Lessons Learned. ✪

BACKGROUND & HISTORY

Carlisle Barracks' history as a military encampment dates at least to the French and Indian War when the area was used as staging ground for British and American troops preparing to engage French forces in Western Pennsylvania. The site, then named "Washingtonburg," was designated by the Continental Congress as an ordinance center in 1777. During what became known as the Whiskey Rebellion, Carlisle became a center for mobilization of approximately 14,000 federal troops before President Washington led them into Western Pennsylvania.¹

The site was owned by the Penn family but rented free of charge to Pennsylvania between 1755 and 1801. The original Army post at Carlisle Barracks consisted of 29 acres acquired by the War Department in 1801.² For 23 years prior to the outbreak of the Civil War, Carlisle served as the home of the Army's Calvary School. In 1863, the site was briefly occupied and burned by Confederate troops just before they engaged with Union Troops at the Battle of Gettysburg.

The site was turned over to the Interior Department in 1870 for use as the Carlisle Indian Industrial

School, which opened in 1879. The Interior Department expanded the site by 109 acres in 1897 and an additional 175 acres in 1901. Upon the U.S. entry into World War I, the expanded site reverted back to the War Department. During the war, the installation served as a rehabilitation hospital and in 1920 became home to a new Medical Field Service School for Active Duty, Reserve, and National Guard medical officers. The school was responsible for multiple innovations in combat medicine, including the development of the "Carlisle Bandage," eventually carried by most soldiers during World War II.³ The Medical Field Service School was moved to Fort Sam Houston in 1946. Since 1951, Carlisle Barracks has primarily been the home of USAWC.

USAWC initially began operation in 1901 at the Washington Barracks in the District of Columbia (currently Fort McNair). The institution suspended operations during World War I and again in 1940. Following World War II, USAWC was reestablished at Fort Leavenworth, Kansas in 1950, and the following year was relocated to Carlisle Barracks in October 1951. ✪

ECONOMIC IMPACT

This report estimates the total economic impact of Army operations at Carlisle Barracks accruing within the State of Pennsylvania and an estimate for the local economic impact within Cumberland County. The IMPLAN model was used to estimate the direct, indirect, and induced impacts generated by the ongoing operations at USAWC, including USAHEC and the Army's Dunham Medical Clinic. Direct impacts are the employment and spending by Army organizations located at Carlisle Barracks, which includes the impacts of resident students enrolled in USAWC programs. Indirect impacts, sometimes called intermediate impacts, are generated by the supply chain purchases of these organizations. Induced impacts derive from the spending patterns of civilian employees and service members at Carlisle Barracks and other workers whose jobs are generated by operations at the installation.

This economic impact analysis quantifies the potential impact on employment and economic output of operations at Carlisle Barracks. This could be interpreted as the result if USAWC was disestablished and all operations at Carlisle Barracks were relocated outside of Pennsylvania. USAWC staff provided data and personnel, payroll, and expenditures for the 2015–16 federal fiscal year; results reflect economic impact over that period.

The total economic impacts generated by Army operations at Carlisle Barracks, broken down by direct, indirect, and induced sources include: (see Table 1)

- A total of 2,868 jobs within the state of Pennsylvania, generating over \$229 million in labor income annually.
- \$521 million in overall economic output within Pennsylvania. Just under \$434 million of this was estimated to be Gross Regional Product (GRP), or value-added production, generated within the state. 🌟

TABLE 1

ECONOMIC IMPACT SUMMARY – THE ARMY WAR COLLEGE AT CARLISLE BARRACKS

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
CUMBERLAND COUNTY	Direct Effect	1,578	\$ 168,546,671	\$ 327,081,578	\$ 339,721,971
	Indirect Effect	198	\$ 8,543,965	\$ 18,302,744	\$ 29,071,618
	Induced Effect	924	\$ 41,849,403	\$ 70,906,808	\$ 119,588,450
	Total Effect	2,700	\$ 218,940,039	\$ 416,291,130	\$ 488,382,039
PENNSYLVANIA TOTAL	Direct Effect	1,578	\$ 168,546,671	\$ 327,081,578	\$ 339,721,971
	Indirect Effect	262	\$ 12,987,182	\$ 25,833,367	\$ 43,949,308
	Induced Effect	1,028	\$ 48,053,616	\$ 81,012,372	\$ 138,194,210
	Total Effect	2,868	\$ 229,587,470	\$ 433,927,317	\$ 521,865,489

TABLE 2

SWOT THEMES – THE ARMY WAR COLLEGE AT CARLISLE BARRACKS

STRENGTHS

- **Proximity to Washington, D.C./Pentagon**
- **International Outreach**
- **Career Faculty and Staff Specialized in Strategic Analysis and Research**

WEAKNESSES

- **Federal Pay Limitations**
- **Lack of Jointness**

OPPORTUNITIES

- **Leveraging of Foundation Support**

THREATS

- **Potential Efforts to Consolidate Army Officer Education Programs**

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at USAWC. 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 2 and aspects of the analysis are described throughout the following sections.

One of the key advantages of Carlisle Barracks as a location for USAWC is its proximity to Washington, D.C. Within 100 miles from the Pentagon, visitors from D.C. or Northern Virginia can easily reach Carlisle by car or air. Students can regularly travel to D.C., individually or as part of a group, when required. As the Army's center for advanced leadership education, the ability for students and staff to directly interact with

Army and DoD leadership is crucial for USAWC's education, research, and directed policy and planning missions.

As with all institutions of higher education, a principal strength of USAWC is the core faculty and staff. The key areas of research specializations among USAWC staff are critical to supporting Army and Defense Department needs; many are concentrated in unique areas that are difficult to find elsewhere either within the defense establishment or at civilian institutions.

As part of its core education mission, USAWC has become a pillar for international military education by hosting students from a wide range of partner nations. The USAWC International Fellows program began with six students enrolled in the 1977–78 academic year and has expanded to 80 students in recent classes. By hosting senior military leaders, many of whom go on to much higher level strategic leadership roles in their home countries, USAWC is instrumental in building bi-

lateral and multilateral ties with allied foreign military services. USAWC's continuing role in international education is critical to enhancing DoD coalition efforts around the world. International students are typically some of the most competitive officers in their home nations and continue into advanced leadership positions later in their careers. Students are funded either by their awarded governments or through IMET (International Military Education and Training) funding provided by the DoD.

Through the Center for Strategic Leadership, USAWC hosts the premier wargaming facility in the U.S. Army. Centered at Collins Hall, the wargaming complex was built around the relocation of World Wide Military Command and Control hardware from the U.S. European Command in 1993. Today, the facility is an education and technology laboratory supporting senior leader education, research, and strategic communications initiatives. The wargaming infrastructure unique to the facility allows students, faculty, and

staff real-world operational connectivity with major joint theater commands.

The USAWC Foundation, LLC was established in 1977 and has assets in excess of \$12 million, raised by individual and corporate donations. The educational experience of students has been enhanced with foundation funding toward: an endowed chair, visiting professorships, and guest lecturers; the college's National Security Seminar Week; writing awards for students and faculty; texts for the college's professional library; the International Fellows Program; and high-level conferences and exercises.

One ongoing challenge identified by USAWC leadership was the ability of the institution to hire the best civilian talent given federal pay limits. An important role of USAWC in advanced officer education is providing diverse perspectives uniquely provided by civilian faculty and research staff. Competitive hiring is seen as critical to maintaining a diversity in teaching and curriculum that enhances the strategic-level focus of

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Upton Hall, which serves as the headquarters for the U.S. Army Garrison, Carlisle Barracks, and the Peacekeeping and Stability Operations Institute.

Photo courtesy of U.S. Army War College



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USAWC. Staff identified an inability to match pay scales available at some other civilian institutions. The USAWC College Foundation has helped to address this issue in part and foundation funding has directly supported some key staff positions, but the limitations of the federal salary scale remains a weakness for the institution to be competitive with other major research universities.

USAHEC supports the Army Heritage Museum, the USAWC Library and the U.S. Army Military History Institute. Though the Army maintains over 57 individual museums, the Army Heritage Museum is currently the only Army museum that is not mission- or base-specific and is dedicated to telling the story of the American soldier. The museum's tens of thousands of artifacts range from an M60 tank to buttons from the American Revolution. The archival piece of USAHEC's collection includes about 12.5 million documents and 1.7 million photographs. Moreover, the USAWC Library is the largest in the Army with about 500,000 holdings. The USAHEC also has specialized staff, such as two of the Army's only four conservators.

The core of the research collection at the Military History Institute was formed from the collections of USAWC, the National War College and the U.S. Army Command and General Staff College. The Institute was formed as the U.S. Army Military History Research collection in 1967 and renamed the Military History Institute in 1977. Today the collection goes beyond and includes materiel and artifacts from all conflicts that the U.S. Army has participated in since its founding.

The Army Heritage Center Foundation was created in 1999 and provides additional support for the multifaceted missions the USAHEC. The Army Heritage Center Foundation has funded the construction of the public components of the USAHEC including the Visitor and Education Center and the Heritage Center. These facilities were then transferred to the U.S. Army to operate and maintain.

An ongoing challenge identified for the USAHEC is increasing visibility for the museum and education opportunities provided by the center. Though the latest Army Heritage Day attracted over 10,000 visitors, additional opportunities remain for expanding the visibility of the center within Central Pennsylvania and across the Army. A new National Museum of the Army is currently being planned for Fort Belvoir outside of Washington, D.C. Planned to open in 2019, the new museum will create new collaborative opportunities for the existing USAHEC.

The Army has identified excess capacity across its force structure, but there has been no downsizing of the core education mission at USAWC. No Base Realignment and Closure (BRAC) commission final report has ever designated USAWC for relocation, nor any major downsizing at Carlisle Barracks. In preparation for the 1995 BRAC round, a military value assessment (MVA) was made of each of the Army's primary professional schools and their respective installations: The U.S. Military Academy at West Point, The Command and Staff College at Fort Leavenworth, USAWC at Carlisle Barracks, and also included Fort McNair in D.C., which hosts the National Defense University. This MVA "reaffirmed the military value of each academic institution."⁴ None of the institutions, to include USAWC, was selected for further study.

In 2005, the BRAC commission initially considered a proposal for USAWC to be co-located with the Command and Staff College at Fort Leavenworth.⁵ The move was justified by excess capacity identified at Fort Leavenworth and the potential advantages of combining operational and strategic education for the Army at a single location. The U.S. Army opposed the proposed relocation and the final BRAC report did not include the proposal to move USAWC. The 2005 BRAC round emphasized realignments that promoted the coordination of efforts between military services, or jointness, especially for certain training functions.⁶ ✪

CARLISLE BARRACKS & THE CUMBERLAND COUNTY COMMUNITY

The continuing presence of USAWC has developed into extensive integration with its host community of Carlisle, and has provided additional impacts across Cumberland County. Housing on base is available for both staff and students, but a large number of students and all staff live off post. In addition, all international students in-residence at USAWC live off-base, giving students and their dependents additional opportunities for cultural exchange and learning. On-base housing, like most Army housing, has been privatized with private development of housing on garrison land and leased via a public-private partnership and a 50-year lease. Whether living on base or in the community, the amenities available within the greater Carlisle community are a critical factor in maintaining the learning and research environment critical to USAWC's core missions. Quality of life in the greater Carlisle community is a key advantage for the institution and an essential component to its success at retaining staff.

The USAHEC sponsors annual Army Heritage Days, a themed weekend living history event that features reenactors from all eras. The events are open to the public and have attracted growing numbers of visitors. The 2017 Army Heritage Days drew an estimated 10,300 visitors, the highest number ever recorded.

USAWC has become a critical part of the greater Carlisle and Cumberland County community, and in particular its schools. The Commandant is a standing member of the local school board, and the regular rotation of dependent children are enrolled at local schools. Two full-time staff members at USAWC work as liaisons to local school districts supporting the population of dependent children. This integration of students and their families is an important part of the education provided, especially to visiting international students during their time at USAWC.

The Army's Dunham Clinic is a separate tenant at Carlisle Barracks, but is the center for Army medical support in Central Pennsylvania including smaller clinics at the Defense Logistics Agency headquarters in Susquehanna and at the Pennsylvania National Guard installation at Fort Indiantown Gap. The clinic supports over 11,000 enrollees, including not only the local population of Active Duty service members, but also retirees from across Pennsylvania.

Cumberland County maintains an active Local Defense Group — the Cumberland York Area Local Defense Group (CYALDG). CYALDG formed in 2014, as part of a wider regional effort “to coordinate, advocate, develop, and implement recommendations to enhance the military value of the installations in the area.”⁷ Since that time, CYALDG has met on a regular basis and works closely with base leadership across the region, while also coordinating projects and programs across various area government jurisdictions. CYALDG is organized through a large advisory board of state and local elected officials, installation personnel, economic development organizations, and other nonprofit organizations.

Among other things, in 2016, CYALDG — with the support of the Pennsylvania Military Community Enhancement Commission — commissioned a Strategic Positioning Plan, which included a survey of Cumberland, York, and Dauphin county residents about their perception of Carlisle Barracks/USAWC, Defense Distribution Center Susquehanna, and Naval Support Activity Mechanicsburg. The plan highlighted the War College's partnerships with Dickinson College, and the Penn State Dickinson Law School, as well as efforts on behalf of the Carlisle Area School District to aid the children of international fellows at the War College.⁸ CYALDG is also working to improve highway and air access to Carlisle Barracks. ★

LOOKING FORWARD

USAWC has continued to adapt and change as the needs of the Army and the nation's military services have evolved. The institution is considered to be in the "Fourth War College Era," a period that dates to the passage of the Goldwater-Nichols Act and the end of the Cold War.⁹ With those major changes, the strategic focus on the nation's armed services was forced to change and USAWC transitioned into new efforts at providing Joint Education as mandated by the Goldwater-Nichols Act. As the college looks to the future, it will benefit from emphasizing its unique strengths and relying on local and state partners to advocate on its behalf.

- *An enduring strength of USAWC centers on its core instructional and research workforce, which has continued to develop at Carlisle for over six decades. Carlisle provides an attractive and cost-effective location to continue building this core workforce, which will become ever more important as the Army, and the nation, grapple with the most difficult challenges shaping national defense policy formation and strategy. USAWC and USAHEC will benefit from continuing to leverage the support of its affiliated foundations to attract and retain professors, researchers, and archivists.*

- *USAWC has continued to redefine its mission and capabilities in the face of a changing strategic environment. The latest evolution includes the development of expanded senior leader education. These efforts will become more acute as current conflicts wind down. USAWC is uniquely charged within the Army to shape future strategy for Peace and Stability operations.*

- *The ongoing development of CYALDG should be supported and maintained. As is common across many installations, military and federal staff can feel challenged to advocate on their own behalf. At Carlisle Barracks, no major problems in community relations were identified, but continuing enhancement of relations between the installation and the community can lead to greater support should the need arise. The Local Defense Group can also be used to promote and enhance existing commercial ties between USAWC and the local community to include greater participation of local businesses in bidding on federal contracts originating at Carlisle Barracks.*

- *Strategic messaging should encourage the Pennsylvania congressional delegation to emphasize the unique mission of USAWC and USAHEC and the value of maintaining the two institutions at Carlisle where local cost of living and quality of life are critical to maintaining the quality of education and research provided there. ★*

Notes

¹ Judith Hicks Stiehm, *The U.S. Army War College: Military Education in a Democracy* (Philadelphia: Temple University Press, 2002) 87.

² "Report of the Secretary of the Interior; Being Part of the Message and Documents Communicated to the Two Houses of Congress at the Beginning of the Second Session of the Fifty-Second Congress" Volume 2, (Washington: Government Printing Office, 1892) 894-895. goo.gl/6YWBqE

³ John Kurash, "Medical Field Service School," August 10, 2007, army.mil/article/4376/medical_field_service_school

⁴ Department of Defense, "1994 Army Team Lead Desk Material - DoD Report to the 1995 BRAC Commission Vol. III," March 1995, 50, digital.library.unt.edu/ark:/67531/metadc25505/m1/120/?q=%22%22-1

⁵ BRAC 2005 Infrastructure Executive Council (IEC) Meeting Minutes, May 2, 2005, digital.library.unt.edu/ark:/67531/metadc18394/m2/1/high_res_d/BRAC-2005_05096.pdf

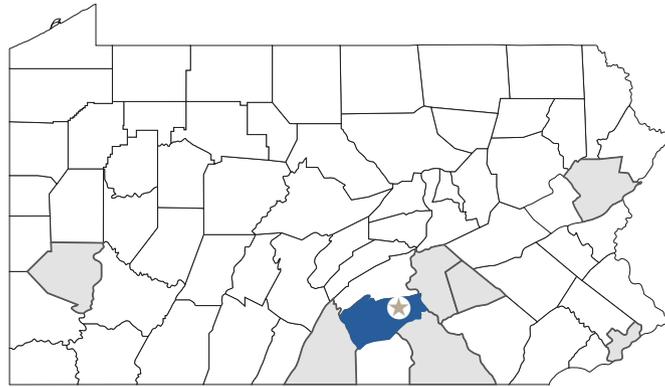
⁶ United States Government Accountability Office, "Military Base Realignments and Closures: More Guidance and Information Needed to Take Advantage of Opportunities to Consolidate Training," February 18, 2016, 16-45

⁷ "Cumberland York Area Local Defense Group," accessed January 4, 2018, cumberlandbusiness.com/about-us/local-defense-group

⁸ Michael Baker & Associates, *Strategic Positioning Plan: Cumberland York Area, Pennsylvania*, February 2017

⁹ John M. Cyrulik, "The 'Fifth' Army War College: Preparing Strategic Leaders to Win in a Complex World" (Research Report, Air War College, Air University, 2015)

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



NAVAL SUPPORT ACTIVITY

MECHANICSBURG, CUMBERLAND COUNTY





NAVAL SUPPORT ACTIVITY MECHANICSBURG

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

Located in Hampden Township, Cumberland County, **Naval Support Activity Mechanicsburg (NSAM)** is one of the U.S. Navy's most important centers for supply and distribution. It employs over 4,200 people, making it the largest employer in Cumberland County. These personnel work at a location that covers 806 acres and includes 107 facilities that comprise nearly eight million square feet of office and warehouse space.

NSAM hosts 37 different tenant organizations, and the majority of these tenants represent relatively small operations. The bulk of NSAM activities are managed by Defense Logistics Agency (DLA) Distribution and the Naval Supply Systems Command (NAV-

SUP). Local NAVSUP functions include a headquarters staff of approximately 500 people, NAVSUP Weapons System Support with approximately 1,000 people, and an additional 1,000 workers at NAVSUP Business Systems Center.

NSAM operates as part of a larger configuration that also includes NSA Philadelphia and the Philadelphia Navy Yard Annex. All three installations are under the leadership of the Commanding Officer, Naval Support Activity, who in turn reports to Navy Region Mid-Atlantic in Norfolk, Virginia. NSAM benefits from close synergies with these facilities, as well as with the other logistics-centered operations located in Central Pennsylvania. ⚙



Aerial view of the 806-acre NSAM site — the Navy's strategic hub for logistics, based in Cumberland County.

Photo courtesy of U.S. Navy

BACKGROUND & HISTORY

Like other military logistics centers across the state, NSAM traces its origins, opening in 1942, to World War II-era strategies to move supply depots away from more vulnerable coastal locations. At the time, Central Pennsylvania benefited from numerous transportation and logistics assets, and most of these advantages, such as easy rail and highway access, are still relevant today.

For most of its existence, the base was known as the Naval Supply Depot, Mechanicsburg. In the 1990s, reorganization within the Navy created new command

structures. Today, NSAM, along with NSA Philadelphia and the Philadelphia Naval Yard Annex, report to Navy Region Mid-Atlantic in Norfolk. In addition to various reorganizations, NSAM has gained new activities and functions as a result of the Base Realignment and Closure (BRAC) process. Most recently, the 2005 BRAC Commission recommended relocation to NSAM for a number of activities, including Naval Supply Systems Command and DLA Document Services. Most of these activities were transferred from the Washington Navy Yard or Navy office space in Arlington, VA. ★

ECONOMIC IMPACT

This economic impact analysis quantifies the potential impact of all federal activities located at NSAM on employment and economic output. This could be interpreted as the result if the installation were to be dis-established and the operations of all tenant commands relocated outside of Pennsylvania. The IMPLAN model was used to estimate the total economic impact of NSAM, including direct, indirect, and induced impacts that accrue within Pennsylvania. Direct impacts are the employment and spending associated with tenants at NSAM, 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. Staff of NSAM provided data on the employment of installation tenants in 2016; results reflect 2016 economic impacts.

Table 1 is a summary of annual economic impacts of NSAM broken down by direct, indirect, and induced sources.

- Overall, activities at NSAM generate 8,371 jobs within Pennsylvania and over \$667.2 million in labor income annually.

- 7,883 of these jobs, and \$635.8 million in labor income

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TABLE 1

ECONOMIC IMPACT SUMMARY – NAVAL SUPPORT ACTIVITY MECHANICSBURG

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
CUMBERLAND COUNTY	Direct Effect	4,323	\$ 467,002,791	\$ 593,063,275	\$ 647,599,152
	Indirect Effect	875	\$ 47,324,906	\$ 69,940,157	\$ 119,461,138
	Induced Effect	2,684	\$ 121,553,724	\$ 205,957,095	\$ 347,356,265
	Total Effect	7,883	\$ 635,881,421	\$ 868,960,526	\$ 1,114,416,555
PENNSYLVANIA TOTAL	Direct Effect	4,323	\$ 467,002,791	\$ 593,063,275	\$ 647,599,152
	Indirect Effect	1,060	\$ 60,582,175	\$ 91,723,429	\$ 157,785,577
	Induced Effect	2,988	\$ 139,675,025	\$ 235,479,742	\$ 401,687,351
	Total Effect	8,371	\$ 667,259,992	\$ 920,266,446	\$ 1,207,072,080

TABLE 2

TOP 10 INDUSTRIES AFFECTED – NAVAL SUPPORT ACTIVITY MECHANICSBURG

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
465	Business support services	1,689.3	\$ 181,351,865	\$ 176,050,294	\$ 111,807,298
461	Management of companies and enterprises	1,131.5	\$ 117,135,207	\$ 149,596,250	\$ 277,340,452
535	Federal government, civilian	758.0	\$ 79,357,459	\$ 119,196,097	\$ 121,025,665
416	Warehousing and storage	570.4	\$ 71,721,187	\$ 77,185,948	\$ 59,419,189
536	Federal government, military	211.0	\$ 20,881,919	\$ 75,412,464	\$ 82,514,681
482	Hospitals	190.6	\$ 15,170,823	\$ 16,788,963	\$ 29,275,180
501	Full-service restaurants	188.6	\$ 4,089,168	\$ 4,594,719	\$ 8,877,287
440	Real estate	178.7	\$ 4,934,188	\$ 34,327,604	\$ 43,798,833
502	Limited-service restaurants	143.9	\$ 2,743,907	\$ 6,768,690	\$ 11,759,405
464	Employment services	116.9	\$ 4,606,560	\$ 6,415,159	\$ 8,247,915

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

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annually, are estimated to be generated within Cumberland County.

- **Activities at NSAM represent nearly \$1.21 billion in economic output and generate \$920 million in Gross Regional Product (GRP), or value-added production, within Pennsylvania each year.**

The direct, indirect, and induced economic impacts are spread across multiple industries within Pennsylvania. While virtually all employees at NSAM are

federal civilian employees, contractors, or military service members, 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 2 highlights the top 10 industries impacted as estimated by the IMPLAN model. Highest on the list are business support services and management of companies and enterprises. ☆

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at NSAM. 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 3, and aspects of the analysis are described throughout the following sections.

The factors that led to the original siting of the Naval Supply Depot to Mechanicsburg in WWII remain as strong competitive assets today. NSAM and

other logistics centers in Pennsylvania benefit from an excellent location: they are close to major urban centers of the Northeast, but lack the high costs and major congestion of places like New York or Washington D.C. They also align well with the current structure of U.S. military installations. Via overnight train or truck, NSAM can access more than 100 Department of Defense installations, 14 naval installations, and four major ports.¹

Central Pennsylvania's strategic location is bolstered by strong local transportation assets and other infrastructure. The region is a globally recognized center for rail and highway transportation, with air transportation availability at Harrisburg International Airport. Other infrastructure assets are also excellent.

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TABLE 3

SWOT THEMES – NAVAL SUPPORT ACTIVITY MECHANICSBURG

STRENGTHS

- **Location**
- **Regional Infrastructure Assets**
- **Synergy with Nearby Installations**
- **Regional Employer of Choice**

OPPORTUNITIES

- **Regional Logistics Cluster**
- **Enhanced Outreach and Local Partnerships**

WEAKNESSES

- **Limited Visibility**
- **Limited Local Workforce/Education Linkages**

THREATS

- **Higher Potential Operating Costs**

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For example, the region has strong broadband capacities that are critical to current NSAM operations. NSAM also benefits from strong local partnerships. NSAM has numerous mutual aid arrangements with local governments, providing effective back up support in core areas like ambulance and fire services.

In addition, NSAM faces few talent and workforce challenges. Employment at NSAM is highly prized in the region, and NSAM tenants face few pressures in finding high quality and skilled personnel. NSAM has little trouble in recruiting and retaining quality workers, a positive trend common across other installations in the region. However, current federal pay rules do create some minor complications for NSAM. At present, Hampden Township is designated as part of the Harrisburg-Lebanon Federal Pay Area for federal pay purposes, while other nearby local installations DLA Susquehanna and Letterkenny, are deemed part of the Washington D.C. Metropolitan Statistical Area (MSA). Thus, workers are eligible for higher pay rates. This differential places NSAM at a slight disadvantage when recruiting and retaining workers who may be considering employment at several local installations.

NSAM's leadership has supported significant investments in environmental sustainability, and the base has received several awards for this work.² Via actions like the use of low emissions vehicles, new energy and

water technologies, and the use of smart technologies, NSAM has reduced its energy use and significantly increased its water materials recycling levels. The base also hosts significant green space, especially around its perimeter areas.

NSAM benefits from the economic strength of Central Pennsylvania and the Harrisburg-Carlisle MSA. Harrisburg is what some experts have called an "18-hour city," medium-sized cities with a wide range of amenities and work options, but lacking the density and vibrancy of global "24-hour" cities like New York or London.³ These 18-hour cities are becoming increasingly attractive to millennial workers who are seeking more affordable locations that still offer diverse lifestyle and recreation options.

While NSAM currently faces few challenges related to workforce, installation leadership has developed few formal connections to local training and education institutions. Some limited internship programs are in place, along with an informal relationship with Lancaster's Thaddeus Stevens Institute of Technology. An expansion and deepening of these workforce connections could bring many benefits to the region. For NSAM, it would provide a more reliable and sustainable talent pipeline. Meanwhile, these partnerships would help further strengthen the region's important and growing logistics cluster. ☆



Capt. Douglas M. Bridges Jr., commanding officer of Naval Supply Systems Command (NAVSUP) Business Systems Center (BSC), speaks with new employees during a new employee workshop at NAVSUP BSC in Mechanicsburg, April 18, 2018.

Photo by James E. Foehl

NSA MECHANICSBURG & THE CUMBERLAND YORK AREA

Because NSAM is Cumberland County's largest employer, its work is strongly supported by local and regional partners who have come together to form the Cumberland York Area Local Defense Group (CYALDG). The CYALDG formed in 2014 as part of a wider regional effort "to coordinate, advocate, develop, and implement recommendations to enhance the military value of the installations in the area."⁴ Since that time, CYALDG has met on a regular basis and closely coordinates with base leadership across the region. CYALDG also coordinates projects and programs across various area government jurisdictions. Among other things, the CYALDG — with the support of the Pennsylvania Military Community Enhancement Commission — has commissioned a major Strategic Positioning Plan for the region and is supporting a Joint Land Use Study focused on potential collaborations between NSAM and Hampden Township.

The CYALDG's Strategic Positioning Plan includes findings from a survey of local leaders and residents who were asked to share their perspectives on the NSAM, U.S. Army War College, and DLA Susquehanna.⁵ Surveyed residents expressed strong support for the base, and also noted that it played a critical role in driving the local economy. NSAM's local impact is especially pronounced because the vast majority of its employees are civilians. In fact, less than 4% of full-time employees are active duty service members. Because they are year-round residents of the region, these civilian workers generate a large local economic impact via local purchases of goods, services, and real estate, and via local taxes as well.

At present, NSAM has made only limited efforts to promote local contracting opportunities. Base lead-



Chief of Naval Operations Adm. John Richardson visited NSA Mechanicsburg, October 13, 2016.

Photo by Petty Officer 1st Class Nathan Laird

ership seeks to meet mandated directives for small business set-asides and the like, but there does not appear to be an organized effort to identify local contractors who would benefit from potential new customers at NSAM. Most current outreach appears to be centered at Naval Region Mid-Atlantic headquarters in Norfolk, a six-hour drive from NSAM. NSAM's ongoing and award-winning sustainability projects would offer one area where local firms could effectively compete.⁶

While survey respondents were universally positive about the role of the region's military installations, their comments also suggested that NSAM and neighboring facilities could improve their outreach efforts. Several respondents noted that the base's economic impact could be better recognized in the community, and that more outreach via community events could further improve community support for the local military presence. In particular, expanded outreach to local schools was identified as a high priority item.⁷ ★

LOOKING FORWARD

Thanks to the work of CYALDG and other local advocates, NSAM and other installations in Central Pennsylvania are well positioned to enhance both their military effectiveness and the quality of their partnerships with area governments. Moving ahead, NSAM leadership should embrace several new directions, a number of which were also cited in CYALDG's Strategic Positioning Plan.

- *Expand Local Outreach: NSAM's important local impacts are not widely understood in the region. Expanded outreach, especially to area schools, will help build a stronger case for the local military presence.*
- *Identify New Partnership Opportunities: NSAM leadership and the surrounding region would benefit from enhanced*

local partnerships that help base operations and create new regional economic development opportunities as well. The ongoing Hampden Township Joint Land Use Study analysis should help on this front by identifying specific projects related to storm water and environmental sustainability.

- *Build a Regional Talent Base: Talent development presents another excellent partnership opportunity. Central Pennsylvania is a leading logistics center, yet there are few formal connections between NSAM and local education partners to train residents for positions at NSAM or other military installations. NSAM and other local facilities would benefit from creation of a Pennsylvania Logistics Center of Excellence that supports new education, training, and business development opportunities. Such a center would build a common orientation around the state's concentrated strength in transportation, distribution, and logistics. ✪*

Notes

¹ Michael Baker & Associates, *Strategic Positioning Plan: Cumberland York Area, Pennsylvania*, February 2017, 4

² "FY 2016 Secretary of Defense Environmental Award Naval Support Activity Mechanicsburg, Sustainability, Non-Industrial Installation," 2016, accessed January 5, 2018, greenfleet.dodlive.mil/files/2017/03/2-NSA-Mechanicsburg-Narrative.pdf

³ Michael Baker & Associates, *Strategic Positioning Plan: Cumberland York Area, Pennsylvania*, February 2017, 16-17

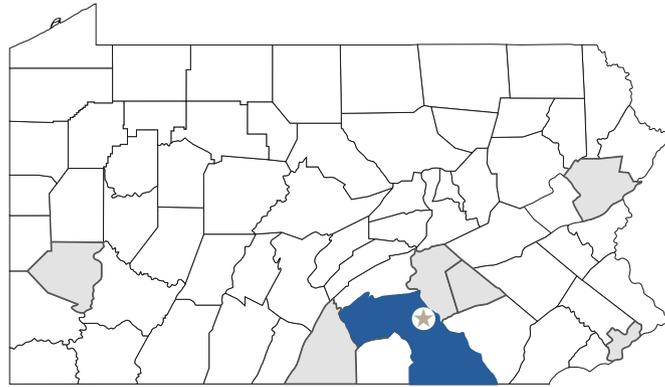
⁴ Michael Baker & Associates, *Strategic Positioning Plan*, 7

⁵ Michael Baker & Associates, *Strategic Positioning Plan*, Appendix

⁶ "FY 2016 Secretary of Defense Environmental Award Naval Support Activity Mechanicsburg, Sustainability, Non-Industrial Installation," 2016, accessed January 5, 2018, greenfleet.dodlive.mil/files/2017/03/2-NSA-Mechanicsburg-Narrative.pdf

⁷ Michael Baker & Associates, *Strategic Positioning Plan*, Appendix 22-25

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



DEFENSE DISTRIBUTION
CENTER SUSQUEHANNA

NEW CUMBERLAND, YORK COUNTY / DEFENSE LOGISTICS AGENCY





DEFENSE DISTRIBUTION CENTER SUSQUEHANNA

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 Defense Logistics Agency (DLA) Distribution is the primary distribution provider for the Department of Defense (DoD) in the continental U.S. and internationally. It distributes DoD mission critical commodities, such as food, medical supplies, and military and commercial repair parts, to all branches of the armed forces and other federal agencies throughout the world.

DLA Distribution Headquarters is collocated with DLA Susquehanna in Fairview Township, York County, next to New Cumberland borough. The installation lies along the west bank of the Susquehanna River, near Harrisburg and next to the Capital City Airport.

DLA Susquehanna is one of three strategic distribution platforms in DLA's global network. DLA

Susquehanna is the central distributor for the eastern seaboard and principal support of the U.S. European Command and the U.S. Central Command. DLA Susquehanna also operates an additional facility at Mechanicsburg, Pennsylvania.

With 10.1 million square feet of covered storage, DLA Susquehanna annually handles 2.4 million different items, valued at over \$105 billion in 2016 and destined to more than 243,000 distinct customers around the globe. The installation covers 848 acres and is a federal enclave, responsible for its own public services and public safety. It effectively operates as a small city, with a number of amenities for active duty personnel, their families, and civilian employees, including a golf course, childcare facility, fitness center, and other recreational activities.

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In 2017, more than 3,500 employees worked at DLA Susquehanna in New Cumberland, including contractors and major tenants, with additional DLA employees at Naval Support Activity (NSA) Mechanicsburg. DLA Susquehanna is the largest tenant at NSA Mechanicsburg, with 5.8 million square feet of covered storage and 233 DLA employees. DLA Susquehanna also manages Contingency of Operations Planning at Fort Indiantown Gap. At New Cumberland, DLA Susquehanna's largest tenant is the United States Army Security Assistance Command; other tenants include regional recruiting offices and the Army Reserve.

As is common across Pennsylvania's military installations, most of DLA Susquehanna's workforce are permanent civilian employees, with only 17 active duty

The DLA Distribution Susquehanna's mission is to provide world-class distribution services to enhance the readiness of the DoD and other customers, through effective and efficient receipt, storage, control, shipment, and disposal of materiel. It strives to be a values-based team known for workforce excellence and providing superior distribution services on time, every time.

military on the installation. However, many of the civilian employees are former military or current National Guard members or reservists. In addition, common across the state's installations are low levels of turnover among these civilian employees.

As in other DLA facilities, the volume of activity is tied to military operations tempo. With a recent slowdown, the installation's leadership has focused on enhancing operations, improving efficiencies by reducing turnaround times, and finding new ways to deliver value-added components to various global military operations. Yet the facilities retain capacity to surge if and when needed. The ability to be ready for wartime expansion remains fundamental to the operation, its mission, and its future. ★

Ron Hunziker of DLA Distribution Susquehanna shows representatives from U.S. Army Tank-automotive and Armaments Command's Integrated Logistics Support Center the small parcel area in the Eastern Distribution Center, DoD's largest distribution facility.

Photo by Jess Roman





An aerial view of Defense Logistics Agency Distribution Susquehanna, in New Cumberland.

Photo courtesy of DLA Susquehanna

BACKGROUND & HISTORY

DLA Susquehanna’s origins began a century ago, with what became the New Cumberland Army Depot, when its location next to the Pennsylvania Railroad and near the Enola rail yard made it attractive for the federal government to purchase the land for a reserve distribution center, along with a second reserve depot in Schenectady, New York. It began as the Marsh Run Storage Depot, officially the U.S. Quartermaster Interior Storage Depot, with the Army raising its first flag on May 14, 1918.

While it served as a site for receiving overseas supplies during World War I, little activity occurred again on the site until World War II, when volume increased with packing, distribution, and storage activity. It also served as an induction center for inductees from Central Pennsylvania and later, a site for German and Italian prisoners of war. Construction accelerated during the Korean War, with four new buildings comprising the “Golden Mile” that forms the heart of the current base facilities. The installation continues to house one World War I 1918 warehouse.

The installation supported an air maintenance mission from 1958–83. It took on a greater role in logistics and distribution upon creation of its Eastern Distribution Center beginning in 1985.

The installation’s mission was formally unified to operate solely as a distribution center in the 1980s. This included demolition of older structures and construction of new “state-of-the-art” storage and distribution facilities.

Unlike many other facility changes in recent years, DLA Susquehanna’s new missions were not dictated by the Base Realignment and Closure (BRAC) process, but rather by the Defense Management Review (DMR). The 1989 DMR under President George H.W. Bush aimed to improve cost effectiveness, efficiencies, and economies of scale so that the DoD could generate savings to offset the end of the Cold War budget cuts.¹ The DMR contained 38 Defense Management Review Decisions (DMRD), including DMRD 902, Consolidation of Defense Supply Depots. Under DMRD 902, DLA was directed to consolidate and streamline defense materiel distribution functions and undertook a major

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consolidation of service depot activities. DLA initially had six installation sites and later assumed management of 24 total. These changes had major impacts in Pennsylvania, affecting many of the state's largest military installations, including sites in Tobyhanna, New Cumberland, Letterkenny, and Mechanicsburg.

In 1991, the Army Depot New Cumberland and the Defense Depot Mechanicsburg merged to form the new Defense Distribution Depot Susquehanna. The

Defense Distribution Region East was established as the regional headquarters operation. DLA's own internal consolidation efforts were further supplemented by various BRAC Commission actions that shifted depot and distribution functions from the military services to DLA. DLA Distribution benefitted from BRACs, with greater portions of military supply chains transferred to the DLA, which ultimately operates all the military's Defense Depots. ★



Supplies move through the Eastern Distribution Center at DLA Distribution Susquehanna, the largest distribution center in the DLA distribution network.

Photo by Brianne M. Bender

ECONOMIC IMPACT

DLA Susquehanna makes up York County's second largest employer and forms a critical component of the regional economy.² The IMPLAN model was used to estimate the total economic impact of operations at DLA Susquehanna within a local area consisting of York and Cumberland Counties and for the state of Pennsylvania. The IMPLAN model estimates the direct, indirect, and induced impacts that accrue within Pennsylvania because of operations at DLA Susquehanna including the DLA Distribution Headquarters and major tenant organizations located at New Cumberland. Direct impacts represent employment and economic activity at the installation, while indirect impacts, sometimes called intermediate impacts, are generated by the supply chain requirements and purchases of the organizations being analyzed. Induced economic impacts derive from the spending patterns of service members and employees whose jobs are generated by direct or indirect economic activity.

This economic impact analysis quantifies the cumulative impact on employment and economic output of DLA Susquehanna at New Cumberland. This could

TABLE 1

ECONOMIC IMPACT SUMMARY – DLA SUSQUEHANNA, NEW CUMBERLAND, PA

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
CUMBERLAND & YORK COUNTIES	Direct Effect	3,539	\$ 378,803,817	\$ 485,197,309	\$ 601,288,373
	Indirect Effect	1,285	\$ 63,017,752	\$ 99,384,378	\$ 180,989,484
	Induced Effect	2,395	\$ 102,576,136	\$ 175,761,974	\$ 302,944,169
	Total Effect	7,219	\$ 544,397,705	\$ 760,343,661	\$ 1,085,222,026
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	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
PENNSYLVANIA TOTAL	Direct Effect	3,539	\$ 378,803,817	\$ 485,197,309	\$ 601,288,373
	Indirect Effect	1,456	\$ 75,039,129	\$ 119,379,587	\$ 217,797,680
	Induced Effect	2,632	\$ 116,855,739	\$ 199,014,197	\$ 345,757,122
	Total Effect	7,626	\$ 570,698,685	\$ 803,591,093	\$ 1,164,843,175

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

be interpreted as the result if DLA Susquehanna were either to be disestablished, or relocated outside of Pennsylvania. Staff of DLA Susquehanna provided economic data for the 2015-16 federal fiscal year; results reflect economic impact over that period.

The majority of DLA employees at New Cumberland are full-time civilians who are a mix of permanent federal employees and contractors. More than 98% of full-time staff at DLA Susquehanna are federal civilian workers or contractors, with active duty service members comprising less than 2%. In addition, nearly all DLA employees are Pennsylvania residents. Fewer than 2% of all employees were residents of other states.

The specialized nature of DLA as a center for distribution and warehousing is reflected in the IMPLAN inputs for this analysis. While most workers at the installation were federal civilian employees, most workers were categorized as being employed in one of several civilian industry sectors including the ware-

housing and storage industry, management of companies and enterprises, and business support services. Table 1 is a summary of economic impacts for DLA Susquehanna broken down by direct, indirect, and induced sources.

- Overall, DLA Susquehanna generates 7,626 jobs and over \$570 million in labor income annually within Pennsylvania. Over 7,200 jobs and \$544 million in annual labor income are estimated to accrue within York and Cumberland counties.
- Operations at DLA Susquehanna represent over \$1.1 billion in annual economic output, which generates an estimated \$803 million in Gross Regional Product (GRP), or value added production, annually to the Pennsylvania economy.

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Table 2 highlights the top 10 industries impacted by DLA Susquehanna as estimated by the IMPLAN model. DLA Susquehanna has economic impacts across industries, including and most importantly other firms in the transportation, distribution, and logistics cluster, where the upstream and downstream impacts are greatest. Warehousing and storage and nonmilitary federal government are among the most important in-

dustry sectors affected by DLA Susquehanna, with \$240 million generated in total output for warehousing and storage and \$163 million in total output for the nonmilitary federal government. Following these sectors, the direct, indirect and induced economic impacts from DLA Susquehanna are concentrated in many locally serving industries, including real estate, restaurants, employment services, retail, and hospitals. ★

TABLE 2
TOP 10 INDUSTRIES AFFECTED – DLA SUSQUEHANNA, NEW CUMBERLAND, PA

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
416	Warehousing and storage	1,372	\$ 117,501,535	\$ 139,643,184	\$ 240,749,563
535	Employment and payroll of federal government, non military	941	\$ 109,528,639	\$ 163,274,566	\$ 163,274,577
461	Management of companies and enterprises	709	\$ 86,241,363	\$ 104,583,654	\$ 156,712,745
465	Business support services	590	\$ 68,665,621	\$ 66,932,164	\$ 36,557,693
62	Maintenance and repair construction of nonresidential structures	246	\$ 14,957,102	\$ 18,603,935	\$ 40,059,377
440	Real estate	216	\$ 5,959,188	\$ 41,458,622	\$ 52,897,349
482	Hospitals	166	\$ 13,183,037	\$ 14,589,157	\$ 25,439,343
501	Full-service restaurants	157	\$ 3,398,859	\$ 3,819,066	\$ 7,378,676
464	Employment services	127	\$ 5,009,437	\$ 6,976,211	\$ 8,969,254
502	Limited-service restaurants	123	\$ 2,339,279	\$ 5,770,551	\$ 10,025,314

Sector reflects IMPLAN industry category

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



Entrance gate to DLA Susquehanna.

Photo courtesy of DLA Susquehanna

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at DLA Susquehanna. 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 3 and aspects of the analysis are described throughout the following sections.

A major strength of DLA Susquehanna is its capabilities in the distribution arena, in particular its specialization in defense logistics. DLA Susquehanna is unique among distribution organizations for its deep understanding of military service requirements. DLA Susquehanna is designated as a combat support activity and has received numerous awards for its service over the years.

Moreover, its deployable capability is a critical asset that has been used both domestically and internationally. For example, in 2017, DLA Susquehanna provided shipping support to the Federal Emergency

Management Agency in response to Hurricanes Harvey and Irma, and deployed employees to Texas and Alabama to manage receipt and delivery of items.³

DLA was created to increase the efficiency of DoD distribution across all military services. Consolidation of distribution and logistics functions has created significant economies of scale across the supply chain. The efficiencies introduced into the system continue to reduce the burden on the military services, leading to improved readiness. DLA Susquehanna leadership is focused on cost savings and has advanced its performance improvements in recent years.

DLA Susquehanna operates materiel consolidation for both the Army and Air Force and is in the center of major highway networks, with proximity to final destinations. Output is shipped by truck to air hubs at Dover, Delaware, and Maguire Air Force Base, New Jersey, along with commercial shipments that provide an "airbridge" to overseas locations. Some shipments travel to Norfolk, Virginia, for water transport, and ports in Baltimore and Jacksonville are also reached from DLA Susquehanna. An internal fleet of 75 vehicles is responsible for on-base transport of materiel, with commercial carriers moving shipments onward to

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TABLE 3

SWOT THEMES – DLA SUSQUEHANNA, NEW CUMBERLAND, PA

STRENGTHS

- **Capabilities and Efficiencies**
- **Location**
- **Surge Capacity**
- **Workforce and Pay Scale**

WEAKNESSES

- **Some Outdated Facilities**

OPPORTUNITIES

- **Transportation, Distribution and Logistics Cluster Enhancement by State Logistics Center for Excellence**
- **Active Local Defense Group**

THREATS

- **Continuing Privatization**
- **Consolidation**

<<

port destinations. There are 85 scheduled truck routes from the installation, which deliver materiel directly to the end user and reduce the need for redistribution at intermediate points. The installation moved away from rail shipment 20 years ago. The installation handles 14 million maintenance lines, and in 2016, 21.6 million tons of shipment were transported by air and 544.5 million tons by surface transport. The volume has dropped in recent years with less activity for troop support in the Middle East, but operations are scalable for surge during wartime.

This also points to what can be a potential threat for DLA — greater privatization of DoD distribution functions. In accordance with the Office of Management and Budget’s Circular No. A-76, which established federal policy for competition surrounding commercial activities, DLA privatized a number of wholesale stock areas.⁴ Privatization of military activities is expected to continue. As greater aspects of the supply chain are privatized, scalability for surge is threatened. Unlike private sector firms, DLA Susquehanna’s mission is to support readiness across the DoD. A recurring notion that greater parts of the military’s supply chain can be directly privatized overlooks

the fundamental requirement to be ready to surge capacity on short-notice. Commercial firms have historically found it inefficient to maintain standing defense supply capacity when underutilized — as is often the case in periods between major conflicts. Yet, when needed most, there is insufficient time to rebuild or expand a private sector system for the most critical supplies. DLA understands the unique military service requirements, whether how to store, handle, or ship materiel and, most importantly, how to support combatant commanders worldwide during both peacetime and during conflicts. DLA also faces potential competition from within the DoD, to include possible consolidation with U.S. Transportation Command (TRANSCOM).

The workforce is a major strength of the installation. The region excels in expertise, education, and training in logistics, warehousing, and shipping; this supply base provides a workforce with the skills needed by the installation. DLA Susquehanna develops those skills further by building employees’ expertise in DoD military service requirements. The installation provides internal mobility for its workers, and, coupled with its location in a large commuter shed and rela-

tively high pay area (Washington, DC), the installation has a strategic advantage for attracting and retaining logistics and warehousing workers. These advantages generate other positive outcomes for the workforce and region. There is little turnover among staff, and veterans make up 11% of personnel on site, including disabled veterans, which is a relatively high figure compared to other DLA installations and of growing importance given federal laws on employing veterans.

The region recognizes the importance of the transportation, distribution, and logistics cluster and DLA Susquehanna is central in importance in that cluster. The competitive advantages of location and workforce work together to generate additional competitive strengths. According to the Central Pennsylvania Works Funders Collaborative, the transportation, distribution and logistics industry in Central Pennsylvania employs over 1,600 workers in the region, with over \$10 billion in annual sales.⁵ DLA Susquehanna is co-located with logistics companies that often provide a pool of applicants with warehousing experience when jobs are open to be filled. DLA benefits from the strength of this logistics cluster in the region; workers can be found in the private sector with skills and experience to make the jump to DLA.

Transportation, distribution and logistics also represents an opportunity for DLA Susquehanna and across installations in Pennsylvania for the state to embrace a Logistics Center of Excellence. DLA Susquehanna is central to that Center of Excellence, with robust transportation networks and infrastructure. [We still need to ADD description here] Greater interconnectedness among installations and state-supported programs of excellence can add to the existing strengths of operation.

DLA Distribution conducts Continuity of Operations Planning (COOP) with annual training visits to alternate sites to strengthen preparedness capabilities. A recent (December 2016) agreement with Fort In-

diantown Gap (FTIG) for DLA Distribution to work in the Range Facility Management Support System further reinforces the competitive advantage of location and joint co-operation across installations in the Central Pennsylvania region. The capacity at FTIG represents a strength for DLA Susquehanna under this new agreement to be used in a regional contingency.⁶

The installation has embarked on a number of environmental initiatives to create energy cost savings for the operation. DLA Susquehanna opened its new headquarters building in fall 2016. The new building brought DLA Distribution employees from across the complex together for the first time under one roof in an environmentally advanced, Leadership in Energy and Environment (LEED)-certified Silver building. This investment replaced a number of older buildings, most dating from a half-century ago or more. The building brings green technology and energy savings to DLA and advances its goals to meet more stringent energy standards.

It has also cut energy use and costs through a recent initiative to convert its steam plant to natural gas, resulting in a large savings. It also capped a former landfill area with three feet of soil, and the site will not be redeveloped. DLA Susquehanna conducts its own recycling and handles the recycling from nearby West Shore School District.

Despite the strong positioning of DLA Susquehanna, the installation must remain responsive to threats that can occur. The privatization process and opening the doors to online private firms and retailers means DLA Susquehanna must continue to advance its mission through innovative approaches and expand in new directions. Across Pennsylvania's military installation, a common weakness is the lack of strong bonds and ties to elected officials, particularly at the state level. Promoting strong ties is critical for stakeholders and the Local Defense Group for DLA Susquehanna.



DLA SUSQUEHANNA & THE CENTRAL PA COMMUNITY

DLA Susquehanna benefits from an active and engaged Cumberland York Area Local Defense Group (CYALDG). The CYALDG was established through the Cumberland Area Economic Development Corporation to promote the military and economic value of DLA Susquehanna, along with the Army War College at Carlisle Barracks and the Naval Support Activity Mechanicsburg.⁷ The CYALDG is organized through a large advisory board of state and local elected officials, installation personnel, economic development organizations and other nonprofit organizations.

In 2016—with the support of the Pennsylvania Military Community Enhancement Commission—CYALDG conducted a survey of Cumberland, York, and Dauphin county residents about their perception of Defense Distribution Center Susquehanna, Naval Support Activity Mechanicsburg, and the Carlisle Barracks/Army War College.⁸ Following a strategic planning process, the CYALDG will be focusing on three opportunity areas: • **Community cooperation** — marks a strength in the region with partnerships across key stakeholders in the region • **Workforce development and education** — this can be an important component of a logistics corridor strategy and a distribution, logistics, and transportation cluster policy • **Infrastructure, utilities and services** — also tied to the logistics sector and improving transportation options and reducing congestion in the region.⁹

The LDG also has released reports on the impacts of the installations and their critical importance to the regional economy. Central to this focus is the attention to supply chain management, both as it affects DLA



The supply chain in action at DLA Distribution Susquehanna's Distribution Center.

Photo courtesy of DLA Distribution Public Affairs

Susquehanna and its relation to other regional companies from the point of origin to the final shipping destination. The logistics component within DLA has been streamlined to meet the needs of maximum supply support for assigned units, with expanding education links for workforce training important for both DLA and the logistics corridor.

DLA Susquehanna has many other important community links. DLA will discontinue its military family housing operations by the end of 2018. Much of the housing dates from the 1950s and early 1960s and all installation personnel will be in market housing by 2018,¹⁰ important for residents in nearby communities. The site also provides services through the Susquehanna Club, a former barn located on the installation site and available for rental for functions and events by the public. ★

LOOKING FORWARD

DLA Susquehanna continues to expand its local partnerships in the Central Pennsylvania region. The common themes across distribution installations represent areas of opportunity for DLA Susquehanna. The transportation advantages of the location will continue to create new opportunities for products, workloads, and functions.

- *DLA Susquehanna is well positioned — both geographically and organizationally — to work in partnerships to expand the logistics corridor and logistics expertise to advance a Logistics Center of Excellence in Pennsylvania. Such a center would build a common orientation around the state’s concentrated strength in transportation, distribution, and logistics and support new education, training, and business development opportunities. This represents an important opportunity for DLA Susquehanna to position itself in a broader cluster of logistics expertise and expansion, with agencies and programs in Pennsylvania government and county economic development supporting expansion. Key here is also the CYALDG that is already critical to the installation’s presence and partnerships.*

- *The importance of logistics and the supply chain can be enhanced by additional support from Pennsylvania in a number of different ways. DLA Susquehanna has the opportunity to work more closely with local schools to make greater strides in technological modernization. This could include ties to higher education institutions to offer supply chain management curriculum that would be a natural fit for DLA Susquehanna and building the workforce for its future. There are certainly opportunities for development in these educational endeavors. This fits with Pennsylvania taking a more active and direct role in training and education related to logistics and the future of the workforce.*

- *The state can take the lead in forming a Logistics Center of Excellence, which can work in partnership with DLA Susquehanna, other Pennsylvania military installations, higher education institutions, and business-community partners, organized through Local Defense Groups, to expand the already successful transportation, distribution, and logistics cluster in the state.*

- *Other opportunities exist for the LDG to promote. DLA Susquehanna through the CYALDG and in partnership with other LDGs from other installations can promote a more public view of installations and their assets across Pennsylvania. This common theme represents an opportunity to work with local elected officials and economic development organizations. As in many examples, installation leadership sits on regional and nonprofit boards, and engages in other public-private-nonprofit partnerships. These can be promoted for continued support and success.*

DLA Distribution supports a global force from its location in New Cumberland, Pennsylvania. It sources and assembles the materiel needed in peacetime and retains capacity for much larger conflicts and initiatives when needed to surge. It meets its military mission and contributes mightily to the regional and state economies. It generates more than \$800 million in value-added output for Pennsylvania and offers strength beyond its numbers to Pennsylvania’s growing transportation, distribution, and logistics corridor. ⚡

Notes

¹ Walter Grauer, "Predicting Space Requirements at Defense Logistics Agency Warehouses" (Master's Thesis, Naval Postgraduate School, 1996)

² York Hospital is York County's largest employer according to Pennsylvania's Center for Workforce Information and Analysis

³ DLA Distribution Public Affairs, "DLA Distribution Susquehanna Supports Hurricanes Harvey and Irma Recovery," September 18, 2017, www.dla.mil/AboutDLA/News/NewsArticleView/Article/1312242/dla-distribution-susquehanna-supports-hurricanes-harvey-and-irma-recovery

⁴ Office of Management and Budget, "Circular No. A-76 (Revised)" May 29, 2003

⁵ National Fund for Workforce Solutions, "Central Pennsylvania Works Funders Collaborative," accessed December 8, 2017, nationalfund.org/collaborative/central-pennsylvania-works-funders-collaborative

⁶ DLA Distribution Public Affairs, "DLA Distribution Practices the Continuity of Operations Plan" May 4, 2017, www.dla.mil/AboutDLA/News/NewsArticleView/Article/1171870/dla-distribution-practices-the-continuity-of-operations-plan; U.S. Government Accountability Office, "Supply Chain Management: DoD Could More Efficiently Use Its Distribution Centers," June 2017

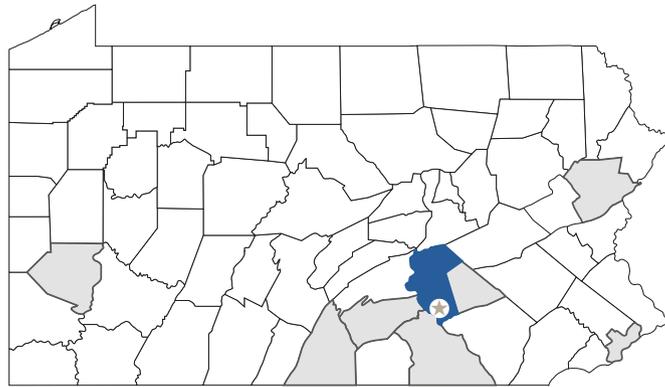
⁷ Local Defense Group: Cumberland York Area Local Defense Group, Cumberland Valley, PA: cumberlandbusiness.com/about-us/local-defense-group

⁸ Michael Baker & Associates, Strategic Positioning Plan: Cumberland York Area, Pennsylvania, January 2017

⁹ Cumberland Area Economic Development Corporation, "Cumberland York Area Local Defense Group Announces Results of Strategic Positioning Plan," March 28, 2017, cumberlandbusiness.com/news/cumberland-york-area-local-defense-group-announces-results-strategic-positioning-plan

¹⁰ "DLA Distribution Command Overview" (PowerPoint Presentation, April 12, 2017)

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



**193RD SPECIAL
OPERATIONS WING**

HARRISBURG INTERNATIONAL AIRPORT / PA AIR NATIONAL GUARD





193RD SPECIAL OPERATIONS WING

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 193RD Special Operations Wing (SOW) of the Air National Guard is based at the Harrisburg International Airport (HIA) in Middletown, Pennsylvania. The 193rd operates and maintains the only airborne Military Information Support Operations broadcasting unit in the U.S. military. The 193rd flies and maintains the EC-130J Commando Solo Hercules transport as its primary mission. It provides an airborne radio and television broadcast platform and military communications bands for any contingency. With its unique Commando Solo mission and J model aircraft as flying radio and television stations, the 193rd participates in operations around the world. The 193rd is the most deployed Air National Guard unit in the U.S., conducting 12–15 exercise or real-world deployments annually.¹

In peacetime, the 193rd SOW is a Pennsylvania Air National Guard (PaANG) unit, serving under the Pennsylvania Governor for natural disaster and homeland security support. In times of war or other contingency operations, the 193rd reports to Air Force Special Operations Command (AFSOC) in Hurlburt Field, Florida. The 193rd SOW is one of four Special Operations Wings of the AFSOC and the only one that is part of the Air National Guard.

Most of the personnel affiliated with the 193rd are traditional Guard members serving part-time through the year, with dual-status Air Guard Technicians comprising the majority of the wing's full-time workforce. Technicians are full-time civil service employees who also serve in the PaANG. The 193rd installation covers 42 acres at the HIA, with a headquarters building, operations building, civil engineer-

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The Air National Guard's EC-130E Commando Solo takes off for the final time above a C-130 Hercules at the Harrisburg International Airport on Monday, April 3, 2006. The "E" model has flown members of the 193rd Special Operations Wing into combat since the Vietnam Conflict.

Photo by Staff Sgt. Matt Schwartz

MISSION:

The primary flying mission of the 193rd SOW is to provide an airborne broadcast platform for a range of contingencies and execute specialized and contingency operations using advanced aircraft, highly trained operators, specialized tactics, and air refueling techniques to infiltrate/exfiltrate, resupply and perform information operations for the Special Operations Forces.

<< ing facility, the aircraft maintenance hangar, and engine shops on site supporting seven aircraft.

The 193rd includes a number of assigned organizations, such as the 193rd Air Operations Group in State College, where the Air Operations Group covers the planning, execution, and evaluation of an air conflict. Other tenant organizations are: Regional Support Group at Fort Indiantown Gap, which includes the 211th Engineering Installation Squadron, the 201st

RED HORSE Squadron (Rapid Engineer Deployable Heavy Operational Repair Squadron Engineers), the 148th Air Support Operations Squadron, the 553rd Air Force Band (Air National Guard of the Northeast), the 203rd Weather Flight, the 271st

Combat Communications Squadron, and the Air National Guard Schoolhouse. At its HIA location, the 193rd includes Maintenance, Mission Support, and Medical Groups. ★

BACKGROUND & HISTORY

Information support has been a part of war throughout human history. In the U.S., the modern military's use of information support operations extends back to the first airborne radio and television information broadcasts. The U.S. Army Air Corps began with the 347th Fighter Squadron in 1942 and, after the war, the mission was assigned to an Air National Guard unit with the 148th Fighter Squadron at Spaatz Field in Reading, later converted to the 140th Air Transport Squadron and C-46 Commando transports. The move from these and the C-119 Flying Boxcar to the bigger C-121 Constellation aircraft required a move from Reading to the larger Olmsted Air Force Base (AFB) facility in Middletown. The unit operated in Cuba and throughout Southeast Asia during the Vietnam War and became the 193rd Tactical Electronic Warfare Group in 1967. Later, in 1980, the planes were replaced with the C-130E, and the unit converted to the 193rd Tactical Electronic Warfare Group.

During those years, the Pennsylvania National Guard's 193rd Tactical Electronic Warfare Squadron became responsible for psychological operations (PSYOP)² with five EC-121S on site under project Coronet Solo. In 1990, the 193rd came under the newly formed Air Force Special Operations Command with aircraft now designated Commando Solo. From that time, from Operations Desert Shield and Desert Storm to the Global War on Terrorism, EC-130J missions have spanned Asia, the Middle East, Europe, and North America through military and civilian missions.

The HIA, including the 193rd, is on the site of the former Olmsted AFB, decommissioned in 1969 and transitioned to HIA and Penn State University. In 1966, Penn State University constructed its Capitol Campus on the former Air Force property on the north side of Route 230. The Susquehanna Area Regional Airport Authority (SARAA) was established in 1997 to take over HIA, along with other regional airports in the years since, with the property transfer from Pennsylvania's Bureau of Aviation in 1998. ✪



Senior Airman Ryan Dunkle, a loadmaster at the 193rd Special Operations Wing, Middletown, Pennsylvania, secures tie-down straps prior to an incentive flight departure of the EC-130J aircraft, April 9, 2017.

Photo by Senior Airman Julia Sorber

ECONOMIC IMPACT

The 193rd SOW generates a number of economic benefits to Pennsylvania's economy. The IMPLAN model was used to estimate the total economic impact of the 193rd SOW within the state of Pennsylvania. The IMPLAN model estimates the direct, indirect and induced impacts that accrue within Pennsylvania because of activity generated by the 193rd. Direct impacts are the employment and spending associated with the 193rd SOW, while indirect impacts, sometimes called intermediate impacts, are generated by the supply chain requirements and linkages of the activity being

analyzed. Induced impacts derive from the spending patterns of employees and service members.

This economic impact analysis quantifies the potential impact on employment and economic output of the 193rd when operating at its current location, collocated with HIA in Middletown, Pennsylvania — Dauphin County. This could be interpreted as the result if the 193rd SOW were either to be disestablished or relocated outside of Pennsylvania. 193rd SOW staff provided economic data for the 2015–16 federal fiscal year; results reflect economic impact over that period.

TABLE 1

ECONOMIC IMPACT SUMMARY – 193RD SPECIAL OPERATIONS WING

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
DAUPHIN COUNTY	Direct Effect	531*	\$ 44,026,947	\$ 107,389,707	\$ 130,207,625
	Indirect Effect	88	\$ 5,651,920	\$ 8,770,461	\$ 15,107,361
	Induced Effect	192	\$ 8,811,165	\$ 14,999,892	\$ 25,397,858
	TOTAL	811	\$ 58,490,032	\$ 131,160,060	\$ 170,712,844
PENNSYLVANIA TOTAL	Direct Effect	531*	\$ 44,026,947	\$ 107,389,707	\$ 130,207,625
	Indirect Effect	104	\$ 6,820,999	\$ 10,665,827	\$ 18,961,837
	Induced Effect	217	\$ 10,253,196	\$ 17,340,215	\$ 29,686,501
	TOTAL	851	\$ 61,101,142	\$ 135,395,749	\$ 178,855,963

* Represents full-time equivalent employment including civilian employees and active duty service members, and an adjustment for the part-time service of traditional reservists/Guard members. Source: University of Pittsburgh Center for Social and Urban Research, 2018

TABLE 2

TOP 10 INDUSTRIES AFFECTED – 193RD SPECIAL OPERATIONS WING

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
536	Federal government, military	235	\$ 26,167,267	\$ 77,157,420	\$ 77,157,422
408	Air transportation	149	\$ 9,343,448	\$ 17,325,267	\$ 40,025,684
535	Federal government, non-military	148	\$ 8,929,840	\$ 13,311,731	\$ 13,311,733
503	All other food and drinking places	21	\$ 596,020	\$ 501,197	\$ 849,837
414	Scenic and sightseeing transportation and support activities for transportation	19	\$ 1,241,631	\$ 1,506,516	\$ 3,091,644
482	Hospitals	19	\$ 1,490,374	\$ 1,649,340	\$ 2,875,979
501	Full-service restaurants	17	\$ 366,691	\$ 412,025	\$ 796,059
502	Limited-service restaurants	15	\$ 293,083	\$ 722,980	\$ 1,256,051
473	Junior colleges, colleges, universities, professional schools	15	\$ 1,008,755	\$ 1,127,091	\$ 1,801,624
440	Real estate	14	\$ 397,236	\$ 2,763,608	\$ 3,526,107

Sector reflects IMPLAN industry category

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

As of September 30, 2016, 363 full-time federal and civilian employees worked at the 193rd SOW. Full-time employees include active duty service members, civilian employees, and military technicians — personnel who serve in a dual status as both civilian employees and members of the PaANG. The full complement of the 193rd SOW includes a total of 1,073 PaANG service members, including both traditional reservists who train part-time throughout the year, Active Guard Reserve members, and dual status technicians.

The total economic impacts for the 193rd SOW are broken down by direct, indirect and induced sources (see Table 1).

- Overall, the 193rd SOW generated an estimated 851 jobs across Pennsylvania. These jobs produce an

estimated \$61.1 million in labor income annually within the state.

- Operations of the 193rd SOW accounted for \$178.9 million in overall economic output within Pennsylvania. A total of \$135.4 million of this was estimated to be Gross Regional Product (GRP), or value added production, generated within the state.

The direct, indirect and induced economic impacts are spread across industries in the state's economy. Table 2 highlights the top 10 industries impacted by activity at the 193rd, as estimated by the IMPLAN model. Highest on the list are federal government (military and non-military) and air transportation sectors. ★

COMPETITIVE ASSESSMENT

The project team conducted an analysis of the strengths, weaknesses, opportunities, and threats (SWOT) at the 193rd. 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 3 and aspects of the analysis are described throughout the following sections.

The competitive strengths of the 193rd begin with its unique mission as the only airborne Military Information Support Operations. Another competitive

strength is the location of the 193rd SOW and the benefits derived from its location along a number of different dimensions.

Certainly, the 193rd SOW's location at HIA is one of its most important assets and creates many benefits for the installation. These include both the physical location and the benefits of the workforce and education and training opportunities in the Central Pennsylvania region.

The strengths of the 193rd could also be weaknesses or threats. For its unique mission, changes in technology could alter the distribution of PSYOP missions through other forms of communications in addition to the 193rd's broadcasting radio and television messages from its fleet. Technology, however, can also

TABLE 3
SWOT THEMES – 193RD SPECIAL OPERATIONS WING

STRENGTHS

- **Military Value – Uniqueness of PSYOP Mission**
- **Location • Workforce and Attraction**
- **Maximum Capacity • Green and Solar Initiatives**

OPPORTUNITIES

- **External Partnerships – Particularly a Local Defense Group**
- **Virtual Trainer**

WEAKNESSES

- **Space Limitations**
- **No Local Defense Group**
- **Limited Visibility**

THREATS

- **Technology**
- **Limited Opportunities for Mission Expansion**

be an opportunity. On the technology side, the installation might be able to expand capacity through the addition of virtual simulation for training.

The 193rd's location at HIA is also a constraint. There is little room for expansion, despite current reconstruction, and no excess capacity at HIA. Whether viewed internally as a weakness or externally as a threat, the space limitations of the 193rd presents limitations to new activities going forward.

Despite these limitations, the legacy of the site is important, for it represents the longstanding importance of the 193rd at HIA. It shares fuel with HIA because it does not have land for its own fuel storage. That also means through this cooperation, by rapid turnover, fuel is always fresh and the airport's capacity can accommodate any events falling under the 193rd's mission.

Since 9/11, the 193rd SOW has been operating at nearly maximum capacity. The 193rd SOW's unique mission means that its operations tempo is quite intense. It is the most frequently deployed ANG unit in the country, based on the mission of Air Force Special Operations Command. At any one time, approximately 10% of the Airmen (180–200 people) are deployed. Even with this pace of operations, the 193rd can rely on a stable workforce. It benefits from longevity of the workforce in the region, with little turnover and an ease of attracting and building its workforce — mainly from the surrounding region — a common trait across the installations in Pennsylvania.

The 193rd SOW engages in domestic operations supporting visiting dignitaries, such as the Papal visit in September 2015. The 193rd also coordinates with the Army War College on transportation services for distinguished visitors, and staff use the medical services available at the War College. Most recently, Airmen from the 193rd SOW assisted with relief and communications efforts in Texas and Florida following hurricanes in the fall of 2017.

The proximity to Penn State Harrisburg is also a key advantage. Since both the 193rd and the original Penn State — Capitol Campus are located on the former Olmstead AFB site, a number of synergies and cooperative agreements have developed. The ties to Penn State have created opportunities on environmental and infrastructure issues. They have operated co-op programs with the engineering department and with a group of environmental engineers, and are now examining a study of the shared wetlands across the two locations. That work has expanded to the construction of a small water retention basin. Possible future collaborations include a succession of green infrastructure projects and joint water practices.

In discussion is potential for green power generation with solar energy on land adjacent to HIA to the east. The site is 20 acres and a former coal-fired power plant. The site was listed as a Superfund in 1986, and, after cleanup, deleted from the list in 1997. Contamination included volatile organic compounds and heavy metals, such as lead. Coal ash remains on the site, but in working with Penn State for its 2013 master plan, the goal was to build the parking lot and cap the ash pits. The new lot addresses the environmental ash issues and secures new access through an entrance road constructed to meet security standards. Though the installation faces space constraints with limited prospects for physical expansion, these security and safety infrastructure measures are underway as part of the Air National Guard Base Installation Development Plan and offer means to enhance the physical installation through cost efficiency and environmental improvements.

In sum, despite the noted limitations of the site, these exchanges and partnerships with HIA and Penn State University provide a number of opportunities and resources that would not be available in other locations. ☆

193RD & THE CENTRAL PA COMMUNITY

The 193rd is a tremendous asset to the community. Its community connections and partnerships range from educational institutions to local law enforcement to an airport authority.

The 193rd's events and interactions with local schools are important, as they affect the wing's long-term ability to attract a local workforce. The ability to attract highly skilled personnel that form a stable workforce contributes to one of the 193rd SOW's main strengths. It conducts extensive recruiting throughout the local area.

The 193rd maintains ties to other area higher education institutions in addition to Penn State. These include Harrisburg Area Community College, where Air Guard members can work toward their Community College of the Air Force degrees and classes are conducted on site. There were 62 graduates from the program in 2015 and an estimated 80 graduates in 2016.

The 193rd previously had a master's degree program through Delaware Valley Community College and is currently evaluating bringing it back. There is also a master's degree program in public administration through Fort Indiantown Gap that attracts a num-



With the help of Staff Sgt. Emery Barrett, 193rd Special Operations Maintenance Squadron hydraulic technician, left, Airman 1st Class Reanna Keener, crew chief, moves a shuttle valve to the correct side of an aircraft brake assembly, April 5, 2017 at the 193rd Special Operations Wing, Middletown, Pennsylvania.

Photo by Master Sgt. Culeen Shaffer



Airman 1st Class Matt Huggins, a loadmaster at the 193rd Special Operations Wing, Middletown, Pennsylvania, tests the alarms in this EC-130J aircraft on April 9, 2017.

Photo by Senior Airman Julia Sorber

ber of Guard members from the 193rd. Clearly, any additional educational opportunities for personnel is a welcome additional strength for the 193rd.

The 193rd also has a number of shared agreements with partners in the region. It has a cooperative agreement for joint support with HIA firefighters for emergency response and flight emergencies. It has joint trainings with local fire departments, including the Dauphin County fire department and emergency management team that includes both military and civilian firefighters. It works in cooperation with both the airport and Penn State Harrisburg on security training that includes active shooter drills. Both security forces conduct exercises together, providing synergy from training and working with one another. They also provide active shooting practices to the nearby communities of Highspire and Middletown. The 193rd also works with the Civil Air Patrol.

In addition to security partnerships with HIA and Penn State, the 193rd also provides law enforcement training to local police departments, including those from Middletown and Highspire. With many of the local communities, the 193rd has MOUs with civilian law enforcement agencies to provide support in the

event of needed assistance on both sides.

Other related community activities are performed by the 193rd Association. The 193rd Association is composed of many of the wing's retirees and others who provide support for the troops, partner for community services, and conduct military appreciation events in the region. That said, the 193rd recognizes that it needs to increase public awareness and understanding of the wing's missions and promote activities linking wing members to nearby communities.

Finally, the 193rd plays an important role in the SARAA and is highly engaged on the board and planning process. Since the creation of the SARAA, the 193rd and HIA have coordinated planning efforts, with the 193rd/PaANG sitting on the SARAA board. Joint planning activities expanded with the combined master plans in 2003, a practice that has continued through the most recent 2016 plan. The SARAA completed its latest master plan in 2016, and it was coordinated with the PaANG Base Master Plan. Recommendations from the development plan include changes to the base with new off-base parking to meet anti-terrorism/force protection perimeter requirements.





193rd Special Operations Maintenance Squadron Airmen reattach an antenna pod to one the 193rd Special Operations Wing's EC-130 J Commando Solo aircraft, in a hanger, Middletown, Pennsylvania, April 5, 2017.

Photo by Master Sgt. Culeen Shaffer

LOOKING FORWARD

The 193rd operates on the smallest physical footprint of the 90+ units of the Air Guard Flying Wing. While there are constraints to the physical size of the 193rd SOW, with its limited geography and limited expansion opportunities, the 193rd has many opportunities on the horizon:

- *The 193rd SOW continues to coordinate its master planning with the HIA's planning, which has resulted in major improvements through the current construction of off-site employee parking and serpentine entrance road.*
- *The benefits have also extended to major environmental improvements and additional cost savings from more efficient energy generation and use. The benefits of location sees the 193rd now in the early stages of talks with the airport, Penn State, and the township about a possible green power generation site through solar energy on an adjacent lot. This work extends from previous relationships with Penn State on wet-land studies. This partnership could be a lasting contribution to both the environmental upgrade of the site and economic*

development that can come from solar power generation. The hopes are to kick that off in the near future.

- *Staff finds that there could be an opportunity to host an eighth aircraft and, through master planning, create much needed additional facilities, but the installation is not a viable candidate for new missions because of the space limitations on the site. The prospects for physical growth and larger facilities are much greater at the Regional Support Group.*
- *The installation may consider expanding opportunities in new technologies with cyber and communications created by the new PaANG Combined Communications Operations and Training Facility at Fort Indiantown Gap and other resources at the 193rd. The importance of information in multiple forms over the coming years can be a technology opportunity for the 193rd to explore and exploit.*
- *The stability of the workforce remains key and critical to its future. Current demand for commercial pilots is intense and many Air Force and Air National Guard units struggle to attract and retain talented personnel. The 193rd is not immune*

from these pressures, but the wing's leadership remains pleased with the stability and commitment of its current workforce. Nonetheless, the unit is investing in aggressive recruiting efforts. They have recruiters now at different active duty AFBs, such as Cannon AFB, and recruit for the entire wing.

- The 193rd SOW generates over \$178 million in economic impact annually to Pennsylvania. These important strengths to Central Pennsylvania and the entire state can be the focus of more extensive information to elected officials and other stakeholders by support organizations.
- The 193rd can create opportunities in the Central Pennsylvania region by expanding partnerships for engagement. The lack of a Local Defense Group (LDG) is currently a weakness

of the installation, but also can become an opportunity. This is important, as an LDG can promote the benefits and advantages of the 193rd in the broader public realm. The 193rd Association does many important events and promotions, but ties to political and economic development leadership may be less robust than with an LDG. It is important that public understands the many activities in military information and support operations conducted by the 193rd SOW.

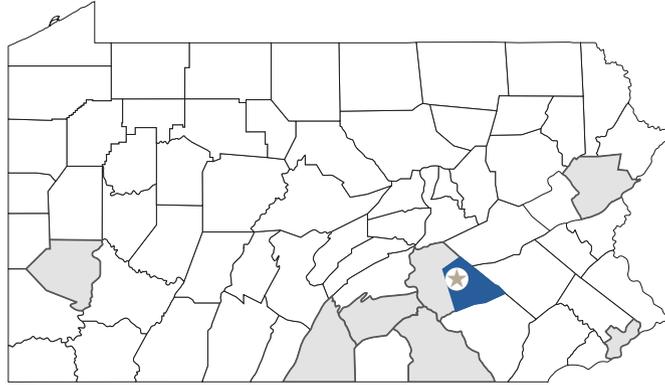
The 193rd is highly successful within its scope. Specialized and directed, through missions over time and across the globe, the 193rd SOW and Commando Solo continues to support military and civilian peace initiatives, as well as wartime initiatives, and represent one of the important military installation assets to the Central Pennsylvania region and Commonwealth. ☆

Notes

¹ Ann Robertson, "Special Operations Wing," in *The Sage Encyclopedia of Terrorism*, 2nd edition, ed. Gus Martin (Thousand Oaks, CA: Sage, 2011), 552

² The Pentagon announced in June 2010 that PSYOP would be known as "military information support operations," or MISOs

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



FORT INDIANTOWN GAP

LEBANON & DAUPHIN COUNTIES / PA NATIONAL GUARD





FORT INDIANTOWN GAP

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

Located in Lebanon and Dauphin Counties, **Fort Indiantown Gap (FTIG)** serves as the busiest National Guard training site in the U.S., training more than 130,000 troops each year.¹ FTIG is the only live fire maneuver training facility in Pennsylvania. It is managed by the Pennsylvania National Guard and serves Pennsylvania National Guard units, as well as military and civilian personnel from around the country.

FTIG is home to a diverse mix of tenants and activities, ranging from its core activities of military training to unique functions such as the Pennsylvania National Guard Military Museum. FTIG can support a host of training activities ranging from individual warrior training to brigade level unit support. The FTIG range complex includes several weapons ranges, urban combat training sites, virtual training, and helicopter training. FTIG's Muir Army Airfield is the second busiest Army heliport in the U.S.

In total, the FTIG site encompasses approximately 17,100 acres. Of this, 12,000 acres are used as training areas, and facilities cover the remaining 5,000 acres. FTIG contains a small number of housing units, but the majority of personnel live off-post. Most of the installation's users are National Guard members, while others use the base for limited training periods. Current facilities can accommodate from 8,000 to 15,000 personnel per training event.²

FTIG is Lebanon County's largest employer. Over 2,200 people work at FTIG on a regular basis, but the base often hosts as many as 9,000 personnel on a given weekend. FTIG has a big impact on the regional economy beyond its role as a major local employer and in providing contracting opportunities to local businesses. Personnel using FTIG for training purposes stimulate the economy further by using local hotels and patronizing local restaurants and other retail establishments.





Fort Indiantown Gap hosts Pathfinder Course, 2018.

Photo by Pennsylvania National Guard

BACKGROUND & HISTORY

The FTIG site has supported military missions since 1931. Since that time, the base has served a variety of functions. It provided Army training in World War II and during the Korean War. FTIG has supported other unique missions, including stints as a German POW camp after World War II and as a housing facility for Cambodian, Cuban, and Vietnamese refugees in the 1970s and 1980s.

Officially, an active U.S. Army presence at FTIG ended in October 1998 through the Base Realignment and Closure (BRAC) process. At that point, formal control of FTIG was given back to the Commonwealth of Pennsylvania to support the Pennsylvania National Guard. Today, FTIG is a state-managed federally-

leased installation. Thus, its status and continued operations cannot be reviewed via the BRAC process or other federal driven strategies related to real estate or installation management. However, changes in National Guard and Reserve training priorities could affect future FTIG activities.

Since the departure of active-duty troops in 1998, base operations have grown in both size and scale as state leaders have developed and supported newer uses for the base. FTIG has developed new missions, built new capacities and infrastructure, and greatly increased the tempo of on-site training activities. FTIG has developed a strong reputation for providing excellent customer service and a world-class warrior training experience. ★

ECONOMIC IMPACT

FTIG is home to a sizable level of activities, and these impacts ripple into the wider regional economy.³ The IMPLAN model was used to estimate the total economic impact of operations at the FTIG location. The IMPLAN model estimates the direct, indirect, and induced impacts that accrue within Pennsylvania because of activity generated by the National Guard at the FTIG location. Direct impacts are the employment and spending associated with the installation itself, while indirect impact, 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. Economic impacts were estimated for a local region consisting of Lebanon and Dauphin counties and for the total economic impacts within Pennsylvania.

Table 1 is a summary of economic impacts for Fort Indiantown Gap broken down by direct, indirect, and induced sources.

- Overall, operations at FTIG generate 4,641 jobs and over \$357 million in labor income annually within Pennsylvania; 4,437 of these jobs and \$344 million in labor income annually are estimated to accrue within a local area consisting of Lebanon and Dauphin counties.

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TABLE 1
ECONOMIC IMPACT SUMMARY – FORT INDIANTOWN GAP

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
LEBANON & DAUPHIN COUNTIES	Direct Effect	2,943	\$ 274,408,691	\$ 427,033,917	\$ 493,476,260
	Indirect Effect	197	\$ 11,690,844	\$ 17,212,656	\$ 29,472,413
	Induced Effect	1,297	\$ 58,182,813	\$ 99,198,905	\$ 170,539,586
	Total Effect	4,437	\$ 344,282,349	\$ 543,445,478	\$ 693,488,259
PENNSYLVANIA TOTAL	Direct Effect	2,943	\$ 274,408,691	\$ 427,033,917	\$ 493,476,260
	Indirect Effect	246	\$ 15,340,643	\$ 23,371,505	\$ 41,692,491
	Induced Effect	1,453	\$ 67,379,014	\$ 114,215,705	\$ 198,007,166
	Total Effect	4,641	\$ 357,128,349	\$ 564,621,127	\$ 733,175,917

TABLE 2

TOP INDUSTRIES AFFECTED – FORT INDIANTOWN GAP

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
482	Hospitals	115	\$ 9,165,915	\$ 10,143,564	\$ 17,687,493
501	Full-service restaurants	99	\$ 2,143,023	\$ 2,407,969	\$ 4,652,347
503	All other food and drinking places	88	\$ 2,501,055	\$ 2,103,154	\$ 3,566,136
502	Limited-service restaurants	81	\$ 1,552,124	\$ 3,828,792	\$ 6,651,850
440	Real estate	78	\$ 2,161,242	\$ 15,035,964	\$ 19,184,493
400	Retail - Food and beverage stores	69	\$ 1,996,997	\$ 2,658,462	\$ 4,164,672
395	Wholesale trade	62	\$ 5,641,614	\$ 10,236,333	\$ 15,881,502

Sector reflects IMPLAN industry category

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

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- **FTIG generates an estimated \$733 million in economic output and over \$564 million in Gross Regional Product (GRP), or value-added production, to the economy of Pennsylvania annually.**

Operations at FTIG affect a range of industries. Table 2 highlights the industries with the largest employment impacts generated by operations at FTIG. This list reflects employment impacts beyond the jobs located at FTIG itself. The largest impact is on jobs at hospitals, but extends across a range of retail and service sector industries including restaurants, real estate, and transportation industries. 🌟

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at FTIG. 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 3 and aspects of the analysis are described throughout the following sections.

FTIG enjoys an enviable position in Pennsylvania and within the National Guard Bureau as well. It serves as the headquarters for the Pennsylvania Depart-

ment of Military and Veteran Affairs, the Pennsylvania National Guard, and hosts other key state entities such as the Pennsylvania Department of Transportation's Eastern Training Facility, and various Army Reserve and Army National Guard units. At regional and national levels, FTIG is a core component of the National Guard's training infrastructure. For the last two years, FTIG has ranked first among the 48 National Guard training centers located throughout the continental U.S. and Puerto Rico for number of training man-days.⁴ In FY2016, the installation logged more than 740,000 man-days through the training of more than 120,000 service members and federal, state, local, and international personnel.⁵

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TABLE 3
SWOT THEMES – FORT INDIANTOWN GAP

STRENGTHS

- **Unique Mission Sets**
- **Vital Assets, Including Workforce**
- **Location**

WEAKNESSES

- **Force Protection**
- **Limited Visibility**
- **Relatively Small Size**

OPPORTUNITIES

- **Force Protection Planning**
- **Partnerships**
- **Desired Visibility**

THREATS

- **Shortages of Some Specialized Workers**

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FTIG possesses numerous competitive strengths, suggesting that the installation will be able to maintain its current strong performance into the future. These competitive advantages include a convenient location, unique facilities and capacities, forward thinking management, and strong community partnerships.

Fort Indiantown Gap's core strength stems from its excellent location in Central Pennsylvania. This site has easy access to major highways, and can be easily accessed by National Guard units in Pennsylvania and across the East Coast. It also has quick access to major metropolitan areas, including Washington D.C., Baltimore, New York, Philadelphia, and Pittsburgh. This location provides FTIG with a competitive advantage when compared to other Guard training centers with less convenient locations. Travel costs are an important factor in determining training locations, especially when many units must bring their own equipment to training centers. FTIG's physical layout and infrastructure also provide strong competitive assets.

FTIG is conveniently located, yet the region remains very rural. However, as Lebanon County has grown, encroachment is becoming a potential concern for the facility. FTIG provides one of the few easily accessible training sites for night time helicopter flights and live fire ranges. At present, FTIG is designated as a Level II Maneuver Training Center, and it can host units as large as a brigade, composed of approximately 4,000 service members.

FTIG also benefits from its diverse set of training offerings. FTIG currently provides the following training opportunities:

- *A Training and Maneuver Corridor for live fire, maneuver, vehicle and other kinds of customized training.*
- *Leadership Reaction Course*
- *Muir Army Airfield for rotary aircraft training*
- *Bollen Air-to-Ground Weapons Range*
- *Urban Warfare Training*

- *Obstacle Course*
- *Weapons Ranges*
- *Unmanned Aircraft Systems Facility*
- *Virtual Training Centers*

FTIG also hosts several Training Facilities that offer specialized courses and instruction these include:

- *166th Regiment Regional Training Institute*
- *Eastern Army Aviation Training Site*
- *Medical Battalion Training Site and Medical Simulation Training Center*
- *Northeast Counterdrug Training Center, High Risk Entry Facility and Polygraph Center*
- *Pennsylvania Air National Guard's Lightning Force Academy*
- *Regional Equipment Operators Training School (REOTS) Complex*

Because of its exceptional location and facilities, FTIG contains many strong, marketable assets that make it a premiere military training facility. However, it is important to remember that assets "don't sell themselves" and to emphasize the extraordinary customer service commitment executed by FTIG personnel and staff. Many training centers have strong capabilities, but success comes when strong capabilities are combined with effective management and a commitment to customer service. FTIG management has succeeded in this task and built a strong reputation for excellent customer service.

FTIG's leaders, both military and civilian, place great importance on providing excellent customer service and on developing new capabilities and capacities. In recent years, virtual training has assumed greater importance, supported by significant investment to improve local broadband capacity. In 2016, FTIG trained 32,000 people in its virtual training center.⁶ The team has also supported major new investments in its ranges to accommodate new weapons systems and ammuni-

tion types. For example, recent investments have created new capacities in small arms and small unit training. Finally, FTIG continues to develop other new capabilities. For example, the center was recently certified to provide air assault, rappel master, and pathfinder training, making FTIG one of only seven locations that host these trainings in the U.S. In 2017, FTIG expected to train 400 soldiers in these capabilities.

Given its convenient location, excellent facilities, and strong management capacity, FTIG is well situated to maintain and grow its current base of operations. However, future growth will be constrained by the lack of additional space. While FTIG is a sizable installation, it remains on the small side compared to many Guard or other military training centers. In the face of these space constraints, FTIG management has attempted to develop capabilities that require less open space (e.g. virtual training) and to focus on supporting existing core capacities. As former Installation Commander Colonel Robert Hepner, Jr. noted: “We have our limitations, but I think what we are capable of doing, we do it the best.”⁷ However, at the same time, base leadership has aggressively acted to address potential encroachment issues that might affect training operations.

FTIG faces some other challenges related to its physical plant. The current lack of a security perimeter is a pressing problem as there is no means to currently control access. Fortunately, solutions are on the way as the FY2017 National Defense Authorization Act contained funding to construct a new security perimeter at FTIG. This \$20 million project is underway, and



*Fort Indiantown Gap hosts
Lithuanian Land Forces Commander.*

Photo by Pennsylvania National Guard

the perimeter should be completed in 2018 or 2019. The security perimeter funding was secured with support from the local Congressional delegation, especially Representatives Bill Shuster and Charlie Dent, Chairman of the House Appropriations Subcommittee on Military Construction.

Like all training centers, FTIG always faces an uncertain budget situation. Nearly all funds for Guard training come from federal dollars as opposed to state investments. As such, FTIG’s continued success will depend on sustained Department of Defense investment in training for the Guard and Reserve. Funds for training and base operations are expected to hold steady in coming years, but additional funding would need to be secured if major investments in new facilities, capacities, or site upgrades were deemed necessary. ★

FORT INDIANTOWN GAP & CENTRAL PENNSYLVANIA

FTIG greatly benefits from close partnerships with key officials at the state and local level. At the state level, FTIG is headquarters for the Department of Military and Veterans Affairs and the Pennsylvania National Guard, and hosts many important state government functions and activities, including a home for the Lieutenant Governor. The site is state-owned, and the state has strongly supported efforts to upgrade and improve FTIG and its facilities.

FTIG's leadership is also investing significant time and resources into building closer linkages with community partners in Lebanon County and surrounding areas. Most prominently, the Lebanon County Com-

missioners and FTIG leadership — with help from the Pennsylvania Military Community Enhancement Commission — created a local defense group (LDG) with the mission “to proactively promote and enhance the economic, community, and military value of Fort Indiantown Gap.”⁸ The LDG regularly meets and has developed a strategic plan for building closer ties between FTIG and the surrounding region. However, the LDG has not yet assumed an active role in advocating for FTIG.

The LDG has identified some options for future action. Its strategic plan, based on surveys and interviews with local leaders, presents several important action items for regional leaders.⁹ As a primary goal, the



Fort Indiantown Gap hosts Lithuanian Land Forces Commander.

Photo by Pennsylvania National Guard



Fort Indiantown Gap hosts inaugural air assault preparation course. Photo by Pennsylvania National Guard

LDG intends to further highlight FTIG's local economic impacts, which are not fully understood by residents. Group leaders plan to work with FTIG leadership to "tell the story" of how the base contributes to local economic prosperity and to supporting national security as well.

This effort will also include new initiatives to increase local awareness of contracting opportunities at FTIG. At present, FTIG does not have formal processes for sharing contracting opportunities with local businesses. Thus, efforts to build local supplier relationships are needed. Opportunities would range from basic activities, like janitorial or other support services to information technology and other products/services related to FTIG's core training missions.

Finally, the LDG intends to build on FTIG's already excellent partnerships linked to environmental stewardship. Currently, the installation contains numerous sites of special environmental sensitivity. It is home to one of the largest native grassland areas in Pennsylvania, and one of the few native habitats of the Regal Fritillary butterfly. The butterfly habitat and other sites, like local fishing streams and ponds, are regularly accessed by FTIG personnel and area outdoor enthusiasts.

FTIG's leadership has won numerous awards for environmental stewardship in its nature sites and in its daily military and training operations. These awards include First Place in the 2016 Army National Guard Environmental Awards for Sustainability, and 2015 Awards for Environmental Restoration and Natural Resource Conservation.¹⁰ FTIG has built award-winning local partnerships in environmental stewardship and is especially well-known for its recent project with the Ward Burton Wildlife Foundation and the Nature Conservancy to preserve the DeHart Reservoir and Property, a pristine site covering 8,200 acres adjacent to FTIG.¹¹ This effort is especially noteworthy not only because it preserves natural habitat, but more importantly, it also protects training areas that are critical for nighttime helicopter training, one of FTIG's core activities.

FTIG attracts workers from a wide regional footprint across Central Pennsylvania. The base would benefit from closer linkages to area workforce development agencies that can assist in training and provide employees with needed critical technical skills. ✪



Fort Indiantown Gap hosts Pathfinder Course, 2018.

Photo by Pennsylvania National Guard

LOOKING FORWARD

FTIG's current leadership and management team have built an enviable reputation that has led to numerous awards and close partnerships with state and local partners. To build on this progress, the FTIG team and its partners should consider the following strategies:

- **Make a Stronger Economic Case:** While FTIG has close local partnerships in areas such as environmental stewardship, it could do a better job of promoting FTIG as a key economic asset for Central Pennsylvania. FTIG is Lebanon County's largest employer, yet its economic impacts are not widely understood in the region. The base leadership should work to create closer connections to local employers seeking contracting opportunities at FTIG. It should also consider building closer ties to local education providers and workforce development agencies. Closer region-wide cooperation with the Cumberland-York Area Local Defense Group could be helpful on this front.

- **Build on FTIG's Role as a Regional Training Center:** FTIG's training programs attract thousands of outsiders to the region every year. Regional leaders could make a more concerted effort to market Lebanon County and Central Pennsylvania to these visitors. This work would help further stimulate the local hospitality and retail sectors and perhaps attract talented workers to the region as well.

- **Continue Investing in Next Generation Capacity:** Because FTIG's site is physically constrained, base leaders must continue to develop and invest in new capabilities that help maintain FTIG's status as an in-demand training center. These include continued investments in virtual training and consideration of new capacities, such as 3-D printing or other specialized niches (e.g. recently developed air assault training capabilities.) ★

Notes

¹ Fort Indiantown Gap, "Warrior Training Grounds: Post Guide and Training Catalogue 2016"

² Matrix Design Group, "Fort Indiantown Gap Joint Land Use Study: Background Report," January 2015, 3-3

³ This analysis was specific to the impact of the National Guard training and headquarters operations located at Fort Indiantown Gap. Not included is the impact of Pennsylvania National Guard installations or facilities located elsewhere in Pennsylvania

⁴ "The Gap is Again No.1 in Training," *Lebanon Daily News*, January 12, 2017

⁵ "Gap Again"

⁶ "Gap Again"

⁷ Robert Hepner, Jr., Personal Communication, May 8, 2017

⁸ Strategic Consulting Partners. "Ft. Indiantown Gap Local Defense Group: Strategic Plan Draft," revised July 29, 2016, 3

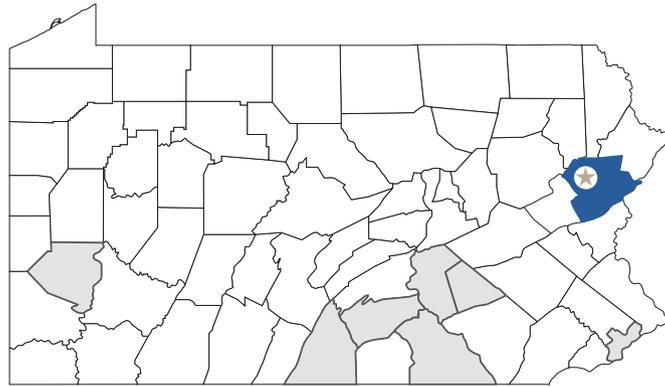
⁹ Strategic Consulting Partners, 3

¹⁰ "PAARNG - Environmental Management Awards," June 6, 2017, www.mybaseguide.com/army/83-1846-19267; Angela King-Sweigart, "Pennsylvania National Guard Places First in Environmental Competition," January 13, 2017,

www.army.mil/article/180633/pennsylvania_national_guard_places_first_in_environmental_competition

¹¹ Julianne Mattera, "Capital Region Water Approves \$9 Million Land Conservation Proposal," *Pennsylvania Real-Time News*, April 29, 2016

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



TOBYHANNA ARMY DEPOT

TOBYHANNA, MONROE COUNTY





TOBYHANNA ARMY DEPOT

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

Located in Coolbaugh Township, Monroe County, **Tobyhanna Army Depot (TYAD)** is the largest full-service electronics materials facility in the U.S. Department of Defense (DoD). TYAD has a long history of operating in northeast Pennsylvania, and it is a major driver of the regional economy. TYAD is the region's largest industrial employer. Depot operations alone employ just under 3,000, providing high paying jobs requiring a well-trained workforce. Over 97% of depot employees are Pennsylvania residents. Major tenants at the installation employ just under 500 additional workers.

TYAD has a strong reputation as DoD's premier joint provider of logistics support for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance — what is known in the field as C4ISR. C4ISR includes today's most modern electronic weapon systems and the enabler of all mili-

tary operations and support missions. Weapon systems such as Lightweight Counter-Mortar Radars, Satellite Tactical Terminals, and the Single Channel Ground and Airborne Radio System are maintained by the highly skilled workforce of Tobyhanna.

TYAD is one of eight depots and arsenals operating under the Army Materiel Command. The facility, the world's largest electronics facility according to TYAD management, is the Army's designated leader for C4ISR and Logistics Support, and is engaged in a number of core functions, including:

- **Sustainment: Providing support and technical assistance to warfighters in the field**
- **Overhaul & Repair: Testing, repairing, and updating key systems**

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- **Engineering:** Providing services such as design, development, prototyping, and integration
- **Fabrication/Manufacturing:** Production of electronic and mechanical assemblies in support of C4ISR
- **Systems Integration:** Designing new systems and inserting new technology into legacy systems

TYAD is home to numerous activities and tenants. Army operations represent the largest share of the base's tenants, but TYAD also hosts major operations of the Defense Logistics Agency (DLA), the Defense Imagery Management Operations Center, and several Army Reserve and National Guard units. TYAD has received several key designations for its joint electronics operations, including as an Army Center of Indus-

trial and Technical Excellence for C4ISR and as an Air Force Technology Repair Center for Command, Control, Communications, Computers, and Intelligence and Tactical Missiles.

In addition, the depot provides extensive support to the U.S. Marine Corps, the U.S. Navy, and other federal agencies. Thanks to its diverse capabilities and missions, TYAD is home to a sizable base of activities. The facility covers 1,336 acres, with more than 2.4 million square feet of building space. TYAD and tenant commands employ 3,388 and have a major economic impact on the entire northeast Pennsylvania region. Annually, TYAD undertakes approximately \$500 million in new contracting activity, and it supports operations in 30 countries. ⚙️

Spc. Jerrod Luetje, left, engineer equipment mechanic, Spc. Zach Houseman, generator mechanic, and Allan Payne, general equipment mechanic, install new fuel lines and rewire a control panel on a Satellite Transportable Terminal generator.

U.S. Army Photo by Jim Lentz



TABLE 1

EMPLOYMENT SUMMARY – TOBYHANNA ARMY DEPOT

DEPOT OPERATIONS	2,924
U.S. Army Test, Measurement & Diagnostic Equipment Support Center	25
U.S. Army Reserve 80th Training Command – High Tech	15
U.S. Army Medical Materiel Agency	37
U.S. Army Health Clinic	11
Syracuse Recruiting Battalion	20
Logistics Support Activity Packaging, Storage & Containerization Center	32
Defense Logistics Agency Distribution	136
Defense Imagery Management Operations Center	12
Defense Contract Management Agency	24
Defense Communication & Army Transmission Systems	17
Defense Commissary Agency	33
Civilian Human Resources Agency N/EU Region	30
Army Contracting Command – Aberdeen Proving Ground	37
Other Tenant Commands*	35
SUBTOTAL – TENANTS	464
TOTAL	3,388

*Data as of September 30, 2016; Employee counts do not include workers who work off-post; *Tenants with less than 10 employees
Source: University of Pittsburgh Center for Social and Urban Research, 2018*

BACKGROUND & HISTORY

The U.S. Army traces its presence at Tobyhanna back to 1912, when the site served as an artillery training camp.¹ Over the first half of the 20th century, the site served many functions, including military training, a prisoner of war camp, and a storage facility. In 1953, the Army selected the Tobyhanna site for the creation

of the Tobyhanna Signal Depot. This decision cemented the site’s role as the Army’s leading center for what is now known as C4ISR and growth from a regional to a worldwide mission.

Over the past several decades, TYAD has seen steady growth in the range of activities undertaken at the base and in the number of different tenants using

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the facility. Much of this growth has occurred even as the Army and DoD have reduced the size and footprint of their depot and arsenal activities. TYAD's recent experiences with the Base Realignment and Closure (BRAC) process are instructive (see Table 2). A number of maintenance depots, such as Vint Hill Farms (Virginia) and the Lexington Bluegrass Depot (Kentucky), have been closed or re-aligned in the five rounds of military base closures held between 1988 and 2005. Over this same time period, TYAD has actually grown and has absorbed new missions and

activities. For example, in 1995, TYAD took over a new ground communications-electronics maintenance mission previously performed at the U.S. Air Force Sacramento Air Logistics Center. During that same BRAC round, TYAD also took over a new guidance and control system repair workload (for three tactical missile systems) previously based at the Letterkenny (Pennsylvania) Army Depot. In 2005, the U.S. Navy and Marine Corps shifted their electro-optics, generator, fire control, radar, and radio workload from bases in California to TYAD. ☆

TABLE 2

MAJOR CHANGES – TOBYHANNA ARMY DEPOT²

BRAC 1988	Recommended transfer of communications-electronics mission to TYAD from Bluegrass Army Depot in KY.
BRAC 1991	Recommended closure of the Sacramento Army Depot, CA, and directed that its workload be competed among the Air Force Sacramento Air Logistics Center and five Army depots; TYAD won four of the five workload packages it was permitted to bid.
BRAC 1993	Recommended closure of Vint Hill Farms, VA, and the transfer of the maintenance and repair function of the U.S. Army Communication-Electronic Command's Intelligence Material Maintenance Center to TYAD.
BRAC 1995	Recommended that all McClellan [Air Force Base, CA] (home to the USAF Sacramento (CA) Air Logistics Center) common-use ground communication/ electronics maintenance work be transferred to TYAD. DoD recommended realigning Letterkenny (PA) Army Depot by transferring the towed and self-propelled combat vehicle mission to Anniston (AL) Army Depot and missile guidance system workload to TYAD. Commission agreed, adding that missile guidance system workload could also go to "private sector commercial activities."
BRAC 2005	Recommended relocating workloads from Naval Weapons Station Seal Beach (CA), Marine Corps Logistics Base Barstow (CA), and Red River Army Depot (TX) to Tobyhanna. Also recommended consolidation of supply, storage, and distribution functions at all DoD maintenance depots, to include TYAD, with the DLA depot co-located with the maintenance depot; approximately 40 employees transferred from the TYAD employment roll to DLA, but remained at Tobyhanna, PA.



Tobyhanna Army Depot personnel load the Integrated Air and Missile Defense trailer onto a C-130 Hercules aircraft mockup to verify all clearance requirements are met.

U.S. Army Photo by Steve Grzedzinski

ECONOMIC IMPACT

The IMPLAN model was used to calculate the total economic impact of TYAD for two sub-regions within Pennsylvania: a seven-county regional area of northeast Pennsylvania and the remaining 60 counties of Pennsylvania. In addition to Monroe County, where TYAD is located, the seven-county region defined here includes the Pennsylvania counties of Carbon, Lackawanna, Luzerne, Pike, Schuylkill, and Wayne. The model estimates the direct, indirect, and induced impacts that accrue because of operations located at TYAD.

Direct impacts are the employment and spending associated with the operations at the installation, while indirect impacts, sometimes called intermediate impacts, are generated by the supply chain requirements and industry linkages of the activity being analyzed. Induced economic impacts derive from the spending patterns of employees and service members. TYAD staff provided both personnel and budget data for TYAD

operations, and comparable data for tenants located at the installation. Personnel data reflected September 30, 2016, and budget data is for the 2015–16 federal fiscal year.

A summary of economic impacts estimated to occur within the seven-county northeast Pennsylvania region includes:

- **Overall, operations at TYAD generate 7,341 jobs and just under \$472 million in labor income annually.**
- **TYAD accounts for just under \$2 billion in overall economic output annually, generating just under \$839 million in Value Added production (Gross Regional Product).**

A summary of economic impacts across Pennsylvania includes:

- **Overall, operations at TYAD generate 8,306 jobs and**

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TABLE 3

ECONOMIC IMPACT SUMMARY – TOBYHANNA ARMY DEPOT

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
NORTHEAST 7-COUNTY REGION	Direct Effect	3,388	\$ 292,347,997	\$ 543,626,365	\$ 1,444,228,264
	Indirect Effect	1,756	\$ 92,226,259	\$ 144,320,205	\$ 280,910,296
	Induced Effect	2,197	\$ 87,328,544	\$ 150,940,008	\$ 274,837,851
	Total Effect	7,341	\$ 471,902,800	\$ 838,886,578	\$ 1,999,976,411
	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
PENNSYLVANIA TOTAL	Direct Effect	3,388	\$ 292,347,997	\$ 543,626,365	\$ 1,444,228,264
	Indirect Effect	2,305	\$ 138,408,892	\$ 215,296,007	\$ 435,339,825
	Induced Effect	2,613	\$ 110,396,832	\$ 189,154,757	\$ 341,088,873
	Total Effect	8,306	\$ 541,153,720	\$ 948,077,129	\$ 2,220,656,962

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

TABLE 4

TOP 10 INDUSTRIES AFFECTED – TOBYHANNA ARMY DEPOT

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
506	Electronic and precision equipment repair and maintenance	742	\$ 75,585,342	\$ 84,718,677	\$ 108,510,741
335	Relay and industrial control manufacturing	715	\$ 63,791,004	\$ 82,918,448	\$ 246,092,084
301	Electronic computer manufacturing	712	\$ 63,000,569	\$ 228,113,792	\$ 792,466,357
311	Electronic connector manufacturing	710	\$ 62,749,229	\$ 124,824,102	\$ 248,056,560
395	Wholesale trade	513	\$ 47,042,889	\$ 85,356,197	\$ 132,428,732
465	Business support services	289	\$ 23,874,712	\$ 23,028,918	\$ 17,837,336
57	Construction of new commercial structures, including farm structures	226	\$ 13,456,923	\$ 16,364,425	\$ 30,790,294
461	Management of companies and enterprises	182	\$ 25,269,160	\$ 31,044,768	\$ 49,345,608
482	Hospitals	166	\$ 13,200,915	\$ 14,608,942	\$ 25,473,843
501	Full-service restaurants	161	\$ 3,491,838	\$ 3,923,540	\$ 7,580,527

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

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just over \$541 million in labor income annually.

- **TYAD accounts for \$2.2 billion in overall economic output annually, generating \$948 million in Value Added production (Gross Regional Product).**

These results do not include additional economic impacts outside of Pennsylvania. Monroe County is adjacent to New Jersey, and both supply chain impacts and the impact of spending by workers residing in New

Jersey, along with any spending or commuting impacts in other states, would be additional to the economic impacts summarized here.

The economic impacts of TYAD are spread across multiple industries throughout Pennsylvania. Table 4 summarizes the top 10 industries estimated to be impacted by operations at TYAD across Pennsylvania. The industries most affected are electronic and precision equipment repair and maintenance, as well as various manufacturing sectors. ☆

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at TYAD. 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 5, and aspects of the analysis are described throughout the following sections.

TYAD sits in a competitive position to solidify its current base of business and to consider expanded missions and activities. In particular, TYAD benefits from several critical competitive strengths, including a desirable location, world class facilities (including radar ranges, anechoic chambers, and certified cleanrooms) and capabilities, strong management capacities, and easy access to a qualified workforce.

TYAD's world-class facilities benefit greatly from their location in northeast Pennsylvania. While TYAD's actual location is rural, the facility has easy

access to nearby metro areas of Wilkes Barre/Scranton and the Lehigh Valley. It is also close to large urban centers like New York City and Philadelphia, and has easy road access to locations throughout the East Coast. TYAD also has easy access to major DoD logistics centers, such as Defense Logistics Agency Susquehanna, McGuire Air Force Base (AFB), and Dover AFB, which are closely integrated with its core missions.

TYAD's physical plant is efficiently configured to its mission; it encompasses 1,336 total acres with 2.4 million square feet of building space. However, the facility has room to grow with available building sites and a number of work areas that are currently underutilized. In addition, TYAD has no current issues with encroachment, and neighboring townships have closely partnered with base leadership to forestall any potential encroachment challenges.

TYAD's leadership has continued to support major investments to build new infrastructure and to upgrade existing facilities and equipment. A current upgrade of Building 1A, the depot's largest building encompassing 750,000 square feet of work space, will

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soon be completed, providing a state-of-the-art work environment.³ Other recent investments have included a new radar test facility, a SATCOM Antenna Test area, and a new wastewater treatment plant. In all, \$697.1 million in infrastructure investments occurred between 2007 and 2017.⁴ Over the next five years, TYAD plans to invest an additional \$152.7 million in a host of projects, including renovations to Building 5-1, an updated fire station, and renovations to the TYAD headquarters facility.

TYAD's facility and equipment modernization and productivity investments are closely linked to the bottom line of providing high quality support to the warfighter. For years, TYAD has modernized its physical plant to perform many operations "under one roof." Today, that objective has been met, as 61% of base operations occur there. This generates major efficiency and cost savings as it reduces costs and time related to packaging and movement of items, systems, and personnel.

Beyond these physical assets, TYAD also benefits from its reputation for managerial and operational excellence. TYAD's leaders note that the facility is "run like a business." Like all depots, TYAD does not operate with an annual appropriation or budget line item. Instead, its work is funded via the Army's Working Capital Fund, where facilities operate as independent business units within the Army's Organic Industrial Base (OIB).⁵ The TYAD team prides itself on serving as the lowest cost operator within the OIB.

TYAD's efficient and effective operations are widely recognized within the Army and DoD, and have also been recognized by many outside entities. TYAD management invests heavily in continuous process improvements, and its operations have received the highest certifications, such as ISO 9001, AS 9100, and OHSAS 18001. TYAD personnel are trained in Lean Six Sigma, and there are currently 6 Lean Six Sigma Black Belts and 24 Green Belts on staff.⁶ TYAD operations have received seven different Shingo Awards for

TABLE 5
SWOT THEMES – TOBYHANNA ARMY DEPOT

STRENGTHS

- **Desirable Location**
- **World Class Facilities and Diverse C4ISR Skills/Capabilities**
- **Strong Management Capacities**
- **Well Trained Workforce**
- **Partnerships with Local Universities and Colleges**

OPPORTUNITIES

- **Consolidation of Work from Other Depots**
- **New Business Lines and Markets (e.g. Software, Internet of Things)**
- **Synergy with Local Logistics/Distribution Activities**

WEAKNESSES

- **Small Size of Installation**
- **Decline in Workload Results in Increasing Personnel and Operational Costs**

THREATS

- **Depot Privatization Efforts**
- **Decline in Workload Due to Technological Change**

Electronics Technician Matt Mills, left, and Electronic Integrated Systems Mechanic Don Christman remove an AN/FRC-181 Milstar Air Force Command Post Terminal radome from the roof of an Extremely High Frequency Antenna Support Shelter.

U.S. Army Photo by Jim Lentz



Operational Excellence.⁷ Finally, the TYAD facility and management team have won numerous awards for superior performance in terms of occupational health and safety and environmental stewardship.

While TYAD has enjoyed a decade of growth and expansion, its operations do face some potential challenges. Impacts from world events or a decline in operations tempo could lead to potential downsizing of TYAD's workforce and work activities. Like all military installations, TYAD faces the potential of a future BRAC round or other steps to reduce military infrastructure and to downsize the public depot and arsenal system. TYAD has actually gained work and missions from previous BRAC rounds, so TYAD is poised to grow as other facilities are closed or consolidated. Nonetheless, the prospect of future base closures does loom on the horizon as a potential threat.

Business and market transformations are equally pressing. As the U.S. military presence in the Middle East has shrunk, TYAD's workload has declined. At present, the TYAD employee base and workload are roughly half as large as a decade ago. With fewer global military operations underway, the need for Maintenance Repair and Overhaul and other support services has declined. Meanwhile, the increasing efficiency of new military equipment further dampens demand for TYAD's support and sustainment services. Parts and components last longer and have less need for regular upgrades and maintenance. Today's gear is smaller and more reliable, and often disposable as well.

For example, Vietnam-era military radios required upgrade and maintenance every 250 hours. Today's handheld radios operate for thousands of hours and are typically disposed of rather than undergoing repair.⁸

Utilizing the breadth and depth of its C4ISR experience, TYAD management has aggressively pursued new missions and projects. It has developed several important new business lines, including new work in sectors such as software development, cybersecurity, and satellite ground stations. These efforts have been successful, a core component of TYAD's positioning as a "one stop shop" for total logistics support. TYAD management contends that they "can do it all," i.e. provide support and sustainment across a diverse array of systems and programs.

This flexibility and diverse market range are core strengths for the TYAD team, but they may also present potential challenges. Without a widely recognized core competency and a diverse mix of projects and business lines, TYAD faces numerous competitors in both the private and public sector. At the same time, TYAD's smaller operations may face consolidation pressures in future discussions related to BRAC or military base downsizing more generally. To date, TYAD leadership has successfully weathered these challenges, and the team has succeeded in effectively managing market decline. Nonetheless, continued vigilance and focus on TYAD's operational strengths will be required in the future. ★

TOBYHANNA ARMY DEPOT & THE REGION

TYAD's location provides it with a significant workforce advantage. Unlike other defense firms or military installations, TYAD does not suffer from a workforce shortage. Instead, TYAD is "an employer of choice" in northeast Pennsylvania, and faces few challenges in terms of attracting and retaining talent. TYAD pays well above regional averages — median annual salaries of \$57,400 far exceed the regional average of \$41,080. Employee retention rates are high, with the current workforce averaging 13 years of service. Most base employees commute to TYAD from as far as 20–30 miles away, providing yet another indication that these jobs are widely desired in the region. The majority of current employees reside in and commute from either Lackawanna or Luzerne County. At TYAD, 33% of the workforce are veterans. There are over 1,000 employees with associate, bachelor's, master's, and doctorate degrees.

TYAD has strong partnerships with two-year technical colleges, which have developed electronics curricula that support future TYAD needs/workloads, and result in significant hiring. TYAD utilizes a Pathways program which allows interns from local colleges and universities to obtain needed skillsets, such as software and engineering skills. This often results in the permanent hiring of students upon graduation.

As an organization devoted to continuous process improvement, TYAD has over 30 employees who have been awarded with green, black, and master Lean Six Sigma black belts. An additional 300 employees are certified in business, software and networking programs such as the Project Management Certification Program (PMP), IT - CompTIA Security Plus, IT - CompTIA A+, 901 and 902 Certification Course, IT -

CompTIA NETWORK PLUS, and APCIS – CPIM Certification and using those skills world-wide.

TYAD benefits from strong economic development support via the Blue Ribbon Task Force, convened by the Northeast Pennsylvania Alliance (NEPA), which serves as the depot's Local Defense Group. The Task Force is a public-private partnership, which was formed in 1992 in anticipation of the 1993 BRAC round. It includes representatives from elected officials, economic development, education, labor organizations, workforce development, and travel/transportation organizations, among others. The Task Force helps connect TYAD to local businesses and to community leaders and produces a regular series of reports detailing the depot's regional economic impact.⁹ The group has engaged in creative marketing campaigns and outreach efforts to garner support for the installation, especially in response to the threat of a BRAC.¹⁰

The Blue Ribbon Task Force and NEPA also played a critical role in helping TYAD deal with potential encroachment issues. Thanks to this partnership, NEPA — with support from the Pennsylvania Military Community Enhancement Commission — arranged to purchase a 40-acre parcel of land adjacent to TYAD in 2015.¹¹ This property had been open to commercial development, which many feared would encroach on current TYAD operations. As a result of this land purchase, the site is now secured, providing an even larger buffer for TYAD activities.

TYAD has also developed strong community partnerships. It supports local organizations such as veterans groups, groups that support wounded warriors, STEM programs, local schools, the Red Cross, and other charitable causes. Unique community events are held at TYAD, including the annual holiday charity

drive: Operation Santa Claus. About 600 children and other area residents served by more than 20 regional agencies participate in the charity drive. The drive is supported by fund-raising events at the depot and contributions from regional businesses. ★



LOOKING FORWARD

TYAD's leadership has pursued a number of strategies to help position the facility for future growth and expansion. These efforts have been successful and should continue. Further investment and support should be targeted in the following areas:

- *Develop New Market Capabilities: As TYAD's traditional market for hardware support declines, the facility must develop new market capabilities. This work is already underway and generating new business opportunities. At present, cybersecurity is among the fastest growing defense sub-markets,¹² and many military installations are competing to become cyber-security "centers of excellence." TYAD has opted to combine a new focus on software with its traditional strengths in hardware repair.¹³ Under a new partnership with the Army's Software Engineering Center, TYAD has developed new capabilities to mitigate the risks of cyber-attacks on military components and weapons systems. These new ca-*

Electronics Mechanic Therese Paxton moves the radio frequency absorption panels of the depot's Near Field Probe test system into place.

U.S. Army Photo by Jim Lentz

pabilities are already opening many new business opportunities for TYAD's Information Management Division. Similarly, TYAD's C4ISR focus presents expanded opportunities to support U.S. allies through the U.S. Department of State Foreign Military Sales Program, especially with respect to increasing the interoperability and communications of equipment among friendly foreign nations and DoD. Additional efforts to attract other activities to TYAD, or to encourage the location of new program management or program executive offices at the base, could also help bring new work and new capabilities to the depot.

- *Strengthen Regional Logistics and Distribution Capabilities: While distribution and logistics are not the primary mission of TYAD, these capabilities matter to the base's success and to the success of major tenants, such as DLA. As such, the facility would greatly benefit from development of a Pennsylvania Logistics Center of Excellence. The center would build*

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a common orientation around the state's concentrated strength in transportation, logistics, and distribution, and support new education, training, and business development opportunities. The center's work would also align well with Northeast Pennsylvania's growing capabilities in this field.¹⁴

- *Invest in Unique Capabilities: TYAD is a unique facility and is home to equipment and specializations that are not available elsewhere in the public depot system. For example, TYAD is especially strong in the area of testing, with roughly 14,000 pieces of testing equipment on site.¹⁵ These unique capabilities, such as an anechoic test chamber for radars, exist in few other locations. They provide TYAD with unique capacities*

within the DoD, and also provide potential private sector partnering opportunities as well.

- *Strengthen Regional Talent Pipelines: While TYAD remains a regional "employer of choice," it must continue to invest in developing new talent within its regional labor pool. This work is occurring and the facility has close partnerships with local high schools, community colleges, and area universities, such as Penn State University, Lehigh University, University of Scranton, Johnson College, Marywood University, and East Stroudsburg University. These partnerships are developing new talent with essential technical skills, as well as managers with new capabilities in emerging areas such as supply chain management and logistics. ☆*

Notes

¹ "History of Tobyhanna," Tobyhanna Army Depot, last updated October 26, 2017, tobyhanna.army.mil/about/history/history.html

² 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*

³ Kevin Kunzmann, "\$46M Tobyhanna Army Depot Project Will Upgrade 60-Year-Old Building," *Pocono Record*, June 14, 2015; See also Jacqueline Boucher, "Building 1A Modernization Nears Completion," *Tobyhanna Reporter*, June 13, 2017, 4-5

⁴ "Tobyhanna Army Depot: Command Perspectives" (PowerPoint Presentation, June 14, 2017)

⁵ For background, see Kimberly Hanson, "The Army's OIB: A National Security Insurance Policy," November 18, 2015, army.mil/article/158816/The_Army_s_OIB_a_National_Security_Insurance_Policy

⁶ "Tobyhanna Army Depot: Command Perspectives" (PowerPoint Presentation, June 14, 2017)

⁷ "The Shingo Prize," Shingo Institute, accessed January 12, 2018, shingoprize.org

⁸ Robert K. Ackerman, "Depot Service Changes with Technology," *Signal AFCEA Magazine*, February 1, 2013

⁹ NEPA Alliance, "The Economic Impact of Tobyhanna Army Depot Based on Operation in FY 2015 and Construction in FY 2014 and 2015," November 2016

¹⁰ "Our History," Blue Ribbon Task Force, accessed January 12, 2018, supporttobyhanna.org/our-history

¹¹ Technically, the predecessor to the Pennsylvania Military Community Enhancement Commission provided support

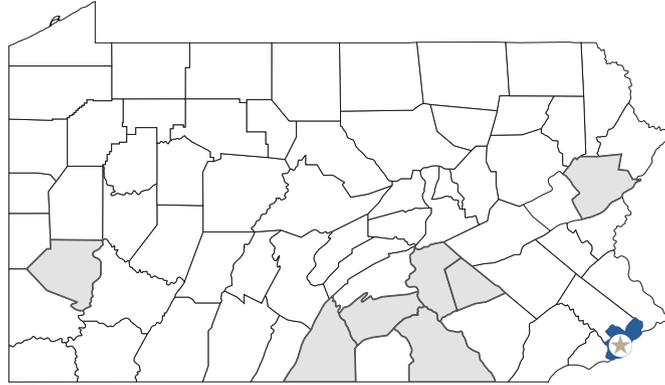
¹² Jason Miller, "Federal Spending on Technology Could Reach \$95 Billion in 2018," *Federal News Radio*, May 24, 2017

¹³ Jacqueline Boucher, "Tobyhanna Expands Capability to Include Software Support," June 6, 2016, army.mil/article/169200/tobyhanna_expands_capability_to_include_software_support

¹⁴ "Northeast Pennsylvania Intelligence Report," *Site Selection Magazine*, September 2017

¹⁵ Robert K. Ackerman, "Depot Service Changes with Technology," *Signal AFCEA Magazine*, February 1, 2013

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



NAVAL SUPPORT ACTIVITY

PHILADELPHIA





NAVAL SUPPORT ACTIVITY PHILADELPHIA

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

Naval Support Activity (NSA) Philadelphia is located on 135 acres in northeast Philadelphia. NSA Philadelphia and the Philadelphia Navy Yard Annex are component commands of NSA Mechanicsburg, which facilitates efficiency in installation operations. NSA Philadelphia is host to a broad range of tenant commands. Major tenants include multiple organizations within the Defense Logistics Agency (DLA) and Navy Supply Systems Command. Additional tenant commands include the headquarters for the Philadelphia region Navy Recruiting Command (NRD Philadelphia) and an operations center for the Navy's Office of Civilian Human Resources, among others.

DLA Troop Support specializes in delivering sustenance, clothing and textiles, construction equipment, and medical and industrial hardware supplies

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TABLE 1

MAJOR TENANT COMMANDS NAVAL SUPPORT ACTIVITY PHILADELPHIA

- DLA Troop Support**
- DLA Aviation Procurement Operations**
- DLA Document Services**
- Navy Supply Systems Command – Weapons Systems Support**
- Navy Supply Systems Command – Fleet Logistics Center**
- Defense Contract Management Agency – Navy Special Emphasis Operations**
- Navy Recruiting District Philadelphia HQ**
- Army Office of Health and Heraldry**
- Navy Office of Human Resources**



NSA Philadelphia provides common base operating and support services to Navy and DoD tenant activities as directed by Commander, Navy Region Mid-Atlantic. The installation, located in northeast Philadelphia, has 38 buildings totaling more than 2.25 million square feet of space on a 135-acre complex. The primary mission of the tenants is DoD logistics support.

Image courtesy of NSA Philadelphia

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to global warfighters. While Philadelphia is no longer a hub for the operating forces of the Naval Aviation enterprise, the Navy Supply Systems Command bases its Weapons Systems Support organization at the installation while the fleet logistics operations center supports Department of the Navy operations.

The Navy's Fleet Logistics Center provides wholesale and Navy-owned repairable and consumable material at ashore activities worldwide. NRD Philadelphia is responsible for recruiting new military accessions to the U.S. Navy from across eastern Pennsylvania, New Jersey, and Delaware. ★

BACKGROUND & HISTORY

The multifaceted missions of NSA Philadelphia derive from historic support of the Philadelphia region to both the Navy aviation enterprise and the role Philadelphia has played in supplying the nation's armed forces since their very inception. From the 1880s, the Schuylkill Arsenal, later renamed the Philadelphia Quartermaster Depot, operated at Grays Ferry Avenue and Washington Avenue, producing clothing and supplies for the military services. The Naval Aircraft Factory was constructed at the Philadelphia Navy Yard in 1917, which later expanded to include the Henry C. Mustin Naval Air Facility in 1926. The facility produced planes for the U.S. Navy during World War I and shifted into experimental research and design after the war. Regional expansion of the Navy during World War II included the commissioning of the Naval Air Station at Willow Grove (Horsham, Pennsylvania) in 1943, and the 1944 purchase of the Brewster aviation

factory in Philadelphia, subsequently converted into the Naval Air Development Center at Warminster, both north of Philadelphia. The Navy Aviation Supply Depot was moved out of the Philadelphia Navy Yard to Northeast Philadelphia in 1941 and became the center for Navy aviation logistics through World War II. The Philadelphia Quartermaster Depot expanded during World War I and relocated to South 20th Street in Philadelphia. Later renamed the Defense Personnel Support Center, operations were relocated to NSA Philadelphia following the final recommendations of the 1993 Base Realignment and Closure (BRAC) Commission.¹

Previous BRAC rounds have increased the workforce located at NSA Philadelphia, as consolidations and relocations added to the use of the facility. Table 2 provides an overview of the major changes to NSA Philadelphia that resulted from BRAC recommendations. ★

TABLE 2

MAJOR CHANGES – NAVAL SUPPORT ACTIVITY PHILADELPHIA²

BRAC 1993	Recommended relocating the Defense Personnel Support Center and tenant activities from downtown Philadelphia to the Aviation Supply Office compound at NSA Philadelphia.
BRAC 1995	Recommended disestablishing the Defense Industrial Supply Center and creating a single Inventory Control Point for the management of troop and general support items at the Defense Personnel Support Center at NSA Philadelphia.
BRAC 2005	Recommended realigning Human Resource Service Center-Northeast in downtown Philadelphia by relocating the Civilian Personnel Office to NSA Philadelphia.

ECONOMIC IMPACT

This economic impact analysis quantifies the potential impact on employment and economic output of all federal activities located at NSA Philadelphia. This could be interpreted as the result if the installation were to be disestablished and the operations of all tenant commands relocated outside of Pennsylvania. The IMPLAN model was used to estimate the total economic impact of NSA Philadelphia including direct, indirect, and induced impacts that accrue within Pennsylvania. Direct impacts are the employment and spending associated with tenants at NSA Philadelphia, 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. Staff of NSA Philadelphia provided data on the employment of installation tenants in 2016; results reflect 2016 economic impact.

Table 3 is a summary of annual economic impacts of NSA Philadelphia broken down by direct, indirect, and induced sources.

- Overall, activities at NSA Philadelphia generate 7,533 jobs within Pennsylvania, and over \$653.8 million in labor income annually.

TABLE 3
ECONOMIC IMPACT SUMMARY – NAVAL SUPPORT ACTIVITY PHILADELPHIA

	IMPACT TYPE	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
CITY OF PHILADELPHIA	Direct Effect	4,547	\$ 439,423,191	\$ 534,933,401	\$ 773,491,957
	Indirect Effect	903	\$ 92,019,998	\$ 132,924,866	\$ 197,112,755
	Induced Effect	1,678	\$ 96,089,704	\$ 160,824,751	\$ 255,789,775
	Total Effect	7,128	\$ 627,532,892	\$ 828,683,019	\$ 1,226,394,487
PENNSYLVANIA TOTAL	Direct Effect	4,547	\$ 439,423,191	\$ 534,933,401	\$ 773,491,957
	Indirect Effect	1,109	\$ 107,466,546	\$ 152,406,137	\$ 232,071,732
	Induced Effect	1,877	\$ 106,903,574	\$ 178,069,071	\$ 287,873,348
	Total Effect	7,533	\$ 653,793,310	\$ 865,408,610	\$ 1,293,437,037

TABLE 4

TOP 10 INDUSTRIES AFFECTED – NAVAL SUPPORT ACTIVITY PHILADELPHIA

SECTOR	DESCRIPTION	EMPLOYMENT	LABOR INCOME	VALUE ADDED	OUTPUT
465	Business support services	2,333	\$ 67,216,899	\$ 60,628,560	\$ 138,944,555
461	Management of companies and enterprises	1,744	\$ 354,686,109	\$ 422,665,372	\$ 580,800,785
464	Employment services	340	\$ 14,860,078	\$ 20,620,156	\$ 26,268,199
536	Federal government, military	276	\$ 13,658,478	\$ 40,273,711	\$ 40,273,712
501	Full-service restaurants	210	\$ 4,559,918	\$ 5,123,668	\$ 9,899,251
440	Real estate	1965	\$ 5,398,827	\$ 37,560,139	\$ 47,923,248
482	Hospitals	194	\$ 15,442,279	\$ 17,089,373	\$ 29,799,009
502	Limited-service restaurants	154	\$ 2,945,375	\$ 7,265,672	\$ 12,622,823
503	All other food and drinking places	120	\$ 3,414,975	\$ 2,871,676	\$ 4,869,251
400	Retail - Food and beverage stores	117	\$ 3,377,524	\$ 4,496,261	\$ 7,043,715

Sector reflects IMPLAN industry category

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

- 7,128 of these jobs, and \$627.5 million in labor income annually, are estimated to be generated within the City of Philadelphia.

- Activities at NSA Philadelphia represent \$1.29 billion in economic output and generate \$865 million in Gross Regional Product (GRP), or value-added production, within Pennsylvania each year.

The direct, indirect, and induced economic impacts are spread across industries. While virtually all

staff at NSA Philadelphia are federal civilian employees or military service members, 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 4 highlights the top 10 industries impacted as estimated by the IMPLAN model. Highest on the list are business support services and management of companies and enterprises. ☆

COMPETITIVE ASSESSMENT

The sections that follow originate from an analysis of strengths, weaknesses, opportunities, and threats (SWOT) at NSA Philadelphia. 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 5, and aspects of the analysis are described throughout the following sections.

Each of the major tenants at NSA Philadelphia have highly specialized missions that rely on an equally specialized workforce with deep expertise in their re-

spective fields. The mix of tenants at NSA Philadelphia makes it a major hub of Department of Defense (DoD) talent in critical fields of acquisition, logistics, and aviation program management, among others. The Navy Supply Systems Command bases its Weapons Systems Support organization at the installation, while the fleet logistics operations center supports Department of the Navy operations. The installation's largest tenant, DLA Troop Support, is responsible for supplying sustenance, clothing/textile, construction and engineering equipment, and medical supplies to combatant commands worldwide. DLA Troop Support is currently constructing a new headquarters building on the installation; its completion is expected in May 2019. The building will be a four-story LEED (Leadership in Energy and Envi-

TABLE 5

SWOT THEMES – NAVAL SUPPORT ACTIVITY PHILADELPHIA

STRENGTHS

- Career Federal Workforce in Multiple Specialized Fields
- Access to Philadelphia Regional Labor Force

WEAKNESSES

- Urban Location Limits Expansion Opportunities Beyond Current Size
- Force Protection Challenges of Urban Location

OPPORTUNITIES

- Cooperation with City and Other Partners
- Transportation, Distribution, and Logistics Cluster Enhancement
- Local Defense Group (Philadelphia Industrial Development Corporation)

THREATS

- Potential Consolidation of Navy Organizations in Fleet Concentration Areas

Rendering of the new DLA Troop Support headquarters building at NSA Philadelphia, to be completed in May 2019.

Image courtesy of NSA Philadelphia



ronmental Design) certified building using Low Impact Development features to manage stormwater runoff.

Smaller tenants, including the Defense Contract Management Agency's office for Navy Special Emphasis Operations, have equally specialized missions. This one office supports federal contracting and acquisition in highly specialized fields of nuclear propulsion, deep submergence systems, aviation launch and recovery systems, and other programs. The smaller, but unique mission of the Army's Office of Clothing and Heraldry provides services with all heraldry products including the presidential flag. Across the spectrum, these tenant commands have built a nearly irreplaceable core of talent located in Philadelphia and support a broad range of DoD missions.

As the workplace of over 4,500 people, NSA Philadelphia is a major part of a cluster of federal jobs that together represent the 3rd largest employer in Philadelphia County.³ The majority of these workers are career federal civilian employees who have built up decades of experience in their respective specialties and who have deep roots across the greater Philadelphia region. The stability of this workforce and its flexibility draws from the strength of the multi-state Philadelphia Metropolitan labor market. The nearly 3.2 million

workers in the Philadelphia Metropolitan Statistical Area make it the 8th largest labor market in the U.S.⁴ Sustaining this workforce will be a challenge — as it will be across the federal workforce nationally — as baby-boomers retire and will have to be replaced by new hires. The size and breadth of the Philadelphia regional labor market provides clear competitive advantages to the major tenants of NSA Philadelphia in their recruiting efforts toward sustaining their core workforces.

Easy access to the northeast corridor and the transportation options at the Philadelphia International Airport are additional advantages of the Philadelphia location — especially for the major commands at NSA Philadelphia in their broad missions supporting DoD operations worldwide. Several tenants' strengths in logistics, combined with proximity to major transportation nodes, make NSA Philadelphia another vital piece of Pennsylvania's core capabilities in military logistics, distribution, and transportation. Philadelphia is not only a major labor market, but home to a significant defense industry and multiple institutions of higher education that regularly partner for defense procurement as well as research and development. Expanded partnerships with these institutions

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can increase future workforce recruiting and procurement efforts supporting Navy missions in Philadelphia and across the nation.

NSA Philadelphia faces some challenges and external threats. Located in a densely populated neighborhood within the City of Philadelphia, NSA Philadelphia has limited expansion opportunities outside of its current footprint. Tenant commands have

been able to overcome this by ongoing improvement of existing structures on site. Additionally, with the closure of the Philadelphia Naval Station and the Philadelphia Naval Shipyard, the overall presence of the Navy in Philadelphia is much smaller than it was two decades ago. Any effort by the Navy to further consolidate operations at larger fleet concentration areas could affect the future of NSA Philadelphia.⁵ ✪

A DLA Troop Support Flag Room embroiderer lets DLA Foreign Policy Advisor Dolores Brown sign a presidential flag in-the-making, while DLA Senior Enlisted Leader Army Command Sgt. Maj. Charles Tobin looks on during a visit to the organization in 2015. This is the only place where the flags of the president and vice president are made; 16 seamstresses hand-embroider U.S. presidential and vice presidential flags, just as it has been done for 150 years.

Photo by Ed Maldonado



NAVAL SUPPORT ACTIVITY & THE PHILADELPHIA REGION

The Philadelphia Industrial Development Corporation (PIDC), a non-profit economic development corporation, serves as the Local Defense Group (LDG) for both NSA Philadelphia and the Navy Yard Annex — the federal tenants that remain at the Philadelphia Navy Yard. PIDC was established in 1958 and took over development and management of the Navy Yard in the late 1990s after the 1991 and 1993 BRAC rounds required the closure of the shipyard and privatization of the site. With the support of the Pennsylvania Military Community Enhancement Commission (PMCEC), PIDC worked with state and federal representatives in preparing for the subsequent 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. More recently, PIDC has worked in conjunction with the Economy League of Greater Philadelphia and Econsult Solutions — again, with the support of PMCEC — to produce SWOT analyses and economic impact analyses of DoD in the Philadelphia region.⁶

NSA Philadelphia is located within a dense residential neighborhood and is involved with the surrounding community in a number of ways. Installation liaisons regularly attend monthly Lawncrest Community Association meetings and quarterly Rising Sun Avenue Business Association meetings. NSA Philadelphia engages with the Police District Advisory



Aerial view of NSA Philadelphia's 135-acre site located in northeast Philadelphia.

Image courtesy of NSA Philadelphia

Council and the Greater Northeast Philadelphia Chamber of Commerce. NSA Philadelphia staff participate in community events at the Philadelphia Protestant Home. The installation is part of the Tookany/Tacony Frankford Watershed Partnership, which is focused on stormwater management. 🌱



June 27, 2017 groundbreaking for the new \$47 million DLA Troop Support headquarters building at NSA Philadelphia which represents the installation's largest facility investment since the base's inception in 1942.

Image courtesy of NSA Philadelphia

LOOKING FORWARD

Past consolidation of both Navy aviation and DoD logistics missions have added to the scale of operations and workforce at NSA Philadelphia. Limited space is available for expansion outside of the current installation footprint, and close proximity to residential neighborhoods presents ongoing security and force protection challenges. As it looks to the future, NSA Philadelphia will benefit from continuing to strengthen external partnerships, including those that will help tenants to maintain their uniquely skilled, specialized workforces.

- *Mitigating future security challenges, commuting and transportation challenges, and any future expansion efforts will require ongoing cooperation and coordination with the City of Philadelphia and the Police District Advisory Council.*
- *Sustaining the large federal workforce at NSA Philadelphia will be an ongoing challenge as the older cohort of baby boom era workers is expected to retire and must be replaced by new hires. Leveraging the large Philadelphia regional labor market will be key to these future recruiting efforts. Collaboration*

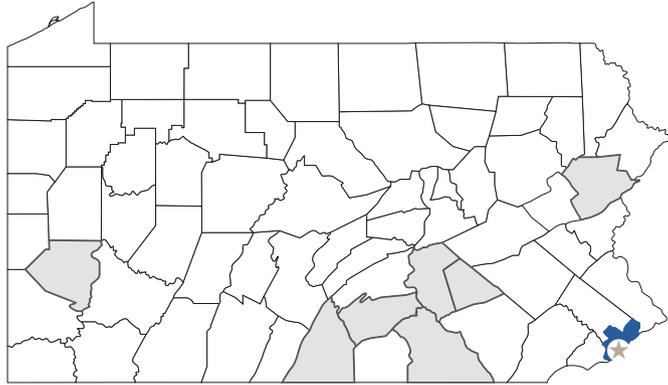
with Philadelphia labor force organizations, including Philadelphia Works — the former Philadelphia Workforce Investment Board — and other local workforce organizations, can support these efforts. Such efforts would also benefit from the creation of a Pennsylvania Logistics Center of Excellence, which would build a common orientation around the state's concentrated strength in transportation, distribution, and logistics. The center could support new education, training, and business development opportunities.

- *PIDC currently serves as the LDG for both the federal tenants at the Navy Yard Annex and at NSA Philadelphia. In that role, PIDC responded effectively to potential threats during the 2005 BRAC round, but it could boost ongoing engagement with NSA Philadelphia. Separate from its LDG role, PIDC is the executive agent for the management of the Navy Yard and its highly successful, and ongoing, privatization efforts. Current and future issues facing federal tenants at the Navy Yard are distinct from those affecting NSA Philadelphia. A new PIDC subgroup could be tasked with increasing the visibility of, and engagement with, NSA Philadelphia. ★*

Notes

- ¹ 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
- ² Defense Base Closure and Realignment Commission, 2005; 1995; 1993; Pennsylvania Military Community Enhancement Commission, 2015; Pennsylvania Base Development Committee, 2009
- ³ Pennsylvania Department of Labor & Industry, Center for Workforce Information & Analysis, "Top 50 Employers 2nd Quarter, 2017, Philadelphia County," December 2017, workstats.dli.pa.gov/Documents/Top%2050/Philadelphia_County_Top_50.pdf
- ⁴ The greater Philadelphia MSA encompasses five counties in Pennsylvania, but also extends into parts of Maryland, New Jersey, and Delaware. As of October 2017, the Philadelphia MSA labor force included 3.089 million workers. See: "Civilian Labor Force and Unemployment by State and Metropolitan Area," Economic News Release, United States Department of Labor, last modified January 4, 2018, bls.gov/news.release/metro.t01.htm
- ⁵ For example, see the current relocation of the Navy's Military Sealift Command Headquarters from its location in the Washington Navy Yard (Washington, DC) to Norfolk, Virginia to be completed by 2019: "Military Sealift Command Consolidates Headquarters," *Navy Times*, November 6, 2014, navytimes.com/news/your-navy/2014/11/06/military-sealift-command-consolidates-headquarters
- ⁶ For example: Economy League of Greater Philadelphia, "The Military and Greater Philadelphia: Strengths, Weaknesses, Opportunities, & Threats" (PowerPoint, 2015); Economy League of Greater Philadelphia, "The Military in Greater Philadelphia: 2014 Economic Impact Analysis," December 2014

PENNSYLVANIA MILITARY INSTALLATIONS // IMPACTS



THE NAVY YARD ANNEX

PHILADELPHIA





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

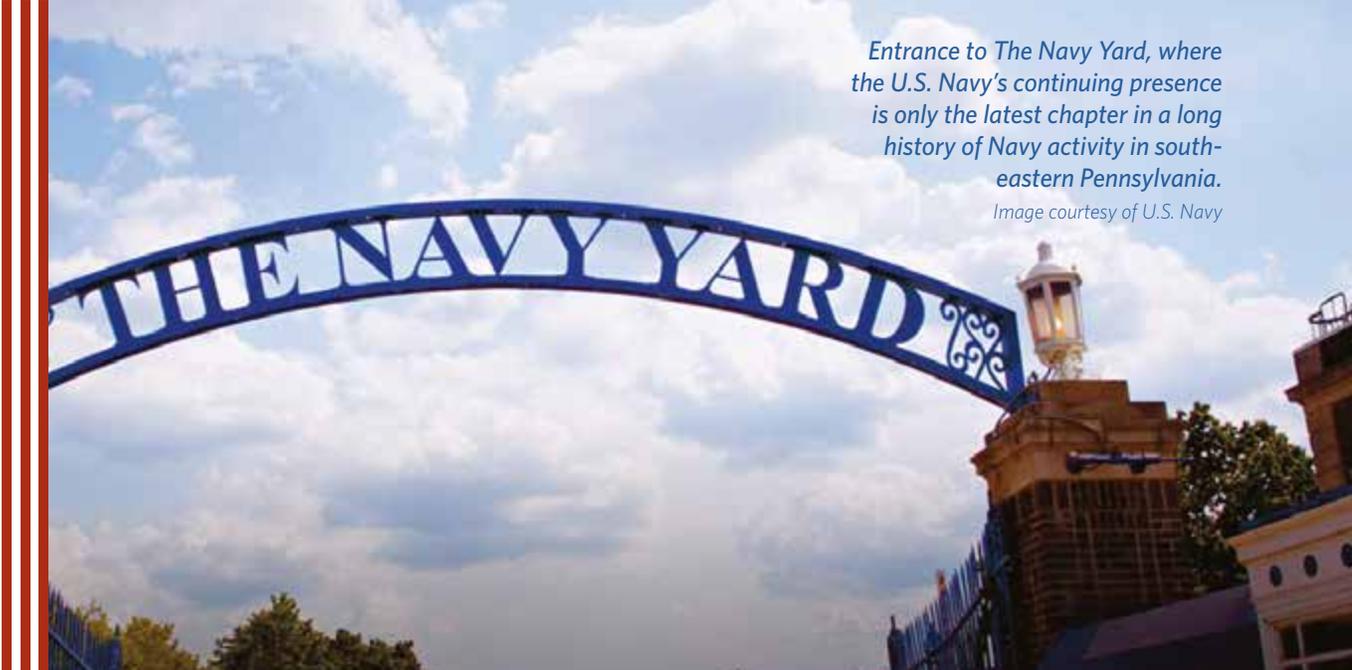
The Navy's continuing presence at the Philadelphia Navy Yard is only the latest chapter in a long history of Navy activity in southeastern Pennsylvania. Philadelphia was one of the nation's earliest centers for Navy operations and warship construction. Downtown Philadelphia became home to the nation's 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 ANNEX⁴

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
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

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 pat-

tern 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, sup-

ply 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

- **Unique Mission Sets**
- **Location**
- **Vital Assets, including Workforce**

WEAKNESSES

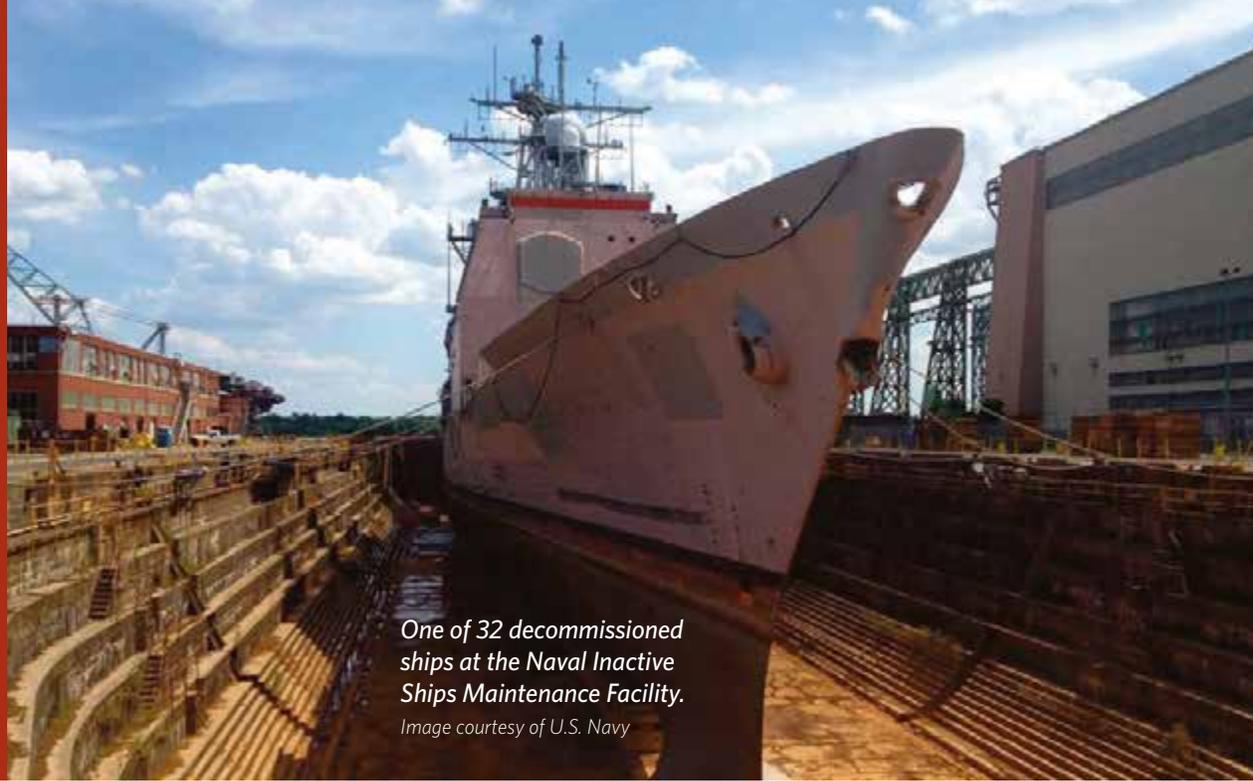
- **Force Protection**
- **Lack of Visibility**

OPPORTUNITIES

- **Force Protection Planning**
- **Partnerships**
- **Expanded Local Defense Group**

THREATS

- **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.” 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



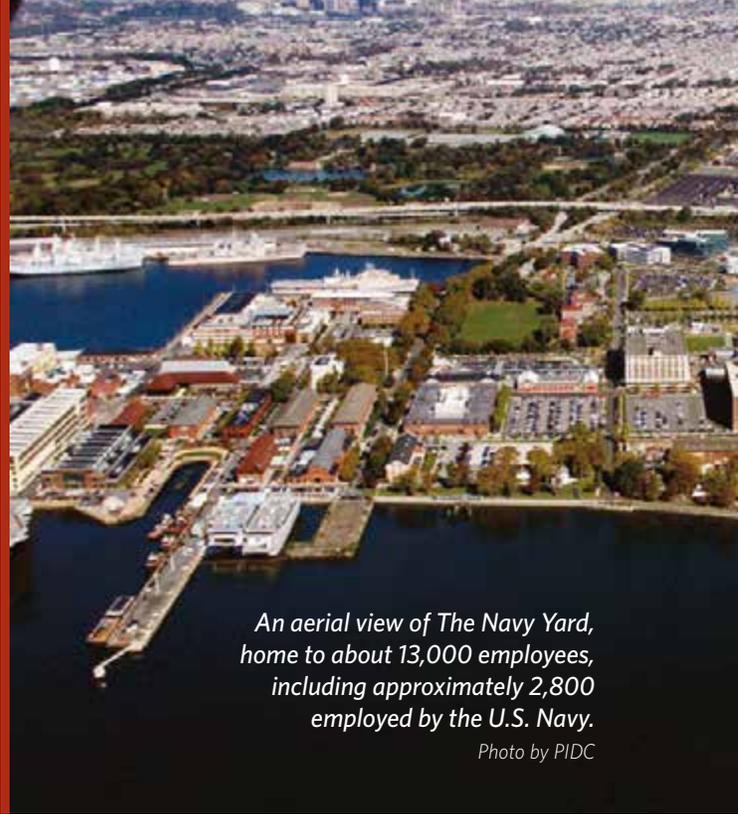
Operations underway at the Naval Foundry and Propeller Center, the only center that designs, manufactures, and repairs propellers and propulsors for the Navy and its customers.

Photo from Naval Foundry and Propeller Center Facebook page

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*



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

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

- ¹ Joseph Ahern, "We Had the Hose Turned on Us!": Ross Gunn and the Naval Research Laboratory's Early Research into Nuclear Propulsion, 1939-1946," *Historical Studies in the Physical and Biological Sciences* 33, no. 2 (2003): 217-236
- 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](https://www.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
- ¹³ "Nemes Appointed Director of Academic Programs for Penn State at the Navy Yard," *Penn State News*, September 21, 2017
- ¹⁴ Jeffrey Spivak, "Historic Rehab: Philadelphia's Navy Yard," *UrbanLand Magazine*, April 1, 2016

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