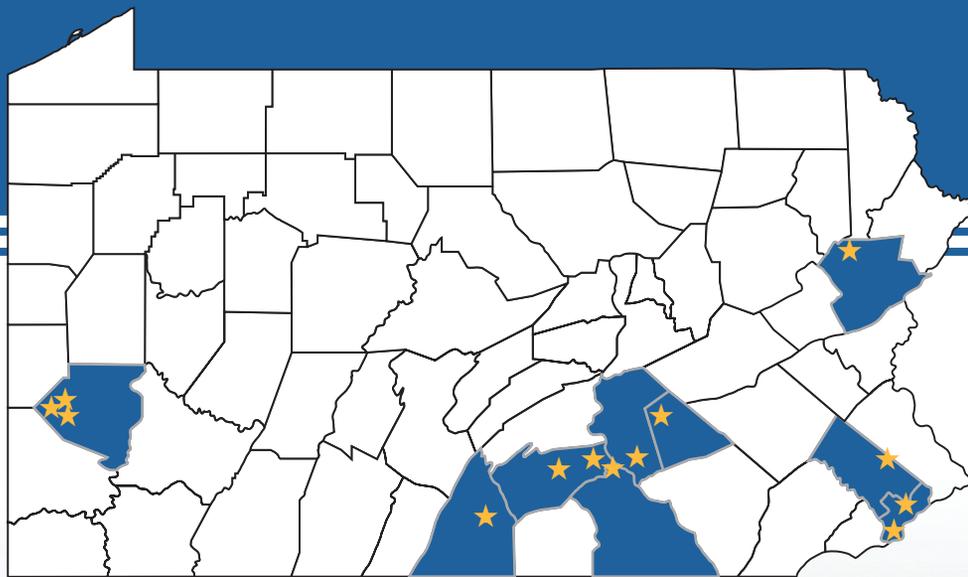




A COMPREHENSIVE ASSESSMENT OF

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 for our warfighters and the Pennsylvania men and women who serve them. For more information, visit the website available at www.dced.pa.gov/pmcec.



University of Pittsburgh

University Center for Social & Urban Research (UCSUR)

Center for Social and Urban Research (UCSUR):

The Center for Social and Urban Research (UCSUR), established in 1972, provides research support and policy analysis for state, local, and national agencies. Its research areas include urban impact analysis, regional development, and local and national policy-relevant data. Find more information at www.ucsur.pitt.edu.

TEAM
PENNSYLVANIA

Working. Together.

...
... by the University of Pittsburgh Center for Social and Urban Research (UCSUR) and financed by a grant from the Pennsylvania Department of Community and Economic Development.

... by the University of Pittsburgh Center for Social and Urban Research
... research
... research

... Public and International Affairs

Deitrick, Sabina, Christopher Briem, Colleen Cain, and Erik R. Pages. (2018). A Comprehensive Assessment of Pennsylvania’s Military Installations. Pittsburgh: University of Pittsburgh Center for Social and Urban Research, June.



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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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

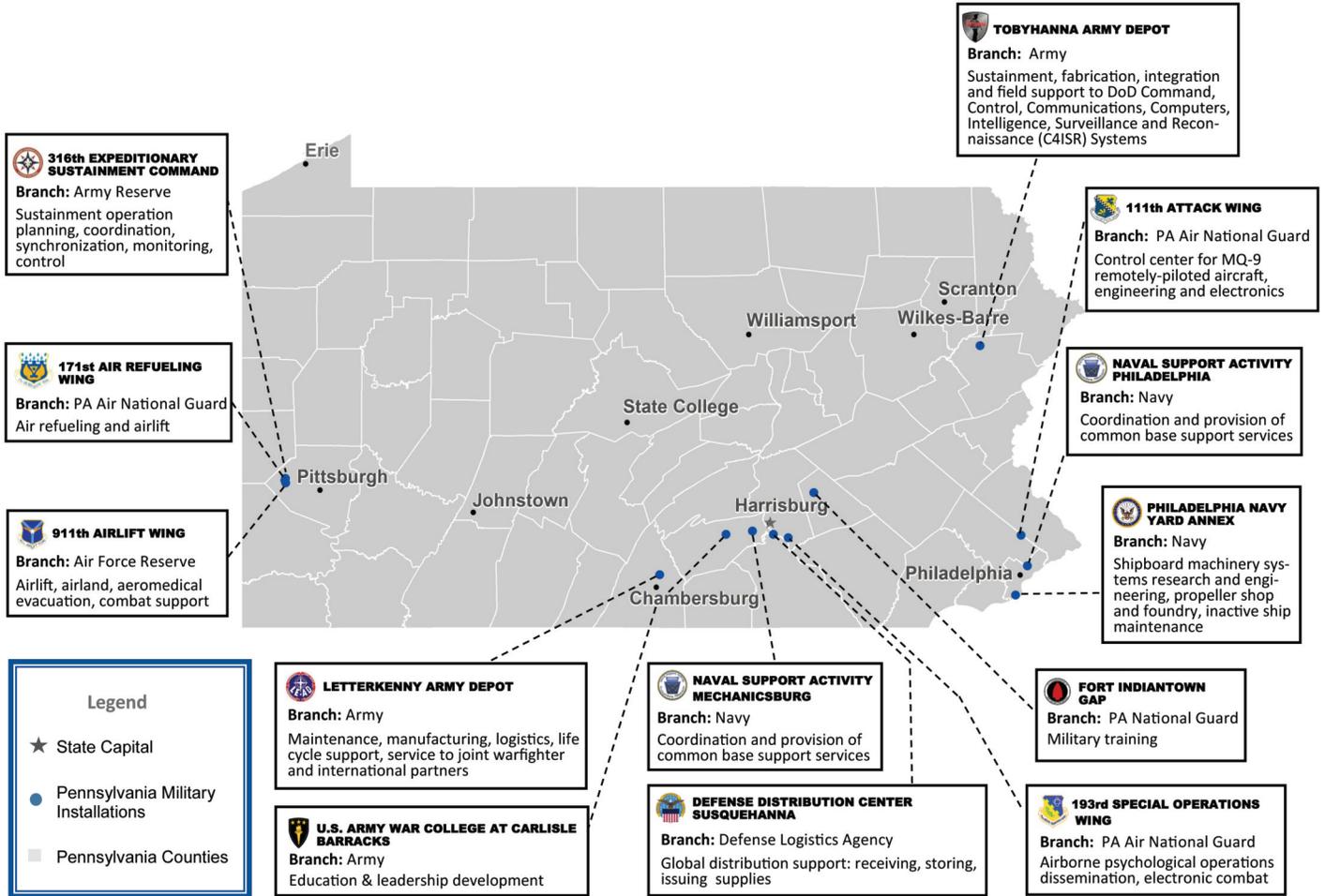
911th Airlift Wing, Pittsburgh International Airport
171st Air Refueling Wing, Pittsburgh International Airport
316th Sustainment Command (Expeditionary), Coraopolis
Letterkenny Army Depot, Chambersburg
The Army War College & Carlisle Barracks,
Cumberland County
Naval Support Activity, Mechanicsburg
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.

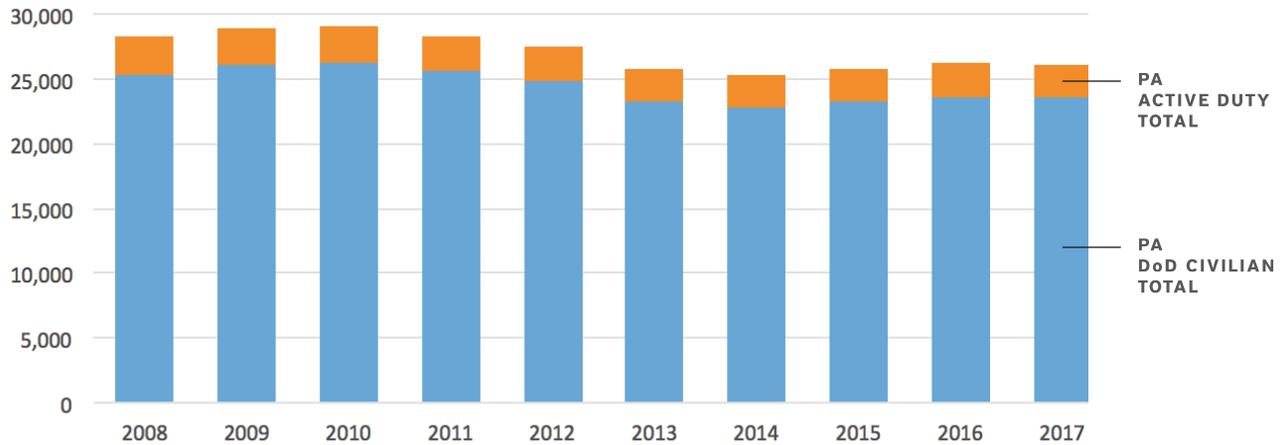
focused on the business side of the defense sector, home to a diverse mix of industrial, logistics, and other military operations. Pennsylvania's military workforce is different from most other states because the state does not host a large active duty military base; the workforce is characterized by 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.

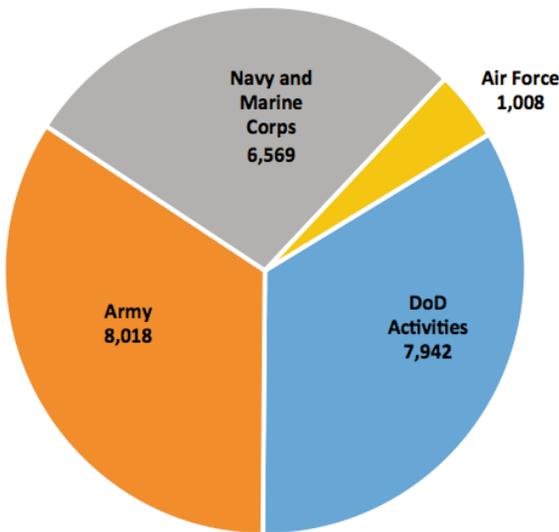
<< Pennsylvania's DoD workforce comprises all service branches, along with what are called "4th Estate" defense organizations, such as the Defense Logistics Agency (DLA), located in New Cumberland. 4th Estate organizations are joint operations that fall directly under DoD and support all military branches 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).

>>

TABLE 4

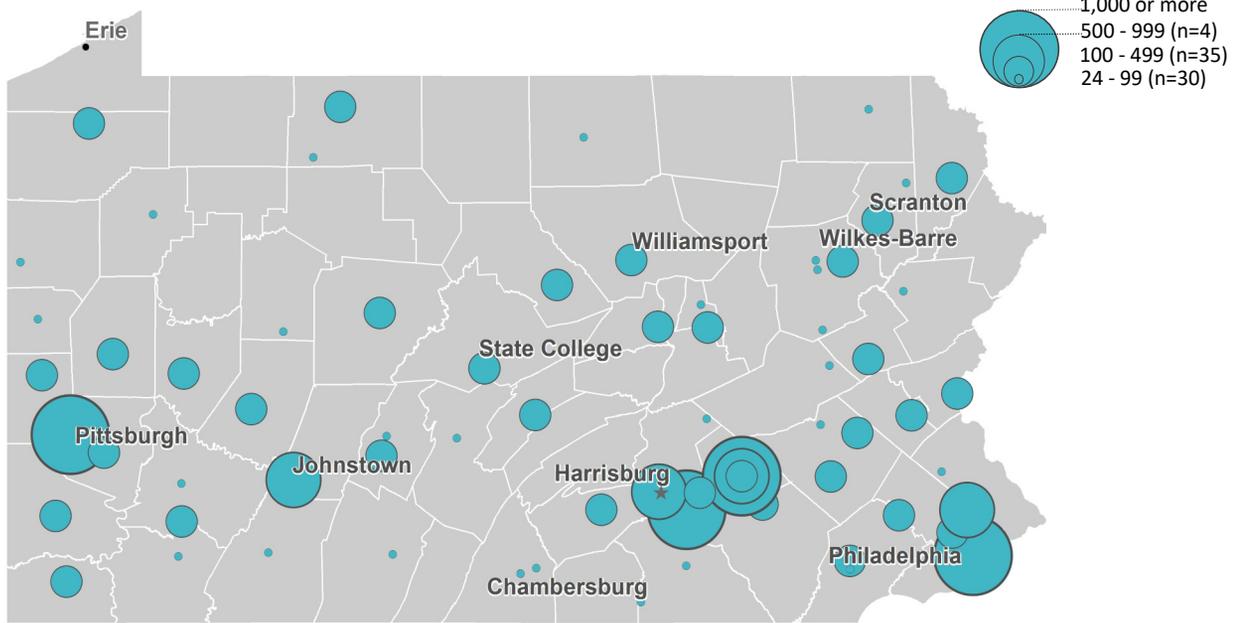
Largest National Guard Membership by State, 2017

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

PROGRAM NAME	NUMBER OF GUARD MEMBERS*
Fort Indian	3,037
	1,476
Coraopolis Pit	1,180
Middleto	1,073
	870
	793
	698
	609
	487
	435

*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

^a Economic impact summary includes total of direct, indirect, and induced impacts estimated with the IMPLAN Model; ^b In millions

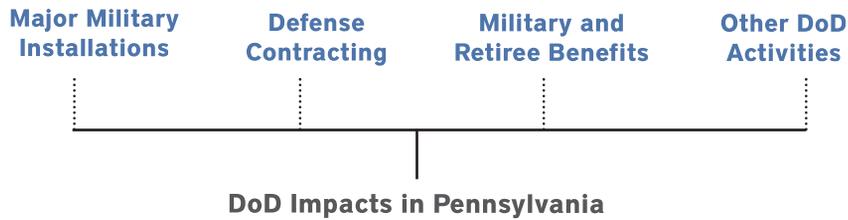
Source: University of Pittsburgh Center for Social and Urban Research, 2018

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

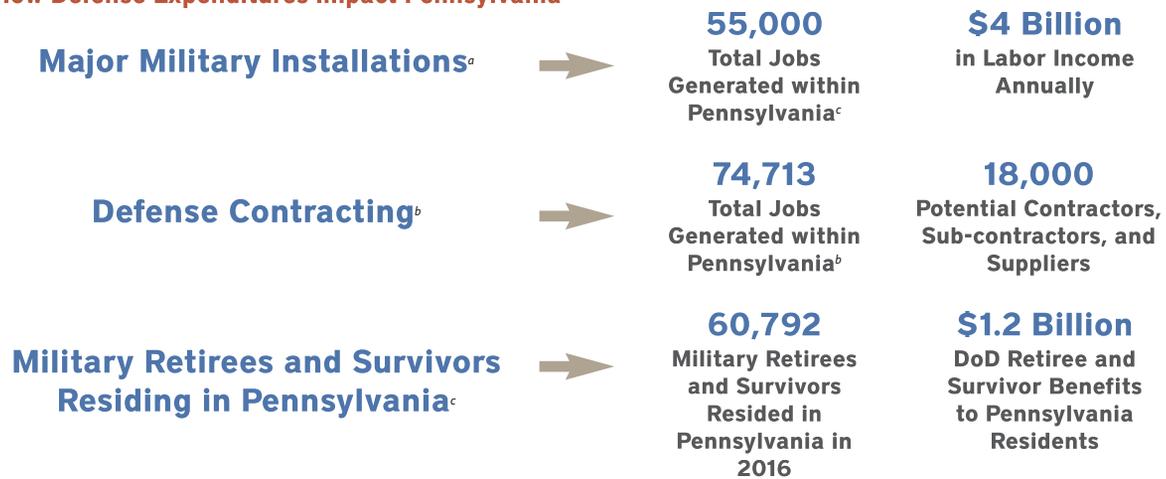
The economic impacts generated by major military installations are only part of the total economic impact DoD generates within the state. Outside of the major installations, each of the military services and independent DoD agencies, along with the Pennsylvania National Guard, maintain a distributed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

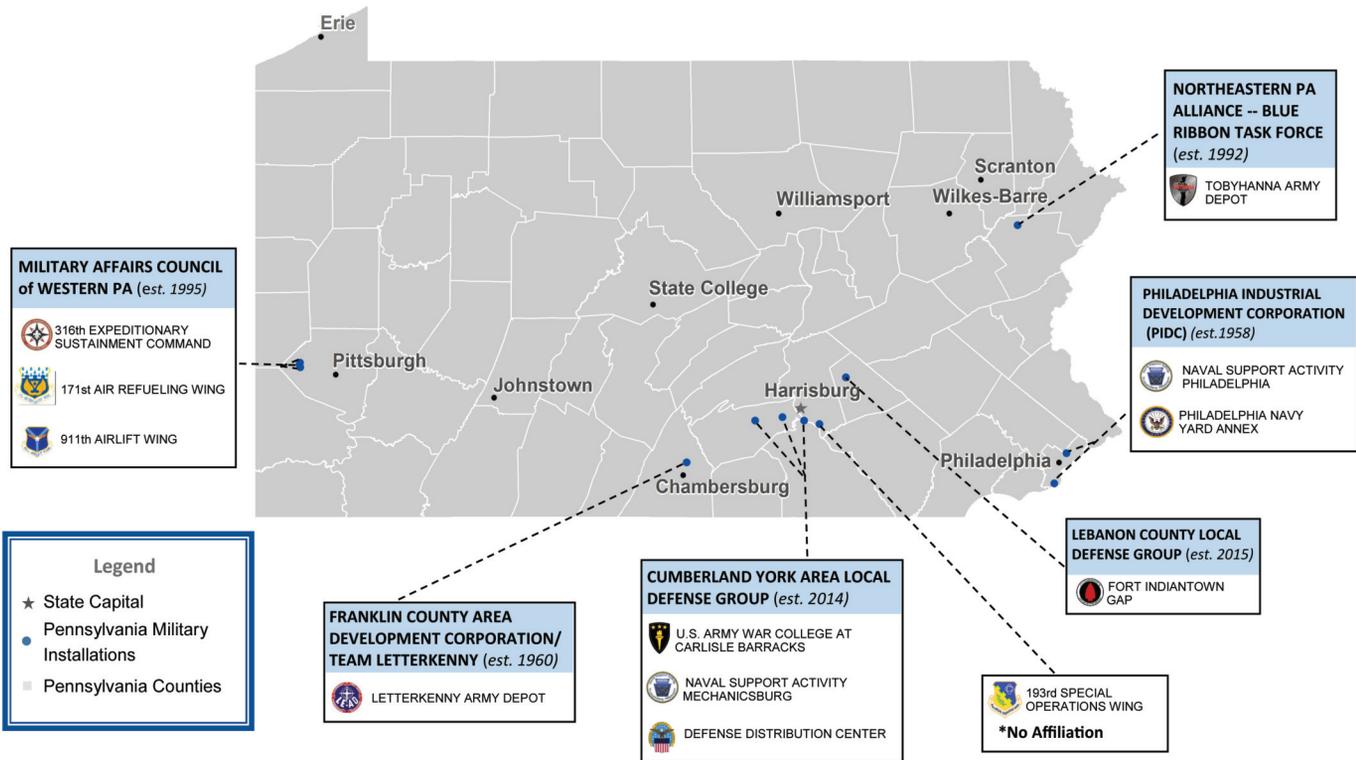
The first Pennsylvania LDGs were created in response to the Base Realignment and Closure (BRAC) process and the threat of closure. The Military Affairs Council of Western Pennsylvania (MACWPA) originated as an organization whose purpose was to advocate for the 911th Airlift Wing threatened by a BRAC. 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.”*

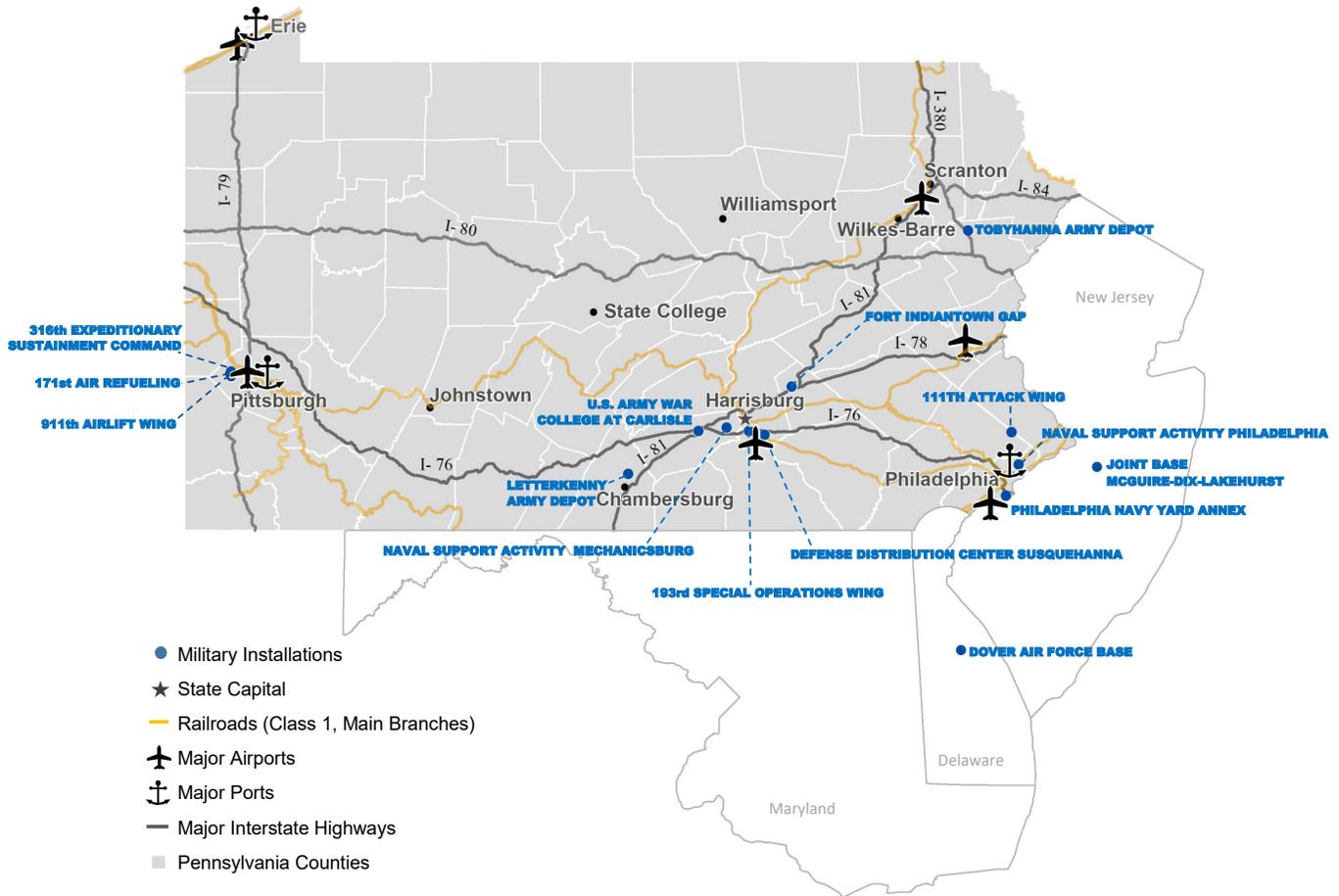
²⁹ *CBRE Group, Inc., “Pennsylvania’s Lehigh Valley.”*

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."

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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
-
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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		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		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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A COMPREHENSIVE ASSESSMENT OF
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