



UMASS DONAHUE INSTITUTE



## An Economic-Contribution Analysis and Overview of **Massachusetts Military Installations**

Underwritten by MassDevelopment for the Commonwealth of  
Massachusetts Military Asset & Security Strategy Task Force

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## Acknowledgements

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## Letter from the Governor

Dear All,

Massachusetts' military presence has long been a source of economic growth, jobs and development for cities and towns across the Commonwealth, including a strong community relationship with the members of our military and their families that extend well beyond the borders of individual bases.

Contributing more than \$13 billion to the Commonwealth's economy in 2013 alone, the military's impact here directly or indirectly supports 57,618 jobs, including 29,515 active, reserve, and guard military and civilian personnel and at least 28,103 jobs in support, operations, and construction services.

This report, "An Economic Contribution Analysis and Overview of Massachusetts Military Installations," affirms those benefits and jobs, and will serve as a critical resource for the state's Military Asset and Security Strategy Task Force and our congressional delegation as we collectively work to protect, enhance and promote the six major military facilities located in the Commonwealth.

The strong ties built between our military installations and Massachusetts' world class universities, research institutions and industries, in partnership with the Department of Defense, have cultivated innovative and technological advancements essential to our national security for decades.

Hanscom Air Force Base and the U.S. Army Natick Soldier Systems Center each lead world-renowned research initiatives that help strengthen the nation militarily and often find a range of applications for commercial users hoping to expand, expand create jobs and explore the next major breakthrough. The unique research capabilities at Hanscom and Natick are a strategic asset to the nation's defense and play key roles in the development of the Massachusetts tech economy.

The military footprint in Massachusetts is significant, and indeed has played an important role in the overall growth and development of the Commonwealth. On behalf the Task Force and everyone involved in this process, we are proud to join the University of Massachusetts Donahue Institute and MassDevelopment in releasing this updated economic study of our critical military installations.

We look forward to continuing to evaluate strategic investments at each of our six military installations and in their communities to maintain these valuable jobs, promote national security and foster opportunities for economic growth across Massachusetts.

Yours truly,

Charlie Baker  
Governor

## Executive Summary

Massachusetts' military installations boast several factors key to the Commonwealth's economic growth and community development, including geographic diversity, innovative technologies and valuable jobs. The Commonwealth's six installations – Barnes Air National Guard Base, Fort Devens, Hanscom Air Force Base, Joint Base Cape Cod, U.S. Army Natick Soldier Systems Center, and Westover Air Reserve Base – are spread throughout the state, supporting their local communities and ensuring the nation and state are prepared to respond rapidly and effectively to domestic and international security missions and natural disasters.

The bases serve as an important resource for defense research and development and training, employing 29,515 active, reserve, and guard military and civilian personnel in 2013. Outside expenditures by military and civilian personnel and base investments in operations, construction, and contracts, support at least another 28,103 jobs in the Commonwealth, for a total of 57,618 jobs supported directly or indirectly by the military's presence in Massachusetts.

The majority of these 29,515 base personnel resides in Massachusetts and received nearly \$1.1 billion in salaries and benefits in 2013, while approximately 2,500 live in neighboring New England states, including 800 in New Hampshire, more than 600 in Connecticut, more than 300 in Rhode Island, nearly 100 in Maine, and more than 40 in Vermont.

These installations are integral to the Commonwealth's globally-recognized innovation economy, industry and educational institutions, spending almost \$1.3 billion on daily operations and construction in 2013 and serving as a home to substantial research facilities that work in partnership with the high-technology companies also based here in Massachusetts. In 2013, the research and development investments at Hanscom AFB and Natick Soldier Systems Center alone totaled over \$5.5 billion.

The important roles the Massachusetts Army National Guard armories and U.S. Army Reserve Centers play in the Commonwealth's defense sector have also been included in the Donahue Institute's study. Combined, these reserve forces account for 14,365 direct or indirect jobs from Cape Cod to the Berkshires and economic contributions of more than \$13 billion in 2013, including \$8 billion for payroll, contracting, construction and research and development and an additional \$5.2 billion in indirect and induced economic activity.

The following tables summarize the economic contributions of military installations in Massachusetts.

### Total Employment and Expenditures (in millions of \$) Summary: Massachusetts Military Installations FY2013

<b>Employment (full-time and part-time)</b>	<b>29,515</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$1,114</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$1,219</b>
<b>Construction Expenditures</b>	<b>\$130</b>
<b>Research and Development and Acquisition Activities Expenditures</b>	<b>\$5,538</b>
<b>Total Expenditures</b>	<b>\$8,001</b>

Source: Massachusetts Military Installations.

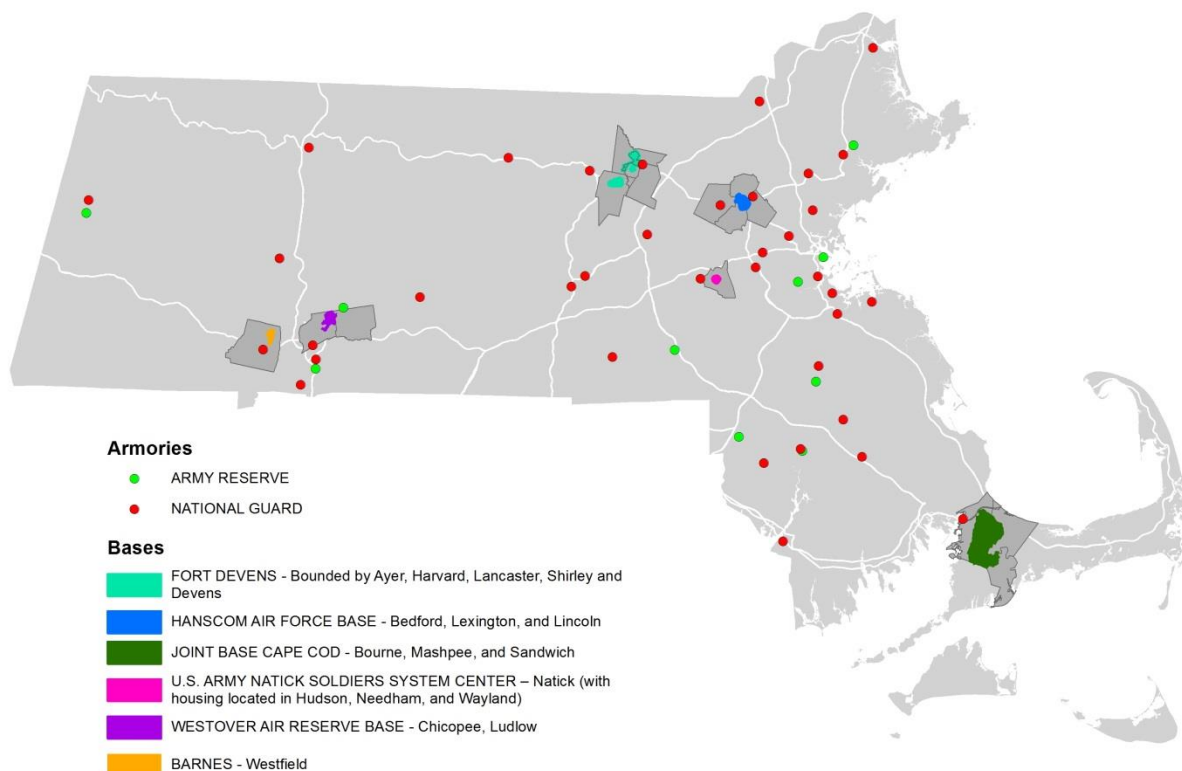
**Total Economic (in millions of \$) and Employment Contributions: Massachusetts Military Installations FY2013**

Type	Direct	Indirect and Induced	Total
Employment	29,515	28,103	<b>57,618</b>
Output	\$8,001	\$5,287	<b>\$13,288</b>

Sources: Massachusetts Military Installations and UMDI IMPLAN analysis.

## Introduction

### Locations of Military Installations in Massachusetts



Sources: U.S. Census Bureau, Geography Division and MassGIS. Produced by UMass Donahue Institute

A thriving defense sector remains vital to the health of the Massachusetts economy. The Bay State ranks among the top states nationally for Defense Department and Homeland Security contracts, many of which result in highly specialized products and services.

The Commonwealth's military facilities are key contributors to defense innovation and serve as major economic engines in their own right. While several studies have detailed economic impacts for some of the bases, no study has uniformly assessed all of them in the same fashion and time frame. With the possibilities of federal funding cuts and base closures, MassDevelopment, on behalf of the Military Asset and Security Strategy Task Force, requested that the UMass Donahue Institute Economic and Public Policy Research (EPPR) unit assess the economic contributions of Massachusetts' six military installations. Under these auspices, this report seeks to:

- Provide a straightforward model to enable the repetition of the analysis in the future;



- Ensure that the approach taken is as consistent across bases as possible to allow for comparable reporting;
- Compare the Commonwealth's military and homeland security installations; and
- Provide a template for information on each of the six installations so that major activities at each base are clear, and major expenditures are easy to read and understand.

## Barnes Air National Guard Base

### Overview

Barnes Air National Guard Base is located in Westfield at the Westfield-Barnes Regional Airport. The major tenant at the base, discussed below, is the Air National Guard's 104<sup>th</sup> Fighter Wing.

#### *Massachusetts Air National Guard, 104<sup>th</sup> Fighter Wing*

Barnes is home to the 104<sup>th</sup> Fighter Wing of the Air National Guard, which maintains a highly-trained, well-equipped, and motivated military force to provide combat-ready F-15 aircraft and support elements in response to wartime and peacetime tasking under state and federal authorities. The F-15 Eagle is an all-weather, extremely maneuverable tactical fighter that provides 24-hour protection for the northeastern United States.<sup>1</sup> The unit protects one-quarter of the nation's population and an area responsible for one-third of the Gross Domestic Product.

When not mobilized or under federal control, Air National Guard units report to the governor of their respective state or territory, or the commanding general of the District of Columbia National Guard. Under state law, the Air National Guard protects lives and properties, and helps with keeping peace, order, and public safety. The Air National Guard does so by providing emergency relief support during natural disasters; search and rescue operations; support to civil defense authorities; maintenance of vital public services; and counterdrug operations. Federally, the Air National Guard provides almost one-half of the Air Force's tactical airlift support, combat communications functions, aeromedical evacuations, and aerial refueling. In addition, the Air National Guard has total responsibility for the air defense of the United States.<sup>2</sup>

#### *Massachusetts Army National Guard, 3<sup>rd</sup> Battalion, 126<sup>th</sup> Aviation Regiment*

Army Aviation Support Facility #2 (AASF #2) is an element of the Massachusetts Army National Guard, 3<sup>rd</sup> Battalion, 126<sup>th</sup> Aviation Regiment, headquartered at Joint Base Cape Cod with units at Barnes. Units based at AASF #2 provide aero-medical evacuation (MEDEVAC) (HH-60M); intelligence, surveillance, and reconnaissance (ISR); and air-movement operations (LUH-72) at a centralized location designed to best maintain the readiness of aviation units assigned to the Army National Guard in Western Massachusetts.

### Economic-Contribution Analysis

In FY2013, Barnes Air National Guard Base employed 1,073 (active-duty and Guardsmen) military, DoD, and non-DoD civilians who together received more than \$60.6 million in salaries and benefits. In FY2013, Barnes Air National Guard Base had expenditures of more than \$37 million on contracts, procurements, and purchases for operations. In addition, Barnes spent more than \$1.6 million on construction.

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<sup>1</sup> 104<sup>th</sup> Fighter Wing Website Factsheet: [www.104fw.ang.af.mil/resources/factsheets/factsheet.asp?id=12530](http://www.104fw.ang.af.mil/resources/factsheets/factsheet.asp?id=12530) (accessed March 11, 2015).

<sup>2</sup> 104<sup>th</sup> Fighter Wing Website: [www.104fw.ang.af.mil/main/welcome.asp](http://www.104fw.ang.af.mil/main/welcome.asp) (accessed March 11, 2015).

**Employment and Expenditures Summary: Barnes Air National Guard Base FY2013**

<b>Employment (full-time and part-time)</b>	<b>1,073</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$60,611,000</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$37,031,000</b>
<b>Construction Expenditures</b>	<b>\$1,611,000</b>
<b>Total Expenditures</b>	<b>\$99,253,000</b>

*Source: Barnes Air National Guard Base.*

Barnes Air National Guard Base is a major contributor to the economy of the Commonwealth. Directly and indirectly, this military installation is responsible for more than 1,600 jobs. The overall direct, indirect, and induced economic activity generated by the day-to-day operation of Barnes reached about \$198 million to the Massachusetts economy in FY2013.

**Total Economic and Employment Contributions: Barnes Air National Guard Base FY2013**

<b>Type</b>	<b>Direct</b>	<b>Indirect and Induced</b>	<b>Total</b>
<b>Output</b>	\$99,253,000	\$98,467,739	<b>\$197,720,739</b>
<b>Employment</b>	1,073	575	<b>1,648</b>

*Sources: Barnes Air National Guard Base and UMDI IMPLAN analysis.*

## Fort Devens Reserve Forces Training Area

### Overview

Fort Devens Reserve Force Training Area is located on a portion of land that the U.S. Army purchased from the Towns of Ayer, Harvard, Lancaster, and Shirley nearly a century ago. Reserves who train at the base enhance their readiness utilizing training facilities that support activities on and off the installation. Fort Devens is home to tenant commands of the Army, Marine, and Navy reserves. At least 35 tenants at Fort Devens support nearly 3,000 military and civilian personnel (see Appendix B for more detail on tenant organizations).<sup>3</sup>

#### *U.S. Army, Marine, and Navy Reserves*

Fort Devens supports civilians and military personnel from the U.S. Army, Marines, Navy, National Guard, FBI, and Massachusetts Emergency Management Agency. Fort Devens provides training facilities and training support to enhance the readiness of reserve component units in New England. Fort Devens has 960 beds in barracks for military trainees. The South Post contains 4,800 acres, 23 live-fire ranges, and 25 different training facilities including a live fire shoot house used to train personnel in simulated realistic, stressful, quick decision-making scenarios; urban assault training; military strategy in urban terrain; nuclear, biological, and chemical chamber; convoy operations course; and an improvised explosive device “petting zoo” or special training ground for personnel to get a hands-on look at techniques used by insurgents.

Also located on South Post is the U.S. Army Natick Soldier Systems Center’s (PM-FSS) Base Camp System Integration Laboratory. This unique laboratory replicates camps in combat zones in Iraq and Afghanistan in order to test and develop the shelters and systems that will best serve the troops and mission.

Fort Devens’ main post has a training support center; 15 classrooms, including a distance-learning center; video-teleconferencing services; and transportation-support services for passenger, freight, and unit moves. After Fort Devens ceased operating as an active duty installation in 1996, part of the base became Devens, a neighboring unincorporated community that has a small residential population and scores of businesses.<sup>4</sup>

### Economic-Contribution Analysis<sup>5</sup>

In FY2013, employment at Fort Devens included 2,434 (active-duty and reserve) military, DoD, and non-DoD civilians who together received more than \$62 million in salaries and benefits. In FY2013, Fort Devens and its associated tenants had more than \$8 million in expenditures on contracts, procurements, and purchases for operations. In addition, Fort Devens spent \$19.5 million on construction.

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<sup>3</sup>See [www.devens.army.mil/For\\_the\\_Soldier/Installation\\_Overview.htm](http://www.devens.army.mil/For_the_Soldier/Installation_Overview.htm) (accessed March 11, 2015).

<sup>4</sup> See “Businesses and Organizations Located in Devens, Massachusetts: Profile and Economic Contributions” by the UMass Donahue Institute, June 2012, available at [www.devenscommunity.com/sites/default/files/devens\\_commercial\\_report\\_062012.pdf](http://www.devenscommunity.com/sites/default/files/devens_commercial_report_062012.pdf) (accessed March 11, 2015).

<sup>5</sup> This analysis includes data covering the garrison at Fort Devens and tenants who reported information upon request. Payroll data for non-reporting tenant employment were extrapolated from reporting tenant data. See Appendix A for data contact information.

**Employment and Expenditures Summary: Fort Devens FY2013**

<b>Employment (full-time and part-time)</b>	<b>2,434</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$62,326,810</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$8,029,619</b>
<b>Construction Expenditures</b>	<b>\$19,500,000</b>
<b>Total Expenditures</b>	<b>\$89,856,429</b>

*Source: Fort Devens.*

Fort Devens is a major contributor to the economy of the Commonwealth. Directly and indirectly, this military installation is responsible for more than 3,000 jobs. The overall direct, indirect, and induced economic activity generated by the operation of Fort Devens exceeded \$183 million to the Massachusetts economy in FY2013.

**Total Economic and Employment Contributions: Fort Devens FY2013**

<b>Type</b>	<b>Direct</b>	<b>Indirect and Induced</b>	<b>Total</b>
<b>Output</b>	\$89,856,429	\$93,835,197	<b>\$183,691,626</b>
<b>Employment</b>	2,434	593	<b>3,027</b>

*Sources: Fort Devens and UMDI IMPLAN analysis.*

## Hanscom Air Force Base

### Overview

Hanscom Air Force Base (AFB) occupies 846 acres in a light industrial area of eastern Massachusetts adjacent to Massport's L.G Hanscom Field, a major general aviation airport serving greater Boston. The site occupies land in the Towns of Bedford, Lexington, Lincoln, and is home to an elementary and a middle school for base personnel children.<sup>6</sup> As a major military installation, Hanscom hosts several key entities.

#### ***Air Force Life Cycle Management Center (AFLCMC)***

Hanscom AFB serves as one of six Air Force Material Command business units called the Air Force Life Cycle Management Center (formerly the Electronic Systems Center).<sup>7</sup> AFLCMC, which manages approximately 200 programs, serves as the Air Force's center for the development and acquisition of electronic command and control (C2) systems. AFLCMC itself does not design or manufacture the systems; instead, it facilitates the development of systems by civilian contractors to meet operational needs. AFLCMC employs teams of engineers, managers, acquisitions specialists, and computer experts to supervise the design, development, testing, production, and deployment of C2 systems.

#### ***66<sup>th</sup> Air Base Group***

While serving as a critical technical hub, Hanscom AFB also serves a central role in service provision for military personnel and retirees. The 66<sup>th</sup> Air Base Group (ABG), Hanscom's host unit, serves active-duty, Reserve, and National Guard military personnel; DoD civilians; and contractors who work and live at Hanscom AFB. The 66<sup>th</sup> ABG supports more than 4,000 military and civilian personnel at more than 35 Geographically Separated Units across New England and New York, including ROTC detachments, Recruiting Detachments, Rome Labs, and military personnel studying at area graduate schools. The 66<sup>th</sup> ABG also supports more than 100,000 retired military personnel and spouses living in New England and New York.

#### ***Massachusetts National Guard Joint Force Headquarters***

The Massachusetts National Guard Joint Force Headquarters, a state-of-the-art facility completed in 2012, houses both the Massachusetts National Guard and Massachusetts Military Division. Less than 20 miles from Boston, this facility provides information to local and federal officials to make decisions and respond to security concerns of the Commonwealth of Massachusetts.

#### ***Hanscom Collaboration and Innovation Center (HCIC)***

In partnership with the Commonwealth, the U.S. Air Force, and MITRE, the HCIC, formally known as the Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance Enterprise Integration Facility, opened in December 2014. HCIC employees collaborate with their counterparts at academic, military, industry, and federally-funded research centers to develop cutting-edge defense applications in cybersecurity, public safety, and information technology. The HCIC will house the Northeast Safety Collaborative, which will bring federal, state, local, and military first-responder organizations with industry and academia to research, prevent, respond to, and mitigate various hazardous scenarios.

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<sup>6</sup> See Department of Defense Education Activity: [www.dodea.edu/CEOA/upload/Special-Arrangements.pdf](http://www.dodea.edu/CEOA/upload/Special-Arrangements.pdf) (accessed March 11, 2015).

<sup>7</sup> See [www.hanscom.af.mil/news/story.asp?id=123310227](http://www.hanscom.af.mil/news/story.asp?id=123310227) and [www.wpafb.af.mil/shared/media/document/AFD-130523-047.pdf](http://www.wpafb.af.mil/shared/media/document/AFD-130523-047.pdf) (accessed March 11, 2015).

## Economic-Contribution Analysis

In FY2013, Hanscom AFB and Massachusetts National Guard Joint Force Headquarters employed 6,179 (active-duty and reserve) military, (DoD and non-DoD) civilians, and contractors. In total, 11,935 people live or work at Hanscom AFB, a figure that includes active-duty dependents living on- or off-base as well as other service members stationed in the commuting area (e.g., Coast Guard personnel stationed in Massachusetts can live at Hanscom). In FY2013, Hanscom AFB had expenditures of more than \$69 million on contracts, procurements, and purchases for operations. In addition, Hanscom spent more than \$23 million on construction. Research and development and acquisition activities made up more than \$3.9 billion in Hanscom expenditures.<sup>8</sup>

### Employment and Expenditures Summary: Hanscom Air Force Base FY2013

<b>Employment (full-time and part-time)</b>	<b>6,179</b>
<b>Gross Payroll (including salary and benefits)</b>	\$297,440,402
<b>Value of All Contracts, Procurements, and Purchases</b>	\$69,102,758
<b>Construction Expenditures</b>	\$23,782,755
<b>Research and Development and Acquisition Activities Expenditures</b>	\$3,928,824,166
<b>Total Expenditures</b>	<b>\$4,319,150,081</b>

Sources: Hanscom Air Force Base and Massachusetts National Guard.

Hanscom Air Force Base is a major contributor to the economy of the Commonwealth. Directly and indirectly, this military installation is responsible for more than 16,000 jobs. The overall direct, indirect, and induced economic activity generated by the operational and procurement activities of Hanscom AFB exceeded \$6 billion to the Massachusetts economy. Significantly, much of this activity involves technology and other innovative activities, a key sector of the Massachusetts economy with impacts on communities and industries across the Commonwealth. Hanscom AFB, in combination with Massachusetts' research universities, cutting-edge technology centers (like MIT Lincoln Laboratory and MITRE), and major defense contractors such as Raytheon, forms an integral part of the Commonwealth's ecosystem for technological innovation.

### Total Economic and Employment Contributions: Hanscom Air Force Base FY2013

Type	Direct	Indirect and Induced	Total
<b>Output</b>	\$4,319,150,081	\$1,767,258,499	<b>\$6,086,408,580</b>
<b>Employment</b>	6,179	10,050	<b>16,229</b>

Sources: Hanscom Air Force Base and Massachusetts National Guard and UMDI IMPLAN analysis.

<sup>8</sup> Does not include Geographically Separated Units also considered part of the Hanscom AFLCMC operating location. R&D and Acquisition activities increased by more than 8% in FY2014.

## Joint Base Cape Cod

### Overview

Joint Base Cape Cod (JBCC) is a joint-use base that covers about 22,000 acres of land, or about 30 square miles, on the upper western portion of Cape Cod. JBCC includes parts of the Towns of Bourne, Mashpee, and Sandwich. This major military installation is home to four military commands including the Massachusetts Army National Guard (MARNG), the Massachusetts Air National Guard (MANG), the U.S. Coast Guard (USCG), and the U.S. Air Force (USAF). Major missions located at the JBCC include training for domestic and international operations; emergency response; airborne search and rescue; and intelligence command and control.<sup>9</sup> Key units that carry out these missions include the Camp Edwards Training Site (MARNG), the 6<sup>th</sup> Space Warning Squadron (Pave PAWS) (USAF), the 102<sup>nd</sup> Intelligence Wing (MANG), and the Coast Guard Air Station Cape Cod (USCG). Numerous additional tenants (military, governmental, and non-profit) also reside at JBCC (see Appendix B for more detail on tenant organizations).

#### ***Massachusetts Army National Guard, Camp Edwards Army National Guard Training Site***

Camp Edwards prepares soldiers for combat missions overseas as well as domestic missions. Comprising about 15,000 acres in the northern section of JBCC, Camp Edwards remains the largest user of JBCC land. Serving as the primary military training facility for the Massachusetts National Guard and used by other military branches as well as law enforcement, the site has a battle simulation center and live-fire shoot house.

#### ***Massachusetts Army National Guard, 3rd Battalion, 126th Aviation Regiment***

The Army Aviation Support Facility #1 (AASF #1) and Army Aviation Support Facility #2 (AASF #2) are elements of the Massachusetts Army National Guard, 3<sup>rd</sup> Battalion, 126<sup>th</sup> Aviation Regiment, headquartered at Joint Base Cape Cod. AASF #1 serves a critical role in providing aviation support (UH-60 A/L), including Air Movement, Air Assault, casualty evacuation (CASEVAC) and security and support to the Commonwealth of Massachusetts during and following domestic emergencies such as the Boston Marathon bombings. Units based at AASF #2 at Barnes ANG Base provide aero-medical evacuation (MEDEVAC) (HH-60M); intelligence, surveillance, and reconnaissance (ISR); and air-movement operations (LUH-72) at a centralized location designed to maximize the readiness of aviation units assigned to the Army National Guard in Western Massachusetts. Specific aviation capabilities include counter-drug operations in support of state and local law enforcement; firefighting; search and rescue; Hoist Operations; MSP/FBI Fast Rope Training (FRIES); observation in support of FEMA/MEMA; damage assessment; and MEDEVAC capability including medical personnel for six air ambulances for disaster response.

#### ***Massachusetts Air National Guard, Otis Air National Guard Base/102<sup>nd</sup> Intelligence Wing***

The Massachusetts Air National Guard's 102<sup>nd</sup> Intelligence Wing provides worldwide precision intelligence command and control, and trained and experienced Airmen, for combat support and homeland security. The Intelligence Wing provides support to analyze information sent from Unmanned Aerial Vehicles throughout the world.<sup>10</sup>

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<sup>9</sup> This information comes from the JBCC website: [states.ng.mil/sites/MA/JBCC/index.htm](http://states.ng.mil/sites/MA/JBCC/index.htm) (accessed March 11, 2015).

<sup>10</sup> For more information, see [www.102iw.ang.af.mil/main/welcome.asp](http://www.102iw.ang.af.mil/main/welcome.asp) (accessed March 11, 2015).



### ***U.S. Coast Guard Air Station, Cape Cod (ASCC) and Base Cape Cod***

U.S. Coast Guard operates several programs on JBCC, including Air Station Cape Cod, the only Coast Guard aviation facility in the northeast. This unit provides search and rescue, and fisheries and law enforcement from Sandy Hook, New Jersey to Canada. In 2014, Base Cape Cod was established as a mission-support facility to serve Coast Guard operations in the 1<sup>st</sup> Coast Guard District. Base Cape Cod also operates the Kaehler Memorial Clinic, the only military facility providing Aviation Medicine in New England.

### ***U.S. Air Force, Cape Cod Air Force Station, 6<sup>th</sup> Space Warning Squadron***

The 6<sup>th</sup> Space Warning Squadron, a Geographically Separated Unit (GSU) of the 21<sup>st</sup> Space Wing, Peterson Air Force Base, Colorado, mans the Cape Cod Air Force Station. The Air Force Station is the only land-based radar site providing missile warning for the eastern United States and southern Canada against sea-launched and intercontinental ballistic missiles. “TEAM 6” includes active duty U.S. and Canadian Air Force troops; DoD civilians; and BAE Systems employees.

### ***Massachusetts Unmanned Aircraft Systems Test Center (MA UASTC)***

In partnership with MassDevelopment and JBCC, the MA UASTC coordinates all Unmanned Aircraft Systems (UAS) flight operations within JBCC. The facility focuses on developing standards for the safe integration of UAS into the National Airspace System and provides a safe testing ground for businesses focused on UAS operations for civilian use.

## **Economic-Contribution Analysis**

In FY2013, the major missions at Joint Base Cape Cod employed 2,816 (active and reserve) military, DoD, and non-DoD civilians who together received more than \$115 million in salaries and benefits. In FY2013, the major tenants of Joint Base Cape Cod had expenditures of nearly \$25 million on contracts, procurement, and purchases for operations. In addition, JBCC spent more than \$30 million on construction.

### **Employment and Expenditures Summary Joint Base Cape Cod FY2013**

<b>Employment (full-time and part-time)</b>	<b>2,816</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$115,593,826</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$24,988,976</b>
<b>Construction Expenditures</b>	<b>\$32,232,672</b>
<b>Total Expenditures</b>	<b>\$172,815,474</b>

Source: Joint Base Cape Cod major missions.

Joint Base Cape Cod is an important contributor to the economy of the Commonwealth, especially within the Upper Cape but also more widely. Directly and indirectly, this military installation is responsible for almost 3,800 Massachusetts jobs. The overall direct, indirect, and induced economic activities generated by JBCC exceeded \$330 million to the Massachusetts economy in FY2013.

### **Total Economic and Employment Contributions: Joint Base Cape Cod FY2013**

Type	Direct	Indirect and Induced	Total
<b>Output</b>	<b>\$172,815,474</b>	<b>\$158,042,742</b>	<b>\$330,858,216</b>
<b>Employment</b>	<b>2,816</b>	<b>973</b>	<b>3,789</b>

Sources: Joint Base Cape Cod major missions and UMDI IMPLAN analysis.

## U.S. Army Natick Soldier Systems Center

### Overview

The U.S. Army Natick Soldier Systems Center (NSSC), known as Natick Labs, occupies 124 buildings on 78 acres in the Town of Natick. NSSC includes administration, laboratory, maintenance, storage, and housing facilities. As the Army's center for soldier-related research and development, NSSC is home to numerous additional military and civilian tenants (see Appendix B for more details).

#### *U.S. Army Natick Soldier Systems Center*

The NSSC, representing one of seven key technology areas under the U.S. Army Research, Development and Engineering Command (RDECOM), is a Department of Defense installation responsible for technology research and development; engineering; field-testing; and systems to support soldiers in combat, including human-systems integration, food, clothing, and shelter. The NSSC also has specialized expertise in parachute design and airdrop systems. The NSSC maintains 459,000 square feet of lab space and has several specialized R&D facilities including the Doriot Climatic Chambers; a hypobaric (altitude) chamber; USARIEM hypoxia room; thermal manikins and clothing biophysics laboratories; a combat rations production and packaging facility; Center for Military Biomechanics Research; a 3-D Anthropometrics lab; a water immersion laboratory; Fiber Center of Excellence; a thermal test facility; and Polymer Film Center of Excellence. NSSC also runs and staffs an operational environment called the Base Camp System Integration Laboratory at Fort Devens.

Natick Labs is located just 17 miles west of Boston and Cambridge, which gives the NSSC convenient access to world-renowned universities and research hospitals. The region is also home to technology-based private IT and nanotech companies that provide additional opportunities for NSSC research and development teams to network and share technology. The NSSC uses a variety of mechanisms (grants; Small Business Innovative Research awards; cooperative R&D agreements; testing services agreements; patent license agreements; and education partnership agreements) to contract and partner with many organizations including universities, hospitals, and businesses. These mechanisms help the NSSC leverage resources to accelerate technological developments and get improved products to the military more quickly.<sup>11</sup>

### Economic-Contribution Analysis<sup>12</sup>

In FY2013, NSSC employed 1,498 active-duty military and DoD civilians who received more than \$232 million in salaries and benefits. In FY2013, NSSC had expenditures of more than \$1 billion on contracts, procurements, and purchases for operations. Research and development and acquisition activities made up more than \$1.6 billion<sup>13</sup> in NSSC expenditures. In addition, NSSC spent \$8.5 million on construction.

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<sup>11</sup> This information came from [www.natick.army.mil/](http://www.natick.army.mil/). Also see *Presentation to the MetroWest Chamber of Commerce*, BG John J. McGuinness, Deputy Commanding General, US Army Research, Development and Engineering Command and Senior Commander, US Army Natick Soldier Systems Center. January 27, 2012. [www.natick.army.mil/about/command/2-MetroWestChamberofCommerceJan2012presentation-compressed.pdf](http://www.natick.army.mil/about/command/2-MetroWestChamberofCommerceJan2012presentation-compressed.pdf) (accessed March 11, 2015).

<sup>12</sup> This analysis includes data covering the U.S. Army Natick Soldier System Center from Garrison-Natick, RDECOM HQ, RDECOM – NSRDEC, TACOM-ILSC Natick, CHRA-Natick, ACC-NCD, NEC, West Point-Health Clinic, and PM-FSS. See Appendix A for data contact information.

<sup>13</sup> R&D value is based on 2011 study.

**Employment and Expenditures Summary: U.S. Army Natick Soldier Systems Center FY2013**

<b>Employment (full-time and part-time)</b>	<b>1,498</b>
<b>Gross Payroll (including salary and benefits)</b>	\$232,375,002
<b>Value of All Contracts, Procurements, and Purchases</b>	\$1,006,374,081
<b>Construction Expenditures</b>	\$8,500,000
<b>Research and Development and Acquisition Activities Expenditures<sup>14</sup></b>	\$1,609,151,264
<b>Total Expenditures</b>	<b>\$2,856,400,347</b>

Source: U.S. Army Natick Soldier Systems Center.

Natick Soldier Systems Center is a major contributor to the economy of the Commonwealth. Directly and indirectly, this military installation is responsible for more than 14,000 jobs. The overall direct, indirect, and induced economic impacts generated by the operational and procurement activities of NSSC exceed \$5.5 billion to the Massachusetts economy. Significantly, the concentration of technology and other innovative activities at Natick impacts communities and industries across the Commonwealth.

**Total Economic and Employment Contributions: U.S. Army Natick Soldier Systems Center FY2013**

Type	Direct	Indirect and Induced	Total
<b>Output</b>	\$2,856,400,347	\$2,711,013,215	<b>\$5,567,413,562</b>
<b>Employment</b>	1,498	13,071	<b>14,569</b>

Sources: U.S. Army Natick Soldier Systems Center and UMDI IMPLAN analysis.

<sup>14</sup> R&D value is based on 2011 study.

## Westover Air Reserve Base

### Overview

Westover Air Reserve Base (ARB) is located in Chicopee and Ludlow. Westover is the largest U.S. Air Force Reserve facility in the nation<sup>15</sup> and home of the 439<sup>th</sup> Airlift Wing, which provides worldwide air movement of troops, supplies, equipment, and medical patients. The 337<sup>th</sup> Airlift Squadron is the Wing's flying unit and operates C-5 aircraft that deliver outsized and oversized cargo that no other aircraft can carry. Westover's 11,600-foot runway, the longest in New England, accommodates large, heavy aircraft flying long-distance missions. Westover also houses ten Army Reserve and four Marine Corps Reserve units (see Appendix B for more details).

Westover is a joint-use, military-civilian airport. Westover Metropolitan Airport, the civilian component, is owned and managed by a non-profit organization and enjoys military-grade air traffic control and firefighting/rescue services provided by the U.S. Air Force.

The installation has participated in Operations Desert Shield, Storm, Enduring Freedom, Iraqi Freedom, and New Dawn; and relief efforts in New Orleans following Hurricane Katrina, Houston following Hurricane Rita, Haiti following its earthquake, and Japan following its earthquake and tsunami. Westover is located one hour closer to European NATO members than the next nearest U.S. logistics base. In addition to combat, installation tenant missions during peacetime include recruiting and training.<sup>16</sup>

In December 2014, Governor Deval Patrick released a business plan with recommendations on the future of Westover ARB and Westover Metropolitan Airport to increase economic growth for the region and support for the Air Force Reserve. This plan in part proposed \$5 million in capital funding for UMass-Amherst to develop a National Aeronautics, Research, Development, and Training Center. The proposed site at Westover ARB would host a school to train the next generation of Air Traffic Controllers and pilots as well as to provide aviation courses.<sup>17</sup>

### Economic-Contribution Analysis<sup>18</sup>

Westover ARB employed 2,870 active-duty and reserve personnel; DoD employees; and other civilians in FY2013. These personnel received nearly \$140 million in salaries and benefits. In FY2013, Westover ARB had expenditures of more than \$23 million on contracts, procurements, and purchases for operations. In addition, Westover ARB spent almost \$13 million on construction.

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<sup>15</sup> Wilbur Smith Associates, LLC., *Massachusetts Statewide Airport Economic Impact Study*, Massachusetts Department of Transportation, Aeronautics Division, 2010 [www.massdot.state.ma.us/portals/7/docs/mass\\_exec\\_summary\\_CML.pdf](http://www.massdot.state.ma.us/portals/7/docs/mass_exec_summary_CML.pdf) (accessed March, 11, 2015).

<sup>16</sup> Westover Air Reserve Base, Mass. 15 Fast Facts [www.westover.afrc.af.mil/News/ArticleDisplay/tabid/136/Article/562652/15-fast-facts-about-westover.aspx](http://www.westover.afrc.af.mil/News/ArticleDisplay/tabid/136/Article/562652/15-fast-facts-about-westover.aspx) (accessed March 11, 2015).

<sup>17</sup> See [www.massdevelopment.com/wp-content/uploads/2014/12/12192014-01.pdf](http://www.massdevelopment.com/wp-content/uploads/2014/12/12192014-01.pdf) (accessed April 16, 2015).

<sup>18</sup> This analysis includes data covering the 439<sup>th</sup> Airlift Wing. These data do not include any non-Air Force Reserve tenants at Westover. See Appendix A for data contact information.

**Employment and Expenditures Summary: Westover Air Reserve Base FY2013**

<b>Employment (full-time and part-time)</b>	<b>3,065</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$139,682,430</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$23,837,331</b>
<b>Construction Expenditures</b>	<b>\$12,769,033</b>
<b>Total Expenditures</b>	<b>\$176,288,794</b>

Source: Westover Air Reserve Base.

Westover Air Reserve Base is a major contributor to the economy of the Commonwealth. Directly and indirectly, this military installation is responsible for more than 3,900 jobs. The overall direct, indirect, and induced economic activity generated by Westover operations was about \$324 million in Massachusetts for FY 2013.

**Total Economic and Employment Contributions: Westover Air Reserve Base FY2013**

Type	Direct	Indirect and Induced	Total
<b>Output</b>	\$176,288,794	\$147,677,834	<b>\$323,966,628</b>
<b>Employment</b>	3,065	925	<b>3,990</b>

Sources: Westover Air Reserve Base and UMDI IMPLAN analysis.

## Massachusetts Army National Guard (MANG)

### Overview

The oldest Army National Guard unit, the Massachusetts Army National Guard has seen action from the American Revolutionary War to Operation Enduring Freedom in Afghanistan and Operation Iraqi Freedom in Iraq. The National Guard is a citizen-soldier force supporting both the Commonwealth, when activated by the Governor to respond to natural disasters or other civil emergencies, and the U.S. Government, when activated by the President to support a military mission. The MANG protected property and lives during natural disasters, and provided security after the Boston Marathon bombings. Headquartered at Hanscom Air Force Base in Bedford, MANG maintains 43 armories across 38 communities throughout Massachusetts.

### Economic-Contribution Analysis

The Massachusetts Army National Guard employed 6,262 active-duty and reserve personnel; DoD employees; and other civilians in FY2013. These personnel together received nearly \$130 million in salaries and benefits. In FY2013, MANG had expenditures of more than \$38 million on contracts, procurements, and purchases for operations. In addition, MANG spent more than \$22 million on construction.

#### Employment and Expenditures Summary: Massachusetts Army National Guard FY2013

<b>Employment (full-time and part-time)</b>	<b>6,262</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$129,886,075</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$38,130,453</b>
<b>Construction Expenditures</b>	<b>\$22,869,460</b>
<b>Total Expenditures</b>	<b>\$190,885,988</b>

Source: Massachusetts National Guard.

With armories across 38 communities, MANG is a major contributor to the economy of the Commonwealth. Directly and indirectly, these military installations are responsible for more than 7,000 jobs. The overall direct, indirect, and induced economic activity generated by MANG operations was nearly \$378 million in Massachusetts for FY2013.

#### Total Economic and Employment Contributions: Massachusetts Army National Guard FY2013

Type	Direct	Indirect and Induced	Total
<b>Output</b>	<b>\$190,885,988</b>	<b>\$187,104,398</b>	<b>\$377,990,386</b>
<b>Employment</b>	<b>6,262</b>	<b>1,126</b>	<b>7,388</b>

Sources: Massachusetts National Guard and UMDI IMPLAN analysis.

## U.S Army Reserve (USAR)

### Overview

The U.S. Army Reserve provides trained and equipped citizen-soldiers to meet a full spectrum of operations across the globe. Unlike the National Guard, USAR solely falls under the command and control of the President and Secretary of Defense. The Army Reserve force, unlike the Guard, can also tailor forces for specific combatant command requirements. A majority of USAR units are combat support and combat service support units while a majority of National Guard units are combat units. The 99<sup>th</sup> Regional Support Command in Joint Base McGuire-Dix-Lakehurst, New Jersey commands the Army Reserve units for the northeastern United States including all 24 USAR facilities across Massachusetts.

### Economic-Contribution Analysis

The U.S. Army Reserve employed 6,188 active-duty and reserve personnel; DoD employees; and other civilians in FY2013 within Massachusetts. These personnel received more than \$76 million in salaries and benefits. In FY2013, USAR had expenditures of more than \$11 million on contracts, procurements, and purchases for operations. In addition, USAR spent more than \$9 million on construction.

#### Employment and Expenditures Summary: U.S. Army Reserve FY2013

<b>Employment (full-time and part-time)</b>	<b>6,188</b>
<b>Gross Payroll (including salary and benefits)</b>	<b>\$76,023,179</b>
<b>Value of All Contracts, Procurements, and Purchases</b>	<b>\$11,484,408</b>
<b>Construction Expenditures</b>	<b>\$9,123,203</b>
<b>Total Expenditures</b>	<b>\$96,630,790</b>

Source: U.S. Army Reserve.

With reserve centers across 24 communities, USAR is a major contributor to the economy of the Commonwealth. Directly and indirectly, these military installations are responsible for about 7,000 jobs. The overall direct, indirect, and induced economic activity generated by USAR operations was more than \$220 million in Massachusetts for FY2013.

#### Total Economic and Employment Contributions: U.S. Army Reserve FY2013

Type	Direct	Indirect and Induced	Total
<b>Output</b>	\$96,630,790	\$123,654,287	<b>\$220,285,077</b>
<b>Employment</b>	6,188	789	<b>6,977</b>

Sources: U.S. Army Reserve and UMDI IMPLAN analysis.

## Appendix A – Data Contacts

### **Barnes Air National Guard Base**

Timothy Cullen  
Legislative Liaison  
Massachusetts Military Division

### **Fort Devens**

Lt. Colonel Steven Egan  
U.S. Army Garrison Fort Devens Commander

Sean C. Lehane  
Fort Devens RFTA  
Deputy to the Garrison Commander

### **Hanscom Air Force Base**

Chuck Paone  
Director of Public Affairs at Hanscom Air Force Base

Mary Anne Scully  
Operations Research Analyst  
AFLCMC/FZC

Brian D. Fersch  
Chief  
Acquisition Cost Research, Studies & Training Air Force Lifecycle Management Center  
AFLCMC/FZCR

Timothy Cullen  
Legislative Liaison  
Massachusetts Military Division

### **Joint Base Cape Cod**

*Camp Edwards Training Site*  
Timothy Cullen  
Legislative Liaison  
Massachusetts Military Division

*Cape Cod Air Force Station*  
Lt Col David R. Anderson, USAF  
Commander, 6<sup>th</sup> Space Warning Squadron

*Otis Air National Guard Base*  
Timothy Cullen  
Legislative Liaison  
Massachusetts Military Division



*U.S. Coast Guard Air Station and Base Cape Cod*

Captain John Newby, USCG

Executive Officer

**Natick Soldier Systems Center**

John Harlow

NSSC Public Affairs Officer

**Westover Air Force Base**

Colonel Albert V. Lupenski

Commander, 439<sup>th</sup> Airlift Wing

Wayne M. Williams

Base Civil Engineer and Fire Marshal

**Massachusetts Army National Guard**

Timothy Cullen

Legislative Liaison

Massachusetts Military Division

**U.S. Army Reserve**

Colonel J. Matthew Lissner

Congressional Legislative Liaison

Cmd Group, 99<sup>th</sup> RSC

## Appendix B – Tenant Organizations by Installation

### **Barnes Air National Guard Base**

104<sup>th</sup> Fighter Wing

Army Aviation Support Facility #2 of the 3<sup>rd</sup> Battalion, 126<sup>th</sup> Aviation Regiment

### **Fort Devens**

*Army*

*U.S. Army Garrison*

Facility Engineer Team 21

98<sup>th</sup> Division Units

4<sup>th</sup> Chemical Battalion

6<sup>th</sup> Military Intelligence Battalion

7<sup>th</sup> Ordnance Battalion

11<sup>th</sup> Health Service Battalion

Drill Sergeant School #3

Regional Training Site Maintenance

655<sup>th</sup> Regional Support Group

174<sup>th</sup> Infantry Brigade, First Army Division East

2/310<sup>th</sup> Regiment

3/313<sup>th</sup> Logistics Support Battalion

E. Co., 1/304<sup>th</sup> Regiment, 95<sup>th</sup> Division

366<sup>th</sup> Military Police Detachment (Criminal Investigation Division)

804<sup>th</sup> Medical Brigade

Test, Measurement & Diagnostic Equipment Training Support Center - NE

Northeastern Army Reserve Intelligence Support Center Devens Detachment

Joint Reserve Intelligence Center

Northeast Information Operations Center

99<sup>th</sup> RSC East

99<sup>th</sup> RSC East Education Office

Equipment Concentration Site #65

308<sup>th</sup> Military Intelligence Battalion

Army Criminal Investigation Command, 701<sup>st</sup> MP Group Boston Fraud Resident Agency Major Procurement

Fraud Unit

U.S. Army Corps of Engineers, New England District Office

Western Resident Field Offices

Boston Resident Field Offices

BRAC Environmental

Total Army School System Training Center

A Company, 325<sup>th</sup> Military Intelligence Battalion

C Company, 3/319<sup>th</sup> Regiment, 800<sup>th</sup> Brigade, 80<sup>th</sup> Division

Detachment 1, U.S. Central Command

B Company, 533<sup>rd</sup> BSB

2200<sup>th</sup> Military Intelligence Group, Military Intelligence Readiness Command

Detachment 1, 3200 Strategic Intelligence Group, Military Intelligence Readiness Command

Army and Air Force Exchange

*Marine Corps*

Hqs 25<sup>th</sup> Marine Regiment, 4<sup>th</sup> Marine Division USMCR  
1<sup>st</sup> Bn. 25<sup>th</sup> Marine Regiment, 4<sup>th</sup> Marine Division, USMCR  
Contact Team, 4<sup>th</sup> Maintenance Bn. 4<sup>th</sup> Marine Logistics Group

*Navy*

Reserve Navy Information Operations Command – NRNIOC Devens  
Reserve Intelligence Program Office 18  
    Joint Forces Intelligence Command 0197  
    Office of Naval Intelligence 0397  
    Naval Criminal Investigative Service 0297  
    Office of Naval Intelligence 1897  
    Defense Intelligence Agency 0797

**Hanscom Air Force Base**

Massachusetts National Guard  
Air Force Life Cycle Management Center  
66<sup>th</sup> Air Base Group  
    319<sup>th</sup> Air Force Recruiting Squadron  
    439<sup>th</sup> USAF Reserve Recruiting Squadron, Detachment 1  
    46<sup>th</sup> Test Squadron, Detachment 1  
    Air Force Audit Agency (AFAA)  
    Detachment 102, AF Office of Special Investigations (OSI)  
    Defense Commissary Agency (DECA)  
    U.S. Air Force – Civil Air Patrol Liaison Office  
    Joint Personal Property Shipping Office (JPPSO)  
    Army and Air Force Exchange Service (AAFES)  
    Defense Contract Audit Agency (DCAA)  
    Defense Metropolitan Area Telephone System (DMATS-Boston)  
    United States Postal Service (USPS)  
    Hanscom Federal Credit Union (HFCU)  
    Lincoln Public Schools  
    Commission for the Blind  
    Caritas Health Services at Brighton Marine  
    TRICARE Service Center (Managed Health Care Facility)  
MIT Lincoln Laboratory (MIT/LL)  
MITRE Corporation

**Joint Base Cape Cod**

*Camp Edwards Training Site*  
Army Aviation Support Facility #1 of the 3<sup>rd</sup> Battalion, 126<sup>th</sup> Aviation Regiment  
Massachusetts Army National Guard Regional Training Institute  
Massachusetts Environmental & Readiness Center

*Cape Cod Air Force Station*

6<sup>th</sup> Space Warning Squadron  
Air Force Civil Engineer Center Installation Restoration Program

*Otis Air National Guard Base*

102<sup>nd</sup> Intel Wing  
253/267 Combat Communications Group  
U.S. Air Force Auxiliary (Civil Air Patrol)

*U.S. Coast Guard Air Station Cape Cod*

Air Station Cape Cod  
Coast Guard Base Cape Cod  
Northeastern Regional Fisheries Training Center  
Electronic Support Detachment Cape Cod  
Marine Safety Detachment Cape Cod  
Communications Station Boston  
Atlantic Area Armory  
Port Security Unit 301  
Coast Guard Investigative Service  
Exchange/Commissary  
Golf Course  
USGS Cape Cod Toxic Substances Hydrology Research

*Other Tenants<sup>19</sup>*

Veterans Administration, Massachusetts National Cemetery  
Wings Inn  
Massachusetts Department of Environmental Protection  
U.S. Department of Agriculture  
U.S. Environmental Protection Agency  
MassDevelopment  
Federal Aviation Administration, North Atlantic Region  
Senior Environmental Corps  
Massachusetts Disaster Preparedness Safe Haven Facility  
Police Motorcycle & Canine Training Areas  
Upper Cape Trash Transfer Station  
Volpe, the National Transportation Systems Center, Environmental Measurement and Modeling Division  
Volpe, the National Transportation Systems Center, Weather Test Facility  
Massachusetts Maritime Academy  
U.S. Army Environmental Center Impact Area  
Barnstable County Correctional Facility  
Police Motorcycle & Canine Training Areas  
Buzzards Bay Project  
FAA Cape Approach  
Bourne Public Schools  
Auxiliary Flotilla 11-8

**Natick Soldier Systems Center**

U.S. Army Soldier System Center  
U.S. Army Garrison  
U.S. Army Natick Soldier Research & Development Engineering Center  
U.S. Army Research Institute for Environmental Medicine  
Product Manager – Force Sustainment Systems  
Product Manager – Soldier Clothing and Individual Equipment

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<sup>19</sup> For complete list, see U.S. EPA Contaminated Site Clean-Up Information (CLU-IN) site, [www.clu-in.org/conf/tio/renewableenergyland/slides/Forbes.pptx](http://www.clu-in.org/conf/tio/renewableenergyland/slides/Forbes.pptx) (accessed April 2015).

U.S. Navy Clothing and Textile Research Facility  
U.S. Coast Guard Clothing Design and Technical Office  
U.S. Army TACOM, Integrated Logistics Support Center  
Army Contracting Command - APG, Natick Contracting Division  
Document Automation and Production Service  
U.S. Army Medical Command Occupational Health Clinic  
U.S. Army NETCOM, Network Enterprise Center – Natick  
Civilian Personnel Advisory Center

**Westover Air Reserve Base**

439<sup>th</sup> Airlift Wing

*Air Force Auxiliary*

Westover Composite Squadron, NER-MA-015, Massachusetts Civil Air Patrol

*Army*

302<sup>nd</sup> Maneuver Enhancement Brigade  
287<sup>th</sup> Medical Detachment, 804<sup>th</sup> Medical Brigade  
226<sup>th</sup> Transportation Company (Railway Operating)

*Marine Corps*

Marine Wing Support Squadron, Detachment B  
Marine Air Support Squadron 6  
Machine Gun Platoon, Support Company, Anti-Terrorism Battalion, 4<sup>th</sup> Marine Division

*All Services*

Springfield Military Entrance Processing Station

**Massachusetts Army National Guard**

Joint Forces HQ  
151st Regional Support Group  
164th Transportation Battalion  
3/126th Aviation Battalion  
101st Finance Detachment  
D Company  
    223rd Military Intelligence Battalion  
    26th Maneuver Enhancement Brigade  
    101st Engineer Battalion 126th Brigade Support Battalion  
    211th Military Police Battalion  
    26th Network Support Company  
    51st Troop Command  
    181st Infantry Battalion  
    182nd Infantry Battalion  
    101st Field Artillery Regiment Company C  
    1st Battalion  
    20th Special Forces Group (A)  
    79th Troop Command 215th Army Band 1st Civil Support Team  
272 Chemical Company  
387th Explosive Ordnance Detachment  
65th Press Camp  
179th Engineer Detachment (Firefighter)

180th Engineer Detachment (Firefighter)  
Medical Command  
Massachusetts Military Academy (101st Regional Training Site) Camp Edwards

**U.S. Army Reserve**  
99<sup>th</sup> Regional Support Command

## Appendix C – Employment Detail

Data limitations do not allow us to report this level of detail for each installation, but where available we have included the breakdowns by employment or service membership below.

### Barnes Air National Guard Base Employment and Payroll

Personnel	Total Employment or Service Membership (full-time and part-time)	Total Gross Payroll (including salary and benefits)
Active Military Full-Time & Part-Time	171	\$15,372,000
Reserve Force Military Full-Time & Part-Time	850	\$41,929,000
DOD Civilian Full-Time & Part-Time	2	\$110,000
Non-DOD Civilian Full-Time & Part-Time	50	\$3,200,000

### Hanscom Air Force Base Employment and Payroll<sup>20</sup>

Personnel	Total Employment or Service Membership (full-time and part-time)	Total Gross Payroll (including salary and benefits)
Active Military Full-Time & Part-Time	1,591	\$111,107,085
Reserve Force Military Full-Time & Part-Time	69	\$1,683,565
DOD Civilian Full-Time & Part-Time	1,958	\$176,682,286
Non-DOD Civilian Full-Time & Part-Time	314	\$4,316,883

### Fort Devens Employment and Payroll

Personnel	Total Employment or Service Membership (full-time and part-time)	Total Gross Payroll (including salary and benefits)
Active Military Full-Time & Part-Time	94	\$8,930,000
Reserve Force Military Full-Time & Part-Time	2,130	\$34,371,810
DOD Civilian Full-Time & Part-Time	210	\$16,025,000
Non-DOD Civilian Full-Time & Part-Time	46	\$3,000,000

*\*Note: Estimates do not include average weekly transient training population of 1,832 personnel.*

<sup>20</sup> Total Employment and Gross Payroll do not include Massachusetts National Guard personnel or AF contracted support.

### Joint Base Cape Cod Employment and Payroll

Personnel	Total Employment or Service Membership (full-time and part-time)	Total Gross Payroll (including salary and benefits)
Active Military Full-Time & Part-Time	520	\$48,473,080
Reserve Force Military Full-Time & Part-Time	1,719	\$26,000,733
DOD Civilian Full-Time & Part-Time	346	\$31,649,799
Non-DOD Civilian Full-Time & Part-Time	231	\$9,470,214

### Westover Air Reserve Base

Personnel	Total Employment or Service Membership (full-time and part-time)	Total Gross Payroll (including salary and benefits)
Active Military Full-Time & Part-Time	72	\$22,929,130
Reserve Force Military Full-Time & Part-Time	2,433	\$47,151,926
DOD Civilian Full-Time & Part-Time	365	\$67,502,330
Non-DOD Civilian Full-Time & Part-Time	195	\$2,099,044

### Employment by State of Residence

In a follow-up to our original data request, we asked the military installations for additional detail on the residences of their employees. The following table shows these estimates for FY2013.

Employment by Residence	Barnes ANG Base	Fort Devens	Hanscom AFB	JBCC	Westover	National Guard	Total
Massachusetts	908	1,492	2,611	1,968	1,401	5,683	<b>14,063</b>
Connecticut	67	0	6	15	493	93	<b>674</b>
Maine	9	0	11	8	39	29	<b>96</b>
New Hampshire	22	0	497	35	134	210	<b>898</b>
New York	18	0	0	14	283	52	<b>367</b>
Rhode Island	6	0	17	34	125	131	<b>313</b>
Vermont	11	0	0	1	30	6	<b>48</b>
Other	22	988	13	100	0	76	<b>1,199</b>
<b>New England</b>	<b>1,041</b>	<b>1,492</b>	<b>3,155</b>	<b>2,075</b>	<b>2,505</b>	<b>6,204</b>	<b>16,459</b>

Notes:

These are estimates derived from partial data reported by the installations to UMDI. Actual employment by state is reported when available; otherwise, estimates are based on approximate ratios provided by the installations.

Employment by state of residence for the Army Reserve and Natick SSC could not be completed in time for this analysis. Hanscom employment by residence reflects military and civilians only; contractor support and MA National Guard were not available.

JBCC only includes the Air Force Station Cape Cod, Camp Edwards, and Otis.



**Educational Attainment by Installation**

Education	Barnes ANG Base	JBCC	Fort Devens	Hanscom AFB	Westover	National Guard
High School Diploma or Below	52%	43%	74%	25%	14%	59%
Associate's	19%	26%	9%	5%	36%	20%
Bachelor's	24%	23%	12%	29%	35%	17%
Master's or Above	5%	9%	4%	41%	16%	5%

Notes:

Educational attainment estimates are provided by installations that chose to participate. Natick SSC has said it has nearly 1,200 personnel with degrees in 70 disciplines ranging from Aerospace to Zoology.

## Appendix D – Methodology

### Data Collection

The University of Massachusetts Donahue Institute Economic and Public Policy Research Unit (EPPR) requested an itemization of expenditures (e.g., payroll, operations, construction, and R&D) from each installation. MassDevelopment identified appropriate contacts to coordinate data collection for each base (see Appendix A for data contacts by installation). EPPR asked these data contacts to provide expenditure data for their respective installations. Insofar as several different missions under different commands may use a particular installation, EPPR requested these data contacts to capture the vast range of the economic activity at each installation. In cases where several major missions coexist on the same base, EPPR contacted data contacts from each major mission and aggregated the data to provide a base total (see notes in relevant sections for more information on this process for each base). Due to time and resource constraints, and to make the analysis replicable, EPPR only captured data from tenants of an installation if the primary data contacts could provide the information. We focused data collection on the major missions of each installation. The specific commands and tenants for each installation are footnoted.

EPPR provided each data contact with a standard outline specifying the data required for the analysis and engaged in additional follow-up with installations to tailor the data-collection process to match the different economic activities undertaken by each installation.

The six military installations function and are structured in multiple ways. Each installation and tenant has its own accounting, reporting systems, and relationships with other commands. A centralized full accounting of information at the base level can be rare, especially for large, multi-functional bases. Thus, consistent data reporting proved challenging, not only across installations, but within them as well. Given finite time and resources, EPPR attempted to ensure the most comparable and complete data collection possible in spite of the many different accounting and oversight systems used by the myriad missions, commands, and tenants for which we sought data.

### Relationship among Missions

While each installation serves a different combination of tenants, the military installations across the Commonwealth provide support, training grounds, housing, administrative, and other services to the United States Army, United States Marine Corps, United States Navy, United States Air Force, United States Coast Guard, Massachusetts Army National Guard, Army Reserve, Marine Corps Reserve, Naval Reserve, Massachusetts Air National Guard, Air Force Reserve, Coast Guard Reserve, and other state and federal services. Additionally, some installations have other tenant organizations or groups that are located within the installation, but are not under the command of a service branch of the military or under the major command of the installation. As noted earlier, the service, mission, or command, rather than the installation, generally keeps financial records. We try to indicate the service missions and tenants located at each particular installation, and clarify what groups are covered by the financial information provided. In focusing on specific military installations, this analysis may miss some of the expenditures by military missions or commands operating outside of military installations.

### Massachusetts Army and Air National Guard

This study includes the economic contributions of both the Massachusetts Army and Air National Guard. The Massachusetts Army and Air National Guard operate at multiple locations throughout the

Commonwealth, including some of the six installations highlighted in this analysis, but also operate outside the main installations. National Guard personnel connected to Hanscom Air Force Base, Barnes Air National Guard Base, Otis Air National Guard Base (JBCC), and Camp Edwards (JBCC) were reported at each of these respective installations. The 44 smaller National Guard armories spread across Massachusetts were reported as a separate economic contribution.

### **Joint Base Cape Cod (JBCC)**

One of the most complex installations with varied commands, missions, and tenants, JBCC houses the United States Air Force, United States Coast Guard, Massachusetts Army National Guard, Massachusetts Air National Guard, and other tenant organizations. Cape Cod Air Force Station (Air Force), Air Station Cape Cod (Coast Guard), Camp Edwards (Army National Guard), and Otis Air National Guard Base contacts contributed economic data for their major missions at JBCC.

## **Comparability across Installations**

While this study does seek to create commensurate analyses that would also allow for direct comparisons, we acknowledge that given how unique each installation is, a simple comparison across installations looking solely at expenditures as an indicator of relative importance would be misleading. The preceding sections present discussions of each installation in its own right both to provide a comprehensive analysis with a common methodology and to recognize each installation's unique contributions to the Commonwealth.

## **Comparability with Other Studies**

### **MassDevelopment Defense Contracts Analysis**

Concurrently with this analysis, MassDevelopment engaged EPPR to analyze Department of Defense and Department of Homeland Security contracts awarded to businesses and institutions within each New England state for FY2013. The study looks at DoD and DHS primary contracts awarded to New England businesses, as well as work actually performed in New England (whether this work results from a primary contract awarded in New England or elsewhere), and includes an economic-contribution analysis.

Because some DoD and DHS contracts awarded to New England businesses are awarded through and/or on behalf of the six installations included in this study, the contract data used in the MassDevelopment-sponsored study overlaps to an unknown degree with the direct expenditure on contracts reported by the installations considered in this study. Furthermore, data limitations on both the installation data and the [USASpending.gov](http://USASpending.gov) contracting database complicate distinguishing in every case which contracts support the operation of the military installations from those that are ultimately awarded to businesses supporting other defense and homeland-security needs. Therefore, the economic activity in this study *should not* be added to the economic activity resulting from the DoD and DHS contracts analysis as doing so would result in some double-counting. Instead, these two studies complement each other qualitatively as they answer specific and unique questions about the federal defense-related economic contributions in Massachusetts.

## **Limitations and Areas for Potential Future Research**

Certain economic activities could not be measured given time and resource constraints. Expenditures by visitors to the installations who come from out of the area (most notably those who come to Massachusetts for training) is an area for future exploration. Service members who come from out of state to train at installations in the Commonwealth spend money locally on goods and services. Analyzing the impacts of such expenditures typically requires the use of surveys to estimate local visitor expenditures.

Installations rarely have centralized bureaucracies, particularly when multiple missions exist on a base. In fact, the bureaucracy (i.e., procurement office) for some installations works off-base or entirely out-of-state, and therefore local mission staff may not have access to all of the financial information related to local expenditures. Some contract expenditures from DoD or DHS may go directly to local firms to support an installation without the installation keeping financial records of the transaction. Additionally, some DoD and DHS expenditures related to Massachusetts firms have no connection to local installations at all. In spite of the difficulties these factors present for this study, any spending connected to Massachusetts firms associated with contracts to support local installations, regardless of where the purchase office is located, is included in the study.

The economic-contributions analysis included in this report covers only the information received from each installation and its associated contact. While not all expenditures may have been captured, this study seeks to account for the vast majority of expenditures originating from each base. Additionally, many installations receive consumable supplies from the U.S. General Services Administration and do not perform their own contracting/acquisition functions on-site. To this end, the full expenditures of each installation may not be fully represented by the data used for this analysis. Thus, this report may be considered a conservative analysis of the economic contributions of each installation in the Commonwealth.

Finally, the military installations in Massachusetts naturally have economic relationships with and hire employees who live in nearby states. This economic-contributions analysis is limited to the economic contributions to the Massachusetts economy (resulting from expenditures related to Massachusetts firms and payroll expenditures on Massachusetts residents).

## **Economic-Contribution Analysis and the IMPLAN Model**

Economic-contribution analysis attempts to estimate the total contribution of different types of economic activities to a regional and/or state economy. An initial investment in one sector of an economy (i.e. defense, research and development, etc.) spurs additional economic activity in other sectors as the money is re-spent in a region. The total economic contribution of the investment is estimated by tracing the flow of money between industries and households until all of the initial investment eventually leaves the region through foreign or domestic trade, or is collected as a tax.

The IMPLAN modeling system, a widely used proprietary software, combines the U.S. Bureau of Economic Analysis' Input-Output Benchmarks with regional employment and wage data to construct quantitative models of the flow of goods and services among businesses and employees. The IMPLAN model captures all monetary market transactions for consumption in a given period.

The EPPR economic-contribution analyses of each military installation in Massachusetts use the total operations and payroll budgets of each installation to represent the direct contribution of the installation to the Massachusetts economy. These direct contributions then continue to generate economic effects in the state. We use a budget of installation expenditures in three categories -- operations, personnel payroll, and construction -- to identify how the dollars from each of these expenditures move through the economy. The IMPLAN software and data package for Massachusetts model later rounds of local spending. Finally, all rounds of spending are combined to produce the total contribution estimate. The model specifically reflects the expenditure patterns and industry mix of Massachusetts, including specific information about when expenditures leave the state due to (foreign and domestic) trade and taxes.

As previously stated, this study includes an analysis across all six installations that can be used comparatively. Several of the installations have been the subject of recent economic-impact studies. This

analysis improves on previous work by using consistent methodology and the most recent, most comprehensive data available for the six installations.

We estimate two major types of contributions:

- *Outputs* are expenditures of the industry and supplier industries to produce the final good.
- *Employment* refers to all employees required to produce the outputs, including wage and salary employees; full-time and part-time employees; and the self-employed.

IMPLAN estimates direct, indirect, and induced effects for both outputs and employment. Direct, indirect, induced, and total are defined as follows:

- *Direct effect* refers to the gross expenditures of the industry or sector on operations, payroll, and taxes.
- *Direct employment* refers to workers in the sector or industry.
- *Indirect effect* refers to spending by suppliers and contractors to produce inputs for the industry (such as medical devices).
- *Indirect employment* refers to employees of the industry's contractors and suppliers.
- *Induced effect* refers to household spending on goods and services by industry employees and the employees of contractors and suppliers (both direct and indirect employees).
- *Induced employment* refers to the employees of industries that produce the household goods and services purchased by the direct and indirect employees.
- *Total outputs or total impacts* are the sum of direct, indirect, and induced effects.
- *Total employment* is the sum of direct, indirect, and induced employment.

## About Us

The UMass Donahue Institute (UMDI) is the public service outreach and economic development unit of the University of Massachusetts President's Office. Established in 1971, the UMDI coordinates multi-campus initiatives that link UMass, other public and private higher education, and other external resources with the needs of government agencies, corporations, and nonprofit organizations. UMDI provides significant economic and public policy analysis, organizational development, training, education, financial management education, research, and evaluation to federal and state agencies, nonprofits, industry associations, and corporations. UMDI draws on its unique position within higher education to serve as a bridge between theory, innovation, and real-world applications.

The Economic and Public Policy Research (EPPR) group is a leading provider of applied research, helping clients make more informed decisions about strategic economic and public policy issues. EPPR produces in-depth economic impact and industry studies that help clients build credibility, gain visibility, educate constituents, plan economic development initiatives, and prioritize investments. EPPR provides unbiased economic analysis on state-level economic policy issues in Massachusetts and beyond, and has completed a number of economic studies on manufacturing, IT, defense industries, telecommunications, health care, and transportation. EPPR also features two experienced transportation economists with expertise working on economic impacts, benefit-cost analysis and industry profiles across all modes. Its trademark publication is *MassBenchmarks*, an economic journal that presents timely information concerning the performance of and prospects for the Massachusetts economy, including economic analyses of key industries that make up the economic base of the state.

For more information, visit [www.donahue.umassp.edu](http://www.donahue.umassp.edu) and [www.massbenchmarks.org](http://www.massbenchmarks.org).