

Massachusetts Statewide Airport Economic Impact Study Update

EXECUTIVE SUMMARY

JANUARY 2019

MASSACHUSETTS



MASSACHUSETTS AIRPORTS: A Catalyst for Business Growth and Development

In a world where communications are instantaneous, and time means money, businesses rely on aviation for the rapid delivery of goods and services to distant locations, often inaccessible or difficult to reach. Massachusetts' system of 39 airports provides the Commonwealth with a vital link to the regional, national, and international markets that drive our emerging economy.

Airports in Massachusetts connect us to worldwide markets and destinations, sustaining the Bay State's rapidly expanding business community and its world-renowned tourist destinations.

One of the most important factors in today's global economy is having access to a transportation system that promotes the safe, efficient, and rapid movement of people and goods. Massachusetts' system of public-use airports is a key component of the overall transportation system and plays important roles both as a catalyst for local and regional economies, which generate billions of dollars in economic development, and as a vital transportation link for Massachusetts businesses, residents, and visitors, supporting thousands of jobs.

Airports stimulate economic growth and development in many communities because aviation is essential for the attraction and retention of businesses. Aviation improves overall efficiency by enabling businesses to expedite customer service and the delivery of their products to market. In effect, Massachusetts' airports connect the Commonwealth to the national air transportation system and the global economy.

Airports also serve as gateways to premier tourist destinations such as the Berkshires and the Cape and Islands region, as well as the many cultural and historical attractions found throughout the Commonwealth. Visitors arriving at Massachusetts' commercial service and general aviation airports spend money for food, lodging, retail purchases, recreation, and ground transportation, all of which drive growth in local and regional economies. Conversely, Massachusetts residents also use aviation for their own leisure travel outside of the Commonwealth, connecting them to family and friends and vacation destinations throughout the world.

To better understand the economic benefits of Massachusetts' public-use airports, the Massachusetts Department of Transportation Aeronautics Division completed Airport Economic Impact Study updates in 2011 and 2014. This study is a continuation of that overall planning effort that began in 2009 with the Massachusetts Statewide Airport System Plan (MSASP), which examined the structure and long-term development of the Statewide Airport System as a whole. The 2019 Economic Impact Study will serve as a specific update to the previous economic studies to show how aviation propels the economic growth of the Commonwealth, as well as documenting some of the many other benefits that air transportation brings to its host communities.

The Aeronautics Division has taken a new approach to this study, to share in layman's terms some of the many unique stories that each of Massachusetts' diverse airports bring to their host communities.

A photograph showing three private jets parked on an asphalt tarmac. The largest jet is in the foreground, and two smaller ones are behind it. The background shows a line of trees and a hangar under a sunset sky with orange and yellow hues.

Promote aviation throughout the Commonwealth, while establishing an efficient, integrated airport system that will enhance airport safety, customer service, economic development, and environmental stewardship.

— MassDOT Aeronautics Division Mission Statement

Study Overview

This report details how Massachusetts’ 39 public-use airports are economically valuable to the Commonwealth by quantifying employment, payroll, and economic output. The economic impact analysis considers the annual impacts associated with on-airport, aviation-related businesses and government organizations, capital improvement projects, military aviation, the spending of visitors who arrive via scheduled commercial service airlines, and the spending of visitors who arrive on privately-owned general aviation aircraft. Economic impacts are presented for each individual airport and the Commonwealth as a whole. It is important to note that an economic impact study provides a “snapshot in time” with respect to airport operations and economic conditions. The data collection process, economic modeling, and state of the economy for this study update are all specifically related to 2017.

The Massachusetts Public-Use Airport System

Massachusetts’ system of public-use airports is comprised of nine commercial service and 30 general aviation airports, 11 of which are privately owned and operated.

The MassDOT Aeronautics Division supports the operation and development of 36 of these airports through:

- Grant funding
- Airport inspections
- Technical guidance
- Statewide planning initiative
- Aviation education outreach
- Communication with local, state, and federal officials

The **Massachusetts Port Authority (Massport)** owns and operates the three remaining airports, including Boston Logan International Airport (BOS), Laurence G. Hanscom Field (BED), and Worcester Regional Airport (ORH).



Multiple factors account for the growth in economic impacts generated by Massachusetts’ public-use airports since the completion of the 2014 Economic Impact Study. The primary driver is the overall increase in airline passenger traffic (both domestic and international) at Boston Logan. Other factors include increased spending per person by visitors arriving in Massachusetts on passenger airlines and general aviation aircraft, growth in business/air charter operations and the addition of new on-airport businesses. Similarly, strategic investments from the state had an excellent return on investment, and public private partnerships such as that with Gulfstream also had a very positive impact on the economy of the surrounding communities during this time.

	Total Employment	Total Payroll	Total Output
2014 Study	162,256	\$6,094,002,000	\$16,555,117,000
2019 Study	199,237	\$7,243,169,000	\$24,692,585,000
PERCENT GROWTH	23%	19%	49%

Behind the Numbers

This study collected information from airport sponsors, on-airport businesses and government agencies, visiting pilots and passengers, and other sources, all of which served as the input for an economic impact model. This model estimated each airport's impact generated by aviation activities occurring directly on the airports, such as operations by aircraft maintenance businesses, flight schools, and concessionaires, as well as capital improvement projects.

The benefits of an airport go beyond what is seen on the airfield. As the diagram shows, there is a great deal of economic activity that takes place beyond the airport fence. Expenditures by the airport and businesses/government agencies on the airport trickle through the economy, influencing people and businesses nearby. For example, when an aircraft mechanic working on the airport purchases local goods and services, such as gas or groceries, that spending circulates through the local economy by supporting the jobs and payroll of other businesses and thereby generates additional economic activity that is referred to as multiplier impacts. Additionally, visitors flying to the area typically spend money in the local community. The total impacts reflect all of the economic activity, not just what can be witnessed on the airport. The methodology used in this report, which follows FAA guidelines, has successfully quantified the benefits of airports and airport systems throughout the U.S.



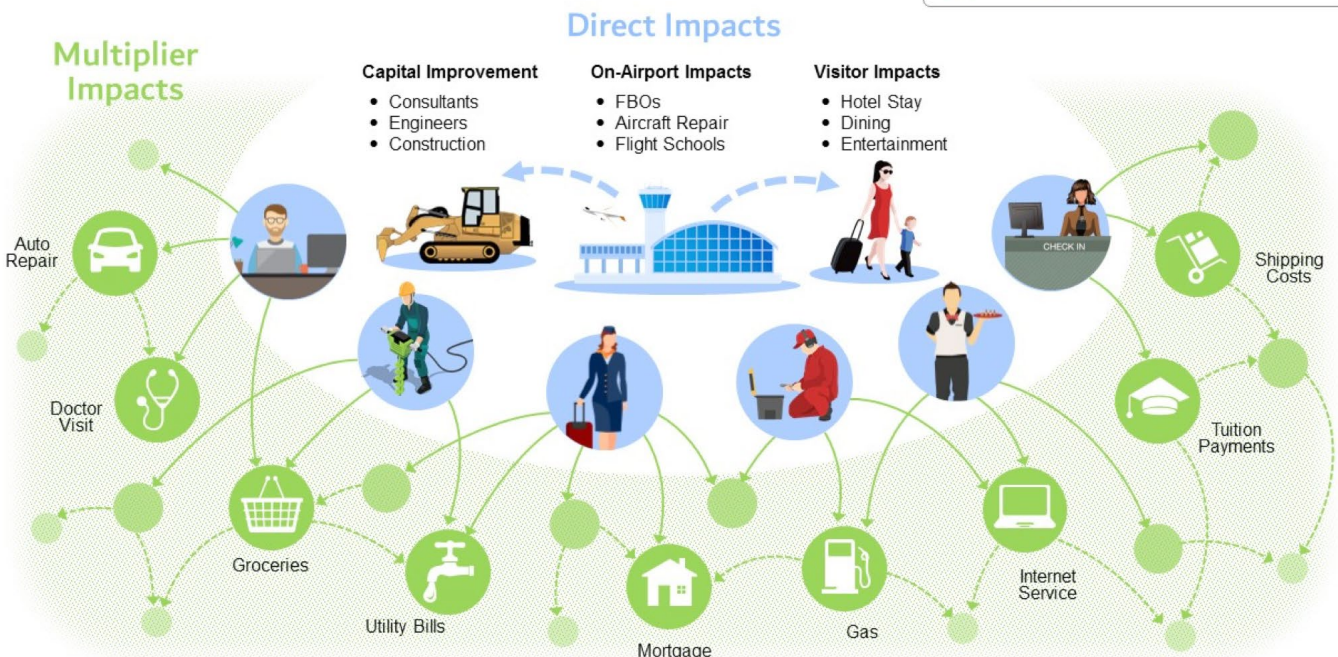
BARNSTABLE MUNICIPAL AIRPORT- BOARDMAN/POLANDO FIELD

Strategic Investments Position HYA for Economic Growth

Over the last 10 years, the FAA, MassDOT, and Barnstable Municipal Airport (HYA) have made significant strategic investments into airport infrastructure, which has helped to position the airport for future economic growth while enhancing airfield safety. With its new airport terminal building, HYA has been able to attract JetBlue to provide seasonal service from New York to Cape Cod.

ECONOMIC IMPACT MODEL

● + ● = Total Impacts



How Aviation's Benefits Are Quantified

MEASURES OF ECONOMIC IMPACT

Employment – Employment is the measure of full-time equivalent jobs, where two part-time positions are the equivalent of a single full-time position. Seasonal jobs are treated proportionally as appropriate.

Payroll – Payroll represents the costs associated with the annual salary, wages, and benefits earned by all the full-time equivalents measured under employment.

Output – Output is the quantity of goods and services generated annually by an airport and its associated activities and businesses, expressed in dollars. Output is estimated using an organization's annual sales, or its annual operating costs, which assumes that its output is approximately equivalent to what it expends.

TYPES OF ECONOMIC IMPACT

Direct Impacts – Direct impacts account for the initial point where the money from aviation-related activity enters the economy. On-airport direct impacts can be found at the airport while visitor-related direct impacts take place off-airport.

Multiplier Impacts – Multiplier impacts result from the re-circulation and re-spending of direct impacts within the economy. This re-spending of money can occur multiple times. For example, as airport employees spend their salary on clothing at a local retailer, those expenditures circulate through the economy, resulting in increased spending, payroll, and employment throughout Massachusetts.

Total Economic Impacts – Total impacts are the sum of all direct and multiplier economic impacts attributable to an airport or the system of airports.



Total Economic Impacts Of Massachusetts' Airports

COMMERCIAL SERVICE AIRPORTS				
Associated City	Airport Name	Total Employment ²	Total Payroll ²	Total Output ²
Bedford	Laurence G. Hanscom Field ¹	19,587	\$527,823,000	\$6,709,016,000
Boston	Boston Logan International Airport	162,266	\$5,974,587,000	\$16,325,472,000
Chicopee/Springfield	Westover Air Reserve Base/Metropolitan Airport ¹	4,571	\$172,687,000	\$245,257,000
Hyannis	Barnstable Municipal Airport-Boardman/Polando Field	1,724	\$73,761,000	\$157,240,000
Nantucket	Nantucket Memorial Airport	3,268	\$118,249,000	\$323,044,000
New Bedford	New Bedford Regional Airport	277	\$11,025,000	\$29,598,000
Provincetown	Provincetown Municipal Airport	390	\$13,958,000	\$34,856,000
Vineyard Haven	Martha's Vineyard Airport	1,401	\$50,939,000	\$140,551,000
Worcester	Worcester Regional Airport	587	\$29,617,000	\$96,746,000
COMMERCIAL SERVICE AIRPORTS TOTAL		194,071	\$6,972,646,000	\$24,061,780,000

¹ Includes economic impacts associated with military operations located on the airport. See page 8 for specific military totals.

² Total impacts include all on-airport business and government agency, capital improvement project, visitor, and multiplier impacts.



Total Economic Impacts Of Massachusetts' Airports

GENERAL AVIATION AIRPORTS				
Associated City	Airport Name	Total Employment ²	Total Payroll ²	Total Output ²
Barre/Barre Plains	Tanner-Hiller Airport	18	\$294,000	\$702,000
Berkley	Myricks Airport	0	\$0	\$58,000
Beverly	Beverly Regional Airport	269	\$11,638,000	\$34,302,000
Chatham	Chatham Municipal Airport	156	\$4,777,000	\$13,919,000
Edgartown	Katama Airpark	19	\$636,000	\$2,087,000
Falmouth	Falmouth Airpark	7	\$294,000	\$641,000
Fitchburg	Fitchburg Municipal Airport	162	\$6,573,000	\$17,619,000
Gardner	Gardner Municipal Airport	8	\$279,000	\$1,028,000
Great Barrington	Walter J. Koladza Airport	56	\$1,827,000	\$5,213,000
Hanson	Cranland Airport	11	\$351,000	\$990,000
Hopedale	Hopedale Industrial Park Airport	13	\$719,000	\$1,010,000
Lawrence	Lawrence Municipal Airport	403	\$18,363,000	\$49,885,000
Mansfield	Mansfield Municipal Airport	112	\$4,490,000	\$12,455,000
Marlborough	Marlboro Airport	1	\$34,000	\$189,000
Marshfield	Marshfield Municipal Airport - George Harlow Field	82	\$5,177,000	\$15,897,000
Marstons Mills	Cape Cod Airport	8	\$303,000	\$937,000
Montague	Turners Falls Airport	30	\$1,420,000	\$3,924,000
Newburyport	Plum Island Airport	6	\$167,000	\$295,000
North Adams	Harriman-and-West Airport	122	\$5,427,000	\$18,398,000
Northampton	Northampton Airport	32	\$806,000	\$3,202,000
Norwood	Norwood Memorial Airport	467	\$19,854,000	\$59,266,000
Orange	Orange Municipal Airport	110	\$4,297,000	\$11,067,000
Pittsfield	Pittsfield Municipal Airport	219	\$13,421,000	\$40,262,000
Plymouth	Plymouth Municipal Airport	368	\$19,273,000	\$62,910,000
Southbridge	Southbridge Municipal Airport	57	\$2,280,000	\$6,185,000
Spencer	Spencer Airport	3	\$100,000	\$356,000
Sterling	Sterling Airport	18	\$601,000	\$1,871,000
Stow	Minute Man Air Field	210	\$7,576,000	\$25,844,000
Taunton	Taunton Municipal Airport - King Field	25	\$1,060,000	\$3,543,000
Westfield/Springfield	Westfield-Barnes Regional Airport ¹	2,174	\$138,486,000	\$236,750,000
GENERAL AVIATION AIRPORTS TOTAL		5,166	\$270,523,000	\$630,805,000

¹ Includes economic impacts associated with military operations located on the airport. See page 8 for specific military totals.

² Total impacts include all on-airport business and government agency, capital improvement project, visitor, and multiplier impacts.

TOTAL ECONOMIC IMPACTS FOR ALL AIRPORTS COMBINED



199,237

TOTAL EMPLOYMENT



\$7,243,169,000

TOTAL PAYROLL



\$24,692,585,000

TOTAL OUTPUT

Massport Airports

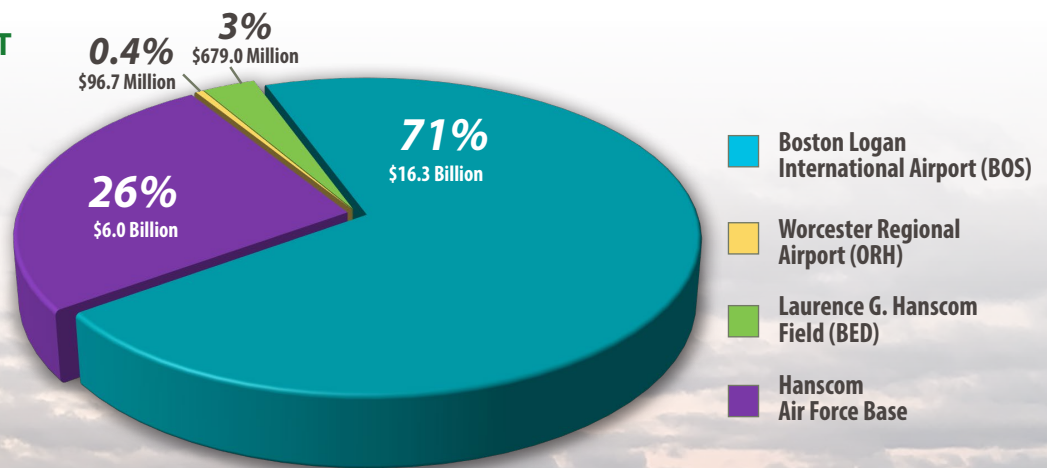


The Massachusetts Port Authority (Massport) is committed to connecting Massachusetts and New England to the world. Massport prioritizes safety, security, efficiency, and cost-effectiveness in its mission to help people and goods travel through diverse facilities found across the Commonwealth. In achieving its mission, Massport aims to serve the surrounding community who live and work around those facilities in a manner that is inclusive and economically prosperous yet mindful of the impacts on residents and the environment.

Massport owns and operates three airports - Boston Logan International Airport (BOS), Laurence G. Hanscom Field (BED), and Worcester Regional Airport (ORH) - each

playing a significant and unique role as a transportation and economic hub. Serving as the primary gateway for airline passengers in New England, BOS links the region to over 130 domestic and international destinations via more than 40 different airlines. BOS accommodated more than 38 million passengers and over 400,000 aircraft operations in 2017, ranking as the 16th busiest airport in the U.S. ORH offers commercial service provided by four different air carriers and supports general aviation and cargo services, with convenient access for a large population in central Massachusetts. BED offers general aviation access and features an ideal location off Interstate 95 just outside of Boston, with facilities for business, research, and military groups.

TOTAL ECONOMIC IMPACT
\$23.1 Billion



The data collection process, economic modeling, and state of the economy for this study update are all specifically related to 2017.

Additional Economic Benefits of Aviation in Massachusetts

MILITARY AVIATION

Dating back to colonial times, Massachusetts has had a long and distinguished military history supporting multiple branches of the service. Home to four active military installations – Hanscom AFB, Barnes ANGB, Westover ARB, and Joint Base Cape Cod – Massachusetts benefits from military aviation activities and the economic impacts attributed to each of those facilities.

Military Air Facility	Total Employment	Total Payroll	Total Output
Hanscom AFB	17,344	\$393,836,000	\$6,030,000,000
Westover ARB	4,384	\$161,257,000	\$212,534,000
Barnes ANGB	1,519	\$85,742,000	\$104,359,000
Joint Base Cape Cod	299	\$10,800,000	\$28,969,000
Total	23,546	\$651,635,000	\$6,375,862,000

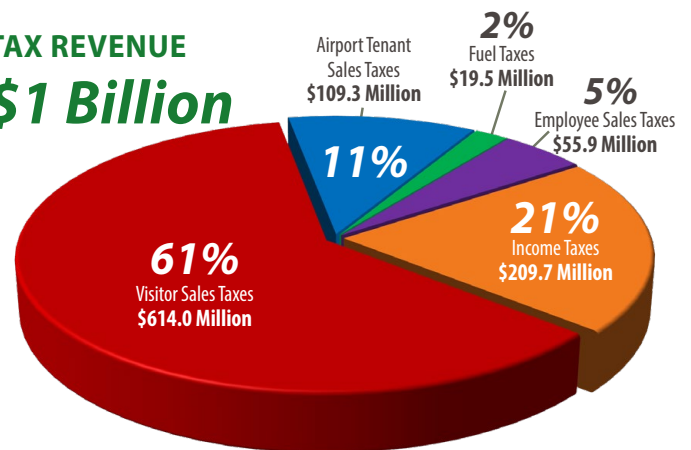


AIRPORT-RELATED TAXES

Massachusetts' airports support the businesses and associated jobs that generate substantial taxes for the Commonwealth. A tax analysis for this study examined the revenue generated by the state sales tax; local sales tax; and lodging, restaurant, rental car, state income, and aviation fuel taxes. These taxes are paid by on-airport businesses, visitors arriving by both commercial airlines and general aviation aircraft, and employees supported by airport-related activity. For example, an airport employee who refuels aircraft pays income tax. The owners of those aircraft pay aviation fuel tax, and if visiting from outside the area, they also pay hotel, restaurant, and rental car taxes. The hotel receptionist and restaurant waitress pay income taxes and sales tax on purchases in Massachusetts. Added all together, this airport-related activity generates an estimated \$1.0 billion in tax revenue for Massachusetts.

TAX REVENUE

\$1 Billion



LAURENCE G. HANSCOM FIELD

A Vital Business, Community, and Military Hub

Owned and operated by Massport, BED is strategically located 15 miles outside of Boston and adjacent to Interstate 95/128. It is the busiest general aviation airport in New England, supporting business aviation and the military. BED is a gateway for numerous sports team charters for all major professional and college sporting events in the Boston area. The tenants of BED support various non-profit charities such as Angel Flight Northeast and Pilots N Paws. Boston MedFlight has their air ambulance headquarters based at the airport.

Unique Aviation Activities In Massachusetts

Unmanned Aircraft Systems

Unmanned aircraft systems (UAS) have seen a dramatic rise in use across the country, a trend that is expected to continue. In Massachusetts alone, it is expected that the UAS industry will grow from approximately \$63 million to over \$285 million by 2026.

This growth is due to both technological advancements and the FAA's ratification of Part 107 regulations for small drone use. Part 107 stipulates that small UAS (between 0.55 lbs. and 55 lbs.) must be registered with the FAA, flown during the day within line-of-sight of the operator, kept within Class G airspace, and operated by pilots that have passed an aeronautical knowledge test, among other provisions. UAS pilots who wish to run drone operations not strictly adhering to Part 107 rules – such as night flying or operating a drone over 55 lbs. – may apply for a waiver. The FAA Reauthorization Act of 2018 repealed the Special Rule for Model Aircraft and now requires that recreational users also pass the aeronautical knowledge test.

Drones come in both fixed-wing and rotary-wing models and can be equipped with sensors such as HD cameras and thermal sensors. Some of the limitless applications for UAS include:

- precision agriculture
- construction
- infrastructure inspections
- aerial photography
- site mapping
- crowd control and security
- disaster management and response
- HAZMAT detection
- news reporting



Drones offer a long list of safety, time, quality, and cost benefits. UAS remove humans from potential hazardous situations, aid greatly in disaster response, save time and ensure quality by providing repeatable data and removing human error, and are extremely adaptable. Nearly every

benefit is tied to saving money, from the inexpensive training and greatly reduced time, to avoiding high insurance costs or those related to human injury and litigation.

Massachusetts is at the forefront of UAS use in industry and government. MassDOT's comprehensive Drone Pilot Program facilitates the adoption of drones in a manner that is safe, cost-effective, and secure and incentivizes applied research to solve realistic MassDOT drone challenges. Under the program, MassDOT uses UAS for infrastructure inspection, to oversee construction, and for emergency response. At airports specifically, MassDOT Aeronautics touts utilizing drones for runway, fence, and building inspections; obstruction surveys; wildlife surveys; and accident investigation.

MassDOT is also a participant in the Commonwealth UAS Integration Program (CUIP), a collaboration focused on creating a world-class drone ecosystem across government, industry, and academia in which innovative technologies were developed to facilitate practical integration of UAS into the Massachusetts economy. Work under CUIP includes delivery of medication to Martha's Vineyard with drone flights that go beyond visual line of sight and testing of drones at the MA UAC Test Center at Joint Base Cape Cod.

Multiple Massachusetts higher education institutions conduct drone training and research programs:

- UMassAir conducts UAS-based research projects related to operational safety and security, agriculture, infrastructure management, and public policy, while offering drone coursework.
- MIT's Lincoln Laboratory at Hanscom AFB is a participant in CUIP and home to the university's Autonomous Systems Development Facility (ASDF), a 17,000-square-foot test center equipped with motion capture sensors for accurate test results.
- Northeastern University has constructed the George J. Kostas Research Institute for Homeland Security. The facility includes a 150-foot by 200-foot, five-story-tall netted drone testing facility and will soon include an anechoic chamber for testing drones against counter-UAS interference.



Business – Airport Synergies Throughout the Commonwealth

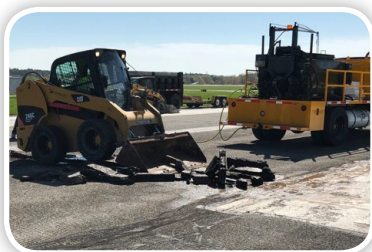
Airports have long provided a fertile environment for business development, and businesses situated on-site have provided a consistent revenue stream to support airport operations and the surrounding community. Airports and businesses located both on- and off-site have developed unique synergies with each other to take advantage of the dynamic environment of aviation. Activities at five of the Commonwealth's airports showcase these opportunities:



SOUTHBRIDGE – A KEY TO HYDE TOOLS SUCCESS

Established over a century ago, Hyde is a leading provider of

hand tools and an active supporter of Southbridge Municipal Airport. Hyde Tools' CEO sits on the Southbridge Airport Commission, and his family has facilitated the airport for many years by purchasing airfield equipment and volunteering their time for regular clean-up and maintenance activities at the airport.



BEVERLY – NAA DRIVES BUSINESS AVIATION

As a lone fixed-base operator (FBO), North Atlantic Air has invested over \$1.3 million in the past 18 months

on airside and landside infrastructure improvements at Beverly Regional Airport. The boutique style FBO has greatly enhanced the customer experience, resulting in an increase of over 30 percent in business jet aircraft and a nearly 40 percent increase in the flowage of jet fuel.



WESTFIELD-BARNES – PUBLIC PRIVATE PARTNERSHIPS STIMULATE WORKFORCE DEVELOPMENT

Recognizing significant workforce development

challenges in the aviation industry, the City of Westfield and Westfield Technical Academy (WTA) set out to establish an FAA-approved Part 147 Aircraft Maintenance Technician (AMT) program for high school students. WTA achieved this rigorous certification with the aid of Gulfstream and Bombardier and now stands as one of only three high schools

in the country offering the AMT curriculum. AMT students who pass their FAA exams can begin their careers (upon graduation) as highly skilled, well-paid aircraft mechanics or apply those skills to their continuing education. The first class of 14 students is scheduled to graduate in June 2019.



MINUTE MAN AIR FIELD – STATE INVESTMENTS PROMPT TENANTS/PRIVATE DEVELOPERS TO FUND NEW AIRPORT INFRASTRUCTURE

State investments for infrastructure have

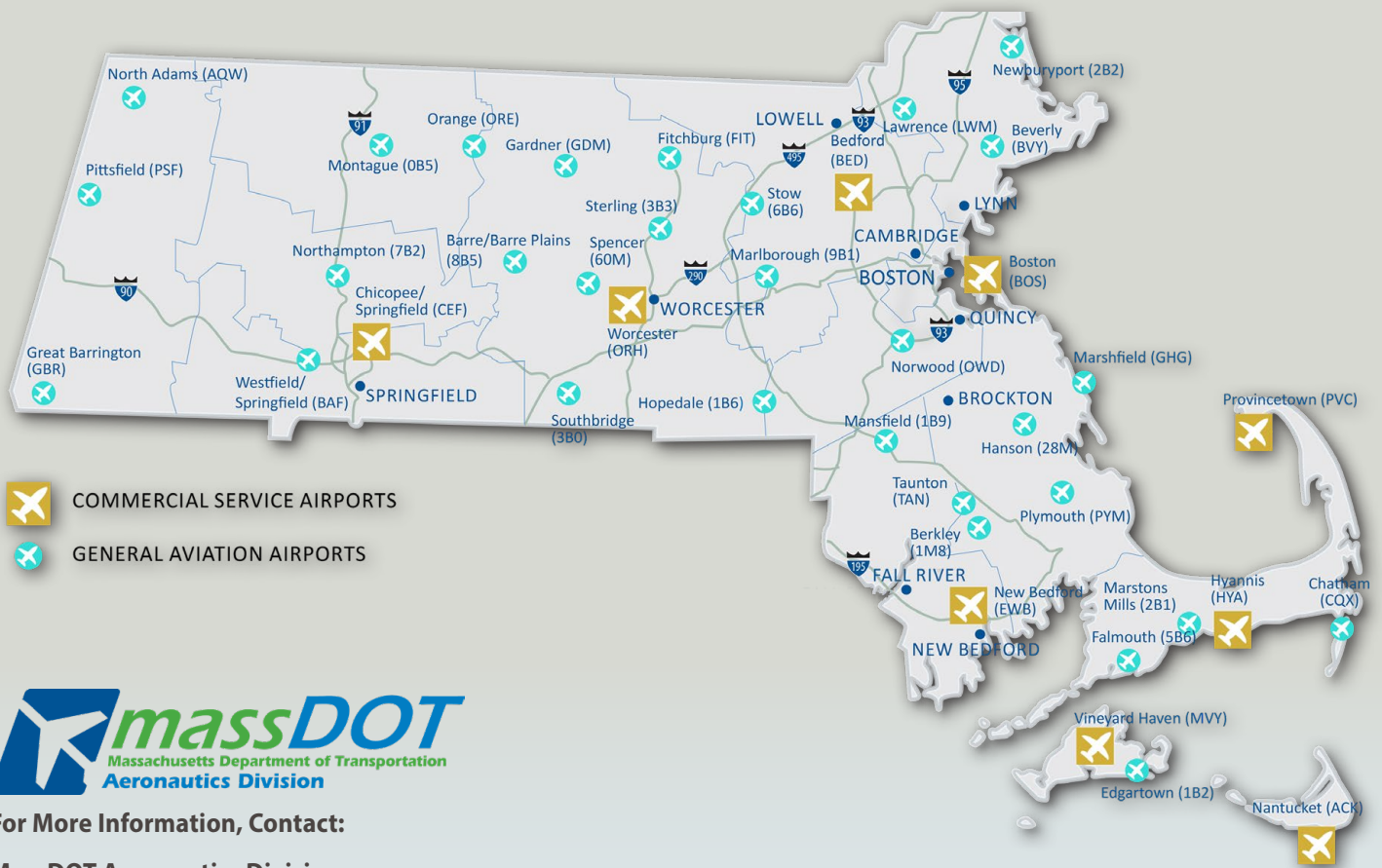
prompted tenants and private sector developers to invest monies that have brought in more tenants and funded new and renovated hangar facilities. The airport's tenants include the National Aviation Academy – offering FAA-approved AMT training to over 100 students and Nancy's Airfield Café, which offers acclaimed "farm-to table" dining.



MARSHFIELD – COLLABORATIVE PARTNERSHIP WITH FIRST RESPONDERS BENEFITS LOCAL COMMUNITY

Marshfield Municipal

Airport-George Harlow Field is an essential public safety transportation asset for the region. The airport holds an annual "Safety Day," highlighting the strong partnerships between local, state, and federal first responders and how these agencies are working collaboratively in response to man-made disasters. An example of this partnership occurred when the airport's FBO, Shoreline Aviation, provided aerial support (aircraft & pilot) to the Marshfield Police Department when the State Police Air Wing's helicopter was unavailable for a search-and-rescue effort. This search effort resulted in a timely arrest of a wanted suspect on the run within the community.



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Aircraft Owners and Pilots Association (AOPA)

Massachusetts Port Authority (Massport)

National Business Aviation Association (NBAA)

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WWLP-22 News

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**Massachusetts' 39
public-use airports offer a
competitive business advantage.
Overall, for every \$100 spent
by aviation related businesses, an
additional \$56 is created as a multiplier
impact that boosts spending, payroll,
and employment benefits improving
the quality of life in Massachusetts
for all its residents.**