



THE EVOLVING ROLE OF OUR
GENERAL AVIATION AIRPORTS
AND THEIR SIGNIFICANCE TO
NEW ENGLAND





A PROFILE OF THE NEW ENGLAND GENERAL AVIATION AIRPORTS

PHASE I - SUMMARY OF FINDINGS
SEPTEMBER 2015



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DEAR READER

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We, the state aviation officials representing the six New England states, have just completed a broad assessment of the general aviation (GA) airports in New England. The study was funded by a Federal Aviation Administration (FAA) Grant.

Unlike most airport system planning studies which are conducted on a “state by state” basis, this analysis adopted a more unique approach. It was developed with a broader perspective, that is; an airport system evaluation without state boundaries. The geographic makeup of the six New England states provides an excellent platform to evaluate our GA airport system on that scale. A similar analysis of the New England commercial airport system in 2004 proved to be very successful. Moreover the state partnership which was formed provided an opportunity to share our common thinking, as well as our differences, in discussing policies and funding programs to guide the GA airports for our individual states’.

Our initial objectives in proceeding with this assessment were quite ambitious and ultimately needed to be scaled back. To work within the boundaries of the available funds, and with FAA guidance, we made a decision to conduct the evaluation utilizing a phased approach. The phased approach provided some additional benefits:

It permitted the GA system to be analyzed through various independent lenses – again not a traditional system planning approach. The results of these independent tasks provided new and different insights and anecdotal information on the regional airport system. As a result; the findings and observations in this initial phase can identify potential areas where additional analysis may be needed, or in some cases simply provide a baseline for the GA system in the New England Region.

The challenge to conduct any future work is entirely dependent on the probability of obtaining additional funding from the FAA grant program. This first phase of the study was undertaken to understand:

- The role of our GA airports in providing aviation services for their communities and states;
- How our GA airports interact with each other, and as a component of the national system;
- The resources required to maintain the existing runway and taxiway infrastructure;
- FAA’s new airport classification system, General Aviation Airports: A National Asset Study; and,
- The types of facilities which are critical to the emerging use of these airports as supplements to scheduled passenger and cargo air service.

The objectives primarily focus on: (a) the roles and classification of the existing system, (b) projecting the runway/ taxiway infrastructure costs, and finally, (c) attempting to understand the significance of the GA system as it relates to our overall transportation system. While each objective was important, it was the latter that got our attention. Ultimately it influenced the title we adopted for this report; “The Evolving Role of our General Aviation Airports and Their Significance to New England”.

The report has magnified our thinking about the New England GA airports system. Clearly, the general aviation segment of our air transportation system has evolved over the past several decades. It has truly evolved from the small airports that have served our recreational flying enthusiasts of the '50's and 60's into a much larger component of the New England transportation system and ultimately its economic development. Today, GA airports serve as a valuable complement to scheduled air service within the nation's air transportation system. This new role, coupled with new aircraft and navigation technology is altering the role and requirements of the system of general aviation airports.

Make no mistake, our GA airports system continues to serve all aviation interests but if it is to continue to be successful it must rely on the fact that it is part of a transportation system and the overall New England economy. The question it raises for all of us involved in developing and maintaining the system is; "at what cost?" In order to improve our understanding of how the GA system is changing this regional system plan analysis identifies, in part, the challenges for maintaining and enhancing the aviation services needed by these airports.

With that background, we trust we have provided you with the encouragement to read this modest summary document. It will certainly provide the reader with a greater awareness of the "evolving" New England GA System. Moreover, it is our hope that what you read in the summary document will motivate you to research the comprehensive facts and figures presented in the full report which is available on line at: www.pvdairport.com

Submitted by the Project Management Team,



Chris Willenborg, Project Director
Massachusetts Department of Transportation



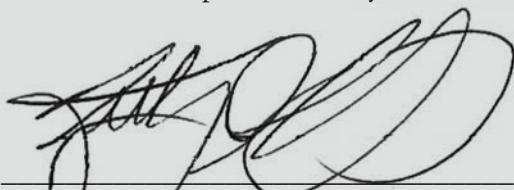
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INTRODUCTION

The general aviation (GA) segment of our nation's air transportation system has evolved over the past several decades from a category dominated by private pilots flying for recreational purposes. Today it serves as a valuable complement to scheduled air service within the nation's air transportation system. This new role, coupled with new aircraft and navigation technology is altering the role and requirements of the system of general aviation airports. To improve our appreciation of these changes, it is critical to identify the challenges and needs for maintaining and enhancing the aviation services for these GA airports.

It also became obvious that it was essential to develop a strategic perspective of the New England general aviation airport system because we were faced with:

- A recent struggling economy,
- Rising costs to operate aircraft and airports,
- Declining operational activity,
- An aging infrastructure, and
- Limited state and federal funds to address improvements.

Therefore the New England state aviation officials, in partnership with the Federal Aviation Administration (FAA), has conducted a study of the GA airport system in New England. It has permitted us to develop a greater understanding of the role of GA in New England, as well as the infrastructure investment and priorities to support that role. This unique application of airport system planning is similar to the May 2012 FAA study that was conducted to develop a nationwide GA perspective. It is called; "General Aviation Airports: A National Asset" (FAA ASSET Study). We were fortunate to have this national perspective because it provides the newest and latest FAA framework for analyzing our New England GA airport system.

This phase of the study was conducted to understand:

- The role of our GA airports in providing aviation services for their communities;
- How our GA airports interact with each other, and as a component of the national system;
- The resources required to maintain the existing runway and taxiway infrastructure;
- FAA's new airport classification system, General Aviation Airports: A National Asset Study; and,
- The types of facilities which are critical to the emerging use of these airports as supplements to scheduled passenger and cargo air service.

Waterbury-Oxford Airport, Connecticut



For the purpose of this study we need to be clear what we are referring to when we say the “New England airport system”. In terms of landing areas there are over 360 landing sites (excluding heliports and seaplane bases) in New England. Of these 360 landing areas, 156 are public use airports that are publicly or privately owned. They are depicted in the figure on the following page. And of these 156, just 110 airports are eligible for FAA Airport Improvement Program (AIP) grants. It is these 110 AIP eligible airports that are addressed in this general aviation study.

A phased approach provided an added benefit; it permitted the analysis to be conducted through various independent lenses that do not follow a traditional system planning approach. The results of these independent tasks provided new insights and anecdotal information on the regional airport system. They are highlighted in this summary brochure. Moreover, the findings and observations in this initial Phase identified a few potential areas where additional analysis is needed, while others simply provide a baseline for our New England GA system. Future work to review those components will need to rely on additional FAA funding. This initial planning phase was essential to identify the key findings and observations, as well as potential areas that should be considered in subsequent planning efforts. Unfortunately, it could not develop the strategies that are essential to address the challenges the GA system faces going forward.

So much for the; “Why” and “How” we conducted this evaluation of our New England GA Airport System! The following pages of this brochure are intended to take you on a very brief journey on what our evaluation of the New England GA airports revealed concerning certain aspects of our system. Hopefully it will peak your awareness of what decision makers must address to sustain this essential component of our transportation system. These transportation interests can service the economy and welfare of the region and its communities in ways not commonly thought of. For example, the airport system could be access for marketing and developing existing or potential business interests in New England, it could be access to tourist destinations, it could be access to remote locations not conveniently reached by other modes or it could be a lifeline to a medical emergency.

The basic content of this summary document is presented to introduce you to:

- The existing system as classified in FAA’s “National Plan of Integrated Airports System” (NPIAS);
- The newest classification described in FAA’s “GA Airports: A National Asset Study”;
- How they serve to provide access to New England;
- How corporate aircraft serve New England and the “connectivity” to our national system;
- How business flying by large and small companies is directly related to their productivity;
- Case studies that reflect on the impact a GA airport has on the New England community;
- A cost assessment needed to sustain the basic infrastructure;
- The funding traditionally available from FAA for airport improvements; and,
- The findings and observations that resulted from this analysis.

Hopefully, what you read in the summary document will motivate you to research the comprehensive facts and figures presented in the full report which is available online at: <http://www.pvdairport.com>.

AIRPORT CLASSIFICATION

This task provides a basic understanding concerning the classification of GA airports in New England. Airport classification is not an area most interests focus on. They understand that airports, like Boston-Logan, MA, Bradley International CT, T.F. Green, RI, Manchester NH, Bangor, ME, etc., have scheduled air carrier service. They also understand that airports like Bedford-Hanscom, MA, Nashua NH, Norwood, MA and some 100 others like them service GA aircraft. For those in the business of planning and designing airports, and equally important obtaining funding for airport improvements, “classifications” are a significant element of the business. Table 1 on page nine provides the very basic classifications as defined in the FAA National Plan of Integrated Airport Systems (NPIAS).

The NPIAS is an important FAA publication. It identifies over 3,300 existing and proposed airports that are significant to national air transportation and thus eligible to receive Federal grants under the Airport Improvement Program (AIP). One basic requirement for a GA airport to be included in the NPIAS was to meet a minimum activity threshold, that is; at least 10 based aircraft and located at least 20 miles from the next nearest NPIAS airport. The basic foundation for the NPIAS is the state airport system plan prepared and updated by the states. Collectively the NPIAS provides a 10-year outlook of national airport system needs. Ultimately, how an airport is classified within that system has an influence on the prioritization of funds which can be allocated for AIP projects. Those funding levels are reflected later in this summary report. In summary; “airport classification” can play a substantive role in the development of an airport and therefore can not be taken lightly in attempting to make an assessment of the GA system.

The cost of maintaining the GA system on a national level is also a FAA concern. The infrastructure requirements are growing, while the “trust fund” is not being replenished at the same rate. It is also public knowledge that the airline industry voiced their displeasure with having to “support” the GA system. In 2011 FAA, Airports Service Washington, DC took on the task to reassess the long standing NPIAS classification system. In coordination with the National Association of State Aviation Officials (NASAO), in May 2012 FAA released their results; General Aviation Airports: A National Asset Study (ASSET Study). With the release of the FAA ASSET Study, the FAA created five new classifications for the general aviation airports included in the National Plan of Integrated Airport Systems (NPIAS).

The new classifications identified were; “National”, “Regional”, “Local”, “Basic” and “Unclassified”. The following page provides a description of each classification. Some airports were designated as “Unclassified” because of a lack of information. Beginning with the FY 2013-2017 NPIAS report, future NPIAS reports will utilize the new GA airport classifications.

The table associated with the map on page 10 lists the number of New England airports by state in this new classification system. The full report located on the project website (<http://www.pvdairport.com>) identifies, by state, the specific airports in each category. It appears that the requirements for a GA airport to maintain it’s recognition under the new ASSET classification system will be more difficult when compared to the former NPIAS classification. As a result, the new classification could have consequences on the distribution of future AIP funds for GA airports.



ASSET CLASSIFICATION BY DESCRIPTION AND FUNCTIONS



Source: http://www.faa.gov/airports/planning_capacity/ga_study/

National Airports

They support the national and state system by providing communities with access to national and international markets. Accommodate a full range of aviation activity and functions and often work in conjunction with, and in support of, hub airports serving the aviation needs of larger metropolitan areas.

6	# with a runway longer than 5,000 feet
1,671	Total based aircraft at these airports
209	Average based aircraft
25	Average based jets
8 or 100%	# with an air traffic control tower
8 or 100%	# with on-airport weather reporting

Regional Airports

They support regional economies by connecting communities to statewide and interstate markets. Accommodate a full range of regional and local business activities, limited scheduled passenger service, or cargo operations and they serve corporate jet and multi-engine aircraft, as well as single-engine propeller aircraft.

12	# with a runway longer than 5,000 feet
1,511	Total based aircraft at these airports
94	Average based aircraft
2	Average based jets
7 or 44%	# with an air traffic control tower
16 or 100%	# with on-airport weather reporting

Local Airports

They supplement communities by providing access to primarily intrastate and some interstate markets. Accommodate small businesses, flight training, emergency service, charter passenger service, cargo operations, and personal flying activities, and typically accommodate smaller general aviation aircraft, mostly single-engine propeller and some multi-engine aircraft.

9	# with a runway longer than 5,000 feet
1,920	Total based aircraft at these airports
44	Average based aircraft
0.2	Average based jets
1 or 2%	# with an air traffic control tower
32 or 72%	# with on-airport weather reporting

Basic Airports

They support GA activities such as emergency service, charter or critical passenger service, cargo operations, flight training, and personal flying. Typically accommodate mostly single-engine propeller aircraft and may be located in, and provide service to, remote areas with limited or no surface transportation options, and therefore may be critical to the transportation of goods required for local day-to-day life.

5	# with a runway longer than 3,200 feet
63	Total based aircraft at these airports
8	Average based aircraft
0	Average based jets
0 or 0%	# with an air traffic control tower
6 or 75%	# with on-airport weather reporting

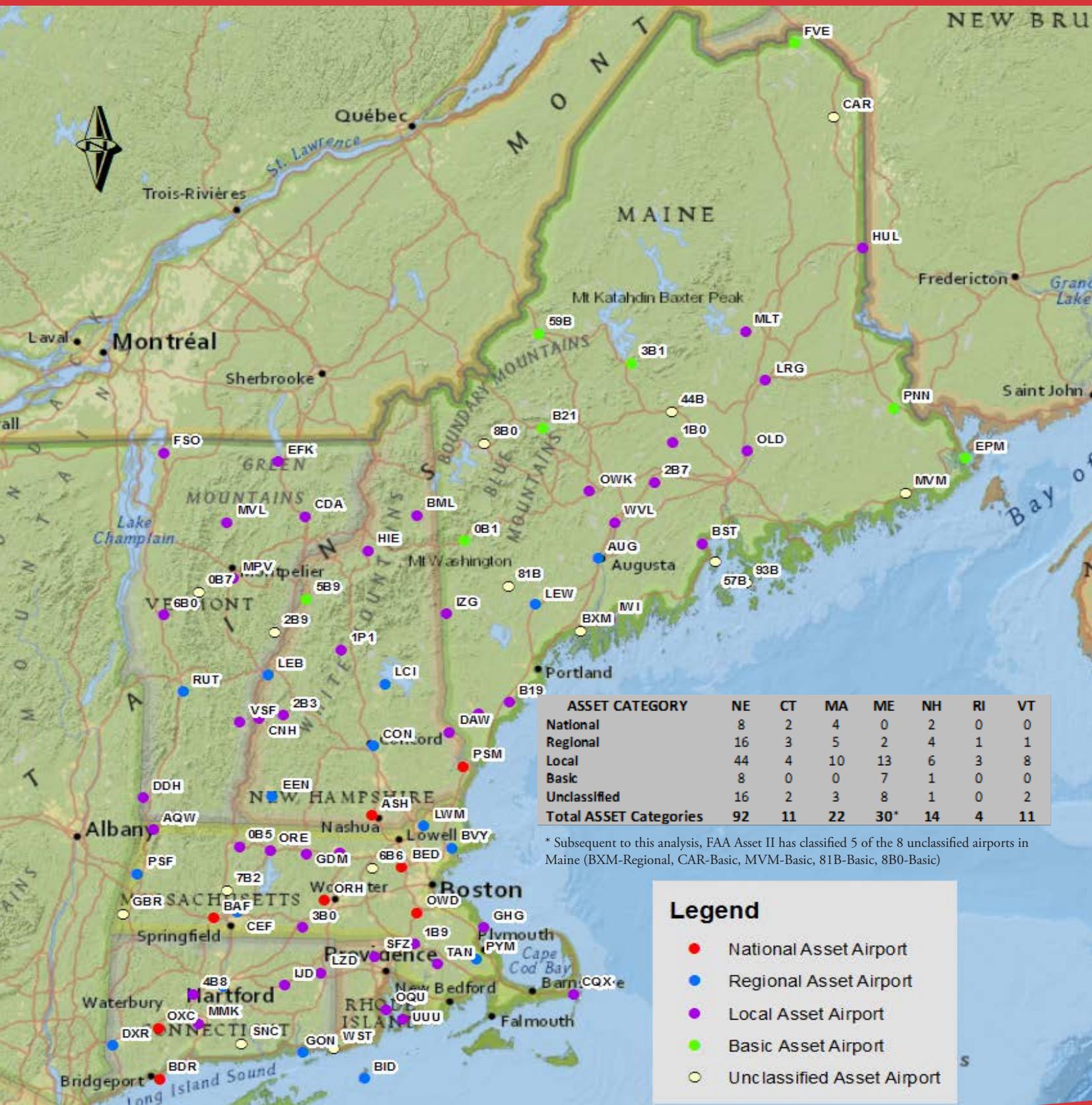
Unclassified Airports

Of the nation's 2,952 GA airports studied by the FAA, there were 497 airports with different types of activity and characteristics that could not be readily described as a clear group or category. 16 of these are located in New England. The FAA has resumed their effort to further evaluate the airports in this classification in order to reduce the number of "Unclassified airports."

STATE	LOCATION ID	NAME
ME	LEW	AUBURN/LEWISTON MUNI
ME	AUG	AUGUSTA STATE
ME	BGR	BANGOR INTL
ME	BHB	HANCOCK COUNTY-BAR HARBOR
ME	BST	BELFAST MUNI
ME	0B1	BETHEL RGNL
ME	B19	BIDDEFORD MUNI
ME	BXM	BRUNSWICK EXECUTIVE
ME	CAR	CARIBOU MUNI
ME	B21	SUGARLOAF RGNL
ME	1B0	DEXTER RGNL
ME	44B	CHARLES A. CHASE JR. MEMORIAL FIELD
ME	EPM	EASTPORT MUNI
ME	FVE	NORTHERN AROOSTOOK RGNL
ME	LZG	EASTERN SLOPES RGNL
ME	3B1	GREENVILLE MUNI
ME	HUL	HOULTON INTL
ME	57B	ISLESBORO
ME	59B	NEWTON FIELD
ME	LRG	LINCOLN RGNL
ME	MVM	MACHIAS VALLEY
ME	MLT	MILLINOCKET MUNI
ME	OWK	NORRIDGEWOCK
ME	OLD	DEWITT FLD, OLD TOWN MUNI
ME	81B	OXFORD COUNTY RGNL
ME	2B7	PITTSFIELD MUNI
ME	PWM	PORTLAND INTL IETPORT
ME	PQI	PRESQUE ISLE
ME	PNN	PRINCETON MUNI
ME	8B0	STEVEN A. BEAN MUNI
ME	RKD	KNOX COUNTY RGNL
ME	SFM	SANFORD RGNL
ME	93B	STONINGTON MUNI
ME	WV1	WATERVILLE ROBERT LAFLEUR
ME	IWI	WISCASSET
NH	BML	BERLIN RGNL
NH	CNH	CLAREMONT MUNI
NH	CON	CONCORD MUNI
NH	5B9	DEAN MEMORIAL
NH	AFN	JAFFREY AIRPORT-SILVER RANCH
NH	EEN	DILLANT-HOPKINS
NH	LCI	LACONIA MUNI
NH	LEB	LEBANON MUNI
NH	MHT	MANCHESTER
NH	ASH	BOIRE FIELD
NH	2B3	PARLIN FIELD
NH	1P1	PLYMOUTH MUNI
NH	PSM	PORTSMOUTH INTL AT PEASE
NH	DAW	SKYHAVEN
NH	HIE	MOUNT WASHINGTON RGNL
RI	BID	BLOCK ISLAND STATE
RI	UUU	NEWPORT STATE
RI	OQU	QUONSET STATE
RI	SEZ	NORTH CENTRAL STATE
RI	PVD	THEODORE FRANCIS GREEN STATE
RI	WST	WESTERLY STATE

STATE	LOCATION ID	NAME
VT	MPV	EDWARD F KNAPP STATE
VT	DDH	WILLIAM H. MORSE STATE
VT	BTY	BURLINGTON INTL
VT	FSO	FRANKLIN COUNTY STATE
VT	CDA	CALEDONIA COUNTY
VT	6B0	MIDDLEBURY STATE
VT	MVL	MORRISVILLE-STOWE STATE
VT	EFK	NEWPORT STATE
VT	2B9	POST MILLS
VT	RUT	RUTLAND - SOUTHERN VERMONT RGNL
VT	VSF	HARTNESS STATE (SPRINGFIELD)
VT	0B7	WARREN-SUGARBUSH
CT	BDR	IGOR I SIKORSKY MEMORIAL
CT	SNC	CHESTER
CT	DXR	DANBURY MUNI
CT	LZD	DANIELSON
CT	GON	GROTON-NEW LONDON
CT	HFD	HARTFORD-BRAINARD
CT	MMK	MERIDEN MARKHAM MUNI
CT	HVN	TWEED-NEW HAVEN
CT	OXC	WATERBURY-OXFORD
CT	4B8	ROBERTSON FIELD
CT	4B9	SIMSBURY
CT	IJD	WINDHAM
CT	BDL	BRADLEY INTL
MA	BED	LAURENCE G HANSCOM FLD
MA	BVY	BEVERLY MUNI
MA	BOS	GENERAL EDWARD LAWRENCE LOGAN INTL
MA	CQX	CHATHAM MUNI
MA	FIT	FITCHBURG MUNI
MA	GDM	GARDNER MUNI
MA	GBR	WALTER I. KOLADZA
MA	HYA	BARNSTABLE MUNI-BOARDMAN/POLANDO FIELD
MA	LWM	LAWRENCE MUNI
MA	1B9	MANSFIELD MUNI
MA	GHG	MARSHFIELD MUNI - GEORGE HARLOW FIELD
MA	0B5	TURNERS FALLS
MA	ACK	NANTUCKET MEMORIAL
MA	EWB	NEW BEDFORD RGNL
MA	ACW	HARRIMAN-AND-WEST
MA	7B2	NORTHAMPTON
MA	OWD	NORWOOD MEMORIAL
MA	ORE	ORANGE MUNI
MA	PSF	PITTSFIELD MUNI
MA	PYM	PLYMOUTH MUNI
MA	PVC	PROVINCETOWN MUNI
MA	3B0	SOUTHBRIDGE MUNI
MA	CEF	WESTOVER ARB/METROPOLITAN
MA	TAN	TAUNTON MUNI - KING FIELD
MA	MVY	MARTHAS VINEYARD
MA	BAF	BARNES MUNI
MA	ORH	WORCESTER RGNL

NEW ENGLAND GA AIRPORTS BY ASSET CLASSIFICATION



NEW ENGLAND GA "NATIONAL" AIRPORTS

To highlight the importance of "profiling" our airports by classification, we have provided the IFR activity profile at "National" airports (See Table below). The "National" airports account for 53% of the general aviation IFR departures within the region's GA system, and 28% of the region's total general aviation IFR activity. Total aircraft operations at the "National" airports, including flights flown without flight plans and pilot training activity, averages 67,000, based on the FAA's Air Traffic Activity System (ATADS). This is just one example of profiling. We have completed similar presentations for each airport attribute, by classification. It is highlighted in the full report that is posted online at: <http://www.pvdairport.com/corporate/planning>.

NEW ENGLAND'S NATIONAL GA AIRPORTS



IFR ACTIVITY, NEW ENGLAND'S NATIONAL GA AIRPORTS

NATIONAL AIRPORTS	CODE	STATE	2011 IFR DEPARTURES	PERCENT OF TOTAL
Bedford-Hanscom	BED	MA	22,025	46.6%
Portsmouth Intl at Pease	PSM	NH	5,050	10.7%
Bridgeport Igor Sikorsky Memorial	BDR	CT	4,891	10.4%
Norwood Memorial	OWD	MA	4,103	8.7%
Waterbury-Oxford	OXC	CT	3,895	8.2%
Barnes Municipal	BAF	MA	2,945	6.2%
Nashua-Boire Field	ASH	NH	2,790	5.9%
Worcester	ORH	MA	1,539	3.3%
Total National Airports			47,238	100.0%

The region's National GA airports have a high share of IFR departures performed with jet aircraft, indicating their importance in serving the needs of business aviation users. In 2011, jets accounted for half of the IFR departures at the National airports. This is similar to the region's Primary airports, where jets also accounted for half of all general aviation IFR departures.



PROFILE OF NEW ENGLAND GA AIRPORTS

To develop an in-depth understanding of the nature and character of GA airports in New England, profiles with data relevant to the operation were collected for each airport. This information included operational data, especially instrument flight rule (IFR) activity, from air traffic control towers, runway length; fuel and maintenance services; weather reporting and future runway and taxiway pavement costs. These profiles in conjunction with the FAA ASSET classification were used to define the attributes of the New England GA airports. The results yielded data for the following airport characteristics:

- Runway Length Ranges by Classification
- Airports with Non-paved Runways
- Runway Airport Reference Code (ARC)
- Instrument Flight Rules (IFR) Departures Range (2011)
- Average IFR Departures (2011)
- Best Available Approach by Type
- Approach Minimum Range
- On-Airport Weather Reporting
- Air Traffic Control Tower
- Aircraft Rescue & Fire Fighting (ARFF)
- Aviation gas (AVGAS)
- Jet Fuel Availability

Aircraft activity is measured by aircraft operational counts; a takeoff or a landing. Within these operational counts, activity is also measured as visual flight rules (VFR) or IFR. VFR activity is conducted in good weather conditions and IFR is conducted in poor weather conditions, or when a flight plan is filed. Most commercial, scheduled, and charter aircraft operators file IFR flight plans even in good weather conditions. The challenge however is to obtain accurate operational counts for VFR activity. It is easier to collect operational activity at airports with air traffic control towers (ATCT), but at non-control tower airports the data is based on estimates by airport management.

Due to the uncertainty of these VFR estimates, this Phase I study focused on analyzing IFR activity. The other aspect of bringing attention to the IFR activity is to highlight the importance it places on the requirements of the system to support corporate business aviation. The data for the IFR activity is quite revealing in terms of identifying the “interconnectivity” of the New England GA airport system with the rest of the national system. Having stated that, we can not diminish the VFR activity that occurs in the New England GA system. Ultimately, we still need to analyze the impact of the VFR component of the GA activity.

In order to develop the profile of the New England GA airport system, the airports in each of the five FAA ASSET classifications were compared against the airport characteristics listed above. The outcome of the analysis reveals some interesting statistics. It is all displayed with graphs and charts that are depicted in the full report. For example airports in the “National” and “Regional” classification reflect over 70% of the IFR departures as compared to the same statistic for the three other airport classifications. In some respects it adds validity to the merits of the FAA ASSET classification system to identify the “visibility or recognition” to certain airports in the system.

ACCESS TO NEW ENGLAND

GA airports in New England provide varying levels of access to the communities they serve. The level of activity from based aircraft and operations varies by state and often varies within a state itself. Phase I efforts have resulted in identifying some GA airports in New England to be international gateways, while there are others that provide remote emergency access.

The distribution of airports based on the application of the ASSET classifications makes sense from a geographical standpoint. It is within each of these classifications where subsequent analysis will be able to yield specific benefits to each classification.

The National Airports are generally focused around New England's metropolitan areas of Boston and southwestern Connecticut. These airports play a critical role in the operational capacity of those areas, but some have constraints (infrastructure, environmental, etc.) that impact their ability to fully meet their role. These airports base the largest average amount of jet aircraft.

The Regional Airports have a larger geographical distribution in New England, some still within the metropolitan areas, and others still within close proximity to the Interstate highway system. Regional airports have a broad mix of users and based aircraft.

The Local Airports have the widest geographical distribution in New England with most being located off of the Interstate highway system on the state and local roads and some getting into the more rural areas of New England. Local airports have a broad mix of users and based aircraft.

With the exception of one in New Hampshire, all Basic Airports in New England are located in Maine. From a geographical standpoint, these airports provide access to remote areas.

There is reason to believe that the observations of the Phase I effort are only the surface of identifying a unique and complex system of airports that provide a significant benefit to New Englanders and their economy. The User and Economic perspectives offered within the body of the full report are testament to their benefits to the regional, state, and local economies.



“Response time has always been the biggest benefit of GA for our business. Being able to launch in under 2 hours to anyplace east of the Mississippi has created more business than what we have paid for the aircraft.”

---Management Consulting Company

MAINTAINING THE RUNWAY & TAXIWAY SYSTEM

Understanding how our GA system is constituted (classification) and how it operates in relation to the national system (connectivity) is necessary and important. But it is equally important to understand:

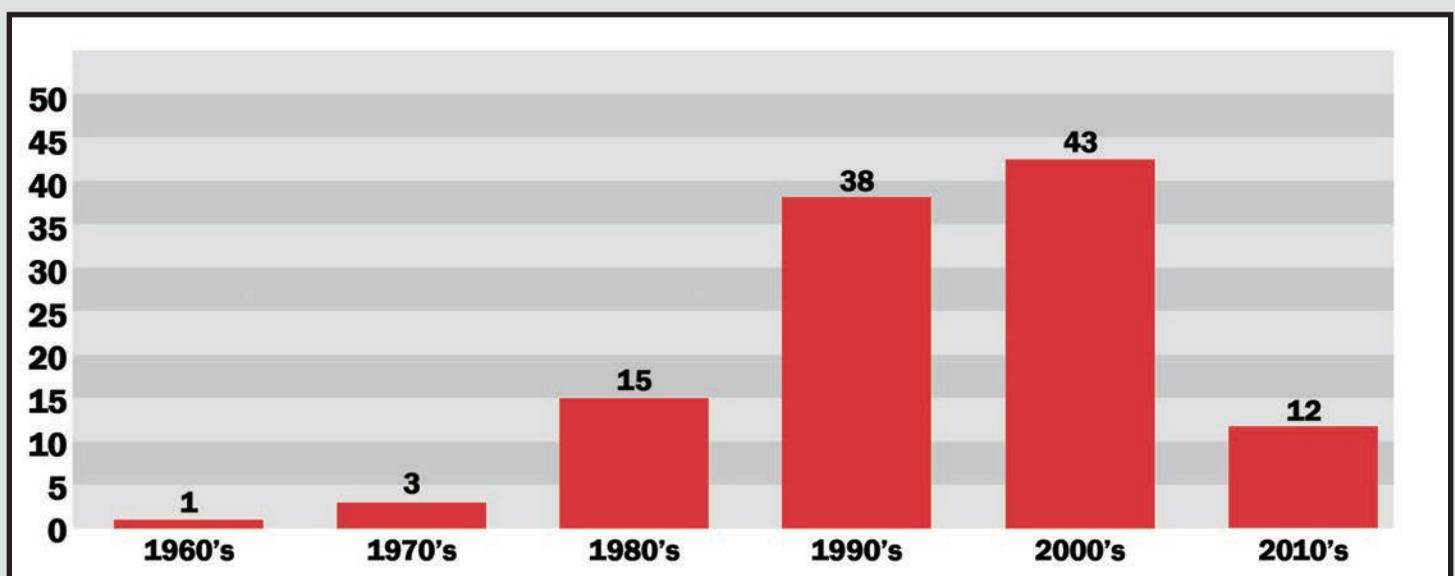
- What is the cost of maintaining that basic airfield system – runways and taxiways?
- Can we afford to continue maintaining our current airport system?
- Does maintaining the existing system impede our ability to make other essential improvements?
- What policy and financial strategies should be considered going forward?

Unfortunately this initial phase of the work only permitted us to answer the first question, that is: to develop a basic understanding of the cost to maintain the runways and taxiways. This is certainly a good first step enabling us to ultimately develop some answers to the other three questions in a subsequent phase of the analysis.

In this task an assessment of the existing runway and taxiway pavement conditions of the GA airport system was completed. Utilizing an airport survey process, it was possible to assemble a data base of “pavement conditions”, and prepare the projected costs associated with rehabilitating the pavement. Estimates assumed a typical 20-year life-cycle period during which one major reconstruction project and three major maintenance projects (at 5-year, 10-year, and 15-year intervals) were completed. The capital costs were developed for both partial and full depth scenarios to provide a reasonable range and to account that either application could be utilized based on specific site conditions.

The runway and taxiway assessment concluded that the total system-wide cost of maintenance and reconstruction in a 20-year life cycle will range from approximately \$776 million to \$968 million. Of this amount, approximately \$617 million to \$809 million (including contingencies) is required for actual runway and taxiway reconstruction and approximately \$159 million for regular runway and taxiway maintenance.

NUMBER OF RUNWAYS. *Year of Last Reconstruction*



It is noted that the runway and taxiway rehabilitation costs did not include any costs for meeting new airport design standards, obstruction removal, drainage, airfield lighting signs, NAVAIDS, Runway Safety Area construction, etc. Estimating these costs requires detailed analyses of site-specific conditions, which was beyond the scope of the study. We must also keep in mind that there are other components to the “basic infrastructure” of an airport. They remain a fundamental consideration in maintaining and developing an airport. To name a few they include; parking aprons for based and transient aircraft, maintaining safe approaches, support systems such as firefighting equipment (ARFF) and snow removal equipment (SRE).

It is interesting to note from the airport survey responses that approximately 60% of the airports reported a condition rating of “good” to “excellent” for their runways and taxiways. The airport survey also included the year the last reconstruction project was undertaken. The graph below also indicates that over the next decade the system can anticipate a scenario where there will be peaks and valleys in the demand for funding to address aging pavement again. The positive ratings in all likelihood reflect:

- New England’s priority to pursue and fund capital reconstruction projects over the last 20 years,
- An airport commitment to an active pavement maintenance program.
- From a negative perspective, New England winters (thaw-freeze cycle) is damaging to pavement, therefore creating more frequent pavement maintenance) and shorter periods between rehabilitation.

The assessment recognizes that the focus is on runways and taxiways. The reason is; they typically utilize the largest portion of annual FAA AIP. Moreover, this pavement evaluation can only be prepared in the context of an overall system assessment, but it still can be effectively used to provide officials a:

- Projection of estimated funding levels needed to rehabilitate the runway/taxiway pavements;
- Comparison of these costs to projected future FAA AIP funding levels;
- Perspective of the New England funding capabilities and requirements on a national level;
- Projection of the potential shortfall in funding levels;
- Parameter to develop funding priorities;
- Long-range budget outlook for state and local decision-makers to have a better perspective on the cost of sustaining their individual airport and/or state airport system.

Notwithstanding the limitations noted; this assessment still provides an effective snapshot of the potential future cost burden associated with just attempting to sustain the existing runway and taxiway pavement in the New England GA system. It also puts on notice that New England states cannot continue supporting our airport system with a “business as usual” approach.

The full report provides a comprehensive assessment of the pavement evaluation and associated cost.

Reconstruction Cost Range:			
Asset Category	Airports	Partial Depth	Full Depth
National	8	\$155,020,000 to	\$196,980,000
Regional	15	\$153,240,000 to	\$190,700,000
Local	42	\$189,390,000 to	\$237,770,000
Basic	9	\$20,230,000 to	\$24,960,000
Primary	12	\$207,160,000 to	\$253,970,000
Unclassified	14	\$51,010,000 to	\$63,580,000
	100	\$776,050,000 to	\$967,960,000

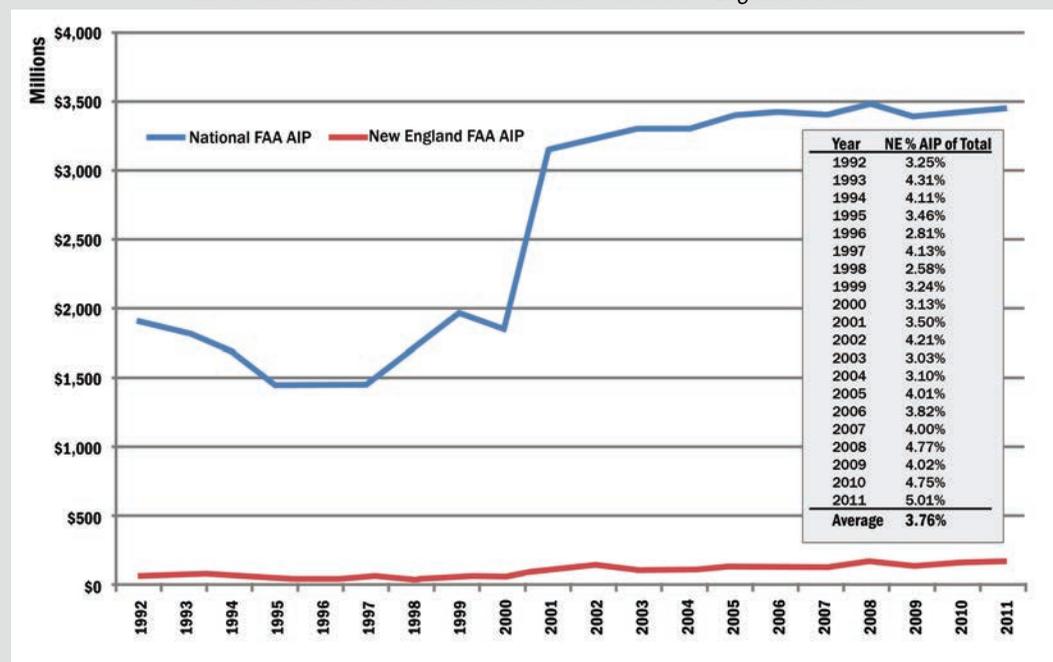
HISTORY OF AIRPORT FUNDING

This Phase I study reviewed FAA grant histories for the last 30 years. The data was assembled from the FAA data base known as; “System of Airports Reporting” (SOAR). The analysis was conducted to develop an understanding of all the federal AIP dollars invested in the New England GA (non-primary) system airports. The review accounted for almost 1,500 grants. When the historical grant data for all FAA funding is compared to just the future needs of the runway and taxiway system, it is clear there will still be a significant shortfall in federal funding. There are various means to reduce the funding gap (i.e. bringing both costs to current year dollars and doing more comprehensive research on how the grants were classified to assure similar projects). Notwithstanding that consideration the funding difference would still be appreciable.

To provide a pictorial understanding of the funding situation, the AIP funding activity in New England was graphed to compare it to the national AIP funding program over the last 20-years.

This graph shows the funding received for all AIP projects in New England is fairly constant and averages 3.76% over the time period. It was slightly more than that annual average in each of the last six (6) years. While this historical funding review was not by any means a comprehensive effort, it is clear that capital needs just for runway and taxiway improvements will continue to outweigh the available funding that is provided to New England for all eligible AIP projects.

HISTORICAL FAA AIP. National FAA AIP Versus New England FAA AIP



To provide an overall national perspective, a review of FAA's Report to Congress; the NPIAS yields a similar outlook. The NPIAS is a 5-year (2013 - 2017) summary of AIP eligible infrastructure needs for airports in the NPIAS. During that period, the total development needs for all the airports in the NPIAS was over \$42.4 billion. That is an annual average exceeding \$8.4 billion. For New England, the 5-year development needs are over \$1.3 billion.

In terms of FY-13 real dollars consider this picture; the FAA distributed nationally just over \$3.0 billion in AIP grants. Of that amount just over \$137 million was distributed to the New England airports which is approximately 50% of New England's needs. On a national level things are not better; \$3.0 billion meets just 35% of the national needs for airport infrastructure.

This analysis is not intended to reflect how little is allocated to New England airports or that we should receive more AIP funding going forward. The figures are intended to bring awareness to airport management, state officials, legislators and users of the system that maintaining just the basic airport infrastructure is well beyond what current federal funding levels can be reasonably assumed to provide. Moreover, it is equally fair to conclude that state aviation funds are also constrained and beyond the expectations that the New England state's can make up the federal funding gap.

Overall, there is a clear message; "the outlook to meet all infrastructure needs for New England general aviation airports is not possible". It is essential that state aviation officials address this issue and in the short-term fund projects that must meet certain predetermined priorities.

In the long-term these same officials will require new strategies that consider the role and importance the airport has to the overall transportation system. This Phase I study presents certain baseline information about both these parameters. A Phase II study, funded by FAA, is critical to provide the resources needed by state aviation officials to evaluate the opportunities and policies at a state and regional level to develop the most efficient and effective New England GA airport system.



NPIAS
\$268,173,107
 NPIAS 5-year annual average capital need in New England*

\$131M Gap in Funding

FAA AIP FUNDING
\$137,179,209
 Actual FY13 AIP funding level in New England*

A REAL STORY

The Beverly Airport Commission and Airport Manager wanted to both improve the level of safety at Beverly Municipal Airport (BVY) in Massachusetts and improve landing minimums. They identified what tree penetrations needed to be removed in order to obtain a LPV approach (near precision type approach) to Runway 16. Once identified, they met with neighbors and explained the need to remove the penetrations. As a result of lowering the minimums, BVY is getting more aircraft that are equipped to fly this type of approach. This includes, but is not limited to NetJets, FlexJet, fractional ownership and privately owned jets. Also, due to the reduced minimums several jets have decided to base at BVY and include a Global Express, Eclipse, Challenger, Hawker, and a TBM700 Socata corporate turboprop. Two new hangars were also built to accommodate two of the jets. The hangars would not have been built had it not been for the lowered minimums.

Beverly Municipal Airport, Massachusetts



“We use our company airplanes to maximize the efficiency of our senior executives in the corporation. Their time is very valuable to us and making them productive while they travel is paramount to our success. Our customers are also a valuable commodity and bringing them to our facilities around the country in a convenient and efficient manner gives us a competitive advantage.”

---Global Health Insurance Company



AIRCRAFT STORAGE

A key observation of the Phase I effort during the review of flight data clearly indicated a practice where corporate aircraft are being stored outside of metropolitan areas and being ferried to larger GA and commercial service airports to pick up passengers and then proceed to their intended destination.

As identified in the Regional classification profile, the Connecticut regional airports, in particular the ones that border the metropolitan New York area, contribute to the region's economic development in yet another way. Some New York based companies store and maintain their aircraft at New England facilities, which may be more attractive than a local facility because of lower operating costs and greater hangar availability. Recent hangar development at these airports is confirmation of this trend that represents a direct injection of money from outside the region into the New England economy, helping to support aviation jobs in New England.

Since the adequacy of itinerant apron space is critical to the aircraft using the airport system, and hangars promote the safety and protect the value of aircraft, this trend should be evaluated in more detail to understand the potential economic impact as well as the impact on existing airport infrastructure capacities and economic development to the states and the New England Region.



Quonset State Airport, Rhode Island

A REAL STORY

A construction services company with headquarters and multiple regional offices in New England and other states utilizes business aviation to respond to customer needs and increase employee productivity and quality of life while growing their business. The company, which has more than \$400 million in annual sales and over 4,000 employees companywide, bases its corporate aircraft at one of New England's Local airports. Business aviation gives the company the ability to visit multiple job sites or customers in a single day. On some days they have been able to visit more than four states in one day. It also allows them to respond to customers' emergency needs, by sending company employees, tools or parts to a job site in a matter of hours rather than days if relying on commercial air service. Employees can not only accomplish more using business aviation, they can eliminate overnight travel and spend more time with their families. The company also flies potential customers to New England so they can tour the company's various fabrication facilities.



Rutland, Vermont

CONNECTIVITY

Airports classified as National in the FAA Asset Study serve the diverse aviation needs of the region's large metro areas and providing relief to busier commercial service airports. As alternatives to nearby large and medium hub airports for general aviation users, they provide capacity relief for busier commercial service airports in New England and the New York metropolitan area. National airports serve a range of users from high end business jets to single-engine piston aircraft. National airport users fly to and from destinations across the U.S. and as far away as Abu Dhabi. By providing convenient and flexible transportation for businesses, National airports also play an important role in facilitating economic development for the region.

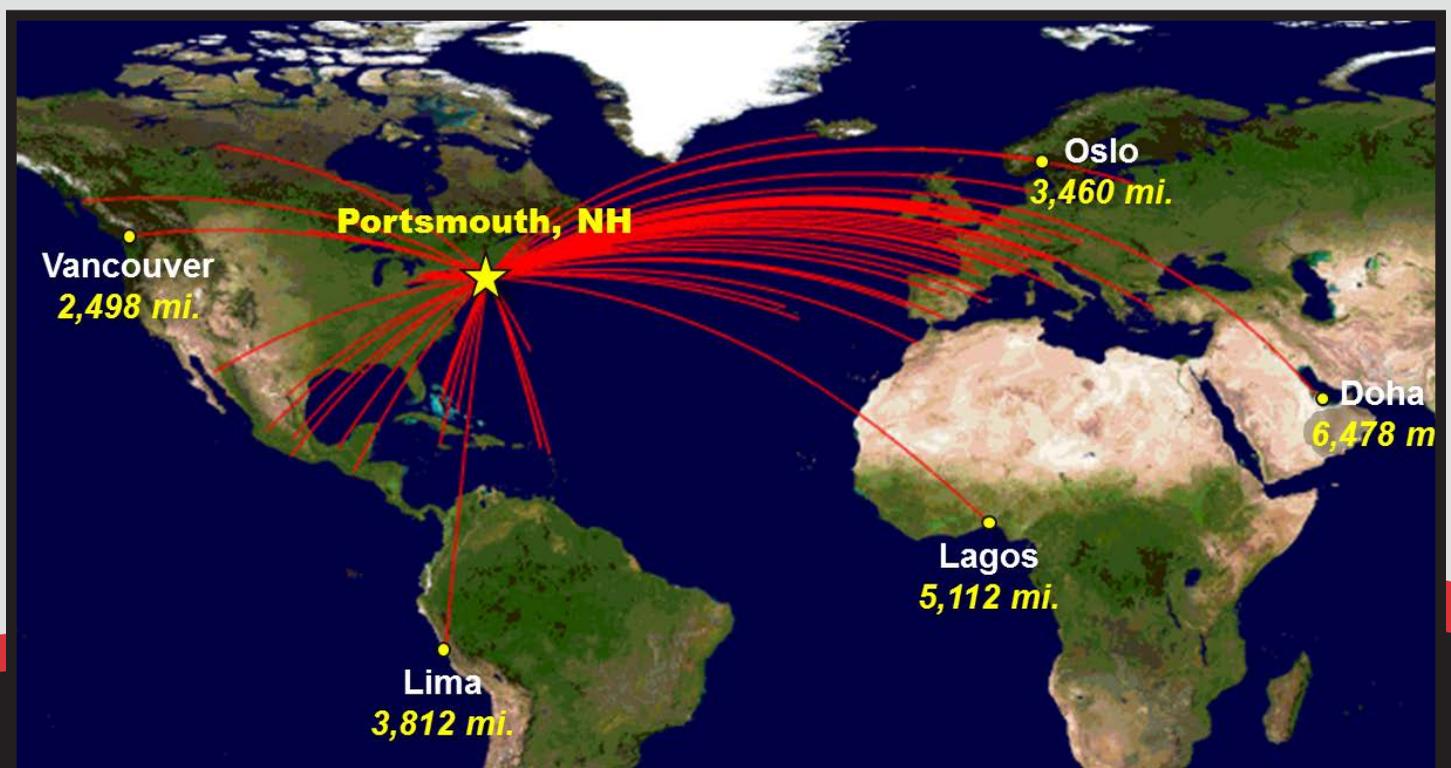
National airports connect New England to other destinations across the U.S. and the globe. This study revealed that more than 60% of business aviation flights from the National airports in New England are to other U.S. markets, primarily in the New York metropolitan area. The National airports also provide access to international destinations, allowing business users to reach global markets. In 2011, there were nearly 300 business aviation flights from Portsmouth International Airport to international destinations.



A REAL STORY

Yankee Pacific, LLC, based in Rye, New Hampshire, invests in aviation-related businesses and provides business development and management services to aviation companies. Their investment portfolio includes aviation businesses that are located in areas not well served by commercial airlines. Yankee Pacific's company-owned airplane, based at Portsmouth International Airport (PSM) at Pease, is a critical business tool for reaching customer and company locations on short notice and with minimal down time.

In one instance, on a Friday evening a client in Wichita called for a meeting at 2:00 pm the following Monday. The meeting not only required executives from New Hampshire, but also required an engineer from Tulsa. The company's plane was able to depart from Pease International Tradeport at 7:00 am on Monday and make a stop in Tulsa to pick-up the engineer and arrive in Wichita in time for the scheduled meeting. The meeting was a success due in part to the company's ability to be responsive on short-notice. Using scheduled commercial airline services and automobiles to transport all of the company representatives to the meeting would have required multiple days of travel and excessive down time. Instead, it was accomplished in a single day by using private business aviation.





ECONOMIC DEVELOPMENT

Businesses from small privately-owned companies to large multinational corporations rely on New England's general aviation airports to increase their efficiency and productivity by transporting executives and managers to company and customer locations. Private general aviation services provide businesses with more convenience and flexibility than scheduled commercial airline services, and encourage economic development throughout New England.

By using company planes or air taxi services, businesses can access multiple locations in a single day, reach remote locations not served by scheduled airlines, and quickly respond to customer needs. Companies benefit from general aviation services by expanding their market reach and more efficiently managing their operations. Business aviation even benefits the shipbuilder industry in Maine, where ship builders report that customers rely on general aviation services to reach their newly built and refurbished boats.

A REAL STORY

Athena Health, headquartered in Watertown, MA, is a national company that provides cloud-based services for electronic health records, medical practice management and care coordination to medical groups and health systems. The publicly-traded company earned \$422 million in revenue in 2012 and employs more than 2,600 people. Athena Health has operation sites in Belfast, Maine; Alpharetta, Georgia; Rome, Georgia; Birmingham, Alabama; Chennai, India; Austin, Texas; Ewing, New Jersey; Durham, North Carolina; and San Mateo, California. Athena Health relies heavily on business aviation to transport employees and clients from across the U.S. to two of its facilities in Maine via the Belfast Municipal Airport. More than 400 people are employed at the Belfast operations center located in a complex that formerly housed credit card giant MBNA which ceased its Maine operations in 2005. Athena Health's Belfast facility has the potential of employing up to 600 persons over the next few years if the company's growth plans are realized. Operations at the Belfast facility include processing claims for clients, posting remittances, doing follow-up work to track health payments and providing customer support. Athena Health also owns and operates an education and conference facility in Northport, Maine, located 15 minutes from the Belfast office complex. The Northport facility, which is used to train both employees and customers, employs about 50 people.

“The safety and security [general aviation] provides, allows our company to continue to expand and maintain market share. Short notice travel is key to our success.”

---Mail Order, Retail and
Specialty Pharmacy



Groton-New London, Connecticut



A REAL STORY

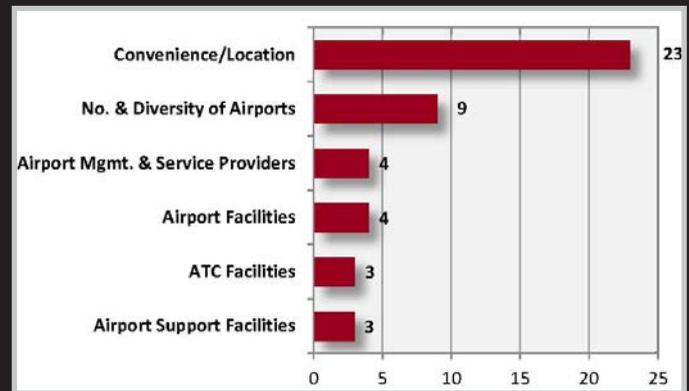
Arundel Machine, located in southern Maine, is one of New England’s leading manufacturers of precision machined components. Arundel Machine employs 79 people and serves customers in the Aerospace, Defense, Medical, Semiconductor, Oil & Gas and Optics/Security industries. The company President, Marcel Bertrand, is a pilot who bases an aircraft at Biddeford Municipal Airport and uses it to give his business a competitive edge. Approximately 90% of Arundel’s customers are in New England and the remainder are in the NY/Great Lakes regions. Access to business aviation allows Arundel Machine Tool to deliver high quality service along with their high quality products. They can quickly travel to customer sites on short notice to conduct business or deliver critical parts. Business aviation also allows the company to operate from two locations. Arundel Machine Tool has grown from a small operation that started in a basement in 1985 to a 30,000 square foot state-of-the-art facility that can be expanded to 60,000 square feet as the business grows and develops.

BUSINESS GA USER SURVEYS

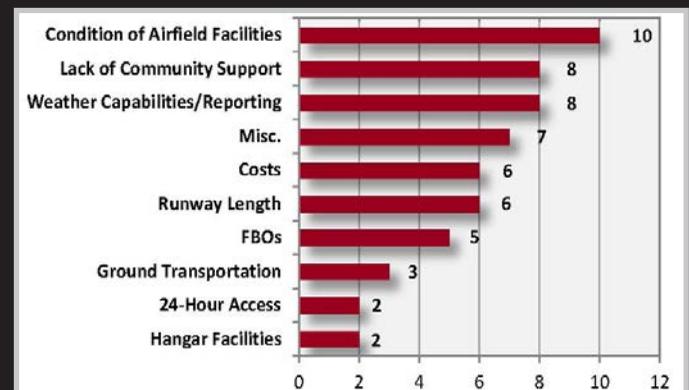
In a survey conducted as part of this study, business aviation users cited “location and convenience of the region’s GA airports” as the strength of the region’s GA airport system. Those airports in our region which are classified as a “National” airport play an important role in creating economic development opportunities for the New England region. Not only are the “National” airports conveniently located in our centers of commerce, but they also have the facilities to accommodate corporate aircraft. This provides local businesses with the ability to use general aviation as an effective business tool with numerous benefits including:

- Flexibility to utilize business aircraft on-demand
- Quick access to multiple locations in a single day
- Access to locations not easily reached with commercial airline services
- Time savings that allow employees to be more productive
- Quick response to customer needs

NEW ENGLAND AIRPORT SYSTEM STRENGTHS FOR BUSINESS GA USERS



NEW ENGLAND AIRPORT SYSTEM WEAKNESSES FOR BUSINESS GA USERS



OBSERVATIONS & FINDINGS

1. The FAA ASSET Study Classification:

- Makes it possible to establish a new baseline for classifying GA airports.
- Allows development of new parameters to identify performance measures.
- Makes for better planning decisions to establish priorities for developing airports
- Creates more effective capital improvement decisions for federal/ state airport funding.

2. The Importance and Diversity of General Aviation in New England:

- GA touches all aspects of airports; from the types of airports to the services provided. Many aspects of GA activity cross over to commercial service airports.
- The level of GA activity varies between states and within a state. Some New England airports are international gateways; others provide emergency access to remote areas.
- The analysis only touched the surface of identifying the unique and complex system of airports that provide a significant benefit to New England and its economy.

3. The Runway and Taxiway Pavement Assessment:

- The Pavement Survey results revealed; approximately 60 percent of the GA airports reported their runway/ taxiway pavement condition as “good” to “excellent”.
- Positive ratings of this nature indicate that over the last 20 years, there has been a regional focus to provide funds for capital reconstruction projects, as well as a commitment to a pavement maintenance program.
- The survey also revealed; during the period 2000 - 2010 there were 43 runways which were reconstructed in New England. Assuming a 20-year life cycle, these same runways will need to be reconstructed beginning in 2020. Over the next decade we can anticipate a fluctuation in the demand for funding to address aging runway and taxiway pavement. Current research shows that pavements deteriorate with time for many reasons, but with proper maintenance pavement life can be extended.
- A limited review of federal and state grant data was conducted to understand the historical funding activity. The results reveal that the costs to maintain the runway and taxiway infrastructure has, and will continue to, outpace the annual FAA AIP funding levels for New England. The individual New England states are limited in their ability to fund projects above and beyond any federal contribution.
- Airport management must understand their responsibility to place maximum importance on creating and implementing an annual pavement maintenance program to maximize and extend pavement life.
- The FAA in conjunction with private business partners is evaluating a “sustainability initiative” to extended pavement life beyond the current 20-year life cycle to estimates of upwards of 40 years.
- As FAA’s sustainability initiative moves forward it is anticipated that the initial design and construction costs will be higher, but it can also be anticipated that the overall life cycle costs will decrease. It is important to monitor the progress of this sustainability initiative to determine how it will impact future costs to maintain the runway and taxiway system.

4. Funding Capital Improvements:

- To maintain just the basic airport infrastructure (runways and taxiways) is well beyond what future federal funds can be reasonably assumed to accommodate.
- Other facilities critical to GA users, like transient aircraft parking, airfield lighting and minimum runway length also need to be maintained. The ability to fund such projects is challenged because they are not in the higher range of FAA's priority rating system.
- The FAA's own requirements for obstruction removal present an even greater hurdle for the small GA airports in their efforts to improve or maintain IFR minimums. The New England topography and environmental impacts pose difficult issues in attempts to achieve FAA standards.
- The process to identify and fund future projects will need to be based on new set of priorities. To do this regional performance measures will need to be established to aid decision makers in the use of the limited AIP funding we know will exist in the future for our GA airport system.

5. The Potential Impact of Closing Air Traffic Control Tower (ATCT):

- The congressional "sequestration" issue that surfaced in 2013 caused FAA to identify Air Traffic Control Towers that could close in New England.
- The closures of ATCT could significantly impact GA activity at both commercial service and GA airports alike.
 - Some level of GA activity could divert to airports that retained their ATCT.
 - These airports are likely the busier GA and commercial service airports.
 - This will probably impact the capacity of these airports.
 - They are also airports with existing environmental issues related to noise disturbance.
- The ATCT closures were not implemented, but understanding the potential scenarios will be important to the state aviation directors to make informed decisions. The long term fate of these ATCT's is still unknown.



FUTURE PLANNING

- The process to identify and fund future projects will need to be based on a new set of priorities. This will require regional performance measures to aid decision makers in the use of the limited AIP funding that will exist for our GA airport system in the future.
- This Phase I study is a good first step in providing an understanding of our GA system and it presents certain baseline information about the parameters for addressing the issues. However, it is lacking in the ability to evaluate potential options that could bring about needed change.
- The Phase I study was undertaken with the understanding by FAA and State Aviation directors that a second phase would be necessary to achieve the original goal. That goal was to evaluate the GA airport system and recommend options that address the issues identified.
- Therefore; a Phase II FAA funded study is critical to provide the resources needed by state aviation officials to evaluate the opportunities and strategies to develop the most efficient and effective New England General Aviation airport system.

This Phase I assessment of our New England GA airport system has, as tasked, (a) collected the data, (b) surveyed the user, (c) interpreted airport classifications by NPIAS and ASSET definitions, (d) assessed the pavement condition, (e) analyzed IFR activity, (f) assembled cost estimates to maintain the basic infrastructure, (g) recorded the historical pattern of federal funds, (h) developed case studies that suggest the significance of GA activity to specific communities and finally, (i) highlighted a set of observations and findings. We have presented the analytical work in this Executive Summary Brochure and a comprehensive report (available on-line @ <http://www.pvdairport.com/corporate/planning>). The brochure was seen as the most effective vehicle to bring awareness to the user, the operator and the local and state officials as to the merits and challenges facing the New England GA airport system.

Overall, there is a clear message; “the outlook to meet all infrastructure needs for New England general aviation airports is not feasible”.

It is essential for state aviation officials and policy makers to address this issue with a different perspective – “business as usual” is not a viable outlook.

It will require new strategies that place more emphasis on the role and importance the airport has to the overall transportation system.

For the preparers and the readers, this first phase of the system plan does not provide the answers necessary to find an overall solution to maintaining the current system of airports. For the most part it raises the important questions. For example;

- What are the options to mitigate the costs to maintain the airport system in the presence of the federal funding gap?
- How does the ASSET classification change our priorities for assessing the performance of the individual airport and the collective system?
- What are the expectations of improving access to the system via new navigation technologies or impacting the system by ATCT closures?
- What policies and strategies should state aviation officials adopt to ameliorate the challenges that these questions provoke?
- What are the consequences to the system if funding is not available? Is it a possibility some airports could be considered “low priority” or possible candidates for closure?

It is important that the subsequent phase of this planning project evaluate the impacts of a reduced GA funding program so these questions may have options and/or strategies to respond to these issues facing GA airports.

NEXT STEPS

A Phase II planning effort to address the questions and challenges provided in Phase I is a logical next step. The state aviation officials who comprised the project management team have every expectation that FAA will provide the funding to conduct the second phase of work. It was agreed to by the states and FAA at the outset to initiate a phased approach. It was also understood that the tasks in Phase I would only be effective to; (a) develop a baseline on the GA system and (b) highlight the formidable issues that would evolve as a result of the analysis.

A Phase II Study program should consider the Observations and Findings presented in Phase I. A suggested preliminary outline to begin discussions on a more complete scope of work would include:

- System Demand Forecast
- Develop Parameters to Assess System Performance
- Assess System Performance
- Assess System Sustainability
- Case Studies; such as:
 - Defining policies, strategies and options to alleviate the funding limitations
 - What is the impact of closing an airport in the New England system?
 - What is the impact of NextGen on GA in New England?
 - Evaluation of the New England Region Reliever System.
 - Alternative Energy Scenarios.

We hope this summary of the New England general aviation airport system has provided you the reader with a basic understanding of the challenges, complexity and cost of sustaining the GA airport system. Moreover it has given you an understanding of how general aviation is a vital component of the overall national transportation system, as well as its impact on the New England economy.

Finally, thanks to all who helped make this initial Phase I study analysis an informative presentation of what is happening to general aviation airports in New England.



THE EVOLVING ROLE OF OUR GENERAL AVIATION AIRPORTS
AND THEIR SIGNIFICANCE TO NEW ENGLAND

A PROFILE OF THE NEW ENGLAND GENERAL AVIATION AIRPORTS
PHASE I - SUMMARY OF FINDINGS