

Executive Summary

Purpose of the 2000 ESPR

The *2000 Environmental Status and Planning Report (2000 ESPR)*, EOE #5484/8696 presents the status of 2000 activity levels, environmental conditions and mitigation initiatives at Laurence G. Hanscom Field for ground transportation; noise; air quality; wetlands, wildlife and water quality; cultural and historical resources; and sustainable development.

The *2000 ESPR* provides a snapshot of 2000 conditions at Hanscom Field compared to the conditions of 1995. This information is derived from historic data from the *1995 Generic Environmental Impact Report (1995 GEIR)* and other available sources. The *2000 ESPR* also presents and evaluates the potential cumulative environmental effects of Moderate and High Growth scenarios for 2005 and 2015, forming the foundation for future planning. The scenarios present estimates of what may occur in the future using certain assumptions, and do not necessarily reflect what will or should actually occur.

Hanscom Field



Hanscom Field, which is located in the four towns of Bedford, Concord, Lexington, and Lincoln is New England's premier regional general aviation (GA) airport. The Federal Aviation Administration (FAA) identifies Hanscom Field as a GA reliever airport for Logan International Airport. As such, its primary role in the regional aviation system is to accommodate regional GA needs, thereby allowing Logan Airport and other larger nearby airports to concentrate on large-scale air carrier commercial activity. Hanscom Field has historically accommodated corporate aviation, private

flying, charter, air taxi, pilot training operations, military operations as well as scheduled commuter airline service and limited cargo operations. Figure ES-1 shows the location of Hanscom Field.

Massport remains committed to operating Hanscom Field as a premier regional GA airport with limited commercial service and to carefully managing the environmental effects of airport operations. In 1978 Massport,

through a lengthy community process, developed the 1978 Hanscom Field Master Plan and Environmental Impact Statement. Until superseded, the master plan will continue to be Hanscom's program for the future. The Master Plan and Massport's 1980 Regulations (740 CMR 25.00) contemplate that the airport will operate primarily as a GA airport with limited passenger commercial airline and cargo service. Massport's 1980 Regulations specifically allow for passenger service in aircraft with no more than 60 seats. Commercial airlines have operated periodically at Hanscom Field since the mid-1970s.

The airport is an economic asset that is linked to the economic health of the region, particularly nearby high technology businesses. According to the 2000 *State of Hanscom* report, Massport estimated that Hanscom Field generated \$110.6 million dollars from direct, indirect, and induced sources in fiscal year 2000. The airport has had positive revenues for the last two years. Nearly 500 employees work at Hanscom Field, many from nearby communities. Hanscom Field is also home to a technical training school, East Coast Aero Tech, and two flight schools.

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US Airways Turboprop with tie-down area in the background.

ESPR Documentation

This 2000 *ESPR* contains planning information, technical analyses, and supportive data including the Secretary's Certificate, comment letters on the proposed scope for the *Draft 2000 ESPR*, a list of reviewers, and technical appendices. A copy of this Executive Summary is available on the Massport web site (www.massport.com). The document is organized as follows:

- **Chapter 1 - Introduction** provides the environmental and regulatory context for the 2000 *ESPR*.
- **Chapter 2 - Airport Facilities and Infrastructure** describes the airfield and its supporting infrastructure including parking and the utility systems serving the airport and the airport's environmental baseline such as tank management and spill prevention efforts.
- **Chapter 3 - Airport Activity Levels** describes the aircraft operations and passenger activity levels for 2000; compares the 2000 data to historic trends and forecasts from the 1995 *GEIR*; presents the results of an air passenger survey; and presents 2005 and 2015 aircraft operation and air passenger forecasts for Moderate and High Growth scenarios, which form the basis for the technical analyses that follow.

- **Chapter 4 - Airport Planning** describes the status of planning initiatives and projects for the terminal area, airside area and landside area; evaluates the potential effects of the 2005 and 2015 scenarios on the airport infrastructure; and presents the relationship between the 2000 *ESPR* and Executive Order 385.
- **Chapter 5 - Regional Transportation Context** describes the role of Hanscom Field in the region's transportation system and describes activities at other regional airports.
- **Chapter 6 - Ground Transportation** reports on current conditions and potential conditions in the 2005 and 2015 analysis years for traffic; roadway and access including intersection operations and Average Daily Traffic volumes; mode share data, High Occupancy Vehicle and demand management alternatives, and employee survey results.
- **Chapter 7 - Noise** updates the status of the noise environment around Hanscom Field for 2000 conditions and for the 2005 and 2015 analysis years including Total Noise Exposure (EXP) calculations, Day-Night Average Sound Level (DNL) contours, Time-Above contours, Single Event contours, Single Event Level Distribution metrics, and ranked tabulation of take-off noise levels.
- **Chapter 8 - Air Quality** reports on 2000 conditions and conditions in the 2005 and 2015 analysis years including emissions inventory for carbon monoxide (CO), oxides of nitrogen (NO_x), volatile organic compounds (VOC) and particulate matter (PM₁₀) and monitoring results for ozone precursors and nitrogen dioxide.
- **Chapter 9 - Wetlands/Wildlife/Water Resources** describes the natural environment at Hanscom Field including wetlands delineations, vernal pools, and wildlife habitats; reports on the stormwater management system; and provides an update on the Vegetation Management Plan (VMP).
- **Chapter 10 - Cultural and Historical Resources** reviews the existing data on historic and archaeological resources located at, or near, Hanscom Field; presents information about the Minute Man National Historical Park; and evaluates the potential effects of the Moderate and High Growth scenarios for the 2005 and 2015 analysis years.
- **Chapter 11 - Environmental Management System (EMS) and Sustainable Development** reports on Massport's Sustainable Development Program and the Pilot EMS Program.
- **Chapter 12 - Mitigation** summarizes potential beneficial actions described in the previous chapters.
- **Glossary of Terms** defines key terms used in the *Draft 2000 ESPR*.
- **List of Reviewers**
- **Appendix A** provides the Secretary's 1997 Certificate on the 1995 *GEIR*.
- **Appendix B** includes the Massachusetts Environmental Policy Act (MEPA) Scoping Certificate, copies of all comments received on the proposed scope, and a Response to Comments section.
- **Appendix C through Appendix H** are the technical appendices that provide detailed analytical data and methodological documentation for the various environmental analyses conducted for the 2000 *ESPR*.

Table ES-1 Proposed Schedule for the Technical Review of the Draft 2000 ESRP

Meeting #	Topic	Date
One	Overview of ESRP	June 27, 2002
Two	Regional Transportation Context Aviation Activity Levels	September 12, 2002
Three	Infrastructure and Facilities Airport Planning	September 18, 2002
Four	Ground Transportation	September 25, 2002
Five	Noise Cultural and Historical Resources	September 28, 2002
Six	Wetlands/Wildlife/Water Quality	October 3, 2002
Seven	Mitigation	October 5, 2002
Eight	Air Quality	October 9, 2002
Nine	HATS Discussion of Public Comments	October 17, 2002
Ten	MEPA Consultation Session	November 7, 2002

Scope of the 2000 ESRP

As directed by the Secretary's Certificate, the purpose of this ESRP is to "provide an overview of the operational environment and planning status of Hanscom Field and long-range projections of environmental conditions against which the effects of future individual projects can be compared."

Environmental Review Schedule

Massport filed the Draft Scope for the 2000 ESRP on July 15, 2001. Massport held a public review session on November 8, 2001 at the Bedford Town Hall. A Massachusetts Environmental Policy Act (MEPA) consultation session was held on November 15, 2001, in the Bedford Town Hall to formally solicit written and oral testimony on the proposed scope. The comment period closed on November 27, 2001 and a certificate was issued on December 7, 2001. The MEPA Certificate is included in Appendix B. The environmental review schedule for this 2000 ESRP is as follows:

- The *Draft 2000 ESRP* will be filed with the Executive Office of Environmental Affairs (EOEA), MEPA Office on or about July 31, 2002. Notice will be published in the Environmental Monitor on, or about, August 10, 2002.
- Massport will voluntarily extend the required 30-day public comment period to approximately 100 days, with the comment period ending on November 15, 2002. It is anticipated that the Secretary's Certificate will be issued one week later.
- Ten public meetings will be held prior to the close of comments as part of a schedule that Massport developed in consultation with the four towns (see Table ES-1).
- A MEPA consultation date is tentatively scheduled for November 7, 2002.

Based on the scope of the *Draft 2000 ESRP* MEPA Certificate, Massport will prepare a Final ESRP. Massport will convene up to two public review sessions prior to the MEPA consultation session. It is anticipated that the Certificate will be issued one week after the close of comments for the Final 2000 ESRP. The following sections present highlights from each of the chapters in this 2000 ESRP.

Airport Facilities and Infrastructure Highlights

Figure ES-2 illustrates the location of airport facilities. The following summarizes changes in airport facilities since the *1995 GEIR*.

- Jet Aviation expanded its Fixed Base Operator (FBO) facility by approximately 34,000 square feet, due to increased demand for GA hangar space.
- Mercury Air Center added a 38,000-square-foot hangar with office space to its FBO facilities. Signature Flight Support assumed operation of the Mercury Air Center in July 2002, due to increased demand for GA hangar space.
- A corporate hangar and one maintenance hangar were developed in the southeast portion of the Terminal Area.
- In response to the resumption of commercial air service at Hanscom Field in 1999 by Shuttle America, Massport reconfigured interior terminal spaces to include a passenger holding area, public seating, and a security checkpoint.
- The FAA began construction of a new air traffic control tower in 2001, which will be operational in the latter part of 2002.
- Massport restriped the parking lot in front of the Civil Air Terminal to provide a pedestrian walkway and improve the delineation of parking spaces.

Massport uses Best Management Practices (BMPs) to control the stormwater impacts of these projects and has conducted design reviews to ensure that new facilities improve the quality and character of the airport while minimizing environmental impacts.

A detailed parking space inventory has been completed. It shows nearly 1,500 parking spaces at Hanscom Field including the main surface lot in front of the Civil Air Terminal and other lots located throughout the airport.



New FAA Air Traffic Control Tower.

Beginning around 1995, Massport instituted a tank management program designed to track the age and physical characteristics of all Massport-owned and Massport tenant fuel storage tanks at Hanscom Field. Massport records show that all of its existing tanks are currently in compliance with all applicable state and federal regulations. Massport will continue to monitor the condition of all of its tanks to ensure proper functioning and regulatory compliance.

The *1995 GEIR* identified eight active Massachusetts Department of Environmental Protection (DEP) listed disposal sites located on Massport property that were under active investigation under the Massachusetts Contingency Plan (MCP) by Massport and Massport tenants. Six of those sites were brought to regulatory closure by the year 2000 and one was recently brought to regulatory closure (March 2002), leaving one active DEP-listed disposal site that Massport is responsible for bringing to regulatory closure under the MCP. Site remediation is tentatively scheduled to begin in the fall of 2002.

Airport Activity Highlights

Aviation activity trends at Hanscom Field are based on actual 2000 activity and historical information from the 1995 GEIR. Key findings include:

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- Hanscom Field accommodated 212,400 aircraft operations in 2000.
- In 2000, GA accounted for 96.3 percent of aircraft operations at Hanscom Field. Scheduled airline operations were only 3.1 percent of aircraft activity and the military performed less than one percent (see Figure ES-3).
- From 1995 to 2000 total aircraft operations grew at an average annual rate of 2.2 percent. Jet aircraft operations increased by an average of 16.1 percent per year.
- Shuttle America commenced scheduled passenger services at Hanscom Field in September 1999. In 2000, Shuttle America transported 162,000 passengers and performed 6,600 operations with 50-seat turboprop aircraft.
- Total 2000 operations were within the 1995 GEIR forecast range.

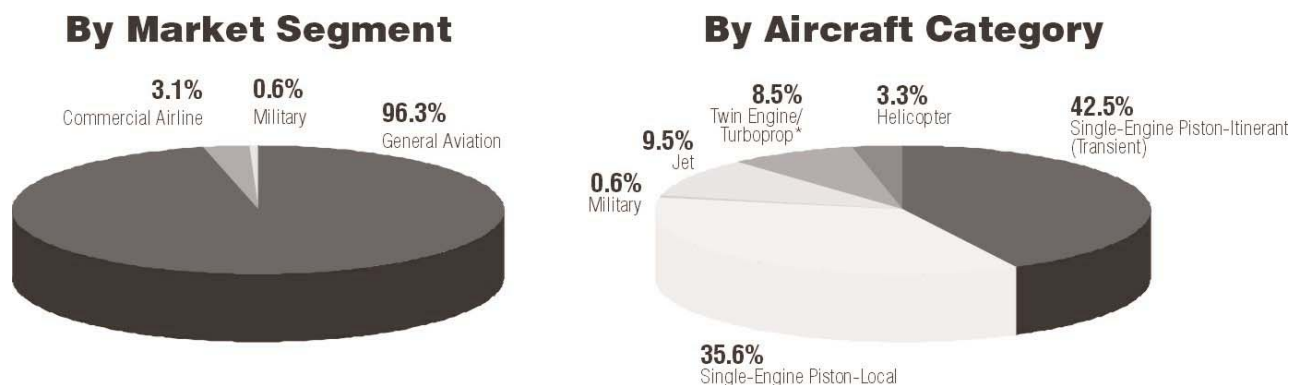
While general aviation operations were also within the 1995 GEIR forecast range for 2000, jet

operations were higher than predicted. The 1995 GEIR correctly predicted that jet operations would be the fastest growing segment of Hanscom Field operations, but actual growth surpassed forecast assumptions.

The actual level of scheduled airline operations at Hanscom Field in 2000 was within the 1995 GEIR forecast range. However, 162,000 commercial airline passengers utilized Hanscom Field in 2000 compared to the 1995 GEIR forecast range of 43,000 to 88,000, and passenger levels exceeded forecasted passengers because of differences between actual and predicted fleet mix and passenger load factors.

The new forecasts, which are show in Table ES-2, include projections of aircraft operations, regional airline passengers, and based aircraft for two planning scenarios - the Moderate Growth and High Growth scenarios. The forecasts assume that Hanscom Field primarily accommodates GA operations, with limited military, commercial passenger and cargo aircraft operations. The general aviation forecasts are based on historic trends at Hanscom Field, national historic trends in GA activity, and industry projections for the national GA market. These projections serve as inputs to the analyses of potential future environmental impacts and facility needs.

Figure ES-3 Hanscom Field Aircraft Operations by Type and Aircraft Class- 2000



Source: Massport and FAA Tower Counts

* Includes commercial operations



Table ES-2 Summary of ESPR Forecast Aviation Activity at Hanscom Field

	Actual		2005		2015	
	2000	2001	Moderate	High	Moderate	High
Aircraft Operations (7 a.m. - 11 p.m.)						
General Aviation	204,512	197,770	213,793	223,402	248,074	265,306
Military	1,287	1,252	1,521	1,573	2,179	2,902
Scheduled Passenger Airline	6,572	6,414	15,170	20,063	21,168	26,060
Scheduled Cargo Airline	-	-	520	1,040	1,040	1,560
Total	212,371	205,436	231,004	246,078	272,461	295,828
Commercial Passengers	162,147	134,337	330,168	503,707	488,646	659,872
Based Aircraft	397	403	425	444	494	529
Percent of Total Operations						
General Aviation	96.3%	96.3%	92.5%	90.8%	91.0%	89.7%
Military	0.6%	0.6%	0.7%	0.6%	0.8%	1.0%
Scheduled Passenger Airline	3.1%	3.1%	6.6%	8.2%	7.8%	8.8%
Scheduled Cargo Airline	0.0%	0.0%	0.2%	0.4%	0.4%	0.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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Source: Massport and FAA Tower Counts

The key findings for the future scenarios are presented below:

- Total aircraft operations are forecast to range from 231,000 in the 2005 Moderate Growth Scenario to 296,000 in the 2015 High Growth Scenario.
- General aviation is forecast to remain the single largest category of aviation activity at Hanscom Field, accounting for 90-91 percent of operations in 2015 (Moderate Growth to High Growth range).
- Scheduled passenger operations are forecast to increase from three percent of airport activity in 2000 to eight or nine percent in 2015 (Moderate Growth to High Growth range). Projections of commercial passenger operations are based on the recent pattern of scheduled airline services at Hanscom Field, the potential passenger demand generated by the Hanscom Field catchment area, and the types of airline services that could be supported given Massport's 1980 Regulations.
- Although in recent years military operations at Hanscom Field have declined, the 2000 ESPR forecasts assume an increase in military activity at Hanscom Field over the forecast period as a result of the heightened state of national security.
- Scheduled cargo airline operations are forecast to account for 0.4-0.5 percent of 2015 activity (Moderate Growth to High Growth range). The potential for scheduled all-cargo services at Hanscom Field will be driven by the growth in air cargo demand in the Boston metropolitan area and land constraints at Logan Airport that could limit future all-cargo growth there.
- Scheduled airline passengers are forecast to increase from 162,000 in 2000 to 330,000 in the 2005 Moderate Growth Scenario and 660,000 in the 2015 High Growth Scenario. These potential increases in airline passenger levels may require additional terminal space and parking spaces allocated for commercial passengers.

Airport Planning Highlights

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Airport planning for Hanscom Field is based on the airport activity levels that have been forecast for the 2005 and 2015 Moderate and High Growth scenarios and airport facility and infrastructure conditions. Planning concepts, which are summarized in Table ES-3, were identified for potential facilities that could support the future growth scenarios. These planning concepts take into account the 1978 Master Plan and the Massport's 1980 Regulations that provide the general planning context for Hanscom Field. These scenarios and planning concepts describe what may occur in the future using certain assumptions, and do not necessarily represent what will or should actually occur.

- Additional GA facilities would be needed to meet both 2005 and 2015 forecast demand. Potential locations include the Pine Hill Area, the Terminal Area, the East Ramp Area, and the North Airfield Area (see Figure ES-4).

- Additional passenger throughput capacity would be needed in the terminal to meet forecast demand for scheduled passenger service in the 2005 and 2015 scenarios.
- Making more efficient use of existing paved surfaces could accommodate demand for parking spaces under the 2005 Moderate Growth Scenario. Additional public parking would be required to meet forecast demand for the 2005 High, 2015 Moderate, and 2015 High Growth scenarios.
- Cargo facilities would be needed to meet the projected cargo demand for the 2005 and 2015 scenarios.
- No new facilities are anticipated in the West Airfield Area or the Runway 5 Approach Area under any of the 2005 or 2015 Growth scenarios.

Table ES-3 Hanscom Field Planning Concepts

Planning Area	2005 Analysis Year	2015 Analysis Year*
Terminal Area	<ul style="list-style-type: none"> • Hangar 1 Site redevelopment • Flight school relocations to Pine Hill Area • West Ramp upgrades (new and/or replacement GA Hangars) 	<ul style="list-style-type: none"> • Terminal improvements • Parking facility improvements, potential parking structure • Hotel
Runway 5 Approach Area	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
Pine Hill Area	<ul style="list-style-type: none"> • Pine Hill GA hangars • GA facility (former MIT hangar) • Flight school relocations from Terminal Area • Two GA hangars at 12,000 square feet each 	<ul style="list-style-type: none"> • None
West Airfield Area	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • None
North Airfield Area	<ul style="list-style-type: none"> • New T hangars (along Taxiway H, East of Runway 23) 	<ul style="list-style-type: none"> • New GA hangars (north of Taxiway R, west of Runway 23) • New T hangars (north of Taxiway R, west of Runway 23)
East Ramp Area	<ul style="list-style-type: none"> • Cargo facility • Access to East Ramp from Hanscom AFB • Field Maintenance Building improvements 	<ul style="list-style-type: none"> • Cargo facility • Access to East Ramp from Hartwell Avenue or Hanscom AFB • New GA hangars • New T-hangars

* 2005 planning concepts are also assumed in 2015.

- The future demand for the 2005 Moderate, 2005 High, and 2015 Moderate Growth scenarios might be met by reconfiguring space within the existing terminal facility. The 2015 High Growth Scenario would likely warrant additional terminal space to support commercial airline service and related support functions.



Corporate business jet taxiing at Hanscom Field.

Future infrastructure requirements include those to address potential needs related to water supply/demand, the sanitary sewer system, storm water management and drainage system, electrical distribution system, natural gas, and telephone communications. Key findings regarding future infrastructure requirements are summarized below.

- The existing distribution system can accommodate potential potable water demands for the 2005 and 2015 Moderate and High Growth scenarios with appropriate service extensions to potential new facilities.

- The potential new facilities in the 2005 and 2015 Moderate and High Growth scenarios will meet the Massachusetts Department of Environmental Protection (DEP) Stormwater Management Standards for water quality and quantity.
- It is Massport's policy that stormwater runoff after construction of a new project not exceed the stormwater runoff that existed prior to the construction of the new facility. This approach will be used for the construction of potential new facilities that are described below for the 2005 and 2015 Moderate and High Growth scenarios if those projects are constructed.
- Additional capacity and an expanded electrical distribution system will be necessary to serve the 2005 and 2015 Moderate and High Growth scenarios.
- The natural gas distribution system has sufficient capacity to accommodate the 2005 and 2015 Moderate and High Growth scenarios.
- Upgrades to telephone and other communications service capacities are needed to accommodate the 2005 and 2015 Moderate and High Growth scenarios.

Regional Transportation Context Highlights

Because of growing congestion and delays at Logan Airport, Massport has adopted a policy to promote increased usage and development of New England's regional airports and supports the region's inter-city rail projects. Massport has been actively working with federal, state and regional agencies to develop an integrated regional transportation plan that would expand and improve inter-city travel options for the New England region.

As part of this regional approach, Massport is committed to maintaining Hanscom Field as a vital transportation resource within the regional aviation system. It is expected that Hanscom Field will continue to function within the regional airport network primarily as a GA reliever for Logan

Airport with a limited role as a commercial air service airport.

Hanscom Field is the region's premiere regional GA reliever airport. Because of its proximity to Boston and Route 128-area businesses that rely on corporate aviation, Hanscom Field handles over 200,000 annual GA operations, more GA activity than any other GA reliever or commercial service airport in the area (see Figure ES-5 and Table ES-4).

As airlines continue to look to alternative airports for serving New England, it is expected that Hanscom Field can continue to play a limited role and support some level of scheduled airline services. However, Hanscom's principle role in the

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Table ES-4 Aircraft Operations at Logan Airport, Hanscom Field, and New England Regional Airports - 2000

Airport*	Commercial Airline	General Aviation & Military	Total Airport	Percent of Total
Logan Airport**	452,763	35,233	487,996	31.4%
Regional Airports				
Hartford Bradley International, CT	132,062	37,674	169,736	10.9%
T.F. Green/Providence, Warwick, RI	103,750	54,948	158,698	10.2%
Manchester, NH	61,506	46,326	107,832	6.9%
Portland, ME	47,609	58,643	106,252	6.8%
Burlington, VT	45,745	69,618	115,363	7.4%
Bangor, ME	21,466	61,338	82,804	5.3%
Hanscom Field, MA	6,572	205,799	212,371	13.7%
Worcester, MA	4,029	47,013	51,042	3.3%
Tweed New Haven, CT	5,260	56,469	61,729	4.0%
Subtotal Regional Airports	427,979	637,828	1,065,807	68.6%
Total New England	880,742	673,061	1,553,803	100.0%

Source: FAA APO Terminal Area Forecast

* Massport Data

** Based on FAA National Plan of Integrated Airport Systems (1998-2002), March 1999

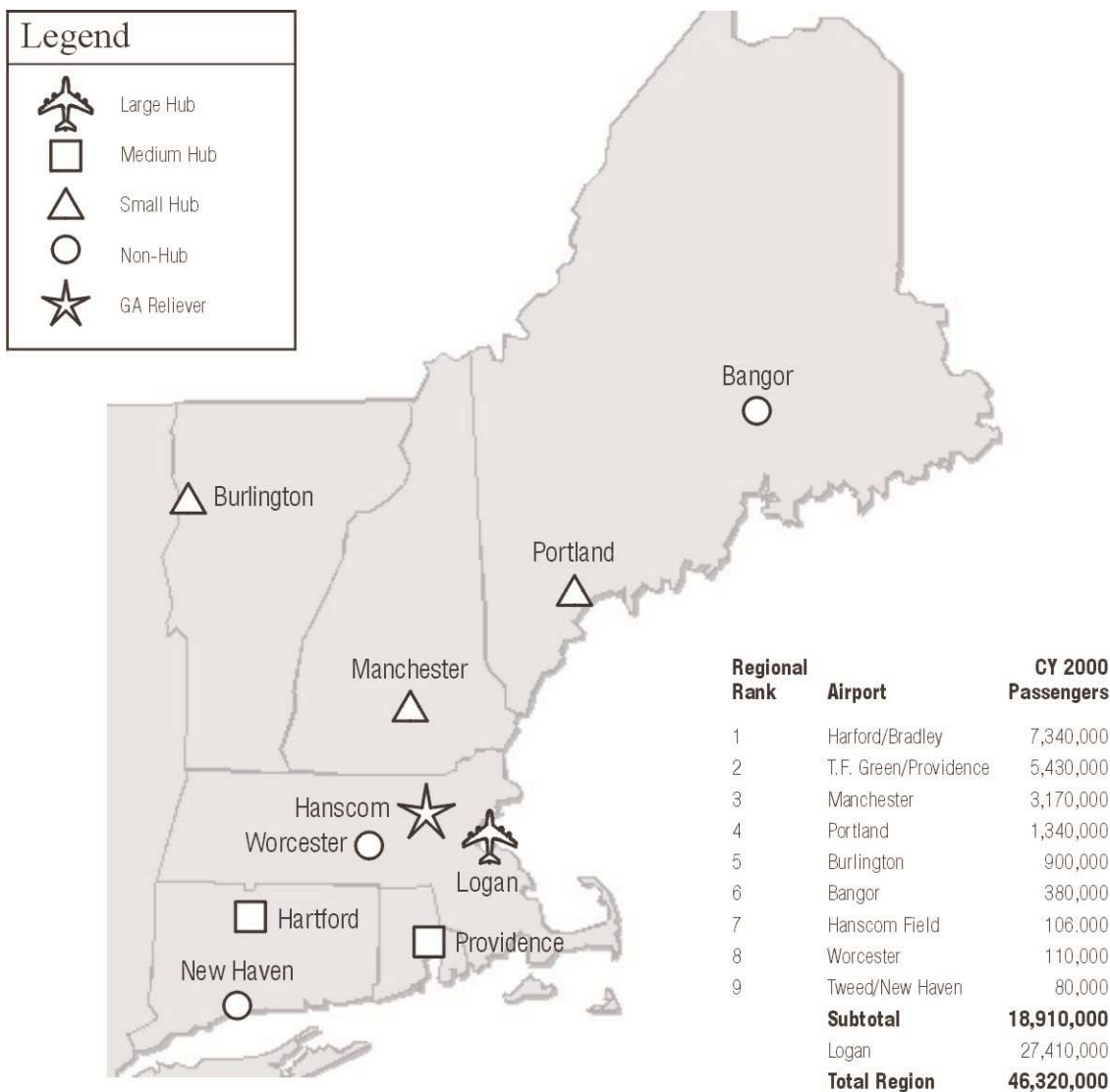
Note: The consolidated Boston metro area includes the Worcester, MA-CT and the Manchester, NH Primary Metropolitan Statistical Areas.



regional airport network will be limited by its proximity to several larger commercial service airports (e.g., Logan, T.F. Green and Manchester) and the aircraft size restriction on scheduled passenger services, as well as ground access and other facility constraints. In addition to the regional airports, several rail projects in the New England area, including Amtrak's high-speed, Boston-New York Acela service will increase options for high-speed inter-city travel and create a more efficient and environmentally balanced regional transportation system.

Massport advocates a regional transportation policy to improve the efficient use of the region's transportation infrastructure by appropriate expanded use of regional airports and alternative transportation modes. To achieve this policy goal, Massport is committed to cooperative transportation planning and is working actively with federal, state and regional agencies to ensure an integrated, multi-modal regional transportation network.

Figure ES-5 Principle Commercial Service Airports in New England



Note: Passengers are enplaned and deplaned passengers for Logan Airport and enplaned passengers times two for regional airports.

Ground Transportation Highlights

The location of Hanscom Field is west of Route 128/I-95, south of Routes 62 and 4-225, and north of Route 2A. Within the region, traffic to and from Hanscom Field is served by a network of major expressways, including Route 128/I-95, Route 2, Route 3, and Interstate 90 (the Massachusetts Turnpike). Direct access to Hanscom Field is provided via Hanscom Drive off of Route 2A.

Auto is the primary access mode to Hanscom Field. However, as shown in Figure ES-6, Hanscom traffic occurs outside the morning and afternoon peak hours.

The key ground transportation findings are presented below:

- In 2002, Hanscom Field generates 161 vehicle trips during the morning peak hour (7:45 to 8:45 a.m.) and 159 vehicle trips during the afternoon peak hour (5:00 to 6:00 p.m.). Peak hour trip distribution is summarized in Table ES-5.
- In 2002, Hanscom Field makes up only 12 percent of the traffic volumes on Hanscom Drive during the morning peak hour and 13 percent during the afternoon peak hour (see Figure ES-6). The remaining traffic is

generated by the Hanscom Air Force Base (AFB) and other activities that use Virginia Road. In future scenarios, Hanscom Field-related traffic volumes represent from 16 to 31 percent of total traffic volumes on Hanscom Drive.

In 2002, only three to four percent of the peak hour traffic volumes along Route 2A are Hanscom Field-related (see Figure ES-7). In the future scenarios, five to seven percent of morning peak hour traffic volumes on Route 2A are Hanscom Field-related and eight to 15 percent of afternoon peak hour traffic volumes on Route 2A will be Hanscom Field-related.

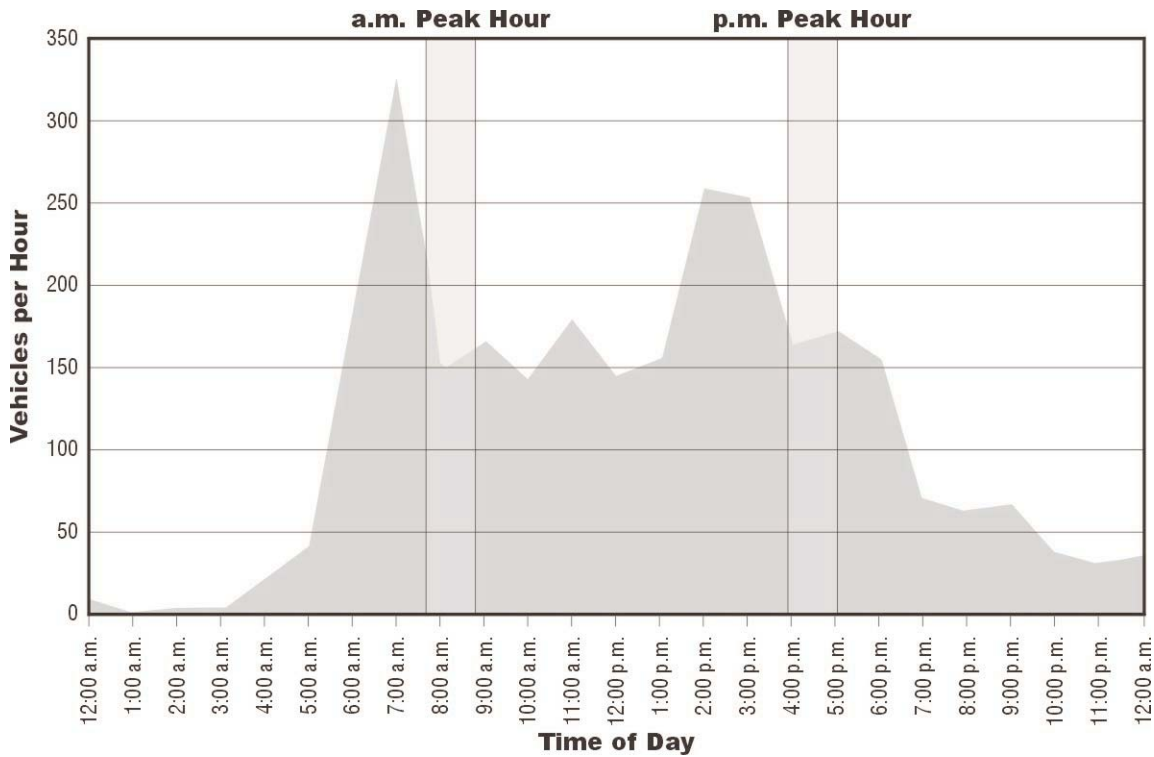
Year 2002 peak hour operating conditions were evaluated for three intersections because the Hanscom Field-related traffic exceeds ten percent for any single movement at these intersections. Two of the three intersections operate at Level of Service (LOS) D or better. The third intersection, Hanscom Drive/Route 2A, operates at LOS F in the morning peak hour due to delays for the southbound Hanscom Drive left-turn movement and at LOS D under police control in the afternoon peak hour. Operating conditions would improve in the morning peak hour with police officer control.

Table ES-5 Hanscom Field Peak Hour Trip Generation

	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
	In	Out	Total	In	Out	Total
2002 Conditions	109	52	161	47	112	159
Future 2005 Moderate Growth	152	81	233	112	186	298
Future 2005 High Growth	156	88	244	193	267	460
Future 2015 Moderate Growth	244	138	382	190	266	456
Future 2015 High Growth	259	146	405	289	365	654

Sources: Trip generation for 2002 conditions based on traffic counts collected by Rizzo Associates, Inc., January and February of 2002. Future trip generation numbers (new trips) estimated with the Hanscom Trip Generation Model based on aviation forecasts presented in Chapter 3.

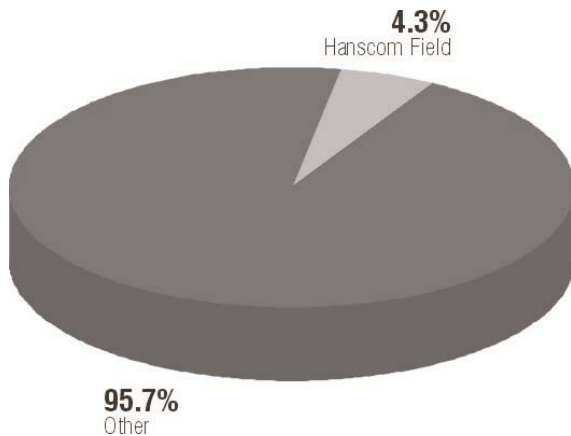
Figure ES-6 Hanscom Field Vehicle Traffic Peaking Characteristics



Analysis of future scenarios indicates that projected Hanscom Field traffic increases would represent a small portion of the total increase in intersection traffic volumes. The comparison of traffic operations with and without projected Hanscom Field increases shows that most intersections operate at the same LOS regardless of the level of Hanscom Field-related traffic growth, with the following exceptions:

- For 2005 scenarios, the intersections of Hanscom Drive with Old Bedford Road and Route 2A experience a change in LOS due to Hanscom Field-related traffic volumes. Of these two intersections, the new vehicle trips generated by Hanscom Field would result in LOS F only at the intersection of Hanscom Drive/Route 2A for the afternoon peak hour in the 2005 High Growth Scenario.

Figure ES-7 Afternoon Peak Hour Traffic on Route 2A (East of Hanscom Drive)



- For 2015 scenarios, three intersections would experience a change in intersection level of service to LOS E or F as a result of anticipated Hanscom Field traffic increases. These intersections include Hanscom Drive/Route 2A in Lincoln and Old Bedford Road intersections with Lexington Road (Route 2A) and Virginia Road in Concord. A fourth intersection, Hanscom Drive/Old Bedford Road, would experience a change in LOS as a result of anticipated Hanscom Field traffic increases, but would operate at LOS D or better.

Table ES-6 Potential Improvements to Affected Intersections

Intersection	Year	General Approach	Comment
#6) Hanscom Drive/Route 2A (Lincoln)	2005, 2015	Police Control	Morning peak hour
#9) Old Bedford Road/ Lexington Road (Concord)	2015	Traffic Calming	Roundabout
#10) Old Bedford Road/Virginia Road (Concord)	2015	Exclusive Left Turn Lane	Provide Exclusive westbound Left-Turn Lane on Virginia Road

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Potential improvements to address the traffic effects of Hanscom Field include operational improvements such as police traffic control and traffic calming and new measures. Operational and roadway improvements that work within existing rights-of-way potential improvements are needed at only three of 14 study intersections as a result of projected Hanscom Field traffic increases. The three intersections with LOS changes due to Hanscom traffic growth include:

- Hanscom Drive/Route 2A in Lincoln (#6), in the 2005 High Growth Scenario, for the afternoon peak hour.
- Old Bedford Road/Lexington Road in Cocord (#9), in the 2015 High Growth Scenario, the Old Bedford Road southbound left-turn would change from LOS D to LOS E for the afternoon peak hour
- Old Bedford Road at Virginia Road in Concord (#10) in the 2015 Moderate and High Growth scenarios.

Potential improvement strategies for these locations are summarized in Table ES-6.

Future traffic growth from increased background traffic, new developments near Hanscom Field and potential increased activity at Hanscom Field will add to existing delays at study area intersec-

tions. TDM approaches that include a variety of measures can result in fewer vehicles on the road, particularly during peak commuter hours. These measures could reduce existing and future traffic volumes on area roadways.

To be successful in reducing traffic demand, travel demand management approaches need to be regional in scope with participation from a range of stakeholders that includes major employers, the Hanscom Air Force Base, Massport, and the National Park Service. Hanscom Field contributes a small portion of the year 2002 peak hour traffic on area roadways and is a relatively low traffic generator compared to other uses in the area such as Hanscom AFB.

Hanscom Field represents only three to four percent of peak hour traffic on Route 2A and 12 to 13 percent of peak hour traffic on Hanscom Drive. While Hanscom Field traffic would increase in the 2005 and 2015 scenarios, it will remain one of many traffic generators that contribute traffic volumes to area roadways, rather than the dominant traffic generator.

The role of a TDM program at Hanscom Field would be to provide measures that would be useful to the current commuting population while laying the foundation for addressing future demands as they occur.



Noise Highlights

In general, noise levels at Hanscom Field have been increasing over the last several years, due primarily to increases in general aviation jet activity. This has been partially offset by technological trends toward quieter and better performing aircraft. This trend would continue with the addition of more jet activity in the High Growth forecasts for both 2005 and 2015, although the total population exposed to high noise levels at Hanscom Field remains low. Specific findings are outlined below:

- Comparison of 2000 noise contours to 1995 contours shows that noise levels have increased in Concord and Lexington, but decreased in Bedford and Lincoln (see Figure ES-8). This is largely due to overall higher activity levels by general aviation jets, and lower use of Runway 5-23 (the shorter runway).
- Despite the contour shifts since 1995, total population exposed to Day Night Level (DNL) greater than 65 dB has decreased from 29 in 1995 to 26 in 2000, all of whom reside in Bedford.
- Comparison of predicted noise levels at permanent noise monitoring sites shows good agreement at the sites closest to the airport, and less agreement at the more distant sites dominated by community noise.
- The 2015 High Growth Scenario represents the worst noise condition of the four alternatives analyzed. Forecast noise levels for the 2015 High Growth Scenario show increases in DNL of as much as 4 dB at permanent noise monitoring locations. The total estimated population within the DNL 65 dB contour would increase from 26 in 2000 to 202 in 2015 under the High Growth Scenario.

Population estimates were prepared for the forecast cases using year 2000 U.S. Census data and the same Geographic Information Systems (GIS)

techniques described previously for the 2000 operating conditions. Table ES-7 presents the population within the 55, 60, 65, and 70 dB DNL contours for the forecast cases in 2005 and 2015. The areas of growth in the contours shown in Figures ES-9 through ES-12 are reflected in the results shown below. Increases in Bedford's population within the 65 dB DNL contour occur for the 2005 High Growth Scenario and for both of the 2015 scenarios. In addition, some homes generally along Bedford Street in Concord would be within the 65 dB DNL contour in 2005 and 2015.

Table ES-8 presents computed noise levels at selected locations within the Minute Man National Historical Park, using both DNL and Time Above (TA) metrics. None of these locations are within the 65 dB DNL metric now or in the future scenarios.

The overall conclusions from the analysis of future forecast scenarios suggests that the highest noise exposures would occur in the 2015 High Growth Scenario, followed by those in the 2005 High Growth Scenario. Under the 2005 and 2015 High Growth scenarios, the number of people exposed to greater than 65 dB DNL increases from 26 in 2000 to 103 in 2005 and to 202 in 2015. As a point of comparison, there are currently 17,745 people exposed to greater than 65 dB DNL near Logan. FAA land use compatibility guidelines, indicate that these individuals are considered to be adversely affected by noise. One historical noise-sensitive site, the Merriam-Wheeler house on Virginia Road in Concord, would also experience a DNL value greater than 65 dB under the High Growth Scenario; levels at the site are less than 65 dB DNL under all other scenarios.

Potential mitigation strategies to reduce the numbers of people affected would include continued Fly Friendly operational measures of a voluntary nature such as are reported in Chapter 12.

Table ES-7 U.S. Census Population Counts within Current and Forecast DNL Contours

DNL Contour (dB)	Town	Population				
		2000	2005 Moderate	2005 High	2015 Moderate	2015 High
70	Bedford	0	0	0	0	1
Total Population within the 70 dB DNL Contour		0	0	0	0	1
65-70	Bedford	26	45	83	51	124
	Concord	0	2	20	2	78
Total Population between the 65 & 75 dB DNL Contours		26	47	103	53	202
60-65	Bedford	270	385	485	409	541
	Concord	313	496	729	571	902
	Lexington	0	6	54	28	210
Total Population between the 60 & 65 dB DNL Contours		583	887	1,268	1,008	1,703
55-60	Bedford	881	909	1085	923	1251
	Concord	839	905	1058	1020	1351
	Lexington	519	906	1776	1105	2157
	Lincoln	0	0	0	0	8
Total Population between the 55 & 60 dB DNL Contours		2,239	2,720	3,919	3,048	4,767

Source: HMMH

ES-16

Table ES-8 Noise Levels at Selected Sites in Minute Man National Historical Park

Label	Name	Town	Year 2000	2005 Moderate	2005 High	2015 Moderate	2015 High
Day-Night Sound Level, DNL, in decibels							
N12	Minute Man National Historical Park	Concord	52.7	54.1	55.2	54.8	56.6
N13	North Bridge Monument Square Historic District	Concord	50.6	51.4	52.4	51.5	53.2
N14	Old Manse	Concord	50.6	51.4	52.4	51.5	53.2
N38	Minute Man National Historical Park, Captain William Smith House	Lincoln	45.2	45.9	46.3	46.4	47.3
N40	East Village Historic District	Lexington	32.6	33.6	34.8	34.2	37.0
Time Above (TA) 65 dB, in minutes							
N12	Minute Man National Historical Park	Concord	5.4	7.0	8.6	8.5	11.6
N13	North Bridge Monument Square Historic District	Concord	4.2	5.5	7.0	6.6	9.7
N14	Old Manse	Concord	4.2	5.5	7.0	6.6	9.7
N38	Minute Man National Historical Park, Captain William Smith House	Lincoln	0.9	1.0	1.1	1.0	1.0
N40	East Village Historic District	Lexington	0.1	0.1	0.1	0.1	0.1

Source: HMMH

Air Quality Highlights

Up to 30 years of Massachusetts DEP air monitoring data for the Greater Boston area were used to evaluate the air quality in recent years, including the year 2000. These data reveal that:

- Air quality in the Greater Boston area, including the Hanscom Field communities, has improved substantially and continually from the early 1970s to the present.
- The Greater Boston area, including the Hanscom Field communities, is currently in compliance with all Massachusetts and National Ambient Air Quality Standards (NAAQS).
- Ozone levels have been in compliance with the 1-hour NAAQS for ozone in the Boston area, including the Hanscom Field communities, since 1996. Some violations of the 1-hour ozone NAAQS still occur on Cape Cod and in southeastern Massachusetts.
- The year 2000 aircraft emission totals are less than one percent of Middlesex County emissions (see Figure ES-13).

Annual emissions from aircraft operations and motor vehicles accessing the airport, were calculated for the year 2000. These emissions were compared to emissions for the years 1985 and 1995, previously calculated for the *1995 GEIR*.

Emissions of all four pollutants from aircraft operations have increased between 1995 and 2000. Emissions from motor vehicle traffic between 1995 and 2000 and between 1985 and 2000 decreased for CO, VOC, and PM₁₀. Emissions of NO_x increased between 1995 and 2000 and between 1985 and 2000. These changes are a result of an overall increase in vehicle miles traveled (VMT).

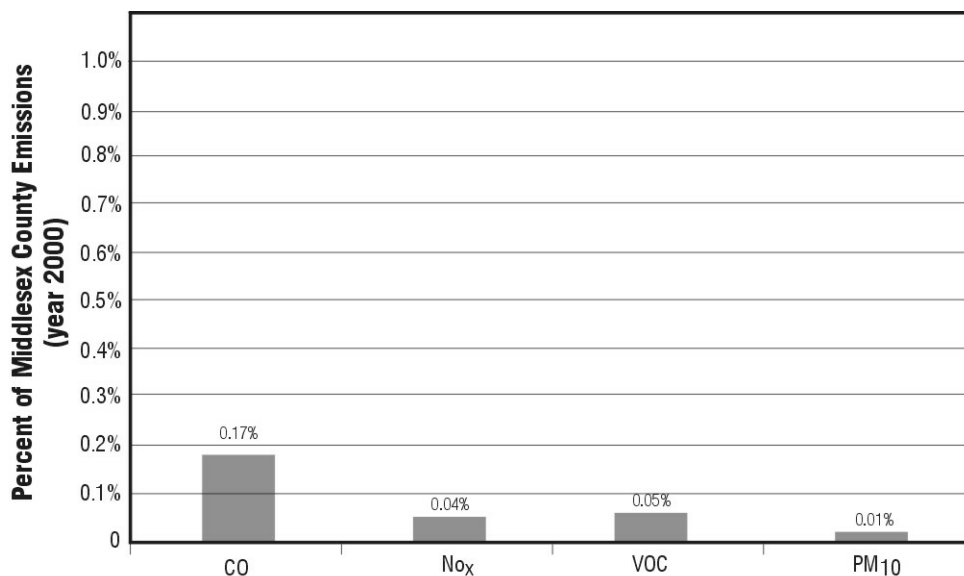
Annual emissions from aircraft operations and motor vehicle traffic were estimated for the 2005 Moderate and High Growth scenarios and for the 2015 Moderate and High Growth scenarios.

Maximum air quality concentrations for all future scenarios will easily comply with the NAAQS.

To reduce future air emissions, Massport will explore emissions reduction opportunities such as TDM measures, that would help to reduce future motor vehicle emissions.

ES-18

Figure ES-13 Year 2000 Hansom Field Aircraft Emissions as a Percentage of Middlesex County Emissions



Wetlands, Wildlife and Water Resources

The current status of the wetland resource areas at Hanscom Field is relatively unchanged from the existing conditions documented in the 1995 *GEIR*. A summary of existing conditions follow.

- The Massachusetts Natural Heritage and Endangered Species Program have certified three vernal pools since 1995 at Hanscom Field. The vernal pools are located in Concord to the west of Runway 11-29.
- Two perennial waterways exist at Hanscom Field: the Shawsheen River in Bedford and Elm Brook within Bedford, Concord and Lincoln.
- Some areas of Hanscom Field are located within an area identified in the Massachusetts Natural Heritage Atlas as a Priority Habitat of Rare Species (see Table ES-9).

- One state listed endangered species (Upland Sandpiper) and one threatened species (Grasshopper Sparrow) have been observed on the Hanscom Field property.

Massport continues to regularly update its Spill Prevention Control and Countermeasure Plan (SPCCP). Massport maintains contracts with emergency response cleanup contractors to respond to Massport or tenant spill events.

When considering areas of potential future development, efforts were made to identify locations that could minimize the potential effects of the 2005 and 2015 Moderate and High Growth scenarios. No impacts to three certified vernal pools near the western end of Runway 11-29, or their wildlife habitat value, would result from the potential locations for new facilities identified in any of the growth scenarios. Similarly, potential new facilities would not result in any significant adverse effects on rare or endangered species or their habitat. Lastly, no impacts are anticipated on agricultural resources at Hanscom Field.

Table ES-9 Known Endangered, Threatened, or Special Concern Species at Hanscom Field

Common Name	Latin Name	Status*
Observed on Hanscom Field property:		
Upland Sandpiper	<i>Bartramia longicauda</i>	Endangered
Grasshopper Sparrow	<i>Ammodramus savannarum</i>	Threatened
Observed on adjacent Hanscom AFB property:		
Eastern Box Turtle	<i>Terrapene carolina</i>	Special Concern
Elderberry Long-horned Beetle	<i>Desmocerus palliatus</i>	Special Concern
Mystic Valley Amphipod	<i>Crangonyx aberrans</i>	Special Concern

* In accordance with the Massachusetts Endangered Species Act (M.G.L. Ch. 131A) and regulations (321 CMR 10.03)

Cultural and Historic Resource Highlights

Cultural and historical resources include historic buildings and districts, archaeological sites, park areas, recreational and conservation lands, and agricultural resources. Cultural and historical resources are shown in Figure ES-14. Key points regarding year 2000 conditions for cultural and historical resources are summarized below.

- There are no State Register properties within the 65 dB DNL noise contour, an exposure level that the FAA identifies as a guideline for determining potential land use incompatibilities. Two State Register properties, the Simonds Tavern and the Wheeler-Merriam House, are located between the 65 and 55 dB DNL noise contours.
- The Massachusetts Historical Commission (MHC) Inventory files (historical and archaeological resources that have not been formally designated) contain no buildings within the year 2000 65 dB DNL noise contour.
- None of the Minute Man National Historical Park is located in the current 65 dB DNL noise contour. Approximately 17 acres of the parklands lie between the 55 and 65 dB DNL noise contours.

The analysis of potential future impacts focussed on traffic, noise and air quality effects of Hanscom Field. The key findings with regard to the year 2005 and 2015 Moderate Growth and High Growth scenarios are summarized below.

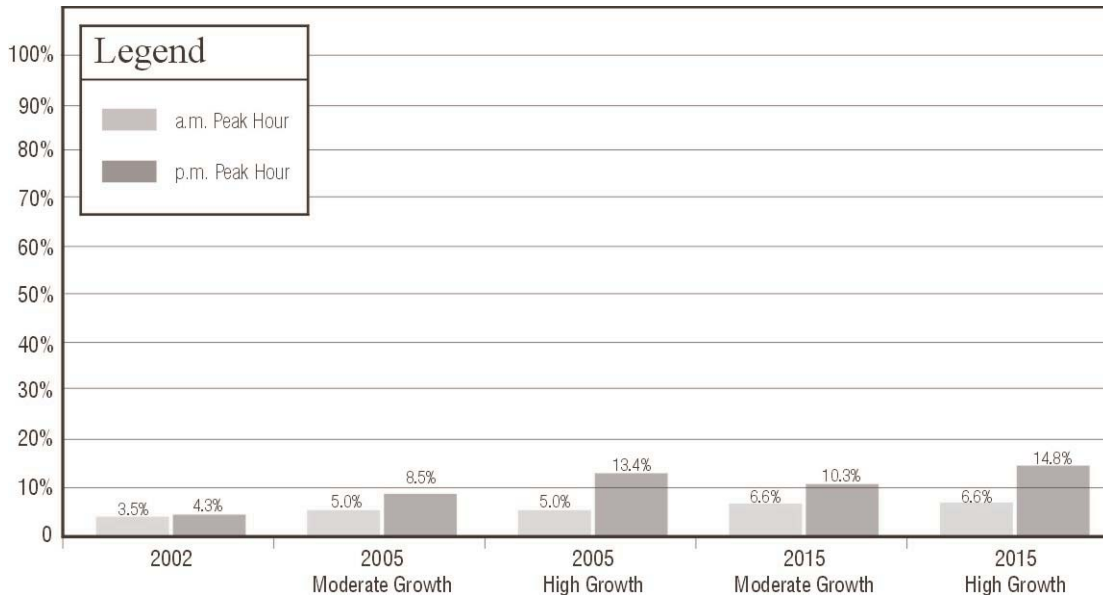
- In the 2005 Moderate Growth Scenario, noise exposure is projected to increase on the order of ½ to 1½ dB above levels occurring in 2000. However, no State Register historical buildings are expected to experience DNL levels above 65 dB.

- Under the 2005 High Growth Scenario, DNL noise exposure levels at State Register historical properties are expected to increase about 1 dB more than in the Moderate Growth scenario, or approximately 1½ to 2½ decibels above 2000 levels.
- In 2015, the Moderate Growth Scenario would result in exposure levels approximately 1 to 2 dB higher than in 2000.
- Only in the 2015 High Growth scenario would the changes in DNL be expected to rise significantly above current levels - generally by about two to four decibels - but even with these largest increases, the only historical property on the State Register to exceed 65 dB would be the Wheeler-Merriam House which would experience levels of approximately 66 dB.
- In 2005, Hanscom Field would represent five percent of the morning peak hour traffic on Route 2A and eight to thirteen percent of the afternoon peak hour traffic on Route 2A. In 2015, Hanscom Field would represent seven percent of the a.m. peak hour traffic on Route 2A and eight to thirteen percent of the afternoon peak hour traffic on Route 2A (see Figure ES-14).

No adverse air quality effects to historical, architectural or archaeological resources are projected for the 2005 and 2015 planning scenarios.

No adverse effects to agricultural and conservation lands are projected for the 2005 and 2015 planning scenarios.

Figure ES-14 Percent of Hanscom Field Traffic on Route 2A (East of Hanscom Drive)



Environmental Management Systems and Sustainable Development Highlights

In May 2001, Massport obtained ISO 14001 certification for the Hanscom Field EMS. Hanscom Field was the first airport in the nation to have its EMS certified to the ISO 14001 standard. ISO 14001 certification is a milestone for Massport in achieving its sustainability goals. The implementation of the EMS at Hanscom Field will encourage the use of sustainable principles.

Sustainability is the integration of economic development and environmental stewardship, while meeting societal needs.

Sustainability is a practice in which the use of renewable resources is balanced against their current and future availability, as well as the individual and commercial needs for those resources, under the principle that consumption of resources should not lead to their exhaustion or permanent damage. The World Commission on Environment

and Development defines sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Use of natural resources includes not only their direct consumption in processes, but encroachment upon nature through development and land use. Because natural resources are limited, their future economic and societal value is expected to increase over time.

To be successful, sustainability must be initiated at all levels of a community - from the individual citizens to large public and private organizations. To date, sustainability has achieved its greatest success as voluntary programs wherein citizens, organizations, and businesses formulate plans that balance the needs of economic prosperity with environmental health.

Mitigation Highlights

In general, the analysis concluded that the key future environmental effects of Hanscom Field are likely to be those associated with traffic and noise. For most of the future scenarios, the traffic and the noise effects are relatively minor in nature. Future traffic conditions are comparable with or without the anticipated Hanscom Field traffic increases at most intersections. Changes in the 65 dB DNL noise contour occur primarily on Hanscom Field property. The 2015 High Growth Scenario represents what could be considered the worst-case condition relative to the effects of potential increases to traffic and noise levels. In all scenarios, the following measures are recommended for consideration:

- Participate with other area employers to provide police traffic control at the Hanscom Drive/Route 2A intersection during the a.m. peak hour
- Participate with other area employers in new TDM measures to address traffic effects of Hanscom Field, which would be maximized as part of a regional effort
- Continued pilot education and public information efforts to encourage noise abatement

An additional possible measure to consider for the 2015 High Growth Scenario is a traffic calming improvement that would replace the existing intersection of Old Bedford Road/Lexington Road in Concord with a roundabout, which would improve operations and provide the benefits of traffic calming.

The analysis of air quality indicated that the emission levels forecasted for the future scenarios will not result in significant adverse air quality effects. The air quality concentrations for all four future scenarios will be in compliance with the Massachusetts and National Ambient Air Quality Standards, which have been set to protect the public health with a margin for safety. However, to reduce future air emissions, Massport will explore emissions reduction opportunities such as TDM measures that would help to reduce future motor vehicle emissions.

Improvements have occurred in response to the on-airport environmental effects identified in the *1995 GEIR*. In May 2001, Massport obtained ISO 14001 certification for the Hanscom Field Environmental Management System (EMS). Hanscom Field was the first airport in the nation to have its EMS certified to the ISO 14001 standard. All but one DEP-listed disposal site have been brought to regulatory closure at Hanscom Field, and remediation efforts at that site are expected to begin in the fall of 2002. Massport uses BMPs to address issues such as stormwater run-off at facilities that have been constructed since the *1995 GEIR*. These approaches would be part of future efforts to address the environmental effects of the 2005 and 2015 Moderate and High Growth scenarios.