U.S. Department
of Transportation
Federal Aviation
Administration

A Model Zoning Ordinance to Limit Height of Objects Around Airports

AC: 150/5190-4A
DATE: 12/14/87

Advisory Circular

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Subject: A MODEL ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND AIRPORTS

Date: 12/14/87
Initiated by: AAS- 100

AC No: 150/5190-4A
Change:

1. PURPOSE.

a. This advisory circular provides a model zoning ordinance to be used as a guide to control the height of objects around airports.

b. This advisory circular has been editorially updated for reprint/stock purposes only. There were no changes made to the content of the advisory circular except to update the format and renumber rhe document to AC 150/5190-4A.

2. CANCELLATION. AC 150/5190-4, A Model Zoning Ordinance to Limit Height of Objects Around Airports, dated August 23, 1977.

3. FOCUS.

a. Aviation safety requires a minimum clear space (or buffer) between operating aircraft and other objects. When these other objects are structures (such as buildings), the buffer may be achieved by limiting aircraft operations, by limiting the location and height of these objects, or, by a combination of these factors. This advisory circular concerns itself with developing zoning ordinances to control the height of objects, based on the obstruction surfaces described in Subpart C of Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, current edition. It should be recognized, however, that not all obstructions (objects whose height exceeds an obstruction surface) are a hazard to air navigation.

b. The Federal Aviation Administration (FAA) conducts aeronautical studies on obstructions which examine their effect on such factors as: aircraft operational capabilities; electronic and procedural requirements; and, airport hazard standards. If an aeronautical study shows that an obstruction, when evaluated against these factors, has no substantial adverse effect upon the safe and efficient use of navigable airspace, then the obstruction is considered not to be a hazard to air navigation. Advisory Circular 150/5300-4, Utility Airports--Air Access to National Transportation, current edition, presents additional discussion on hazards to air navigation.

c. Airport zoning ordinances developed for height limitations do not in themselves ensure compatible land use surrounding the airport. Land use zoning, incorporating height limiting criteria, is an appropriate means for achieving this objective. Advisory Circular 150/5050-6, Airport-Land Use Compatibility Planning, current edition, presents generalized guidance for compatible land use planning in the vicinity of airports.

4. BACKGROUND.

a. The purpose of zoning to limit the height of objects in the vicinity of airports is to prevent their interference with the safe and efficient operations of the airport.

b. Section 511 of the Airport and Airway Improvement Act of 1982, states, in part, the following: ". . . Sec. 511(a) SPONSORSHIP. As a condition precedent to approval of an airport development project contained in a project grant application submittted under this title, the Secretary shall receive assurances in writing, satisfactory to the Secretary that . . . (4) the aerial approaches to the airport will be adequately cleared and protected by removing, lowering, relocating, marking, or lighting or mitigating existing airport hazards and by preventing the establishment or creation of future airport hazards; (5) appropriate action, including the adoption of zoning laws has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff aircraft; . . . ." Conformity with this advisory circular will assist the responsible local government in complying with the Section 511 assurances with respect to the height of objects. However, this advisory circular does not address other land use compatibility criteria, such as noise compatibility, which may be required under Section 511.

c. This advisory circular is based on the obstruction surfaces described in Subpart C of FAR Part 77. Examples of zoning ordinances for a utility airport and for a larger than utility airport have been included in appendices 2 and 3.

5. USE OF MODEL ZONING ORDINANCE.

a. Those responsible for drafting an airport zoning ordinance to limit height of objects are aware, of course, that it must conform to the prescribed authority of that particular airport zoning enabling act. Only terminology applicable to the airport named in the ordinance should be used.

b. The model ordinance included in this advisory circular defines and provides for the establishment of various zones and prescribes height limitations for each zone as required to prevent the creation or establishment of objects which would interfere with the operation of the airport. These zones will vary depending on the type, size, and layout of the runways. The model ordinance, therefore, leaves the specific zone measurements to be inserted by the political subdivision adopting the ordinance as appropriate for its particular airport.

c. The appendices also include examples of how the model ordinance may be used for various types of airports. Since much of the technical terminology and definitions are derived from Federal Aviation Regulations, technical procedural handbooks, and advisory circulars, care should be taken to ensure that language used in the ordinance drafted is consistent with terms used in the model ordinance.

d. Any height limitations imposed by a zoning ordinance must be "reasonable," meaning that the height limitations prescribed should not be so low at any point as to constitute a taking of property without compensations under local law. Therefore, the zoning ordinance should not purport to impose height limitations in any area so close to the ground that the application of criteria prescribed would result in unreasonable or unduly restrictive height limitations. This is provided for by provision 12, Excepted Height Limitations, of Section IV, Airport Zone Height Limitations, in the Model Zoning Ordinance.

e. The decision as to the excepted height limits should be made on the basis of local conditions and circumstances, including the uses being made of property in the vicinity of the airport. In making such a decision, the political subdivision should use the same procedures generally recognized as desirable in preparing comprehensive zoning ordinances, including necessary coordination with recognized state, regional, and local planning offices, where applicable.

f. Areas in the various zones where the height limitation is below the excepted height limit prescribed in the ordinance should be acquired to ensure the required protection. In the approach area, the minimum acquisition begins at the end of the primary surface defined in FAR Part 77, Section 77.25, and extends outward with the width of the approach surface defined in that section, to a point where the approach surface slope reaches a height of 50 feet above the ground elevation of the runway or terrain, whichever distance is the shorter. If easements are acquired, they should include the right of passage over the property by aircraft as well as the right to prevent creation of future obstructions.

g. Drafters of airport zoning ordinances should consult with Federal Aviation Administration (FAA) Airports personnel in regional or district offices when developing airport zoning regulations.

h. The standards contained in FAR Part 77, Subpart C, make it possible to determine, for any location on or adjacent to an airport, the height at which any structure or object of natural growth would constitute an obstruction. Section 77.13 of FAR Part 77, Subpart C sets forth the requirements for filing notice of proposed construction or alteration.

i. If the object exceeds a height or surface defined in Subpart C of FAR Part 77, it would be an obstruction and would be the subject of an aeronautical study by the FAA to determine its effect on navigable airspace. If the object is concluded to have a substantial adverse effect upon the safe and efficient utilization of such airspace, it would be determined to be a hazard to air navigation. The FAA cannot prevent its erection without local assistance. The enactment of this proposed model zoning ordinance will permit the local authorities to control the erection of hazards to air navigation and thus protect the community's investment in the airport.

j. The FAA aeronautical study will be made available to the local zoning authorities and will set forth the effects on aviation of any proposed object that would constitute an obstruction under Subpart C of FAR Part 77. This information can then be considered by the Board of Adjustment when processing applications for variances.

6. AIRPORT ZONING ORDINANCE MAP.

a. Attached to the airport zoning ordinance and made a part thereof is the airport zoning map. The airport zoning map is similar for all types of airports and heliports, and must be compiled from the criteria in Subpart C of FAR Part 77 as reflected in the Ordinance. A typical example of this zoning map was reduced in size for printing in this publication (see appendix 4).

b. The airport zoning map is of the area affected by the airport zoning ordinance and shows the layout of the runways, the airport boundaries, the airport elevation, and the area topography. The map should also set forth the various zones with the applicable height limitations for each as described in the body of the ordinance. The zoning map should contain a method of land identification, as typical in different areas of the country, such as section, township and range, block and lot, or metes and bounds. This map should also depict other identifying geographic objects such as streams, rivers, railroads, roads, and streets. By using a map with this amount of detail, in conjunction with the text of an ordinance, a property owner should, without undue difficulty, be able to determine not only the location of his property, but also the height limitations imposed thereon by the ordinance.

c. Adequate topographic maps may be available from local government sources. Standard topographic maps (quadrangle maps) are available from the U. S. Geological Survey. Maps should be ordered from the Distribution Branch, U. S. Geological Survey, P. 0. Box 25286, Federal Center, Denver, Colorado 80225.

d. Many state agencies also make topographic maps available. In the absence of contour topographic data, land evaluation source data may be available from bench marks, railroads, highways, or local project surveys. Contour data on zoning maps should be shown to the extent reasonably available or required locally to support the ordinance.

7. BOARD OF ADJUSTMENT. The model ordinance provides for the creation of a Board of Adjustment to hear appeals, to hear and decide special exemptions, and to hear and decide special variances. Provision is also made for judicial review of decisions of the Board of Adjustment. Such review and appeal procedures are intended to conform to applicable constitutional requirements.

8. GENERAL INSTRUCTIONS FOR USING THE MODEL ZONING ORDINANCE.

a. The model zoning ordinance may be used as a guide for developing airport zoning ordinances to limit the height of objects that may interfere with the operation of a civil airport or heliport. The blank spaces should be filled in with appropriate data as noted.

b. It is not necessary that all material set forth in the model ordinance be used for all airport zoning ordinances. For example, if the airport to be zoned is a utility airport with no precision or nonprecision instrument runways existing or planned, those definitions and paragraphs referring to precision or nonprecision instrument runways or larger than utility runways may be omitted, (see appendix 2). However, if the airport changes to a larger than utility airport or receives instrument approach procedures, the ordinance should be amended to provide for the changes.

c. Section III should only include the airport zones applicable to the airport being zoned. An approach zone is applied to each end of each runway based upon the type of approach available or planned for that runway end. The most precise type of approach, existing or planned, for either end of the runway determines the primary surface width. Heliports do not have horizontal or conical zones. Other zones to accommodate the areas covered in FAR Par 77.23(a)(2) and (3) may be added.

d. Examples of several airport-type ordinances are included in the appendices for guidance.

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APPENDIX 1. MODEL ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND AN AIRPORT 1/

AN ORDINANCE REGULATING AND RESTRICTING THE HEIGHT OF STRUCTURES AND OBJECTS OF NATURAL GROWTH, AND OTHERWISE REGULATING THE USE OF PROPERTY, IN THE VICINITY OF THE ________ 2/ BY CREATING THE APPROPRIATE ZONES AND ESTABLISHING THE BOUNDARIES THEREOF; PROVIDING FOR CHANGES IN THE RESTRICTIONS AND BOUNDARIES OF SUCH ZONES; DEFINING CERTAIN TERMS USED HEREIN; REFERRING TO THE _____ 2/ ZONING MAP WHICH IS INCORPORATED IN AND MADE A PART OF THIS ORDINANCE; PROVIDING FOR ENFORCEMENT; ESTABLISHING A BOARD OF ADJUSTMENT; AND IMPOSING PENALTIES. 1/.

This Ordinance is adopted pursuant to the authority conferred by ____ 3/. It is hereby found that an obstruction has the potential for endangering the lives and property of users of _ 2/, and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums of _ 2/; and that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of _ 2/ and the public investment therein. Accordingly, it is declared:

(1) that the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by _ 2/;

(2) that it is necessary in the interest of the public health, public safety, and general welfare _ 4/ that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

(3) that the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

1/ This title should be written to meet the usages and legal requirements of your state, and the political subdivision.

2/ Insert the name of the airport being zoned by the Ordinance.

3/ This citation should be made to conform to the usual method of citing your state laws.

4/ If other terms are commonly used by the courts of your state in defining the limits of police power, such as "convenience" or "prosperity," they should be added here.

It is further declared that the prevention of the creation or establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or the marking and lighting of obstructions are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

IT IS HEREBY ORDAINED BY ________________ 5/ as follows:

SECTION I: SHORT TITLE

This Ordinance shall be known and may be cited as _ 2/ Zoning Ordinance.

SECTION II: DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

1. AIRPORT - _________ 2/.

2. AIRPORT ELEVATION - The highest point of an airport's usable landing area measured in feet from sea level.

3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

4. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

5. BOARD OF ADJUSTMENT - A Board consisting of _ 6/ members appointed by the _ 6/ as provided in _ 6/.

6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

7. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

5/ A form of enacting clause commonly used by the political subdivision in adopting ordinances should be followed.

6/ Insert the number of members appointed to the Board of Adjustment, the appointing body, and the enabling legislation authorizing same.

8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

9. HELIPORT PRIMARY SURFACE - The area of the primary surface coincides in size and shape with the designated takeoff and landing area of a heliport. This surface is a horizontal plane at the elevation of the established heliport elevation.

10. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

11. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

12. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this Ordinance or an amendment thereto.

13. NONPRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned.

14. OBSTRUCTION - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

15. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association, or governmental entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.

16. PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS) or a Precision Approach Radar (PAR). It also means a runway for which a precision approach system is planned and is so indicated on an approved airport layout plan or any other planning document.

17. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section III of this Ordinance. The elevation of any point on the primary surface

is the same as the elevation of the nearest point on the runway centerline.

18. RUNWAY - A defined area on an airport prepared for landing and take-off of aircraft along its length.

19. STRUCTURE - An object, including a mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation, and overhead transmission lines.

20. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the aides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those portions of the precision approach surfaces, which project through and beyond the limits of the conical Surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.

21. TREE - Any object of natural growth.

22. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and leas.

23. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures.

SECTION III: AIRPORT ZONES

In order to carry out the provisions of this Ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach aurfacea, transitional surfaces, horizontal aurfacea, and concical surfaces as they apply to _ 2/. Such zones are shown on _ 2/ Zoning map consisting of __ sheets, prepared by __, and dated __19 __, which is attached to this Ordinance and made a part hereof. An area located in more than one (1) of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

1. Utility Runway Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is ___ 7/ feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface.' Its centerline is the continuation of the centerline of the runway.

7/ Insert dimension as set forth in FAR Part 77. Where more than one dimension is applicable, insert dimension identified to the appropriate runway involved.

2. Utility Runway Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the brimarv surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

3. Runway Larger Than Utility Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is ________ 7/ feet wide. The approach zone expands outward uniformly to a width of 1,500 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is ________ 7/ feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

5. Runway Larger Than Utility With A Visibility Minimum As Low A3 3/4 Mile Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width-of 4,000 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

6. Precision Instrument Runway Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

7. Heliport Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is ____ 8/ feet wide. The approach zone expands outward uniformly to a width of 500 feet at a horizontal distance of 4,000 feet from the primary surface.

8. Transitional Zones - The transitional zones are the areas beneath the transitional surfaces.

8/ The size of the heliport primary surface must be baaed on present and future heliport operations.

9. Heliport Transitional Zones - These zones extend outward from the sides of the primary surface and the heliport approach zones a horizontal distance of 250 feet from the primary surface centerline and the heliport approach zone centerline.

10. Horizontal Zone - The horizontal zone is established by swinging arcs of _ 9/ feet radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

11. Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet.

SECTION IV: AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

2. Utility Runway Nonprecision Instrument Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

3. Runway Larger Than Utility Visual Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone - Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

9/ The radius of arc is:
a) 5,000 feet for all runways designated utility or visual,
b) 10,000 feet for all others.
The radius of the arcs for each end of the runway shall be the same. The radius used shall be the longest determined for either end.

5. Runway Larger Than Utility With A Visibility Minimum As Low As 3/4 Mile Nonprecision Instrument Approach Zone - Slopes thirty-four **(34)** feet outward for each footupward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

6. Precision Instrument Runway Approach Zone - Slopes fifty **(50)** feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically to an additional horizontal distance of 40,000 feet along the extended runway centerline.

7. Heliport Approach Zone - Slopes eight **(8)** feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a distance of 4,000 feet along the heliport approach zone centerline.

a. Transitional Zones - Slope seven **(7)** feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation which is ___ feet above mean sea level. In addition to the foregoing, there are established height limits sloping seven **(7)** feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending to where they' intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven **(7)** feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.

9. Heliport Transitional Zones - Slope two (2) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the heliport approach zones and extending a distance of 250 feet measured horizontally from and at 90 degree angles to the primary surface centerline and heliport approach zones centerline.

10. Horizontal Zone - Established at 150 feet above the airport elevation or at a height of   feet above mean sea level.

11. Conical Zone - Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of **350** feet above the airport elevation.

12. Excepted Height Limitations - Nothing in this Ordinance shall be construed as prohibiting the construction or maintenance of any structure, or growth of any tree to a height up to _____ 10/ feet above the surface of the land.

SECTION V: USE RESTRICTIONS

Notwithstanding any otner provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

SECTION VI: NONCONFORMING USES

1. Regulations Not Retroactive - 'The regulations prescribed by this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to tne effective date of this Ordinance, and is diligently prosecuted.

2. Marking and Lighting - Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance tnereon of such markers and lights as shall be deemed necessary by the _ 11/ to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lignts shall be installed, operated, and maintained at the expense of the _ 12/.

10/ The adoption of height limits should be reasonable and based on land use considerations in the vicinity of the airport and the nature of the area to be zoned. The adoption of height limits should not be so low as to constitute a taking of private property without due process of law.

11/ Insert the title of the appropriate official who has been charged with the responsibility for determining the necessity for marking and lighting.

12/ Insert the name of the appropriate political body or subdivision.

SECTION VII: PERMITS

1. Future Uses - Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefor shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this Ordinance shall be granted unless a variance has been approved in accordance with Section VII, 4.

   a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

   b. In areas lying within the limits of the approach zones, but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

   c. In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for such transition zones.

   Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section IV, 12.

2. Existing Uses - No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. Nonconforming Uses Abandoned or Destroyed - Whenever the _ 13/ determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. Variances - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this Ordinance, may apply to the Board of Adjustment for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance. Additionally, no application for variance to the requirements of this Ordinance may be considered by the Board of Adjustment unless a copy of the application has been furnished to the _ 14/ for advice as to the aeronautical effects of the variance. If the _ 14/ does not respond to the application within fifteen (15) days after receipt, the Board of Adjustment may act on its own to grant or deny said application.

5. Obstruction Marking and Lighting - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the Board of Adjustment, this condition may be modified to require the owner to permit the _ 12/ at its own expense, to install, operate, and maintain the necessary markings and lights.

13/ Insert here the title of the appropriate official charged with making this determination.

14/ Insert here the official or body responsible for operation and maintenance of the airport to be zoned.

SECTION VIII: ENFORCEMENT

It shall be the duty of the ___ 15/ to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the 15/ upon a form published for that purpose. Applications required by this Ordinance to be submitted to the ___ 15/ shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the _ 15/.

SECTION IX: BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirement, decision, or determination made by the ___ 15/ in the enforcement of this Ordinance; (2) to hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations my be required to pass; and (3) to hear and decide specific variances.

2. The Board of Adjustment shall consist of members appointed by the _ 12/ and each shall serve for a term of years until a successor is duly appointed and qualified. Of the members first appointed, one shall be appointed for a term of ___ year, ___ for a term of ___ years, and ___ for a term of ___ years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this Ordinance. Meetings of the Board of Adjustment shall be held at the call of the Chairperson and at such other times as the Board of Adjustment may determine. The Chairperson or, in the absence of the Chairperson, the Acting Chairperson may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each question; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of _ 15/ and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and cmclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of this Ordinance.

15/ Insert here the title of the appropriate official, such as Director, Department of Public Works, etc.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the ___ 15/ or decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect variation to this Ordinance.

SECTION X: APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the ___ 15/ made in the administration of the Ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the ___ 15/ a notice of appeal specifying the grounds thereof. The ___ 15/ shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the ___ 15/ certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would in the opinion of ___ 15/ cause imminent peril to life or property. In such case, proceedings shall not be stayed except by the order of the Board of Adjustment on notice to the ___ 15/ and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conformity with the provisions of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination as may be appropriate under the circumstances.

SECTION XI: JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Court of ___ as provided in Section ____ of Chapter _____ of the Public Laws of ___ 16/.

16/ Insert the jurisdiction. Consideration should be given the desirability of setting forth this procedure here, or as an alternative attaching to all copies of this Ordinance, a copy of excerpts from the statute cited.

SECTION XII: PENALTIES

Each violation of this Ordinance or of any regulation, order, or ruling promulgated hereunder shall constitute a misdemeanor and shall be punishable by a fine of not more than ____ dollars or imprisonment for not more than days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII: CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height cf structures or trees, and the use of land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

SECTION XIV: SEVERABILITY

If any of the provisions of this Ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are declared to be severable.

SECTION XV: EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this Ordinance is necessary for the preservation of the public health, public safety, and general welfare, an EMERGENCY is hereby declared to exist, and this Ordinance shall be in full force and effect from and after its passage by the and publication and posting as required by law.
Adoptedby the _____ this ______ day of ________, 19__.

APPENDIX 2. SAMPLE ORDINANCE FOR UTILITY-TYPE AIRPORT WITHOUT INSTRUMENT PROCEDURES

ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND AIRVILLE AIRPORT

AN ORDINANCE REGULATING AND RESTRICTING THE HEIGHT OF STRUCTURES AND OBJECTS OF NATURAL GROWTH, AND OTHERWISE REGULATING THE USE OF PROPERTY, IN THE VICINITY OF THE AIRVILLE AIRPORT BY CREATING THE APPROPRIATE ZONES AND ESTABLISHING THE BOUNDARIES THEREOF; PROVIDING FOR CHANGES IN THE RESTRICTIONS AND BOUNDARIES OF SUCH ZONES; DEFINING CERTAIN TERMS USED HEREIN; REFERRING TO THE AIRVILLE AIRPORT ZONING MAP WHICH IS INCORPORATED IN AND MADE A PART OF THIS ORDINANCE; PROVIDING FOR ENFORCEMENT; ESTABLISHING A BOARD OF ADJUSTMENT; AND IMPOSING PENALTIES.

This Ordinance is adopted pursuant to the authority conferred by Chapter 333 of the Laws of the State of xxxxx. It is hereby found that an obstruction has the potential for endangering the lives and property of users of Airville Airport, and property or occupants of land in its vicinity; that an obstruction may affect existing and future instrument approach minimums of Airville Airport; and that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of Airville Airport and the public investment therein. Accordingly, it is declared:

(1) that the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by Airville Airport;

(2) that it is necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

(3) that the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

It is further declared that the prevention of the creation or establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or marking and lighting of obstructions are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

IT IS HEREBY ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF INDIAN COUNTY, XXXX, AS FOLLOWS:

SECTION I: SHORT TITLE

This Ordinance shall be known and may be cited as Airville Airport Zoning Ordinance.

SECTION'II: DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

1. AIRPORT - Means Airville Airport.

2. AIRPORT ELEVATION - 100 feet above mean sea level.

3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

4. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

3. BOARD OF ADJUSTMENT - A board consisting of 3 members appointed by the Board of County Commissioners of Indian County as provided for in Chapter 33 of the Laws of the State of xxxxx.

6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

7. HAZARD TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

9. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

10. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this Ordinance or an amendment thereto.

11. OBSTRUCTION - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

12. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association, or governmental entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.

13. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section III of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

14. RUNWAY - A defined area on an airport prepared for landing and take-off of aircraft along its length.

15. STRUCTURE - An object, including a mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation, and overhead transmission lines.

16. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces

17. TREE - Any object of natural growth.

18. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

19. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures.

SECTION III: AIRPORT ZONES

In order to carry out the provisions of this Ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to the Airville Airport. Such zones are shown on the Airville Airport Zoning Map consisting of one sheet, prepared by the Department of Public Works and dated August 1, 1975, which is attached to this Ordinance and made a part hereof. An area located in more than one (1) of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined'as follows:

1. Utility Runway Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from tne primary surface. Its centerline is the continuation of the centerline of the runway.

2. Transitional Zones - The transitional zones are the areas beneath the transitional surfaces.

3. Horizontal Zone - The horizontal zone is established by swinging arcs of 5,000 feet radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tar-gent to those arcs. The horizontal zone does not include the approach and transitional zones.

4. Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet.

SECTION IV: AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height limit herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

2. Transitional Zones - Slope seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation which is 100 feet above mean sea level. In addition to the foregoing, there are established height limits sloping Seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the approach surface, and extending to where they intersect the conical surface.

3. Horizontal Zone - Established at 150 feet above the airport elevation or at a height of 250 feet above mean sea level.

4. Conical Zone - Slopes 20 feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

5. Excepted Height Limitations - Nothing in this Ordinance shall be construed as prohibiting the construction or maintenance of any structure, or growth of any tree to a height up to 50 feet above the surface of the land.

SECTION V: USE RESTRICTIONS

Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

SECTION VI: NONCONFORMING USES

1. Regulations Not Retroactive - The regulations prescribed by this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as of the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted.

2. Marking and Lighting - Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the Director, Department of Public Works, to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the Indian County Department of Public Works.

SECTION VII: PERMITS

1. Future Uses - Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefor shall have been applied for

and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this Ordinance shall be granted unless a variance has been approved in accordance with Section VII, 4.

a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

b. In areas lying within the limits of the approach zones, but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

c. In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above.the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section IV,5.

2. Existing Uses - No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. Nonconforming Uses Abandoned or Destroyed - Whenever the Director, Department of Public Works, determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. Variances - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not, in accordance with the regulations prescribed in this Ordinance, may apply to the Board of Adjustment for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is duly found that a literal application or enforcement of the regulations will result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance. Additionally, no application for variance to the requirements of this Ordinance may be considered by the Board of Adjustment unless a copy of the application has been furnished to the Airport Manager for advice as to the aeronautical effects of the variance. If the Airport Manager does not respond to the application within 15 days after receipt, the Board of Adjustment may act on its own to grant or deny said application.

5. Obstruction Marking and Lighting - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the Board of Adjustment, this condition may be modified to require the owner to permit the Indian County Department of Public Works, at its own expense, to install, operate, and maintain the necessary markings and lights.

SECTION VIII: ENFORCEMENT

It shall be the duty of the Director, Department of Public Works, to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the Director, Department of Public Works upon a form published for that purpose. Applications required by this Ordinance to be submitted to the Director, Department of Public Works, shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the Director, Department of Public Works.

SECTION IX: BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirement, decision, or determination made by the Director, Department of Public Works, in the enforcement of this Ordinance; (2) to hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations may be required to pass; and (3) to hear and decide specific variances.

2. The Board cf Adjustment shall consist of three members appointed by the Board of County Commissioners and each shall serve for a term of three years until a successor is duly appointed and qualified. Of the members first appointed, one shall be appointed for a term of one year, one for a term of two years, and one for a term of three years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this Ordinance. Meetings of the Board of Adjustment shall be held at the call of the Chairperson and at such other times as the Board of Adjustment. may determine. The Chairperson or, in the absence of the Chairperson, the Acting Chairperson may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each question; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official action, all of which snail immediately be filed in the office of County Clerk and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement , decision, or determination which comes before it under the provisions of this Ordinance.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the Director, Department of Public Works, or to decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect variation to this Ordinance.

SECTION X: APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the Director, Department of Public Works, made in the administration of she Ordinance, may appeal to the Hoard of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the Director, Department of Public Works, a notice of appeal specifying the grounds thereof. The Director, Department of Public Works, shall forthwith transmit to the Board of Adjustment al? the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the Director, Department cf Public Works, certifies to the Board of Adjustment after the notice of appeal has been filed with it., that by reason of the facts stated in the certificate a stay

would in the opinion of the Director, Department of Public Works cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the Board of Adjustment or notice to the Director, Department of Public Works, and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conformity with the provisions of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination as may be appropriate under the circumstances.

SECTION XI: JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Circuit Court as provided in Section 333.111 of Chapter 333 of the Public Laws of the State of xxxxx.

SECTION XII: PENALTIES

Each violation of this Ordinance or of any regulation, order, or ruling promulgated hereunder shall constitute a misdemeanor and be punishable by a fine of not more than 500 dollars or imprisonment for not more than 180 days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII: CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, and the use of land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

SECTION XIV: SEVERABILITY

If any of the provisions of this Ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are declared to be severable.

SECTION XV: EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this Ordinance is necessary for the preservation of the public health, public safety, and general welfare, an EMERGENCY is hereby declared to exist, and this Ordinance shall be in full force and effect from and after its passage by the Indian County Board of Commissioners and publication and posting as required by law. Adopted by the Indian County Board of Commissioners this 12th day of October, 1975.

APPENDIX 3. SAMPLE ORDINANCE FOR LARGER THAN UTILITY TYPE AIRPORT WITH INSTRUMENT APPROACHES

ZONING ORDINANCE TO LIMIT HEIGHT OF OBJECTS AROUND AIRVILLE AIRPORT

AN ORDINANCE REGULATING AND RESTRICTING THE HEIGHT OF STRUCTURES AND OBJECTS OF NATURAL GROWTH, AND OTHERWISE REGULATING THE USE OF PROPERTY, IN THE VICINITY OF THE AIRVILLE AIRPORT BY CREATING THE APPROPRIATE ZONES AND ESTABLISHING THE BOUNDARIES THEREOF; PROVIDING FOR CHANGES IN THE RESTRICTIONS AND BOUNDARIES OF SUCH ZONES; DEFINING CERTAIN TERMS USED HEREIN; REFERRING TO THE AIRVILLE AIRPORT ZONING MAP WHICH IS INCORPORATED IN AND MADE A PART OF THIS ORDINANCE; PROVIDING FOR ENFORCEMENT; ESTABLISHING A BOARD OF ADJUSTMENT; AND IMPOSING PENALTIES.

This Ordinance is adopted pursuant to the authority conferred by Chapter 49 of Statutes of the State of xxxxx. It is hereby found that an obstruction has the potential for endangering the lives and property of users of Airville Airport, and property or occupants of land in its vicinity; that an obstuction may affect existing and future instrument approach minimums of Airville Airport; and that an obstruction may reduce the size of areas available for the landing, takeoff, and maneuvering of aircraft, thus tending to destroy or impair the utility of Airville Airport and the public investment therein. Accordingly, it is declared:

(1) that the creation or establishment of an obstruction has the potential of being a public nuisance and may injure the region served by Airville Airport;

(2) that it is necessary in the interest of the public health, public safety, and general welfare that the creation or establishment of obstructions that are a hazard to air navigation be prevented; and

(3) that the prevention of these obstructions should be accomplished, to the extent legally possible, by the exercise of the police power without compensation.

It is further declared that the prevention of the creation or establishment of hazards to air navigation, the elimination, removal, alteration or mitigation of hazards to air navigation, or marking and lighting of obstructions are public purposes for which a political subdivision may raise and expend public funds and acquire land or interests in land.

IT IS HEREBY ORDAINED BY THE CITY COUNCIL OR AIRVILLE, XXXXX, AS FOLLOWS:

SECTION I: SHORT TITLE

This Ordinance shall be known and may be cited as Airville Airport Zoning Ordinance.

SECTION II: DEFINITIONS

As used in this Ordinance, unless the context otherwise requires:

1. AIRPORT - Means Airville Airport.

2. AIRPORT ELEVATION - 100 feet above mean sea level.

3. APPROACH SURFACE - A surface longitudinally centered on the extended runway centerline, extending outward and upward from the end of the primary surface and at the same slope as the approach zone height limitation slope set forth in Section IV of this Ordinance. In plan the perimeter of the approach surface coincides with the perimeter of the approach zone.

4. APPROACH, TRANSITIONAL, HORIZONTAL, AND CONICAL ZONES - These zones are set forth in Section III of this Ordinance.

5. BOARD OF ADJUSTMENT - A board consisting of 3 members appointed by the City Council as provided in Chapter 12 of the Laws of the State of xxxxx.

6. CONICAL SURFACE - A surface extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet.

7. HAZARD 'TO AIR NAVIGATION - An obstruction determined to have a substantial adverse effect on the safe and efficient utilization of the navigable airspace.

8. HEIGHT - For the purpose of determining the height limits in all zones set forth in this Ordinance and shown on the zoning map, the datum shall be mean sea level elevation unless otherwise specified.

9. HORIZONTAL SURFACE - A horizontal plane 150 feet above the established airport elevation, the perimeter of which in plan coincides with the perimeter of the horizontal zone.

10. LARGER THAN UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of greater than 12,500 pounds maximum gross weight and jet powered aircraft.

11. NONCONFORMING USE - Any pre-existing structure, object of natural growth, or use of land which is inconsistent with the provisions of this Ordinance or an amendment thereto.

12. NONPRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing air navigation facilities with only horizontal guidance, or area type navigation equipment, for which a straight-in nonprecision instrument approach procedure has been approved or planned.

13. OBSTRUCTION - Any structure, growth, or other object, including a mobile object, which exceeds a limiting height set forth in Section IV of this Ordinance.

14. PERSON - An individual, firm, partnership, corporation, company, association, joint stock association or government entity; includes a trustee, a receiver, an assignee, or a similar representative of any of them.

15. PRECISION INSTRUMENT RUNWAY - A runway having an existing instrument approach procedure utilizing an Instrument Landing System (ILS) or a Precision Approach Radar (FAR). It also means a runway for which a precision approach system is planned and is so indicated on an approved airport layout plan or any other planning document.

16. PRIMARY SURFACE - A surface longitudinally centered on a runway. When the runway has a specially prepared hard surface, the primary surface extends 200 feet beyond each end of that runway; for military runways or when the runway has no specially prepared hard surface, or planned hard surface, the primary surface ends at each end of that runway. The width of the primary surface is set forth in Section III of this Ordinance. The elevation of any point on the primary surface is the same as the elevation of the nearest point on the runway centerline.

17. RUNWAY - A defined area on an airport prepared for landing and take-off of aircraft along its length.

18. STRUCTURE - An object, including a mobile object, constructed or installed by man, including but without limitation, buildings, towers, cranes, smokestacks, earth formation, and overhead transmission lines.

19. TRANSITIONAL SURFACES - These surfaces extend outward at 90 degree angles to the runway centerline and the runway centerline extended at a slope of seven (7) feet horizontally for each foot vertically from the sides of the primary and approach surfaces to where they intersect the horizontal and conical surfaces. Transitional surfaces for those 'portions of the precision approach surfaces, which project through and beyond the limits of the conical surface, extend a distance of 5,000 feet measured horizontally from the edge of the approach surface and at 90 degree angles to the extended runway centerline.

20. TREE - Any object of natural growth.

21. UTILITY RUNWAY - A runway that is constructed for and intended to be used by propeller driven aircraft of 12,500 pounds maximum gross weight and less.

22. VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures.

SECTION III: AIRPORT ZONES

In order to carry out the provisions of this Ordinance, there are hereby created and established certain zones which include all of the land lying beneath the approach surfaces, transitional surfaces, horizontal surfaces, and conical surfaces as they apply to Airville Airport. Such zones are shown on Airville Airport Zoning Map consisting of one sheet, prepared by the Department of Public Works, dated September 1, 1975, which is attached to this Ordinance and made a part hereof. An area located in more than one of the following zones is considered to be only in the zone with the more restrictive height limitation. The various zones are hereby established and defined as follows:

1. Utility Runway Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 250 feet wide. The approach zone expands outward uniformly to a width of 1,250 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

2. Utility Runway Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 2,000 feet at a horizontal distance 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

3. Runway Larger Than Utility Visual Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 1,500 feet at a horizontal distance of 5,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 500 feet wide. The approach zone expands outward uniformly to a width of 3,500 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

5. Runway Larger Than Utility With A Visibility Minimum As Low As 3/4 Mile Nonprecision Instrument Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 4,000 feet at a horizontal distance of 10,000 feet from the primary surface. Its centerline is the continuation of the centerline of tne runway.

b. Precision Instrument Runway Approach Zone - The inner edge of this approach zone coincides with the width of the primary surface and is 1,000 feet wide. The approach zone expands outward uniformly to a width of 16,000 feet at a horizontal distance of 50,000 feet from the primary surface. Its centerline is the continuation of the centerline of the runway.

7. Transitional Zones - The transitional zones are the areas beneath the transitional surfaces.

8. Horizontal Zone - The horizontal zone is established by swinging arcs of 5,000 feet radii for all runways designated utility or visual and 10,000 feet for all others from the center of each end of the primary surface of each runway and connecting the adjacent arcs by drawing lines tangent to those arcs. The horizontal zone does not include the approach and transitional zones.

9. Conical Zone - The conical zone is established as the area that commences at the periphery of the horizontal zone and extends outward therefrom a horizontal distance of 4,000 feet.

SECTION IV: AIRPORT ZONE HEIGHT LIMITATIONS

Except as otherwise provided in this Ordinance, no structure shall be erected, altered, or maintained, and no tree shall be allowed to grow in any zone created by this Ordinance to a height in excess of the applicable height herein established for such zone. Such applicable height limitations are hereby established for each of the zones in question as follows:

1. Utility Runway Visual Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

2. Utility Runway Nonprecision Instrument Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

3. Runway Larger Than Utility Visual Approach Zone - Slopes twenty (20) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 5,000 feet along the extended runway centerline.

4. Runway Larger Than Utility With A Visibility Minimum Greater Than 3/4 Mile Nonprecision Instrument Approach Zone - Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

5. Runway Larger Than Utility With A Visibility Minimum As Low As 3/4 Mile Nonprecision Instrument Approach Zone - Slopes thirty-four (34) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline.

6. Precision Instrument Runway Approach Zone - Slopes fifty (50) feet outward for each foot upward beginning at the end of and at the same elevation as the primary surface and extending to a horizontal distance of 10,000 feet along the extended runway centerline; thence slopes upward forty (40) feet horizontally for each foot vertically to an additional horizontal distance of 40,000 feet along the extended runway centerline.

7. Transitional Zones - Slope seven (7) feet outward for each foot upward beginning at the sides of and at the same elevation as the primary surface and the approach surface, and extending to a height of 150 feet above the airport elevation which is 100 feet above mean sea level. In addition to the foregoing, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and the same elevation as the approach surface, and extending to where they intersect the conical surface. Where the precision instrument runway approach zone projects beyond the conical zone, there are established height limits sloping seven (7) feet outward for each foot upward beginning at the sides of and the same elevation as the approach surface, and extending a horizontal distance of 5,000 feet measured at 90 degree angles to the extended runway centerline.

8. Horizontal Zone - Established at 150 feet above the airport elevation or at a height of 250 feet above mean sea level.

9. Conical Zone - Slopes twenty (20) feet outward for each foot upward beginning at the periphery of the horizontal zone and at 150 feet above the airport elevation and extending to a height of 350 feet above the airport elevation.

10. Excepted Height Limitations - Nothing in this Ordinance shall be construed as prohibiting the construction or maintenance of any structure, or growth of any tree to a height up to 50 feet above the surface of the land.

SECTION V: USE RESTRICTION

Notwithstanding any other provisions of this Ordinance, no use may be made of land or water within any zone established by this Ordinance in such a manner as to create electrical interference with navigational signals or radio communication between the airport and aircraft, make it difficult for pilots to distinguish between airport lights and others, result in glare in the eyes of pilots using the airport, impair visibility in the vicinity of the airport, create bird strike hazards, or otherwise in any way endanger or interfere with the landing, takeoff, or maneuvering of aircraft intending to use the airport.

SECTION VI: NONCONFORMING USES

1. Regulations Not Retroactive - The regulations prescribed in this Ordinance shall not be construed to require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations as the effective date of this Ordinance, or otherwise interfere with the continuance of a nonconforming use. Nothing contained herein shall require any change in the construction, alteration, or intended use of any structure, the construction or alteration of which was begun prior to the effective date of this Ordinance, and is diligently prosecuted.

2. Marking and Lighting - Notwithstanding the preceding provision of this Section, the owner of any existing nonconforming structure or tree is hereby required to permit the installation, operation, and maintenance thereon of such markers and lights as shall be deemed necessary by the City Manager to indicate to the operators of aircraft in the vicinity of the airport the presence of such airport obstruction. Such markers and lights shall be installed, operated, and maintained at the expense of the City of Airville.

SECTION VII: PERMITS

1. Future Uses - Except as specifically provided in a, b, and c hereunder, no material change shall be made in the use of land, no structure shall be erected or otherwise established, and no tree shall be planted in any zone hereby created unless a permit therefor shall have been applied for and granted. Each application for a permit shall indicate the purpose for which the permit is desired, with sufficient particularity to permit it to be determined whether the resulting use, structure, or tree would conform to the regulations herein prescribed. If such determination is in the affirmative, the permit shall be granted. No permit for a use inconsistent with the provisions of this ordinance shall be granted unless a variance has been approved in accordance with Section VII, 4.

a. In the area lying within the limits of the horizontal zone and conical zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when, because of terrain, land contour, or topographic features, such tree or structure would extend above the height limits prescribed for such zones.

b. In areas lying within the limits of the approach zones but at a horizontal distance of not less than 4,200 feet from each end of the runway, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure would extend above the height limit prescribed for such approach zones.

c. In the areas lying within the limits of the transition zones beyond the perimeter of the horizontal zone, no permit shall be required for any tree or structure less than seventy-five feet of vertical height above the ground, except when such tree or structure, because of terrain, land contour, or topographic features, would extend above the height limit prescribed for such transition zones.

Nothing contained in any of the foregoing exceptions shall be construed as permitting or intending to permit any construction, or alteration of any structure, or growth of any tree in excess of any of the height limits established by this Ordinance except as set forth in Section IV, 10.

2. Existing Uses - No permit shall be granted that would allow the establishment or creation of an obstruction or permit a nonconforming use, structure, or tree to become a greater hazard to air navigation, than it was on the effective date of this Ordinance or any amendments thereto or than it is when the application for a permit is made. Except as indicated, all applications for such a permit shall be granted.

3. Nonconforming Uses Abandoned or Destroyed - Whenever the City Manager determines that a nonconforming tree or structure has been abandoned or more than 80 percent torn down, physically deteriorated, or decayed, no permit shall be granted that would allow such structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations.

4. Variances - Any person desiring to erect or increase the height of any structure, or permit the growth of any tree, or use property, not in accordance with the regulations prescribed in this Ordinance, may apply to the Board of Adjustment for a variance from such regulations. The application for variance shall be accompanied by a determination from the Federal Aviation Administration as to the effect of the proposal on the operation of air navigation facilities and the safe, efficient use of navigable airspace. Such variances shall be allowed where it is dully found that a literal application or enforcement of the regulations will

result in unnecessary hardship and relief granted, will not be contrary to the public interest, will not create a hazard to air navigation, will do substantial justice, and will be in accordance with the spirit of this Ordinance. Additionally, no application for variance to the requirements of this Ordinance may be considered by the Board of Adjustment unless a copy of the application has been furnished to the Airport Manager for advice as to the aeronautical effects of the variance. If the Airport Manager does not respond to the application within 15 days after receipt, the Board of Adjustment may act on its own to grant or deny said application.

5. Obstruction Marking and Lighting - Any permit or variance granted may, if such action is deemed advisable to effectuate the purpose of this Ordinance and be reasonable in the circumstances, be so conditioned as to require the owner of the structure or tree in question to install, operate, and maintain, at the owner's expense, such markings and lights as may be necessary. If deemed proper by the Board of Adjustment, this condition may be modified to require the owner to permit the City of Airville, at its own expense, to install, operate, and maintain the necessary markings and lights.

SECTION VIII: ENFORCEMENT

It shall be the duty of the City Manager to administer and enforce the regulations prescribed herein. Applications for permits and variances shall be made to the City Manager upon a form published for that purpose. Applications required by this Ordinance to be submitted to the City Manager shall be promptly considered and granted or denied. Application for action by the Board of Adjustment shall be forthwith transmitted by the City Manager.

SECTION IX: BOARD OF ADJUSTMENT

1. There is hereby created a Board of Adjustment to have and exercise the following powers: (1) to hear and decide appeals from any order, requirement, decision, or determination made by the City Manager in the enforcement of this Ordinance; (2) to hear and decide special exceptions to the terms of this Ordinance upon which such Board of Adjustment under such regulations may be required to pass; and (3) to hear and decide specific variances.

2. The Board of Adjustment shall consist of three members appointed by the City Council and each shall serve for a term of three years until a successor is duly appointed and qualified. Of the members first appointed, one shall be appointed for a term of one year, one for a term of two years, and one for a term of three years. Members shall be removable by the appointing authority for cause, upon written charges, after a public hearing.

3. The Board of Adjustment shall adopt rules for its governance and in harmony with the provisions of this Ordinance. Meetings of the Board of Adjustment shall be held at the'call of the Chairperson and at such other times as the Board of Adjustment may determine. The Chairperson or, in the absence of the Chairperson, the Acting Chairpers n may administer oaths and compel the attendance of witnesses. All hearings of the Board of Adjustment shall be public. The Board of Adjustment shall keep minutes of its proceedings showing the vote of each member upon each question; or if absent or failing to vote, indicating such fact, and shall keep records of its examinations and other official actions, all of which shall immediately be filed in the office of the City Clerk and on due cause shown.

4. The Board of Adjustment shall make written findings of facts and conclusions of law giving the facts upon which it acted and its legal conclusions from such facts in reversing, affirming, or modifying any order, requirement, decision, or determination which comes before it under the provisions of this Ordinance.

5. The concurring vote of a majority of the members of the Board of Adjustment shall be sufficient to reverse any order, requirement, decision, or determination of the City Manager or decide in favor of the applicant on any matter upon which it is required to pass under this Ordinance, or to effect variation to this Ordinance.

SECTION X: APPEALS

1. Any person aggrieved, or any taxpayer affected, by any decision of the City Manager, made in the administration of the Ordinance, may appeal to the Board of Adjustment.

2. All appeals hereunder must be taken within a reasonable time as provided by the rules of the Board of Adjustment, by filing with the City Manager a notice of appeal specifying the grounds thereof. The City Manager shall forthwith transmit to the Board of Adjustment all the papers constituting the record upon which the action appealed from was taken.

3. An appeal shall stay all proceedings in furtherance of the action appealed from unless the City Manager certifies to the Board of Adjustment, after the notice of appeal has been filed with it, that by reason of the facts stated in the certificate a stay would in the opinion of the City Manager cause imminent peril to life or property. In such case, proceedings shall not be stayed except by order of the Board of Adjustment or notice to the City Manager and on due cause shown.

4. The Board of Adjustment shall fix a reasonable time for hearing appeals, give public notice and due notice to the parties in interest, and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney.

5. The Board of Adjustment may, in conformity with the provisions of this Ordinance, reverse or affirm, in whole or in part, or modify the order, requirement, decision, or determination appealed from and may make such order, requirement, decision, or determination as may be appropriate under the circumstances.

SECTION XI: JUDICIAL REVIEW

Any person aggrieved, or any taxpayer affected, by any decision of the Board of Adjustment, may appeal to the Circuit Court as provided in Section III of Chapter 12 of the Public Laws of the State of xxxxx.

SECTION XII: PENALTIES

Each violation of this Ordinance or of any regulation, order, or ruling promulgated hereunder shall constitute a misdemeanor and be punishable by a fine of not more than 500 dollars or imprisonment for not more than 180 days or both; and each day a violation continues to exist shall constitute a separate offense.

SECTION XIII: CONFLICTING REGULATIONS

Where there exists a conflict between any of the regulations or limitations prescribed in this Ordinance and any other regulations applicable to the same area, whether the conflict be with respect to the height of structures or trees, and the use of land, or any other matter, the more stringent limitation or requirement shall govern and prevail.

SECTION XIV: SEVERABILITY

If any of the provisions of this Ordinance or the application thereof to any person or circumstances are held invalid, such invalidity shall not affect other provisions or applications of the Ordinance which can be given effect without the invalid provision or application, and to this end, the provisions of this Ordinance are declared to be severable.

SECTION XV: EFFECTIVE DATE

WHEREAS, the immediate operation of the provisions of this Ordinance is necessary for the preservation of the public health, public safety, and general welfare, an EMERGENCY is hereby declared to exist, and this Ordinance shall be in full force and effect from and after its passage by the City Council and publication and posting as required by law. Adopted by the City Council this 12th day of October, 1975.

Appendix 2-A – Sample Airport Survey

New Hampshire State System Plan Update and Economic Analysis

Commercial Service Airport Survey

This survey is intended to supplement existing information gathered from the Division of Aeronautics on your facility and will be used to update the State's on-going Airport System Plan. The information requested in this survey covers several categories including Operational, Environmental, Local Government, and Economic.

Airport: ____
Individual Completing Survey: ____
Address and Phone: ____
____

A. OPERATIONAL

1. Does the current air service provide useful and adequate service to the region you serve? Yes ______ No ______

   If no, please explain: ____

   ____

   ____

2. What specific markets are not served now that you feel could support future scheduled jet service, and which airline(s) would you like to see serve this market?

____

   ____

   ____

3. Are you currently marketing airlines to provide or increase service? Yes ____ No __

   If yes, please indicate where and what airline: ______________________________________

4. Are you aware of any operational limitations imposed on airlines at the airport due to physical facility constraints or instrument approaches? Yes _ No __

   If yes, please briefly explain: ____

   ____

5. Does your facility meet current FAA Design Criteria for the following:

   Runway Safety Area? Yes ___ No __ Unknown ___
   Runway Protection Zone? Yes ___ No __ Unknown ___
   Runway Object Free Area? Yes ___ No __ Unknown ___
   Other? Yes ___ No __ Explain:
   ____

6. Are there existing penetrations to your FAR Part 77 Imaginary Surfaces? Yes ___ No _____

   If yes, do these penetrations impact your airport in terms of runway length (such as displaced or relocated thresholds) or instrument approach minimums?

   If yes, please briefly explain: ____

   ____

   ____

7. Do you expect to FAA to upgrade, any of your existing instrument approaches or publish any new approaches over the next several years? Yes _________ No ______

   If yes, please explain: ____

   ____

B. ENVIRONMENTAL

8. Are there any environmental limitations to development on-airport (e.g. wetlands)? Yes __ No ____

   If yes, please briefly explain: ____

   ____

   ____

9. Are there any environmental limitations to development off-airport? Yes ____ No __

   If yes, please briefly explain: ____

   ____

   ____

10. Do you have a perceived noise issue or aircraft over-flight issue? Yes ___ No ___

    If yes, please briefly explain: ____

    ____

C. GOVERNMENTAL

11. Has airport related zoning been established in the town(s) in which your airport is located? Yes _____ No ______

    If yes, could you provide a copy of the zoning ordinance?

12. If no zoning exists, have considerations been given to establish a zoning ordinance? Yes ____ No __

If yes, please describe and note time frame: ____

____

____

13. In general, is there local political support for the airport? Yes ______ No _________

If no, how has it affected the airport and its operations? _____________________________________

____

____

If yes, how has it helped the airport? ____

____

____

D. ECONOMIC

14. Please indicate the percentage of use by the following categories:

Commercial Service:	_______
Business/Corporate:	_______
Charter:	_______
Cargo:	_______
Recreational:	_______
Instructional:	_______
Agriculture	______
Med/Police/Government	______
Other (explain):	_______
Total:	100%

15. If you have business/corporate traffic, please indicate the types of aircraft used and daily/weekly frequency:

____

____

16. Are you aware of small single and twin engine aircraft being used for business purposes that operate to or from the airport? Yes ____ No _____

    If yes, could you speculate on the percentage of small GA operations that are business oriented? _____

    ____

    What percentage of your recreational users also use their aircraft for business purposes? ____%

17. What is the primary "draw" of the airport? (rank order)

    Commercial Passenger Service ___
    Cargo ___
    Recreation/Tourism ___
    Aircraft Service ___
    Business ___
    Close to Population Centers ___
    Other____
    _

21. Does your airport have a terminal building for passengers? Yes____ No___

    If yes, how large is the building/public area?_________________

22. Please check the types of businesses and services that are provided at the airport:

    Bus Service: _______
    Taxi Service: _______
    Limousine Service: _______
    Rental Car: _______
    Other (explain): ____

23. Please indicate the total number of businesses and services at your airport. __________

24. Is a list of airport-based business and service contacts available from your office? Yes___ No___

25. What is the estimated volume of aviation fuel sold at your airport last year? ________ gallons
    ________ $

26. Please check the utilities that are available at your airport.

    Water ___ Sewer ___ Gas ___
    Electricity ___ Fiber Optic Cable ___

27. Does your airport currently lease apron, hanger space or land? Yes ___(move to question 27 A)
No ___ (move to question 28)

27A. Please indicate lease rates, etc. for the following items:

	Square Feet Occupied	SF Available	Lease Rate/SF
Hanger Space	________________	_________	__________
Apron Space	________________	_________	__________
Land	________________	_________	__________
Office Space	________________	_________	__________
Commercial Space	________________	__________	__________
Other Space	________________	_________	__________

27B. If you currently lease land at your facility, please list the use(s) of that land. ____________________

____

28. Does your airport have non-aviation property used by commercial enterprises? Yes___ No ___

29. Please add any additional comments or information you deem pertinent to this survey:

____

____

____

____

____

____

____

____

____

New Hampshire State System Plan Update and Economic Analysis

General Aviation Airport Survey

This survey is intended to supplement existing information gathered from the Division of Aeronautics on your facility and will be used to update the State's on-going Airport System Plan. The information requested in this survey covers several categories including Operational, Environmental, Local Government, and Economic.

Airport: ____
Contact Completing Survey: ____
Address and Phone: ____
____

A. OPERATIONAL

1. Do you maintain the following activity statistics for your airport:

   Annual Aircraft Operations? Yes ___ No __
   Based Aircraft Counts? Yes ___ No __
   Local Itinerant Operations Split? Yes ___ No __

2. If you answered yes to any of the above elements, could you provide the past three years of data?

   Yes ______ No __

3. Please explain the trends in aircraft activity at your facility over the past five years:

   ____
   ____
   ____
   ____

4. Please explain the trends in based aircraft at your facility over the past five years:

   ____
   ____
   ____
   ____

5. Are there any limitations to development at your facility currently or in the future? (please explain):

____

____

____

____

6. Does your facility meet current FAA Design Criteria for the following:

Runway Safety Area?	Yes ___	No __	Unknown ___
Runway Protection Zone?	Yes ___	No __	Unknown ___
Runway Object Free Area?	Yes ___	No __	Unknown ___
Other?	Yes ___	No __	Explain:

____

7. Are there existing penetrations to your FAR Part 77 Imaginary Surfaces? Yes ______ No __

If yes, do these penetrations impact your airport in terms of runway length (such as displaced or relocated thresholds) or instrument approach minimums? Please explain: ______________________

____

____

8. If there are no instrument approaches to your facility, do you have plans (through the FAA) to develop an instrument approach? Yes _____ No __

If yes, please explain: ____

____

9. If you have existing instrument approaches, do you expect to upgrade any of your instrument approaches over the next several years? Yes ______ No __

If yes, please explain: ____

____

B. ENVIRONMENTAL

10. Are there any environmental limitations to development on-airport (e.g wetlands, etc.)? Yes _ No __

If yes, please briefly explain: ____

____

____

11. Are there any environmental limitations to development off-airport? Yes ____ No __

    If yes, please briefly explain: ____

    ____

    ____

12. Do you have a perceived noise issue or aircraft over-flight issue? Yes ______ No __

    If yes, please explain: ____

    ____

C. GOVERNMENTAL

13. Has airport related zoning been established in the town(s) in which your airport is located?
    Yes ___ No __

    If yes, could you provide a copy of the zoning ordinance?

14. If no zoning exists, have considerations been given to establishing a zoning ordinance? Yes __ No __

    If yes, please describe and note timeframe: ____

    ____

    ____

15. In general, is there local political support for the airport? Yes ______ No _______

    If no, how has it affected the airport and its operations? ____

    ____

    ____

    If yes, how has it helped the airport? ____

    ____

    ____

D. ECONOMIC

16. Please indicate the percentage of use by the following categories:

Business/Corporate: _______
Charter: _______
Cargo: _______
Recreational: _______
Instructional: _______
Agriculture: ______
Med/Police/Government: ______
Other (explain): _______
Total: 100%

17. If you have corporate traffic, please indicate the types of aircraft used and daily/weekly frequency:

____

18. Are you aware of small single and twin engine aircraft being used for business purposes that operate to or from the airport? Yes ____ No _____

If yes, could you speculate on the percentage of small GA operations that are business oriented? _____

____

What percentage of your recreational users also use their aircraft for business purposes? _____%

19. What is the primary "draw" of the airport?

Commercial Passenger Service: ___
Cargo: ___
Recreation/Tourism: ___
Aircraft Service: ___
Business: ___
Close to Population Centers: ___
Other:
____

21. Does your airport have a terminal building for passengers? Yes____ No___

If yes, how large is the building/public area?_________________

22. Please check the types of businesses and services that are provided at the airport:

Bus Service: _______
Taxi Service: _______
Limousine Service: _______
Rental Car: _______
Other (explain): ____

23. Please indicate the total number of businesses and services based at your airport. __________

24. Is a list of airport-based business and service contacts available from your office? Yes___ No___

25. What is the estimated volume of aviation fuel sold at your airport last year? ________ gallons
________ $

26. Please check the utilities that are available at your airport.

Water ___ Sewer ___ Gas ___
Electricity ___ Fiber Optic Cable ___

27. Does your airport currently lease apron, hanger space or land? Yes ___(move to question 27 A)
No ___

27A. Please indicate lease rates, etc. for the following items:

	Square Feet Occupied	SF Available	Lease Rate/SF
Hanger Space	________	________	________
Apron Space	________	________	________
Land	________	________	________
Office Space	________	________	________
Commercial Space	________	________	________
Other Space	________	________	________

27B. If you currently lease land at your facility, please list the use(s) of that land. ____________________
____

28. Please add any additional comments or information you deem pertinent to this survey: _____________
____
____
____
____
____
____

Appendix 2-B – ARC Designations for Various Aircraft Types

ARC DESIGNATIONS FOR VARIOUS AIRCRAFT TYPES

A-I
Piper Cub J3

ARC A-I
Cessna C182 Skylane

ARC B-I
Beech Baron 58

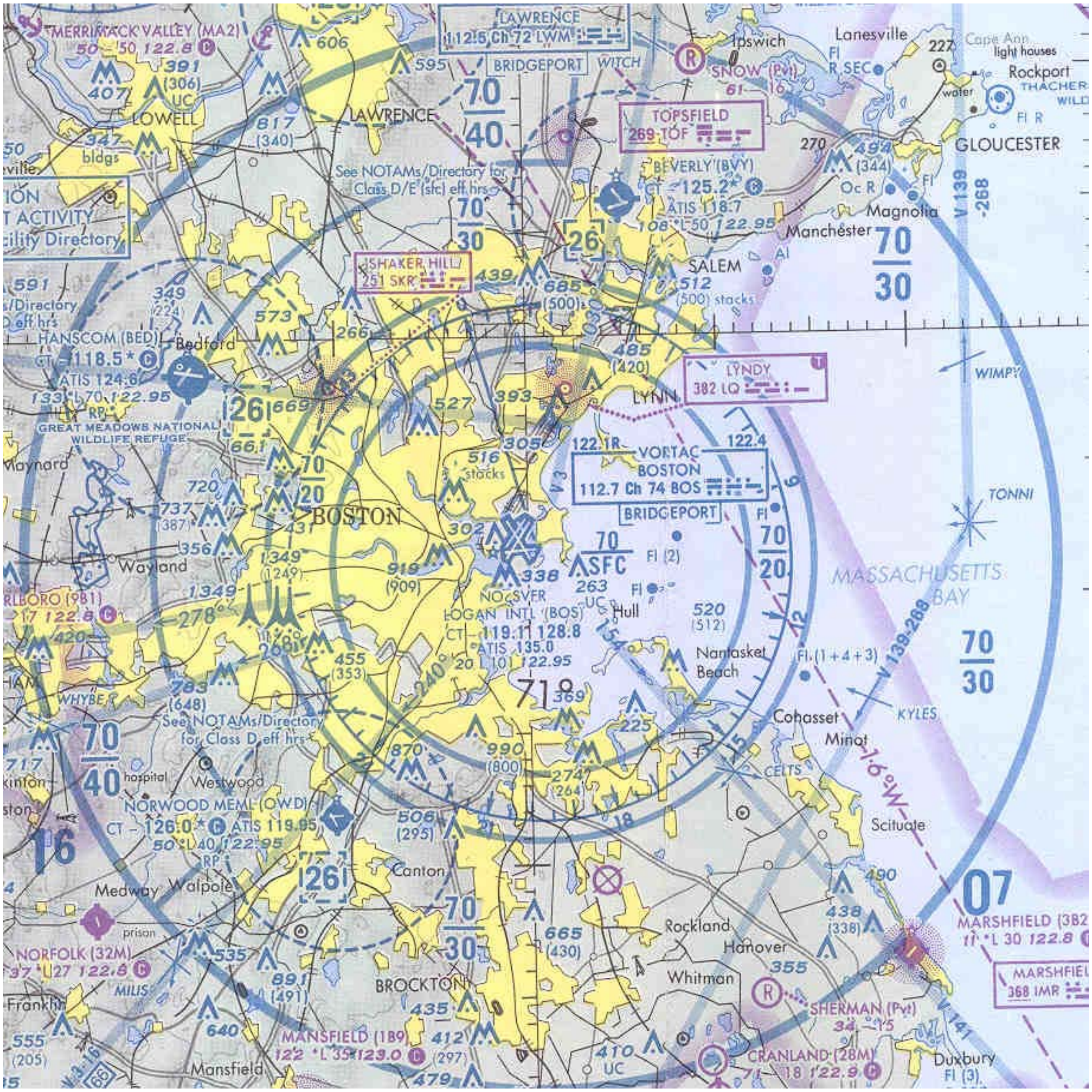
ARC B-I/II
Beech King Air

ARC B/C-II
Dassault Falcon 2000

ARC C-III
Boeing 737

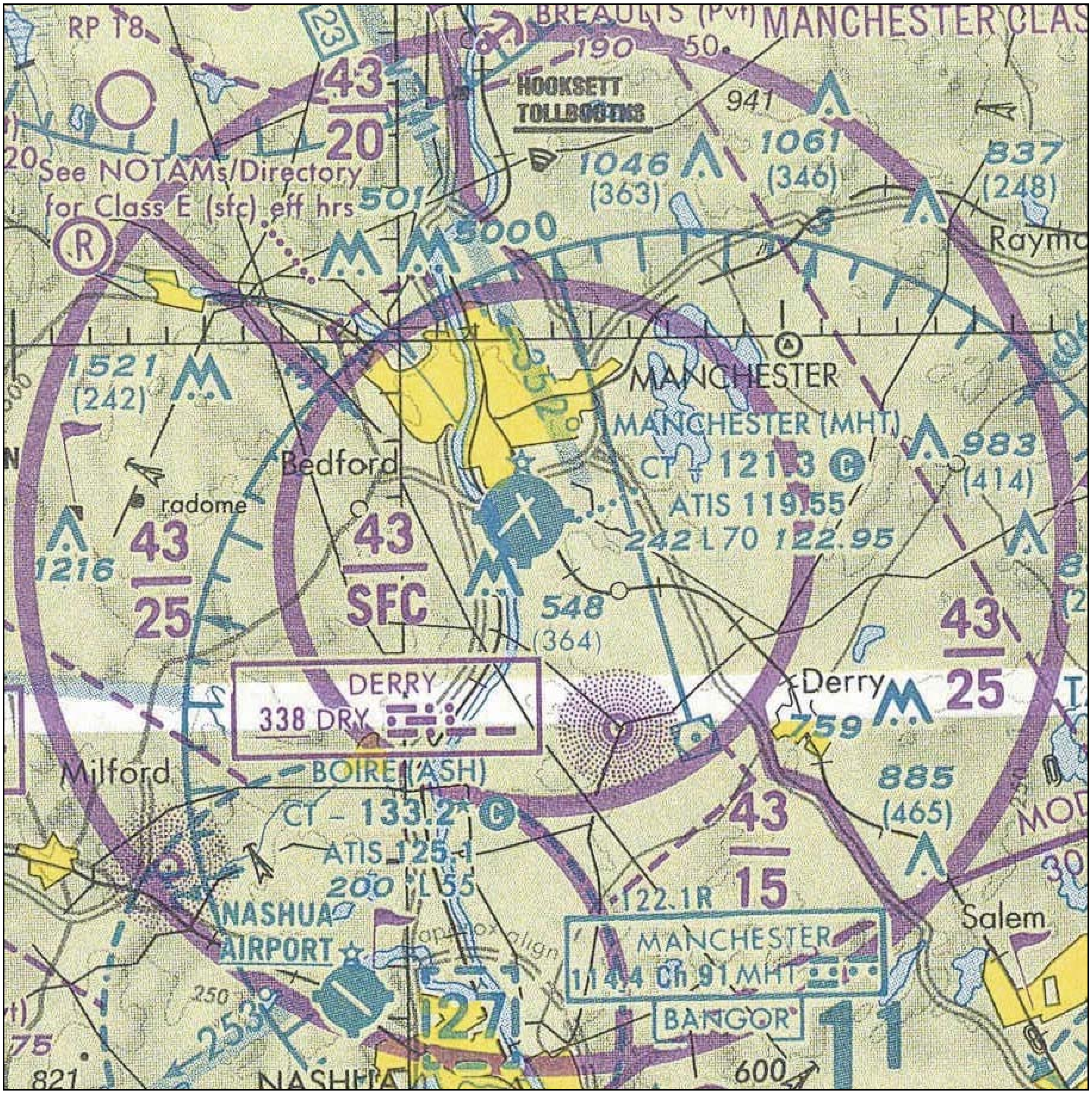
Appendix 2-C – Airspace

Class B Airspace – Boston



Source: National Oceanic and Atmospheric Administration, New York Aeronautical Sectional Chart

Class C Airspace - Manchester

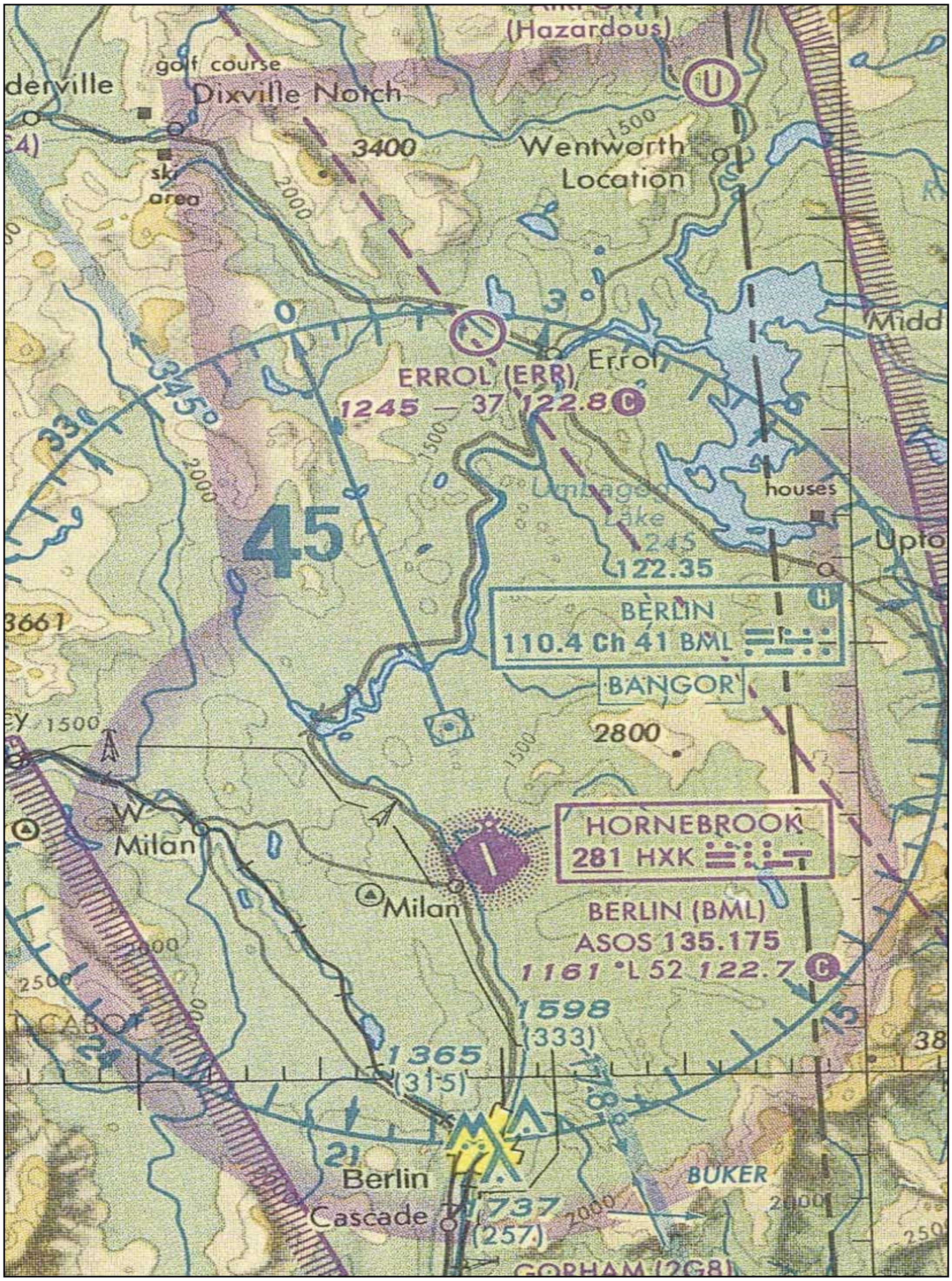


Source: National Oceanic and Atmospheric Administration, New York Aeronautical Sectional Chart

Class D Airspace - Lebanon

Source: National Oceanic and Atmospheric Administration, New York Aeronautical Sectional Chart

Class E/G Airspace – Berlin



Source: National Oceanic and Atmospheric Administration, New York Aeronautical Sectional Chart.

Appendix 2-D – Historical FAA AIP Grants

AIP Grant Information

REGION: ANE STATE: NH CITY: MANCHESTER LOCID: MHT
AIRPORT: MANCHESTER
SITE NO: 13332.*A NPIAS: 330011 TYPE: PRIMARY HUB: SMALL

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1982	1	0	198,336	198,336
1983	3	861,478	225,584	1,087,062
1984	1	161,287	234,518	395,805
1986	1	125,361	686,092	811,453
1987	2	0	296,697	296,697
1988	1	38,468	771,435	809,903
1990	3	172,020	1,781,046	1,953,066
1991	2	4,320,303	1,288,391	5,608,694
1992	4	8,961,139	1,333,157	10,294,296
1993	7	15,966,751	1,540,586	17,507,337
1994	4	4,529,279	701,354	5,230,633
1995	3	1,411,872	2,712,012	4,123,884
1996	2	2,265,898	381,304	2,647,202
1997	3	8,227,076	3,377,335	11,604,411
1999	2	3,039,000	1,725,000	4,764,000
2000	3	8,048,657	2,294,466	10,343,123
TOTAL	42	58,128,589	19,547,313	77,675,902

APP-520 Home Page | Another LOCID Search

AIP Grant Information

REGION: ANE STATE: NH CITY: LEBANON LOCID: LEB
AIRPORT: LEBANON MUNICIPAL
SITE NO: 13317.*A NPIAS: 330010 TYPE: PRIMARY HUB: NON

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1983	1	1,779,161	143,821	1,922,982
1984	1	47,970	0	47,970
1985	1	125,516	0	125,516
1986	1	199,513	0	199,513
1987	2	261,393	0	261,393
1988	1	8,892	433,800	442,692
1989	2	1,486,633	476,227	1,962,860
1991	1	2,133,648	300,000	2,433,648
1992	1	412,775	325,541	738,316
1993	1	0	312,305	312,305
1995	1	3,300	319,901	323,201
1996	1	0	391,019	391,019
1997	1	1,413,863	1,111,892	2,525,755
1998	2	21,544	510,434	531,978
1999	1	0	500,000	500,000
2000	2	0	812,850	812,850
TOTAL	20	7,894,208	5,637,790	13,531,998

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AIP Grant Information

REGION: ANE   STATE: NH   CITY: PORTSMOUTH   LOCID: PSM
AIRPORT: PEASE INTERNATIONAL TRADEPORT
SITE NO: 13386.*A   NPIAS: 330016   TYPE: GENERAL AVIATION   HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1990	1	573,583	0	573,583
1992	2	280,396	120,639	401,035
1993	3	3,005,939	0	3,005,939
1994	1	3,800,000	0	3,800,000
1995	1	3,999,484	378,246	4,377,730
1996	3	3,626,535	383,697	4,010,232
1997	2	4,658,609	0	4,658,609
1998	2	1,744,375	348,367	2,092,742
1999	2	1,558,528	0	1,558,528
2000	2	1,981,702	1,633	1,983,335
TOTAL	19	25,229,151	1,232,582	26,461,733

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AIP Grant Information

REGION: ANE STATE: NH CITY: NASHUA LOCID: ASH
AIRPORT: BOIRE FIELD
SITE NO: 13350.*A NPIAS: 330012 TYPE: RELIEVER HUB: LARGE

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1982	1	79,675	0	79,675
1983	1	544,410	0	544,410
1984	1	472,500	0	472,500
1985	1	447,754	0	447,754
1986	1	130,663	46,469	177,132
1987	2	794,216	0	794,216
1988	2	276,036	0	276,036
1990	1	525,934	0	525,934
1991	2	504,292	0	504,292
1992	2	420,243	0	420,243
1993	1	916,267	0	916,267
1996	1	443,303	0	443,303
1997	1	0	46,622	46,622
1999	2	0	178,486	178,486
2000	1	0	236,481	236,481
TOTAL	20	5,555,293	508,058	6,063,351

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AIP Grant Information

REGION: ANE STATE: NH CITY: CONCORD LOCID: CON
AIRPORT: CONCORD MUNICIPAL
SITE NO: 13224.*A NPIAS: 330004 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1983	1	83,150	0	83,150
1984	1	173,517	0	173,517
1986	1	0	52,466	52,466
1989	1	0	109,670	109,670
1990	1	97,070	1,339,123	1,436,193
1991	1	0	670,114	670,114
1993	1	285,977	0	285,977
1994	2	22,266	289,117	311,383
1996	1	0	46,017	46,017
1998	1	0	143,523	143,523
1999	1	0	97,790	97,790
2000	1	0	131,580	131,580
TOTAL	13	661,980	2,879,400	3,541,380

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AIP Grant Information

REGION: ANE STATE: NH CITY: ROCHESTER LOCID: DAW
AIRPORT: SKYHAVEN
SITE NO: 13395.*A NPIAS: 330015 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1982	1	38,156	174,113	212,269
1984	2	9,770	179,622	189,392
1985	1	814,361	352,938	1,167,299
1986	1	0	171,191	171,191
1993	2	59,702	75,510	135,212
1995	1	0	13,500	13,500
1996	1	0	270,268	270,268
1997	1	0	113,427	113,427
1999	1	0	226,632	226,632
2000	1	0	66,195	66,195
TOTAL	12	921,989	1,643,396	2,565,385

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AIP Grant Information

REGION: ANE STATE: NH CITY: KEENE LOCID: EEN
AIRPORT: DILLANT-HOPKINS
SITE NO: 13306.*A NPIAS: 330008 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1983	1	123,812	0	123,812
1984	1	37,780	0	37,780
1985	1	27,675	0	27,675
1987	2	134,177	0	134,177
1989	1	2,829,994	0	2,829,994
1992	1	240,445	0	240,445
1993	2	234,506	516,908	751,414
1994	1	379,397	0	379,397
1995	2	400,500	279,463	679,963
1997	2	623,000	476,980	1,099,980
1998	1	0	43,986	43,986
1999	1	0	235,980	235,980
TOTAL	16	5,031,286	1,553,317	6,584,603

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AIP Grant Information

REGION: ANE STATE: NH CITY: CLAREMONT LOCID: CNH
AIRPORT: CLAREMONT MUNICIPAL
SITE NO: 13218.*A NPIAS: 330002 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1984	1	29,741	85,500	115,241
1988	1	12,786	172,800	185,586
1992	1	16,924	489,600	506,524
1993	1	0	137,185	137,185
1994	1	292,926	39,175	332,101
1995	1	0	80,640	80,640
1996	1	25,348	140,400	165,748
1997	1	0	37,800	37,800
1998	1	0	108,900	108,900
2000	2	1,207	505,800	507,007
TOTAL	11	378,932	1,797,800	2,176,732

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AIP Grant Information

REGION: ANE STATE: NH CITY: LACONIA LOCID: LCI
AIRPORT: LACONIA MUNICIPAL
SITE NO: 13312.*A NPIAS: 330009 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1983	2	1,308,784	0	1,308,784
1984	1	166,459	0	166,459
1985	2	1,035,067	0	1,035,067
1986	2	661,550	0	661,550
2000	1	0	86,524	86,524
2001	1	0	65,764	65,764
TOTAL	9	3,171,860	152,288	3,324,148

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AIP Grant Information

REGION: ANE STATE: NH CITY: BERLIN LOCID: BML
AIRPORT: BERLIN MUNICIPAL
SITE NO: 13201.*A NPIAS: 330001 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1983	1	0	22,002	22,002
1984	1	21,560	28,030	49,590
1985	1	1,040,089	0	1,040,089
1988	1	0	267,670	267,670
1992	1	0	148,887	148,887
1995	1	46,151	441,053	487,204
1998	1	0	82,683	82,683
1999	2	18,831	458,119	476,950
TOTAL	9	1,126,631	1,448,444	2,575,075

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AIP Grant Information

REGION: ANE STATE: NH CITY: WHITEFIELD LOCID: HIE
AIRPORT: MOUNT WASHINGTON REGIONAL
SITE NO: 13452.*A NPIAS: 330017 TYPE: GENERAL AVIATION HUB:

FY	GRANTS	DISCRETIONARY	ENTITLEMENT	TOTAL
1983	1	156,605	208,776	365,381
1986	1	0	29,352	29,352
1993	1	161,310	0	161,310
1995	1	0	58,666	58,666
1996	1	7,551	45,237	52,788
1997	1	0	147,803	147,803
1999	1	0	44,922	44,922
2001	1	0	118,620	118,620
TOTAL	8	325,466	653,376	978,842

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Appendix 4-A – Aircraft Owner Survey

New Hampshire State Airport System Plan Update

1. List Make and Model of each aircraft owned?

____

2. Where is(are) aircraft based?

____

3. Ownership of the aircraft?
(Private ☐)(Joint Ownership ☐)(Business ☐)

4. How is the aircraft primarily used?
(Business ☐)(Recreational☐)(Air Taxi ☐)(Training ☐)

5. How many hours per year is(are) the aircraft flown.
(Business___)(Recreational___)(Air Taxi___)(Training___)

FROM NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION DIVISION OF AERONAUTICS: In an effort to provide an effective statewide aviation program the Division of Aeronautics has retained an aviation consultant to update the State Airport System Plan. As a part of this study an aircraft owner survey has been developed to inquire how the aviation industry uses airport services that are provided within the state.

The information that is received will be kept in strict confidence and will only be used to generate the final report. Please fill out and return this survey to us by **September 7, 2001**. No postage is needed. We thank you in advance for your cooperation. Happy flying and clear skies to everyone.

6. Please list the New Hampshire airports that you visit frequently during the year____

____

____

7. How important do you rank the following airport facilities (*please rank each separately on a scale of 5 to 0, 5 being most important and 0 representing none)?*
Restaurant facility_______, Fuel Cost_____, Instrument Approaches______, Quality of FBO Services ______, Convenient for business _______, Paved runways_____.

8. If the aircraft is used for business, please provide:
Type and location of business ________________________________
Number of employees located in New Hampshire________________
Total amount spent for air travel per year $_____________________

9. How is the aircraft used for business *(please rank each separately on a scale of 5 to 0, 5 being most important and 0 representing none)?*
To make commercial airline connections _______________________
For the transportation of business personnel____________________
For the transportation of materials or products __________________
To fly directly to business clients to save time__________________

10. How is the aircraft stored? Hangar☐, “T” Hangar ☐, Ramp ☐, Grass☐. Annual cost for storage $__________.

11. What is the approximate estimated annual cost of maintenance for your aircraft $_________.

12. Where is the major maintenance on the aircraft conducted? Based airport ☐, In state ☐, Out of state ☐. Please indicate Airport_____________.

13. Where is fuel primarily purchased? Based airport ☐, In state ☐, Out of state ☐, Corporate self fuel ☐. Please indicate Airport ____________.

14. What is the approximate number of gallons of fuel purchased per year _________.

15. What additional airport facilities do you believe are needed at your home based airport *(please rank each separately on a scale of 5 to 0, 5 being most important and 0 representing none)?*
More hangar space_____, Longer runways_______, More aircraft parking ramps______, Airfield and Approach Lighting______, Instrument Approaches______, Other__________________.

16. If flying in the north country of New Hampshire, does the Yankee One/Two Military Operating Area restrictions affect your flying?

Yes ☐, No ☐. If yes please describe why:

____

Please fill out all questions, fold and tape and return it by SEPTEMBER 7, 2001. Please make sure the return Business Reply Mail address is on the outside of the envelope. THANK YOU.

	number of responses	% of respondents
3. Ownership of Aircraft		
Private	80	66%
Joint ownership	13	11%
Business	28	23%
Total	*121*	*100%*
4. How is the aircraft primarily used?		
Business	37	27%
Recreation	92	68%
Air Taxi	3	2%
Training	3	2%
Total	*135*	*100%*
10. How is the aircraft stored		
Hangar	66	*52%*
T-Hangar	26	*21%*
Ramp	27	*21%*
Grass	7	*6%*
Total	*126*	*100%*
12. Where is maintenance conducted?		
Based Airport	78	61%
In State	24	19%
Out of State	26	20%
Total	*128*	*100%*
13. Where is fuel primarily purchased?		
Based Airport	90	68%
In State	31	23%
Out of State	10	8%
Corp. self fuel	2	2%
Total	*133*	*100%*

	Ranking scale	# of responses	% of respondants
Restaurant	0	23	19%
	1	13	11%
	2	16	13%
	3	32	27%
	4	20	17%
	5	16	13%
Total		*120*	*100%*
Fuel cost	0	12	10%
	1	2	2%
	2	5	4%
	3	20	17%
	4	30	25%
	5	51	43%
Total		*120*	*100%*
Instrument approaches	0	39	33%
	1	2	2%
	2	4	3%
	3	19	16%
	4	14	12%

	5	42	35%
Total		*120*	*100%*
FBO Services	0	20	17%
	1	4	3%
	2	13	11%
	3	27	23%
	4	27	23%
	5	29	24%
Total		*120*	*100%*
Convenient for business	0	57	48%
	1	3	3%
	2	8	7%
	3	18	15%
	4	15	13%
	5	19	16%
Total		*120*	*100%*
Paved Runways	0	29	24%
	1	6	5%
	2	7	6%
	3	8	7%
	4	15	13%
	5	55	46%
Total		*120*	*100%*

9. How is the aircraft used for business?

Commercial airline connections	0	107	89%
	1	6	5%
	2	3	3%
	3	2	2%
	4	1	1%
	5	1	1%
Total		*120*	*100%*
Transport of personnel	0	86	72%
	1	3	3%
	2	0	0%
	3	4	3%
	4	4	3%
	5	23	19%
Total		*120*	*100%*
Transport of materials	0	93	78%
	1	2	2%
	2	7	6%
	3	9	8%
	4	3	3%
	5	6	5%
Total		*120*	*100%*
Fly direct to business clients	0	84	70%
	1	0	0%

	2	1	1%
	3	3	3%
	4	4	3%
	5	28	23%
Total		*120*	*100%*

15. What additional facilities do you believe are needed at your home base airport?

More hangar space	0	47	39%
	1	2	2%
	2	1	1%
	3	11	9%
	4	6	5%
	5	53	44%
Total		*120*	*100%*
Longer runways	0	86	72%
	1	4	3%
	2	5	4%
	3	9	8%
	4	6	5%
	5	10	8%
Total		*120*	*100%*
More aircraft parking ramps	0	73	61%
	1	2	2%
	2	14	12%
	3	13	11%
	4	9	8%
	5	9	8%
Total		*120*	*100%*
Airfield and Approach Lighting	0	82	68%
	1	8	7%
	2	4	3%
	3	5	4%
	4	6	5%
	5	15	13%
Total		*120*	*100%*
Instrument Approaches	0	85	71%
	1	3	3%
	2	3	3%
	3	7	6%
	4	5	4%
	5	17	14%
Total		*120*	*100%*

16. If flying in the north country of NH, does the Yankee One/Two MOA restrictions affect your flying?

Yes	25
No	95
Total	*120*

Appendix 4-B – Itinerant Aircraft Survey

New Hampshire DOT Division of Aeronautics

New Hampshire State Airport System Plan Update

ITINERANT AIRCRAFT SURVEY

FROM NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION DIVISION OF AERONAUTICS:
In an effort to provide an effective statewide aviation program the Division of Aeronautics has retained an aviation consultant to update the State Airport System Plan. As a part of this study an aircraft owner survey has been developed to inquire how the aviation industry uses airport services that are provided within the state.

The information that is received will be kept in strict confidence and will only be used to generate the final report. Please fill out and return this survey to us by **September 7, 2001**. No postage is needed. We thank you in advance for your cooperation. Happy flying and clear skies to everyone.

1. Name of Airport where you flew into today:

____

2. Please indicate the type of aircraft you flew for this flight?

____

3. Where is aircraft based?

____

4. Please list the origination airport where you started your trip.

____

5. Ownership of the aircraft?(Private)(Fractional Share)
(Business) (Rental ☐)

6. How is the aircraft primarily used? (Business)(Recreational)
(Air Taxi)(Training)

7. If you flew the aircraft for business reasons, please provide:
Type and location of business _________________________________
Total number of employees of the company________________________
Total amount you spend for business air travel per year $______________

8. How important do you rank the following airport facilities (*please rank each separately on a scale of 5 to 0, 5=most important and 0=least important)?*
Restaurant Facility_______, Fuel Cost_____, Instrument Approaches______, Quality of FBO Services ______, Convenient for business _______, Paved runways_____.

9. During your visit to this airport what airport services were used?
Fuel , Tiedown , Hangar Rental , Maintenance , Rental Car , FBO pilots lounge/flight planning , Restaurant , Air Carrier Terminal .

10. Did you overnight during your stay in the area? Yes , No .

11. Approximately how much did you spend during your visit? $____________.

12. Why did you fly to this airport? *(please rank each separately on a scale of 5 to 0, 5=most important and 0=least important)*
To make commercial airline connections ___________________________
For the transportation of business personnel________________________
For the transportation of materials or products ______________________
To fly directly to business clients to save time_______________________
Other____

13. What additional airport facilities need to be enhanced at the airport that you flew into today? *(please rank each separately on a scale of 5 to 0, 5=most important and 0=least important)*
More hangar space_____, Longer runways_______, More aircraft parking ramps______, Airfield and Approach Lighting______, Instrument Approaches______, Other___________________________.

14. Please list the New Hampshire airports that you visit frequently during the year:

____

Please fill out all the questions, fold and tape the end and return it postage free by September 7, 2001. Please make sure the return Business Reply Mail address is on the outside of the envelope. THANK YOU.

Edwards and Kelcey RKG

Appendix 4-C – Business Survey

New Hampshire State Airport System Plan Update

Edward and Kelcey and RKG Associates, Inc, - are working with the New Hampshire Department of Transportation's Division of Aeronautics to update the State Airport System Plan. The goal of the State Airport System Plan is to identify the role airports play within the New Hampshire economy. As a business owner/manager, we would like to have your input on how your local airport influences your business operations. ***Please be assured that your responses will be kept in strictest confidence, to be aggregated with all other responses.***

Business Survey

DOT State Airport System Update **New Hampshire**

Business Location (City/Town): _______________
Years in Business: _______________
Years at This Location: _______________
of Locations: _______________
Employees at This Location: _______________
Employees: _______________

1) What type of business do you do? **(Please Check One)**

❑ Construction ❑ Manufacturing (Durable Goods)(Durable, Non-Durable)
❑ Retail Trade ❑ Manufacturing (Non-Durable Goods)
❑ Wholesale Trade ❑ Business Services ❑ Finance, Insurance and Real Estate
❑ Personal Services ❑ Service
❑ Government ❑ Other ______________________

1B) If possible, please indicate which 4-digit Standard Industrial Classification (SIC) code your business falls under. ______

2) Is your business *directly aviation related* (i.e. deals directly with aviation products or services or a majority of your business revenues are generated from aviation-related customers)? ❑ Yes ❑ No

3) What is the name of the nearest general aviation airport to your business? __________________________
If unknown, please skip to Question 6

(Most people are not aware of a general aviation airport near them and would not think to include unless they were using it for business. I think it would be beneficial if this questions focuses upon the knowledge of a GA airport)

4) How far away is this airport to your business? **(Please Select One)**

❑ Located on Airport Property ❑ Under 1 mile ❑ 1 to 5 miles
❑ 6 to 10 miles ❑ 11 to 25 miles ❑ 25+ miles

5) Do you currently use this airport *in any way* for business purposes?
❑ Yes ❑ No Why? **Go to Question 6** ____

5A) For what purposes does your business utilize this airport? **(Check All That Apply)**

❑ Transporting Staff ❑ Delivering Products
❑ Transporting Clients ❑ Receiving Supplies
❑ Store/Service Corporate Aircraft ❑ Aviation Related Business (explain) ___________
❑ Other (explain) ______________________

5B) How often do you use this airport for business purposes? **(Check One)**

❑ Once a Year ❑ 1 to 5 Times per Year ❑ 6 to 10 Times per Year ❑ 11+ Times per Year

5C) What would be your response if the airport you use for business were no longer available for your use? **(Check All That Apply)**
❑ Use Next Closest Airport ❑ Make Fewer Flights ❑ Substitute other Mode (car, truck, etc.)
❑ Relocate Business ❑ Go Out of Business ❑ Other (Explain) ____________________________

(PLEASE SEE REVERSE SIDE)

6) Does your company charter/own/rent aircraft for business purposes?
7) ❑ Yes (please specify) ❑ No **(Go to question 7)**

6A) If you own an aircraft, please indicate:
Type of aircraft owned:
Where the aircraft is based:
What NH airports are used:
Number of trips monthly/annually:

6B) If you rent/charter aircraft for business use, please indicate what airport is used: ______________________

Please indicate the number of trips you use an aircraft for businesses purposes based upon the Questions 6B
Monthly
Annually

7) Does your company use one of New Hampshire's commercial airports (Manchester, Pease and Lebanon) for business purposes?
❑ Yes ❑ No **(If No, Go to Question 8)**

7A) If you have used one of the state's commercial airports, please indicate which one(s) you have used. **(Check All That Apply)**

❑ Manchester Airport ❑ Pease Tradeport ❑ Lebanon Airport

7B) For what purpose did you use the airport?
❑ Transporting Staff ❑ Delivering Products
❑ Transporting Clients ❑ Receiving Supplies
❑ Store/Service Corporate Aircraft ❑ Aviation Related Business **(Explain)** ______________________
❑ Other **(Explain)** ______________________

7C) How often do you use this airport for business purposes? **(Check One)**

❑ Once a Year ❑ 1 to 5 Times per Year ❑ 6 to 10 Times per Year ❑ 11+ Times per Year

8) Please rank the following criteria in terms of which were most important in selecting the current location for your business:

Criteria	Very Important	Important	Somewhat Important	Unimportant
State and Local Incentives	1	2	3	4
Highway Accessibility	1	2	3	4
Skilled Labor	1	2	3	4
Construction Costs	1	2	3	4
Labor Costs	1	2	3	4
Energy Availability and Cost	1	2	3	4
Tax Exemptions	1	2	3	4
Airport Accessibility	1	2	3	4
Availability of Land	1	2	3	4
ocation (Good Exposure)	1	2	3	4
Close to Population Centers	1	2	3	4
Other ______________	1	2	3	4

In the space below, please provide us your comments on the impact of your local airport on your business:

THANK YOU FOR YOUR ASSISTANCE IN COMPLETING THIS SURVEY. YOUR RESPONSES WILL HELP DETERMINE THE ROLE THAT AIRPORTS PLAY WITHIN NEW HAMPSHIRE'S ECONOMY. IF YOU HAVE ANY QUESTIONS REGARDING THE SURVEY OR PROJECT, PLEASE CALL DARREN MOCHRIE AT RKG ASSOCIATES, INC. AT (800) 555-7541. PLEASE MAIL OR FAX THE COMPLETED SURVEY FORMS BY (INSERT DATE HERE) TO:

Darren Mochrie
RKG Associates, Inc.
277 Mast Road
Durham, New Hampshire 03824
Fax: (603) 868-6463

Appendix 5-A – Regional Economic Performance Measures

Change in Employment, Population and Per Capita Income: 1990-1999/2000 New Hampshire Economic Regions					
Region	**Population**				
	1990	**2000**	**# Change**	**% Change**	**Score**
Rockingham	160,231	180,866	20,635	12.9%	9
South	216,479	240,815	24,336	11.2%	8
Nashua	171,478	190,088	18,610	10.9%	7
Lakes	86,100	94,690	8,590	10.0%	6
Central	95,836	104,152	8,316	8.7%	5
Stafford	120,510	129,663	9,153	7.6%	4
Upper Valley	76,573	81,326	4,753	6.2%	3
North Country	76,573	81,326	4,753	6.2%	2
Southwest	88,342	92,652	4,310	4.9%	1
Region	**Employment**				
	1990	**1999**	**# Change**	**% Change**	**Score**
Central	57,820	73,780	15,960	27.6%	9
Lakes	25,300	29,320	4,020	15.9%	8
Rockingham	134,880	149,810	14,930	11.1%	7
North Country	55,380	60,590	5,210	9.4%	6
South	96,090	103,010	6,920	7.2%	5
Upper Valley	39,970	42,820	2,850	7.1%	4
Nashua	93,560	97,430	3,870	4.1%	3
Stafford	54,420	56,330	1,910	3.5%	2
Southwest	37,150	37,440	290	0.8%	1
Region	**Per Capita Income**				
	1990	**2000**	**$ Change**	**% Change**	**Score**
Rockingham	$18,212	$28,709	$10,497	57.6%	9
Upper Valley	$14,806	$22,781	$7,975	53.9%	8
South	$16,492	$24,946	$8,454	51.3%	7
Stafford	$14,086	$21,244	$7,158	50.8%	6
Central	$15,826	$23,453	$7,627	48.2%	5
Nashua	$18,617	$27,237	$8,620	46.3%	4
Southwest	$14,349	$20,824	$6,475	45.1%	3
North Country	$12,404	$17,843	$5,439	43.8%	2
Lakes	$13,771	$18,976	$5,205	37.8%	1
Source: Claritas, Inc., New Hampshire Employment Security and RKG Associates, Inc.					

Relationship Between Regional Economic Growth and Current and Projected Airport Economic Impact New Hampshire Airports											
Overall Ranking	Region	Mean Regional Ec. Growth Score	Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)	Projected Operations	Projected Based Aircraft	Estimated Airport Ec. Impact*
1	Rockingham	8.3	Hampton Airfield	Private	Hampton	1	Turf	2,100	Positive	Positive	Low
			Pease Tradeport	Public	Portsmouth/Newington	1	Asphalt	11,300	Positive	Positive	High
2	South	6.7	Manchester	Public	Manchester	2	Asphalt	7,573 & 7,001	Positive	Positive	High
3	Central	6.3	Concord Municipal	Public	Concord	2	Asphalt	3,200 & 6,005	Positive	Positive	High
4	Lakes	5.0	Laconia Mun. Airport	Public	Laconia	1	Asphalt	5286	Positive	Positive	High
			Lakes Region	Private	Wolfeboro	1	Asphalt	2,540	Positive	Positive	Low
			Newfound Valley	Private	Bristol	1	Asphalt	1,800	Positive	Positive	Low
			Moultonboro Airport	Private	Moultonboro	1	Asphalt	3625	Positive	Positive	Low
5	Upper Valley	5.0	Lebanon Mun. Airport	Public	Lebanon	2	Asphalt	5,496 & 5,200	Positive	Positive	Medium
			Parlin Field	Public	Newport	2	Turf & Asphalt	1,950 & 3,450	Positive	Positive	Low
			Claremont Mun. Airport	Public	Claremont	1	Asphalt	3,100	Positive	Positive	Medium
6	Nashua	4.7	Boire Field	Public	Nashua	1	Asphalt	5,500	Positive	Positive	High
7	Strafford	4.0	Skyhaven Airport	Public	Rochester	1	Asphalt	4,001	Positive	Positive	Low
8	North Country	3.3	Berlin Mun. Airport	Public	Berlin	1	Asphalt	5,200	Positive	Positive	Medium
			Colebrook Airport	Private	Colebrook	1	Turf	2,440	Positive	Stable	Low
			Errol Airport	Private	Errol	1	Gravel	3,680	Positive	Stable	Low
			Franconia Airport	Private	Franconia	1	Turf	2,305	Positive	Positive	Low
			Gorham Airport	Public	Gorham	1	Turf	2,800	Positive	Stable	Low
			Mt. Wash. Regional	Public	Whitefield	1	Asphalt	3,495	Positive	Positive	Medium
			Plymouth Mun. Airport	Public	Plymouth	1	Turf	2,380	Positive	Positive	Low
			Twin Mountain Airport	Private	Twin Mountain	1	Asphalt	2,640	Positive	Stable	Low
			Dean Memorial Airport	Public	Pike	1	Asphalt	2,500	Positive	Positive	Low
9	Southwest	1.7	Dillant-Hopkins	Public	Keene	2	Asphalt	6,201 & 4,001	Positive	Positive	Medium
			Hawthorne-Feather	Private	Antrim	1	Asphalt	3,260	Positive	Positive	Low
			Jaffrey-Silver Ranch	Private	Jaffrey	1	Asphalt	2,982	Positive	Positive	Low

*Based on results of airport economic impact analysis model

Population

	2000	2001		2002		2003		2004		2005		2006	
New Hampshire	1,195,579	1,230,000		1,241,000		1,253,000		1,268,000		1,285,000		1,301,705	
% Change		2.88%		0.89%		0.97%		1.20%		1.34%		1.30%	
# Change		34,421		11,000		12,000		15,000		17,000		16,705	
Central	104,152	3,442	0.10	1,100	0.10	1,200	0.10	1,500	0.10	2,550	0.15	2,506	0.15
Lakes	94,690	3,442	0.10	1,100	0.10	1,200	0.10	1,500	0.10	2,550	0.15	2,506	0.15
Nashua	190,088	6,884	0.20	2,200	0.20	2,400	0.20	2,250	0.15	2,550	0.15	2,506	0.15
North Country	81,327	0	0.00	0	0.00	0	0.00	750	0.05	850	0.05	835	0.05
Rockingham	180,866	8,605	0.25	2,750	0.25	3,000	0.25	3,000	0.20	2,550	0.15	2,506	0.15
South	240,815	8,605	0.25	2,750	0.25	3,000	0.25	3,000	0.20	2,550	0.15	2,506	0.15
Southwest	92,652	0	0.00	0	0.00	0	0.00	750	0.05	850	0.05	835	0.05
Strafford	129,663	1,721	0.05	550	0.05	600	0.05	1,500	0.10	1,700	0.10	1,671	0.10
Upper Valley	81,326	1,721	0.05	550	0.05	600	0.05	750	0.05	850	0.05	835	0.05
				11,000	1.00	12,000	1.00	15,000	1.00	17,000	1.00	16,705	1.00

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Central	104,152	107,594	108,694	109,894	111,394	113,944	116,450	118,956	121,757	124,565	127,616
Lakes	94,690	98,132	99,232	100,432	101,932	104,482	106,988	109,526	112,295	115,103	119,171
Nashua	190,088	196,972	199,172	201,572	203,822	206,372	208,878	211,416	213,252	215,134	216,151
North Country	81,327	81,327	81,327	81,327	82,077	82,927	83,762	84,608	85,531	86,467	87,484
Rockingham	180,866	189,471	192,221	195,221	198,221	200,771	203,277	204,969	206,815	208,687	210,721
South	240,815	249,420	252,170	255,170	258,170	260,720	263,226	265,764	267,610	269,482	271,516
Southwest	92,652	92,652	92,652	92,652	93,402	94,252	95,087	95,933	97,779	99,651	101,685
Strafford	129,663	131,384	131,934	132,534	134,034	135,734	137,405	139,943	142,712	145,520	148,570
Upper Valley	81,326	83,047	83,597	84,197	84,947	85,797	86,632	87,478	89,324	91,196	93,230
New Hampshire	1,195,579	1,230,000	1,241,000	1,253,000	1,268,000	1,285,000	1,301,705	1,318,627	1,337,088	1,355,807	1,376,144

Notes:
The population forecast is based on population estimates of 2001 and beyond.
The 2000 population estimate used in the report slightly understates the actual census population estimate due to the non-availability of census estimates at the time of report publication/analysis.
Therefore, although the rise in population between 2000 and 2001 is dramatic, the entire forecast is consistent with other long-range forecasts.
2001 population estimate used in this forecast is close to the actual population estimate (census).
The 2002 to 2010 population estimates in this forecast are the most reliable.

AIRPORT ECONOMIC IMPACT SUMMARY

CONCORD MUNICIPAL AIRPORT

Economic Benefits

- 30 aviation dependent jobs
- 2 known aviation dependent businesses
- 81 based aircraft
- 50,430 estimated annual operations
- Used by NASCAR racing team flight departments during racing weekends at the New Hampshire International Speedway
- Relied upon as a transportation asset by local and regional businesses
- Strong public utility asset for emergency medical, government and military use
- Provides access to the national aviation system for recreational and corporate flyers
- Provides linkage to the New Hampshire Capital region for transient flyers
- Supports New Hampshire National Guard unit

Economic Summary

The Concord Airport is an excellent example of a general aviation airport which serves in a multitude of capacities and is financially self-sufficient. Straddled within a geographic market area between Manchester Airport and Laconia Airport, Concord Airport is home to many corporate, government, military and recreational aircraft. The economic impact of the facility is substantial as over 50 NASCAR racing teams fly into the facility during race weekends at the New Hampshire International Speedway in Loudon. Additionally, the many corporate based aircraft and transient corporate flights which regularly use the facility positively impact the regional economy.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Medium
Business Support – High
Public Utility - High

AIRPORT ECONOMIC IMPACT SUMMARY

NEWFOUND VALLEY – BRISTOL

Economic Benefits

- 7 based aircraft (increases to 12 during the summer months)
- Acts as a gateway to attractions and sites within the Newfound Lake region
- Occasional use of the airport by a local machine shop for distribution of machine parts and accessories

Economic Summary

As an airport with a relatively short runway, the facility primarily serves as the gateway to the Newfound Lake region for transient recreational flyers. The airport is occasionally used by a local business to distribute machined parts throughout New England and neighboring states.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

LACONIA MUNICIPAL AIRPORT

Economic Benefits

- 30 aviation dependent jobs
- 5 known aviation dependent businesses
- 97 based aircraft
- 34,898 estimated annual operations
- Used by NASCAR racing team flight departments during racing weekends at the New Hampshire International Speedway
- Used by some entertainers and patrons at the nearby Meadowbrook Farm Arts Center
- Relied upon as a transportation asset by local and regional businesses
- Strong public utility asset for emergency medical, government and military use
- Provides access to the national aviation system for recreational and corporate flyers
- Provides linkage to the lakes region for transient flyers

Economic Summary

The Laconia Municipal Airport, located in the heart of New Hampshire's famous Lake Winnipesaukee lakes region, is one of the best examples of a financially self-sufficient, medium sized airport that can handle aircraft ranging from small single engine to small corporate jets. With the longest runway in the Lakes Region, an Instrument Landing System, and three fixed base operators, Laconia Municipal Airport hosts several corporate based aircraft as well as military training operations, medical emergency and government operations. The economic impact of the airport is substantial as many NASCAR racing teams fly into the facility during race weekends at the New Hampshire International Speedway in Loudon as well as many entertainment acts during shows at the neighboring Meadowbrook Farm Arts Center. The airport is also used by visitors with seasonal homes within the Lakes Region.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – High
Business Support – High
Public Utility - Medium

AIRPORT ECONOMIC IMPACT SUMMARY

LAKES REGION WOLFBORO AIRPORT

Economic Benefits

- 6 based aircraft (including 2 business aircraft used by a local air photo and mapping company)
- Provides linkage and access to Wolfboro and the lakes region
- Provides access to the national aviation system for recreational flyers

Economic Summary

This privately owned facility is used primarily as an access point for Wolfboro and the lakes region for transient recreational flyers. A local air photo and mapping company bases two planes at the airport during the summer months.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility – Low

AIRPORT ECONOMIC IMPACT SUMMARY

MOULTONBOROUGH AIRPORT

Economic Benefits

- 15 based aircraft (approximately 7 to 8 additional based aircraft during the summer months)
- Provides access to the national aviation system for recreational flyers
- Provides access to the Moultonborough and Lakes Region for recreational flyers

Economic Summary

This privately owned facility is used primarily as an access point for Moultonborough and the Lakes Region for transient recreational flyers.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

BOIRE FIELD

Economic Benefits

- 400 based aircraft (including 22 corporate jet aircraft)
- Estimated 200 aviation dependent jobs
- Estimated 1999 economic impact of over $21 million
- Daniel Webster College flight training facility
- Many corporate based aircraft from Massachusetts firms which take advantage of lower fuel and service costs and tax savings
- 123,000 estimated operations
- Heavily relied upon as a transportation asset by local and regional (northern Massachusetts) businesses
- Strong public utility asset for emergency medical, government and military use as well as by City of Nashua police, fire and public works departments
- Provides access to the national aviation system for recreational flyers
- Provides linkage to southern New Hampshire and attractions for transient flyers

Economic Summary

As one of the busiest airports in the state, Boire Field in Nashua is one of the finest examples of a large general aviation facility that contributes significantly to the local, regional and state economies. With a significant portion of the approximately 400 aircraft based at Boire Field used for business purposes, it is estimated that the facility supports about 200 aviation dependent jobs directly on site. Geographically, the airport is ideally located within close proximity to southern New Hampshire's urban population base as well as communities in north central Massachusetts. Due to prudent airport management and the revenues generated through land leases, tie-downs and fuel flow fees, the airport has managed to become financially self-sufficient.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – High
Public Utility - Medium

AIRPORT ECONOMIC IMPACT SUMMARY

BERLIN MUNICIPAL AIRPORT

Economic Benefits

- 26 based aircraft
- 14,000 estimated operations
- Relied upon as a transportation asset by local and regional businesses
- Strong public utility asset for emergency medical, government and military use
- Provides access to the national aviation system for recreational flyers
- Provides linkage to local and regional sites and attractions for transient flyers

Economic Summary

As the largest airport in the North Country region, the facility fulfills a variety of aviation, public utility, tourism and business support roles. With the longest runway in the region and available jet-A fuel, the facility hosts a variety of regular corporate users, military training operations, medical emergency and government operations. For example, during the negotiations for the purchase and reopening of the Berlin and Gorham paper mills, which are the region's biggest employer, the airport hosted visits by potential investors and financial support staff.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Medium
Public Utility - Medium

AIRPORT ECONOMIC IMPACT SUMMARY

COLEBROOK AIRPORT

Economic Benefits

- 6 based aircraft
- Estimated 1,500 annual operations
- Provides access to the national aviation system for recreational flyers
- Provides linkage to local and regional sites and attractions (Balsams Resort, local golf courses, fishing) for transient flyers

Economic Summary

Although the Colebrook Airport has a relatively short turf runway, many transient flyers enjoy the unique rural character (like flying back in history) of the facility as well as local and regional tourist destinations.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility – Low

AIRPORT ECONOMIC IMPACT SUMMARY

ERROL AIRPORT

Economic Benefits

- 6 based aircraft
- Estimated 750 annual operations
- Provides access to the national aviation system for recreational flyers
- Provides linkage to the Umbagog Lake and surrounding area

Economic Summary

As an airport with a relatively long, gravel runway, the facility serves as an access point to local and regional sites and attractions for transient recreational flyers. The airport neighbors Umbagog Lake which is considered one of the most unique and untouched natural settings in New Hampshire.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility – Low

AIRPORT ECONOMIC IMPACT SUMMARY

FRANCONIA AIRPORT

Economic Benefits

- Estimated 4,500 annual operations
- Strong tourism linkage with neighboring Franconia Inn which provides guests with opportunity to glide via Franconia Soaring Association
- Provides access to national aviation system for recreational flyers
- 12 based aircraft (11 gliders)

Economic Summary

The Franconia Airport, although one of the smallest facilities in the state in terms of runway length, is an excellent example of a facility which has established a unique identity for itself based on its geographic location and regional market. The facility's owners have capitalized on its proximity to the Franconia Inn, a well know bed and breakfast inn in the region, to provide guests the opportunity of a once-in-a-lifetime experience of gliding in the White Mountains.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Medium
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

GORHAM AIRPORT

Economic Benefits

- Estimated 1,000 annual operations
- 4 based aircraft
- Provides access to the national aviation system for recreational flyers
- Provides linkage to the Mount Washington Region's natural and scenic assets for transient flyers

Economic Summary

As an airport with a relatively short, turf runway, the facility serves as an access point to the Mount Washington region's noted lodging, skiing and outdoor attractions for transient recreational flyers.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

DEAN MEMORIAL AIRPORT

Economic Benefits

- Provides access to the national aviation system for recreational flyers
- Provides linkage to local and regional sites and attractions for transient flyers

Economic Summary

As an airport with a relatively short, turf runway, the facility serves as an access point to local and regional sites and attractions for transient recreational flyers. Although corporate operations are not predominant at the facility, Municipal officials indicate that the development of the neighboring industrial park and potential future lengthening of the runway may attract some business flights.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

MOUNT WASHINGTON REGIONAL AIRPORT

Economic Benefits

- 36 aviation dependent jobs
- 3 aviation dependent businesses including Presby Environmental Plastics Limited located in the neighboring industrial park
- 36 based aircraft
- Annual operations estimated at 2,500
- Strong tourism linkage with regional hotels, resorts and ski areas including the Mountain View Grand and Bretton Woods Resort
- Provides access to national air system for recreational flyers
- Provides transportation access as a public utility for government, emergency and medical aviation operations

Economic Summary

Mount Washington Regional Airport in Whitefield, is arguably one of the best examples of a well-managed, small general aviation airport facility which provides a variety of transportation services in support of the regional economy. Due to the identified regional impact of the facility, the ten member Mount Washington Airport Commission serves a model for similar airport facilities throughout the state in that member communities share in the airport's financial risk, but also benefit from having the facility nearby.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support - Medium
Business Support - Medium
Public Utility – Low

AIRPORT ECONOMIC IMPACT SUMMARY

PLYMOUTH MUNICIPAL AIRPORT

Economic Benefits

- 8 based aircraft (16 during summer months)
- Provides access to the national aviation system for recreational flyers
- Provides linkage to local and regional sites and attractions for transient flyers

Economic Summary

A recent study completed by the Town of Plymouth indicated positive support for the airport with the facility primarily being a tourism asset. The increase in based aircraft during the summer months is attributed primarily to the large number of seasonal residential units in the Plymouth region.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

TWIN MOUNTAIN AIRPORT

Economic Benefits

- Estimated 1,000 annual operations
- Provides access to lodging, hiking, and skiing amenities located within the Franconia region
- Provides access to national aviation system for recreational flyers
- 3 based aircraft

Economic Summary

The Twin Mountain Airport is geographically located in one of the most mountainous and scenic locations in the state – quintessential New Hampshire. Many resorts, including the world famous Mount Washington Hotel, are located with the area.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Medium
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

HAMPTON AIRFIELD

Economic Summary

Hampton Airfield's turf facilities are home to approximately 70 based aircraft which are primarily used for recreational purposes. Many flyers that use the facility take advantage of the seasonal homes and lodging facilities within the area.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility – Low

AIRPORT ECONOMIC IMPACT SUMMARY

PEASE INTERNATIONAL TRADEPORT

Economic Benefits

- 70 based aircraft
- Over 1,100 aviation dependent jobs at 21 aviation dependent business establishments
- Estimated 24,860 annual operations
- Commercial air service linkage to regional hubs
- New Hampshire Air National Guard air refueling wing
- Provides access to the national aviation system for recreational flyers
- Provides linkage to the New Hampshire Seacoast and northeastern Massachusetts regions' attractions for transient flyers

Economic Summary

Pease International Tradeport is only one of three commercial airports (Manchester Airport and Lebanon Airport) in New Hampshire. The most unique feature of the former U.S. Air Force facility is the fact that it has the longest runway in the state (11,321 feet) – capable of handling aircraft of all sizes (up to and including the space shuttle). Pease's economic impact on the region and state is significant as it is home to 21 aviation dependent businesses with over 1,100 aviation dependent jobs. In addition to commercial passenger (Pan Am Airlines), cargo, and corporate general aviation flight operations based there, Pease is home to the New Hampshire Air National Guard's KC-135 air refueling wing that provides vital air refueling for military aircraft.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – High
Public Utility - High

AIRPORT ECONOMIC IMPACT SUMMARY

MANCHESTER AIRPORT

Economic Benefits

- Second largest airport in New England
- 10 major national and regional commuter airlines
- 6 cargo carriers
- 3.2 million passengers in 2000
- Primary airport used by New Hampshire business and leisure air travelers
- 1,388 aviation related jobs with a gross payroll of almost $19 million (1998)
- Total expenditures for (40) on-airport organizations of $49.7 million (1998)
- Total estimated economic impact of $53.3 million (1998)[1]

Economic Summary

Manchester Airport is northern New England's busiest airport and one of New Hampshire's most important economic "engines". The airport has over 1,300 aviation dependent jobs which, according to an economic impact study complete for the airport in 1998, generate an economic impact of over $53 million. In addition to supporting businesses throughout the state, the facility handles over 3 million passengers annually and is considered the prime air travel gateway to New Hampshire. Additionally, Manchester Airport serves as home for many corporate flight departments as well as filling vital public utility role for important government, emergency medical and military operations.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – High
Business Support – High
Public Utility - High

1 Leigh Fisher Associates. *Economic Impact Study: Manchester Airport* (1998)

AIRPORT ECONOMIC IMPACT SUMMARY

HAWTHORNE-FEATHER AIRPARK

Economic Benefits

N/A

Economic Summary

N/A

Airport Impact

N/A

AIRPORT ECONOMIC IMPACT SUMMARY

SILVER RANCH (JAFFREY) AIRPORT

Economic Benefits

- 41 based aircraft
- 6 estimated aviation dependent jobs
- Estimated 10,648 annual operations
- Provides access to the national aviation system for corporate and recreational flyers
- Provides linkage to the Jaffrey region for transient flyers
- Annual fireworks event attracts flyers, seasonal and year round residents

Economic Summary

Historically, Silver Ranch Airport has traditionally had a significant portion of its based aircraft being corporate users with the remainder being aircraft used for recreational or personal uses. The number of corporate users has declined modestly, however, the airport is still home for many aircraft used for primarily business uses. Many transient corporate flights utilize Silver Ranch in order to access business establishments throughout the Jaffrey region. The facility serves an important public utility role in that it can accommodate emergency medical and government flights.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility – Medium

AIRPORT ECONOMIC IMPACT SUMMARY

DILLANT-HOPKINS (KEENE) AIRPORT

Economic Benefits

- 54 based aircraft and home to many corporate aircraft departments
- 7 aviation dependent businesses
- Estimated aviation dependent employment of over 300 jobs
- 42,646 Estimated annual operations
- Vital public utility role by supporting the Civil Air Patrol, law enforcement, military and medical flights
- Provides access to the national aviation system for recreational flyers
- Provides linkage to local and regional sites and attractions for transient flyers

Economic Summary

The primary role of the airport is to serve general aviation recreational and corporate aircraft. The airport plays an important economic role in that several corporations (including a large wholesale grocery distribution company and Troy Mills automotive) base their corporate aircraft at Dillant-Hopkins. The facility also provides a vital public utility role by facilitating aerial photography, fire surveillance flights, power line and pipeline inspection patrols, air ambulance services and law enforcement operations.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Medium
Public Utility - Medium

AIRPORT ECONOMIC IMPACT SUMMARY

SKYHAVEN AIRPORT

Economic Benefits

- 80 based aircraft
- 9 estimated aviation dependent jobs
- Estimated 18,592 annual operations
- Provides access to the national aviation system for corporate and recreational flyers
- Provides linkage to the New Hampshire Seacoast region for transient flyers

Economic Summary

As the only airport and FBO in Strafford County, Skyhaven primarily serves a multitude of functions including flight training, aircraft refueling and service as well as a base for corporate and recreational aircraft. Additionally, the facility serves in a public utility role as the New Hampshire Army National Guard uses it for training purposes.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

CLAREMONT AIRPORT

Economic Benefits

- 2 aviation dependent businesses
- 10,459 annual operations
- 22 based aircraft
- Provides access to the national aviation system for recreational flyers
- Provides linkage to the Upper Valley region's sites and attractions for transient flyers

Economic Summary

The Claremont Airport primarily serves recreational aircraft with many transient flyers using the facility to access the natural features and sites (Lake Sunapee and ski facilities) throughout the region. Two local Claremont businesses (Costa Tool and Optimum Manufacturing) have historically used the facility within their business operations.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

AIRPORT ECONOMIC IMPACT SUMMARY

LEBANON MUNICIPAL AIRPORT

Economic Benefits

- 11 aviation dependent businesses
- 76 estimated aviation dependent jobs
- 42,749 annual operations
- Strong public utility component as City of Lebanon Fire Department uses facility for training purposes
- Commercial flights available to destinations including New York and Philadelphia
- Several corporate based aircraft
- Strong public utility asset for emergency medical, government and military use
- Provides access to the national aviation system for recreational flyers
- Provides linkage to the Upper Valley region's sites and attractions for transient flyers

Economic Summary

Although the number of commercial enplanements has declined over the past few years, Lebanon Municipal Airport continues to be one of three commercial airports in New Hampshire (along with Pease Tradeport and Manchester Airport) and the only commercial facility in the Upper Valley and eastern Vermont region. The airport impacts the regional economy by supporting 11 businesses and almost 80 aviation dependent jobs.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Medium
Public Utility - Medium

AIRPORT ECONOMIC IMPACT SUMMARY

PARLIN FIELD (NEWPORT)

Economic Benefits

- 11 based aircraft
- Provides access to the national aviation system for recreational flyers
- Provides linkage to the lake Sunapee Region sites (lakes and Sunapee Ski area) and attractions for transient flyers
- Several aviation and non-aviation related special events at the airport attract thousands of people annually

Economic Summary

As the airport's sponsor, the Town and part-time airport manager have positioned the facility as the "gateway to Lake Sunapee" region. Complete with annual scheduled aviation and non-aviation related special events at the facility, including the very successful balloon festival, the airport attracts thousands of seasonal and year round residents and tourists. Within the past year a restaurant has opened in order to cater to aviation-related guests and, according to the Town Manager, business has been good.

Airport Impact

It should be noted that the methodology used to determine the economic impact of each New Hampshire airport is summarized as the Airport Economic Impact Analysis within Chapter Five of the *New Hampshire State Airport System Plan Update*.

Tourism Support – Low
Business Support – Low
Public Utility - Low

Appendix 5-B – FAA Presentation Regarding Future GA Activity

FAA GENERAL AVIATION FORECASTS: 2002-2013

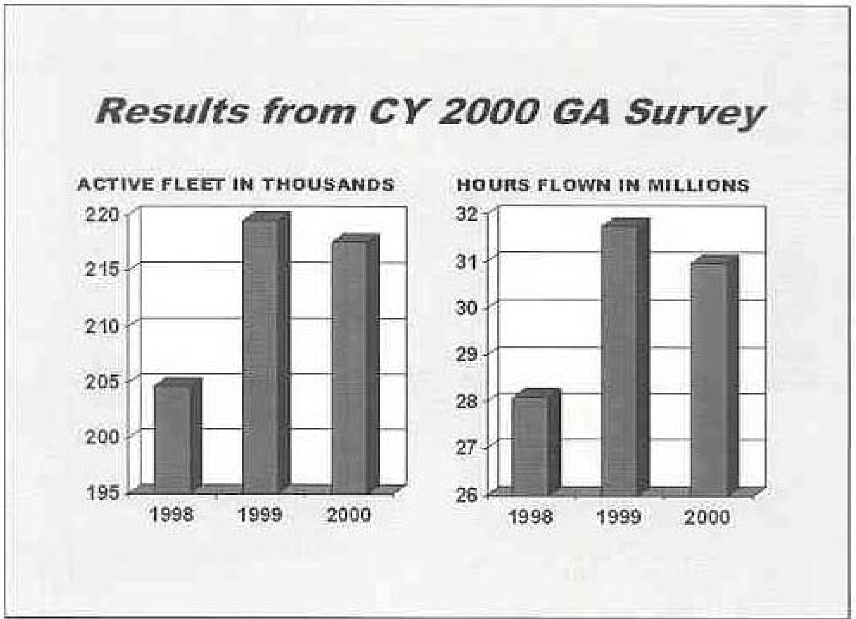
John M. Rodgers

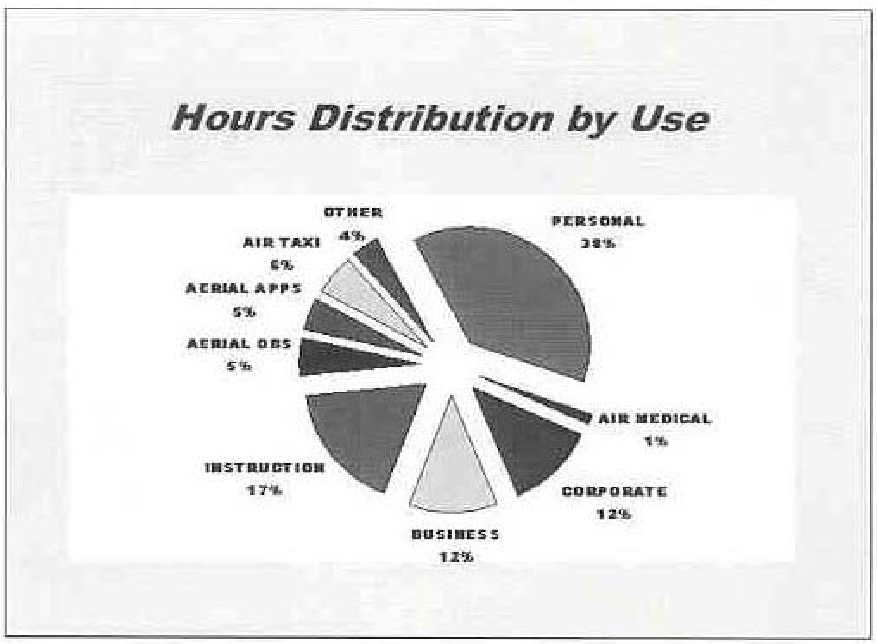
Director, Office of Aviation Policy and Plans

Topics for Discussion

- General Aviation and Air Taxi Activity Survey (GA Survey)
- Mixed Results in 2000/2001
- Uncertain Future Environment
- Forecast Approach / Methodology
- General Aviation Forecast(s)

Source: FAA Office of Policy and Plans





Source: FAA Office of Policy and Plans

Mixed News for GA in 2000-2001

- *GA billings set a record for the fourth consecutive year*
- *Turbojet shipments were up for the fifth consecutive year*
- *Total pilot certificates held were up for the fifth consecutive year*

But

Mixed News for GA in 2000-2001

- *GA active fleet and hours flown were down in CY 2000 after five consecutive years of increase*
- *GA activity at FAA facilities down*
- *F/W piston shipments were down*
- *Student certificates were down in 2001 for third consecutive year*

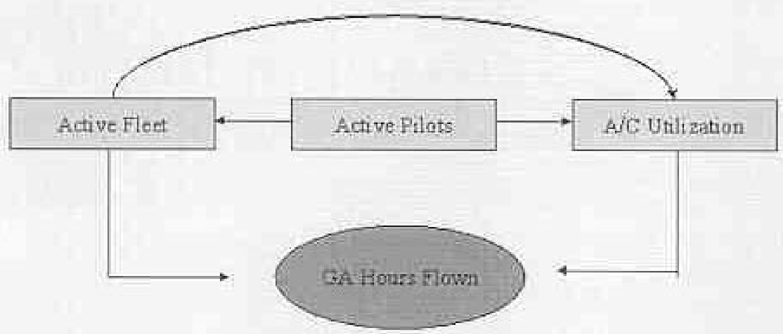
Source: FAA Office of Policy and Plans

Uncertain Future Environment

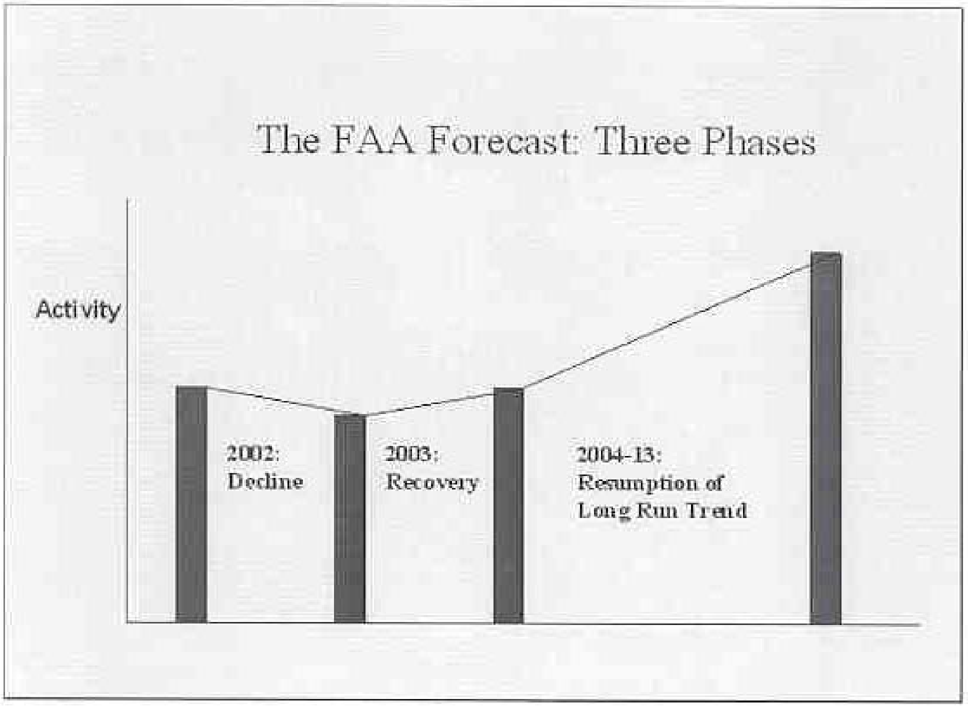
- ***Recession in general economy in 2001/2002***
- ***Lasting effects of September 11th***
  - ***Restrictions on GA ?***
  - ***Restrictions on pilot training?***
- ***How fast does GA recover from recession?***
- ***Can fractional ownership maintain pace?***
- ***Will "sport pilot/light sport aircraft" provide a measurable boost to GA?***

General Forecasting Relationships:

GA Forecasting Relationships



Source: FAA Office of Policy and Plans

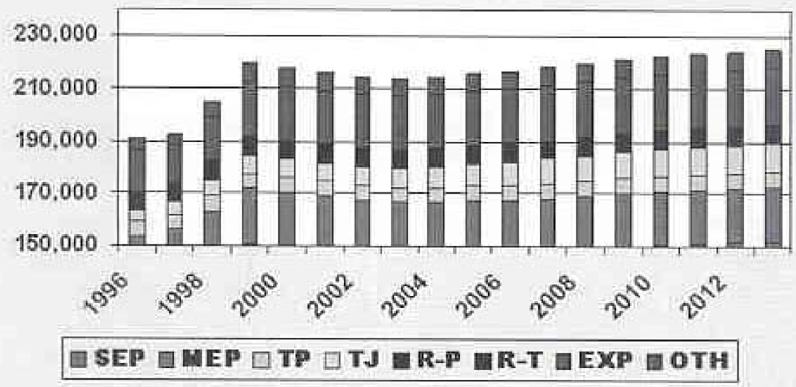


GA Active Fleet: Assumptions and Forecasts

- ***F/W piston***
  - *Single-engine: contraction in fleet through 2003; no change in 2004; and resumption of growth in 2005*
- ***F/W Turbine***
  - *Turboprop: slight decline through 2003; modest growth through 2013*
  - *Turbofan/jet: modest to strong growth throughout the entire forecast period*
- ***Rotorcraft***
  - *Decline through 2003; modest growth, led by piston through 2013*

Source: FAA Office of Policy and Plans

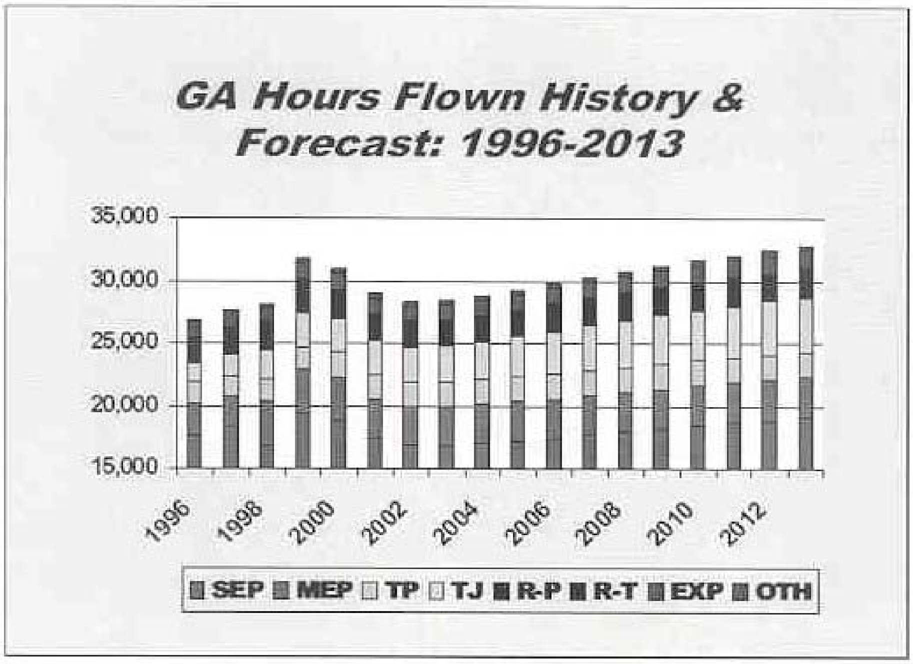
GA Fleet History & Forecast: 1996-2013

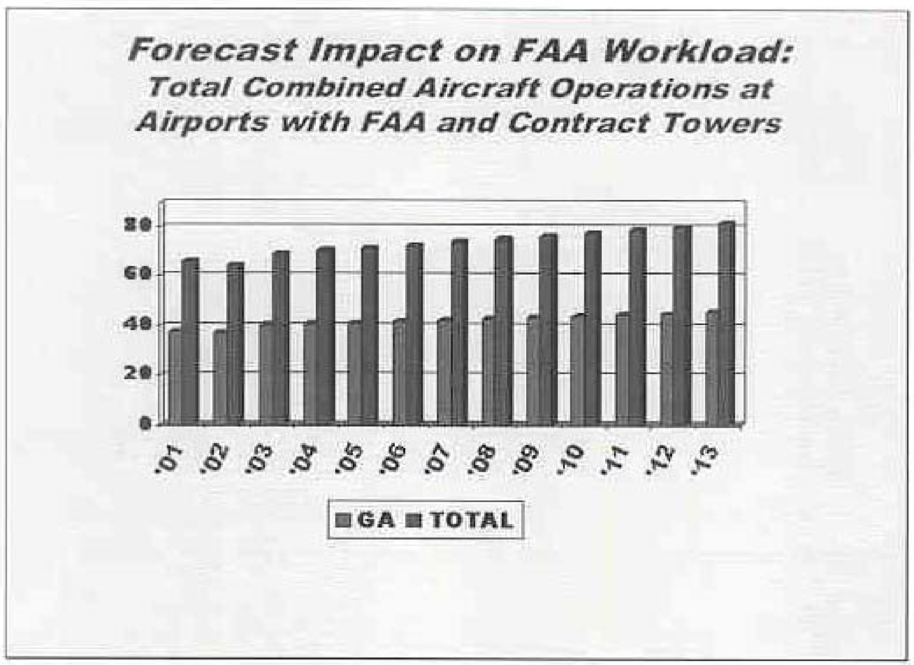


Aircraft Utilization: Assumptions and Forecasts

- ***Piston***
  - *"Aging" of piston fleet and decline in number of student pilots leads to lower piston utilization at end of forecast period*
- ***Turbine***
  - *Increase in turbine utilization is largely due to increase in number of these aircraft in fractional ownership programs*
- ***Rotorcraft***
  - *Utilization decreases slightly due to change in fleet mix and changing use patterns*
- ***Net Effect***
  - *Overall 2.6% increase in utilization over forecast period*

Source: FAA Office of Policy and Plans





Source: FAA Office of Policy and Plans

Forecast Concerns/Risks

- Long term effects of security measures on GA
- Economic cycle -- strength of recovery and its effect on GA
- "Aging" GA fleet -- aircraft production and affordability
- Ability of airport and ATC system infrastructure to support growth

Early Results: Economy and Security

- Recession shallower than expected
  - Recovery sooner, but weaker than predicted
- Fuel prices likely to increase
- Most security (e.g., "no fly zone") restrictions eliminated or relaxed
- Early reports from FAA towers/ centers showing resiliency of GA

Source: FAA Office of Policy and Plans

Summary

- This year's forecast posed an unusually difficult challenge
  - Downturn in GA began in 2000
  - U.S. economy in recession for much of 2001
  - September 11th and its aftermath
  - Cancellation of FAA/TRB Forecast workshop
- Some reasons for optimism for next year
  - U.S. economy recovering more quickly than expected
  - Turbofan/jet shipments holding up
  - Increase in commercial/business use because of the inconvenience imposed by security procedures for scheduled airlines
- Forecast workshop rescheduled for September

Source: FAA Office of Policy and Plans

Appendix 5-C – System Plan Aviation Forecasts Background Data

Based Aircraft Forecasts

FAA BASED AIRCRAFT FORECAST									
Base line scenario	Year								
	2000	% of region	2005	% of region	Growth Rate	2010	% of region	Growth R	Source of Base Year 2000 Data
Region/Airport									
Central									
Concord	81	*100%*	85	*100%*	*4.9%*	88	*100%*	*4.0%*	5010/ FAA Growth rate
Region Total	***81***	*100%*	***85***	*100%*		***88***	*100%*		
Lakes Region									
Bristol	3	*2%*	3	*2%*	*4.9%*	3	*2%*	*4.0%*	5010/ FAA Growth rate
Laconia	97	*73%*	109	*75%*	*4.9%*	113	*75%*	*4.0%*	5010/ FAA Growth rate
Wolfeboro	15	*11%*	16	*11%*	*4.9%*	16	*11%*	*4.0%*	5010/ FAA Growth rate
Moultonboro	17	*13%*	18	*12%*	*4.9%*	19	*12%*	*4.0%*	5010/ FAA Growth rate
Region Total	***132***	*100%*	***145***	*100%*		***151***	*100%*		
Nashua									
Nashua - Boire Field	403	*100%*	*423*	*100%*	*4.9%*	440	*100%*	*4.0%*	5010/ FAA Growth rate
Region Total	***403***	*100%*	***423***	*100%*		***440***	*100%*		
North Country									
Berlin	26	*21%*	30	*23%*	*4.9%*	32	*23%*	*4.0%*	5010/ FAA Growth rate
Colebrook	6	*5%*	6	*5%*	*4.9%*	7	*5%*	*4.0%*	5010/ FAA Growth rate
Errol	6	*5%*	6	*5%*	*4.9%*	7	*5%*	*4.0%*	5010/ FAA Growth rate
Franconia	12	*10%*	13	*10%*	*4.9%*	13	*10%*	*4.0%*	5010/ FAA Growth rate
Gorham	4	*3%*	4	*3%*	*4.9%*	4	*3%*	*4.0%*	5010/ FAA Growth rate
Haverhill	13	*11%*	14	*10%*	*4.9%*	14	*10%*	*4.0%*	5010/ FAA Growth rate
Mount Washington	36	*30%*	38	*29%*	*4.9%*	39	*29%*	*4.0%*	5010/AMP Growth rate
Plymouth	16	*13%*	17	*13%*	*4.9%*	17	*13%*	*4.0%*	5010/ FAA Growth rate
Twin Mountain	3	*2%*	3	*2%*	*4.9%*	3	*2%*	*4.0%*	5010/ FAA Growth rate
Region Total	***122***	*100%*	***131***	*100%*		***136***	*100%*		
Rockingham									
Hampton	70	*43%*	73	*43%*	*4.9%*	76	*43%*	*4.0%*	5010/ FAA Growth rate
Pease	91	*57%*	95	*57%*	*4.9%*	99	*57%*	*4.0%*	5010/ FAA Growth rate
Region Total	***161***	*100%*	***169***	*100%*		***176***	*100%*		
South									
Manchester	85	*100%*	89	*100%*	*4.9%*	93	*100%*	*4.0%*	5010/ FAA Growth rate
Region Total	***85***	*100%*	***89***	*100%*		***93***	*100%*		
Southwest									
Hawthorne	13	*12%*	14	*12%*	*4.9%*	14	*12%*	*4.0%*	5010/ FAA Growth rate
Jaffrey	41	*38%*	43	*38%*	*4.9%*	45	*38%*	*4.0%*	5010/ FAA Growth rate
Keene	54	*50%*	57	*50%*	*4.9%*	59	*50%*	*4.0%*	5010/ FAA Growth rate
Region Total	***108***	*100%*	***113***	*100%*		***118***	*100%*		
Strafford									
Rochester	68	*100%*	71	*100%*	*4.9%*	74	*100%*	*4.0%*	5010/ FAA Growth rate
Region Total	***68***	*100%*	***71***	*100%*		***74***	*100%*		
Upper Valley									
Claremont	22	*20%*	23	*20%*	*4.9%*	24	*20%*	*4.0%*	5010/ FAA Growth rate
Lebanon	76	*70%*	80	*70%*	*4.9%*	83	*70%*	*4.0%*	5010/ FAA Growth rate
Parlin Field	11	*10%*	12	*10%*	*4.9%*	12	*10%*	*4.0%*	5010/ FAA Growth rate
Region Total	***109***	*100%*	***114***	*100%*		***119***	*100%*		
State Total	**1,269**		**1,341**			**1,395**			
Forecast Source: FAA Aerospace Forecasts - FY 2001-2012									

Trend Line Analysis - Based Aircraft

Region	Airport	OPS 90	Ops 2000	% Change 90-00	Annual Change	Airport Share Of Region 2000		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Central	*Concord*	92	81	-12.0%	-1.3%	100.0%	Concord	81	80	79	78	77	76	75	74	73	72	71
	Region Total	**92**	**81**	**-12.0%**	**-1.3%**		**Concord**	**81**	**80**	**79**	**78**	**77**	**76**	**75**	**74**	**73**	**72**	**71**
Lakes	Bristol	3	3	0.0%	0	2.3%	Bristol	3	3	3	3	3	3	2	2	2	2	2
	Laconia	132	97	-26.5%	-3.0%	73.5%	Laconia	97	94	91	88	86	83	81	78	76	73	71
	Wolfboro	24	15	-37.5%	-4.6%	11.4%	Wolfboro	15	15	14	14	13	13	12	12	12	11	11
	Moltonboro	24	17	-29.2%	-3.4%	12.9%	Moltonboro	17	16	16	15	15	15	14	14	13	13	12
	Region Total	**180**	**132**	**-26.7%**	**-3.1%**			**132**	**128**	**124**	**120**	**117**	**113**	**110**	**106**	**103**	**100**	**97**
Nashua	*Nashua*	303	403	33.0%	2.9%		Nashua	403	415	427	439	452	465	478	492	506	521	536
	Region Total	**303**	**403**	**33.0%**	**2.9%**			**403**	**415**	**427**	**439**	**452**	**465**	**478**	**492**	**506**	**521**	**536**
North Cour	*Berlin*	22	26	18.2%	1.7%	21.3%	Berlin	26	27	27	28	29	30	31	31	32	33	34
	Colebrook	6	6	0.0%	0.0%	4.9%	Colebrook	6	6	6	6	6	6	6	6	6	6	6
	Errol	4	6	50.0%	4.1%	4.9%	Errol	6	6	6	7	7	7	7	7	7	8	8
	Franconia	9	12	33.3%	2.9%	9.8%	Franconia	12	12	13	13	13	14	14	15	15	15	16
	Gorham	2	4	100.0%	7.2%	3.3%	Gorham	4	4	4	4	4	5	5	5	5	5	5
	Haverhill	2	13	550.0%	20.6%	10.7%	Haverhill	13	13	14	14	14	15	15	16	16	17	17
	Mt. Washington	22	36	63.6%	5.0%	29.5%	Mt. Washingto	36	37	38	39	40	41	42	44	45	46	47
	Plymouth	15	16	6.7%	0.6%	13.1%	Plymouth	16	16	17	17	18	18	19	19	20	20	21
	Twin Mountain	11	3	-72.7%	-12.2%	2.5%	Twin Mountain	3	3	3	3	3	3	4	4	4	4	4
	Region Total	**93**	**122**	**31.2%**	**2.8%**			**122**	**125**	**129**	**132**	**136**	**140**	**144**	**148**	**152**	**156**	**160**
Rockingha	Hampton	76	70	-7.9%	-0.8%	43.5%	Hampton	70	72	74	76	78	81	83	85	88	91	93
	Pease	45	91	102.2%	7.3%	56.5%	Pease	91	94	96	99	102	105	108	111	114	118	121
	Region Total	**121**	**161**	**33.1%**	**2.9%**			**161**	**166**	**170**	**175**	**180**	**186**	**191**	**197**	**202**	**208**	**214**
South	*Manchester*	228	85	-62.7%	-9.4%	100.0%	Manchester	85	77	70	63	57	52	47	43	39	35	32
	Region Total	**228**	**85**	**-62.7%**	**-9.4%**			**85**	**77**	**70**	**63**	**57**	**52**	**47**	**43**	**39**	**35**	**32**
Southwest	Hillsboro	3	13	333.3%	15.8%	12.0%	Hillsboro	13	13	13	13	13	13	13	13	13	13	13
	Jaffery	41	41	0.0%	0.0%	38.0%	Jaffery	41	41	41	41	41	41	41	40	40	40	40
	Keene	66	54	-18.2%	-2.0%	50.0%	Keene	54	54	54	54	54	54	53	53	53	53	53
	Region Total	**110**	**108**	**-1.8%**	**-0.2%**			**108**	**108**	**108**	**107**	**107**	**107**	**107**	**107**	**106**	**106**	**106**
Strafford	*Rochester*	72	68	-5.6%	-0.6%		Rochester	68	68	67	67	66	66	66	65	65	65	64
	Region Total	**72**	**68**	**-5.6%**	**-0.6%**			**68**	**68**	**67**	**67**	**66**	**66**	**66**	**65**	**65**	**65**	**64**
Upper Valle	*Claremont*	26	22	-15.4%	-1.7%	20.2%	Claremont	22	22	22	22	22	22	22	23	23	23	23
	Lebanon	67	76	13.4%	1.3%	69.7%	Lebanon	76	76	77	77	77	77	78	78	78	79	79
	Newport	12	11	-8.3%	-0.9%	10.1%	Newport	11	11	11	11	11	11	11	11	11	11	11
	Region Total	**105**	**109**	**3.8%**	**0.4%**			**109**	**109**	**110**	**110**	**111**	**111**	**111**	**112**	**112**	**113**	**113**
Total Airport Activity		**1304**	**1,269**	**-2.7%**	**-0.3%**			**1,269**	**1,275**	**1,283**	**1,293**	**1,303**	**1,315**	**1,329**	**1,343**	**1,359**	**1,375**	**1,393**

* 1990 Data for Pease represents 1993 data, the year Pease started civilian operations

Projected Population Growth Forecast - Based Aircraft

		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010	
		1,269		1,280		1,293		1,305		1,321		1,339		1,356		1,374		1,393		1,412		1,434	
Pop. % Change				0.89%		0.97%		0.97%		1.20%		1.34%		1.30%		1.30%		1.40%		1.40%		1.50%	
# Change				11		24		25		16		18		17		18		19		20		21	
Region	Airport																						
Central		81		82	0.10	85	0.10	87	0.10	89	0.10	90	0.10	93	0.15	96	0.15	98	0.15	101	0.15	105	0.15
	Concord	81	1.00	82		85		87		89		90		93		96		98		101		105	
Lakes		132		133	0.10	142	0.10	150	0.10	152	0.10	155	0.15	157	0.15	160	0.15	163	0.15	166	0.15	170	0.20
	Bristol	3	0.00	3		3		3		3		3		3		4		4		4		4	
	Laconia	97	0.00	86		92		97		98		100		102		103		105		107		110	
	Wolfboro	15	0.00	15		16		17		17		17		17		18		18		18		19	
	Moultonbor	17	0.00	29		31		33		33		34		35		35		36		36		37	
Nashua		403		405	0.20	411	0.20	418	0.20	420	0.15	423	0.15	426	0.15	428	0.15	430	0.10	432	0.10	433	0.05
	Nashua	403	1.00	405		411		418		420		423		426		428		430		432		433	
North Country		122		122	0.00	122	0.00	122	0.00	123	0.05	124	0.05	125	0.05	125	0.05	126	0.05	127	0.05	128	0.05
	Berlin	26	0.00	51		51		51		52		52		52		53		53		54		54	
	Colebrook	6	0.00	6		6		6		6		6		6		6		6		6		6	
	Errol	6	0.00	3		3		3		3		3		3		3		3		3		3	
	Franconia	12	0.00	17		17		17		17		17		17		17		17		17		17	
	Gorham	4	0.00	4		4		4		4		4		4		4		4		4		4	
	Haverhill	13	0.00	15		15		15		15		15		15		15		15		15		15	
	Whitefield	36	0.00	9		9		9		9		9		9		9		10		10		10	
	Plymouth	16	0.00	15		15		15		15		15		15		15		15		15		15	
	Twin Moun	3	0.00	4		4		4		4		4		4		4		4		4		4	
Rockingham		161		164	0.25	165	0.25	166	0.25	169	0.20	171	0.15	174	0.15	176	0.10	178	0.10	180	0.10	182	0.10
	Hampton	70	0.00	99		99		100		102		103		105		106		107		108		109	
	Pease	91	0.00	65		66		66		67		68		69		70		71		72		72	
South		85		88	0.25	94	0.25	100	0.25	103	0.20	106	0.15	108	0.15	111	0.15	113	0.10	115	0.10	117	0.10
	Mancheste	85	1.00	88		94		100		103		106		108		111		113		115		117	
Southwest		108		108	0.00	108	0.00	108	0.00	109	0.05	110	0.05	111	0.05	111	0.05	113	0.10	115	0.10	117	0.10
	Hillsboro	13	0.00	3		3		3		3		3		3		3		3		3		3	
	Jaffery	41	0.00	21		21		21		21		21		21		22		22		22		23	
	Keene	54	0.00	84		84		84		85		85		86		87		88		90		91	
Strafford		68		69	0.05	73	0.05	77	0.05	79	0.10	80	0.10	82	0.10	84	0.10	87	0.15	90	0.15	93	0.15
	Rochester	68	1.00	69		73		77		79		80		82		84		87		90		93	
Upper Valley		109		110	0.05	113	0.05	117	0.05	118	0.05	119	0.05	120	0.05	120	0.05	122	0.10	124	0.10	126	0.10
	Claremont	22	0.00	19		20		21		21		21		21		21		22		22		22	
	Lebanon	76	0.00	79		82		85		85		86		87		87		89		90		92	
	Newport	11	0.00	11		11		11		11		12		12		12		12		12		12	
State Total		1,269		1,280	1.0	1,312	1.0	1,345	1.0	1,361	1.0	1,378	1.0	1,395	1.0	1,412	1.0	1,431	1.0	1,450	1.0	1,472	1.0
				11		43		65		16		17											

Aircraft Operations Forecasts

Population Market Share Forecast

Region	Airport	BA 2000		OPS 2000		Current OPBA	Population 2000	Population Ratio
Central	Concord	81	100.0%	50,430	100.0%	623		
	Region Total	**81**		**50,430**		**623**	104,152	1,286
Lakes	Bristol	3	2.3%	1,200	2.2%	400		
	Laconia	97	73.5%	34,898	64.7%	360		
	Wolfboro	15	11.4%	6,000	11.1%	400		
	Moltonboro	17	12.9%	11,870	22.0%	698		
	Region Total	**132**		**53,968**		**409**	94,690	717
Nashua	Nashua	403	100.0%	100,972	100.0%	251		
	Region Total	**403**		**100,972**		**251**	190,086	472
North Country	Berlin	26	21.3%	14,000	42.1%	538		
	Colebrook	6	4.9%	1,500	4.5%	250		
	Errol	6	4.9%	750	2.3%	125		
	Franconia	12	9.8%	4,500	13.5%	375		
	Gorham	4	3.3%	1,000	3.0%	250		
	Haverhill	13	10.7%	4,000	12.0%	308		
	Whitefield	36	29.5%	2,500	7.5%	69		
	Plymouth	16	13.1%	4,000	12.0%	250		
	Twin Mountain	3	2.5%	1,000	3.0%	333		
	Region Total	**122**		**33,250**		**273**	81,327	667
Rockingham	Hampton	70	43.5%	37,500	60.1%	536		
	Pease	91	56.5%	24,860	39.9%	273		
	Region Total	**161**		**62,360**		**387**	180,866	1,123
South	Manchester	85	100.0%	45,740	100.0%	538		
	Region Total	**85**		**45,740**		**538**	240,815	2,833
Southwest	Hillsboro	13	12.0%	1,500	2.7%	115		
	Jaffery	41	38.0%	10,648	19.4%	260		
	Keene	54	50.0%	42,646	77.8%	790		
	Region Total	**108**		**54,794**		**507**	92,652	858
Strafford	Rochester	68	100.0%	18,592	100.0%	273		
	Region Total	**68**		**18,592**		**273**	129,663	1,907
Upper Valley	Claremont	22	20.2%	10,459	17.7%	475		
	Lebanon	76	69.7%	42,749	72.5%	562		
	Newport	11	10.1%	5,730	9.7%	521		
	Region Total	**109**		**58,938**		**541**	81,326	746
	State Total	**1269**		**479,044**		**377**	1,195,579	942

Region	Airport	2001 BA	Operations	2002 BA	Operations	2003 BA	Operations	2004 BA	Operations	2005 BA	Operations	2006 BA	Operations	2007 BA	Operations	2008 BA	Operations	2009 BA	Operations	2010 BA	Operations
Central	Concord	84	52,332	85	52,955	85	52,956	87	54,201	89	55,447	91	56,693	93	57,939	95	59,185	97	60,431	99	61,677
	Region Total	**84**	**52,332**	**85**	**52,955**	**85**	**52,956**	**87**	**54,201**	**89**	**55,447**	**91**	**56,693**	**93**	**57,939**	**95**	**59,185**	**97**	**60,431**	**99**	**61,677**
Lakes	Bristol	3	1,246	3	1,255	3	1,273	3	1,291	3	1,328	3	1,355	3	1,391	4	1,428	4	1,455	4	1,510
	Laconia	101	36,233	101	36,498	103	37,027	104	37,556	107	38,614	109	39,407	112	40,465	115	41,523	118	42,316	122	43,903
	Wolfboro	16	6,230	16	6,275	16	6,366	16	6,457	17	6,639	17	6,775	17	6,957	18	7,139	18	7,275	19	7,548
	Moltonboro	18	12,324	18	12,414	18	12,594	18	12,774	19	13,134	19	13,404	20	13,764	20	14,123	21	14,393	21	14,933
	Region Total	**137**	**56,033**	**138**	**56,442**	**140**	**57,260**	**142**	**58,078**	**146**	**59,714**	**149**	**60,941**	**153**	**62,577**	**157**	**64,213**	**160**	**65,440**	**166**	**67,894**
Nashua	Nashua	418	104,918	422	105,922	427	107,177	432	108,432	438	109,938	443	111,193	448	112,448	452	113,452	456	114,456	458	114,958
	Region Total	**418**	**104,918**	**422**	**105,922**	**427**	**107,177**	**432**	**108,432**	**438**	**109,938**	**443**	**111,193**	**448**	**112,448**	**452**	**113,452**	**456**	**114,456**	**458**	**114,958**
North Country	Berlin	26	14,024	26	14,024	26	14,024	26	14,139	26	14,253	27	14,483	27	14,598	27	14,713	28	14,943	28	15,058
	Colebrook	6	1,503	6	1,503	6	1,503	6	1,515	6	1,527	6	1,552	6	1,564	6	1,576	6	1,601	6	1,613
	Errol	6	751	6	751	6	751	6	757	6	764	6	776	6	782	6	788	6	801	6	807
	Franconia	12	4,508	12	4,508	12	4,508	12	4,545	12	4,581	12	4,655	12	4,692	13	4,729	13	4,803	13	4,840
	Gorham	4	1,002	4	1,002	4	1,002	4	1,010	4	1,018	4	1,035	4	1,043	4	1,051	4	1,067	4	1,076
	Haverhill	13	4,007	13	4,007	13	4,007	13	4,040	13	4,072	13	4,138	14	4,171	14	4,204	14	4,269	14	4,302
	Whitefield	36	9,828	36	9,828	36	9,828	36	9,909	37	9,989	37	10,150	37	10,231	38	10,311	38	10,472	39	10,553
	Plymouth	16	4,007	16	4,007	16	4,007	16	4,040	16	4,072	17	4,138	17	4,171	17	4,204	17	4,269	17	4,302
	Twin Mountain	3	1,002	3	1,002	3	1,002	3	1,010	3	1,018	3	1,035	3	1,043	3	1,051	3	1,067	3	1,076
	Region Total	**122**	**33,306**	**122**	**33,306**	**122**	**33,306**	**123**	**33,579**	**124**	**33,852**	**126**	**34,398**	**127**	**34,671**	**128**	**34,944**	**130**	**35,490**	**131**	**35,763**
Rockingham	Hampton	73	39,330	74	39,795	76	40,494	77	40,959	78	41,657	79	42,123	79	42,355	80	42,821	81	43,286	82	43,752
	Pease	96	26,073	97	26,382	98	26,844	99	27,153	101	27,616	102	27,924	103	28,079	104	28,387	105	28,696	106	29,004
	Region Total	**169**	**65,403**	**171**	**66,177**	**174**	**67,338**	**176**	**68,112**	**179**	**69,273**	**181**	**70,047**	**182**	**70,434**	**184**	**71,208**	**186**	**71,982**	**188**	**72,756**
South	Manchester	88	47,344	89	47,882	90	48,420	91	48,958	92	49,496	93	50,034	94	50,572	94	50,572	95	51,110	96	51,648
	Region Total	**88**	**47,344**	**89**	**47,882**	**90**	**48,420**	**91**	**48,958**	**92**	**49,496**	**93**	**50,034**	**94**	**50,572**	**94**	**50,572**	**95**	**51,110**	**96**	**51,648**
Southwest	Hillsboro	13	1,499	13	1,499	13	1,499	13	1,513	13	1,527	13	1,541	13	1,554	14	1,582	14	1,610	14	1,652
	Jaffery	41	10,641	41	10,641	41	10,641	41	10,739	42	10,838	42	10,936	43	11,035	43	11,232	44	11,429	45	11,724
	Keene	54	42,616	54	42,616	54	42,616	55	43,011	55	43,406	56	43,800	56	44,195	57	44,984	58	45,773	60	46,957
	Region Total	**108**	**54,756**	**108**	**54,756**	**108**	**54,756**	**109**	**55,263**	**110**	**55,770**	**111**	**56,277**	**112**	**56,784**	**114**	**57,798**	**116**	**58,812**	**119**	**60,333**
Strafford	Rochester	69	18,865	69	18,865	70	19,139	70	19,139	71	19,412	72	19,686	73	19,959	75	20,506	76	20,779	78	21,326
	Region Total	**69**	**18,837**	**69**	**18,837**	**70**	**19,110**	**70**	**19,110**	**71**	**19,383**	**72**	**19,656**	**73**	**19,929**	**75**	**20,475**	**76**	**20,748**	**78**	**21,294**
Upper Valley	Claremont	22	10,657	23	10,753	23	10,849	23	10,945	23	11,041	23	11,137	24	11,233	24	11,521	25	11,713	26	12,001
	Lebanon	77	43,556	78	43,940	79	44,341	79	44,733	80	45,126	81	45,518	82	45,911	84	47,088	85	47,873	87	49,050
	Newport	11	5,838	11	5,891	11	5,943	12	5,996	12	6,049	12	6,101	12	6,154	12	6,312	12	6,417	13	6,575
	Region Total	**111**	**60,051**	**112**	**60,592**	**113**	**61,133**	**114**	**61,674**	**115**	**62,215**	**116**	**62,756**	**117**	**63,297**	**120**	**64,920**	**122**	**66,002**	**125**	**67,625**
	State Total	**1306**	**492,980**	**1317**	**496,869**	**1330**	**501,455**	**1346**	**507,407**	**1364**	**515,088**	**1382**	**521,995**	**1400**	**528,651**	**1419**	**536,767**	**1439**	**544,471**	**1461**	**553,948**

Projected Population Growth Forecast - Operations

		2000		2001		2002		2003		2004		2005		2006		2007		2008		2009		2010	
		479,044		483,307		487,609		492,339		498,247		504,923		511,487		518,137		525,391		532,746		540,737	
Pop. % Change				0.89%		0.89%		0.97%		1.20%		1.34%		1.30%		1.30%		1.40%		1.40%		1.50%	
# Change				4,263		8,565		9,031		5,908		6,677		6,564		6,649		7,254		7,355		7,991	
Region	Airport																						
Central		50,430		50,856	0.10	51,713	0.10	52,616	0.10	53,207	0.10	53,874	0.10	54,859	0.15	55,856	0.15	56,945	0.15	58,048	0.15	59,247	0.15
	Concord	50,430	1.00	50,856		51,713		52,616		53,207		53,874		54,859		55,856		56,945		58,048		59,247	
Lakes		53,968		54,394	0.10	59,566	0.10	64,827	0.10	65,418	0.10	66,420	0.15	67,404	0.15	68,402	0.15	69,490	0.15	70,593	0.15	72,191	0.20
	Bristol	1,200	0.02	1,209		1,324		1,441		1,455		1,477		1,499		1,521		1,545		1,570		1,605	
	Laconia	34,898	0.65	35,174		38,518		41,920		42,302		42,950		43,586		44,231		44,935		45,648		46,682	
	Wolfboro	6,000	0.11	6,047		6,622		7,207		7,273		7,384		7,494		7,605		7,726		7,848		8,026	
	Moultonbor	11,870	0.22	11,964		13,101		14,258		14,388		14,609		14,825		15,045		15,284		15,527		15,878	
Nashua		100,972		101,825	0.20	104,445	0.20	107,297	0.20	108,183	0.15	109,184	0.15	110,169	0.15	111,166	0.15	111,892	0.10	112,627	0.10	113,027	0.05
	Nashua	100,972	1.00	101,825		104,445		107,297		108,183		109,184		110,169		111,166		111,892		112,627		113,027	
North Country		33,250		33,250	0.00	33,250	0.00	33,250	0.00	33,545	0.05	33,879	0.05	34,207	0.05	34,540	0.05	34,903	0.05	35,270	0.05	35,670	0.05
	Berlin	14,000	0.42	14,000		14,000		14,000		14,124		14,265		14,403		14,543		14,696		14,851		15,019	
	Colebrook	1,500	0.05	1,500		1,500		1,500		1,513		1,528		1,543		1,558		1,575		1,591		1,609	
	Errol	750	0.02	750		750		750		757		764		772		779		787		796		805	
	Franconia	4,500	0.14	4,500		4,500		4,500		4,540		4,585		4,630		4,675		4,724		4,773		4,828	
	Gorham	1,000	0.03	1,000		1,000		1,000		1,009		1,019		1,029		1,039		1,050		1,061		1,073	
	Haverhill	4,000	0.12	4,000		4,000		4,000		4,036		4,076		4,115		4,155		4,199		4,243		4,291	
	Whitefield	2,500	0.08	2,500		2,500		2,500		2,522		2,547		2,572		2,597		2,624		2,652		2,682	
	Plymouth	4,000	0.12	4,000		4,000		4,000		4,036		4,076		4,115		4,155		4,199		4,243		4,291	
	Twin Moun	1,000	0.03	1,000		1,000		1,000		1,009		1,019		1,029		1,039		1,050		1,061		1,073	
Rockingham		62,360		63,426	0.25	63,676	0.25	63,926	0.25	65,107	0.20	66,109	0.15	67,094	0.15	67,758	0.10	68,484	0.10	69,219	0.10	70,019	0.10
	Hampton	37,500	0.60	38,141		38,291		38,442		39,152		39,754		40,347		40,746		41,183		41,625		42,105	
	Pease	24,860	0.40	25,285		25,385		25,484		25,955		26,355		26,747		27,012		27,301		27,595		27,913	
South		45,740		46,806	0.25	48,947	0.25	51,205	0.25	52,387	0.20	53,388	0.15	54,373	0.15	55,370	0.15	56,095	0.10	56,831	0.10	57,630	0.10
	Mancheste	45,740	1.00	46,806		48,947		51,205		52,387		53,388		54,373		55,370		56,095		56,831		57,630	
Southwest		54,794		54,794	0.00	54,794	0.00	54,794	0.00	55,089	0.05	55,423	0.05	55,751	0.05	56,084	0.05	56,809	0.10	57,545	0.10	58,344	0.10
	Hillsboro	1,500	0.03	1,500		1,500		1,500		1,508		1,517		1,526		1,535		1,555		1,575		1,597	
	Jaffery	10,648	0.19	10,648		10,648		10,648		10,705		10,770		10,834		10,899		11,040		11,183		11,338	
	Keene	42,646	0.78	42,646		42,646		42,646		42,876		43,136		43,391		43,650		44,214		44,787		45,409	
Strafford		18,592		18,805	0.05	20,937	0.05	23,070	0.05	23,661	0.10	24,328	0.10	24,985	0.10	25,650	0.10	26,738	0.15	27,841	0.15	29,040	0.15
	Rochester	18,592	1.00	18,805		20,937		23,070		23,661		24,328		24,985		25,650		26,738		27,841		29,040	
Upper Valley		58,938		59,151	0.05	60,198	0.05	61,352	0.05	61,647	0.05	61,981	0.05	62,309	0.05	62,641	0.05	63,367	0.10	64,102	0.10	64,901	0.10
	Claremont	10,459	0.18	10,497		10,683		10,887		10,940		10,999		11,057		11,116		11,245		11,375		11,517	
	Lebanon	42,749	0.73	42,904		43,663		44,500		44,714		44,956		45,194		45,435		45,961		46,495		47,074	
	Newport	5,730	0.10	5,751		5,853		5,965		5,993		6,026		6,058		6,090		6,161		6,232		6,310	
State Total		479,044		483,307	1.0	497,526	1.0	512,336	1.0	518,244	1.0	524,587	1.0	531,151	1.0	537,468	1.0	544,721	1.0	552,077	1.0	560,068	1.0
				4,263		18,482		29,028		5,908		6,343		6,564		6,317		7,254		7,355		7,991	

Operations Per Based Aircraft Forecast

Region	Airport	BA 2000		OPS 2000		Current OPBA	Population 2000	Population Ratio
Central	Concord	81	100.0%	50,430	100.0%	623		
	Region Total	**81**		**50,430**		**623**	104,152	1,286
Lakes	Bristol	3	2.3%	1,200	2.2%	400		
	Laconia	97	73.5%	34,898	64.7%	360		
	Wolfboro	15	11.4%	6,000	11.1%	400		
	Moltonboro	17	12.9%	11,870	22.0%	698		
	Region Total	**132**		**53,968**		**409**	94,690	717
Nashua	Nashua	403	100.0%	100,972	100.0%	251		
	Region Total	**403**		**100,972**		**251**	190,088	472
North Country	Berlin	26	21.3%	14,000	42.1%	538		
	Colebrook	6	4.9%	1,500	4.5%	250		
	Errol	6	4.9%	750	2.3%	125		
	Franconia	12	9.8%	4,500	13.5%	375		
	Gorham	4	3.3%	1,000	3.0%	250		
	Haverhill	13	10.7%	4,000	12.0%	308		
	Whitefield	36	29.5%	2,500	7.5%	69		
	Plymouth	16	13.1%	4,000	12.0%	250		
	Twin Mountain	3	2.5%	1,000	3.0%	333		
	Region Total	**122**		**33,250**		**273**	81,327	667
Rockingham	Hampton	70	43.5%	37,500	60.1%	536		
	Pease	91	56.5%	24,860	39.9%	273		
	Region Total	**161**		**62,360**		**387**	180,866	1,123
South	Manchester	85	100.0%	45,740	100.0%	538		
	Region Total	**85**		**45,740**		**538**	240,815	2,833
Southwest	Hillsboro	13	12.0%	1,500	2.7%	115		
	Jaffery	41	38.0%	10,648	19.4%	260		
	Keene	54	50.0%	42,646	77.8%	790		
	Region Total	**108**		**54,794**		**507**	92,652	858
Strafford	Rochester	68	100.0%	18,592	100.0%	273		
	Region Total	**68**		**18,592**		**273**	129,663	1,907
Upper Valley	Claremont	22	20.2%	10,459	17.7%	475		
	Lebanon	76	69.7%	42,749	72.5%	562		
	Newport	11	10.1%	5,730	9.7%	521		
	Region Total	**109**		**58,938**		**541**	81,326	746
	State Total	**1269**		**479,044**		**377**	1,195,579	942

Region	Airport	2001 BA	Operations	2002 BA	Operations	2003 BA	Operations	2004 BA	Operations	2005 BA	Operations	2006 BA	Operations	2007 BA	Operations	2008 BA	Operations	2009 BA	Operations	2010 BA	Operations
Central	Concord	84	52,332	85	52,955	85	52,955	87	54,201	89	55,447	91	56,693	93	57,939	95	59,185	97	60,431	99	61,677
	Region Total	84	52,332	85	52,955	85	52,955	87	54,201	89	55,447	91	56,693	93	57,939	95	59,185	97	60,431	99	61,677
Lakes	Bristol	3	1,246	3	1,255	3	1,273	3	1,291	3	1,328	3	1,355	3	1,391	4	1,428	4	1,455	4	1,510
	Laconia	101	36,233	101	36,498	103	37,027	104	37,556	107	38,614	109	39,407	112	40,465	115	41,523	118	42,316	122	43,903
	Wolfboro	16	6,230	16	6,275	16	6,366	16	6,457	17	6,639	17	6,775	17	6,957	18	7,139	18	7,275	19	7,548
	Moltonboro	18	12,324	18	12,414	18	12,594	18	12,774	19	13,134	19	13,404	20	13,764	20	14,123	21	14,393	21	14,933
	Region Total	**137**	**56,033**	**138**	**56,442**	**140**	**57,260**	**142**	**58,078**	**146**	**59,714**	**149**	**60,941**	**153**	**62,577**	**157**	**64,213**	**160**	**65,440**	**166**	**67,894**
Nashua	Nashua	418	104,918	422	105,922	427	107,177	432	108,432	438	109,938	443	111,193	448	112,448	452	113,452	456	114,456	458	114,958
	Region Total	**418**	**104,918**	**422**	**105,922**	**427**	**107,177**	**432**	**108,432**	**438**	**109,938**	**443**	**111,193**	**448**	**112,448**	**452**	**113,452**	**456**	**114,456**	**458**	**114,958**
North Country	Berlin	26	14,024	26	14,024	26	14,024	26	14,139	26	14,253	27	14,483	27	14,598	27	14,713	28	14,943	28	15,058
	Colebrook	6	1,503	6	1,503	6	1,503	6	1,515	6	1,527	6	1,552	6	1,564	6	1,576	6	1,601	6	1,613
	Errol	6	751	6	751	6	751	6	757	6	764	6	776	6	782	6	788	6	801	6	807
	Franconia	12	4,508	12	4,508	12	4,508	12	4,545	12	4,581	12	4,655	12	4,692	13	4,729	13	4,803	13	4,840
	Gorham	4	1,002	4	1,002	4	1,002	4	1,010	4	1,018	4	1,035	4	1,043	4	1,051	4	1,067	4	1,076
	Haverhill	13	4,007	13	4,007	13	4,007	13	4,040	13	4,072	13	4,138	14	4,171	14	4,204	14	4,269	14	4,302
	Whitefield	36	9,828	36	9,828	36	9,828	36	9,909	37	9,989	37	10,150	37	10,231	38	10,311	38	10,472	39	10,553
	Plymouth	16	4,007	16	4,007	16	4,007	16	4,040	16	4,072	17	4,138	17	4,171	17	4,204	17	4,269	17	4,302
	Twin Mountain	3	1,002	3	1,002	3	1,002	3	1,010	3	1,018	3	1,035	3	1,043	3	1,051	3	1,067	3	1,076
	Region Total	**122**	**33,306**	**122**	**33,306**	**122**	**33,306**	**123**	**33,579**	**124**	**33,852**	**126**	**34,398**	**127**	**34,671**	**128**	**34,944**	**130**	**35,490**	**131**	**35,763**
Rockingham	Hampton	73	39,330	74	39,795	76	40,494	77	40,959	78	41,657	79	42,123	79	42,355	80	42,821	81	43,286	82	43,752
	Pease	96	26,073	97	26,382	98	26,844	99	27,153	101	27,616	102	27,924	103	28,079	104	28,387	105	28,696	106	29,004
	Region Total	**169**	**65,403**	**171**	**66,177**	**174**	**67,338**	**176**	**68,112**	**179**	**69,273**	**181**	**70,047**	**182**	**70,434**	**184**	**71,208**	**186**	**71,982**	**188**	**72,756**
South	Manchester	88	47,344	89	47,882	90	48,420	91	48,958	92	49,496	93	50,034	94	50,572	94	50,572	95	51,110	96	51,648
	Region Total	**88**	**47,344**	**89**	**47,882**	**90**	**48,420**	**91**	**48,958**	**92**	**49,496**	**93**	**50,034**	**94**	**50,572**	**94**	**50,572**	**95**	**51,110**	**96**	**51,648**
Southwest	Hillsboro	13	1,499	13	1,499	13	1,499	13	1,513	13	1,527	13	1,541	13	1,554	14	1,582	14	1,610	14	1,652
	Jaffery	41	10,641	41	10,641	41	10,641	41	10,739	42	10,838	42	10,936	43	11,035	43	11,232	44	11,429	45	11,724
	Keene	54	42,616	54	42,616	54	42,816	55	43,011	55	43,406	56	43,800	56	44,195	57	44,984	58	45,773	60	46,957
	Region Total	**108**	**54,756**	**108**	**54,756**	**108**	**54,756**	**109**	**55,263**	**110**	**55,770**	**111**	**56,277**	**112**	**56,784**	**114**	**57,798**	**116**	**58,812**	**119**	**60,333**
Strafford	Rochester	69	18,865	69	18,865	70	19,139	70	19,139	71	19,412	72	19,686	73	19,959	75	20,506	76	20,779	78	21,326
	Region Total	**69**	**18,837**	**69**	**18,837**	**70**	**19,110**	**70**	**19,110**	**71**	**19,383**	**72**	**19,656**	**73**	**19,929**	**75**	**20,475**	**76**	**20,748**	**78**	**21,294**
Upper Valley	Claremont	22	10,657	23	10,753	23	10,849	23	10,945	23	11,041	23	11,137	24	11,233	24	11,521	25	11,713	25	12,001
	Lebanon	77	43,556	78	43,949	79	44,341	79	44,733	80	45,126	81	45,518	82	45,911	84	47,088	85	47,873	87	49,050
	Newport	11	5,838	11	5,891	11	5,943	12	5,996	12	6,049	12	6,101	12	6,154	12	6,312	12	6,417	13	6,575
	Region Total	**111**	**60,051**	**112**	**60,592**	**113**	**61,133**	**114**	**61,674**	**115**	**62,215**	**116**	**62,756**	**117**	**63,297**	**120**	**64,920**	**122**	**66,002**	**125**	**67,625**
	State Total	**1306**	**492,980**	**1317**	**496,869**	**1330**	**501,455**	**1346**	**507,407**	**1364**	**515,088**	**1382**	**521,995**	**1400**	**528,651**	**1419**	**536,767**	**1439**	**544,471**	**1461**	**553,948**

Trend Line Analysis - Operations

Region	Airport	Operations 1990	Operations 2000	% Change 1990-2000	Annual Change	Airport Share Of Region 2000		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Central	*Concord*	70,570	50,430	-28.5%	-3.3%	100.0%	Concord	50,430	48,764	47,152	45,594	44,088	42,631	41,222	39,860	38,543	37,269	36,038
	Region Total	**70,570**	**50,430**	**-28.5%**	**-3.3%**		**Concord**	**50,430**	**48,764**	**47,152**	**45,594**	**44,088**	**42,631**	**41,222**	**39,860**	**38,543**	**37,269**	**36,038**
Lakes	Bristol	1,200	1,200	0.0%	0	2.2%	Bristol	1,200	1,151	1,104	1,059	1,015	974	934	896	859	824	790
	Laconia	62,309	34,898	-44.0%	-5.6%	64.7%	Laconia	34,898	33,470	32,100	30,786	29,526	28,317	27,158	26,046	24,980	23,958	22,977
	Wolfboro	11,204	6,000	-46.4%	-6.1%	11.1%	Wolfboro	6,000	5,754	5,519	5,293	5,076	4,869	4,669	4,478	4,295	4,119	3,950
	Moltonboro	8,455	11,870	40.4%	3.5%	22.0%	Moltonboro	11,870	11,384	10,918	10,471	10,043	9,632	9,237	8,859	8,497	8,149	7,815
	Region Total	**81,968**	**53,968**	**-34.2%**	**-4.1%**			**53,968**	**51,759**	**49,640**	**47,608**	**45,660**	**43,791**	**41,998**	**40,279**	**38,630**	**37,049**	**35,533**
Nashua	*Nashua*	243,340	100,972	-58.5%	-8.4%		Nashua	100,972	92,470	84,683	77,553	71,022	65,042	59,565	54,550	49,956	45,750	41,898
	Region Total	**243,340**	**100,972**	**-58.5%**	**-8.4%**			**100,972**	**92,470**	**84,683**	**77,553**	**71,022**	**65,042**	**59,565**	**54,550**	**49,956**	**45,750**	**41,898**
North Cour	*Berlin*	9,038	14,000	54.9%	4.5%	42.1%	Berlin	14,000	13,452	12,925	12,419	11,932	11,465	11,016	10,585	10,170	9,772	9,389
	Colebrook	1,500	1,500	0.0%	0	4.5%	Colebrook	1,500	1,441	1,385	1,331	1,278	1,228	1,180	1,134	1,090	1,047	1,006
	Errol	1,761	750	-57.4%	-8.2%	2.3%	Errol	750	721	692	665	639	614	590	567	545	523	503
	Franconia	6,264	4,500	-28.2%	-3.3%	13.5%	Franconia	4,500	4,324	4,154	3,992	3,835	3,685	3,541	3,402	3,269	3,141	3,018
	Gorham	4,000	1,000	-75.0%	-12.9%	3.0%	Gorham	1,000	961	923	887	852	819	787	756	726	698	671
	Haverhill	2,736	4,000	46.2%	3.9%	12.0%	Haverhill	4,000	3,843	3,693	3,548	3,409	3,276	3,147	3,024	2,906	2,792	2,683
	Mt. Washington	7,363	2,500	-66.0%	-10.2%	7.5%	Mt. Washingto	2,500	2,402	2,308	2,218	2,131	2,047	1,967	1,890	1,816	1,745	1,677
	Plymouth	11,512	4,000	-65.3%	-10.0%	12.0%	Plymouth	4,000	3,843	3,693	3,548	3,409	3,276	3,147	3,024	2,906	2,792	2,683
	Twin Mountain	5,405	1,000	-81.5%	-15.5%	3.0%	Twin Mountain	1,000	961	923	887	852	819	787	756	726	698	671
	Region Total	**49,579**	**33,250**	**-32.9%**	**-3.9%**			**33,250**	**31,948**	**30,697**	**29,494**	**28,339**	**27,229**	**26,163**	**25,138**	**24,154**	**23,208**	**22,299**
Rockingha	Hampton	34,491	37,500	8.7%	0.8%	60.1%	Hampton	37,500	38,700	39,939	41,217	42,536	43,898	45,303	46,752	48,249	49,793	51,387
	*Pease **	11,017	24,860	125.7%	8.5%	39.9%	Pease *	24,860	25,656	26,477	27,324	28,199	29,101	30,033	30,994	31,986	33,009	34,066
	Region Total	**45,508**	**62,360**	**37.0%**	**3.2%**			**62,360**	**64,356**	**66,416**	**68,541**	**70,735**	**72,999**	**75,335**	**77,746**	**80,234**	**82,802**	**85,452**
South	*Manchester*	165,822	45,740	-72.4%	-12.1%	100.0%	Manchester	45,740	40,213	35,353	31,081	27,325	24,023	21,120	18,568	16,324	14,351	12,617
	Region Total	**165,822**	**45,740**	**-72.4%**	**-12.1%**			**45,740**	**40,213**	**35,353**	**31,081**	**27,325**	**24,023**	**21,120**	**18,568**	**16,324**	**14,351**	**12,617**
Southwest	Hillsboro	10,000	1,500	-85.0%	-17.3%	2.7%	Hillsboro	1,500	1,461	1,423	1,385	1,349	1,314	1,279	1,246	1,213	1,182	1,151
	Jaffery	17,374	10,648	-38.7%	-4.8%	19.4%	Jaffery	10,648	10,370	10,098	9,834	9,577	9,327	9,083	8,845	8,614	8,389	8,169
	Keene	44,046	42,646	-3.2%	-0.3%	77.8%	Keene	42,646	41,531	40,445	39,387	38,357	37,354	36,377	35,426	34,499	33,597	32,718
	Region Total	**71,420**	**54,794**	**-23.3%**	**-2.6%**			**54,794**	**53,361**	**51,966**	**50,607**	**49,283**	**47,994**	**46,739**	**45,517**	**44,327**	**43,167**	**42,038**
Strafford	*Rochester*	23,736	18,592	-21.7%	-2.4%		Rochester	18,592	18,143	17,706	17,278	16,861	16,455	16,057	15,670	15,292	14,923	14,563
	Region Total	**23,736**	**18,592**	**-21.7%**	**-2.4%**			**18,592**	**18,143**	**17,706**	**17,278**	**16,861**	**16,455**	**16,057**	**15,670**	**15,292**	**14,923**	**14,563**
Upper Valle	*Claremont*	9,925	10,459	5.4%	0.5%	17.7%	Claremont	10,459	9,942	9,451	8,985	8,541	8,119	7,718	7,337	6,975	6,630	6,303
	Lebanon	76,335	42,749	-44.0%	-5.6%	72.5%	Lebanon	42,749	40,638	38,631	36,723	34,909	33,185	31,546	29,988	28,507	27,099	25,761
	Newport	11,545	5,730	-50.4%	-6.8%	9.7%	Newport	5,730	5,447	5,178	4,922	4,679	4,448	4,228	4,020	3,821	3,632	3,453
	Region Total	**97,805**	**58,938**	**-39.7%**	**-4.9%**			**58,938**	**56,027**	**53,260**	**50,630**	**48,129**	**45,752**	**43,493**	**41,345**	**39,303**	**37,362**	**35,516**
Total Airport Activity		**849,748**	**479,044**	**-43.6%**	**-5.6%**			**479,044**	**457,040**	**436,873**	**418,386**	**401,443**	**385,916**	**371,693**	**358,672**	**346,763**	**335,882**	**325,954**

* 1990 Data for Pease represents 1993 data, the year Pease started civilian operaitons

Appendix 7-A – New Hampshire Statute Title XXXIX, Airports, Chapter 424 Airport Zoning

State of New Hampshire
Revised Statutes Online

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Chapter 424: Airport Zoning

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:1

424:1 Definitions. – As used in this chapter unless the context otherwise requires:

I. "Airport" means any area of land or water, whether constructed or not, which has been approved by the commissioner as a site for the landing and taking-off of aircraft or utilized or to be utilized by the public as a point of arrival or departure by air.

II. "Airport hazard" means any structure, tree, smoke, steam, dust or other substance which obstructs the aerial approaches of a publicly owned airport or impairs the reasonable visibility in the vicinity thereof, electrical impulses and disturbances which interfere with radio aids or communications and lights which might result in glare in the vision of pilots of aircraft or be confused with airport lights.

III. An airport is "publicly-owned" if the portion thereof used for the landing and taking-off of aircraft is owned by a governmental body, political subdivision, public agency, or other public corporation.

IV. "Department" means the department of transportation.

V. "Person" means any individual, firm, co-partnership, corporation, company, association, joint stock association or body politic, and includes any trustee, receiver, assignee, or other similar representative thereof.

VI. "Structure" means any object constructed or installed by man, including such objects although regulated or licensed by other provisions of law.

VII. "Tree" means any object of natural growth.

Source. 1941, 145:1; 199:40. RL 51:78. RSA 424:1. 1955, 58:1. 1985, 402:6, I(c)(3), 32.

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:2

424:2 Airport Hazards Not in Public Interest. – It is hereby found and declared that an airport hazard endangers the lives and property of users of the airport and of occupants of land in its vicinity, and also, if of the obstruction type, in effect reduces the size of the area available for the landing, taking-off and maneuvering of aircraft, thus tending to destroy or impair the utility of the airport and the public investment therein, and is therefore not in the interest of the public health, public safety, or general welfare.

Source. 1941, 145:2. RL 51:79.

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:3

424:3 Preparation of Airport-Approach Plans. – The department of transportation is hereby empowered and directed to formulate and adopt, and from time to time as may be necessary revise, an airport-approach plan for each publicly-owned airport in the state. Each such plan shall indicate the circumstances in which structures and trees are or would be airport hazards, the area within which measures for the protection of the airport's aerial approaches should be taken, and what the height limits and other objectives of such measures should be. In adopting or revising any such plan, the department shall consider, among other things, the character of the flying operations expected to be conducted at the airport, the nature of the terrain, the height of existing structures and trees above the level of the airport, and the practicability of lowering or removing existing obstructions, and all other material matters, and the department may obtain and consider the views of the agency of the federal government charged with the fostering of civil aeronautics as to the aerial approaches necessary to safe flying operations at the airport.

Source. 1941, 145:3. RL 51:80. RSA 424:3. 1985, 402:6, I(c)(3).

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:4

424:4 Privately-owned Airports. – The department of transportation is hereby empowered and directed to formulate and adopt, and from time to time as may be necessary revise, an airport-approach plan for such airports as are privately owned but which have been licensed for commercial operation, have facilities available for public use and are necessary in the opinion of the department for the maintenance of an effective airway system in the state. Every privately-owned airport so designated by the department is hereby declared to be eligible for zoning protection and for the purposes hereof shall be deemed to be a publicly-owned airport for the purposes of airport zoning as provided in this chapter.

Source. 1949, 53:2. RSA 424:4. 1985, 402:6, I(c)(3).

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:5

424:5 Adoption of Airport Zoning Regulations. –

I. Every town having within its territorial limits an airport, or an area approved as an airport site by the commissioner, shall adopt, administer and enforce, under the police power and in the manner and upon the conditions hereinafter prescribed, airport zoning regulations applicable to such area, which regulations shall divide the area into zones, and, within such zones, specify the land uses permitted, regulate and restrict the height to which structures or trees may be erected or allowed to grow, and regulate and restrict the creation and discharge of smoke, steam, dust or other obstructions to visibility, electrical impulses and disturbances which interfere with radio aids or communication and regulate and restrict lighting as may be necessary to effectuate the safe approach to the airport.

II. In the event that a town has adopted, or hereafter adopts, a general zoning ordinance regulating, among other things, the height of buildings, any airport zoning regulations adopted for the same area or portion thereof under this chapter, may be incorporated in and made a part of such general zoning regulations, and be administered and enforced in connection therewith, but such general zoning regulations shall not limit the effectiveness or scope of the regulations adopted hereunder.

III. Any zoning or other regulations applicable to any area within which, according to an airport-approach plan adopted by the department, measures should be taken for the protection of airport approaches, including not only any airport zoning regulations adopted under this chapter but any zoning or other regulations dealing with the same or similar matters that have been or may be adopted under authority other than that conferred by this chapter, shall be consistent with, and conform to, the department's approach plan for such area, and shall be amended from time to time as may be necessary to conform to any revision of the plan that may be made by the department.

IV. All airport zoning regulations adopted hereunder shall be reasonable, and none shall require the removal, lowering, or other change or alteration of any structure or tree not conforming to the regulations when adopted or amended, or otherwise interfere with the continuance of any nonconforming use, except as provided in RSA 424:6, I.

V. If any city or town fails to adopt within a reasonable time airport zoning regulations, the department may, for the protection of the public safety, adopt and from time to time as may be necessary amend or repeal such regulations for such city or town until airport zoning regulations herein provided for are adopted by such city or town.

Source. 1941, 145:4. RL 51:81. RSA 424:5. 1955, 58:2. 1985, 402:6, I(c)(3).

TITLE XXXIX
AERONAUTICS
CHAPTER 424
AIRPORT ZONING
Section 424:6

424:6 Permits and Variances. –

I. PERMITS. Where advisable to facilitate the enforcement of zoning regulations adopted pursuant to this chapter, a system may be established for granting permits to establish or construct new structures and other uses and to replace existing structures and other uses or make substantial changes therein or substantial repairs thereof. In any event, before any nonconforming structure or tree may be replaced, substantially altered or repaired, rebuilt, allowed to grow higher, or replanted, a permit must be secured from the administrative agency authorized to administer and enforce the regulations, authorizing such replacement, change or repair. No such permit shall be granted that would allow the structure or tree in question to be made higher or become a greater hazard to air navigation than it was when the applicable regulation was adopted; and whenever the administrative agency determines that a nonconforming structure or tree has been abandoned or more than 80 percent torn down, destroyed, deteriorated, or decayed: (a) no permit shall be granted that would allow said structure or tree to exceed the applicable height limit or otherwise deviate from the zoning regulations, but a permit shall be issued as of right if the structure as erected or altered is in conformance with the regulations or will not constitute a greater hazard than the structure that is replaced or altered; and (b) whether application is made for a permit under this paragraph or not, the said agency may by appropriate action compel the owner of the nonconforming structure or tree to lower, remove, reconstruct, or equip such object as may be necessary to conform to the regulations. Except as indicated, all applications for permits for replacement, change or repair of nonconforming uses shall be granted.

II. VARIANCES. Any person desiring to erect any structure, or increase the height of any structure, or permit the growth of any tree, or otherwise use his property in violation of airport zoning regulations adopted hereunder may apply to the zoning board of adjustment for a variance from the zoning regulations in question. Such variances shall be allowed where a literal application or enforcement of the regulations would result in practical difficulty or unnecessary hardship and the relief granted would not be contrary to the public interest but do substantial justice and be in accordance with the spirit of the regulations.

III. OBSTRUCTION MARKING AND LIGHTING. In granting any permit or variance under this section, the administrative agency or zoning board of adjustment may, if it deems such action advisable to effectuate the purposes hereof and reasonable in the circumstances, so condition such permit or variance as to require the owner of the structure or tree in question to permit the political subdivision, at its own expense, to install, operate, and maintain suitable obstruction markers and obstruction lights thereon.

Source. 1941, 145:5. RL 51:82. 2001, 40:1, eff. Aug. 7, 2001.

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:6-a

424:6-a Application of Zoning and Planning Laws. – The provisions of title LXIV shall apply to procedures for adoption of local airport zoning regulations, the administration and enforcement of the requirements of local airport zoning regulations, and procedures for rehearing and appeal from any action taken by a local land use board, building inspector, or the local legislative body with respect to airport zoning regulations.

Source. 2001, 40:2, eff. Aug. 7, 2001.

TITLE XXXIX
AERONAUTICS

CHAPTER 424
AIRPORT ZONING

Section 424:10

424:10 Acquisition of Air Rights. – In any case in which: (1) it is desired to remove, lower, or otherwise terminate a nonconforming use; or (2) the approach protection necessary according to the department's airport-approach plan cannot, because of constitutional limitations, be provided by airport zoning regulations hereunder; or (3) it appears advisable that the necessary approach protection be provided by acquisition of property rights rather than by airport zoning regulations, the town within which the property or nonconforming use is located, the town owning the airport or served by it, or the governor and council, upon recommendation of the department, may acquire, by purchase, grant, or condemnation in the manner provided by law by which towns or the governor and council are authorized to acquire real property for public purposes, such an air right, easement, or other estate or interest in the property or nonconforming use in question, and so may acquire a substitute property, structure and easement and convey the same to anyone whose structures, easements and property are or may be a nonconforming use, as may be necessary to effectuate the purposes hereof.

Source. 1941, 145:9. RL 51:86. RSA 424:10. 1985, 402:6, I(c)(3).

Appendix 7-B – NHDES Worksheets

State of New Hampshire – Department of Transportation

CATEGORICAL EXCLUSION
NON-PROGRAMMATIC ENVIRONMENTAL IMPACT SUMMARY

Action/Project Name: ______________________ **State Project Number:** __________

Federal Project Number: ______________________

Description of Project (Attach Location Map, As Appropriate):

Project Purpose and Need:

Alternatives Considered:

Alt. No. 1

Alt. No. 2

Alt. No. 3

Project Setting:

Urban ☐ Village ☐ Rural ☐

Scenic Byway/NH Scenic Road? Yes ☐ No ☐

National/State Forest Highway? Yes ☐ No ☐

Unique Features: ______________________

State of New Hampshire – Department of Transportation

CONTACT LETTERS SENT & REPLIES RECEIVED

AGENCY/ORGANIZATION	CONTACT	LETTER SENT	REPLY RECV'D

LOCATION MAP

State of New Hampshire – Department of Transportation

IMPACT ASSESSMENT SUMMARY

1. Air Quality — NOT APPLICABLE ☐

Is project located in ozone nonattainment area? Yes ☐ No ☐
Is project located in carbon monoxide nonattainment area? Yes ☐ No ☐
Is project included in conformity determinations? Yes ☐ No ☐ Year ___.
Is project exempt from conformity determination? Yes ☐ No ☐
Is project exempt from CO analysis? Yes ☐ No ☐
Exemption Code (from most recent conformity document): ___.
Has project changed since the conformity analysis? Yes ☐ No ☐

Is project exempt from NEPA requirement to consider air quality? Yes ☐ No ☐

For Projects Requiring a Carbon Monoxide Microscale Analysis:

Maximum Predicted 1-Hour Concentrations (ppm):

	YEAR	CONCENTRATRIONS		
Current Year	( )	___ to ___	NAAQS Violations?	Yes ☐ No ☐
Opening Year	( )build	___ to ___	NAAQS Violations?	Yes ☐ No ☐
Opening Year	( )no-build	___ to ___	NAAQS Violations?	Yes ☐ No ☐
Design Year	( )build	___ to ___	NAAQS Violations?	Yes ☐ No ☐
Design Year	( )no-build	___ to ___	NAAQS Violations?	Yes ☐ No ☐

Comments: ____________________

2. Historic/Archaeological Resources (Section 106 or RSA 227-C:9) — NOT APPLICABLE ☐

Historic Resources Investigated? Yes ☐ No ☐ National Register Eligible? Yes ☐ No ☐
Comments ____________________

Archaeological Resources Investigated? Yes ☐ No ☐ National Register Eligible? Yes ☐ No ☐
Comments ____________________

Findings: No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect ☐

Agency Comments: ____________________

Review Completed: ________

Advisory Council Consultation Comments (when Adverse Effects are found): ____________________

Review Completed: ________

Mitigation (Describe): ____________________

State of New Hampshire – Department of Transportation

3. Threatened or Endangered Species/Natural Communities — NOT APPLICABLE ☐

Endangered species in project area? Yes ☐ No ☐ In vicinity? Yes ☐ No ☐
Section 7 consultation necessary? Yes ☐ No ☐

Comments from NH Natural Heritage Inventory: ______________________
A program of the NH Department of Resources and Economic Development

____
____
____

Comments from State, Federal, or private agency: ______________________

____
____
____

Mitigation (Describe): ______________________

____
____
____

4. Floodplains or Floodways — NOT APPLICABLE ☐

Does the proposed project encroach in the floodplain? Yes ☐ No ☐ Acreage _____ Volume ___

Significance (Describe): ______________________

____
____

Does the proposed project encroach in the floodway? Yes ☐ No ☐ Acreage _____ Volume ___

Significance (Describe): ______________________

____
____

Coordination With FEMA Required? Yes ☐ No ☐

Comments from NH Office of Emergency Management: ______________________

____
____

Comments from NH Office of State Planning: ______________________

____
____

Comments from Federal Highway Administration: ______________________

____
____

Comments from US Army Corps of Engineers: ______________________

____
____

Mitigation (Describe): ______________________

____
____

State of New Hampshire – Department of Transportation

5. Noise

NOT APPLICABLE ☐

Is project a Type I Highway Project? Yes ☐ No ☐
Are There Receptors Present? Yes ☐ No ☐: # of Residential ___ # Of Commercial ___.

Year		Range of Noise Levels (dBA Leq) Residential (R)	Commercial (C)	Noise Abatement Criterion Impacts # Approaching	# At or Exceeding
____	No-Build	____ to ____	____ to ____	Res, Comm	Res, Comm
____	Build	____ to ____	____ to ____	Res, Comm	Res, Comm
____	No-Build	____ to ____	____ to ____	Res, Comm	Res, Comm
____	Build	____ to ____	____ to ____	Res, Comm	Res, Comm

Will completed project increase noise levels 3 dBA or more? Yes ☐ No ☐
15 dBA or More? Yes ☐ No ☐

Are mitigation measures included in project? Yes ☐ No ☐
Explain: ____________________

Has the municipality received a copy of the traffic noise assessment? Yes ☐ No ☐

6. Right-of-Way

NOT APPLICABLE ☐

Is additional ROW required? Yes ☐ No ☐ Acreage ___.
Are improved properties acquired? Yes ☐ No ☐ Acreage ___.
Displacement: Rental Units ___, Private Homes ___, Businesses ___.
Relocation Report received from the Bureau of Right-of-Way? Yes ☐ No ☐

Relocation services to be provided? ____________________

Properties available for relocation? ____________________

Public Land (Federal State, or Municipal) Involvement? Yes ☐ No ☐ (See Section 7 below.)

7. Section 4(f) Resources

NOT APPLICABLE ☐

Public Parkland Impacts?	Yes ☐	No ☐	Temporary ☐	Permanent ☐
Public Recreational Area Impacts?	Yes ☐	No ☐	Temporary ☐	Permanent ☐
Public Wildlife/Waterfowl Refuge Impacts?	Yes ☐	No ☐	Temporary ☐	Permanent ☐
Historic Properties Impacted?	Yes ☐	No ☐	Temporary ☐	Permanent ☐
LCIP Recreational Land?	Yes ☐	No ☐	Temporary ☐	Permanent ☐

Acquisition required? Yes ☐ No ☐ Area___.

Comments: ____________________

Non-acquisition use of 4(f) property (23 CFR 771.135(p)):

Noise Level Increase	Yes ☐	No ☐	Visual Intrusion	Yes ☐	No ☐
Access Restriction	Yes ☐	No ☐	Vibration Impacts	Yes ☐	No ☐
Ecological Intrusion	Yes ☐	No ☐			

Programmatic 4(f) Evaluation ☐ 4(f) Evaluation ☐

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For impacts to recreational 4(f) resources, obtain a statement of significance from official with jurisdiction:
Date Requested: ___. Date Received: ___.

8. Section 6(f) Resources — NOT APPLICABLE ☐

Are there impacts to any properties acquired or improved with funds made available through Section 6(f) of the Federal Land and Water Conservation Fund Act? Yes ☐ No ☐ Temporary ☐ Permanent ☐

Recommendation received from State Liaison Officer? Yes ☐ No ☐
Coordination with the US Department of the Interior necessary? Yes ☐ No ☐

Comments: ______________________________

9. Water Quality/Streams, Rivers, and Lakes — NOT APPLICABLE ☐

Erosion Control Plan Required? Yes ☐ No ☐
Groundwater Impacts? Yes ☐ No ☐
Surface Water Impacts? Yes ☐ No ☐
Wells Impacted? Yes ☐ No ☐ Private☐ Community☐ Municipal☐
Stream Alteration Required? Yes ☐ No ☐

Coordination Required on:
Public Waters Access? Yes ☐ No ☐
Shoreland Protection? Yes ☐ No ☐
Lakes Management? Yes ☐ No ☐
Wild and Scenic River? Yes ☐ No ☐
NH Designated River? Yes ☐ No ☐

Comments: ______________________________

10. Wetlands — NOT APPLICABLE ☐

Will this project impact lands under the jurisdiction of the NH Wetlands Bureau? Yes ☐ No ☐

Type of permit required: *expedited* ☐ *minimum* ☐ *minor* ☐ *major* ☐.

Does this project qualify under the ACOE NHSPGP? Yes ☐ No ☐.

ACOE Individual Permit required? Yes ☐ No ☐.

Landform Type	USF&W Classification	Permanent Impacts	Temporary Impacts
	Total		
Non-Wetland Bank (Jurisdictional land adjacent to lakes, ponds, streams and rivers)	N/A		
Upland Portion of the Tidal Buffer Zone (Land within 100' of the highest observable tide line)	N/A		
	Total		

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Estimated length of permanent impacts to banks ___ ft.
Estimated length of permanent impacts to channel ___ ft.
Estimated volume of impacts in Public Waters ___ cu. yd.
If a channel is to be constructed, or a culvert or a bridge is to be installed, give the distance the flow of water is to be rerouted ___ ft.
If waterfront project, indicate total length of shoreline frontage ___ ft.
If wall, riprap, beach, or similar project, indicate length of proposed shoreline impact ___ ft.

Describe Mitigation: ______________________________

Comments: ______________________________

11. Land Conservation Investment Program (LCIP) — NOT APPLICABLE ☐

Will land or easements obtained through the LCIP be impacted? Yes ☐ No ☐
(Contact the LCIP Coordinator at the NH Office of State Planning)
Have the impacts been reviewed at a monthy Natural Resource Agency Meeting? Yes ☐ No ☐
Has an application been made to CORD demonstrating compliance with RSA 162-C:6? Yes ☐ No ☐

Comments: ______________________________

12. Wildlife and Fisheries — NOT APPLICABLE ☐

Does the project impact important habitat? Yes ☐ No ☐
Does the project have the potential to impact Essential Fish Habitat? Yes ☐ No ☐

Comments from State, Federal, or private agency: ______________________________

Mitigation (Describe): ______________________________

13. Agricultural Land — NOT APPLICABLE ☐

Does the project impact agricultural land? Yes ☐ No ☐ Active farmland? Yes ☐ No ☐
Does project area contain prime, unique, statewide or local important farmland? Yes ☐ No ☐
Completion of Form AD-1006 Required? Yes ☐ No ☐

Comments: ______________________________

14. Coast Guard — NOT APPLICABLE ☐

Does the project involve work in navigable waters? Yes ☐ No ☐
Does the project impact a historic bridge? Yes ☐ No ☐
Does the project require a Coast Guard Permit? Yes ☐ No ☐

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Determination of FHWA and/or Coast Guard: ______________________________

Comments: ______________________________

15.	Hazardous/Contaminated Materials Liabilities	NOT APPLICABLE ☐

Does the project area includes sites from NHDES Groundwater Protection Bureau list? Yes ☐ No ☐
ISA completed and attached? Yes ☐ No ☐ Additional investigation required? Yes ☐ No ☐
CERCLA involvement? Yes ☐ No ☐
Remediation required? Yes ☐ No ☐

Comments: ______________________________

16.	Public Participation Opportunity	NOT APPLICABLE ☐

Public Informational Meeting? Yes ☐ No ☐ Date ___
Public Hearing Required? Yes ☐ No ☐ Date ___
On site meeting? Yes ☐ No ☐ Date ___

Comments: ______________________________

17.	Social and Economic Impacts	NOT APPLICABLE ☐

Is the project consistent with local and regional land use plans? Yes ☐ No ☐

Describe: ______________________________

Neighborhood and community impacts? Yes ☐ No ☐

☐ Churches ☐ Handicapped
☐ Schools ☐ Low Income Housing
☐ Elderly ☐ Emergency Service Facilities/Vehicles
☐ Minorities ☐ Environmental Justice (Executive Order 12898)

Describe ______________________________

State of New Hampshire – Department of Transportation

Impacts to local businesses? Yes ☐ No ☐ Temporary ☐ Permanent ☐

Describe: ____

____

____

____

18.	Environmental Justice	NOT APPLICABLE ☐

Does the area affected by the proposed action contain minority or low-income populations? Yes ☐ No ☐

Are the anticipated environmental impacts resulting from the proposed action likely to fall disproportionately on the minority and/or low income populations? Yes ☐ No ☐

Comments: ____

____

____

____

19.	Traffic Patterns	NOT APPLICABLE ☐

Temporary detour required? Yes ☐ No ☐ Length___
Temporary bridge required? Yes ☐ No ☐ Impacts? Yes ☐ No ☐

Describe: ____

____

____

Permanent changes to traffic patterns? Yes ☐ No ☐

Describe: ____

____

____

20	Construction Impacts:	NOT APPLICABLE ☐

Describe: ____

____

____

____

____

____

____

____

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21. Field Inspection Comments:

22. Coordination

Meeting	Date	Comments

23. Environmental Mitigation and/or Commitments:

Note: When appropriate, more detailed descriptions of resources and an explanation of the impact analysis should be attached to this form.

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Evaluated by: ______________________________ ____________
(Bureau of Environment Representative) Date
(Title)

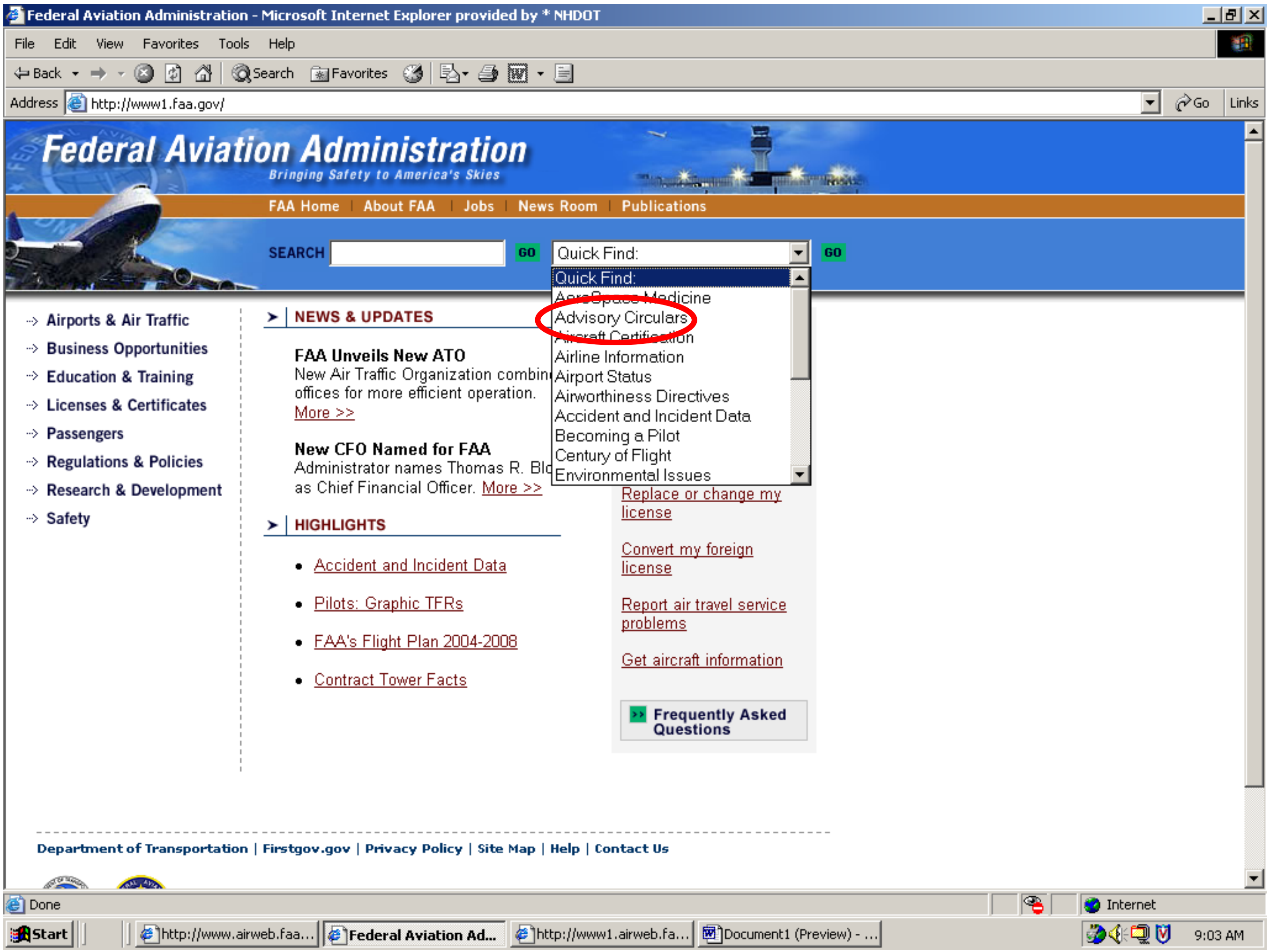
or

Evaluated by: ______________________________ ____________
(Consulting Firm Representative) Date
(Consulting Firm Name)

Accepted by: ______________________________ ____________
(Bureau of Environment Representative) Date
(Title)

Appendix 7-C – Sample Airport Zoning Ordinance

The most current version of AC-150/5190-4A is available on the FAA websites at www.faa.gov by searching the FAA Advisory Circular Download list.



As of the printing of this document, the direct link for AC-150/5190-4A was the following:

http://www1.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/ACNumber/35E1883669B46C6A86256C690074E920?OpenDocument

However, please be aware that these links may change from time to time.

Appendix 8-A – The NASCAR Air Force

The Nascar Air Force

Racing crews take to the air to meet demanding schedules

By Alton K. Marsh (From *AOPA Pilot*, February 1999.)

Forty-three stock cars are thundering around the track in the MBNA Gold 400 faster than the average cruising speed of many general aviation airplanes. The bowl-shaped stands of the Dover Downs International Speedway in Dover, Delaware, provide a great view for spectators while amplifying the screaming clatter. On this Sunday afternoon, the few greenhorn spectators without earplugs hear only the rattling of the anvil and stirrup bones in their ears—perceived by the brain as a buzz saw attacking concrete. They won't hear well again until Monday afternoon.

It's surprising that the pistons remain in the engine blocks of these 725-horsepower Winston Cup Series engines. For those new to racing the Winston Cup Series is, to borrow a phrase, king of the hill, top of the heap. Advertising-covered race cars flash before fans who are dressed in T-shirts decorated in their favorite car's gaudy colors. The aroma of fried chicken and hamburgers from sponsors' VIP tents behind the bleachers mingles with the smell of burning rubber from new racing tires growing old fast.

Nascar Winston Cup races attract 6 million spectators and 177 million television viewers each year. Spectator interest has exploded in the last five years, making Nascar—the National Association for Stock Car Auto Racing—a marketing leviathan. There are race car Jell-O (a car sponsor) molds in your local grocery store, race car models at the nearest Texaco (also a car sponsor), and Nascar souvenir stores in towns that don't even have tracks. Fans are unusually loyal, eating Cheerios for breakfast if they like Johnny Benson's 26 car, but Kellogg's Corn Flakes if they support Terry Labonte's 5 car. (Around Nascar you never say "the number 26 car," but instead "the 26 car" or "the 5 car," unless you want people to think you are a rookie.)

With the explosion in interest has come an explosion in the schedule: There were 36 races in all corners of the country last year. More tracks are under construction and the number of races will grow. A schedule like that can only be met through use of general aviation, a fact not lost on aircraft manufacturers. VisionAire, for example, has targeted all of racing as one of the best markets for its Vantage jet now in development. Last July, the company sponsored the VisionAire 500, part of the Indy Racing League, at the Charlotte (North Carolina) Motor Speedway. In all, VisionAire has sponsored the VisionAire 500 twice, a drag race, and four cars ranging from drag racers and stock cars to Indy-style open-wheel race cars. Next year VisionAire will sponsor a car racing in the Nascar Busch Series, a younger cousin to the Winston Cup Series.

"There is no question that the racing schedules are getting bigger and more hectic each year," said Tim Beverly, a pilot and owner of Tyler Jet Motorsports. "The only way to survive and budget your time wisely is by flying yourself. Drivers can't physically handle the race schedule, sponsor demands, and personal commitments without a plane. You justify all the costs when you look back over the course of a year and realize that you have saved yourself more than two weeks' worth of hours by flying privately rather than on a commercial airline."

Included among the pilot-drivers are Mark Martin and Rusty Wallace, who claimed in a *Sports Illustrated* interview that the Learjet 31A he pilots is the fastest aircraft on the Nascar circuit. Although not pilots, three-time and current Winston Cup champion Jeff Gordon and two-time champion Terry Labonte (1984 and 1996) also ride to work in Learjets. Martin, Gordon's closest competitor for last year's Winston Cup champion title, lives in a fly-in community in Florida and commutes to races in his Cessna CitationJet.

Gordon drives for Hendrick Motorsports, which owns three Winston Cup cars and a race truck. On any weekend during the season the company must move more than 50 people, and uses five airplanes to do it. The company owns a Gulfstream II, two Beech King Air 200s, and two Beech 1900s. Chief pilot Jay Luckwaldt said he stopped operating into the airport near Talladega, Alabama, when pattern operations became "too dangerous" because of the number of aircraft. Since all the drivers and crews are on the same schedule, they generally end up flying at the same time. Rusty Wallace calls it an aerial convoy, while Doyle Rouse, a pilot for the Richard Childress team, calls it an armada.

It takes a fleet of 120 general aviation aircraft—what might be called the Nascar Air Force—to move the army of pit crews, drivers, and owners. Flight Explorer, the flight tracking software by Dimensions International (www.dimen-intl.com), captured the phenomenon last year on the Thursday (moving day for most crews) before a July Winston Cup race in ***Loudon, New Hampshire***. The radar blips bubbled up from North Carolina until there was a string of more than 50 aircraft seemingly nose to tail—all headed to the same destination. Eventually they broke into two tracks when the first airways became clogged. Coming home from that race on the following Sunday, aircraft emerged from two airports near the racetrack (***Concord and Laconia Airports***). The car sponsors could be seen streaking westward to their headquarters in large northern cities while crews and owners headed back to North Carolina. Mark Martin, driver of the Valvoline 6 car, left the pack in North Carolina and flew to his home in Florida.

"So many planes go to a race that you make your own traffic problems in the system itself," said Jeff Hartmann, pilot of a Beech King Air 200—the workhorse of the Nascar fleet—for Andy Petree Racing. Hartmann supports the crew of the Skoal Bandit 33 car driven by Kenny Schrader. "In ***New Hampshire*** they set up a special routing for the teams. Whatever you file, they still give you the special routing."

Rouse said that the Childress team operates four airplanes—an IAI Westwind II, a Rockwell Sabreliner, a Beech 1900, and a King Air 200. The aircraft move 43 people per weekend. Advance teams go in on Thursday to help with qualifications and testing, and the over-the-wall (pit) crew moves in Sunday morning. Last year Rouse flew 189 hours.

"New controllers who have never seen the glitter of all the airplanes on their scopes all taking off at six or seven in the morning ask, ‘Where is everyone going?’ But their supervisors know," Rouse said. He praises Atlanta-area controllers for handling the armada best. At a few other airports, departures are delayed by the requirement for clearances, if the weather is IFR, or by the huge conga line of aircraft on the taxiway. Rouse is kept busy in the off season supporting car and racing truck testing, and with business trips for Childress. Rouse supports teams for Daytona 500 winner Dale Earnhardt and driver Mike Skinner, along with a Super Truck racing team.

Jack Roush, owner of the Valvoline, Exide, Primestar, John Deere, and Cheerios cars, said he puts some of his crews on the Race Car Express, a chartered airliner shared jointly by many of the teams, and uses eight private aircraft to transport 58 race crew members. Roush Industries, a high-performance car engineering company in Livonia, Michigan, has branched out into making airplane parts for jet aircraft. He learned to fly because of his need to visit not only the tracks, but also shops in North Carolina where his cars are built. Since earning his pilot certificate he has developed an interest in warbirds, and rebuilt a North American P–51 Mustang. He and Mark Martin, who drives for him, agreed when they both appeared on the television show Ultimate Flights that climbing into a cockpit offers a good way to "get unhooked from the day’s events."

Martin added that his CitationJet is, in some ways, easier to fly than the Cessna 340 he once operated, and is "as comfortable as an old pair of shoes." The only adjustment was getting used to seeing waypoints pass by faster, he said. Steve Hmiel, Martin’s crew chief, said on the Ultimate Flights show that Nascar aircraft owners are always looking for aircraft speed mods so that they can go a little faster, just like on the track.

While the Nascar fleet has blossomed in the past five or six years with an influx of jets, aviation has always been a part of the racing scene. "Racing was always my first love, but flying has become my passion," says 1983 Winston Cup champion Bobby Allison. His career was cut short from an accident at the Pocono, Pennsylvania, raceway in 1988, but he recovered enough to regain his airman medical certificate. "I bought my first airplane in 1967 and hired an instructor to help me get my pilot’s license," he said. "I would fly from one race to the next so I would have more time to race on short tracks during the week between Winston Cup events." Today’s car owners share his views on the importance of aviation to Nascar.

"The airplane is as important as any milling lathe or any piece of equipment in the shop, primarily due to what has happened to our schedule," said car owner Richard Childress. "There are more races, and we are going farther to several new racetracks. Aviation is a big part of the budget, but you have to have it."

Fifty years have elapsed since Nascar evolved from cars originally built as moonshine tankers that could outfox the law along North Carolina back roads. Descendents of those tankers shine on today’s racetracks at more than 200 mph, but the future of the sport that hooch built clearly depends on still faster machines in the air.

CHAPTER 1 - GOALS AND OBJECTIVES

1.1 INTRODUCTION

The last New Hampshire State Airport System Plan was completed in December, 1993. Due to the numerous changes that have occurred in the State and the aviation industry since that time, the Division of Aeronautics has sponsored this update to the 1993 plan to address the current and anticipated needs of the system of airports throughout the State.

The New Hampshire Department of Transportation's mission is to “plan, construct, and maintain the best possible transportation system and State facilities in the most efficient and economical manner utilizing quality management techniques consistent with available resources and mandated controls.” The Department is “committed to excellence, safety, innovation and the future.”

The Division of Aeronautics is tasked by the State’s legislature to provide the citizens of New Hampshire with an air transportation system that is safe, efficient, and socially responsible. The Division of Aeronautics interacts with the state’s airports in a number of ways:

- Funding: The Division issues state grants, and administers federal grants, to airports. Through its capital improvement program (CIP), the Division assigns priorities to airports and individual projects that are eligible for state and/or federal funding. The Division applies to the state legislature for airport funding.

- Registration: The Division registers all airports, commercial operators, and aircraft within the state. It also inspects all public-use airports and approves new landing sites.

- Regulatory: The Division enforces state law regarding aeronautics, and supports FAA in enforcing federal aviation regulations when appropriate. The Division is also tasked with assisting other federal and state agencies during aircraft accident/incident investigations.

- Navigation Aids: The Division maintains state-owned navigation aids used by pilots.

- Technical Resource: The Division provides technical resources to airports in the form of master plan reviews and other requests.

- Promotion: The Division actively promotes airports and aviation through public events and forums, and coordination with the media.

There were 25 airports listed in the 1993 Airport System Plan. Since then, Foord and Salem Airports have closed while Newfound Valley Airport re-opened to the public and Colebrook was added to the System. Nevertheless, the potential loss of other airports is a real concern to the Division. The focus of the previous System Plan was facility oriented, and did not assess the economic value of the airports to the State or their communities. Since that time, demand for funding for airport capital improvement projects has outstripped the resources available on the local, state, and federal level. In order to make the case for increased funding, this study analyzed the role of airports in relation to local, regional, and statewide economic development.

There are also so-called ‘structural issues’ that were addressed regarding airport funding on the local and state level. For example, unlike other states, there is no aviation trust fund in New Hampshire providing a source of funding dedicated to airport development. The State does, however, have one source in the aircraft operating fees. Another potential revenue source, the aviation fuel tax, goes into the state’s general fund. In addition, due to the state’s tax structure, there is a weak funding mechanism in place both on the local and state level. The Division of Aeronautics and the airports in the State System rely on appropriations from the legislature for the state share of project funding.

This Airport System Plan Update has three overall objectives:

a) Clearly identify the relationship between airports and economic development
b) Develop a program to increase investments by local and state agencies in airports
c) Identify the key constituencies, and make them aware of the value of airports to the state's economy

A list of goals was developed to reach the three objectives described above. The list of goals evolved as the study progressed and additional information was collected throughout the study process.

1.2 SYSTEM PLAN UPDATE GOALS

Based on the scope of work and discussions with Division of Aeronautics staff, six goals were developed for this study. These goals will be used to help define and guide the analysis completed for this study. The goals and objectives are discussed below.

1. Identify The Specific Role Of Each Airport In Terms Of Economic Development

One of the key elements of the System Plan was to analyze the connection between airport activity and economic development. Airports such as Manchester demonstrate an obvious and direct relationship between aviation activity and economic development. Pease International Tradport and Lebanon demonstrate similar relationships because they also have scheduled airline service, albeit on differing scales compared to Manchester. General Aviation (GA) airports, however, have less apparent relationships between airport activity and local or regional economic development. GA airports can support local economic development, but do drive such growth regionally. This System Plan developed various quantitative and qualitative factors with which to define an airport's role and to assess the airport's value to the region and to the State.

2. Develop A System Plan Suited To Meet The Goals Of Airport Users, The State's Citizens, And The Division Of Aeronautics

The System Plan process obtained input from various stakeholders including airport managers, airport users, local and State government officials, and regional planners and economic development officials, to name a few. This information was valuable in establishing the needs of the different airports and the regions that they serve and in identifying the best way in which to develop the airport system.

3. Develop Strategies To Preserve Airports, And Identify The Investment Required To Maintain And Enhance Airports

This System Plan identified airport needs and prioritized those needs to maximize the development of the airport system. Once the airports were prioritized, strategies were developed to preserve the system of airports by identifying issues impacting future use and development. Required investment to meet the needs of airports was also determined and incorporated into a development plan.

4. Identify The Key Stakeholders And Provide The Information That They Need

One of the key objectives of this System Plan was to identify key constituencies and stakeholders, and include them in this study process. Their input and participation was very important to develop a database of information that was relevant and useful to this analysis. It is anticipated that identifying and incorporating the stakeholders and key constituencies will also help to support and secure the funding necessary to maintain and grow the State's airport system in the future.

5. Develop Strategies To Enhance Statewide Intermodal Access

Intermodal access has become an important factor in developing an effective statewide transportation system. Integration of different modes of transportation has become an effective way in which to move people and goods, and also to relieve congestion on the highway system, thereby improving air quality as well. This study reviewed intermodal development options in the state and determined how airports may factor into the state's intermodal network. Recommendations to improve ground access to airports were also developed based on input from airport managers, as well as intercity and municipal transit companies.

CHAPTER 2 - AIRPORT SYSTEM INVENTORY

2.1 INTRODUCTION

This chapter describes the existing airport system in New Hampshire as of the end of 2001 and early 2002 and served as the database for the overall System Plan. As such, it was updated throughout the course of the study. This Chapter focuses on the aviation infrastructure that makes up the system of airports in the State, as well as aviation activity, airport facilities, airport financing, airspace and air traffic services, as well as airport access. Chapter 3 discusses the general economic conditions within the regions and municipalities that are served by the airport system.

The primary purpose of this data collection and analysis was to provide a comprehensive overview of the aviation system and its key elements. These elements also served as the basis for the subsequent recommendations presented for the airport system. The specific topics covered in this Chapter include:

- Data Collection Process
- Airport System Structure
- Definitions
- Airport Descriptions
- Airspace and Navigational Aids
- Scheduled Air Service Summary
- Airport Financing
- Capital Improvement Program
- Environmental Factors

2.2 DATA COLLECTION PROCESS

The data collection was accomplished through a multi-step process that included cataloging existing relevant literature and data, and conducting individual airport surveys and site visits. Division of Aeronautics provided information from their files that included existing airport master plans, FAA Form 5010 Airport Master Records, financial information, and other pertinent data. Two important element of the data collection process included visits to each of the system airports, as well as surveys of airport managers and users. The airport visits provided additional data, as well as confirmed information obtained from the Division of Aeronautics, particularly regarding the airport's physical facilities, levels of activity, and specific issues affecting the operation and development of each airport. Prior to the airport visits, a survey was sent to each airport manager to complete and use for discussion purposes at the meeting. The survey requested information regarding four broad areas: operational, environmental, political, and financial (see Appendix 2-A). Cooperation from each of the airports visited was extremely helpful. The information gathered was fully incorporated into this chapter, and used in subsequent chapters.

2.3 AIRPORT SYSTEM STRUCTURE

The existing system of airports in New Hampshire is comprised of 25 public use airports that are both publicly and privately owned. Ten of the 25 airports (40%) are privately owned, public use facilities. Three of the airports (12%) have scheduled airline service (Manchester, Pease International Tradeport, and Lebanon), and two of those airports (Manchester and Pease International Tradeport) have air cargo services. Facilities that were not included in this study were privately owned airports, seaplane bases, and heliports, only some of which are registered with the Division of Aeronautics, but are not open for public use. There are an estimated 100 privately owned, private use facilities in the state.

For purposes of this report, nine planning regions were identified that correspond very closely with the economic regions of the state, and is discussed in more detail in Chapter 3. The role of airports within each region, particularly in terms of their economic impact and demographic trends, was also analyzed.

Figure 2-1 depicts the existing 25 airports in the State System Plan, their location within each of the planning regions. The subsequent tables provide additional data for each of the 25 airports in the State System Plan.

Figure 2-1 – Existing Airport System

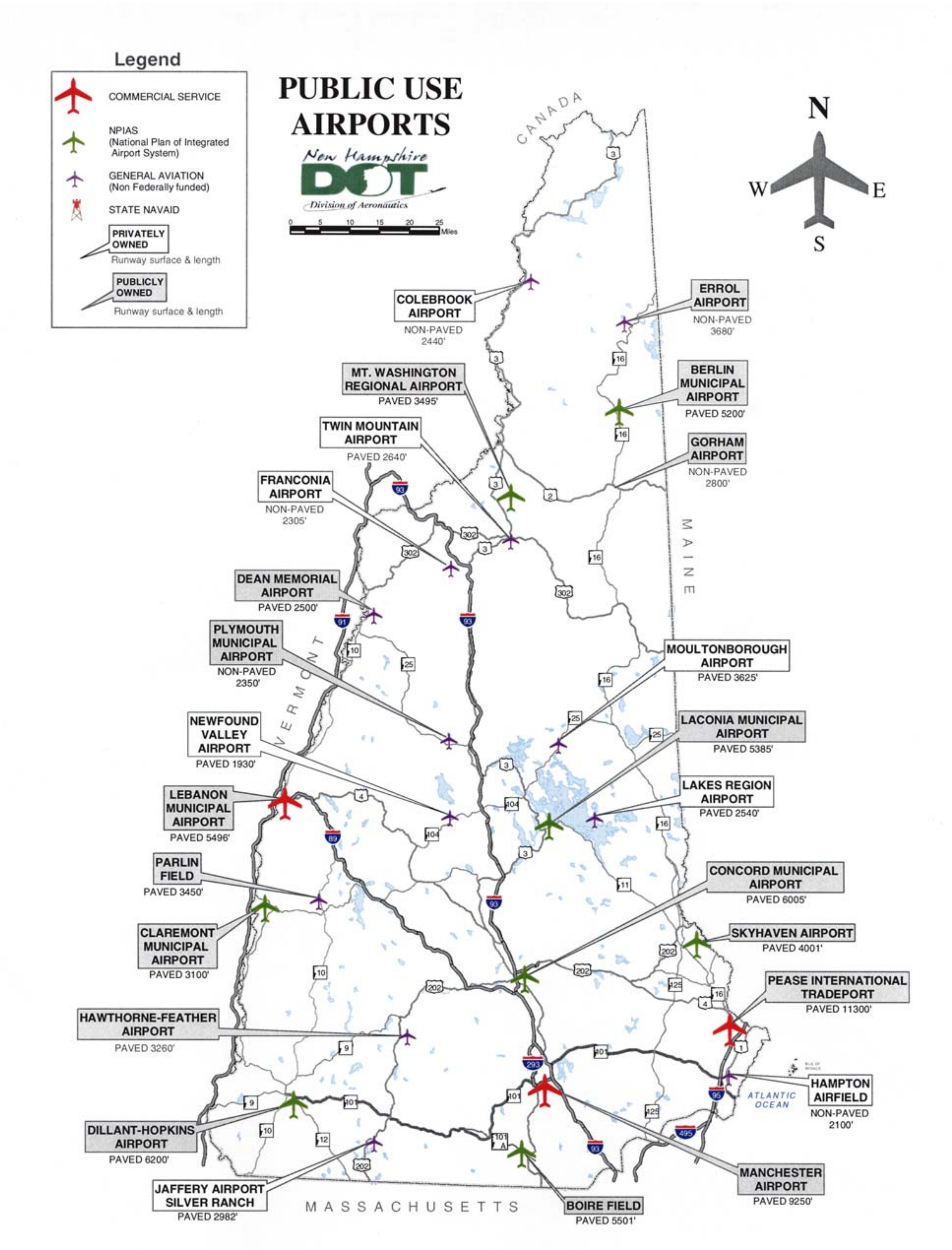


Table 2–1 – State System Airports	
AIRPORT [1]	**ECONOMIC DEVELOPMENT REGION**
Concord	Central Region
Newfound Valley (Bristol)	Lakes Region
Laconia (Gilford)	Lakes Region
Lakes Region (Wolfeboro)	Lakes Region
Moultonboro	Lakes Region
Boire Field (Nashua)	Nashua Region
Berlin (Milan)	North Country Region
Colebrook	North Country Region
Errol	North Country Region
Franconia	North Country Region
Gorham	North Country Region
Dean Memorial (Haverhill)	North Country Region
Mt. Washington Regional (Whitefield)	North Country Region
Plymouth	North Country Region
Twin Mountain	North Country Region
Hampton Airfield (North Hampton)	Rockingham Region
Pease International Tradeport (Portsmouth/Newington)	Rockingham Region
Manchester (Manchester/Londonderry)	South Region
Hawthorne (Hillsborough/Deering)	Southwest Region
Silver Ranch – (Jaffrey)	Southwest Region
Dillant-Hopkins (Sawnzey/Keene)	Southwest Region
Skyhaven (Rochester)	Strafford Region
Claremont	Upper Valley Region
Lebanon	Upper Valley Region
Parlin Field (Newport)	Upper Valley Region
1. Location of airport in municipalities shown in parentheses	

Four of the nine regions have a single airport (South, Central, Nashua, and Strafford), while the North Country, which has the lowest population and employment density in the state, has nine airports.

2.4 DEFINITIONS

Prior to discussing each airport, it is prudent to provide some technical background in order to clarify and define certain aviation-related terminology. The following sections describe key elements of an airport's role, service level, and physical facilities.

2.4.1 AIRPORT CLASSIFICATION

The Federal Aviation Administration's (FAA) National Plan of Integrated Airport Systems (NPIAS) identifies airports that are significant to the national air transportation system and defines the roles and function of airports, as shown in the table below. In addition, the NPIAS identifies the capital improvements required at those airports that are eligible for federal aid. The NPIAS defines the type and role of every airport in the national airport system, and that classification system is useful in this System Plan. In New Hampshire, there are 14 airports (56%) currently included in the NPIAS. However, three of those airports Silver Ranch, Plymouth Municipal, and Parlin Field, do not meet the current requirements for federal funding. One important reason for classifying airports is to identify eligibility for funding, as well as the relative priority of capital improvement projects.

U.S. Airport Categories and Distribution of National Activity

Number Airports	Airport Type	Percentage of All Pass. Enplanements	Percentage of Active GA Aircraft *
31	Large-Hub Primary	69.6	1.3
37	Medium-Hub Primary	19.3	2.9
74	Small-Hub Primary	7.7	4.7
280	Non-Hub Primary	3.2	11.3
124	Other Commercial Service	0.1	2.0
2,558	General Aviation	0.0	37.2
260	Relievers	0.0	27.1
3,364	Total Existing NPIAS Airports	100%	86.4%
15,942	Other Low Activity Landing Areas (Non-NPIAS)	0%	13.6%

* Based on active aircraft fleet of 219,464 aircraft in 1999.
* Source: FAA NPIAS, 2001-2005

FAA has identified two broad classifications of airports, Commercial Service and General Aviation. Commercial Service airports are those that have scheduled passenger service and that have 2,500 or annual passenger enplanements (boardings). In addition, there are different levels of Commercial Service Airports that are defined by the volume of passenger enplanement activity. Primary airports, for example, enplane 10,000 passengers or more each year, and those facilities are eligible for FAA entitlement money, as well as discretionary grants. Until recently, all three commercial service airports in New Hampshire (Manchester, Pease International Tradeport, and Lebanon) were primary airports, but traffic at Lebanon Airport has declined and in 2002 passenger volumes fell below FAA’s threshold. In addition, passenger enplanements at Pease International Tradeport have been close to the threshold for primary airports as well.

The second classification is General Aviation (GA), which accounts for all of the airports that do not have commercial service. Twenty-two airports in the current State System Plan are classified as general aviation. GA airports accommodate a wide range of aircraft, from very small single-engine piston aircraft to corporate turboprop and jet aircraft.

A sub-set of GA airports is known as Reliever airports. Those facilities “relieve” congestion at commercial service airports such as large hub airports like Boston Logan. Relievers typically provide an alternate airport close to a congested hub airport for general aviation and corporate aircraft, thus relieving traffic at the congested hub. Only Boire Field in Nashua is presently classified as a GA reliever airport in New Hampshire.

It should be noted that there are no heliports or seaplane bases listed in the current State System Plan. In order to be included in the State System Plan, the facility must be public-use, which is defined as a facility that allows public access without prior permission. The owner of the facility must request inclusion in the System Plan, and the Division of Aeronautics must approve it.

2.4.2 AIRPORT REFERENCE CODE

The Airport Reference Code (ARC) determines the appropriate airport design criteria promulgated by FAA. The ARC directly affects design criteria such as runway length and width, separation between the runway, taxiways, and parking aprons, the size of runway safety areas, etc. The ARC correlates the design and layout of the airport to the operational and physical characteristics of the 'critical design aircraft'.

FAA advisory circular AC 150/5300-13, *Airport Design*, defines the critical design aircraft as the largest airplane to use the airport on a regular basis. FAA AC 150/5325-4A, *Runway Length Requirements*, Chapter 1, Section 2, defines regular basis as a minimum of 250 operations (takeoffs and landings) per year. The ARC is comprised of two elements, or codes; the Aircraft Approach Category and the Aircraft Design Group as shown in Table 2-2. Typical aircraft in each of these ARC's are shown in Appendix 2-B.

Table 2-2 – Airport Reference Code

Approach Category	Minimum Speed (knots)	Maximum Speed (knots)
A	> 0	< 91
B	> 91	< 121
C	> 121	< 141
D	> 141	< 166
E	> 166	N/A
Aircraft Design Group	**Minimum Wingspan (feet)**	**Minimum Wingspan (feet)**
I	> 0	< 49
II	> 49	< 79
III	> 79	< 118
IV	> 118	< 171
V	> 171	< 214
VI	> 214	< 262

Source: FAA AC 150/5300-13, Airport Design

If the design aircraft is not currently operating at the airport, but is expected to in the future, then the airport's ARC may be upgraded through the Master Planning process. Manchester Airport and Pease International Tradeport, for example, can accommodate the largest critical design aircraft in the state. At Manchester, the ARC is C-IV, which is based on the Boeing B-767-200, while at Pease International Tradeport, the ARC is D-IV, based on the McDonnell Douglas DC-10-30. Pease International Tradeport also accommodates military KC-135s aerial tankers, transient C-5s cargo aircraft, as well as civilian cargo Boeing B-747s. Airports such as Lebanon, Boire Field, Dillant Hopkins, Concord, Laconia, and Berlin, have sufficient runway length (5,000ft.) to accommodate corporate jets that typically fall within approach category B and C, and wingspans in design group II.

2.4.3 AVIATION ACTIVITY

There are a number of terms that define activity levels at an airport, as shown below:

Aircraft Operation – An aircraft operation is defined as either an aircraft landing or taking off. Activity at an airport is a sum of these operations. Twenty-one airports in the State System do not have control towers and are all General Aviation airports. Activity at these airports is not typically counted unless a specific program is in place to do so. Thus, aviation activity is typically estimated by the airport manager and fixed base operators. At airports with control towers (Manchester, Boire Field, Pease International Tradeport, and Lebanon), air traffic control personnel count activity while the tower is open, and this information is made available to the public. The control towers at Manchester and Pease International Tradeport are open 24 hours per day; seven days a week, while the control towers at Boire Field and Lebanon are closed at night. As a result, the tower counts at Boire Field and Lebanon do not capture all of the operations at those airports, although they do count the large majority of activity.

Itinerant Operation – An itinerant aircraft operates to and from an airport other than its home base. For example, an airplane that takes off from Manchester, flies to Laconia lands there and parks temporarily, and then takes off for and lands back at Manchester, has conducted two itinerant operations at Laconia. Itinerant aircraft typically park at an airport for some duration before departing to another airport, and as a result utilize the runways, taxiways, transient parking, and terminal facilities.

Local Operation – An aircraft flying in the airport traffic pattern or a training operation within 20 miles of the airport where the operation starts and ends conducts a local operation. The large majorities of local operations are those conducted in the airport traffic pattern, and are primarily training missions. Aircraft based at an airport typically generate most of the local operations at an airport. For example, Boire Field has several large flight schools, including Daniel Webster College, and many students conduct local operations (takeoffs and landings) as part of their training program.

Based Aircraft – A based aircraft is an aircraft that is stored or parked at an airport for more than 90 consecutive days. Aircraft based in New Hampshire are required to register with the Division of Aeronautics, and pay an annual aircraft operating fee. As discussed in more detail later in this study, because New Hampshire has no sales tax, some aircraft owned by residents and businesses in Massachusetts were based in NH (mainly at Boire Field and Pease International Tradeport) due to the lower cost, particularly corporate turboprops and jets. In 2002, Massachusetts changed their state tax law to exempt aircraft and parts from their sales tax in an effort to prevent future airplanes from being based in New Hampshire.

Passenger Enplanement – A passenger enplanement is defined as a revenue passenger boarding at a commercial service airport.

Aircraft Classifications – Aircraft are classified by the following aircraft type:

- Single Engine (piston)
- Multi Engine (piston)
- Turboprop (single or twin)
- Turbojet
- Rotorcraft
- Other (ultralights, gliders, etc.)

Regarding the aircraft reference code (ARC) described previously, most single and twin engine-piston aircraft fall within ARC A & B and design group I & II. Most corporate turboprops and jets fall with ARC B & C and design group II, while commercial jet aircraft typically fall within ARC C-III and higher. ARC does not classify ultralights and gliders.

2.5 AIRPORT DESCRIPTIONS

This section details each of the airport's facilities, location, and ground access and is grouped by economic planning region. Summary tables present general airport data (Table 2-3), Aviation Activity (Table2-4), Based Aircraft (Tables 2-5), and Runway Data (Table 2-6). Figures 2-2 to 2-26 present pertinent data on each airport individually.

It should be noted that the information in Tables 2-4 and 2-5 represents the most current information available on based aircraft and operations for each airport from the FAA Airport Master Record Form 5010 information and the Airport Facility Directory published by the FAA. The Division of Aeronautics collects the 5010 data as part of their on-going airport inspection program.

Table 2-3 –Airport Data						
Region/Airport	**County**	**Ownership**	**ARC**	**Runway Surface**	**Control Tower**	**Fuel Available**
Central Region						
Concord	Merrimack	Public	C-II	Paved	No	100LL, Jet-A
Lakes Region						
Newfound Valley	Grafton	Private	A-I	Paved	No	No
Laconia	Belknap	Public	C-II	Paved	No	100LL; Jet-A
Lakes Region	Carroll	Private	B-I	Paved	No	No
Moultonboro	Carroll	Private	B-I	Paved	No	100LL
Nashua Region						
Boire Field	Hillsborough	Public	C-II	Paved	Yes	100LL, Jet-A
North Country Region						
Berlin	Coos	Public	B-II	Paved	No	100LL, Jet-A
Colebrook *	Coos	Private	A-I	Turf	No	No
Errol *	Coos	Private	A-I	Turf	No	No
Franconia *	Grafton	Private	A-I	Turf	No	No
Gorham *	Coos	Public	A-I	Turf	No	No
Dean Memorial	Grafton	Public	B-I	Paved	No	100LL
Mt Washington Regional	Coos	Public	B-I	Paved	No	100LL; Jet-A
Plymouth	Grafton	Public	A-I	Turf	No	100LL
Twin Mountain	Coos	Private	B-I	Paved	No	100LL
Rockingham Region						
Hampton Airfield *	Rockingham	Private	B-I	Turf	No	100LL; 80
Pease International Tradeport	Rockingham	Public	D-IV	Paved	Yes	100LL; Jet-A
South Region						
Manchester	Hillsborough	Public	C-IV	Paved	Yes	100LL; Jet-A
Southwest Region						
Hawthorne	Hillsborough	Private	B-I	Paved	No	100LL
Silver Ranch	Cheshire	Private	B-II	Paved	No	100LL
Dillant Hopkins	Cheshire	Public	C-II	Paved	No	100LL; Jet A
Strafford Region						
Skyhaven	Strafford	Public	B-II	Paved	No	100LL; Jet A
Upper Valley						
Claremont	Sullivan	Public	B-I	Paved	No	100LL
Lebanon	Grafton	Public	C-II	Paved	Yes	100LL; Jet-A
Parlin Field	Sullivan	Public	B-I	Paved	No	100LL

* Airports operate on a seasonal basis

Source: NHDOT-DOA, FAA 5010, and AFD/NE

Table 2-4 –Based Aircraft								
Region/Airport	**SE**	**ME**	**Jet**	**Helicopter**	**Gliders**	**Military**	**Ultra-light**	**Total**
Central Region								
Concord [1]	58	9	0	2	0	10	2	81
Lakes Region								
Newfound Valley	3	0	0	0	0	0	0	3
Laconia	79	18	0	0	0	0	0	97
Lakes Region	12	1	0	2	0	0	0	15
Moultonboro	15	1	0	0	0	0	1	17
Nashua Region								
Boire Field	350	22	1	1	0	0	0	403
North Country Region								
Berlin	25	1	0	0	0	0	0	26
Colebrook	6	0	0	0	0	0	0	6
Errol	6	0	0	0	0	0	0	6
Franconia	1	0	0	0	11	0	0	12
Gorham	4	0	0	0	0	0	0	4
Dean Memorial	11	0	0	2	0	0	0	13
Mt. Washington Regional	30	6	0	0	0	0	0	36
Plymouth	13	0	0	0	0	0	3	16
Twin Mountain	3	0	0	0	0	0	0	3
Rockingham Region								
Hampton Airfield	67	0	0	2	1	0	0	70
Pease International Tradeport [1]	31	22	25	3	0	10	0	91
South Region								
Manchester	71	7	7	0	0	0	0	85
Southwest Region								
Hawthorne	10	0	0	0	0	0	3	13
Silver Ranch	35	1	0	1	0	0	4	41
Dillant Hopkins	50	4	0	0	0	0	0	54
Stafford Region								
Skyhaven	55	3	0	0	0	0	10	68
Upper Valley Region								
Claremont	19	2	0	0	0	0	1	22
Lebanon	59	10	0	6	1	0	0	76
Parlin Field	11	0	0	0	0	0	0	11

SE = single engine. ME = multi-engine.

1. NH Army National Guard 1159th Medical Company UH-60 Blackhawk helicopters, Air National Guard 157th Air Refueling Wing – KC 135

Source: NHDOT-DOA and FAA 5010

Table 2-4A - Regional Summary of Based Aircraft								
Region/Airport	**SE**	**ME**	**Jet**	**Helicopter**	**Gliders**	**Military**	**Ultra-light**	**Total (%)**
Central Region								
Sub-Total	58	9	0	2	0	10	2	81 (7%)
Lakes Region								
Sub-Total	109	20	0	2	0	0	1	132 (11%)
Nashua Region								
Sub-Total	350	22	1	1	0	0	0	374 (30%)
North Country Region								
Sub-Total	99	7	0	2	11	0	3	122 (10%)
Rockingham Region								
Sub-Total	98	22	25	5	1	10	0	161 (12%)
South Region								
Sub-Total	71	7	7	0	0	0	0	85 (7%)
Southwest Region								
Sub-Total	95	5	0	1	0	0	7	108 (9%)
Stafford Region								
Sub-Total	55	3	0	0	0	0	10	68 (5%)
Upper Valley Region								
Sub-Total	89	18	0	10	1	0	1	109 (9%)
STATEWIDE TOTAL								
	1,024	107	33	19	13	20	24	1,240 (100%)
	82 %	8.6%	2.7%	1.5%	1.0%	1.6%	1.9%	
Source: NHDOT-DOA and FAA 5010								

Table 2-5 –Annual Aircraft Operations								
Airport	**Air Carrier**	**Commuter**	**Air Taxi**	**GA Local**	**GA Itinerant**	**Military**	**Total**	
Central Region							**(9.8%)**	**56,700**
Concord 1/	0	0	1,930	19,040	31,390	4,340		56,700
Lakes Region							**(9.5%)**	**54,503**
Newfound Valley 1/	0	0	0	1,200	0	0		1,200
Laconia	0	0	345	31,900	2,998	100		35,343
Lakes Region	0	0	50	3,000	3,000	10		6,060
Moultonboro 1/	0	0	30	7,435	4,435	0		11,900
Nashua Region							**(17.5%)**	**101,633**
Boire Field	0	0	560	49,186	51,786	101		101,633
North Country Region							**(5.8%)**	**33,250**
Berlin 1/	0	0	0	9,000	5,000	0		14,000
Colebrook 1/	0	0	0	750	750	0		1,500
Errol 1/	0	0	25	512	213	0		750
Franconia	0	0	0	4,000	500	0		4,500
Gorham 1/	0	0	0	650	324	26		1,000
Dean Memorial	0	0	0	3,500	500	0		4,000
Mt. Washington Regional 1/	0	0	0	1,250	1,250	0		2,500
Plymouth 1/	0	0	0	2,500	1,500	0		4,000
Twin Mountain 1/	0	0	0	0	1,000	0		1,000
Rockingham Region							**(12.9%)**	**74,639**
Hampton Airfield	0	0	0	30,000	7,500	0		37,500
Pease International Tradeport	3,752	0	800	7,354	17,512	7,720		37,138
South Region							**(18.7%)**	**107,832**
Manchester	38,495	23,011	0	45,740	0	586		107,832
Southwest Region							**(11.5%)**	**66,442**
Hawthorne 1/	0	0	0	1,500	0	0		1,500
Silver Ranch	0	0	1,030	3,342	6,076	200		10,648
Dillant Hopkins	0	6,676	1,302	34,389	8,257	3,670		54,294
Strafford Region							**(3.2%)**	**18,592**
Skyhaven	0	0	0	1,200	1,100	0		18,592
Upper Valley Region							**(10.9%)**	**63,080**
Claremont	0	0	103	5,854	4,502	0		10,459
Lebanon	0	3,543	359	23,761	18,988	240		46,891
Parlin	0	0	0	3,445	2,285	0		5,730
Total Operations								**576,670**

1/ Operational breakdown estimated by management
Source: NHDOT-DOA and FAA 5010

Table 2-6 – Runway Data						
Region/Airport	**Runway Orientation**	**Runway Length**	**Runway Width**	**Instrument Approaches**	**Lighting and Visual Aids**	**Surface**
Central Region						
Concord	12-30 17-35	3,200' 6,005'	175' 150'	VOR/GPS 12; ILS 35; NDB/GPS 35; GPS 17	(PLANNED) HIRL; REIL /PAPI-17; MALSR/VASI-35	Asphalt Asphalt
Lakes Region						
Newfound Valley	3-21	1,835'	40'	VISUAL	PLANNED	Asphalt
Laconia	8-26	5,286'	100'	ILS-8; NDB/GPS-8; GPS-26;	MIRL; MALSR/VASI-8; REIL/VASI-26	Asphalt
Lakes Region	12-30	2,540'	50'	VISUAL	LIRL (non-standard)	Asphalt
Moultonboro	2-20	3,625'	50'	VISUAL	LIRL (non-standard)	Asphalt
Nashua Region						
Boire Field	14-32	5,501'	100'	ILS-14; VOR/GPS-A; VOR-32; NDB/GPS-14; GPS-32	HIRL; MALSR/PAPI-14; REIL /VASI-32;	Asphalt
North Country Region						
Berlin	18-36	5,200'	100'	VOR/DME-18; NDB-18; GPS-18, VOR/GPS-B	MIRL, REIL/PAPI-18; REIL-36	Asphalt
Colebrook	4-22	2,440'	75'	VISUAL	NONE	Turf
Errol	15-33	3,680'	75'	VISUAL	NONE	Gravel
Franconia	18-36	2,305'	150'	VISUAL	NONE	Turf
Gorham	12-30	2,800'	70'	VISUAL	NONE	Turf
Dean Memorial	1-19	2,500'	60'	VISUAL	LIRL (non-standard)	Asphalt
Mt. Washington Regional	10-28	3,495'	75'	LOC-10; NDB-10;	MIRL; VASI-10; REIL-28	Asphalt
Plymouth	12-30	2,380'	90'	VISUAL	NONE	Turf
Twin Mountain	09-27	2,640'	60'	VISUAL	LIRL (non-standards)	Asphalt
Rockingham Region						
Hampton Airfield	2-20	2,100'	170'	VISUAL	LIRL (non-standard)	Turf
Pease International Tradeport	16-34	11,321'	150'	ILS-16; ILS-34; VOR/TACAN/GPS-34; VOR-16; GPS-16	HIRL; MALSR/PAPI-16; MALSR/PAPI-34	Asphalt/ConcreteGrooved
South Region						
Manchester	6-24 17-35	7,573' 9,250'	150' 150'	VOR/DME/RNAV-6; GPS-6 ILS-17; ILS-35; VOR/DME/GPS-17; VOR-35;NDB/GPS-35;	HIRL; REIL-24 HIRL; MALSR/VASI-17; MALSR/PAPI-35	Asphalt-Grooved Asphalt-Grooved
Southwest Region						
Hawthorne	2-20	3,260'	75'	VISUAL	MIRL	Asphalt

Table 2-6 – Runway Data (Cont.)						
Airport Name	**Runway Orientation**	**Runway Length**	**Runway Width**	**Approaches**	**Lighting and Visual Aids**	**Surface**
Silver Ranch	16-34	2,982	134	VOR/GPS-A	LIRL (non-standard)	Turf/Asphalt
Dillant-Hopkins	14-32	4,001	150	NONE	MIRL	Asphalt
	2-20	6,201	100	ILS 2; VOR 2; GPS 2	HIRL; MALSR/PAPI-2; PAPI-20	Asphalt
Strafford Region						
Skyhaven	15-33	4,001	100	VOR/DME/GPS-A; NDB-33; GPS-33; NDB/GPS-B	MIRL; REIL/PAPI-33	Asphalt
Upper Valley Region						
Claremont	11-29	3,100	100	NDB-A; GPS-29	MIRL; REIL/VASI-29	Asphalt
Lebanon	7-25	5,496	100	VOR/DME-7; VOR-25; NDB/GPS-B; GPS-7; GPS-25	MIRL; REIL/PAPI-7; REIL/VASI-25	Asphalt
	18-36	5,200	100	ILS-18;	HIRL; REIL-18/PAPI-36	Asphalt
Parlin	12-30	1,950	80	NONE	NONE	Turf
	18-36	3,450	50	NONE	PLANNED	Asphalt
Source: NHDOT-DOA, FAA 5010, AFD/NE, Site Visits						

<u>Glossary of Terms</u>

DME – Distance measuring equipment
GPS – Global positioning system
HIRL – High intensity runway lights
ILS – Instrument landing system (precision instrument approach)
LIRL – Low intensity runway lights
LOC - Localizer
MALSR – Medium intensity approach light system with runway alignment indicator lights
MIRL – Medium intensity runway lights
NDB – Non-directional beacon (low frequency navigation transmitter)
PAPI – Precision approach path indicator lights
REIL – Runway end identifier lights
TACAN – Tactical Air Navigation (military navigation transmitter)
VASI – Visual approach slope indicator lights
VOR – Very high frequency omni-directional radio range (VHF navigation transmitter)

Central Region

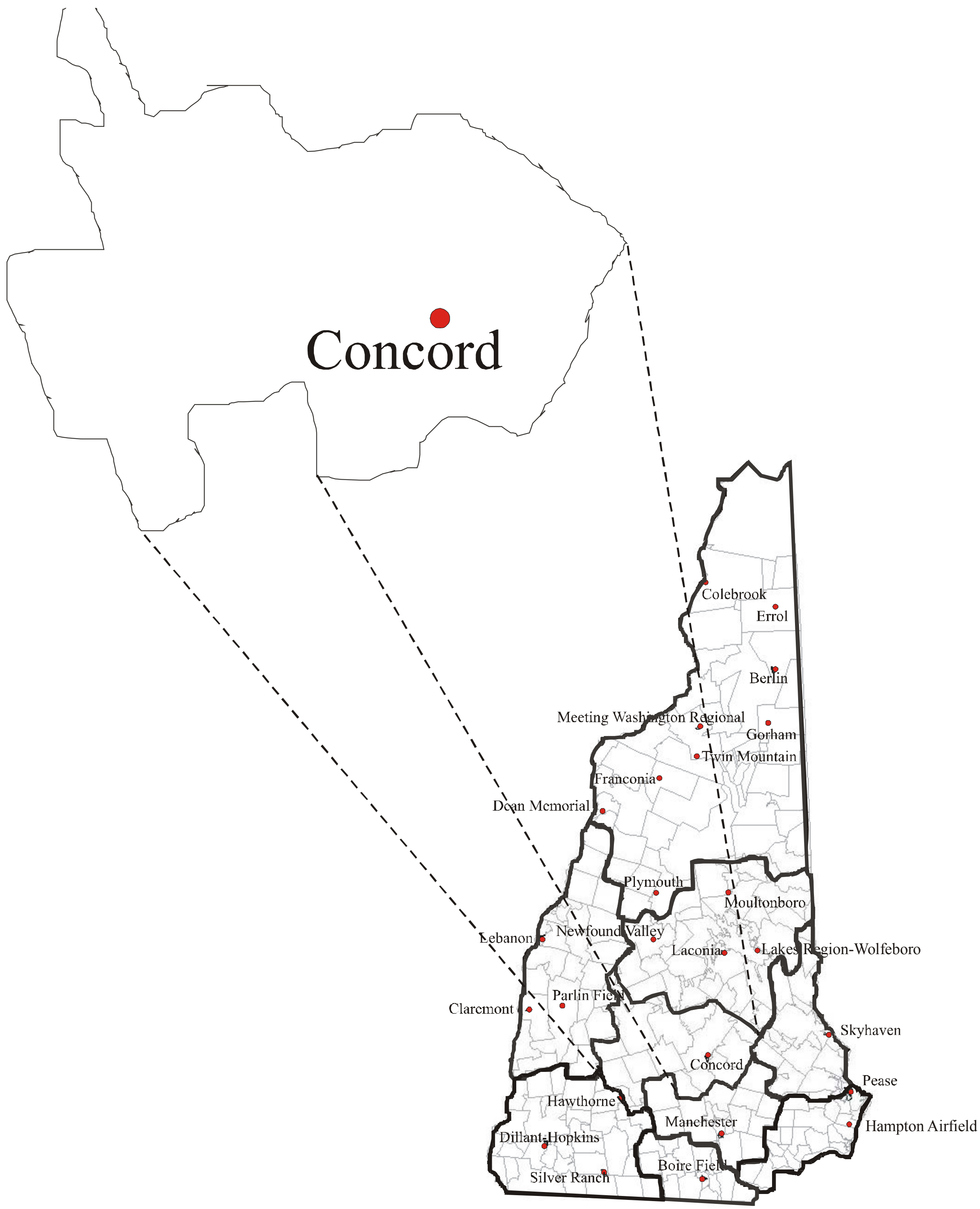
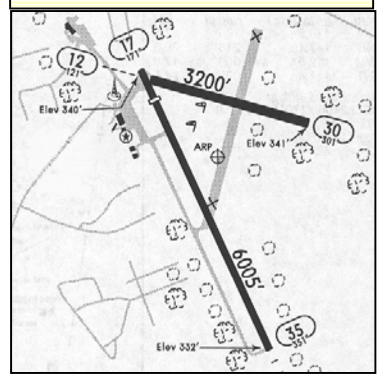


Figure 2-2 – Concord

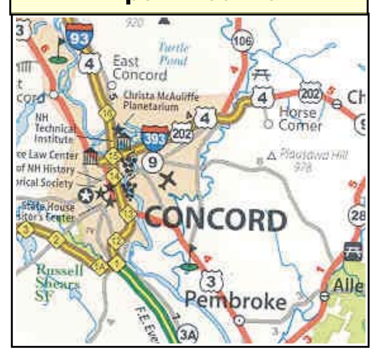
Airport Name:	**CONCORD**
FAA ID:	CON
ARC:	C-II
Ownership:	Public
Economic Region:	Central
County:	Merrimack
Airport Role:	General Aviation
Airspace:	Class E
Zoning:	Airport
Fuel:	100LL, Jet
Weather Information:	ASOS/HIWAS
Fixed Based Operator:	Yes
Navigation Aids:	VORTAC/NDB/ILS
Airport Latitude:	42-53-542.38 N
Airport Longitude:	72-16-148.12 W

Airport Picture

Airport Diagram



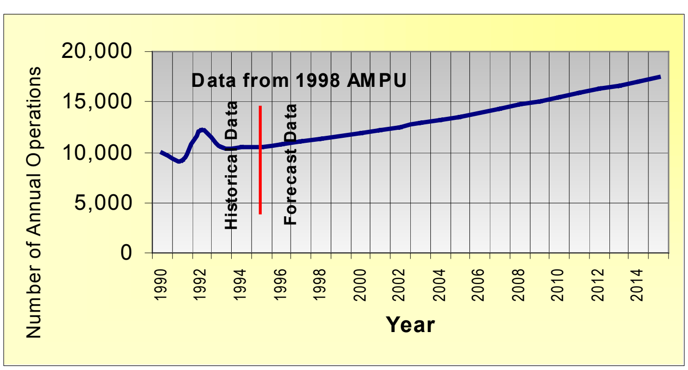
Airport Location



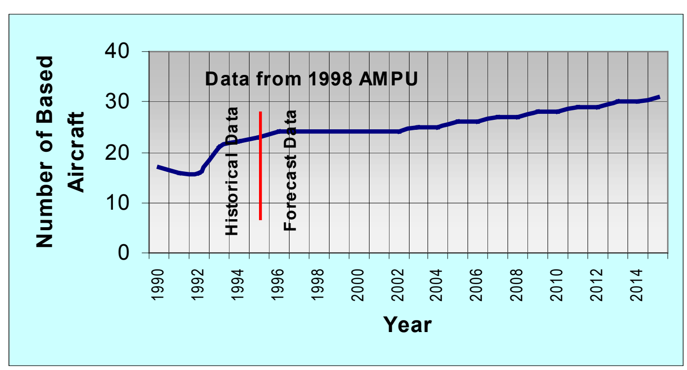
Runway Information:

Orientation:	12-30	17-35
Length:	3,200’	6,005’
Width:	150’	100’
Instrument Approaches:	VOR/GPS 12;	ILS 35; NDB/GPS 35; GPS 17
Lighting:	NONE	HIRL 17-35; REIL /PAPI 17; MALSR/VASI 35
Surface:	ASPHALT	ASPHALT
Condition:	Poor	Good

Operations



Based Aircraft



Source: 1998 AMPU

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

CONCORD MUNICIPAL AIRPORT

Airport Ownership and Management

The airport is owned and operated by the City of Concord. The City's General Services Administration oversees the airport in terms of building and grounds maintenance and plowing. Concord Air Services (FBO) serves as the airport manager under contract to the City. The city's Airport Advisory Committee (chaired by an ex-Mayor), which reports to the Concord City Council, serves in an advisory role relative to airport financial and administrative operations.

Municipal Summary

Government Type:	Manager and Council
Municipal Budget (02):	$58,700,985
Fiscal Year:	July to June
Budget Prepared:	January through May
Budget Voted/Adopted:	May
Population (00):	40,687

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$251,085			
Operating Expenses	$312,976			
Capital Revenues	$759,773			
Capital Expenditures	N/A			

Services Municipality Provides to Airport: Grounds Maintenance (snow clearing and grass cutting)

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

State grant funds contribute to maintaining the airport grounds, however, funds from other airport sources (land leases, etc.) are used to properly maintain the facility. The airport sponsor maintains the facility to the best of their ability.

Fixed Base Operator (FBO)

One full service FBO. The City has a contract for aviation and on-site airport management with the current FBO, which was secured through a competitive bid process.

Airport Contact Information

Robert Rolla (Airport Manager)
Jim Howard (City of Concord Finance Director)
Martha Drukker (City of Concord Engineer)

Lakes Regions

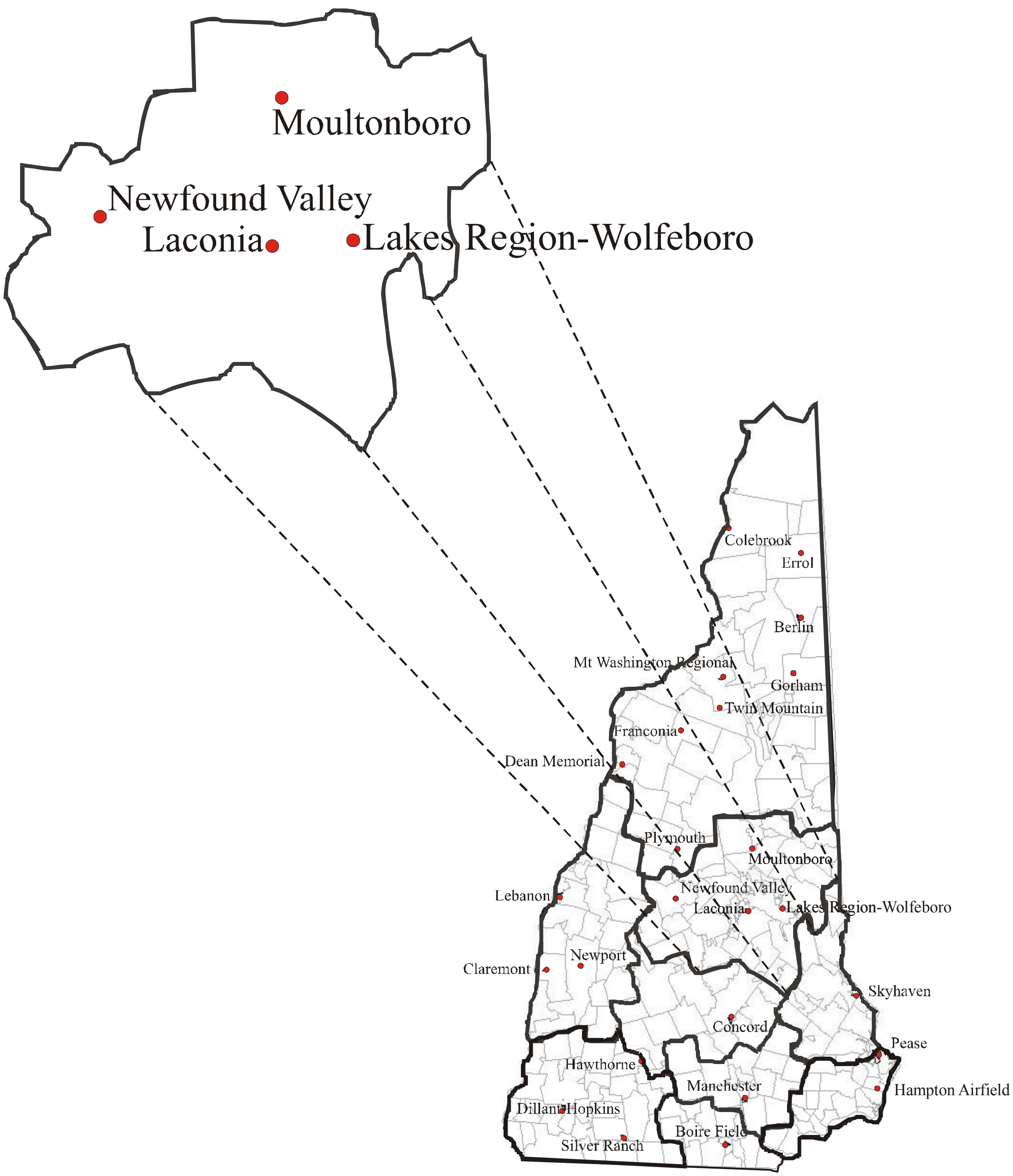


Figure 2-3 – Newfound Valley - Bristol

Airport Name: NEWFOUND VALLEY - BRISTOL

FAA ID: 2N2

ARC: A-I

Ownership: Private

Economic Region: Lakes

County: Grafton

Airport Role: General Aviation

Airspace: Class G

Zoning: Industrial

Fuel: None

Weather Information: None

Fixed Based Operator: No

Navigation Aids: None

Airport Latitude: 43.35.312.65 N

Airport Longitude: 71.45.052.85 W

Runway Information:

Orientation: 3-21

Length: 1,800’

Width: 30’

Instrument Approaches: NONE

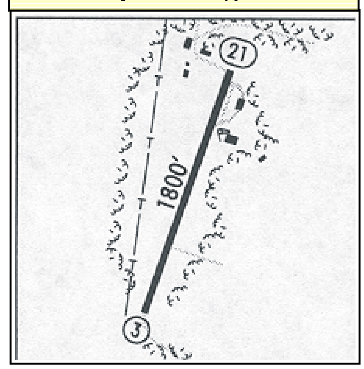
Lighting: NONE

Surface: Asphalt-Gravel

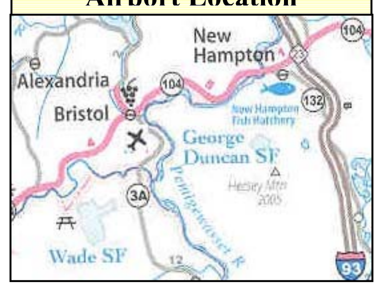
Condition: Fair

Airport Picture

Airport Diagram



Airport Location



Operations

Estimated Annual Operations = 1,200

Based Aircraft

Estimated Based Aircraft = 3

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

NEWFOUND VALLEY - BRISTOL

Airport Ownership and Management

Newfound Valley Airport is a privately owned facility that is managed by a full-time airport manager and a small group of volunteers (based aircraft owners).

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	N/A			
Operating Expenses	N/A			
Capital Revenues	N/A			
Capital Expenditures	N/A			

According to the Airport Manager, airport revenues are minimal and consist of tie-down fees collected by airport users. Airport financial information was not available.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

According to the Airport Manager, the facility received approximately $19,000 in grants and 50/50 match funds in 2002, which it used to resurface the runway. The source of the airport's portion of the 50/50 funds came directly from the airport owner as well as based aircraft owners and contributions from volunteers.

Fixed Base Operator (FBO)

No FBO or fuel.

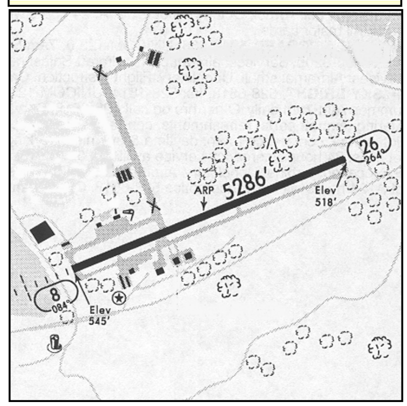
Airport Contact Information

Doug Williams (Airport Manager)
Boake Morrison (Airport Owner)

Figure 2-4– Laconia

Airport Picture

Airport Diagram



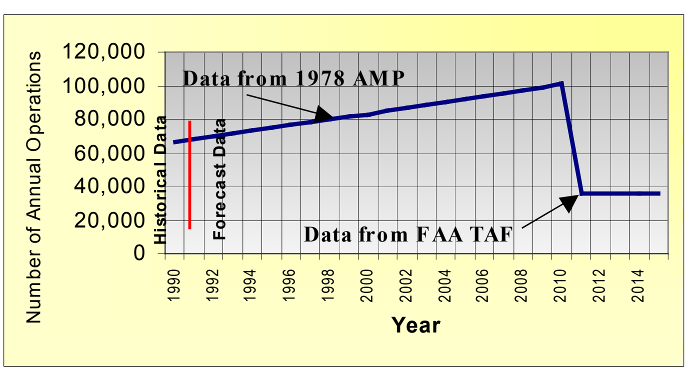
Airport Location

Airport Name:	**LACONIA**
FAA ID:	LCI
ARC:	C-II
Ownership:	Public
Economic Region:	Lakes
County:	Belknap
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Industrial / Airport overlay zone
Fuel:	100LL; Jet
Weather Information:	AWOS
Fixed Based Operator:	Yes
Navigation Aids:	VORTAC/NDB/ILS
Airport Latitude:	43.34.218.21N
Airport Longitude:	71.25.080.41W

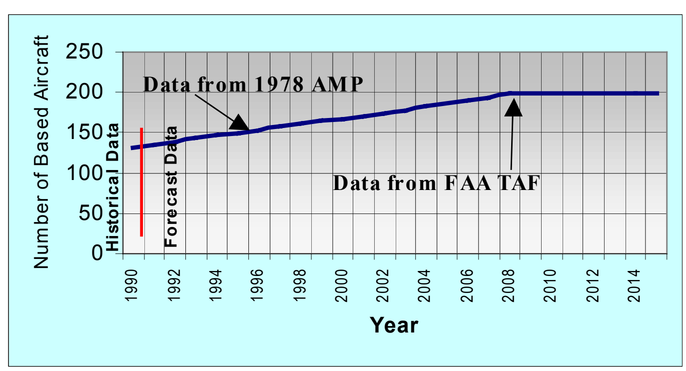
Runway Information:

Orientation:	8-26
Length:	5,286’
Width:	100’
Instrument Approaches:	ILS-8; NDB/GPS-8; GPS-26;
Lighting:	MIRL 8-26; MALSR/VASI 8; REIL/VASI 26
Surface:	Asphalt
Condition:	Good

Operations



Based Aircraft



Source: 1978 AMPU

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

LACONIA MUNICIPAL AIRPORT

Airport Ownership and Management

The airport is owned by the City of Laconia, and located in the town of Gilford. There is an Airport Authority that was established by state legislature. The Authority has 9 members with the Mayor of Laconia is being the Authority Chairperson. Gilford selectmen have two seats on the Authority, and there are 6 at-large seats, one of which goes to the County Commissioner, and at least three of the remaining seats must go to Laconia. The Authority is primarily advisory in nature. The City of Laconia formally acts as the sponsor, and the Mayor signs the grants, and the City Council approves the leases.

Municipal Summary

Government Type:	Manager and Council
Municipal Budget (02):	$39,714,736
Fiscal Year:	July to June
Budget Prepared:	February/March
Budget Adopted/Vote:	April
Population (00):	16,411

Services Municipality Provides to Airport: None

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$275,050			
Operating Expenses	$208,465			
Capital Revenues	$526,471			
Capital Expenditures	$410,831			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Easement acquisition

Fixed Base Operator (FBO)

3 FBOs. Sponsor lease or contractual arrangement information unavailable.

Airport Contact Information

Diane Cooper (Airport Manger)
Pam Reynolds (City Financial Director)
Mark Fraser (Mayor/Chair Airport Authority)

Figure 2-5- Lakes Region – Wolfeboro

Airport Name: **LAKES REGION -WOLFEBORO**

FAA ID: 8B8

ARC: B-I

Ownership: Private

Economic Region: Lakes

County: Carroll

Airport Role: General Aviation

Airspace: Class G

Zoning: Unknown

Fuel: None

Weather Information: None

Fixed Based Operator: No

Navigation Aids: None

Airport Latitude: 43.35.152.80 N

Airport Longitude: 71.15.582.48 W

Runway Information:

Orientation: 12-30

Length: 2,540’

Width: 50’

Instrument Approaches: NONE

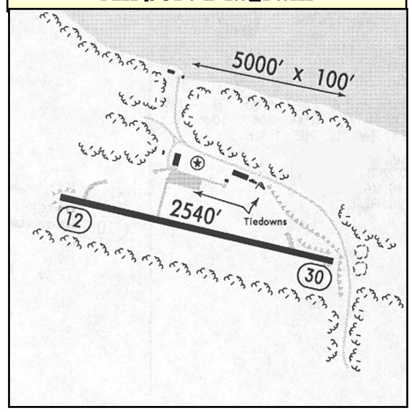
Lighting: LIRL

Surface: Asphalt

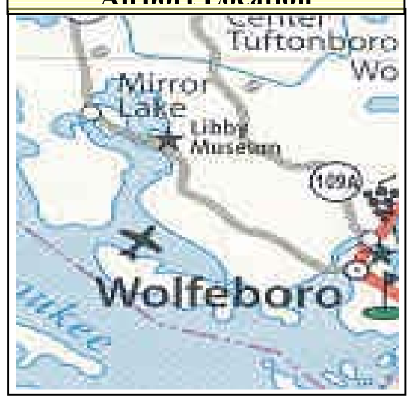
Condition: Good

Airport Picture

Airport Diagram



Airport Location



Operations

Estimated Annual Operations = 6,060

Source: FAA Form 5010 Master Record

Based Aircraft

Estimated Based Aircraft = 15

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

LAKES REGION WOLFBORO AIRPORT

Airport Ownership and Management

Lakes Region Wolfboro Airport is a privately owned public use airport with a full-time on-site security associate.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	N/A			
Operating Expenses	N/A			
Capital Revenues	N/A			
Capital Expenditures	N/A			

According to the airport owner, the facility has annual operating losses. No financial information was provided.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

According to the airport owner, the facility received approximately $2,900 from the state which was used for maintenance of the airport grounds including equipment fuel and grass cutting.

Fixed Base Operator (FBO)

No FBO.

Airport Contact Information

Don Satterfield (Airport Owner)
Frank Covey (Airport Security)

Figure 2-6- Moultonboro

Airport Name: **MOULTONBORO**

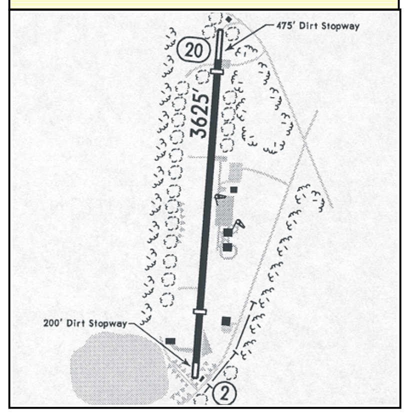
FAA ID:	5M3
ARC:	B-I
Ownership:	Private
Economic Region:	Lakes
County:	Carroll
Airport Role:	General Aviation
Airspace:	Class E
Zoning:	Residential
Fuel:	100LL
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	VORTAC
Airport Latitude:	43.35.152.80 N
Airport Longitude:	71.15.582.48 W

Runway Information:

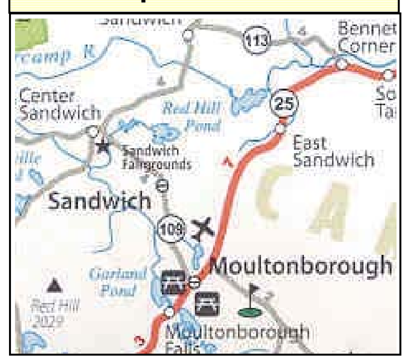
Orientation:	2-20
Length:	3,625'
Width:	50'
Instrument Approaches:	None
Lighting:	PCL (NSTD)
Surface:	Asphalt
Condition:	Fair

Airport Picture

Airport Diagram



Airport Location



Operations

Based Aircraft

Estimated Annual Operations = 11,900

Estimated Based Aircraft = 15

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

MOULTONBOROUGH AIRPORT

Airport Ownership and Management

The Moultonborough Airport is a privately owned facility with two part-time on-site airport managers.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$5,162			
Operating Expenses	$5,508			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Snow Plowing
- Equipment Repairs (Truck and Snow Plow)
- Snow Clearing Labor
- Electricity (Airport Lights) and Utilities (Gas, Telephone)
- Septic Service

Fixed Base Operator (FBO)

No FBO. Fuel is available.

Airport Contact Information

Rick Frederick (Airport Manager)
Tom Condon (Airport Owner)

Nashua Region

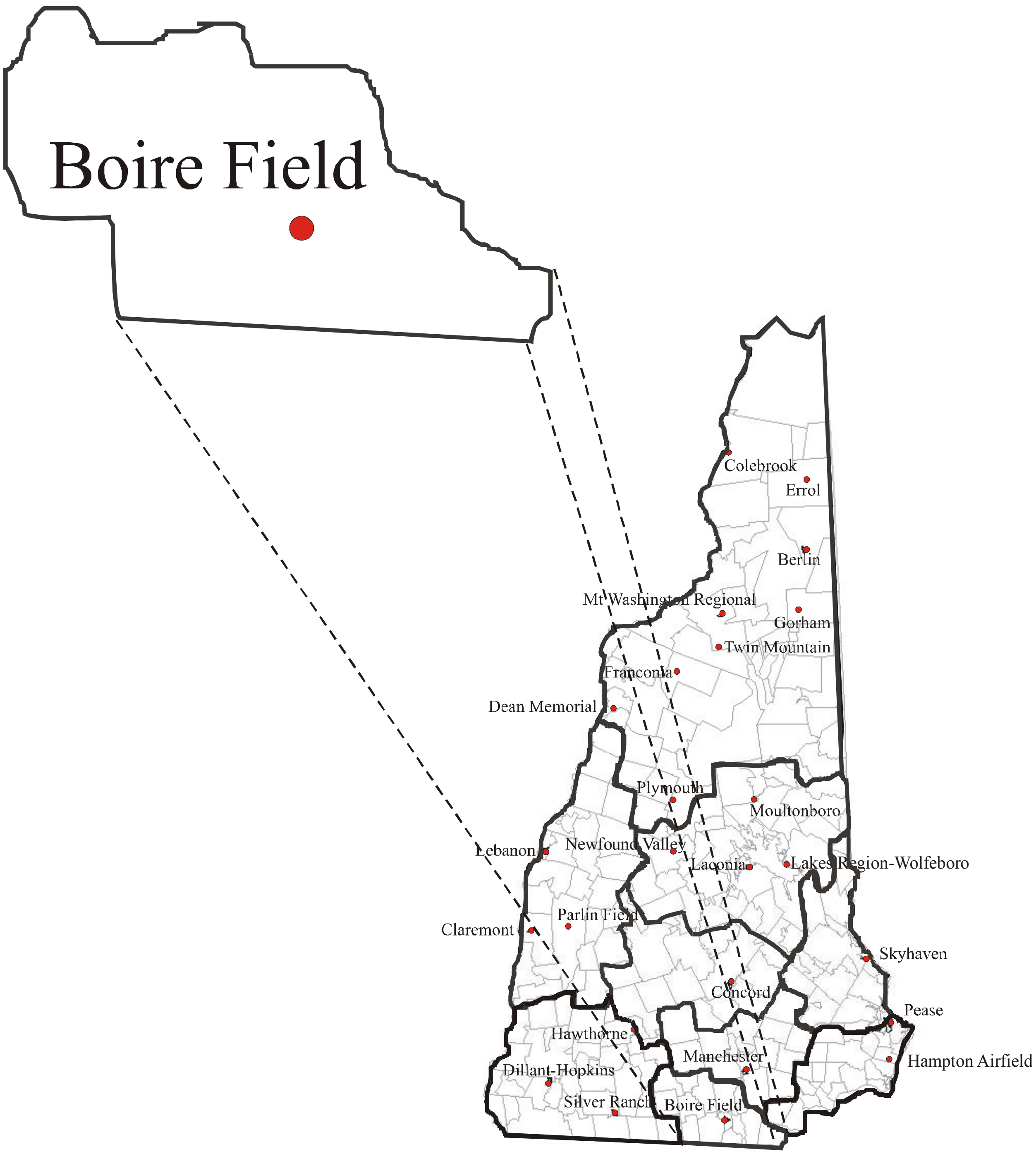


Figure 2-7 –Boire Field - Nashua

Airport Name: **BOIRE FIELD - NASHUA**

FAA ID: ASH

ARC: C-II

Ownership: Public

Economic Region: Nashua

County: Hillsborough

Airport Role: General Aviation

Airspace: Class D

Zoning: Airport

Fuel: 100LL, Jet

Weather Information: None

Fixed Based Operator: Yes

Navigation Aids: VOR/DME; NDB

Airport Latitude: 42.46.543.47 N

Airport Longitude: 71.30.532.06 W

Runway Information:

Orientation: 14-32

Length: 5,501’

Width: 100’

Instrument Approaches: ILS-14; VOR/GPS-A; VOR-32; NDB/GPS-14; GPS-32

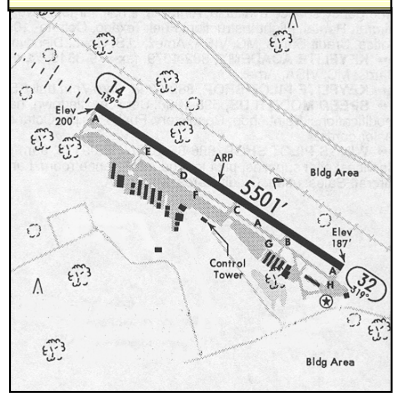
Lighting: HIRL 14-32; MALSR/PAPI 14; REIL /VASI 32;

Surface: Asphalt

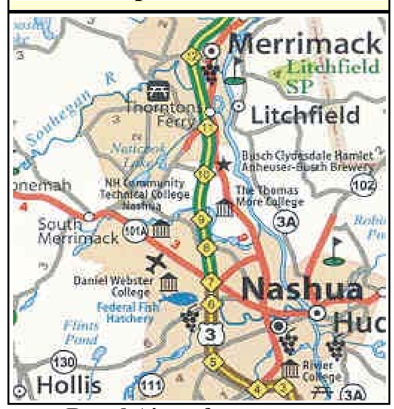
Condition: Good

Airport Picture

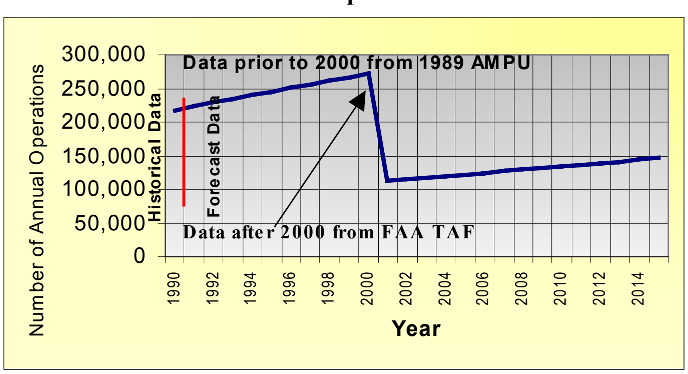
Airport Diagram



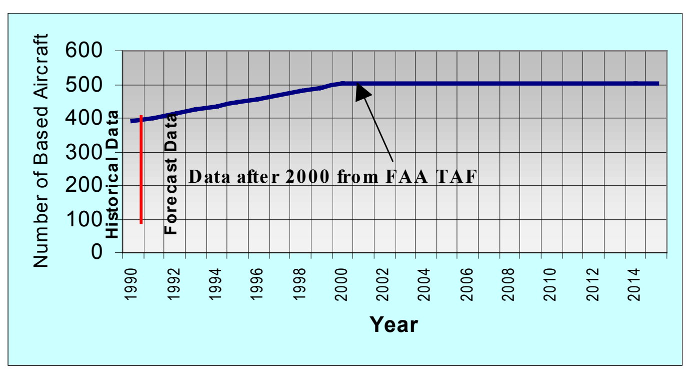
Airport Location



Operations



Based Aircraft



Source: 1989 AMPU, FAA Terminal Area Forecast

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

BOIRE FIELD

Airport Ownership and Management

Boire Field at Nashua is a public airport facility which is owned by the City of Nashua and operated and managed by the Nashua Airport Authority. The airport authority was created by State Legislation whose members are appointed by the Mayor of Nashua. The facility has a full-time manager who is employed by the airport authority.

Municipal Summary

Government Type:	Mayor and Council (Aldermen)
Municipal Budget (02):	$174,954,287
Fiscal Year:	July to June
Budget Prepared:	Spring
Budget Adopted/Vote:	N/A
Population (00):	86,605

Services Municipality Provides to Airport: Provides group health and vehicle coverage

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$378,596			
Operating Expenses	$332,404			
Capital Revenues	$484,733			
Capital Expenditures	$398,565			

The airport is financially self-sufficient with majority of operational revenue generated through land leases, aircraft tie-down fees, and fuel flowage fees. Historically, the Airport's books have come under review by Nashua's aldermen as the City provided the 5% matching funds needed for Airport Improvement Program projects. However, due to the financial stability of the airport, the 5% match from the City is no longer necessary. As a measure of good faith, the Airport Authority meets regularly with Aldermen and provides an annual budget for review. The City of Nashua receives over $400,000 annually in property tax revenue from businesses located on an off airport property.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

Airport management indicated that airport grant and other operating funds contributed significantly to the operations and maintenance of the facility. Specific use of airport grant funds was not available.

Fixed Base Operator (FBO)

The facilities 2 FBOs lease land from the Airport Authority as well as pay a monthly fuel farm rental fee, fuel flowage fee ($0.06/gallon for avgas and $0.07 for avjet fuel), and pass along tie-down fees to the authority.

Airport Contact Information

Royce Rankin (Airport Manager)

North Country

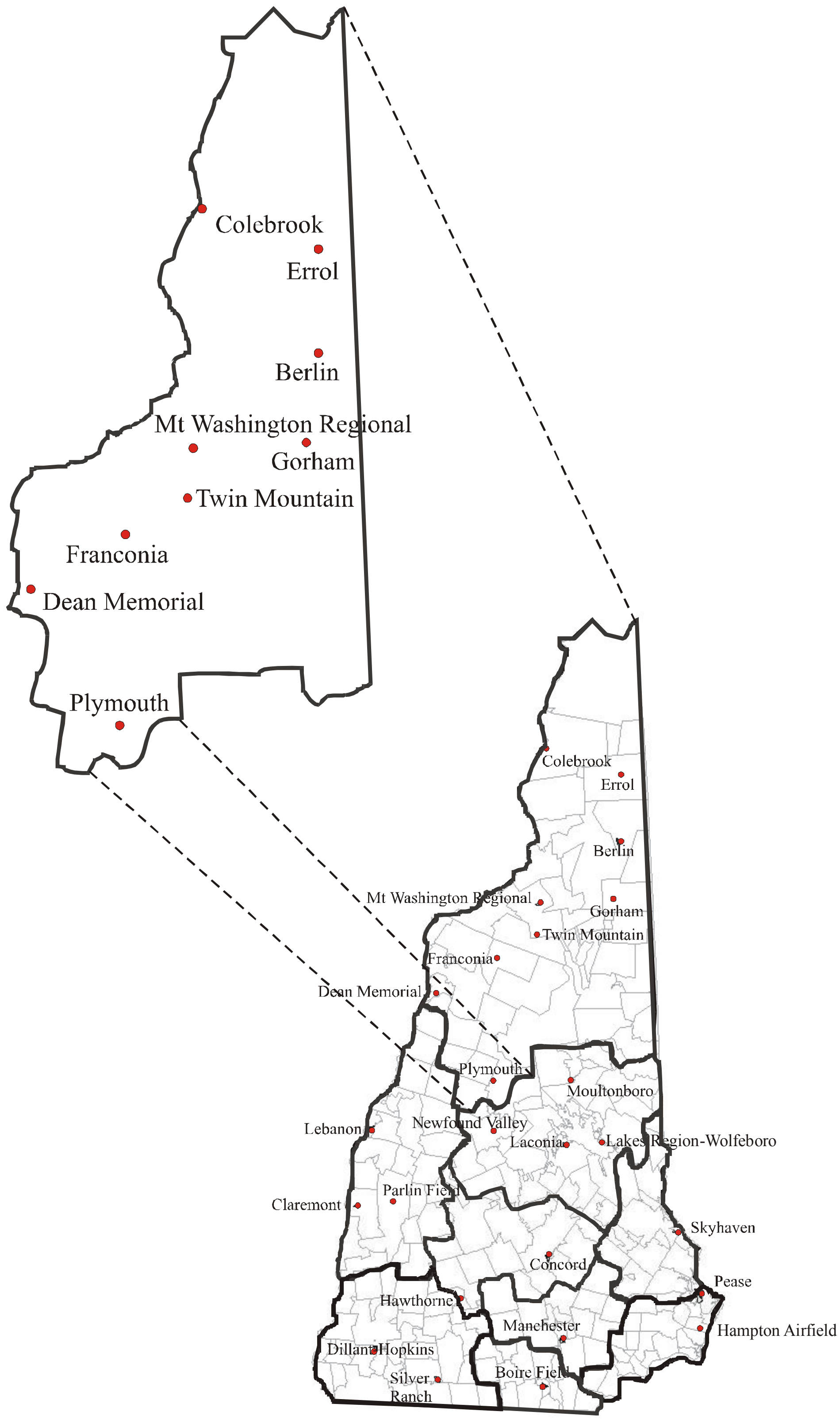
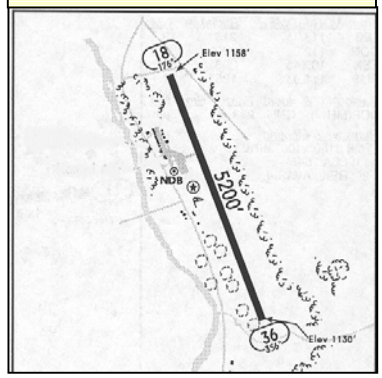


Figure 2-8 – Berlin

Airport Picture

Airport Diagram



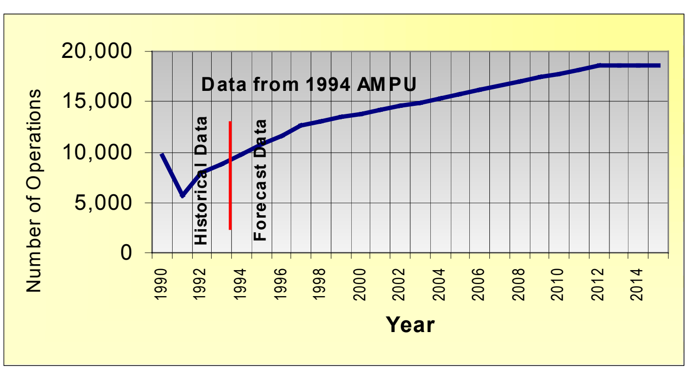
Airport Location

Airport Name:	**BERLIN**
FAA ID:	BML
ARC:	C-II
Ownership:	Public
Economic Region:	North Country
County:	Coos
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Residential/Agricultural
Fuel:	100LL, Jet
Weather Information:	ASOS/HIWAS
Fixed Based Operator:	Yes (Part-Time)
Navigation Aids:	VOR/NDB
Airport Latitude:	44.34.313.42 N
Airport Longitude:	71.10.333.54 W

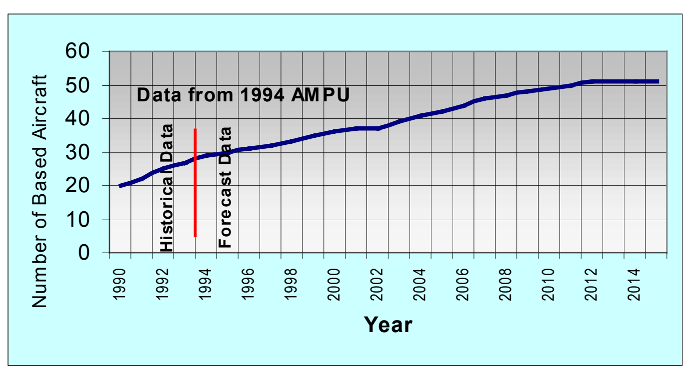
Runway Information:

Orientation:	18-36
Length:	5,200'
Width:	100'
Instrument Approaches:	VOR/DME-18, NDB-18, GPS-18, VOR/GPS-B
Lighting:	MIRL 18-36, REIL/PAPI 18; REIL 36
Surface:	Asphalt
Condition:	Good

Operations



Based Aircraft



Source: 1994 AMPU

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

BERLIN MUNICIPAL AIRPORT

Airport Ownership and Management

Although the Berlin Municipal Airport is located in Milan, New Hampshire, the Berlin Airport Authority owns the facility with financial and administrative operations coordinated through the City of Berlin. The Airport Authority is a seven member agency with representation from the City of Berlin, Town of Milan and Coos County. An airport manager and two part-time staff coordinate day to day airport management.

Municipal Summary

Government Type:	Manager and Council
Municipal Budget (02):	$26,284,706
Fiscal Year:	July to June
Budget Prepared:	January through spring
Budget Adopted/Vote:	N/A
Population (00):	10,331

Services Municipality Provides to Airport: Grounds Maintenance (snow clearing and grass cutting)

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$151,288			
Operating Expenses	$185,033			
Capital Revenues	$76,224			
Capital Expenditures	$31,362			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

State grant and airport operating funds used to support general airport maintenance (snow plowing and grounds maintenance)

Fixed Base Operator (FBO)

Aviation fuel available. An independent contractor is available on a part-time basis to provide aviation instruction and aircraft maintenance. All airport facilities are owned by the City of Berlin.

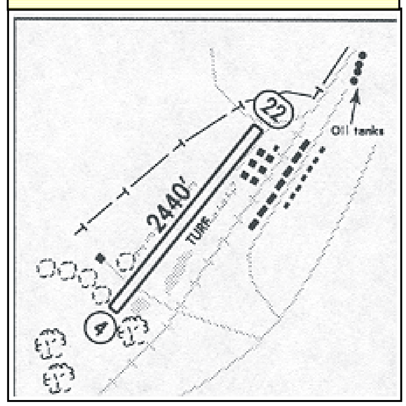
Airport Contact Information

Robert Theberge (Town Manager)
Eric Kaminsky (Airport Manager)

Figure 2-9 - Colebrook

Airport Picture

Airport Diagram



Airport Location

Airport Name:	**COLEBROOK**
FAA ID:	4C4
ARC:	A-I
Ownership:	Private
Economic Region:	North Country
County:	Coos
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	No zoning
Fuel:	None
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	None
Airport Latitude:	44.53.001.70 N
Airport Longitude:	71.29.583.03 W

Runway Information:

Orientation:	4-22
Length:	2,440'
Width:	74'
Instrument Approaches:	None
Lighting:	None
Surface:	Turf
Condition:	Good

Operations

Estimated Annual Operations = 1,500

Based Aircraft

Estimated Based Aircraft = 6

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

COLEBROOK AIRPORT

Airport Ownership and Management

The Colebrook Airport is a privately owned facility. The turf runway at Colebrook is open year round with most flights utilizing the facility during spring through fall.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,628			
Operating Expenses	$850			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Grounds maintenance (brush and grass cutting and runway rolling) expenses
- Utilities (electricity)

Fixed Base Operator (FBO)

No FBO

Airport Contact Information

Douglas Brooks (Airport Manager)
Ian Stevenson (Airport Owner)

Figure 2-10 - Errol

Airport Name: **ERROL**

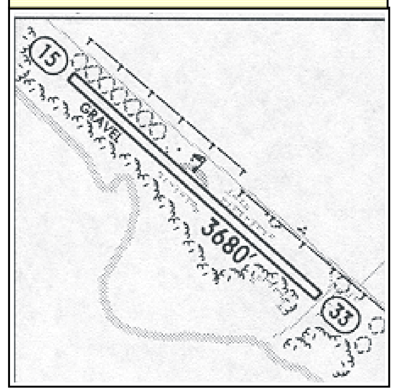
FAA ID:	ERR
ARC:	A-I
Ownership:	Private
Economic Region:	North Country
County:	Coos
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Residential
Fuel:	None
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	None
Airport Latitude:	44.47.331.79 N
Airport Longitude:	71.09.512.82 W

Runway Information:

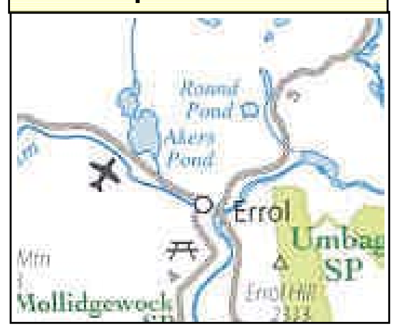
Orientation:	15-33
Length:	3,680’
Width:	75’
Instrument Approaches:	None
Lighting:	None
Surface:	Gravel
Condition:	Good

Airport Picture

Airport Diagram



Airport Location



Operations

Estimated Annual Operations = 750

Based Aircraft

Estimated Based Aircraft = 6

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

COLEBROOK AIRPORT

Airport Ownership and Management

The Colebrook Airport is a privately owned facility. The turf runway at Colebrook is open year round with most flights utilizing the facility during spring through fall.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,628			
Operating Expenses	$850			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Grounds maintenance (brush and grass cutting and runway rolling) expenses
- Utilities (electricity)

Fixed Base Operator (FBO)

No FBO

Airport Contact Information

Douglas Brooks (Airport Manager)
Ian Stevenson (Airport Owner)

Figure 2-11 - Franconia

Airport Name: **FRANCONIA**

FAA ID: 1B5

ARC: A-I

Ownership: Private

Economic Region: North Country

County: Grafton

Airport Role: General Aviation

Airspace: Class G

Zoning: Unknown

Fuel: None

Weather Information: None

Fixed Based Operator: Yes

Navigation Aids: None

Airport Latitude: 44.11.452.29 N

Airport Longitude: 71.44.583.10 W

Runway Information:

Orientation: 18-36

Length: 2,305’

Width: 150’

Instrument Approaches: None

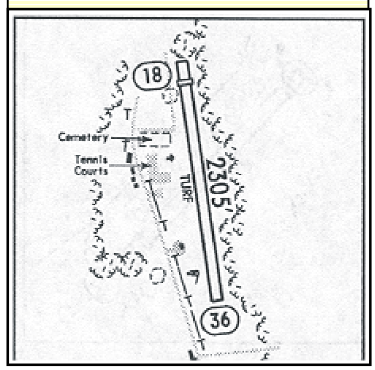
Lighting: None

Surface: Turf

Condition: Good

Airport Picture

Airport Diagram



Airport Location

Operations

Estimated Annual Operations = 4,500

Based Aircraft

Estimated Based Aircraft = 12 (11 gliders)

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

FRANCONIA AIRPORT

Airport Ownership and Management

The Franconia Airport is a privately owned facility with a turf runway which is open from spring until fall depending on runway conditions. The Franconia Soaring Association – a gliding club for members and non-members, primarily uses the facility. As a lodging facility neighboring the airport, the Franconia Inn uses the facility within its marketing campaign to attract guests who are interested taking advantage of the opportunity to experience gliding in the White Mountains.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,841			
Operating Expenses	$5,400			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Owner Relative to Airport Maintenance

- Insurance
- Grounds and building maintenance
- Property taxes

Fixed Base Operator (FBO)

Ramp or tiedown facilities provided on site. FBO operational arrangements N/A.

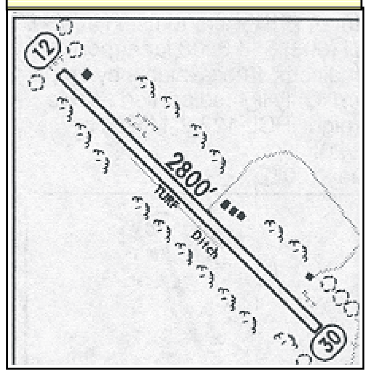
Airport Contact Information

Richard Morris/Franconia Inn
Franconia Soaring Association

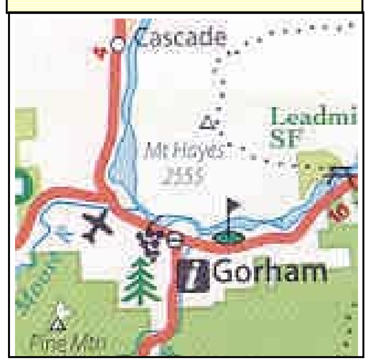
Figure 2-12 – Gorham

Airport Picture

Airport Diagram



Airport Location



Airport Name:	**GORHAM**
FAA ID:	2G8
ARC:	A-I
Ownership:	Public
Economic Region:	North Country
County:	Coos
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Residential
Fuel:	None
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	None
Airport Latitude:	44.23.352.20 N
Airport Longitude:	71.11.482.72 W

Runway Information:

Orientation:	12-30
Length:	2,815’
Width:	80’
Instrument Approaches:	None
Lighting:	None
Surface:	Turf
Condition:	Good

Operations

Estimated Annual Operations = 1,000

Based Aircraft

Estimated Based Aircraft = 4

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

GORHAM AIRPORT

Airport Ownership and Management

The Gorham Airport is owned and operated by the Town of Gorham. Day to day airport maintenance, operation and management are coordinated on a part-time basis through the Town of Gorham Water and Sewer Commission. The turf runway facility is open seasonally from spring through fall.

Municipal Summary

Government Type:	Selectmen
Town Meeting:	March
Municipal Budget (02):	$3,719,327
Fiscal Year:	January through December
Budget Prepared:	Late Summer
Budget Adopted/Vote:	N/A
Population (00):	2,895

Services Municipality Provides to Airport: Grounds Maintenance (snow clearing and grass cutting)

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,717			
Operating Expenses	$11,858			
Capital Revenues	$0			
Capital Expenditures	$0			

A Warrant Article for approximately $3,000 was approved at the 2002 Gorham Town Meeting for sod replacement and maintenance of the runway.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

The Town uses State operating grants and Airport Operating Funds for maintenance of the turf runway including grass cutting and periodic rolling.

Fixed Base Operator (FBO)

No FBO. Fueling is not permitted.

Airport Contact Information

William Jackson (Town Manager)
Lee Caroll (Airport Manager)

Figure 2-13 –Dean Memorial - Haverhill

Airport Name: **DEAN MEMORIAL - HAVERHILL**

FAA ID: 5B9

ARC: B-I

Ownership: Public

Economic Region: North Country

County: Grafton

Airport Role: General Aviation

Airspace: Class G

Zoning: No zoning

Fuel: 100LL

Weather Information: None

Fixed Based Operator: No

Navigation Aids: None

Airport Latitude: 44.04.502.33 N

Airport Longitude: 72.00.283.19 W

Runway Information:

Orientation: 1-19

Length: 2,500’

Width: 60’

Instrument Approaches: None

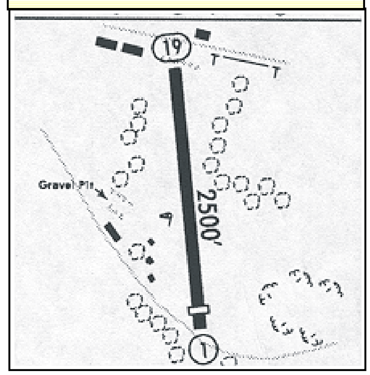
Lighting: None

Surface: Asphalt

Condition: Good

Airport Picture

Airport Diagram



Airport Location

Operations

Estimated Annual Operations = 4,000

Based Aircraft

Estimated Based Aircraft = 13

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

DEAN MEMORIAL AIRPORT

Airport Ownership and Management

The Dean Memorial Airport is a public airport which is owned by the Town of Haverhill and operated through an airport commission comprised of municipal and airport officials.

Municipal Summary

Government Type:	Selectmen/Town Manager
Town Meeting:	March
Municipal Budget (02):	$2,120,081
Fiscal Year:	January through December
Budget Prepared:	October through December
Budget Adopted/Vote:	March
Population (00):	4,416

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$22,700			
Operating Expenses	$15,197			
Capital Revenues	$10,915			
Capital Expenditures	$3,960			

Services Municipality Provides to Airport: None

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

Funds have been used to support airport maintenance and acquisition of equipment (tractor) for grounds maintenance and snow removal. It is anticipated that an additional funding source will be needed in order to complete an anticipated runway resurfacing project over the next few years. Current levels of funding are adequate to support routine facility maintenance.

Fixed Base Operator (FBO)

No FBO. Aviation fuel is available.

Airport Contact Information

Glenn English (Town Manager)
Jim Fortier (Airport Manager)

Figure 2-14– Mt Washington Regional - Whitefield

Airport Name: **MOUNT WASHINGTON REGIONAL - WHITEFIELD**

FAA ID: HIE

ARC: B-II

Ownership: Public

Economic Region: North Country

County: Coos

Airport Role: General Aviation

Airspace: Class G

Zoning: No zoning

Fuel: 100LL; Jet

Weather Information: ASOS

Fixed Based Operator: Yes

Navigation Aids: VOR/DME/NDB/LOC/GPS

Airport Latitude: 44.22.034.19 N

Airport Longitude: 71.32.400.96 W

Runway Information:

Orientation: 10-28

Length: 3,495’

Width: 75’

Instrument Approaches: LOC-10; NDB-10; GPS-10

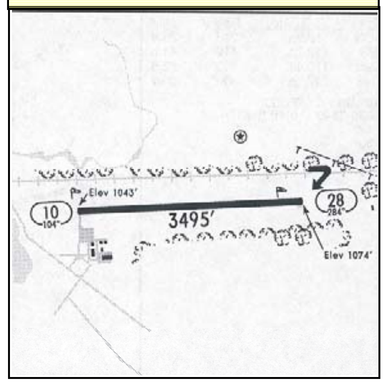
Lighting: MIRL 10-28; VASI 10; REIL 28

Surface: Asphalt

Condition: Good

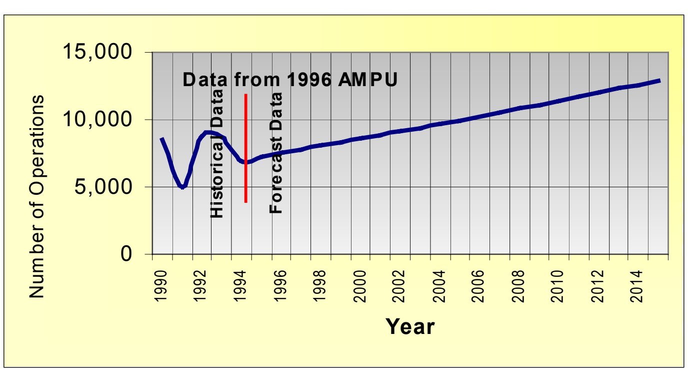
Airport Picture

Airport Diagram

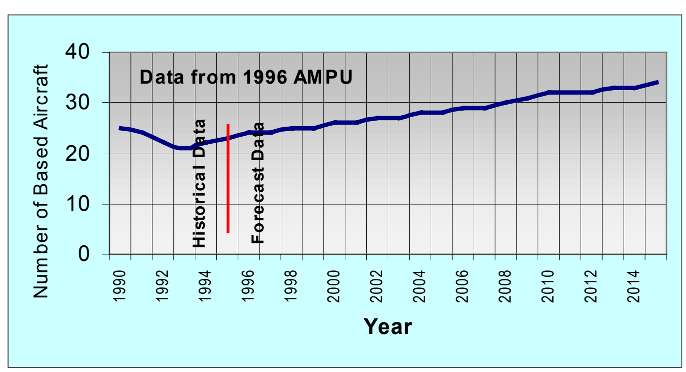


Airport Location

Operations



Based Aircraft



Source: 1996 AMPU

AIRPORT ECONOMIC, FINANCIAL AND MANAGEMENT INFORMATION

MOUNT WASHINGTON REGIONAL AIRPORT

Airport Ownership and Management

The Mount Washington Regional Airport is owned by the Town of Whitefield and is operated and managed by the Mount Washington Regional Airport Commission. The Commission is comprised of ten surrounding towns in a cooperative financial agreement to support the airport. Each member town in the Commission supports the airport by voluntarily providing revenue (as a line item in their annual budget) with a suggested amount of $0.75 per town resident. As each member town's contribution to the Commission is voluntary, most member communities contribute annually. However, some communities may not contribute every year (depending on each respective town's ability to provide funds). All member communities have a selectmen type of government.

	Town Name	Amount of Revenue Contributed to Airport	Total 02 Budget
The ten member towns include:	Whitefield	$1,530	$2,895,919
	Lancaster	$2,460	$3,201,283
	Jefferson	$755	$1,995,057
	Franconia	$695	$910,769
	Lincoln	$955	$3,240,913
	Bethlehem	$1,650	$1,900,000
	Littleton	$4,385	$5,037,457
	Twin Mountain	N/A	N/A
	Sugar Hill	$422	$599,000
	Easton	$192	$111,971
	TOTAL	$13,044	$19,892,369

Airport Financial Summary

	FY01	FY 02	FY03	FY04
Operating Revenue	$9,242			
Operating Expenditures	$4,972			
Capital Revenues	$695,475			
Capital Expenditures	N/A			

Services Municipality Provides to Airport: The Town of Whitefield contributes in-kind services to the airport such as snow removal and road repair equipment and labor.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Commission Relative to Airport Maintenance

Airport maintenance

Fixed Base Operator (FBO)

FBO facilities leased to proprietor

Airport Contact Information

Dave Willis (Airport Commission Chair)
Florian Coriveau (Airport Manager)

Figure 2-15 - Plymouth

Airport Name: **PLYMOUTH**

FAA ID: 1P1

ARC: A-I

Ownership: Public

Economic Region: North Country

County: Grafton

Airport Role: General Aviation

Airspace: Class G

Zoning: Residential – Airport airspace overlay

Fuel: 100LL

Weather Information: None

Fixed Based Operator: No

Navigation Aids: None

Airport Latitude: 43.46.452.57 N

Airport Longitude: 71.45.132.86 W

Runway Information:

Orientation: 12-30

Length: 2,380’

Width: 90’

Instrument Approaches: None

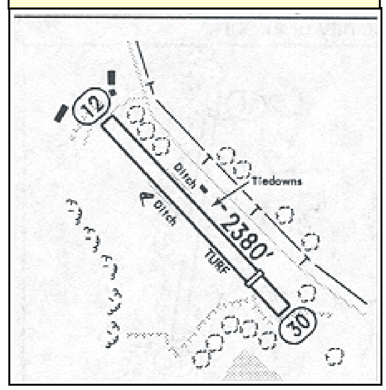
Lighting: None

Surface: Turf

Condition: Good

Airport Picture

Airport Diagram



Airport Location

Operations

Estimated Annual Operations = 4,000

Source: FAA Form 5010 Master Record

Based Aircraft

Estimated Based Aircraft = 16

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

PLYMOUTH MUNICIPAL AIRPORT

Airport Ownership and Management

The Town of Plymouth owns and operates the airport with a part-time airport manager.
Municipal Summary

Government Type:	Selectmen
Town Meeting:	March
Municipal Budget (02):	$4,800,000
Fiscal Year:	July to June
Budget Prepared:	September and October
Budget Adopted/Vote:	March
Population (00):	5,892

Services Municipality Provides to Airport: Town contracts grass cutting with local grounds keeping service

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,993			
Operating Expenses	$2,376			
Capital Revenues	N/A			
Capital Expenditures	$6,000			

Revenue is generated through land leases, hangar storage and tie-downs. The airport manager indicates that approximately 80% of expenses are covered through these sources. The Town of Plymouth provided $3,374 to the airport in FY03.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

State grants have been used for facility grounds maintenance (grass and snow clearing), operations (staff salaries), and purchasing capital equipment.

- Equipment purchase and repair
- Grounds and building maintenance
- Utilities (electricity)
- Staff salary

Fixed Base Operator (FBO)

No FBO. Fuel is available.

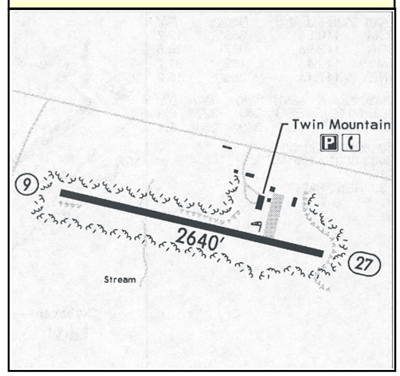
Airport Contact Information

Norman Smith (Airport Manager)

Figure 2-16 – Twin Mountain

Airport Picture

Airport Diagram



Airport Location

Airport Name:	**TWIN MOUNTAIN**
FAA ID:	8B2
ARC:	B-I
Ownership:	Private
Economic Region:	North Country
County:	Coos
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Residential/ Business
Fuel:	100LL
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	VOR/DME
Airport Latitude:	44.15.502.29 N
Airport Longitude:	71.32.512.92 W

Runway Information:

Orientation:	09-27
Length:	2,640’
Width:	60’
Instrument Approaches:	None
Lighting:	LIRL
Surface:	Asphalt
Condition:	Good

Operations

Estimated Annual Operations = 1,000

Based Aircraft

Estimated Based Aircraft = 3

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

TWIN MOUNTAIN AIRPORT

Airport Ownership and Management

The Twin Mountain Airport is a private airport facility with a part-time airport manager.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$0			
Operating Expenses	$100			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Owner Relative to Airport Maintenance

Funds have been allocated for a future maintenance project.

Fixed Base Operator (FBO)

No FBO. Fuel is available.

Airport Contact Information

Evan Karpf (Airport Owner)
Robert Weigand (Airport Manager)

Rockingham Region

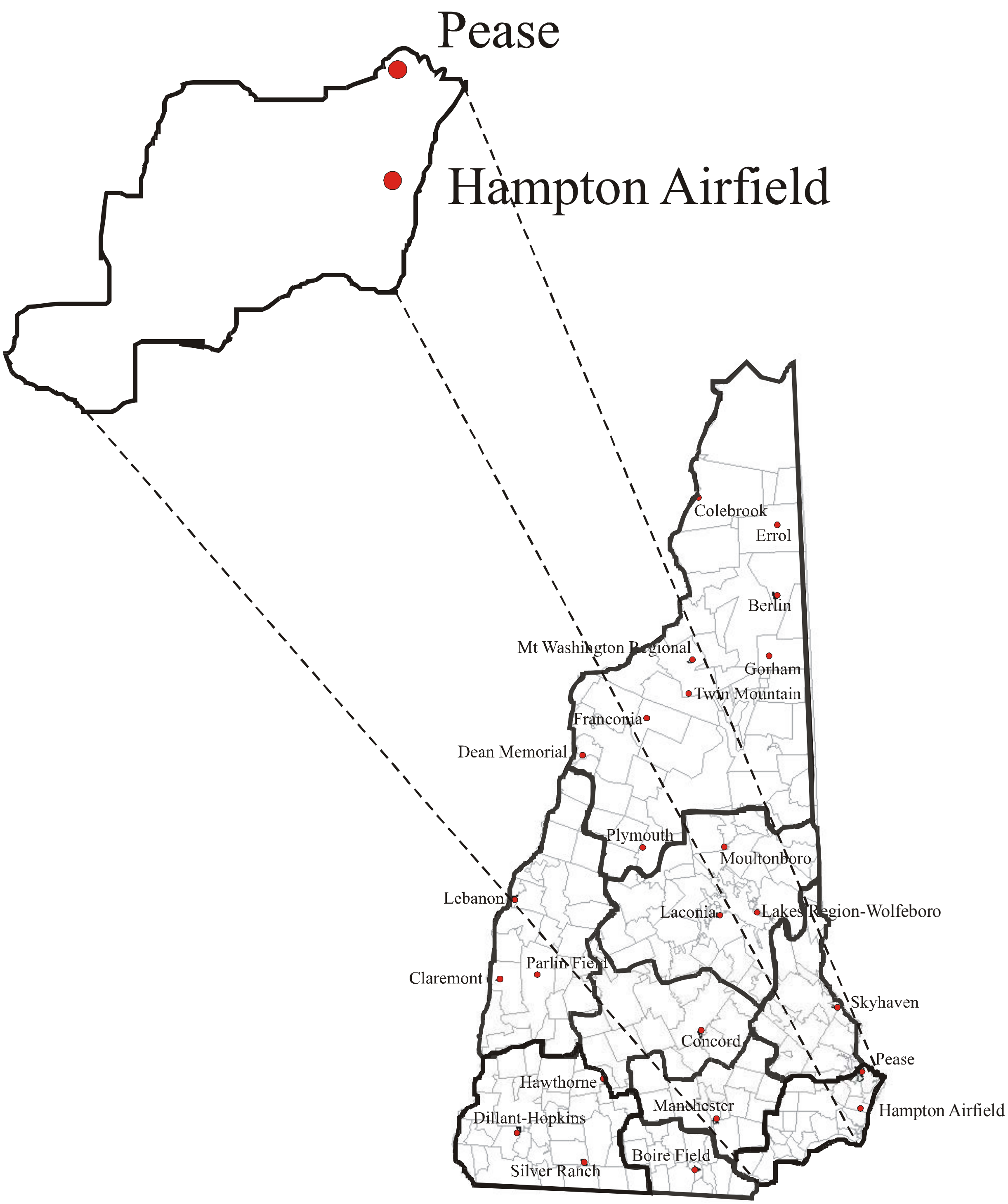


Figure 2-17 – Hampton Airfield

Airport Name: **HAMPTON AIRFIELD**

FAA ID: 7B3

ARC: B-I

Ownership: Private

Economic Region: Rockingham

County: Rockingham

Airport Role: General Aviation

Airspace: Class G

Zoning: Industrial/ Business/ Commercial

Fuel: 100LL; 80

Weather Information: None

Fixed Based Operator: Yes

Navigation Aids: None

Airport Latitude: 42.57.453.22 N

Airport Longitude: 70.49.431.91 W

Runway Information:

Orientation: 2-20

Length: 2,100’

Width: 170’

Instrument Approaches: None

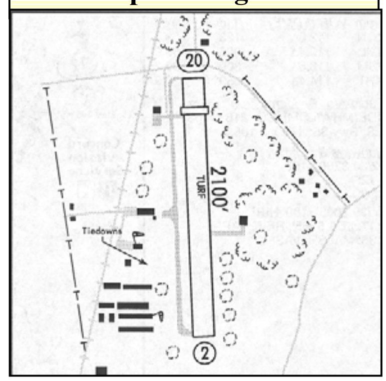
Lighting: Nonstandard

Surface: Turf

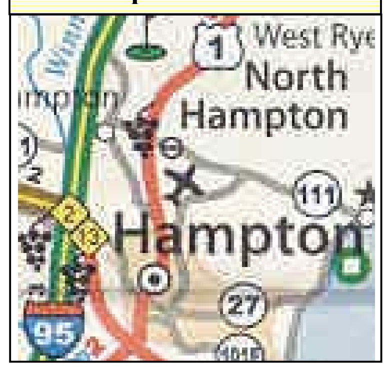
Condition: Fair

Airport Picture

Airport Diagram



Airport Location



Operations

Estimated Annual Operations = 37,500

Based Aircraft

Estimated Based Aircraft = 70

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

HAMPTON AIRFIELD

Airport Ownership and Management

The Hampton Airfield is a privately owned facility managed by Hampton Airfield, Inc.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,628			
Operating Expenses	$850			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Grounds maintenance (plowing and grass seeding)
- Capital improvements (road paving)
- Security
- Consultants (soil survey)

Fixed Base Operator (FBO)

FBO on site. FBO contractual arrangements were not available.

Airport Contact Information

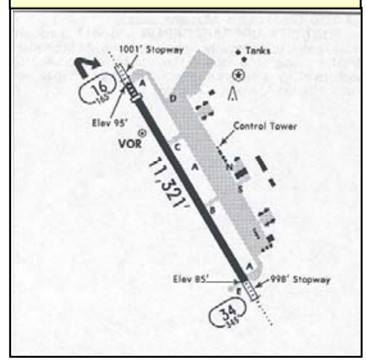
Mike Hart

Figure 2-18 – Pease International Tradeport

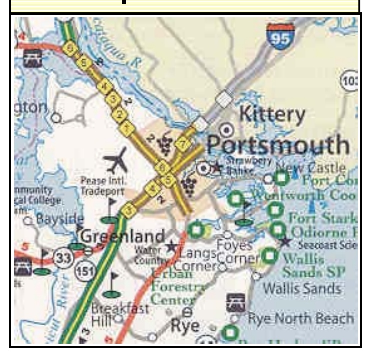
Airport Name:	**PEASE INTERNATIONAL TRADEPORT**
FAA ID:	PSM
ARC:	D-IV
Ownership:	Public
Economic Region:	Rockingham
County:	Rockingham
Airport Role:	Commercial Service
Airspace:	Class D
Zoning:	Airport – specific to Tradeport only
Fuel:	100LL; Jet
Weather Information:	None
Fixed Based Operator:	Yes
Navigation Aids:	ILS/VORTAC/GPS
Airport Latitude:	43.04.406.52 N
Airport Longitude:	70.49.237.84 W

Airport Picture

Airport Diagram



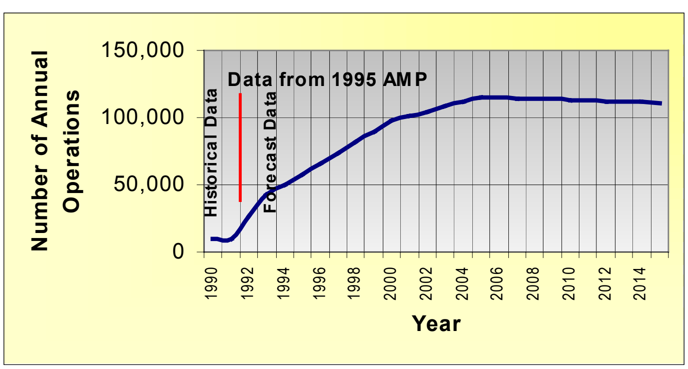
Airport Location



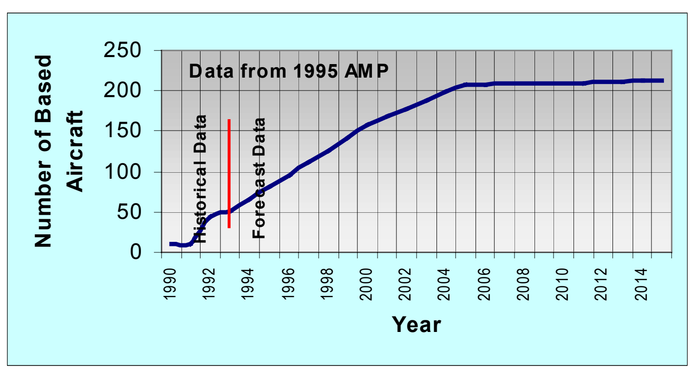
Runway Information:

Orientation:	16-34
Length:	11,321’
Width:	150’
Instrument Approaches:	ILS-16; ILS-34; VOR/TACAN/GPS-34; VOR-16; GPS-16
Lighting:	HIRL 16-34; MALSR/PAPI 16; MALSR/PAPI 34
Surface:	Asphalt-Concrete Grooved
Condition:	Good

Operations



Based Aircraft



Source: 1995 AMPU

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

PEASE INTERNATIONAL TRADEPORT

Airport Ownership and Management

The Pease International Tradeport, a former U.S. Air Force base, opened for civilian use in 1991 and is owned and operated by the Pease Development Corporation – a public corporation created under New Hampshire RSA 12-G. The 900 acre airport is part of the 4000 acre Pease International Tradeport property.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$1,808,426			
Operating Expenses	$3,115,345			
Capital Revenues	$6,056,461			
Capital Expenditures	$345,712			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Snow removal

Fixed Base Operator (FBO)

At least three FBOs on site with several other aircraft repair and aviation related services. FBO contractual arrangements were not available.

Airport Contact Information

Kim William Hopper (Acting Airport Manager)
Katie Hood (Finance Director)
Sue McDonald (Public Relations Director)

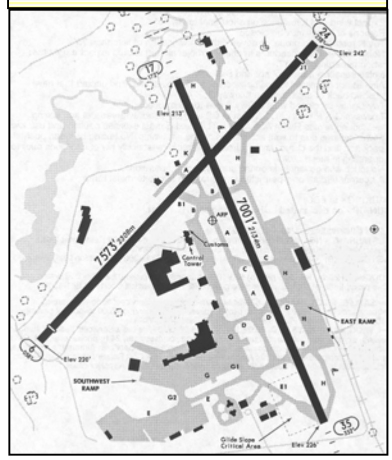
South Region

Figure 2-19 – Manchester

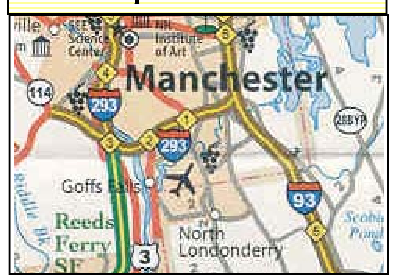
Airport Name:	**MANCHESTER**
FAA ID:	MHT
ARC:	C-IV
Ownership:	Public
Economic Region:	South
County:	Hillsborough
Airport Role:	Commercial Service
Airspace:	Class C
Zoning:	Airport
Fuel:	100LL; Jet
Weather Information:	ASOS/LAWRS
Fixed Based Operator:	Yes
Navigation Aids:	VOR/DME/ILS/NDB/GPS
Airport Latitude:	42.56.042.59 N
Airport Longitude:	71.26.134.01 W

Airport Picture

Airport Diagram



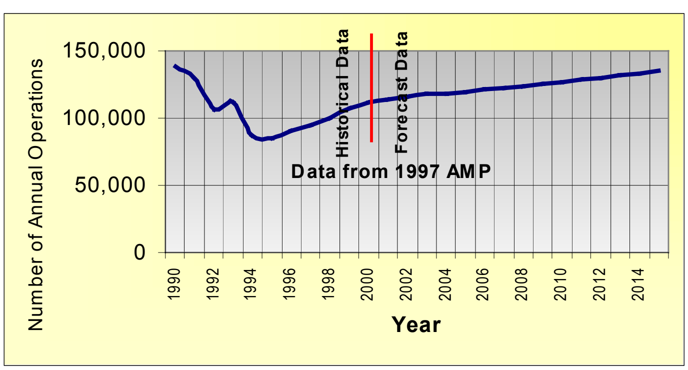
Airport Location



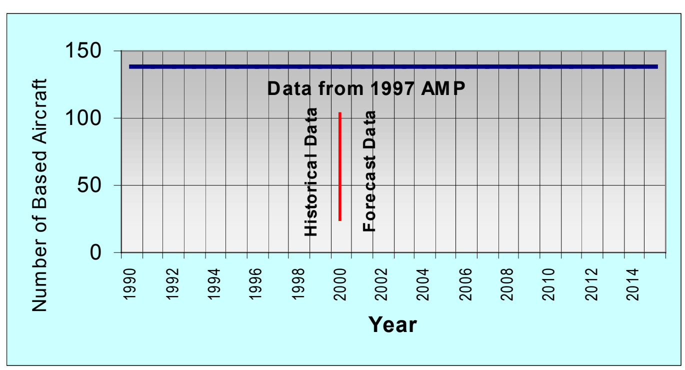
Runway Information:

Orientation:	6-24	17-35
Length:	7,573'	7,001'
Width:	150'	150'
Instrument Approaches:	ILS-6; GPS24	ILS-17; ILS-35; VOR/DME/GPS-17; VOR-35;NDB/GPS-35;
Lighting:	HIRL 6-24; REIL 24; PAPI-24	HIRL 17-35; MALSR/VASI 17; MALSR/PAPI 35
Surface:	ASPHALT-GROOVED	Asphalt-Grooved
Condition:	Good	Good

Operations



Based Aircraft



Source: 1997 AMPU

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

MANCHESTER AIRPORT

Airport Ownership and Management

The Manchester Airport is northern New England's largest and busiest airport and is owned and operated by the City of Manchester. The facility is one of three commercial airports in the state (Pease Tradeport and Lebanon Airport) with over 200 passenger and cargo flights each day. Manchester Airport offers air travelers non-stop and direct service to leading U.S. and Canadian cities as well as a fixed base operator, tie-downs, hangars and services for general aviation aircraft. The airport is a department of the City of Manchester government and is advised by the Manchester Airport Advisory Committee.

Municipal Summary

Government Type:	Mayor and (14) Aldermen
Municipal Budget (02):	$92,271,444
Fiscal Year:	July to June
Budget Prepared:	December - January
Budget Adopted/Vote:	Late Spring
Population (00):	107,006

Services Municipality Provides to Airport: Airport is considered a department of the City of Manchester, however, all airport related revenues remain within the airport's accounts. The airport financially reimburses any services performed at the airport by other city departments.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$29,166,572			
Operating Expenses	$19,371,326			
Capital Revenues	$40,181,443			
Capital Expenditures	$15,163,267			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Purchase aviation de-icing fluid

Fixed Base Operator (FBO)

Full service FBO. FBO leases land from the airport and forwards $0.05/gallon of general aviation and jet fuel (not commercial airline fuel) and $0.025/gallon of cargo fuel sold (fuel flow fee) as well as an undisclosed percentage of gross sales.

Airport Contact Information

Kevin Dillon (Airport Director)
Michael Farren (Assistant Airport Director Finance and Administration)

Southwest Region

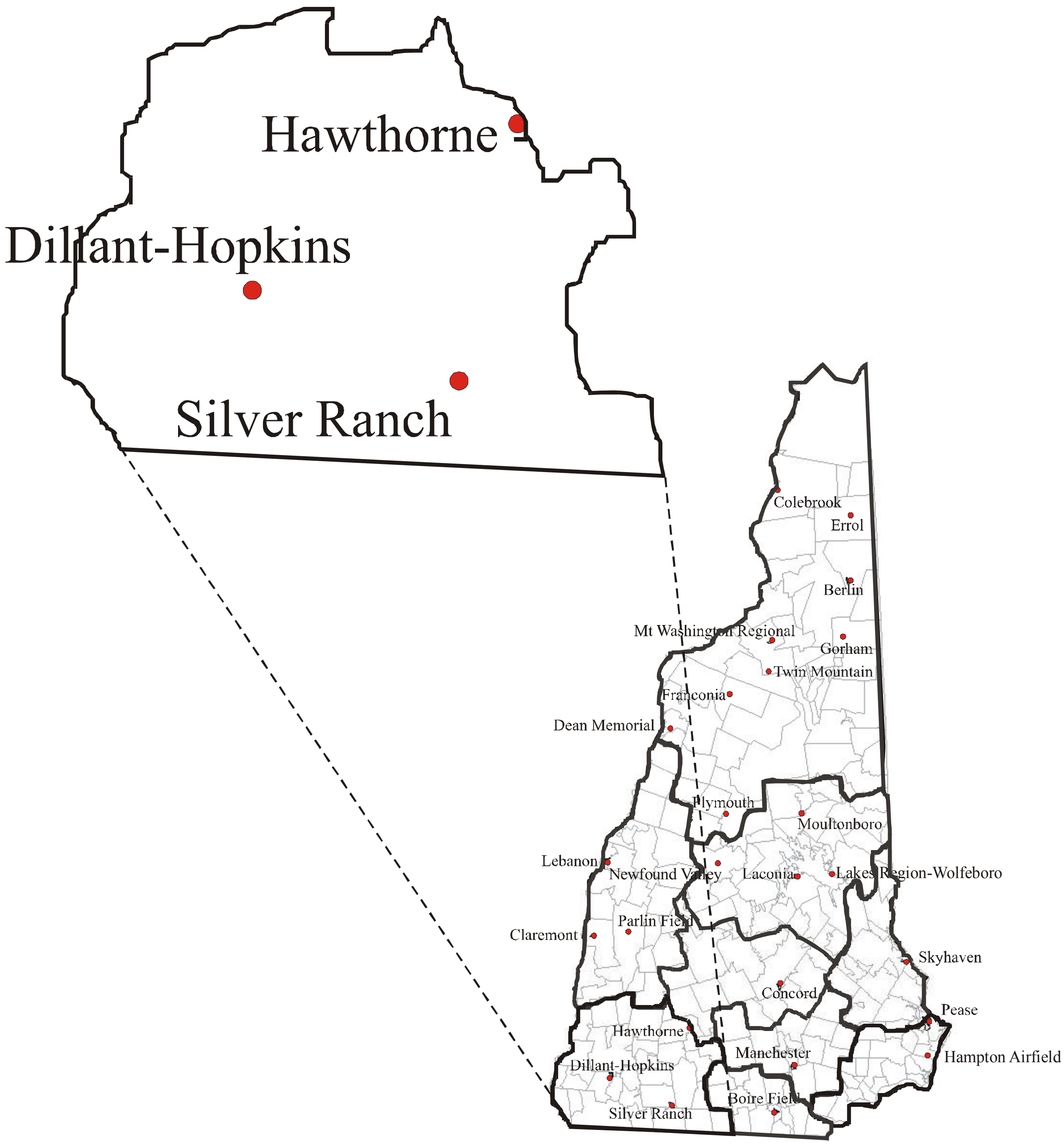


Figure 2-20 – Hawthorne - Hillsboro

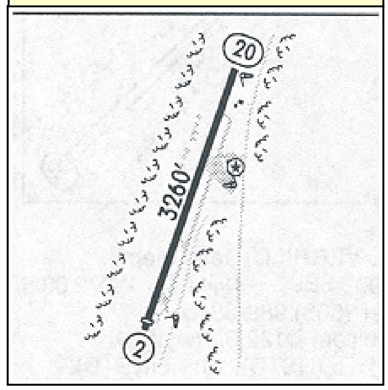
Airport Name:	**HAWTHORNE - HILLSBORO**
FAA ID:	8B1
ARC:	B-I
Ownership:	Private
Economic Region:	Southwest
County:	Hillsborough
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Commercial
Fuel:	100LL
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	VORTAC
Airport Latitude:	43.04.002.89 N
Airport Longitude:	71.53.582.86 W

Runway Information:

Orientation:	2-20
Length:	3,260’
Width:	75’
Instrument Approaches:	None
Lighting:	MIRL
Surface:	Asphalt
Condition:	Good

Airport Picture

Airport Diagram



Airport Location

Operations

Estimated Annual Operations = 1,500

Based Aircraft

Estimated Based Aircraft = 13

Source: FAA Form 5010 Master Record

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

HAWTHORNE-FEATHER AIRPARK

Airport Ownership and Management

Hawthorne-Feather Airpark is a privately owned facility.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	N/A			
Operating Expenses	N/A			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

N/A

Fixed Base Operator (FBO)

No FBO. Fuel is available.

Airport Contact Information

James Rymes (Airport Manager)

Figure 2-21 – Silver Ranch - Jaffery

Airport Name: **SILVER RANCH - JAFFREY**

FAA ID: AFN

ARC: B-I

Ownership: Private

Economic Region: Southwest

County: Cheshire

Airport Role: General Aviation

Airspace: Class G

Zoning: Residential

Fuel: 100LL

Weather Information: ASOS

Fixed Based Operator: No

Navigation Aids: VORTAC

Airport Latitude: 42.48.184.83 N

Airport Longitude: 72.00.108.79 W

Runway Information:

Orientation: 16-34

Length: 2,982’

Width: 134’

Instrument Approaches: VOR/GPS-A

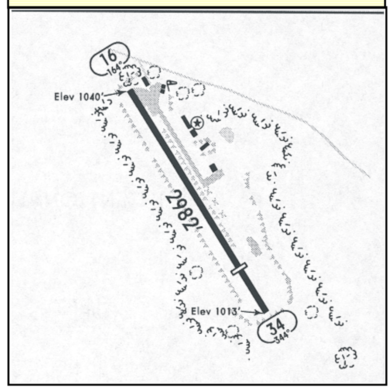
Lighting: LIRL

Surface: Asphalt

Condition: Fair

Airport Picture

Airport Diagram



Airport Location

Operations

Estimated Annual Operations = 10,648

Source: FAA Form 5010 Master Record

Based Aircraft

Estimated Based Aircraft = 41

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

SILVER RANCH (JAFFREY) AIRPORT

Airport Ownership and Management

The Silver Ranch (Jaffrey) Airport is a privately owned facility with a full-time manager.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$5,722			
Operating Expenses	$7,320			
Capital Revenues	N/A			
Capital Expenditures	$5,276			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

State grant funds provided are not enough to sufficiently maintain the facility.

- Utilities (electricity)
- Grounds maintenance (snow plowing)
- Capital improvements (paving)

Fixed Base Operator (FBO)

No FBO. Aviation fuel is available

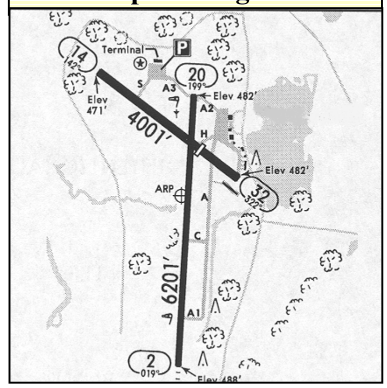
Airport Contact Information

Harvey and Lee Sawyer (Airport Owners and Managers)

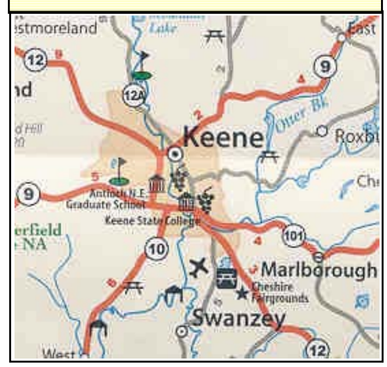
Figure 2-22 – Dillant-Hopkins - Keene

Airport Picture

Airport Diagram



Airport Location



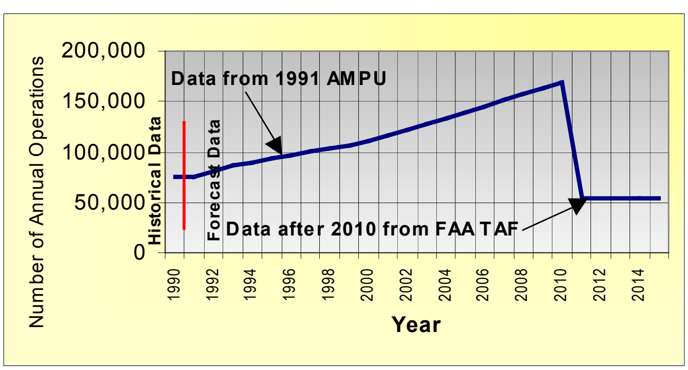
Airport Name: **DILLANT-HOPKINS - KEENE**

FAA ID:	EEN
ARC:	C-II
Ownership:	Public
Economic Region:	Southwest
County:	Cheshire
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Airport
Fuel:	100LL; Jet A
Weather Information:	AWOS
Fixed Based Operator:	Yes
Navigation Aids:	VORTAC/ILS
Airport Latitude:	42.53.542.38 N
Airport Longitude:	72.16.148.12 W

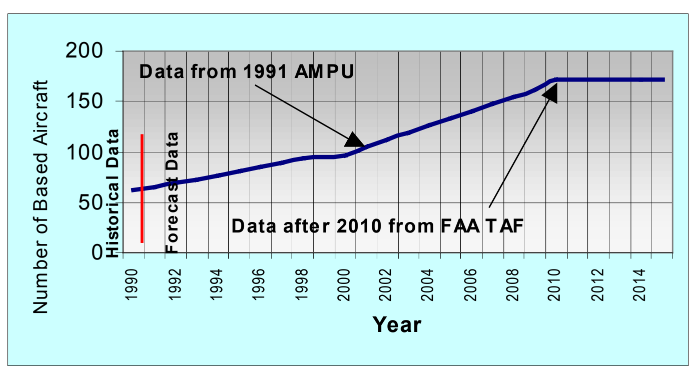
Runway Information:

Orientation:	14-32	2-20
Length:	4,001’	6,201’
Width:	150’	100’
Instrument Approaches:	None	ILS 2; VOR 2; GPS 2
Lighting:	MIRL 14-32	HIRL 2-20; MALSR/PAPI 2; PAPI 20
Surface:	Asphalt	Asphalt
Condition:	Fair	Good

Operations



Based Aircraft



Source: 1991 AMPU, FAA Terminal Area Forecasts

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

DILLANT-HOPKINS (KEENE) AIRPORT

Airport Ownership and Management

Dillant-Hopkins Airport in Keene is owned and operated by the City of Keene. The facility has a full-time manager (city employee) who oversees maintenance, administrative and operation of the airport. With its 6,200 foot runway, the facility has the ability to handle all types of aircraft from single engine personal aircraft to large commercial jet airliners.

Municipal Summary

Government Type:	Mayor and Council and Manager
Municipal Budget (02):	$30,978,288
Fiscal Year:	N/A
Budget Prepared:	N/A
Budget Adopted/Vote:	N/A
Population (00):	22,563

Services Municipality Provides to Airport: Airport is considered a department within the City of Keene administration

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$240,911			
Operating Expenses	$304,689			
Capital Revenues	$462,129			
Capital Expenditures	$100,712			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- In FY 2001, the airport had the following expenditures - $147,933 (personnel), $156,756 (operations), and $100,712 (debt service for T-hangar and equipment facilities and runway relocation)

Fixed Base Operator (FBO)

Full service FBO.

Airport Contact Information

Steve Thornton (Assitant Finance Director)
Ed Mattern (Airport Director)

Strafford Region

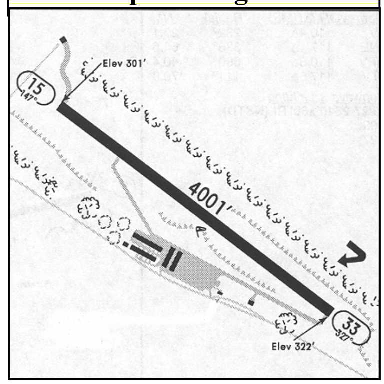
Figure 2-23 – Rochester – Skyhaven

Airport Name: **SKYHAVEN**
FAA ID: DAW
ARC: B-II
Ownership: Public
Economic Region: Strafford
County: Strafford
Airport Role: General Aviation
Airspace: Class G
Zoning: Agricultural/ Airport overlay
Fuel: 100LL; Jet A
Weather Information: ASOS
Fixed Based Operator: Yes
Navigation Aids: VORTAC/NDB
Airport Latitude: 43.17.026.23 N
Airport Longitude: 70.55.453.17 W

Runway Information:
Orientation: 15-33
Length: 4,001’
Width: 100’
Instrument Approaches: VOR/DME/GPS-A; NDB/GPS-B; NDB-33; GPS-33
Lighting: MIRL 15-33; REIL/PAPI 33
Surface: Asphalt
Condition: Good

Airport Picture

Airport Diagram



Airport Location

Operations

Estimated Annual Operations = 18,592

Source: FAA Form 5010 Master Record

Based Aircraft

Estimated Based Aircraft = 47

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

SKYHAVEN AIRPORT

Airport Ownership and Management

As the only general aviation facility owned and operated by the State of New Hampshire, Department of Transportation, Division of Aeronautics. Skyhaven Airport in Rochester, is home to over 80 based aircraft and is the only airport in Strafford County.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$168,730			
Operating Expenses	$166,298			
Capital Revenues	$826,659			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

- Capital improvements (hangar upgrades)
- Grounds, building and fuel system maintenance
- FBO/management
- Utilities (telephone, water, heat, garbage and electric)
- Debt service

Fixed Base Operator (FBO)

Full service FBO.

Airport Contact Information

Ronald W. Wanner (NH DOT)
Glen Horne (Ossipee Valley Aviation)

Upper Valley Region

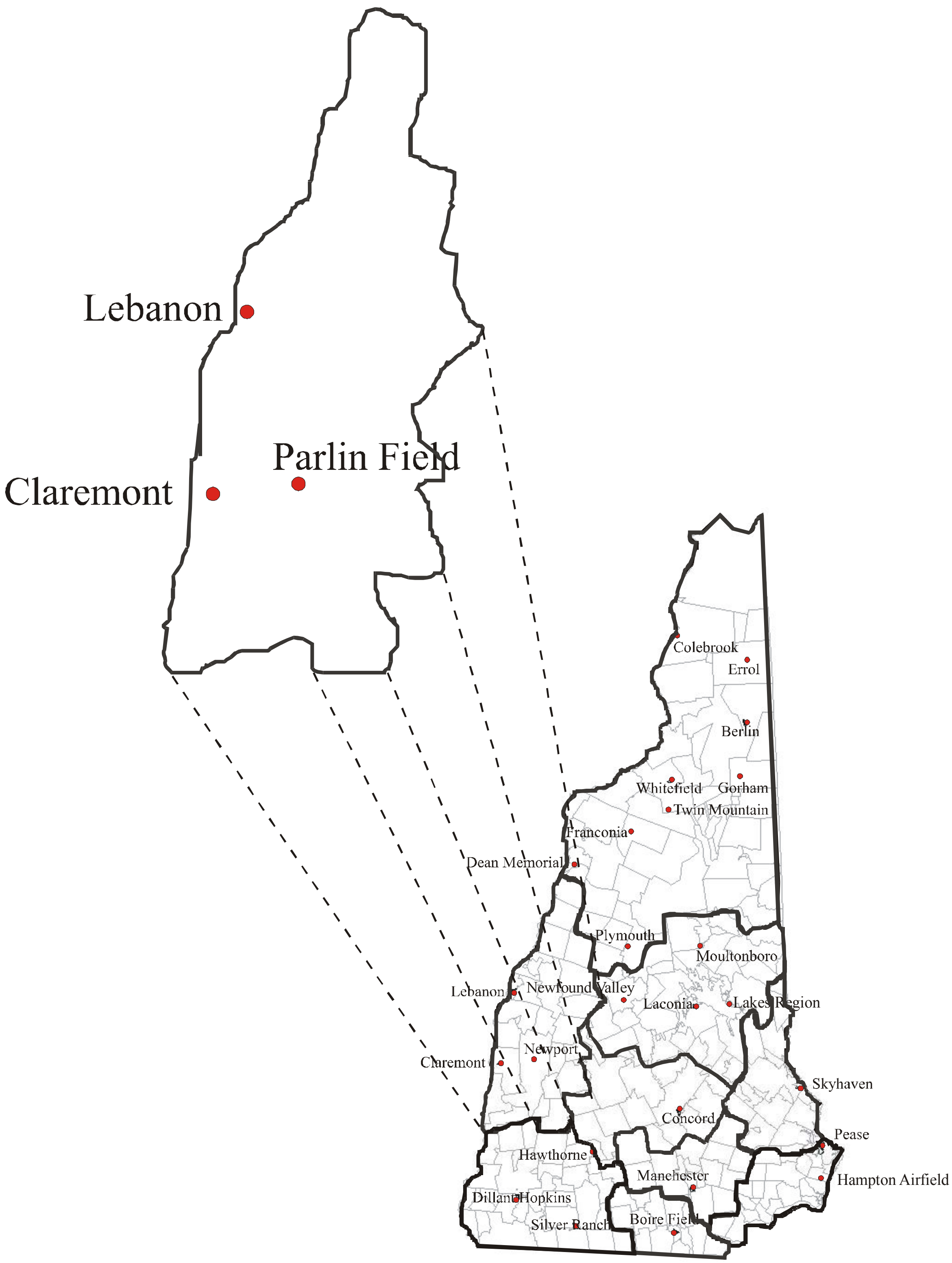


Figure 2-24 – Claremont

Airport Name: **CLAREMONT**

FAA ID: CNH

ARC: B-I

Ownership: Public

Economic Region: Upper Valley

County: Sullivan

Airport Role: General Aviation

Airspace: Class G

Zoning: Airport Approach District

Fuel: 100LL

Weather Information: None

Fixed Based Operator: Part-Time

Navigation Aids: VOR/DME; NDB

Airport Latitude: 43.22.135.55 N

Airport Longitude: 72.22.072.36 W

Runway Information:

Orientation: 11-29

Length: 3,100’

Width: 100’

Instrument Approaches: NDB-A; GPS-29

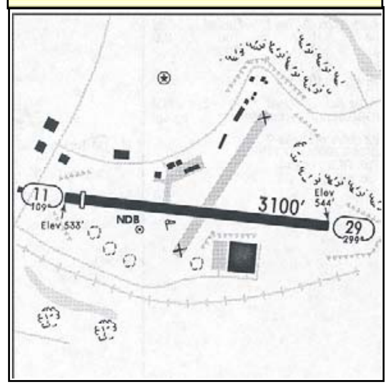
Lighting: MIRL 11-29; REIL /VASI 29

Surface: Asphalt

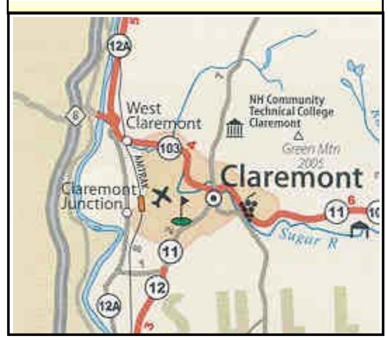
Condition: Good

Airport Picture

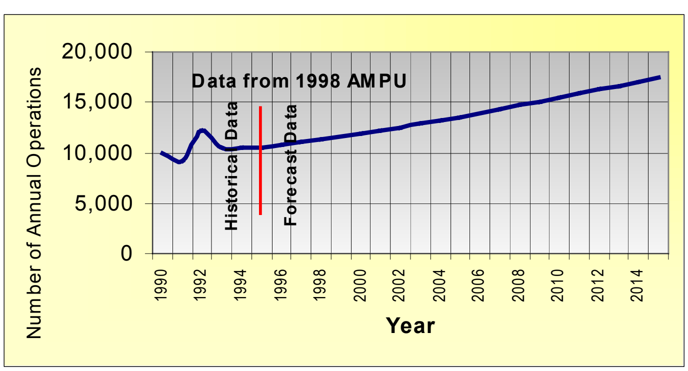
Airport Diagram



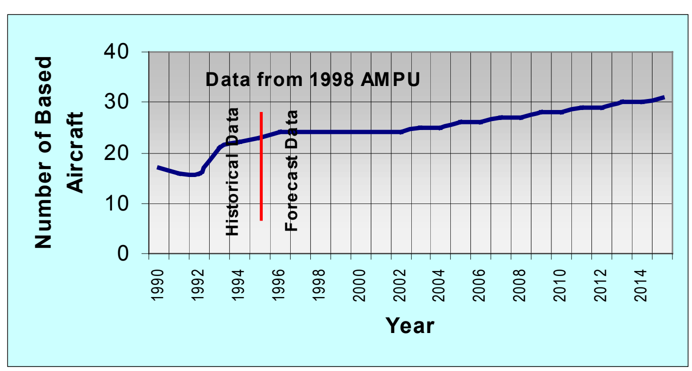
Airport Location



Operations



Based Aircraft



Source: 1998 AMPU

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

CLAREMONT AIRPORT

Airport Ownership and Management

The Claremont Airport is owned and operated by the City of Claremont. The Claremont Airport Advisory Board serves in an advisory function to the City Council relative to airport operations. Due to the limited availability of funds, the airport relies on a part-time airport manager, who is also the City Fire Chief, and volunteers to assist with airport maintenance.

Municipal Summary

Government Type:	Manager and Council
Municipal Budget (02):	$10,266,000
Fiscal Year:	January to December
Budget Prepared:	October through February
Budget Vote:	February
Population (00):	13,151

Services Municipality Provides to Airport: Grounds Maintenance (snow clearing and grass cutting)

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$452			
Operating Expenses	$43,728			
Capital Revenues	N/A			
Capital Expenditures	N/A			

According to a municipal representative, the Town of Claremont funded the airport in the amount of $48,868 in 2003 and has been supporting the airport financially for many years. The amount of funds provided to the airport has increased annually and appear to be sufficient to maintain the facility.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

State grants are used for grounds maintenance and the installation of hazard beacons.

- Airport operations

Fixed Base Operator (FBO)

FBO on site. FBO leases space from City and receives all hangar and tie-down revenue.

Airport Contact Information

Chief Peter Chase (Airport Manager)
Mary Walter

Figure 2-25 – Lebanon

Airport Name: **LEBANON**

FAA ID: LEB

ARC: C-II

Ownership: Public

Economic Region: Upper Valley

County: Grafton

Airport Role: Commercial Service

Airspace: Class D

Zoning: Light industrial

Fuel: 100LL; Jet

Weather Information: ASOS/LAWRS

Fixed Based Operator: Yes

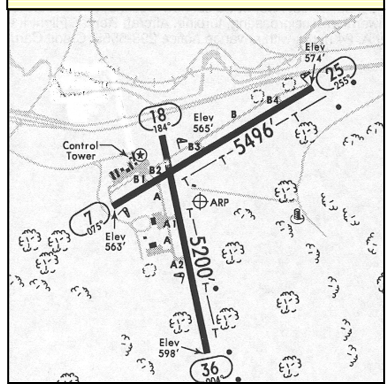
Navigation Aids: VOR/DME/NDB/ILS

Airport Latitude: 43.37.349.40 N

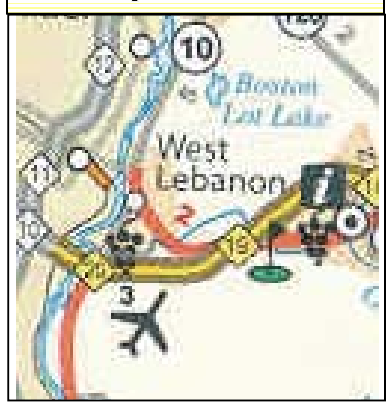
Airport Longitude: 72.18.153.62 W

Airport Picture

Airport Diagram



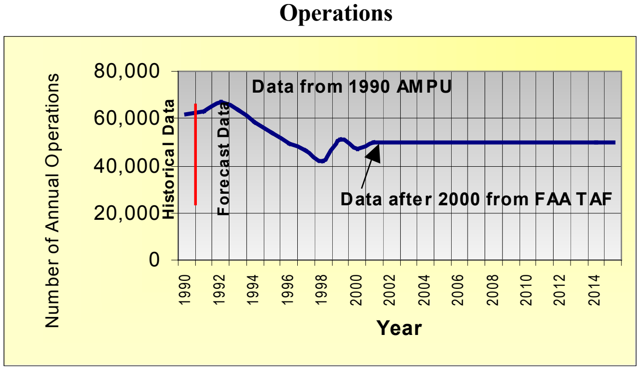
Airport Location



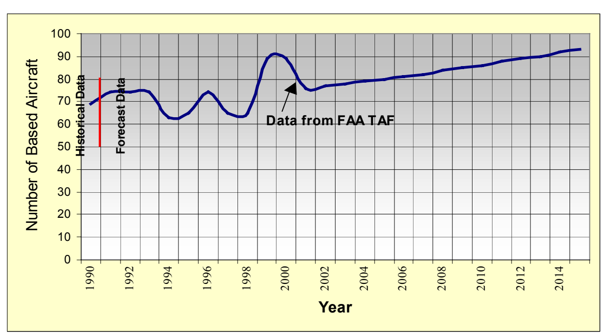
Runway Information:

Orientation:	7-25	18-36
Length:	5,496’	5,200’
Width:	100’	100’
Instrument Approaches:	VOR/DME-7; VOR-25; NDB/GPS-B; GPS-7; GPS-25	ILS-18;
Lighting:	MIRL 7-25; REIL/PAPI 7; REIL/VASI 25	HIRL 18-36; REIL 18; PAPI 36
Surface:	Asphalt	Asphalt
Condition:	Good	Good

Operations



Based Aircraft



Source: 1990 AMPU, FAA Terminal Area Forecasts

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

LEBANON MUNICIPAL AIRPORT

Airport Ownership and Management

The Airport is owned and operated by the City of Lebanon. The previous Lebanon Airport Authority, created by the State Legislature, was discontinued in favor of the Airport being designated as a department within the City of Lebanon. There has been no interest in re-establishing the Airport Authority.

Municipal Summary

Government Type:	Manager and Council
Municipal Budget (02):	$14,684,313
Fiscal Year:	January to December
Budget Prepared:	Late summer to fall
Budget Adopted/Vote:	December
Population (00):	12,568

Services Municipality Provides to Airport: Municipality provides all services (airport is municipal department)

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$612,813			
Operating Expenses	$672,649			
Capital Revenues	$474,431			
Capital Expenditures	$73,772			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

According to the Airport Manager's office, state grants and Airport Operating Funds comprise a small percentage of the total amount of funds needed to maintain the facility. Airport management indicated that they are maintaining the facility as best as possible based on their current and projected fiscal situation.

- Grounds maintenance (grass cutting, snow plowing, etc.)
- Runway maintenance (line painting)
- Capital improvements (paving)

Fixed Base Operator (FBO)

Full service FBO on site. The Lebanon Airport leases land to the FBO as well as receives fuel flowage fees and an undetermined percentage of gross sales from the FBO.

Airport Contact Information

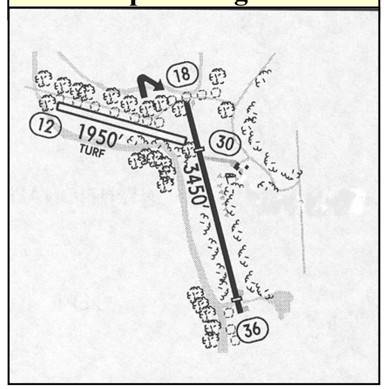
Tim Edwards (Airport Manager)

Figure 2-26 – Parlin Field – Newport

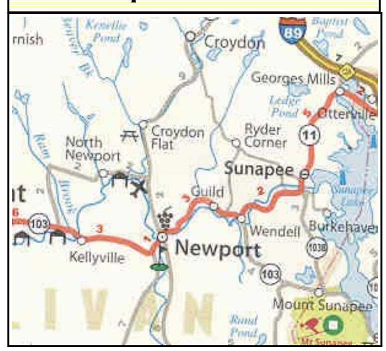
Airport Name:	**PARLIN FIELD - NEWPORT**
FAA ID:	2B3
ARC:	B-I
Ownership:	Public
Economic Region:	Upper Valley
County:	Sullivan
Airport Role:	General Aviation
Airspace:	Class G
Zoning:	Rural/ Airport overlay zone
Fuel:	100LL
Weather Information:	None
Fixed Based Operator:	No
Navigation Aids:	VOR/DME
Airport Latitude:	43.23.172.66 N
Airport Longitude:	72.11.213.15 W

Airport Picture

Airport Diagram



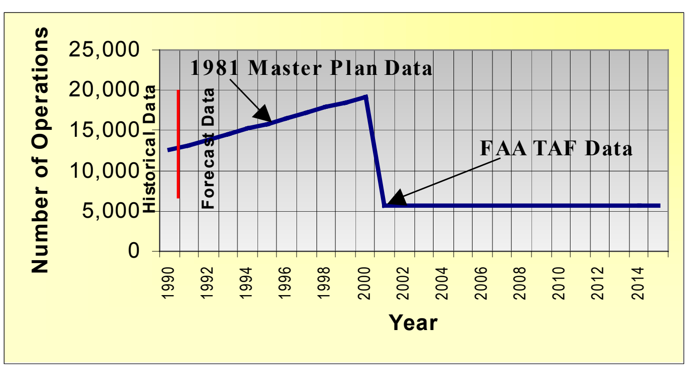
Airport Location



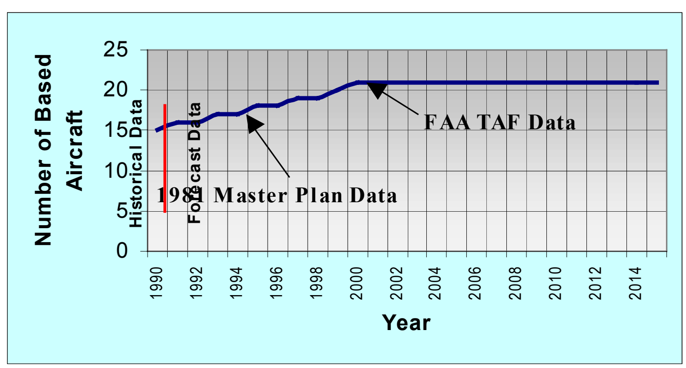
Runway Information:

Orientation:	12-30	18-36
Length:	1,950'	3,450'
Width:	80'	50'
Instrument Approaches:	None	None
Lighting:	None	None
Surface:	Turf	Asphalt
Condition:	Good	Good

Operations



Based Aircraft



Source: 1981 AMPU, FAA Terminal Area Forecasts

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

PARLIN FIELD (NEWPORT)

Airport Ownership and Management

Parlin Field is owned and operated by the Town of Newport with a part-time non-paid airport manager. The elected five member Parlin Field Airport Commission exists as an advisory mechanism to Newport selectmen.

Municipal Summary

Government Type:	Selectmen
Town Meeting:	May
Municipal Budget (02):	$6,100,000
Fiscal Year:	July to June
Budget Prepared:	Late winter through spring
Budget Adopted/Vote:	May
Population (00):	6,269

Services Municipality Provides to Airport: Grounds maintenance (snow plowing and grass cutting)

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	$29,560			
Operating Expenses	$23,487			
Capital Revenues	$6,073			
Capital Expenditures	N/A			

The Town Manager indicated that the airport receives anywhere from $2,000 to $10,000 in municipal funds on an annual basis depending on project specific needs. The Town provided the airport with $50,000 last year.

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

State grants and airport operating funds have helped fund project specific tasks such as clearing thresholds and property acquisition as well as airport maintenance. The Town Manager indicated that the airport is well maintained given their limited resources.

Fixed Base Operator (FBO)

No FBO. Fuel available

Airport Contact Information

Dan O'Neill (Town Manager)
Dean Stetson (Airport Manager)

2.6 AIRSPACE, AIR TRAFFIC CONTROL, AND NAVIGATIONAL AIDS (NAVAIDS)

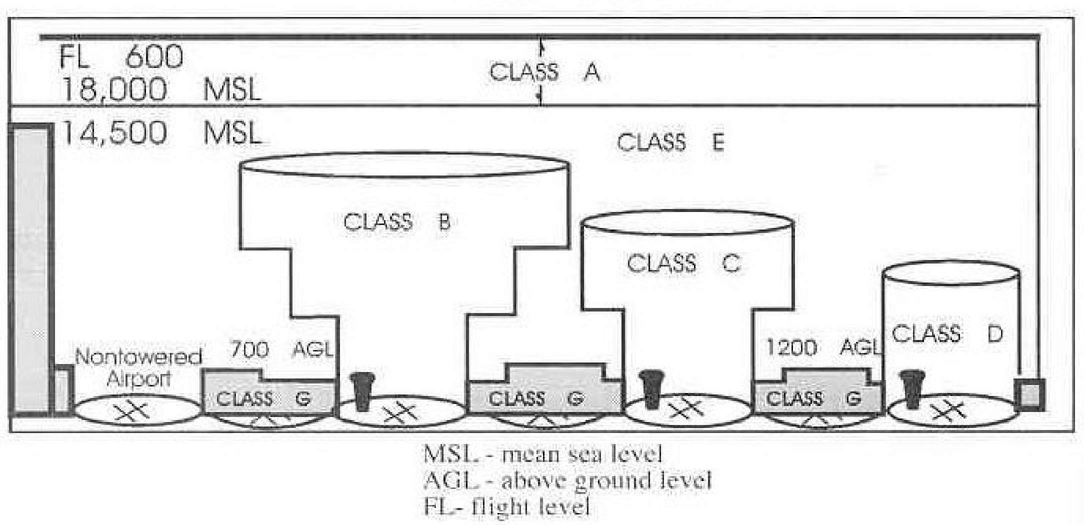
This section describes the airspace system in use in the United States and over New Hampshire, particularly as it impacts existing and future aviation activity. The purpose for this discussion is to define the different types of airspace that exist and how FAA air traffic control (ATC) manages aircraft operations. The discussion focuses on two elements of the airspace system, the airspace itself, and the navigational facilities used by aircraft operators.

2.6.1 AIRSPACE

Airspace in the United States falls under the sole jurisdiction of the Federal Aviation Administration (FAA). Both the type of airspace and the level of air traffic services have a direct impact on aircraft operations. FAA has broadly classified airspace as either controlled or uncontrolled, and each have specific functions, operating requirements and limitations, all of which affect the potential for accommodating and attracting certain types of aircraft service. Within controlled airspace, various types of air traffic control facilities, which are discussed later in this section, govern aircraft operations.

Airspace is categorized by various classes, which are designated A through G, as depicted in Figure 2-27 and described in the following section. Representative depictions of these types of airspace are shown in Appendix 2-C.

Figure 2-27 – Airspace Classification



Source: FAA, Airman's Information Manual, 2001

All of the airspace classifications shown above are found in New Hampshire, with the exception of Class B, which encompasses Boston-Logan International Airport. Manchester Airport, for example, is located within Class C airspace, while Boire Field, Pease International Tradeport, and Lebanon Airports are located within Class D airspace.

Class A Airspace

Class A is controlled airspace that extends from 18,000' Mean Sea Level (mean sea level -MSL) to 60,000' MSL. This airspace covers the contiguous United States and overlies waters within 12 nautical miles of the coast. The 22 Air Route Traffic Control Centers (ARTCC) around the nation controls this airspace. The Boston ARTCC controls the Class A airspace over New Hampshire, which is located in Nashua, NH. Boston

Center is responsible for airspace from the Atlantic Ocean into New York State, and from Canada to Long Island, NY. All aircraft operating within this airspace are required to have an Instrument Flight Rules (IFR) flight plan, and an ATC clearance.

Class B Airspace

Class B is controlled airspace from the ground level up to 10,000’ MSL and surrounds the busiest commercial service (large hub) airports in the country. This airspace resembles an upside down wedding cake in shape, and ATC requires clearance into the airspace under both Visual Flight Rules (VFR) and IFR. The airspace is controlled by FAA Terminal Radar and Approach Control (TRACON). There is no Class B airspace in New Hampshire, the closest being Boston Logan Airport (see Appendix 2-C).

Class C Airspace

Class C airspace extends from the ground to 4,000’ Above Ground Level (AGL). The Class C structure is similar to Class B incorporating an inner core extending form the ground to 4,000’ AGL and having a 5 nautical mile radius. A secondary shelf extends from 1,200’ AGL to 4,000’ AGL within a10 nautical mile radius. This airspace is in place at 19 airports in the contiguous United States that are designated as Class C airspace. Manchester Airport is the only Class C airspace in New Hampshire (see graphic), and Manchester terminal radar control (TRACON) controls this airspace. The TRACON also provides radar services to aircraft throughout southern and central New Hampshire, from the Silver Ranch in Jaffrey to the west, to Pease International Tradeport to the east, and to Laconia Airport to the north.

Class D Airspace

Class D controlled airspace is designated from the surface up to 2,500’ above the airport elevation, and is generally a horizontal distance of 4 NM for airports with operating Air Traffic Control Towers (ATCT). Aircraft activity is controlled by the ATCT within this area, or when transiting through the airspace. Airports with Class D airspace in New Hampshire include Pease International Tradeport, Boire Field, and Lebanon (see Appendix 2-C).

Class E Airspace

Class E is also controlled airspace, however, it only becomes effective under certain weather conditions. The only airport with Class E airspace in New Hampshire is Concord Airport (see Appendix 2-C).

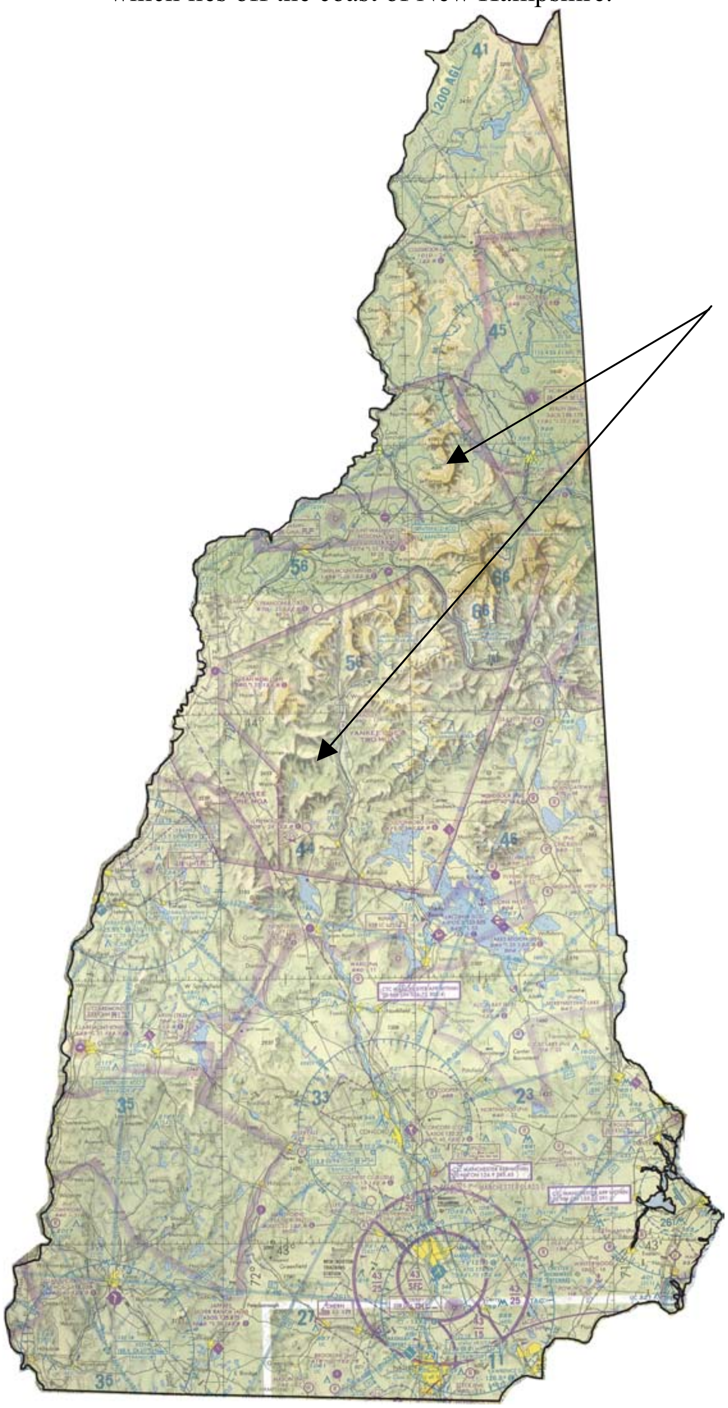
Class G Airspace

Class G airspace is uncontrolled airspace. This is the portion of airspace that has not been classified as A through E. Class G airspace extends from the surface to 14,500’MSL except where airspace is classified as E, or under a federal airway. Class G Airspace is not controlled or regulated by air traffic control (see Appendix 2-C). All of the remaining airports in New Hampshire not identified above lie within Class G airspace.

Special Use Airspace

Several types of special use airspace affect New Hampshire:

Warning Area – Warning area is defined airspace extending three nautical miles off the coast of the U.S., including New Hampshire, which 'contains activity that may be hazardous to non-participating aircraft'. Warning areas are similar to Restricted Areas, but located offshore, and have been designated to alert pilots to potentially hazardous activity. ATC authorization is required prior to operating in Warning Area #103, which lies off the coast of New Hampshire.



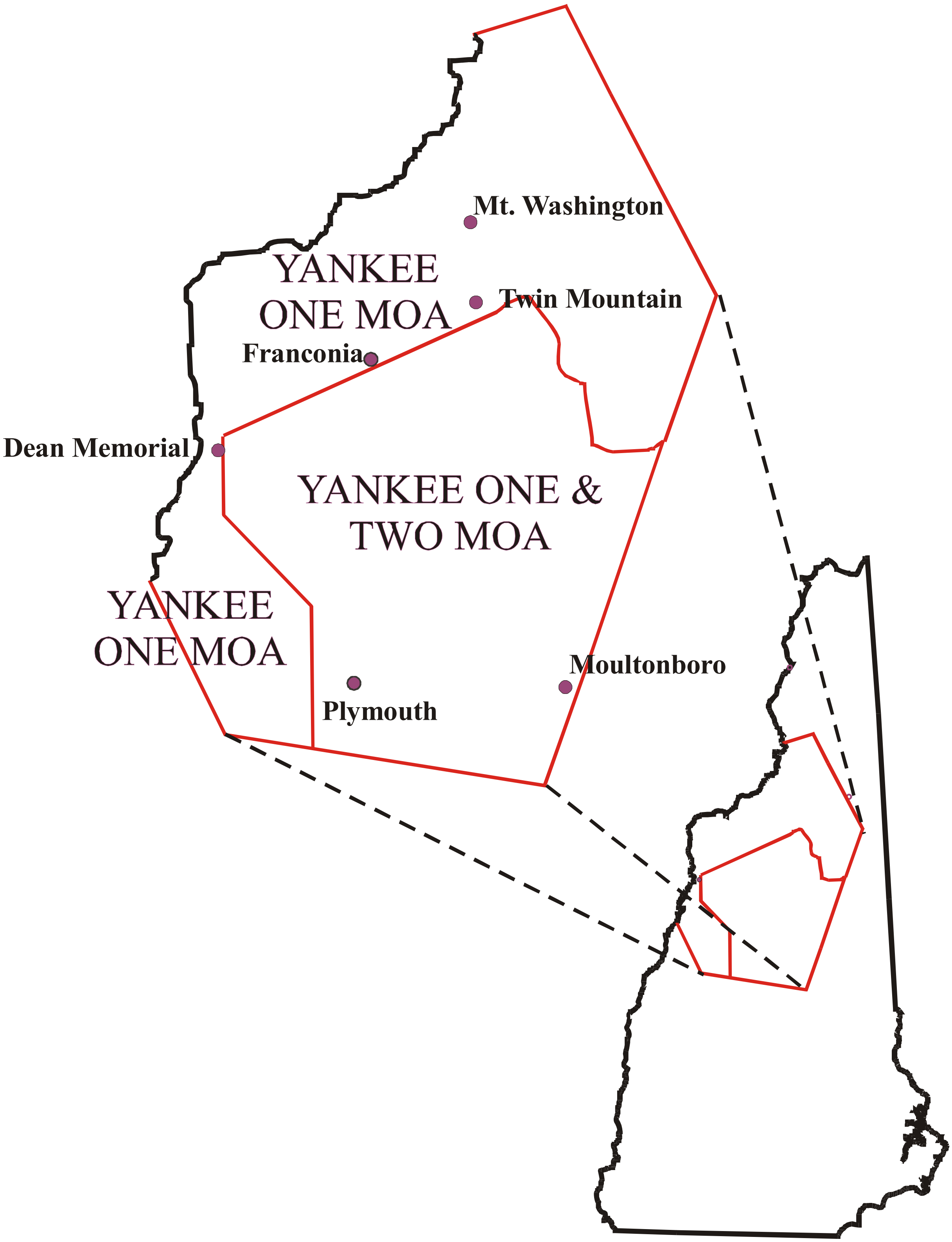
Military Operations Area (MOA) – MOA's are designed to alert pilots that within the defined vertical and lateral limits there may be high levels of military aircraft activity that may pose a hazard to non-participating aircraft.

There are two MOAs within the State, Yankee One and Yankee Two. The two MOA's are used by military aircraft for low and mid-altitude flight training, and they encompass a large area of northern New Hampshire, primarily overlying the White Mountain National Forest region. Both MOAs are active from sunrise to sunset, and Yankee One extends from 9,000' MSL up to but not including 18,000' MSL, while Yankee Two extends from 100' AGL up to 9,000' MSL. Figure 2-28 depicts the two MOAs. As shown in the figure, six public-use airports are located under the two MOAs, and several other airports are close to the MOA boundary. A third MOA (Condor 1) is located in Maine, also overlies a small portion of the state, but does not significantly affect the state's airspace.

Civilian aircraft are not prohibited or restricted from operating in the MOAs, even when the airspace is being used for military training activity. However, FAA specifically notes: "Pilots operating under VFR should exercise extreme caution while flying within a MOA when military activity is being conducted." In addition, FAA air traffic control does not provide separation between aircraft operating in the MOAs, in part because air traffic control cannot provide radar coverage below 7,000 - 8,000 feet over the White Mountains. As a result, pilots flying in the MOAs while they are active are responsible for seeing and avoiding other traffic, which could include high-speed, low-flying military aircraft.

Based on the surveys conducted for this study, as well as interviews with ATC personnel, when the MOAs are active, some pilots will not fly in that airspace, and therefore will not fly to the six airports located in the

Figure 2-28 – Military Operating Areas (MOA)



MOAs, or adjacent to them. In addition, ATC will not clear aircraft operating on IFR flight plans into the MOAs when they are active. Although the actual number of flights that are not conducted to airports in the MOA, or adjacent to the MOA, because of the military training activity is not known, pilots have indicated that it is a factor in their decisions. In fact, the Aircraft Owners and Pilots Association (AOPA) has stated publicly that the creation of MOAs in other parts of the country definitely have a negative impact on general aviation activity.

2.6.2 AIR TRAFFIC CONTROL SERVICES

Air traffic control services in New Hampshire are provided by the four airport control towers (Manchester, Boire Field, Pease International Tradeport, and Lebanon), as well as by Boston Center and Manchester Approach Control (TRACON). Both Boston Center and Manchester Approach provide radar services to pilots operating under visual and instrument conditions.

Manchester TRACON – Manchester Approach Control is responsible for aircraft operating within a 60 NM mile radius from the airport and up to 10,000’ above mean sea level (MSL). Above that altitude, Boston Center provides ARTCC services. In addition to Manchester Airport, the TRACON also provides full-time approach and departure radar control services to Concord, Laconia, Boire Field, Pease International Tradeport, and Skyhaven Airports.

Boston ARTCC – Boston Air Route Traffic Control Center (ARTCC), located in Nashua, controls aircraft on instrument (IFR) flight plans throughout the state that are not handled by Manchester TRACON or one of the four airport control towers. Boston Center controls both civilian and military aircraft based in the region, as well as aircraft transiting the region when flying to or from Canada and the North Atlantic. Boston Center uses a long-range radar system to track aircraft and provide radar services. Although Boston Center is responsible for controlling the two MOAs described previously, they do not have good radar coverage over the mountains due to the line-of-sight limitation of UHF radar frequencies. Radar coverage in some areas of the North Country does not extend below 7,000’, and as a result, Boston Center cannot separate traffic operating in the MOAs and cannot provide radar services for aircraft operating to/from most of the airports located in or adjacent to the MOA. The lack of radar coverage is a factor for some aircraft that would otherwise operate in the White Mountain region, and also significantly decreases airspace capacity.

Another issue that affects airspace capacity is the inability to communicate directly with an air traffic controller while an airplane is on or near the ground. Aircraft communication radios operate predominantly in the VHF band, which are limited by ‘line-of-sight’ constraints. As a result, aircraft do not have direct radio communication with air traffic controllers while operating at a number of airports in northern New Hampshire. Installation of remote communications outlets (RCOs) can help in some areas.

Bangor Flight Service Station – Flight Service Stations (FSS) are facilities located around the country that provide various information services to pilots, including weather briefings, enroute communications, search and rescue services, assisting aircraft in emergency situations, relaying ATC clearances, conveying Notices to Airmen (NOTAMS), broadcasting aviation weather, processing VFR flight plans, and monitoring NAVAIDS.

The FSS located in Bangor serves both New Hampshire and Maine. Services are provided throughout the region using a system of Remote Communications Outlets (RCOs). Those RCO are located at Berlin, Claremont, Concord, Dillant-Hopkins, Lebanon, Manchester, and Mt. Washington Regional. Direct communication with Bangor FSS may also be accomplished through several Very High Ominrange (VOR) stations that require transmitting over a specified frequency and receiving transmissions over the VOR. The VORs that are capable of this are the Dillant-Hopkins VOR, Lebanon VOR and the Manchester VOR.

2.6.3 INSTRUMENT APPROACHES AND NAVIGATIONAL AIDS (NAVAIDS)

Instrument approaches provide the capability to operate to and from airports under Instrument Meteorological Conditions (IMC). They are required by airlines in order to provide reliable service to airports, and are also used frequently by military aircraft, general aviation pilots, and by corporate aircraft operators as well. Instrument approaches are created and published by the FAA, and they provide directional guidance to the ends of instrumented runways, which is necessary when the weather is poor. Instrument approaches use both ground-based and satellite navigational aids (NAVAIDs) to provide guidance.

There are two general types of instrument approaches to airports, precision and non-precision. Precision approaches provide both lateral and vertical guidance to specified runway ends, and as a result, provide lower approach minimums and therefore, better reliability in terms of service when the weather is poor. At present, there is not one precision approach to any of the nine airports located in the North Country. Airports in New Hampshire with published precision instrument approaches include: Manchester, Boire Field, Dillant-Hopkins, Pease International Tradeport, Concord, Laconia, and Lebanon.

By comparison, non-precision instrument approaches provide only lateral guidance to specified runway ends, and the approach minimums are higher than for precision approaches. This further limits aircraft operations during periods of poor weather conditions.

Runway ends that do not have any instrument approach capabilities have only visual approaches.

Enroute Navigation

Enroute navigation is provided by a system of both ground-based and satellite navigation aids throughout the United States. Military and civilian aircraft utilize both systems to operate to and from airports in the state. The primary ground-based NAVAID used for enroute navigation is the VOR[1], which was first installed in the late 1950s. Although VORs have operational limitations in terms of range and radio signal characteristics, the national system of VORs is linked via published airways, which are defined and depicted on aeronautical charts.

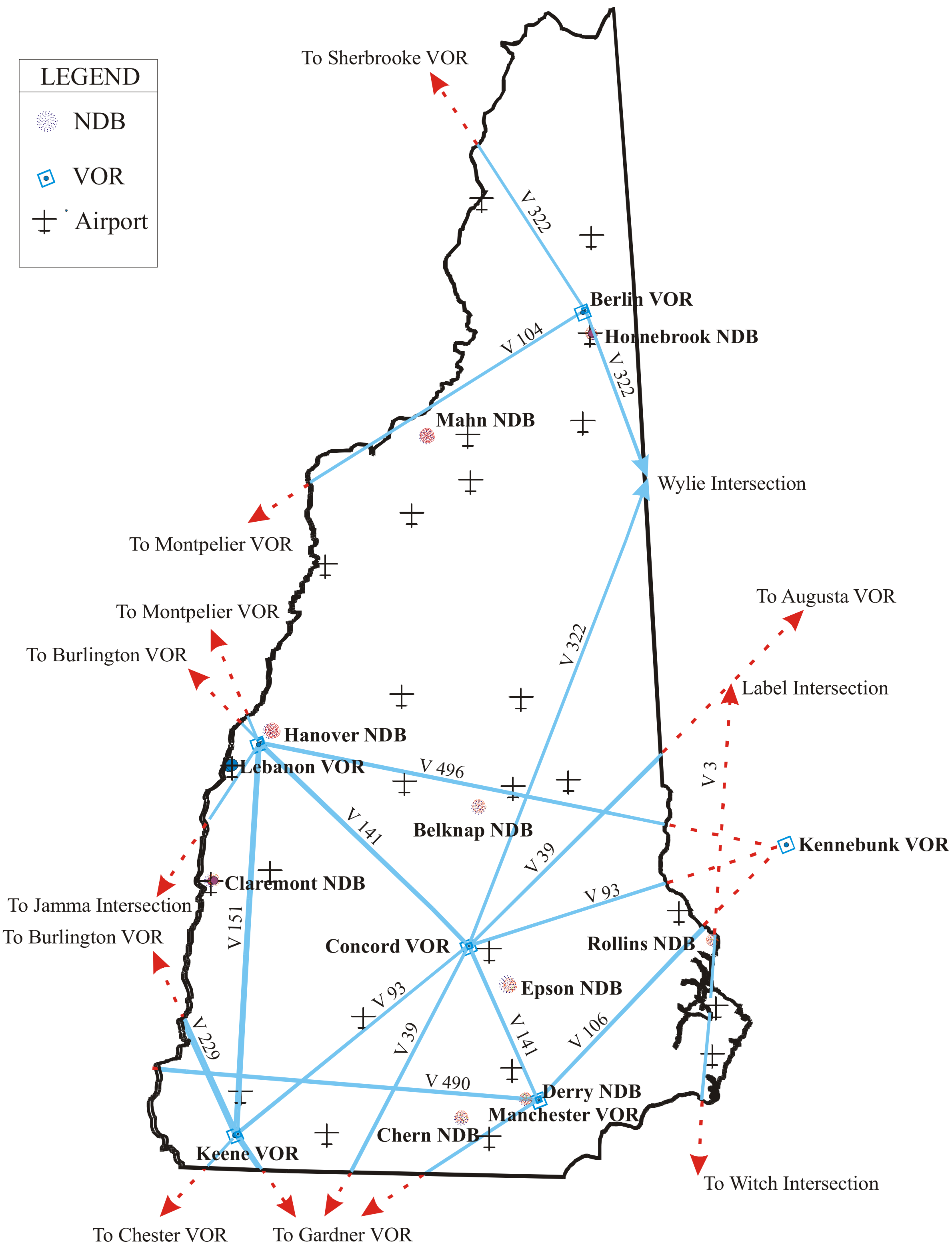
The enroute NAVAID system in New Hampshire is primarily based upon several VORs: Dillant-Hopkins, Manchester, Concord, Lebanon and Berlin, which are depicted in Figure 2-29. Several VORs located outside of, but in close proximity to New Hampshire, are also used by aircraft in the state. The figure also depicts the Non Directional Beacons (NDB) within the state that are used primarily, but not exclusively, for instrument approaches. Although lower in cost and easier to maintain, NDB transmitters have more significant operational limitations than VORs.

Precision Approaches

Precision instrument approaches are, at present, based on the use of ground-based transmitters. The typical precision instrument landing system (ILS) consists of four components: a localizer and glide slope transmitters, radio marker beacons, and an approach light system, all of which require both real estate and certain grading and line-of-sight requirements. The localizer and glide slope transmitters provide lateral and vertical information, respectively, to aircraft equipped with the proper receivers. The approach lights provide visual alignment cues to enhance sighting of the runway during the approach. The ILS provides relatively low weather minima, typically 200' above the runway and 1/2 mile (statute) visibility (or Runway Visibility Range of 2,400 feet), which greatly enhances schedule reliability for the airlines, as well as for corporate, military, and general aviation aircraft.

[1] VOR = VHF omni-radio range

Figure 2-29 – Radio Navigation Aids and Low Altitude Route Network



In New Hampshire, the seven airports that presently have one or more published ILS approaches include:

- Concord
- Dillant-Hopkins
- Laconia
- Lebanon
- Pease International Tradeport
- Boire Field
- Manchester

Category II and III ILS approaches provide even lower minimums, although there are no airports in the state currently equipped with a CAT II or CAT III approach. However, Manchester Airport is slated to have a CAT III approach by approximately 2004 when the extension and reconstruction of Runway 17-35 has been completed. That system will allow instrument approaches to 100' above the runway, and Runway Visibility Range (RVR) of 600 feet, which will further enhance airline schedule reliability during poor weather.

A new system was developed recently based on the transponder, which is located in the aircraft, which provides precision approach guidance. Known as the Transponder Landing System (TLS), it is produced by ANPC, a private company. TLS uses existing equipment in the airplane, as well as a new transmitter and processor on the ground to provide the same approach minimums as a standard instrument landing system (ILS), which is typically 200 ft. and ½ mile. The TLS system has been installed at airports around the country, although none in New Hampshire to date. However, the TLS is not eligible for FAA funding, and must be financed by other sources (such as airport or private investment).

<u>Global Positioning System (GPS)</u>

FAA has adopted a plan to transition both en-route and terminal navigation from ground-based transmitters to a satellite based system (GPS). FAA anticipates that the transition will be completed by 2010, although the program has been experiencing recurring delays. FAA has already published a large number of non-precision GPS instrument approaches to airports throughout New Hampshire, and GPS can also be used for en-route navigation throughout the state as well.

All of the GPS approaches published in the state so far are non-precision approaches, and FAA has published the criteria for both precision GPS approaches as well as non-precision approaches with vertical guidance. These approaches eliminate the need for ground-based transmitters, and reduce the cost of publishing approaches compared to the existing system based on the ILS, VOR, and NDB. In addition, GPS has eliminated the operational limitations of the existing NAVAIDs. As a result, airports that currently do not qualify for a conventional ILS, such as Berlin, Mt. Washington Regional, Skyhaven, Claremont, etc., may qualify for a GPS precision approach, thereby greatly increasing the utility of the airport.

FAA is currently developing future precision approaches utilizing GPS, which will eventually allow CAT I level precision approach minimums when the Wide Area Augmentation System (WAAS) is developed and certified. However, the WAAS system is still under development, and FAA expects that GPS precision approaches will be published near the 2010 time frame. Until then, the conventional ILS based on ground transmitters is the only precision approach NAVAID widely available to airports.

<u>Non-Precision Approaches</u>

Non-precision approaches provide only lateral guidance and typically have minima greater than a 250' ceiling. Non-precision approaches use both ground based and satellite NAVAIDS to provide the instrument approach and one mile visibility minima. These approaches are typically aligned with a specific runway end, however, by flying a modified procedure called circling approach, pilots may land on another runway and if weather conditions are more favorable circling approaches usually have the highest minima of all non-precision approaches.

Ground based NAVAIDS for a non-precision approach does not have to be located on the airport as with an ILS. In fact, many of the NAVAIDS used for a non-precision approach are located a distance away from an airport. The ground based NAVAIDS used for non-precision approaches include the localizer (one part of an ILS), the Very High Frequency Omni-directional Range (VOR) radio, and the Non-Direction Beacon (NDB).

As noted in the previous section, another NAVAID that is providing non-precision approaches is the GPS system. The GPS system's current accuracy has allowed approaches meeting the non-precision requirements. Initial GPS approaches were overlays to current non-precision approaches. However, in recent years, the GPS signal has been improved and many airports now have stand-alone GPS approaches.

Airports with published non-precision approaches are listed below. Of the nine airports in the North Country, only two have non-precision instrument approaches: Berlin and Mt. Washington Regional.

Table 2-7 - Published Non-Precision Instrument Approaches

Airport	Localizer	VOR	NDB	GPS	Circling
Berlin		X	X	X	X
Claremont			X	X	X
Concord		X	X	X	X
Silver Ranch					X
Dillant-Hopkins		X		X	X
Laconia			X	X	X
Lebanon		X	X		X
Manchester		X	X	X	X
Boire Field			X	X	X
Pease International Tradeport		X	X	X	X
Skyhaven			X	X	X
Mt. Washington Regional	X		X		X

Source: U.S. Terminal Procedures

VOR = Very High Frequency Omni-Directional Radio
NDB = Non-Directional Beacon
GPS = Global Positioning System
Circling = an instrument approach to the airport as opposed to a specific runway

2.7 SCHEDULED AIR SERVICE SUMMARY

This section presents a summary of scheduled air service activity in the State. It describes the historic activity and discusses the current air service provided in the State.

2.7.1 HISTORICAL AIR SERVICE

Scheduled passenger airline service in New Hampshire extends back to 1932 with Boston-Maine Airways/Central Vermont Airways providing service between Boston and Manchester, Concord, White River Junction (Upper Valley Region), Montpelier, Burlington, VT, and Montreal, Canada. Boston-Maine Airways became Northeast Airlines in 1940, which was subsequently acquired by Delta Airlines in 1972. Four airports that had scheduled passenger service since the 1940s, but presently do not, include:

- Concord
- Laconia
- Berlin
- Dillant-Hopkins

In addition to the service by Northeast, Precision Airlines was a commuter carrier originally based in Vermont and which opened a base in Manchester, NH. Precision provided scheduled passenger and cargo service throughout New Hampshire over four decades using twin-engine Beech 18s, Piper Navajos, DH-6 Twin Otters, and finally Dornier DO-228 turboprops. However, Precision terminated operations in 1990. The regional/commuter carriers that served New Hampshire previously include Bar Harbor Airlines, Piligrim Airlines, Air New England Airlines, and Colgan Airways.

After the U.S. Congress passed the airline deregulation bill in 1978, Delta Air Lines discontinued jet service to New Hampshire by 1980, and for a period of several years in the early 1980s, there was no jet service to the state. In 1984, United Airlines was the first airline to initiate jet service at Manchester. Their initial service was to Chicago O'Hare Airport. In 1986, US Air (presently US Airways) followed United when they started jet service to Pittsburgh and Philadelphia.

2.7.2 CURRENT LEVELS OF AIR SERVICE

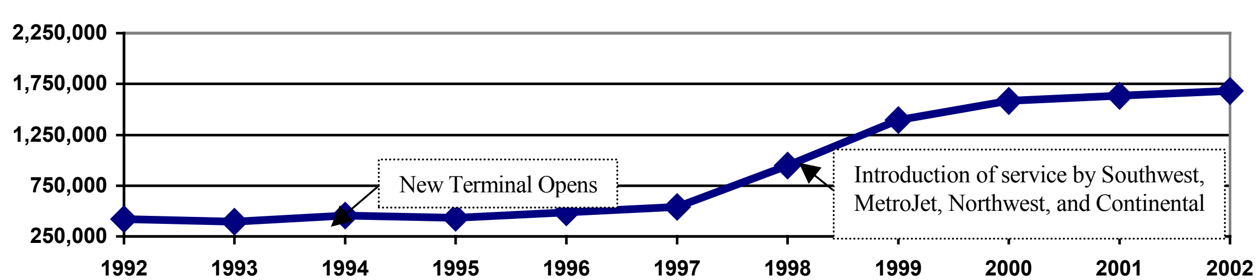
In 2002 there are three commercial service airports in New Hampshire: Manchester (MHT), Pease International Tradeport (PSM), and Lebanon (LEB). Keene's Dillant-Hopkins Airport was served by Colgan Airways through the 1990s, but is presently a general aviation airport with no scheduled service. A summary of existing scheduled service at each of the three airports is provided below. In general, a number of trends have emerged regarding scheduled airline service in New Hampshire within the last five years:

Manchester Airport

Manchester Airport (MHT) presently accommodates over 98% of the scheduled passenger enplanements in the state. As can be seen from the passenger data presented in Figure 2-30, traffic at MHT increased significantly with the advent of low-fare service by Southwest Airlines and MetroJet in 1998 (although MetroJet discontinued service in 2001) Both Southwest and MetroJet provided high-frequency low-fare jet service to a variety of destinations. Between 1995 and 2000, total passenger traffic at MHT increased by 254%, to 3,169,301 inbound and outbound passengers in 2001, with the largest increases occurring between 1998-2000, making MHT one of the fastest growing airports in the U.S. FAA classifies Manchester as a small-hub airport (based on the ratio of passenger enplanements to the national total), although it is close to being classified as a medium hub airport.

Manchester is also an origin and destination (O&D) airport, unlike other airports that serve as airline hubs such as Chicago O-Hare (United and American), Philadelphia (US Airways), Atlanta (Delta), Cincinnati (Delta), Newark (Continental), or Pittsburgh (US Airways), for example.

Figure 2-30 – Passenger Enplanements - Manchester Airport



In 1998, Northwest, Continental, Delta, and Comair initiated jet service to their respective hubs, in addition to the jet service already provided by US Airways, United, Southwest, and MetroJet. In 2001, scheduled international service started with non-stop flights to Toronto and Montreal, Canada, by Air Alliance, a regional partner of Air Canada. Figure 2-31 shows non-stop destinations from Manchester while Table 2-7 summarizes the air service provided at Manchester Airport. All of the passenger aircraft presently serving Manchester are classified as narrow-body, the largest being the B-757-200. Manchester Airport's master plan notes that the B-767, a wide-body aircraft, is the critical design aircraft.

Figure 2-31 - Non-Stop Destinations From Manchester Airport

Source: Manchester Airport

Table 2-8 - Air Service at Manchester Airport	
PASSENGER AIRLINES:	
US Airways/ US Airways Express	Continental/Continental Express/Connection
Southwest	Comair/Delta Connection
United/United Express	Air Canada
Delta	Pan Am (Boston-Maine Airways)
Northwest	
ALL CARGO AIRLINES:	
Federal Express	Telford Aviation
United Parcel Service	Mountain Air Cargo
Airborne Express	Wiggins Airways
TYPE OF PASSENGER AIRCRAFT OPERATED:	
B-737 (various models)	CRJ-100/200
B-757-200A-319	ERJ-135/145
A-320	Saab 340
MD-80	ATR-42/72
	DH Dash 8
	B-1900
TOP 10 ORIGIN & DESTINATION MARKETS:	
Baltimore, MD – BWI	Los Angeles, CA – LAX
Orlando, FL – MCO	Phoenix, AZ – PHX
Chicago, IL – ORD	Tampa, FL – TPA
Chicago, IL – MDW	Philadelphia, PA – PHL
San Francisco, CA – SFO	Las Vegas, NV – LAS
Source: Manchester Airport	

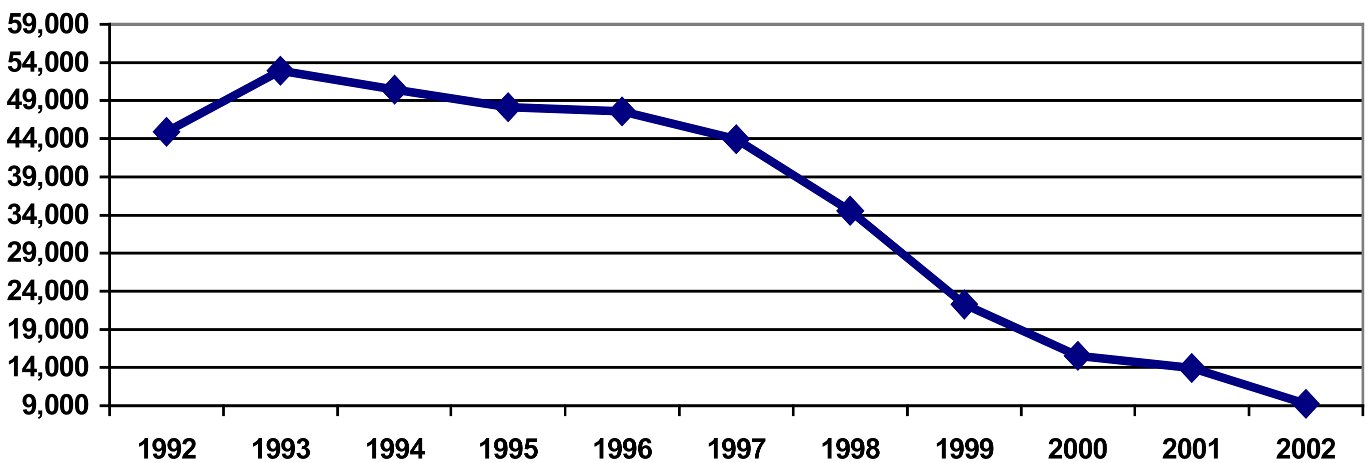
Manchester Airport's air cargo traffic has grown almost as fast as scheduled passenger traffic, with Federal Express, United Parcel Service, and Airborne Express, in particular, creating in effect mini-hub operations at MHT. Manchester is third in New England only to Boston-Logan and Bradley International Airports in terms of the volume of cargo traffic generated. Cargo traffic has grown from less than 35,000 tons in 1991 to 87,500 tons in 2000, an increase of 150%.

Manchester Airport will complete its major expansion program by 2004, which will result in the extension of both runways in addition to numerous other improvements, including expansion of the terminal building and a new airport access road. Runway 17-35 will be extended to 9,250 feet by 2004, which will allow non-stop trans-continental and Trans-Atlantic service, and the runway will also be equipped a Category III instrument landing system (ILS). The expansion program, which includes both landside and airside projects, will provide sufficient capacity to accommodate over 5 million passenger annually. Beyond the current expansion program, additional terminal expansion, a second parking garage, and other projects are anticipated.

Lebanon Airport

In 1993, passenger traffic at Lebanon Airport peaked with 52,929 enplanements, but has declined steadily since that time. Northeast Airlines, Precision, Business Express, and US Airways Express have served Lebanon over the years. As of late 2001, US Airways Express (Mesa Airlines operating as a US Airway Express carrier) is at LEB providing non-stop service to New York LaGuardia, Philadelphia, and Boston, using Beech 1900 turboprops. Figure 2-32 shows the historical passenger enplanements and Table 2-8 summarizes air service provided at Lebanon Airport.

Figure 2-32 – Passenger Enplanements - Lebanon Airport



Source: Lebanon Airport

Table 2-9 – Air Service Summary – Lebanon Airport	
PASSENGER AIRLINES:	US Airways Express (Colgan Airways)
TYPE OF PASSENGER AIRCRAFT OPERATED:	Beech-1900
NON-STOP DESTINATIONS SERVED:	3 flights a day to Philadelphia (PHL) 1 flight daily to Boston Logan International (BOS)
TOP 10 ORIGIN & DESTINATION MARKETS:	New York LaGuardia (LGA) Philadelphia, PA (PHL) Washington DC National Airport (DCA) Atlanta, GA (ATL) Charlotte, NC (CLT) Philadelphia, PA (TPA) Pittsburgh, PA (PIT) Columbus, OH (CMH) Chicago, IL (ORD) San Francisco, CA (SFO)
Source: Lebanon Airport	

One factor impacting passenger traffic is that Lebanon Airport is located within the market area of three other commercial service airports (Manchester, Bradley CT, and Burlington VT), all of which offer low-fare jet service, as well as multiple daily flights by a combination of both mainline and regional airlines. In addition, all three airports are connected by interstate highways from Lebanon (I-89 and I-91), which decreases average driving times compared to local and state routes.

- Manchester Airport - 80 miles (1 hour 30 minute drive via I-89, I-93, I-293)
- Bradley International Airport - 140 miles (2 hours 25 minute drive via I-91)
- Burlington International Airport - 91 miles (1 hour 38 minute drive via I-89)

Pease International Tradeport

Pease International Tradeport (PSM) is a former U.S. Air Force base that was one of the first military facilities put on the Base Realignment and Closure (BRAC) list in 1988. The base was formally closed on March 31, 1991, and is presently owned and operated by the State of NH under the jurisdiction of the Pease Development Authority (PDA).

Pease International Tradeport is still home of the NH Air National Guard's 157th Air Refueling Wing operating KC-135R aircraft, and also has one of the longest runways in New England (11,321 feet)[2]. The Guard operates the control tower on a 24-hour basis, maintains the instrument approach NAVAIDs, provides aircraft rescue and firefighting (ARFF) services (in excess of ARFF Index E), and assists with snow plowing.

In addition to the runway, Pease International Tradeport also has recently constructed a 55,000s.f. terminal building, which includes six ticket counters, a loading bridge, as well as customs, agricultural, and federal inspection facilities for international passengers. Pease International Tradeport has developed plans for additional expansion of the terminal building if the need arises. As a result, Pease International Tradeport has all of the facilities necessary, as well as the operational capacity, to accommodate both domestic (including transcontinental) and international airline service.

However, airline service has been intermittent since the base became available for civilian use. Business Express (BEx) was based at Pease International Tradeport for several years, and both BEx and US Airways

[2]. Only Bangor International Airport and Westover AFRB have slightly longer runways.

Express provided scheduled service from Pease International Tradeport in the 1990s. American Eagle acquired BEx, and both carriers terminated service at Pease International Tradeport.

As of 2002, Pan American Airways is based at Pease operating B-727-200 aircraft serving Sanford, FL, Bangor, ME, and Worcester, MA, with one daily departure to each destination. Pan Am also operates turboprop aircraft – the CASA 212 for cargo service, and BAE Jetstream 31 for passenger service. Figure 2-33 depicts Pan Am's route structure, and Table 2-9 summarizes the air service at Pease International Tradeport.

Figure 2-33 – Pan Am Route Structure 2001

Source: Pan Am

Table 2-10 – Air Service Summary – Pease International Tradeport	
PASSENGER AIRLINES:	Pan American Airways
TYPE OF PASSENGER AIRCRAFT OPERATED:	B-727-200
SCHEDULED PASSENGERS	
ENPLANED	37,235
DEPLANED	37,235
TOTAL	74,470
NON-STOP DESTINATIONS SERVED:	1 flight daily to Sanford FL – SFB 1 flight daily to Bangor, ME – BGR 1 flight daily to Worcester, MA – ORH
TOP ORIGIN & DESTINATION MARKETS:	Sanford FL – SFB Pittsburgh, PA – PIT Sanford FL – SFB
ALL CARGO AIRLINES:	Express One Emery Worldwide
Source: Pease International Tradeport	

Like Lebanon, one factor affecting the level of scheduled service at Pease International Tradeport is its location, which is also within the market area of three other commercial service airports:

- Manchester Airport – 48 miles (55 minutes driving time via recently expanded Route 101)
- Portland International Jetport – 51 miles (60 minutes driving time via I-95)
- Boston Logan International – 57 miles (1 hour 20 minutes driving time via I-95)

Air cargo service has been provided since 1994 by Emery Worldwide, although they recently turned over air operations to Express One (based in Texas) operating B-727 aircraft. Total air cargo traffic is down approximately 40% in 2001 compared to the same period in 2000. Emery had a presence at Pease International Tradeport in terms of ground operations. A large part of the cargo carried by Express One is the U.S. mail, which will be carried by Federal Express by the end of 2001 under a new agreement between the U.S. Postal Service and Federal Express. As a result, Express One discontinued cargo service at Pease.

2.8 AIRPORT FINANCING

2.8.1 INTRODUCTION

How airports are managed, and whether they require subsidies to balance their operating and maintenance accounts on an annual basis, has a significant impact on local perceptions of the value of airports. Airport financing encompasses operating and maintenance (O&M) expenses, and revenues. Airport expenses are broadly divided into two categories:

- Operations and maintenance (O&M)
- Capital improvements

Airport Ownership

Airport sponsors (owners) are defined as the legal representative of the airport. The type of ownership affects the way airports are managed, as well as the financial resources available for their O&M and capital improvement program. There are three different 'types' of airport sponsors in New Hampshire: the State, municipalities, and private entities.

- State owned/operated airports:
- Pease International Tradeport, Portsmouth, NH *
- Skyhaven Airport, Rochester, NH

- Municipally owned/operated airports:

- Boire Field *	- Claremont	- Mt. Washington Regional *
- Manchester *	- Gorham **	- Plymouth **
- Concord	- Laconia *	- Dean Memorial **
- Lebanon	- Berlin	
- Dillant-Hopkins	- Parlin Field **	

- Privately owned/operated airports: **

- Errol	- Colebrook	- Twin Mountain
- Franconia	- Silver Ranch	- Newfound Valley
- Hampton Airfield	- Moultonboro	- Hawthorne
- Lakes Region		

* Pease International Tradeport, Manchester, Laconia, and Boire Field have Airport Authorities created by the state legislature. In each case the airport is owned by the State (PSM) or City (MHT, LCI, ASH), and the Authority acts as the legal representative for the State/City regarding the airport. Mt. Washington Regional Airport is owned by the Town but has a regional authority created by area municipalities.

** These airports are not eligible for federal grants, and are therefore not covered by FAA grant assurances. Lakes Region Airport is operated by legislative authority.

2.8.2 AIRPORT OPERATIONS AND MAINTENANCE (O&M) COSTS

Airport operations and maintenance (O&M) costs include pavement, utilities, building and grounds maintenance, items such as crack sealing, building repairs, as well as snow plowing, grass mowing, etc. In addition, those costs include personnel salaries and overhead for positions such as airport manager, maintenance staff, etc. Airport sponsors are responsible for the O&M costs associated with their airport, and those costs are typically not eligible for federal or state grants (with the exception of that portion of aircraft operating fees returned to airports by the Division of Aeronautics). Operating revenue generated at an airport from land and building leases, aircraft tiedowns, landing and parking fees, fuel flowage fees, concession leases, etc., are typically used to off-set an airport's O&M costs.

FAA grant assurances require that all revenue generated on-airport property must be accounted for and dedicated to airport-related projects. Sponsors cannot, therefore, put airport-generated revenue into their general fund accounts and use that revenue for police, fire departments, public works, etc.

In general, commercial service airports such as Manchester, Pease International Tradeport, and Lebanon have more revenue sources (such as airline leases, landing fees, and fuel flowage fees) as well as larger revenue streams available to cover their O&M expenses than do general aviation (GA) airports. According to airport managers, Manchester, Pease International Tradeport, and Lebanon, and GA airports such as Boire Field and Laconia, for example, generate more revenue than they expend in O&M costs. The majority of the remaining airports, however, do not operate 'in the black', and rely on subsidies from the airport sponsor to cover their annual O&M costs.

The American Association of Airport Executives (AAAE) conducts a detailed financial performance survey of airports around the country every two years [3]. The results of the survey are compiled by airport category (general aviation, commercial service-non hub, -small hub, -medium hub, and -large hub[4].) Manchester Airport is classified as a small-hub airport, while Pease International Tradeport and Lebanon are classified as non-hubs. The remaining airports in New Hampshire are classified as general aviation. Boire Field is the only designated general aviation reliever airport in the state.

The results of the AAAE survey indicate that nationally, general aviation airports generate an average of $5.946 in revenue per aircraft takeoff and landing (operation), while operating expenses total $6.545 per aircraft operation. That means that the average GA airport has an operating deficit of $0.599 per aircraft operation, which equals 10% of average operating revenue. A 'typical' general aviation airport with 25,000 annual operations would have an annual operating deficit of approximately $15,000.

Boire Field, Skyhaven, and Laconia Airports, however, generate operating surpluses, and Concord Airport is close to break-even. By comparison, typical non-hub commercial service airports (airports in this category include Lebanon and Pease International Tradeport) generate a small surplus (2.9%), while small-hub airports (Manchester Airport is classified as a small hub) typically generate a larger surplus (32%). As noted previously, all of the surplus revenue must be expended on airport-related items such as O&M costs, or capital improvements.

Airports budget funds for O&M expenses as part of their annual budgeting process, which is reviewed and approved by the city or town council, or airport authority, as appropriate. It should be noted that a majority of municipalities in New Hampshire use general fund accounting systems, so they often cannot 'match' revenues generated on an airport against the annual appropriations for O&M costs.

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[3] Source: AAAE Survey of Airport Rates & Charges, 1995/96

[4] This hub classification is defined by FAA based on the percentage of passenger enplanements compared to the national total. This classification is different from the term airline hubs, which are determined by airline service patterns.

Interviews held with airport managers throughout the state as part of this study revealed that there is a direct correlation between their financial performance and local political support (or lack thereof) for the airport. Those airports that do not operate in a break-even mode and that require annual subsidies, find there is much less political support than for those airports that achieve operating surpluses. The lack of political support was evident in terms of local unwillingness to invest any more than the minimum required to meet basic obligations at the airport, as well as extremely close scrutiny of all expenditures.

It should be noted that those airports that receive grants from the Federal Aviation Administration (FAA) are required to abide by a list of grant assurances. The state also has similar grant assurances that airport sponsors are required to sign as well. As a condition of issuing the grant, FAA requires airport sponsors to sign the assurances that legally encumber the sponsor. Grant assurances are a series of stipulations covering airport operation, maintenance, financing, and management, and in general, require the airport to be operated in compliance with all applicable federal regulations and policies.

One of the grant assurances (No. 25, excerpted below) requires that all of the revenue generated on an airport (from various fees, leases, and charges, etc.) must be spent on an airport. As a result, revenue generated on an airport cannot be spent for fire, police, public works, etc., although an airport may make payments to the city or town for services actually provided by the municipality to the airport (such as law enforcement, legal services, snow plowing, etc.).

> "25. Airport Revenue. If the airport is under the control of a public agency, all revenues generated by the airport and any local taxes on aviation fuel established after December 30, 1987, will be expended by it for the capital or operating costs of the airport; the local airport system; or other local facilities which are owned or operated by the owner or operator of the airport and directly and substantially related to the actual air transportation of passengers or property; or for noise mitigation purposes on or off the airport."
>
> Source: AC 150/5100-16A, *Airport Improvement Program Grant Assurance Number One - General Federal Requirements*

Some general fund accounting systems, however, do not have the ability to track the source of specific revenues, including those generated on an airport. FAA's general policy is that a sponsor complies with the assurance if they can demonstrate that they expend as much money annually as is collected in revenue from airport operations. It should be noted that airports that do not receive federal funds, primarily privately-owned airports, do not have to comply with FAA grant assurances, although they must comply with state grant assurances if they have accepted grants from NHDOT.

With regard to State funding, similar grant assurances are also imposed on airports and they are similar to the FAA assurances. Major differences, however, are a 10- year obligation to keep the facility open and public use versus 20 years under federal assurances. If a new owner is established, the obligation transfers to the new owner who must pay the balance, or operate the facility as an airport for the remaining time of the grant.

2.8.3 AIRPORT MANAGEMENT

Only seven airports in New Hampshire have full-time, salaried airport managers:

- Manchester
- Boire Field
- Dillant-Hopkins
- Berlin
- Pease International Tradeport
- Laconia
- Lebanon

At the remaining airports, the level of on-site management varies, and they fall into one of the following categories:

- Some have part-time managers who may, or may not, be employees of the municipality , and who may serve in a volunteer capacity
- The fixed base operator (FBO) acts as airport manager, in addition to running their on-airport business
- The director of the public works department or, in one case, the Fire Chief, also acts as airport manager
- The private airport owner is also the manager, and in some cases, the FBO
- There is no airport manager or fixed base operator, either part or full-time

One significant impact for publicly owned airports that do not have full-time managers is that typically no one represents the airport at the time the municipal budget is prepared and voted upon, or the individual advocating for the airport is responsible for other municipal agencies as well. However, paid airport staff (full or part-time managers) increase overhead costs, and for those airports that do not generate sufficient revenue to cover their annual O&M costs, such personnel can further increase the airport's operating deficit.

2.8.4 AIRPORT REVENUE SOURCES

Airports have a wide variety of revenue sources. FAA requires commercial service airports to prepare and file financial reporting forms (FAA Form 5100-125). The revenue sources and expense categories are described in FAA Advisory Circular 150/5100-19B, *Guide for Airport Financial Reports Filed by Airport Sponsors,* and the various revenue sources and expense categories identified by FAA include:

Operating Revenue Sources:

Aeronautical :
1. Landing Fees
2. Terminal Fees
3. Apron Charges/Aircraft Tiedowns
4. Fuel Flowage Fees
5. Utilities
6. Fixed Base Operating (FBO) Revenue
7. Cargo & Hangar Rentals
8. Securities Reimbursement
9. Miscellaneous Aeronautical Revenue (represents "smaller sources of operating revenue…, and should not exceed 5% of total aeronautical revenue.")
10. Other Aeronautical Revenue (includes income from "all other operating revenue sources")

Non-Aeronautical :
1. Land and building rent (e.g. industrial parks)
2. Concessions (e.g. restaurants, gift shops, etc.)
3. Auto Parking
4. Rental Cars
5. Catering
6. Interest
7. Royalties
8. Miscellaneous Non-Aeronautical Revenue (represents "smaller sources of operating revenue…, and should not exceed 5% of total aeronautical revenue.")
9. Other Non-Aeronautical Revenue (includes income from "all other operating revenue sources")

Non-Operating Revenue Sources :
1. Bond Proceeds
2. Sale of Property
3. Grant Payments
4. Passenger Facility Charges (PFCs)
5. Other

Revenue sources are determined by a number of factors such as:

- The type of activity at an airport (for example, scheduled airline passenger and cargo service, general aviation activity, etc.)
- The volume of activity conducted (the number and type of based aircraft and aircraft operations conducted)
- The number of fixed base operators (if any)
- The fee structure in place at the airport (such as transient parking and landing fees, for example). The airport sponsor determines the type and extent of fees charged.

Some airports have more property than is needed for aviation-related activities. That surplus property is then often used for commercial and industrial purposes that generate additional revenue for the airport in the form of land lease. Airports with surplus property that has been, or can be, developed for non-aviation purposes include:

- Manchester (industrial park)
- Boire Field (industrial park)
- Dillant-Hopkins (municipal sewer treatment plant)
- Pease International Tradeport (commercial/industrial park)
- Concord (industrial park)
- Claremont (industrial park)
- Lebanon (industrial park)
- Laconia (industrial park)

As noted earlier, general aviation airports typically have fewer revenue sources than commercial service airports. For example, only commercial service airports impose passenger facility charges (PFCs), and very few general aviation airports receive revenue from rental car concessions, cargo leases, catering, securities reimbursement, etc. In addition, the total amount of revenue generated is smaller at general aviation airports due to the lower volumes of traffic, which is also why fewer general aviation airports are not financially self-sufficient.

It should be noted, however, that commercial service airports must comply with Federal Aviation Regulations that do not apply to general aviation airports: FAR Part 139 - *Certification and Operations: Land Airports Serving Certain Air Carriers*, and TSR 1542 (formerly FAR Part 107)- *Airport Security*. Those regulations impose additional manpower and administrative requirements, as well as costs, on commercial service airports that are not required at general aviation airports. FAA has recently amended FAR Part 139 to apply to all airports with scheduled service by airplanes with more than 10 passenger seats, which includes airplanes such as Beech 1900s. Particularly since September 11, 2001, the cost of security – notably for explosive detection system (EDS) – has significantly increased security costs for commercial service airports, some of which has been reimbursed by the federal government.

Formerly FAR Part 139 applied to airports with scheduled service by airplanes with 30 or more passenger seats, such as the Saab 340, DH Dash 8, and ATR-42. The amendment increases the cost of complying with FAR Part 139 for those airports that have service by Beech 1900s, such as Lebanon, and was a factor in the decision made by Dillant-Hopkins to become a general aviation airport. In fact, the increased cost of complying with FAR Part 139, as well as the possibility of having to cover at least some of the cost of the control tower, have jeopardized Lebanon Airport's operating surpluses. At Pease International Tradeport, services such as aircraft rescue and firefighting (ARFF) are required by FAR Part 139, and the NH Air National Guard helped to bear these costs, as well as other costs associated with FAR Part 139 compliance.

2.8.5 CAPITAL IMPROVEMENT PROGRAMS

Airport capital improvement programs (CIP) involve construction of physical facilities such as runways, taxiways, tiedown aprons, terminal buildings, hangars, access roads, etc. In general, there are four sources of funding for airport capital improvement programs:

1. Airport sponsor
   - Internal funding sources (i.e. airport-generated revenue)
   - Municipal subsidies
   - Bonds (typically airport revenue bonds)
2. New Hampshire DOT
3. Federal Aviation Administration (FAA)
4. Private investment

In addition to these four, other potential sources of federal funding include the federal Public Works and Economic Development Program and the Economic Adjustment Program, both administered by the U.S. Department of Commerce, and also the U.S. Department of Transportation's Transportation Equity Act for the 21st Century (TEA-21), which promotes intermodal transportation. As funding sources for airports, however, they are relatively small compared to what is invested by airport sponsors, the FAA, and State.

There are eleven airports in New Hampshire included in FAA's National Plan of Integrated Airport Systems (NPIAS), which are eligible for FAA grants:

- Berlin	- Dillant-Hopkins	- Manchester	- Skyhaven
- Claremont	- Laconia	- Boire Field	- Mt. Washington Regional
- Concord	- Lebanon	- Pease Int.Tradeport	

Three other airports are listed in the NPIAS (Silver Ranch, Plymouth Municipal, and Parlin Field) however they do not meet FAA's current criteria for receiving federal grants. The remaining airports rely strictly upon State and local funding:

- Newfound Valley	- Errol	- Plymouth	- Hawthorne
- Lakes Region	- Franconia	- Twin Mountain	- Silver Ranch
- Moultonboro	- Gorham	- Hampton Airfield	- Parlin Field
- Colebrook	- Dean Memorial		

Federally Funded Airports

The single largest source of funding for general aviation airport capital improvement programs is FAA's Airport Improvement Program (AIP). Commercial service airports, particularly medium and large hubs, rely primarily on airport revenue bonds for capital improvement programs, and also use passenger facility charges (PFC) and FAA grants as well. Funding for FAA grants comes from the Airport and Airway Trust Fund, which one of several national transportation trust funds created by the U.S. Congress.

Revenue for the Aviation Trust Fund is generated by federal taxes on:

- Domestic passenger ticket (7.5%)
- Passenger flight segments ($3.00 per segment in CY 2002)
- International passenger departures and arrivals ($12.00 per person)
- Passenger tickets at rural airports (7.5%)

- Waybill domestic freight and mail (6.25% of shipment cost)
- Commercial fuel (4.3 cents/gal.) and general aviation fuel (19.3 cents/gal. Avgas – 21.8cents/gal. Jet A)
- Frequent flyers (7.5% of ticket value)
- Special rule: for flights between US and Alaska or Hawaii ($6.00 per departure)

Source: FAA Order 5100-38A, *AIP Handbook*, Chapter 1

No general tax revenue goes into the Aviation Trust Fund. Congress determines the amount of money appropriated each year from the Trust Fund for the AIP as part of the FAA's overall funding authorization.

The U.S. Congress passed a four-year AIP known as the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (a.k.a. AIR-21). AIR-21 covers the years FY 2000 – 2003, and although it is a multi-year program, Congress must appropriate specific funding levels each fiscal year (FY)[5]. For FY 2001, Congress appropriated $3.2 billion for the national AIP, and appropriated $3.3 billion for FY 2002 for all airports in the NPIAS.

The FAA's airport improvement grant program is divided into two basic categories:

- *Entitlement Grants* set aside a certain amount of money for airports in each fiscal year. Entitlement grants for commercial service and cargo airports are based on the volume of traffic generated, while entitlement grants for general aviation airports are set by formulas established in the legislation. If an entitlement grant is not spent in a given fiscal year, it can be carried over to following years within certain limits.

- *Apportionment* is a specific allotment of money provided to the State for use for the GA airports. There are eight airports included in the apportionment, plus continuous system planning grants provided for the Division of Aeronautics. The apportionment is determined through a formula and is based on the number of aircraft, population and other factors defined by the FAA. The Division of Aeronautics maintains the apportionment through their annual Capital Improvement Program with the GA Airports.

- *Discretionary Grants* for all remaining projects other than entitlements. Discretionary grants provide flexibility for FAA and are awarded based on a priority ranking system. Discretionary grants are awarded to both commercial service and general aviation airports. Discretionary grants are used primarily for capacity/safety/standards/noise related projects. There are also so-called 'discretionary set asides' – a minimum amount of the discretionary allocations must be awarded for noise mitigation programs (such as at Manchester Airport), reliever airports (Boire Field), and the military airports program (Pease International Tradeport).

FAA grants typically pay for 90% of an eligible project's costs, while the state normally pays 5% and the sponsor pays 5%. For Pease and Skyhaven, as well as state-sponsored projects such as the statewide airport system plan, NHDOT pays the 10% local share of the total project cost.

In general, in order to be eligible for FAA grants, airport facilities must be 'public use'. Conversely, projects such as hangars and those portions of terminal buildings leased to private operators are not eligible for FAA grants.

All FAA grants are issued through the NH Department of Transportation, Division of Aeronautics. Entitlement grants to Manchester, Pease International Tradeport, and Lebanon, which are based on the number of their scheduled passenger enplanements, essentially 'pass-through' NHDOT and go to each airport. All other FAA

[5] The federal fiscal year runs from October 1 – September 30, and the State of New Hampshire's fiscal year runs from July 1 to June 30.

grants, particularly for general aviation airports, are reviewed and processed by NHDOT Division of Aeronautics.

Airports in FAA's NPIAS are requested by FAA and NHDOT to prepare a five-year capital improvement program (ACIP). ACIPs, which are updated annually, list the projects that each airport would like to undertake, the estimated cost of each project, proposed funding sources, the year in which it should occur, and the relative priority of each project. The FAA and NHDOT use each airport's CIP to develop their statewide CIP.

In federal fiscal year 2001, the FAA issued approximately $2.8 million in grants to eight general aviation airports (Skyhaven, Berlin, Claremont, Concord, Dillant-Hopkins, Laconia, Boire Field, and Mt. Washington Regional), as well as projects sponsored by NHDOT. The majority of the money was disbursed as apportionment/entitlement grants. The total funding requested by the eight airports and the State was almost $2.8 million, and there was a remaining balance of approximately $151,000. NHDOT spent $195,000 as part of the state's matching share in FY 2001.

FAA grants to airports in New Hampshire increased significantly in FY 2000 and 2001, primarily due to Manchester Airport's development program. Table 2-11 presents the FAA AIP Grants awarded by airport category between FY 1997 and FY 2002. See Appendix 2-D for a list of FAA grants to each eligible airport since FY 1982.

Table 2-11 - FAA AIP Grants By Airport Category – New Hampshire

	Primary a)		Reliever b)		General Aviation c)		Total Grants	
Fiscal Year	**No.**	**Amount**	**No.**	**Amount**	**No.**	**Amount**	**No.**	**Amount**
1997	4	$12,034,614	1	$46,800	6	$1,503,769	13	$18,006,125
1998	2	$521,544	0	0	7	$2,569,263	10	$3,274,407*
1999	3	$5,264,000	2	$185,054	8	$2,640,880	13	$8,089,934
2000	6	$18,349,484	1	$427,781	8	$7,682,423	15	$26,459,688
2001	6	$18,150,881	1	$256,680	13	$2,836,434	20	$21,243,995
2002	8	$22,732,344	2	$276,738	13	$2,948,430	23	$25,957,512

Source: FAA Program Implementation Branch, APP-520

a) Primary airports = Manchester, Lebanon, Pease International Tradeport
b) Reliever airport = Boire Field
c) General aviation airports = Skyhaven, Berlin, Claremont, Concord, Dillant-Hopkins, Laconia, Mt. Washington Regional
* Includes a grant for the State System Plan for $183,600

The State's portion of the local share is provided by the General Court, which appropriates the money as part of the State's biennium budget (Table 2-12). The State of New Hampshire does not have an active aviation trust fund similar to the FAA's trust fund, or similar to other states such as Florida, Pennsylvania, etc.

Non-Federally Funded Airports

The remaining fourteen airports within the State's airport system are funded through a number of State legislative programs and private investment. The Division of Aeronautics has five programs that provide the non-federally funded airports with money. The programs are summarized in the following bullets:

- *Tax Reimbursement Program* – This program is funded through the Division of Aeronautics' biennium budget. The budget is $10,000. Under this program, the privately owned airports can tap into this funding to pay a portion of their annual tax bill. The Division of Aeronautics determines the amount of land used as public use, non-revenue generating airport and determines an amount of the tax bill that is eligible for this funding.

- *Grants to Airport Sponsors* – This program has a budget of $57,252 and is somewhat variable. This funding is distributed using a formula developed by the Division of Aeronautics. The formula takes into account based aircraft, operations, and available facilities. Up to 90% of this money can go to the non NPIAS airports, and a maximum of 10% may be distributed to the federally funded airports.

- *Aircraft Operating Fee Return* – The Division of Aeronautics collects registration fees on based aircraft within the state. A portion of the fee, 25%, is returned back to the airport sponsor.

- *50/50 Match Program* – This program is similar to the CIP program, but is based upon a 50/50 match between the airport sponsor and the Division of Aeronautics. This program has a budget of $23,000.

- *Revolving Loan Program* – The Division of Aeronautics also has a revolving loan program in which low interest loans are available to the public use airports.

The Division of Aeronautics does not have a formal CIP program for the non-federally funded airports. Currently, if a public use airport requests funding for a project, they often go through the 50/50 match program. Funds obtained from the other programs amount to only a few thousand dollars and would not be adequate to fully fund projects proposed by these airports. Based on discussions with Division of Aeronautics staff, the program budget is often met. However, in the past several years, there are projects that could not be funded under this program and were deferred to the next year. Based on this discussion, the budgeted level is probably not adequate to fund all of the projects that may be submitted over an annual period. Further discussions indicate that the likelihood of increasing the budgeted funding is not likely.

The lack of a formal CIP process for the non-federally funded airports is a concern. Developing such a program with these airports could help the Division of Aeronautics estimate the amount of funding that would be necessary to meet the needs of these airports. It is understood that these airports typically as small airports with little or no staff managing the facilities. However, if the program were limited to two or three years in the future, it is likely that the CIP would better reflect the needs of the airports than if no program were in place to assess the needs currently.

Another option is to develop a program for the non-NPIAS airports similar to the program instituted by the NJDOT Division of Aeronautics. Many airports within New Jersey's aviation system are small privately owned airports. In order for the NJDOT Division of Aeronautics to understand what capital projects were needed to develop the airports and to identify development issues such as environmental, financial, and municipal, the Division of Aeronautics developed a program to develop mini master plans. Each airport will develop mini master plan consisting of an Airport Layout Plan (ALP) and a corresponding report that details existing conditions and planned development for the airport. A capital improvement program is developed and provides the Division of Aeronautics with an estimation of projects and funding requirements for the system of airports on an annual basis. The mini master plans cost around $80,000 each and have been completed by consultants through a multiple airport, multiple year contract. Funding is provided by the State through a dedicated trust fund established by NJDOT.

Such a program for NHDOT Division of Aeronautics would be extremely beneficial since information on the non-NPIAS airports is limited at best. This program would organize and define the financial requirements for the aviation system on an annual basis. By doing this, the Division of Aeronautics could fully estimate the financial requirements for the system of airports and work with the DOT and the State Legislature to increase funding for airports beyond the 50/50 match program and revolving loan program.

The State charges aircraft operating fees based on the weight of the aircraft, 25 % of which is returned to the airports at which the airplanes are based, as shown in Table 2-12. As noted above, the Division of Aeronautics returns 25% of the operating fee back to the airport sponsors. The remaining 75% of the aircraft operating fees are remanded to the State's General Fund. Three airports, Manchester, Boire Field, and Pease International Tradeport, received 90% of the money because of the number of based aircraft at those airports, and the fact that a number of the airplanes are high-value corporate jets and turboprops. The airlines using Manchester, Lebanon and Pease International Tradeport are not required to register their airplanes with NHDOT, so they do not pay registration fees and are therefore not counted as based aircraft.

Table 2-12 - Operating Fees Returned to Airports by NHDOT – 2002

AIRPORT	AMOUNT	AIRPORT	AMOUNT
Berlin	$538.36	Claremont	$375.29
Colebrook	$178.76	Concord	$3,367.58
Errol	$0.00	Foss Heliport	$210.39
Franconia	$189.76	Gorham	$218.59
Hampton	$3,593.60	Dean Memorial	$550.17
Hawthorne	$284.22	Silver Ranch	$493.48
Dillant-Hopkins	$2,454.14	Laconia	$13,887.43
Lebanon	$11,096.20	Manchester	$28,742.87
Moultonboro	$442.23	Boire Field	$67,514.07
Parlin Field	$751.08	Pease	$62,163.95
Plymouth	$248.06	Skyhaven	$1,249.36
Twin Mountain	$193.20	Mt. Washington Regional	$537.61
Lakes Region	$321.64	**TOTAL**	**$200,083.95**

Source: NH Department of Transportation, July 2003

The State of New Hampshire also levies excise taxes on aviation fuel (both Jet A and avgas), the proceeds from which go into the state's General Fund.

In addition, the State does not collect sales or use tax on aircraft or parts, which has actually provided an incentive for out-of-state aircraft owners to base their airplanes in New Hampshire. In particular Boire Field, Pease International Tradeport, Dillant-Hopkins and Silver Ranch in Jaffrey, among others, have attracted airplanes from Massachusetts, Connecticut and Vermont, who want to take advantage of New Hampshire's lack of a sales tax. In fact, the State of Connecticut changed its tax rate on general aviation airplanes several years ago (airplanes were previously taxed as personal property), and the Massachusetts legislature (*Aircraft Sales Tax Bill*, H 3207) exempted aircraft and parts from the state sales tax in early 2002. Both Connecticut and Massachusetts have taken such actions in an effort to discourage airplanes bought by their residents from being based out of state in New Hampshire.

In 2001, New Hampshire allocated the majority of the $57,242 grants to airport sponsors to airports not eligible for federal funding (Colebrook, Errol, Franconia, Gorham, Hampton Airfield, Dean Memorial, Hawthorne, Silver Ranch, Moultonboro, Parlin Field, Plymouth, Twin Mountain, and Lakes Region-Wolfeboro). Each of the non-NPIAS airports receive a $500 fixed grant annually, in addition to variable allocations based on their capital improvement needs. The majority of those airports, although not all, are privately owned and operated. Any additional investment required for capital improvements comes from the sponsor and/or other private sources.

Because the U.S. Congress must appropriate money from the Trust Fund each fiscal year, the State and airports do not know how much federal money will be available beyond the current fiscal year. The State has projected that FAA grants (general aviation apportionment and entitlements) will equal approximately $2.6 million for each fiscal year between 2003 and 2006. At that level, there are some fiscal years where demand for funding will be greater than the grants available. If Congress appropriates less than $2.6 million for NH in a given fiscal year, then the shortfall in the out years could be significantly larger.

On the other hand, if Congress were to significantly increase the amount of federal funds available each year for capital improvements in New Hampshire, the increased federal funding would require a corresponding increase in both the state and local share in order to match the higher federal grants.

Another source of funding for airport improvements is private investment, even at publicly owned airports. Private parties make investments in most airports in New Hampshire, primarily in the form of hangar development. For example, private parties built all of the hangars constructed at Boire Field and Laconia Airport; at Manchester Airport, Wiggins Airways constructed a large fixed base operation (97,000 SF) that included hangars, offices, meeting rooms, etc.

At other airports in the state, private entities have constructed both conventional and T-hangars. In addition, private parties undertake almost all of the industrial and commercial development that occurs on airport property. At most publicly-owned airports, private entities lease the property on which their building is sited, and the leases often contain a reversion clause that states within a given time period (typically between 20 - 40 years) all aviation-related buildings (such as hangars, etc.) will revert to the airport's ownership. The private owner often has first-right-of-refusal to lease the building from the airport after ownership has been transferred.

The primary advantages of private investment include lower capital outlays by the airport sponsor, no responsibility for the maintenance of the facility or the collection of rent or lease payments from building tenants. However, over a twenty-year period, an airport sponsor could receive more revenue if the airport constructed airport buildings and leased them to private tenants. Hangars and other facilities that are used by private entities are typically not eligible for federal or state grants, so airport sponsors would have to assume the full cost of construction and maintenance, and as a result, private investment is a popular alternative.

2.9 ENVIRONMENTAL FACTORS

Airports in New Hampshire, and across the country, are facing increasing scrutiny from resource agencies. As a result, compliance with various local, state, and federal environmental regulations and procedures is often very complex, time-consuming, and expensive. Further, there is no guarantee the proposed airport project will be approved or issued permits after the review process is completed. Chapter 7 of this study deals with environmental issues in more detail.

Since the passage of the National Environmental Policy Act (NEPA) in 1969, environmental issues have become increasingly important, and costly, factors in terms of day-to-day airport operations and development. This section describes the various environmental regulations that airports must comply with and incorporate into their planning and project construction. Presented is a review of the environmental process as required by FAA Order 5050.4A *Airport Environmental Handbook.* The information provided here is not intended to address specific environmental issues associated with each of the 25 airports within the NH State Airport System, as each airport is unique with respect to its relationship within the environment.

In addition to federal agencies and regulations, the State of New Hampshire also has responsibility for protecting the environment, and the NH Department of Environmental Services (DES) serves as the lead agency for the state in fulfilling that responsibility. Among some of the DES' guiding principles are:

- Consider the quality of life, health and safety, and concerns and aspirations of all our citizens while pursuing our responsibilities under the law
- Commit to scientifically and technically sound, cost effective and environmentally appropriate solutions
- Commit to providing leadership on environmental issues
- Consider the long-term and cumulative effects of our policies, programs and decisions
- Effectively and fairly enforce against those who violate environmental laws

Airports in New Hampshire are subject to the same environmental regulations and guidelines as other governmental agencies and private entities. Three areas of environmental concern that have been addressed by a number of airports in New Hampshire include:

- Mitigating aircraft noise and promoting compatible land use
- Protection of wetlands and wildlife habitat
- Enhancing stormwater runoff collection and disposal

Regulations promulgated by federal and state agencies directly impact airports and their tenants. The U.S. Environmental Protection Agency (EPA), for example, had adopted regulations regarding the testing, monitoring, and replacement of underground storage tanks (UST). As a result of that regulation, many fixed base operators and airport sponsors had to replace their existing UST, and to clean up any contamination that may have occurred from leaking tanks. Compliance with the regulation was, in some cases, extremely expensive.

It should be noted that environmental resource and permitting agencies have adopted the policy of considering the cumulative impacts of all proposed development on an airport. As a result, the cumulative impacts of the projects shown on an Airport Layout Plan (ALP) that depicts a twenty-year development program may be considered by permitting agencies, as opposed to reviewing projects individually and separately.

CHAPTER 3 - OVERVIEW OF THE NEW HAMPSHIRE AND REGIONAL ECONOMY

3.1 INTRODUCTION

The following is an overview of the New Hampshire and regional economy over the past decade. The purpose of this analysis is to provide a broad snapshot of the state's economy and how it relates to aviation activity by providing a summary of changes in socioeconomic indicators such as population, employment, wages, unemployment and business establishments. Additionally, industry-specific profiles of key industrial sectors that strongly influence the State are provided. Various information sources were used in order to prepare this overview, including *New Hampshire in the New Economy: A Vision for Expanded Prosperity* published by the State of New Hampshire Governor's Office, the New Hampshire Department of Employment and Security, and the U.S. Bureau of Labor Statistics.

Almost every aspect of civil aviation activity is affected by demographic trends such as population, employment, and per capita income. Changes in demographic indicators on the regional and state level (Table 3A) can impact aviation demand (Table 3B), both on a short and long term basis. Based on statistical correlations developed nationally, there is a direct relationship between demographic trends and airline passenger activity, and the growth in the state's economy has been mirrored and even stimulated by the growth of airline service at Manchester Airport.

General aviation activity, however, does not show as close a statistical correlation with demographic trends as airline passenger traffic, in part because general aviation pilots and passengers represent a relatively small share of the state's total population. For example, in 2002 there were 3.36 million total passengers at Manchester Airport (almost three times more than the state's population), while there were approximately 4,200 licensed pilots in the state - less than one tenth of one percent of the state's population.

Demographic projections for each of the nine economic regions, and the state as a whole, were factored into the forecasts of future aviation activity in Chapter 4. It should be noted that educational levels were included in this analysis because it has an indirect bearing on existing and future aviation activity. In general, higher education levels translate into higher per capita income (on average), and also a higher propensity for air travel, both on the airlines and general aviation.

Table 3A - Socio-Economic Characteristics By Region - Year 2000

Region	Population Number	Population % change*	Population Density/Sq. Mi.	Median HH Income $	Median HH Income % change*	% Unempl	Labor Force Number	Labor Force % change*
Central	104,152	8.7%	143.1	$49,042	36.3%	2.1%	75,350	23.5%
Lakes	94,690	10.0%	71.7	$38,404	26.6%	2.4%	30,030	11.4%
Nashua	190,088	10.9%	633.6	$59,660	31.7%	3.0%	100,420	1.9%
North Country	81,327	1.3%	24.2	$34,195	29.0%	2.9%	62,430	5.6%
Rockingham	180,866	12.9%	473.5	$60,044	46.1%	3.3%	155,000	7.8%
South	240,815	11.2%	492.5	$53,807	38.3%	2.4%	105,560	3.5%
Southwest	92,652	4.9%	94.6	$43,915	31.8%	2.7%	38,480	-1.0%
Strafford	129,663	7.6%	244.6	$45,486	38.3%	2.4%	57,710	-0.2%
Upper Valley	81,326	6.2%	75.2	$44,672	40.2%	1.7%	43,650	3.8%
N.H. Total	1,195,579	11.0%	130.5	$48,928	25.6%	2.8%	668,630	9.2%
*Note: % change between 1990 – 2000								

Table 3B - Aviation Activity By Region -Year 2000							
Region	**Enplaned Passengers***	**Based Aircraft**	**%**	**Aircraft Operations**	**%**	**Enplaned Pass per Pop.**	**Based AC per 10K Pop**
Central	63,000	81	7%	56,700	9.8%	.61	7.8
Lakes	67,400	132	11%	54,503	9.5%	.71	13.9
Nashua	126,200	374	30%	101,633	17.6%	.66	19.7
North Country	41,600	122	10%	33,250	5.8%	.51	15.0
Rockingham	78,000	161	12%	74,639	12.9%	.96	8.9
South	1,574,000	85	7%	107,832	18.7%	6.54	3.5
Southwest	68,500	108	9%	66,442	11.5%	.74	11.7
Strafford	23,200	68	5%	18,592	3.2%	.18	5.2
Upper Valley	73,700	109	9%	63,080	10.9%	.91	13.4
N.H. Total	2,115,600	1,240	100%	576,671	100%	1.77	10.4
* Data includes both GA and scheduled airline passengers at Manchester Airport, Pease International Tradeport and Lebanon Municipal Airport. GA enplanements based on an average of 2.5 pilots & passengers per GA aircraft departure.							

Historically, New Hampshire's economy was focused almost entirely on the manufacturing, agriculture and resource extraction industrial sectors. However, since the middle of the twentieth century, New Hampshire's economy has become much more diversified. This diversification now includes significant employment within the information technology, trade, health and business service sectors.

Currently, the large majority (over 99%) of companies in New Hampshire are small businesses which employ less than 500 employees. Of the approximately 36,000 business establishments in the state, only about 100 are considered large businesses (employing over 500 employees).

New Hampshire has experienced rapid economic growth during the early to mid 1990s. Between 1992 and 1997, New Hampshire's gross state product increased by 5.6% - a value which exceeded both the New England and the national rate.

3.2 POPULATION GROWTH

In terms of population, New Hampshire has experienced steady population growth throughout the 1990s. Between 1990 and 2000, New Hampshire's population increased by approximately 127,000 (11%) or approximately 12,700 residents per year (1.1%). Population projections indicate that the state is expected to continue with steady population growth over the next 20 years – outpacing all other New England states. The state is expected to grow by 25% over the next 20 years, increasing from a current population of 1.2 million to 1.5 million by 2020.

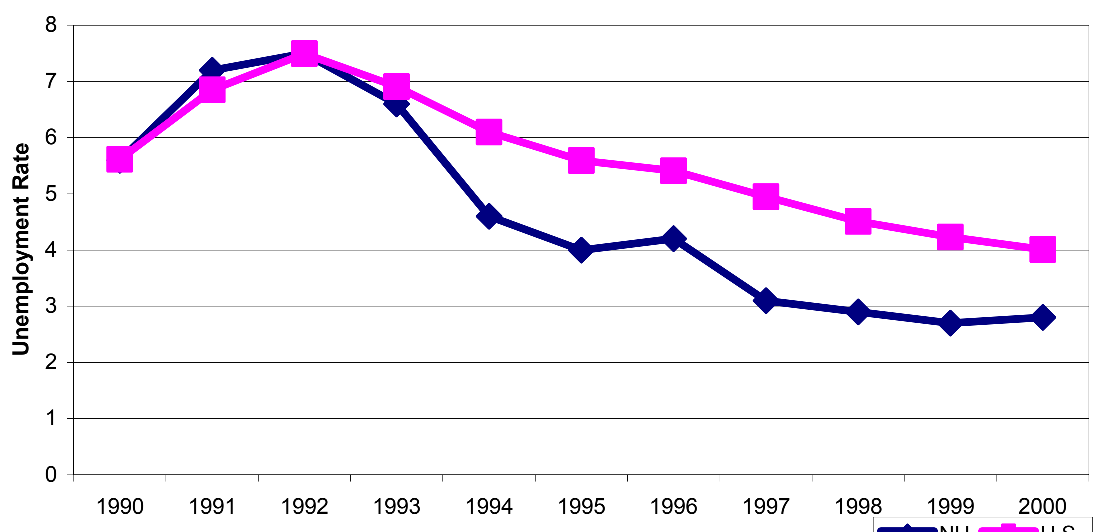
3.3 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT

As shown in Table 3-1, New Hampshire's labor force has increased by approximately 58,000 workers between 1990 and 2000, representing an increase of 9.2% - almost 1% annually. The increased growth in the state's labor force is one indicator of a vibrant economy as people are drawn to areas where jobs are being created. Similarly, the number of employed individuals in New Hampshire increased by over 74,000 individuals (12.5%) between 1990 and 2000. A slowdown in economic growth throughout the state, as experienced throughout New England and nationally, has recently been experienced and therefore employment growth has slowed marginally throughout New Hampshire.

Table 3-1 – Trends in Labor, Employment and Unemployment: 1990-2000 State of New Hampshire				
	1990	**2000**	**# Change**	**% Change**
Labor Force	627,670	685,510	57,840	9.2%
Employment	592,070	666,320	74,250	12.5%
Unemployment Rate	5.7%	2.8%		-2.9%
Source: New Hampshire Department of Employment Security and RKG Associates, Inc.				

As New Hampshire's labor force and employment increased substantially during the 1990s, unemployment dropped to unprecedented lows. During the early 1990s, as the State and the rest of the country were weathering the storm of the recession, New Hampshire's unemployment rate mirrored the national rate of between 5% and 7%. However, over the past few years, New Hampshire has experienced unemployment rates that have been well below the national average. Since 1993 New Hampshire's unemployment rate has dropped by 3.8 percentage points from 5.5% to its current (2000) average of 2.8%. Meanwhile during the same time period, the national unemployment average declined by 2.9 percentage points with the 2000 national unemployment rate at 4%. Figure 3-1 provides a comparison between New Hampshire and the national unemployment rates throughout the 1990s.

Figure 3-1 - Unemployment Rate Trends 1990-2000 - U.S. and New Hampshire



Source: NH Department of Employment Security and U.S. Bureau of Labor Statisitics

Although the major employment indicators (high employment and low unemployment) signal one of the most positive economic times in New Hampshire history, extremely low unemployment has created a shortage of labor throughout the state.

New Hampshire's service industry is the largest and one of the fastest growing sectors. Based on 1998 employment estimates, approximately 28% of the state's employment was within the service industry. Of the 79,000 new jobs created between 1990 and 1998 in New Hampshire, over 50% (40,900) were within the service sector – representing an increase of 34%. Four major sectors within the services industry are:

- Health care services;
- Business services;
- Engineering and management services; and,
- Educational services.

New Hampshire's health care services industry (which includes hospitals, clinics, nursing homes, etc.) employs approximately 50,600 people.

Business services, which employ over 31,000 people, is the fastest growing branch of the services industry. Software companies, which fall under the business service category, have proliferated during the period of economic expansion over the past five years. Many of the software companies in southern New Hampshire have taken advantage of the explosion of information technology firms which have established themselves along Boston's Route 128 "Tech Corridor". As Boston's Route 128 Tech Corridor approaches maximum build-out, many information technology firms who are looking to relocate are moving to southern New Hampshire. In addition to being within commuting distance to Boston, high quality of life as well affordable "wired" office space makes New Hampshire an attractive location for high technology firms.

Engineering and management firms throughout the state employ approximately 24,000 people. New Hampshire Employment Security projects that between 1998 and 2008 engineering and management employment should be in heavy demand in terms of the number of annual openings.

The educational services sector employs approximately 20,000 individuals. New Hampshire has a 50% higher employment concentration in the educational services sector as compared to the national average. In terms of educational attainment, the state takes advantage of a highly educated workforce with approximately 27% of residents having a college degree. Currently, 65,000 students are enrolled in 23 post-secondary institutions throughout the state. However, as only 50% of high school graduates attend college in New Hampshire (4th lowest nationally), attracting and keeping future highly skilled employees is an ongoing concern.

Wholesale and retail trade is New Hampshire's second largest employer with over 165,000 employed. Between 1990 and 1998, the trade sector (combined wholesale and retail) increased its employment base by over 23,000 (nearly 50%). Although it accounts for approximately 27% of the state's employment, the trade sector accounts for only 15% of New Hampshire's gross state product.

Traditionally a primary generator of economic activity, New Hampshire's industrial sector accounts for one quarter of the gross state product – 8% higher than the national average. Based on 1998 employment estimates, approximately 19% of the state's workforce is employed in the manufacturing sector, down 2% from 1990. In terms of manufacturing outputs, there has been a shift from traditionally low value added non-durable goods production (such as paper and lumber) to higher value added products such as computer hardware and electronics manufacturing. According *to New Hampshire in the New Economy: A Vision for Expanded Prosperity*, New Hampshire ranks second in the nation in terms of percentage of private sector employment in high technology (jobs in electronics manufacturing, software, computer related services and telecommunications).

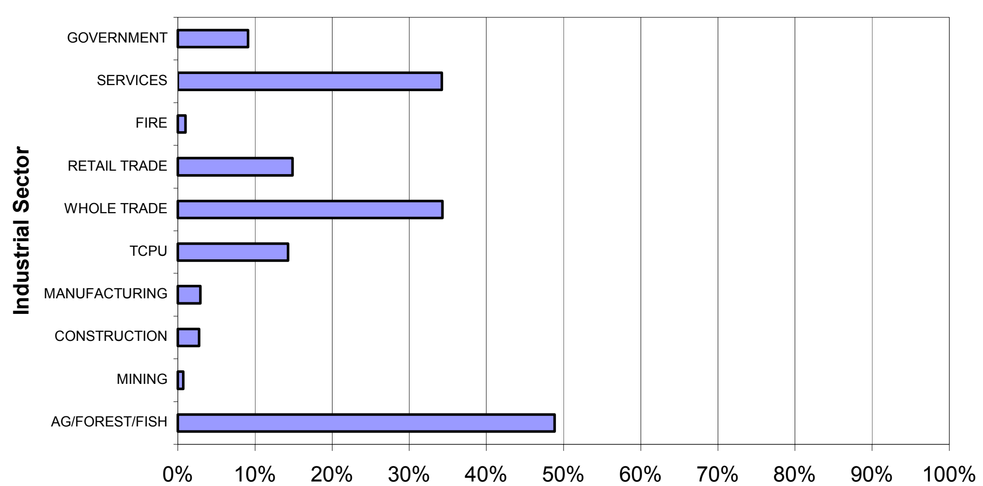
Travel and tourism are mainstays of the state economy with spending by tourists accounting for over 8% of the gross state product. It is estimated that approximately 64,000 people are employed within the travel and tourism industry in the state. Although travel and tourism is not considered a specific industrial sector, majority of employment within travel and tourism is concentrated within the service and retail trade sectors. Based on the results of surveys conducted by the NH Division of Travel and Tourism Development, the large majority of tourists drive to the state, as opposed to fly or take trains into the state.

Employment within the finance, investment and real estate (FIRE) sector accounts for approximately 5% of the state's employment base. Between 1990 and 1998, employment in the FIRE sector rose sluggishly by approximately 300 workers (1%). However, although the FIRE sector is not a major employer, it is a major contributor to the economy of the state, currently accounting for 22% of the gross state product, which is second among all industrial sectors.

In terms of government employment, approximately 13% of the state's employment is within the local, state and federal government organizations, based on 1998 estimates. This was an increase of approximately 6,100 government employees (9%) from 1990.

Although the agriculture and forest industry currently employs less than 1% of the state's workforce, this sector experienced the largest gain in employment between 1990 and 1998 with an additional 1,665 employees (49%). The fastest growing segments of the state's agricultural industry are in higher value-added areas such as greenhouse and nursery production, flowers, turf, landscape material and services. In terms of economic impact, New Hampshire exports approximately $20 million annually in food and agricultural products with the forestry sector contributing $1.7 billion to the state economy. Figure 3-2, shows the change in New Hampshire's employment within each industrial sector between 1990 and 1998.

Figure 3-2 - Employment Change 1990-1998 - State of New Hampshire

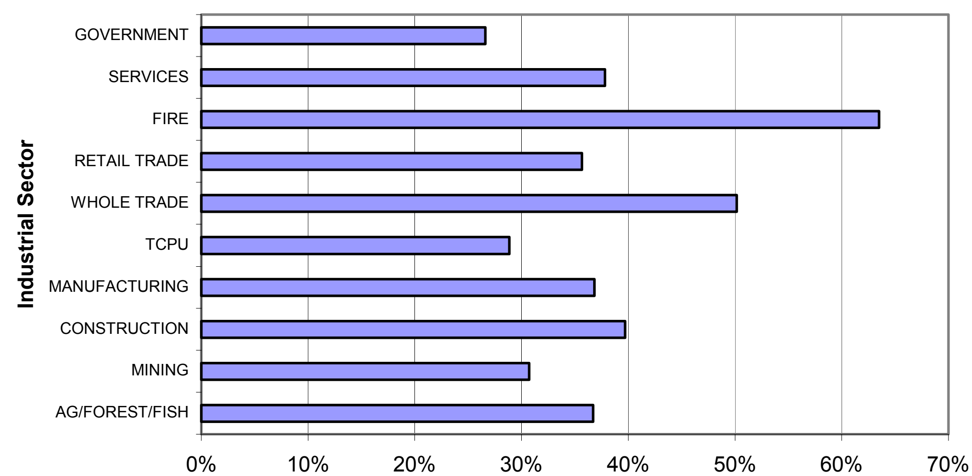


Source: NH Department of Employment Security and RKG Associates, Inc.

3.4 WAGES

In terms of average weekly wages for all employment sectors, between 1990 and 1998 New Hampshire workers increased their average weekly wage by $160 (37%). As shown in Figure 3-3, the FIRE and wholesale trade sectors had the highest gains in average weekly wages with gains of 64% and 50% respectively.

Figure 3-3 - Change in Average Weekly Wages 1990-1998 - State of New Hampshire

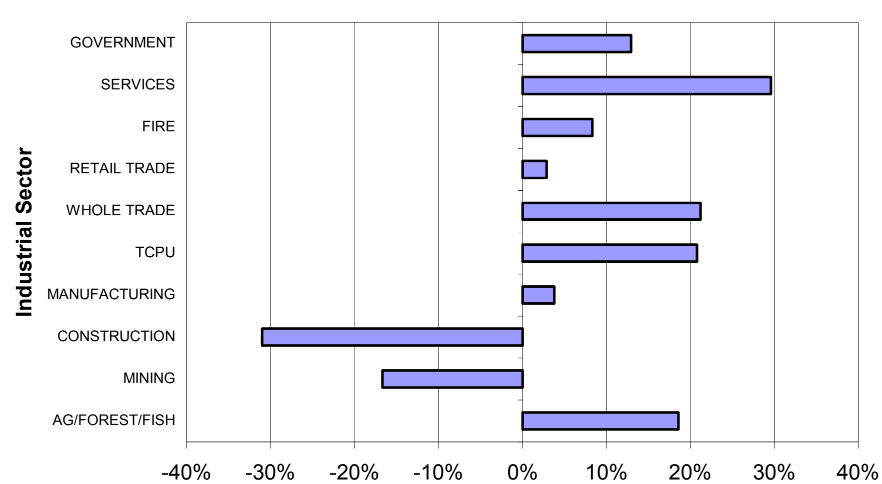


Source: NH Department of Employment Security and RKG Associates, Inc.

3.5 BUSINESS ESTABLISHMENTS

Over 35% of business establishments within New Hampshire are in the service industry. Additionally, the service industry experienced the largest gain in establishment growth between 1990 and 1998 with the addition of 3,100 establishments (30%). Over the same time period, the mining and construction industries lost a combined 1,500 establishments (approximately 48%). Figure 3-4 shows the change in New Hampshire's establishments between 1990 and 1998.

Figure 3-4 - Change in Establishments 1990-1998 - State of New Hampshire



Source: NH Department of Employment Security and RKG Associates, Inc.

3.6 AIR TRANSPORTATION

As air transportation has increased in importance within the state's intermodal network, investments in aviation infrastructure have transformed New Hampshire (Manchester Airport specifically) into the aviation hub of northern New England. The state's airports, primarily in the southern tier, have become a primary regional hub for commercial passenger, charter, general aviation and air cargo. For example, Manchester Airport passenger traffic increased from approximately 750,000 in 1991 to approximately 3.2 million in 2000 representing an increase of 320%.

3.7 REGIONAL SOCIOECONOMIC PROFILES

The following are summaries of socioeconomic conditions within each of nine New Hampshire economic regions. As discussed in Chapter 2, for the purposes of this study, the state has been divided into nine regions, which correspond to the jurisdictions of the nine regional planning commissions. Table 3-2 provides a summary of the cities and towns included within each economic region.

Table 3-2 - New Hampshire Economic Regions

Region	Towns and Cities Included
Strafford	Barrington, Dover, Durham, Farmington, Middleton, Milton, New Durham, Newmarket, Rochester, Rollinsford, Somersworth, Strafford, Lee, Madbury, Northwood, Nottingham, Wakefield
North Country	Albany, Bartlett, Bath, Benton, Berlin, Bethlehem, Campton, Carroll, Chatham, Clarksville, Colebrook, Columbia, Conway, Dalton, Dummer, Easton, Eaton, Ellsworth, Errol, Franconia, Gorham, Groton, Hart's Location, Haverhill, Jackson, Jefferson, Lancaster, Landaff, Littleton, Lincoln, Lisbon, Lyman, Madison, Milan, Monroe, Northumberland, Pittsburg, Plymouth, Randalph, Rumney, Shelburne, Stewartstown, Stratford, Sugar Hill, Thorton, Warren, Waterville Valley, Wentworth, Whitefield, Woodstock
Southwest	Alstead, Antrim, Bennington, Chesterfield, Dublin, Fitzwilliam, Francestown, Gilsum, Greenfield, Greenville, Hancock, Harrisville, Hinsdale, Jaffrey, Keene, Langdon, Marlborough, Marlow, Mason, Nelson, New Ipswich, Peterborough, Richmond, Rindge, Roxbury, Sharon, Stoddard, Sullivan, Surry, Swanzy, Temple, Troy, Walpole, Westmoreland, Winchester, Windsor
South	Auburn, Bedford, Candia, Chester, Deerfield, Derry, Goffstown, Hooksett, Londonderry, Manchester, New Boston, Raymond, Weare
Nashua	Lyndeborough, Mont Vernon, Wilson, Milford, Brookline, Hollis, Amherst, Merrimack, Nashua, Litchfield, Hudson, Pelham
Lakes	Andover, Ashland, Barnstead, Belmont, Bridgewater, Bristol, Brookfield, Center Harbor, Danbury, Effingham, Franklin, Freedom, Gilford, Gilmanton, Hebron, Hill, Holderness, Laconia, Meredith, Moultonboro, New Hampton, Northfield, Ossipee, Sanbornton, Sandwich, Tamworth, Tilton, Wolfeboro
Rockingham	Windham, Salem, Atkinson, Hampstead, Plaistow, Newton, Kingston, Sandown, Danville, Fremont, Epping, Brentwood, East Kingston, South Hampton, Kensington, Hampton Falls, Seabrook, Hampton, North Hampton, Rye, Portsmouth, Newington, Greenland, Stratham, Exeter, Newfields,
Upper Valley	Acworth, Canaan, Charlestown, Claremont, Cornish, Croydon, Dorchester, Enfield, Goshen, Grafton, Grantham, Hanover, Hartford, Hartland, Lebanon, Lempster, Lyme, Newbury, New London, Newport, Norwich, Orange, Orford, Piermont, Plainfield, Springfield, Sunapee, Unity, Washington, Wilmot
Central	Allenstown, Boscawen, Bow, Bradford, Canterbury, Concord, Deering, Dunbarton, Epsom, Henniker, Hillsboro, Hopkinton, Loudon, Pembroke, Pittsfield, Salisbury, Sutton, Warner, Chichester, Webster

Regional planning authorities were established in order to assist municipalities with planning and economic development plans and programs. Any respective regional authority's jurisdiction is defined by the boundaries of the communities who agree to be members of the regional planning authority. Therefore, by natural association, communities with similar geographic and economic commonalities have gravitated together to form relatively coherent economic regions. Since the communities themselves have naturally defined these regions, and that economic activity does not respect county and other political boundaries, it was determined that the regional planning authority jurisdictions would be most appropriate for defining New Hampshire's economic regions.

Where available, socioeconomic information for each of the regions has been presented based on an aggregation of data for each of the towns within the region. However, as socio-economic data is not always available for some small municipalities, county or labor market area (LMA) data has been used where appropriate (unemployment rates for example). The data used within the regional economic profiles has been obtained from the New Hampshire Department of Employment Security and Claritas, Inc., a private provider of demographic data[1].

In order to provide a basic economic "snapshot" or profile of each region, socioeconomic information has been presented which will include:

- Major transportation links;
- Population trends and projections;
- Household income trends;
- Educational attainment levels;
- Distribution of business establishments by major industry sector;
- Distribution of employment by major industry sector;
- Major Employers; and,
- Unemployment.

Additionally, information on each of the region's airport facilities is provided.

3.8 ROCKINGHAM REGION

The Rockingham region, located in the southeast corner of the state, is part of what is commonly known as New Hampshire's seacoast (and also "e-coast") region. Several medium-sized towns and cities are found within the region including Portsmouth, Salem, Newington and Exeter. Over the last few years, the region as a whole has taken advantage of the positive economic influence and growth, which has emanated from the greater Boston area. However, it is interesting to note that different markets influence different geographic areas within the region. For example, the eastern part of the region (Portsmouth area) has a strong economic connection with southeastern Maine (York County), while the western portion (Salem area) has strong economic ties to the Greater Boston market. Many people who work in the greater Boston area are attracted to live in southern New Hampshire due to its relatively affordable housing, high quality of life, and tax advantages.

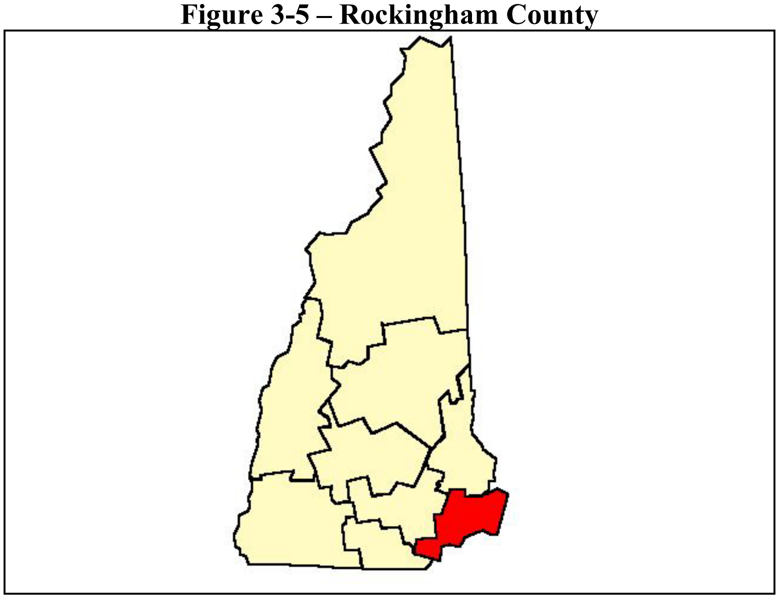
The region historically built its economy on manufacturing through the extensive series of mills within the region, and resources such as fishing and farming. However, although these activities are still very much a part of the regional economy, new economy businesses and industries have transformed the area into an information technology and business service driven economy. As the supply of developable land

[1] As the 2000 census provided only limited demographic information at the time of publication (population and race) for a limited number of communities, Claritas estimates were used as it provides the most complete estimate of socioeconomic conditions for each region. Claritas estimates are considered comparable to U.S. Census Bureau estimates.

and office space becomes limited within greater Boston's 128 technology corridor, more and more information technology businesses are moving their operations to southern New Hampshire – including the Rockingham region. In addition to having an abundant supply of high quality office space, information technology firms are attracted to the region because of its relatively close proximity to the 128 technology corridor and the availability of highly educated and skilled workers.

Prior to the economic boom experienced throughout the 1990s, however, the region suffered two significant blows in the late 1980s –a deep economic recession and the closing of Pease Air Force Base. The state stepped in and took over the base, and has been actively marketing and developing the facility very successfully since the early 1990s. As a result, the Tradeport has more than 160 operating businesses/tenants; in excess of 3,800,000 square feet of new, or newly renovated space; created 5,000 new jobs, with additional commitments to bring the total to 9,000+ jobs; and 1,000,000 square feet of new construction underway in 2002.

Figure 3-5 – Rockingham County



3.8.1 TRANSPORTATION (ROCKINGHAM)

The region has interstate access north to Maine and south to the greater Boston area and points beyond through Interstate 95 – one of the three interstates that service the state. Furthermore, the region is bisected by Route 101, which serves as a major route east, and west from Portsmouth to Manchester, Interstate 93 and Interstate 89. Interstate 93 provides additional access to the greater Boston area as well as access into northern New Hampshire.

The City of Portsmouth in the eastern portion of the region has one of the eastern seaboard's major harbor facilities, Kittery Naval Shipyard, located in Maine, which serves as a repair facility for naval vessels and is a major regional employer. The Port of Portsmouth, as well as several privately owned and operated marine terminals in Newington, provide for movement of a wide variety of bulk, break-bulk and specific cargos to/from New Hampshire as well as the greater Northeast.

In terms of airport facilities, the region is home to two airports (Table 3-3) – Hampton Airfield in the Town of North Hampton and Pease International Tradeport in Portsmouth and Newington. Hampton Airfield is a general aviation facility with a grass runway that serves the needs of predominately single-engine aircraft. Pease International Tradeport, a former Air Force Base which was closed and redeveloped into one of the country's most successful commercial and industrial parks, also has the longest runway in the state, and presently accommodates passenger, cargo, and general aviation aircraft. Pease has successfully developed the airport to meet FAA standards, attract commercial passenger as well as cargo service, and also to accommodate the NH Air National Guard 157th Air Refueling Wing. Furthermore, Pease has taken advantage of the region's significant corporate presence by developing hangars for corporate aircraft, some of which are from Massachusetts and were based at Pease to take advantage of the lack of a sales tax in NH.

Table 3-3 - Airport Facilities - Rockingham Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Hampton Airfield	Private	North Hampton	1	Turf	2,100
Pease International Tradeport	Public	Portsmouth/Newington	1	Asphalt	11,321
Source: Federal Aviation Administration and RKG Associates, Inc.					

3.8.2 POPULATION (ROCKINGHAM)

Based on estimates provided by Claritas, Inc., the Rockingham region has a current (2000) population of approximately 180,800. The region experienced significant population growth during the 1980s with an increase of approximately 27,300 residents (20%) over the decade – representing an increase of approximately 2% per year. Compared to the growth in the 1980s, population growth slowed during 1990s. Between 1990 and 2000, the region's population increased by approximately 20,600 (13%) – representing an average annual increase of 1.3% per year. Population projections indicate that growth should continue at its current average annual rate over the next five years. Table 3-4 shows population trends and projections for the region.

Table 3-4 - Population Trends and Projections Rockingham Region

	Population
2005 Projection	193,882
2000	180,866
1990	160,231
1980	132,926
% Change 90-00	12.9%
% Change 80-90	20.5%
Source: Claritas, Inc.	

3.8.3 HOUSEHOLD INCOME (ROCKINGHAM)

Based on current household income data, the current median household income in the region is approximately $60,000 (Table 3-5).

Table 3-5 - Median Household Income Trends Rockingham Region

	Median HH Income
2000 Med HH Income	$60,044
1990	$41,104
% Change 90-00	46.1%
Source: Claritas, Inc.	

This represents an increase of approximately $19,000 (46%) from 1990 household income levels. Based on an average inflation increase of 3% per year throughout the 1990s, households in the region have more than kept pace with inflation.

3.8.4 EDUCATIONAL ATTAINMENT (ROCKINGHAM)

In terms of educational attainment for the population over 25 years of age, over 34% of the population have graduated from a post-secondary educational institution, which is approximately 2% higher than the state average. The large number of college graduates is one of the reasons many information technology and business service companies have chosen the region as their home. During the latest period of positive economic growth in the late 1990s and early 2000s, obtaining and retaining highly skilled labor is seen as crucial to positive commercial growth – which the region has capitalized on. Table 3-6 summarizes the regional educational attainment levels for residents over the age of 25.

Table 3-6 - Educational Attainment (Population Over 25 Years) Rockingham Region

	#	% of Total
Less than 9th Grade	4,572	4.3%
9th to 12th Grade, No Diploma	9,897	9.3%
High School Graduate	33,687	31.6%
Some College, No Degree	21,686	20.4%
Associate Degree	9,166	8.6%
Bachelor's Degree	18,866	17.7%
Graduate or Prof. Degree	8,680	8.1%
Total	106,554	100.0%

Source: Claritas, Inc.

3.8.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (ROCKINGHAM)

Based on current employment data, between 1990 and 1999, the Rockingham region experienced a labor force increase of approximately 11,100 (7.8%) and employment increase of approximately 15,000 (11%). The increase in labor force for the region outpaced the statewide average by 1.7% and employment average by 1.6% indicating that the region is attracting people who commute into the region to work. Strong employment numbers indicate that the region is attracting and retaining new business activity with the expansion of existing businesses. Table 3-7 shows the growth in employment and labor force in the region throughout the 1990s.

Table 3-7 - Labor Force and Employment Change: 1990-1999 Rockingham Region*

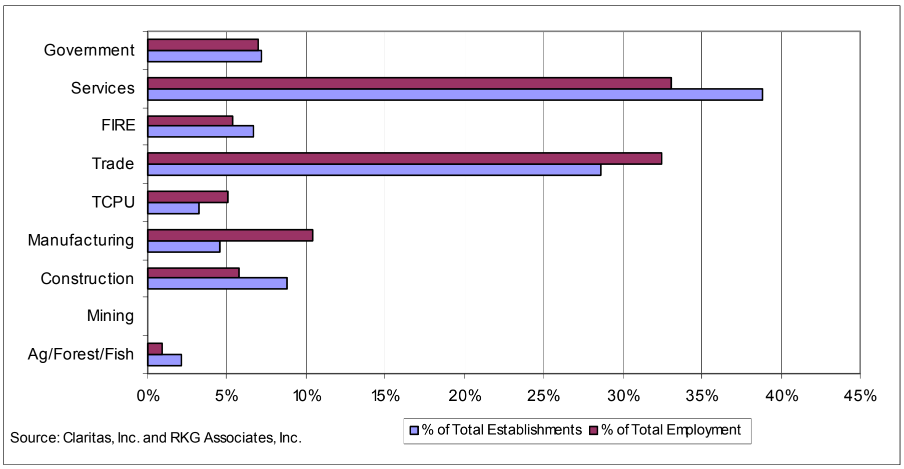
	1990	1999	% Change 90-99
Labor Force	143,840	155,000	7.8%
Employment	134,880	149,810	11.1%

*Note: Comprised of Rockingham County

Employment in the region is concentrated within the Trade (39,000 or 33% of total) and Service (38,600 or 32% of total) sectors. The manufacturing sector, historically a large employer in the region, still maintains a significant employment presence employing over 12,400 people or 10% of the employment base. The high technology sector is sizeable with the Pease International Tradeport in Portsmouth having an estimated 5,000 high technology jobs alone.

In terms of business establishments, the region, like most communities across the country, has a large majority of service and trade establishments. As shown in Figure 3-6, approximately 4,500 (39%) of businesses are within the service sector with approximately 3,300 (29%) being within the trade sector. Furthermore, due to New Hampshire having no sales tax and being in close proximity to Maine and Massachusetts (which have sales taxes), the region has a large retail establishment base. Interestingly, although the manufacturing sector has approximately 530 (5%) establishments, it employs approximately 23 people per establishment – seven more people per establishment than the transportation, communication and public utilities (TCPU) sector which is the second largest employer per establishment (16 jobs per establishment). Having a high number of manufacturing jobs per establishment indicates presence of large production facilities, which tend to be stable during positive economic conditions. However, if and when the economy softens, manufacturing jobs within large production facilities tend be affected first through lay-offs.

Figure 3-6 - Employment and Establishments: 1999 Rockingham Region



The largest employers within the region are spread across many industrial sectors including manufacturing, Insurance, retail, health care and education. As shown in Table 3-8, two of the largest employers (Shaw's Supermarkets and Liberty Mutual Insurance) are very large employing over 3,500 people each[2].

Table 3-8 - Largest Employers: Rockingham Region

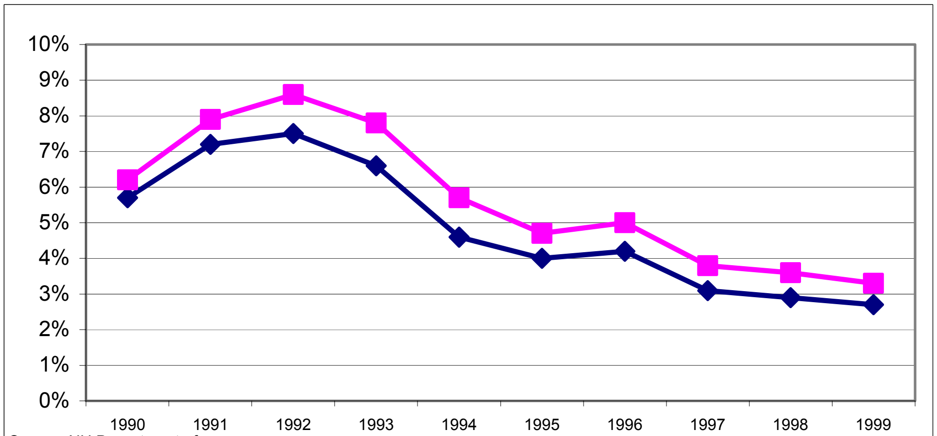
City/Town	Employer	Product/Service	# Employees
Stratham	Shaw's Supermarket	Grocery/Food	3,546
Portsmouth	Liberty Mutual	Insurance	3,480
Exeter	Exeter Hospital	Health Care	1,800
Newington	Sears	Retail	1,700
Exeter	Tyco International *	Telecommunications	1,400
Stratham	Timberland	Outerwear	652
Newfields	Hutchinson Sealing	Sealers	650
Seabrook	Venture Seabrook	Power Plant	560
Exeter	Phillips Exeter Academy	Education	520

* Uses corporate aircraft based at Pease International Tradeport
Source: NH Employment Security and Business NH Magazine

[2] Based on estimates provided by the New Hampshire Department of Employment Security and Business NH Magazine's annual statewide business establishment survey. Note that employment estates for (the largest of) the large employers provided within this chapter may incorporate establishments outside of the respective region.

Based on an analysis of unemployment rates throughout the 1990s, the Rockingham region has maintained unemployment rates which have consistently been between 0.5% and 1% above the statewide average (see Figure 3-7). Furthermore, between 1990 and 1999, the region has experienced a net reduction in its unemployment rate by approximately 3% which is the same reduction as the statewide rate over the same time period.

Figure 3-7 - Unemployment Rate: 1990-1999 - New Hampshire and Rockingham County

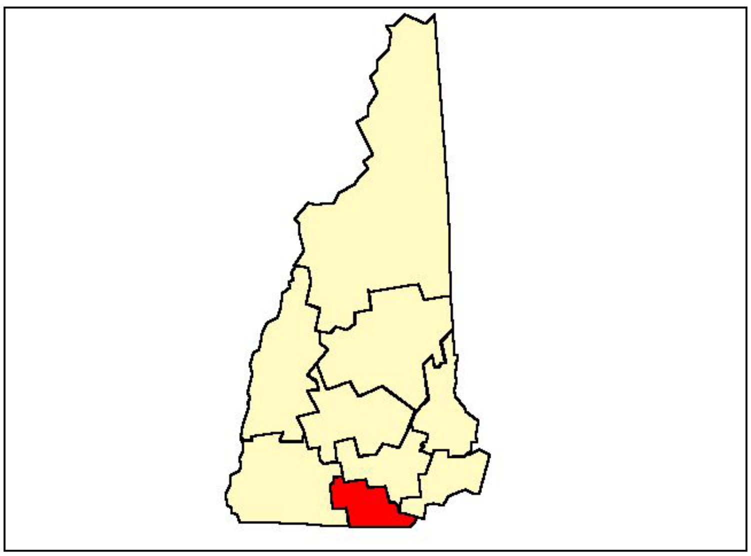


Source: NH Department of Employment Security

3.9 NASHUA REGION

The Nashua region, located in south central part of the state, contains some of the most populated urban centers within New Hampshire including Nashua and Merrimack (Figure 3-8).

Figure 3-8 - Nashua Region



Like the other regions in southern part of the state, in particular the Rockingham region, the Nashua region is heavily influenced by the economic activity generated from the greater Boston area. Furthermore, many people who live in the Nashua region commute south and work in the greater Boston area.

The Nashua region's economy historically was built on manufacturing and, to this day, maintains a large manufacturing presence. As with the Rockingham region, due to the Nashua region's relatively close proximity to the greater Boston market and limited supply of quality office space in the greater Boston area, many information technology and business service firms have made the move from Massachusetts to the Nashua region. As with the Rockingham region, many businesses are attracted to the area due to the availability of highly skilled workforce.

3.9.1 TRANSPORTATION (NASHUA)

The region is bisected by Route 3 (Everett Turnpike), one of the state's busiest highways, connecting to northern New Hampshire via Interstate 89 and 93, and to Interstate 495 and points south. The region is bisected by Route 101, which serves as a major linkage to the City of Keene in the west and the Seacoast area to the east.

In terms of airport facilities, the region is home to Boire Field located in Nashua (Table 3-9). Boire Field is a large general aviation facility in the state, which serves the needs of recreation, training, and corporate users. The facility is one of the busiest and most popular airports in the state (in terms of based aircraft – over 400 total), due in part to its proximity to populated urban centers in southern New Hampshire and northern Massachusetts. Nashua has also attracted aircraft from Massachusetts due to the lack of a sales tax in NH. However, Massachusetts recently exempted aircraft and parts from their state sales tax, so future aircraft may not locate out-of-state.

Table 3-9 - Airport Facilities - Nashua Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Boire Field	Public	Nashua	1	Asphalt	5,501

Source: Federal Aviation Administration and RKG Associates, Inc.

3.9.2 POPULATION (NASHUA)

The Nashua region has a current (2000) population of approximately 191,000. The Nashua region experienced significant growth during the 1980s and somewhat more modest growth during the 1990s. Between 1980 and 1990 the region's population grew by approximately 33,400 (24%) residents representing an increase of 2.4% annually over the time period. Population growth during the 1990s in the region was modest with an increase of 18,600 (11% or approximately 1% annually). Population projections indicate that the region should continue to grow at approximately 1% annually over the next five years. Table 3-10 shows the population trends and projections for the region.

Table 3-10 - Population Trends and Projections: 1980-2005 Nashua Region

2005 Projection	201,110
2000 Total	190,088
1990 Total	171,478
1980 Total	138,087
% Change 90-00	10.9%
% Change 80-90	24.2%

Source: Claritas, Inc.

3.9.3 HOUSEHOLD INCOME (NASHUA)

Based on current household income data, the current median household income in the region is approximately $59,600 (Table 3-11) – which is comparable to the Rockingham region. The current median household income estimate for the Nashua region represents an increase of $14,300 (32%) since 1990. Based on the average increase of 3% per year throughout the 1990s, households in the region have basically stayed even with inflation.

Table 3-11 - Median Household Income Nashua Region	
2000 Med HH Income	$59,660
1990	$45,290
% Change 90-00	31.7%
Source: Claritas, Inc.	

3.9.4 EDUCATIONAL ATTAINMENT (NASHUA)

As shown in Table 3-12, almost 39% of the population over the age of 25 has graduated from college, which is approximately 7% higher than the state average. As with the Rockingham region, the large proportion of residents with college degrees (including 9% with graduate or professional degrees) has attracted business activity to the region.

Table 3-12 - Educational Attainment Population Over 25 Years Nashua Region

	#	% of Total
Less than 9th Grade	5,622	5.10%
9th to 12th Grade, No Diploma	10,398	9.40%
High School Graduate	30,200	27.40%
Some College, No Degree	21,501	19.50%
Associate Degree	9,730	8.80%
Bachelor's Degree	22,874	20.80%
Graduate or Prof. Degree	9,862	9%
Total	110,187	
Source: Claritas, Inc.		

3.9.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (NASHUA REGION)

As shown in Table 3-13, between 1990 and 1999, the Nashua region has experienced a labor force increase of approximately 5,300 (2.7%) and an employment increase of approximately 10,800 (5.7%). The increase in labor force for the Nashua region was 3.4% below the statewide average and the increase in employment was 3.7% below the statewide average reflecting a large increase of commuters into the region.

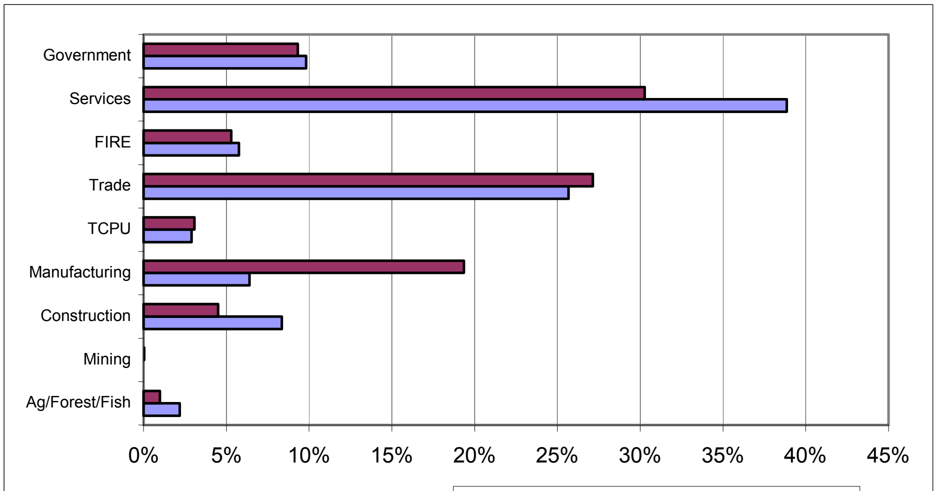
Table 3-13 - Labor Force and Employment Change: 1990-1999 Nashua Region*

	1990	1999	% Change 90-99
Labor Force	98,590	100,420	1.9%
Employment	93,560	97,430	4.1%
*Note: Comprised of Hillsboro County excluding the Manchester PMSA			

Employment within the region is concentrated within services (35,800 or 30% of the total) and the trade sector (32,100 or 27% of the total). Manufacturing plays a very important role in the Nashua economy with nearly 23,000 jobs or approximately 19% of the employment base.

As shown in Figure 3-9, approximately 39% (35,800) of businesses are service related with approximately 26% (32,100) being trade related. Similar to the Rockingham region, the manufacturing sector in the Nashua region continues to have a significant presence. Although the region has relatively few manufacturing establishments (less than 600 manufacturing establishments or 6.4% of the total number of establishments) they have over 19% of the employment base – or approximately 39 employees per manufacturing establishment.

Figure 3-9 - Employment and Establishments: 1999 - Nashua Region



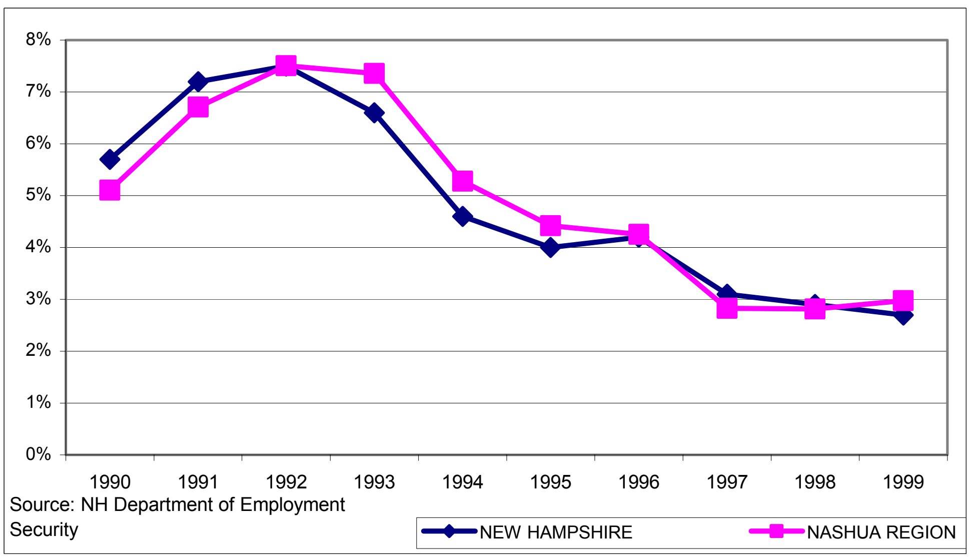
Source: Claritas, Inc. and RKG Associates, Inc.

As shown in Table 3-14, the Nashua region has a great concentration of large employers in the high technology and health care sectors. Furthermore, although the region is the state's industrial and commercial core, the city of Nashua is the location of choice for the region's largest employers.

Based on an analysis of unemployment rates throughout the 1990s, the Nashua region mirrored the statewide unemployment rate (see Figure 3-10) with the only exception being slightly higher unemployment in the region during the mid-1990s. Between 1990 and 1999 the unemployment rate in the region has declined by 2.1% that is 0.9% less than the change in the statewide unemployment rate over the same time period.

Table 3-14 - Largest Employers: Nashua Region New Hampshire			
City/Town	**Employer**	**Product/Service**	**# Employees**
Nashua	Demoulas	Grocery/Food	5,000
Nashua	Sanders	Electronics	3,700
Merrimack	Fidelity Investments	Financial	3,000
Nashua	Compaq Computer	Computer Man.	2,400
Nashua	Teradyne, Inc.	Communications	1,900
Nashua	St. Joseph Hosp.	Health Care	1,603
Nashua	So. NH Med. Center	Health Care	1,500
Milford	Hitchiner Man.		1,303
Nashua	Oxford Health	Health Care	1,219
Merrimack	PC Connection	Computers	1,122
Hudson	Benchmark Elec.	Electronics	700
Source: NH Employment Security and Business NH Magazine			

Figure 3-10 - Unemployment Rates: 1990-1999 New Hampshire and Nashua Region

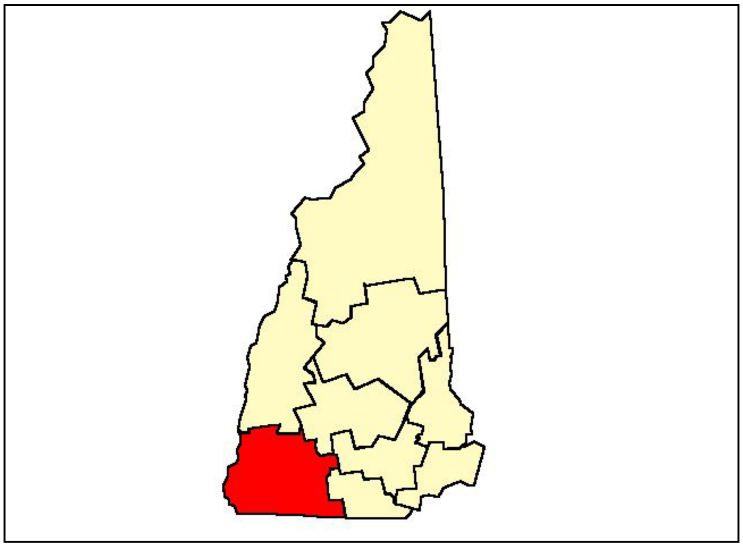


3.10 SOUTHWEST REGION

The Southwest region is an area that incorporates all of Cheshire County and a portion of western Hillsboro County in southwest New Hampshire. Covering approximately 1,000 square miles, the region contains mostly small rural communities with the largest urban center being the City of Keene with a population of approximately 22,500. As shown in Figure 3-11, the region borders Vermont to the west and Massachusetts to the south.

The southwest region is typically described as quintessentially "New England" with small villages, rolling farmland and a scattering of older industrial mill complexes.

Figure 3-11 - Southwest Region



3.10.1 TRANSPORTATION (SOUTHWEST REGION)

The region has three major highways including: Route 101 which provides access to central New Hampshire and the seacoast area; Route 12 which provides access to south to Massachusetts and north to the Upper Valley region; and Route 9 which provides access to Vermont and points west. Interstate 91, located just across the Vermont border (Connecticut River), runs north/south and provides excellent access to western Massachusetts, New York as well as southern Ontario and Quebec.

The region is home to three airports (see Table 3-15) – Dillant-Hopkins Airport, Hawthorne Airport and Silver Ranch Airport in Jaffrey. Dillant-Hopkins Airport, located in Swanzey, is the biggest airport in the western part of the state and caters to single and multi-engine general aviation aircraft. Hawthorne and Silver Ranch Airports are smaller facilities that cater mostly to single engine general aviation aircraft.

Table 3-15 - Airport Facilities - Southwest Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Dillant-Hopkins	Public	Swanzey	2	Asphalt	6,201 & 4,001
Hawthorne	Private	Antrim	1	Asphalt	3,260
Silver Ranch	Private	Jaffrey	1	Asphalt	2,982
Source: Federal Aviation Administration and RKG Associates, Inc.					

In terms of commercial air service, the region is strongly influenced by Bradley International Airport, which is located in Hartford Connecticut (one hour south) off of I-91. However, due to their proximity to the Massachusetts border, both Dillant-Hopkins and Silver Ranch Airports have attracted general aviation airplanes from that state to avoid paying the state sales tax. Massachusetts repealed that tax in early 2002, thereby decreasing the incentive for out-of-state owners to base airplanes in NH.

3.10.2 POPULATION (SOUTHWEST REGION)

The Southwest region has a current population of approximately 92,600. Although the region experienced considerable population growth (12,700 people representing an increase of 17%) during the

1980s, population growth during the 1990s was significantly less (an additional 4,300 people representing an increase of 5%). Population projections indicate that growth should continue at approximately 0.5% annually over the next five years. Table 3-16 shows population trends and projections for the Southwest region.

Table 3-16 - Population and Household Trends and Projections: 1980-2005 Southwest Region	
2005 Projection	95,420
2000 Total	92,652
1990 Total	88,342
1980 Total	75,581
% Change 90-00	4.9%
% Change 80-90	16.9%
Source: Claritas, Inc.	

3.10.3 HOUSEHOLD INCOME (SOUTHWEST REGION)

As shown in Table 3-17, the current median household income in the region is approximately $43,900. This represents an increase of approximately $10,600 (32%) from the 1990 median household income level. Based on an average inflation increase of 3% per year, households in the region have kept pace with inflation. Comparatively, households in the southwest region earn approximately 36% less than households in the other two southern New Hampshire regions.

Table 3-17 - Median Household Income Southwest Region	
2000 Med. HH Income	$43,915
1990 Med. HH Income	$33,319
% Change 90-00	31.8%
Source: Claritas, Inc.	

3.10.4 EDUCATIONAL ATTAINMENT (SOUTHWEST REGION)

In terms of educational attainment for the population over 25 years of age, approximately 33% of the region's population have graduated from college, which is 1% higher than the state average. Table 3-18 summarizes the regional educational attainment levels for residents over the age of 25.

Table 3-18 - Educational Attainment 1990 (for Pop. Over 25 Years) Southwest Region		
	#	%
Less than 9th Grade	3,626	6.5%
9th to 12th Grade, No Diploma	6,469	11.6%
High School Graduate	18,195	32.5%
Some College, No Degree	9,430	16.9%
Associate Degree	3,922	7.0%
Bachelor's Degree	9,490	17.0%
Graduate or Prof. Degree	4,767	8.5%
Total	55,899	
Source: Claritas, Inc.		

3.10.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (SOUTHWEST)

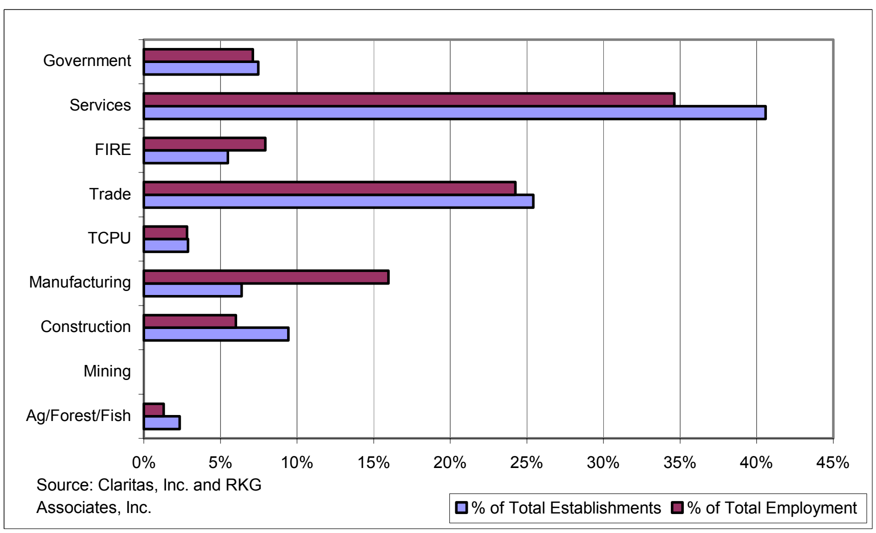
Based on current employment data, between 1990 and 1999 the southwest region experienced virtually no growth in labor force or employment. As shown in Table 3-19, the region's labor force declined by approximately 400 (-1%) individuals while the number of employed increased slightly by 290 (0.8%). It is evident that as the state has increased employment by approximately 9% throughout the 1990s, the southwest region has not been able to capture a significant portion of this growth.

Table 3-19 - Labor Force and Employment Change: 1990-1999 Southwest Region			
	1990	1999	% Change 90-99
Labor Force	38,880	38,480	-1.0%
Employment	37,150	37,440	0.8%
*Note: Comprised of Cheshire County			

Employment in the region is concentrated in the service sector (16,300 or 34% of total) and the trade sectors (11,400 or 24% of total). Manufacturing represents a significant portion of the employment base with over 7,500 jobs (16%).

Like most communities, the southwest region has a large proportion of its business establishments in the trade and service sectors. As with the other southern regions, the southwest region has a large retail base due to no state sales taxes and its close proximity to Vermont and Massachusetts. As shown in Figure 3-12, approximately 1,800 (40%) businesses are service oriented while approximately 1,200 (25%) are trade oriented.

Figure 3-12 - Employment and Establishments: 1999 Southwest Region

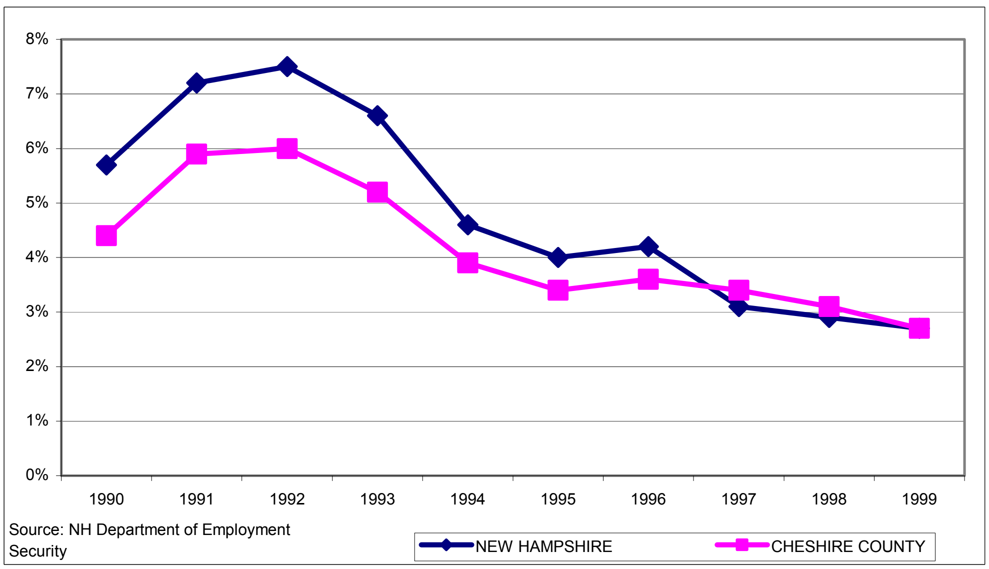


Compared to the other southern regions, the southwest region has significantly fewer large employers with only two (Timken Aerospace and New Hampshire Ball Bearings) employing over 1,000. Furthermore, three of the four largest employers are located in Keene. Table 3-20 shows the largest employers in the Southwest region.

Table 3-20 - Largest Employers: Southwest Region New Hampshire			
City/Town	Employer	Product/Service	# Employees
Keene	Timken Aerospace	Aerospace	1,358
Peterborough	NH Ball Bearings	Ball Bearing Man.	1,031
Keene	Sims Portex Inc.		850
Keene	Markem Corp.		650
Source: NH Employment Security and Business NH Magazine			

Between 1990 and 1999 the region has been able to maintain an average unemployment rate, which is 0.7% below the statewide unemployment rate. Between 1990 and 1999, the county has experienced a decline in its unemployment rate by 1.7%. Figure 3-13 shows a comparison between the region and the statewide unemployment rates between 1990 and 1999.

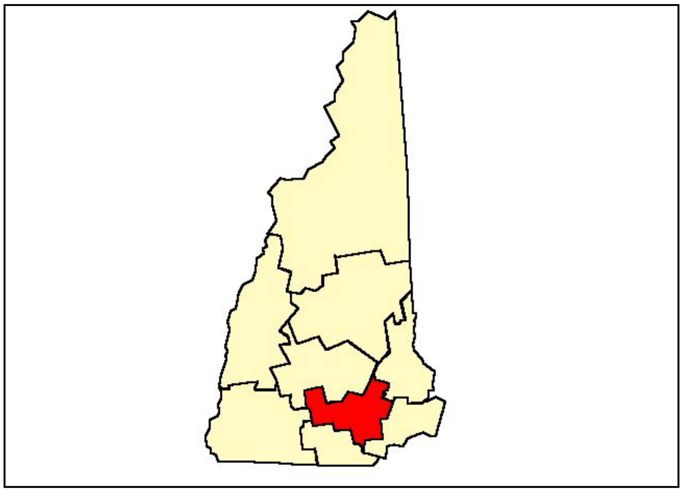
Figure 3-13 - Unemployment Rates: 1990-1999 New Hampshire and Cheshire County



3.11 SOUTH REGION

The south region, located in the south central part of the state, is the urban and industrial center of the state (see Figure 3-14). The region contains the largest city in the state, Manchester, which has a current population of approximately 107,000. Furthermore, the cities of Derry (population 34,000) and Londonderry (population 23,200) make the region a hub for commercial activity.

Figure 3-14 - South Region



Like other regions in the state, the south region has its industrial and commercial roots in manufacturing. As one of the major manufacturing centers for the country during the nineteenth century, the industrial activity in Manchester's extensive array of mill buildings created a host of durable and non-durable goods – most notably textiles.

As the manufacturing industry declined during the past fifty years, other industries, such as financial services, insurance, warehousing and distribution and information technology, have moved into the mill buildings and helped to redevelop the region.

3.11.1 TRANSPORTATION (SOUTH REGION)

The ability to efficiently move goods in and out of the region is achieved through the extensive highway network in the area. Access to northern New Hampshire and markets in Massachusetts and the southern New England is achieved via Interstate 93. The region is connected to the City of Nashua (the state's second largest city) via the Everett Turnpike/Route 3. Furthermore, Route 101 provides direct access to the Seacoast region to the east, and Keene and Vermont to the west.

Complementing the highway network is Manchester Airport - the state (and northern New England's) busiest airports in terms of passenger enplanements (Table 3-21). Manchester Airport, located in the City of Manchester, provides commercial passenger and cargo services for a region which encompasses the entire state of New Hampshire, southern Vermont and Maine, and northern Massachusetts. As a former small municipal airport developed from a World War II airbase (Grenier Field), Manchester has been transformed over the past 15 years into northern New England's primary distribution hub for passengers, packages and cargo.

In terms of passenger traffic, nine major air carriers including Southwest Airlines, United Airlines, US Airlines, Northwest Airlines and Air Canada currently serve Manchester. These carriers provide service to a number of major destinations across North America such as New York City, Chicago, Tampa and Toronto. As for cargo operations, two of the nation's largest courier companies (Federal Express and United Parcel Service), and a handful of smaller cargo companies, use Manchester as a hub for shipping and receiving packages and cargo.

Table 3-21 - Airport Facilities - South Region					
Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Manchester	Public	Manchester	2	Asphalt	7,573 & 9,250
Source: Federal Aviation Administration and RKG Associates, Inc.					

The State of New Hampshire's Department of Resource and Economic Development (DRED) considers the Manchester Airport a major generator of economic activity throughout the entire state. An economic impact study completed for the airport in 1999[3] indicated that, as of 1998, on-airport businesses employed approximately 1,400 people – an increase of 985 employees (41%) since 1994. Based on the total direct, indirect and induced economic impacts, it is estimated that the Manchester airport contributes approximately $540 million to the New Hampshire economy. According to an economic study prepared by Leigh Fisher & Associates in 1998, it was projected that the airport's economic impact could reach $1B by 2010.

Although the airport is clearly a major contributor to the New Hampshire economy, it is unclear how much impact the airport has in attracting new businesses to the state. Based on interviews with government and industry representatives, the airport in and of itself is not necessarily a major attractant of new business activity. However, the size, location, excellent parking and airline services offered by the airport complement other site selection criteria (such as the availability of land, an educated work force, available tax incentives, etc.) for businesses deciding to locate in New Hampshire.

3.11.2 POPULATION (SOUTH REGION)

Due to the presence of several large urban centers, the region has the largest population of all of the state's regions. Based on current estimates, the southern region has a population of approximately 240,800. Like its neighboring regions, the southern region experienced significant population growth during the 1980s, increasing by 44,500 residents (26% - or 2.6% per year). During the 1990s, population growth slowed considerably to approximately half that rate. Between 1990 and 2000, the region's population increased by approximately 24,300 (11% - or approximately 1.1% per year). Population projections indicate that the region's population should increase by approximately 14,800 residents over the next five years – representing a continuation of the current growth rate of 1.1% per year. Table 3-22 shows population trends and projections for the region.

Table 3-22 - Population Trends and Projections: 1980-2005 South Region	
2005 Projection	255,651
2000 Total	240,815
1990 Total	216,479
1980 Total	171,951
% Change 90-00	11.2%
% Change 80-90	25.9%
Source: Claritas, Inc.	

[3] Leigh Fisher Associates. *Economic Impact Study Manchester Airport: Final Report*. December 1999.

3.11.3 HOUSEHOLD INCOME (SOUTH REGION)

As shown in Table 3-23, the current median household income in the region is approximately $53,800. This represents an increase of approximately $14,900 (38%) from 1990 household income levels. Based on an average annual inflation increase of 3% per year throughout the 1990s, households in the region have more than kept pace with inflation.

Table 3-23 - Median Household Income South Region	
2000 Med HH Income	$53,807
1990	$38,914
% Change 90-00	38.3%
Source: Claritas, Inc.	

3.11.4 EDUCATIONAL ATTAINMENT (SOUTH REGION)

Based on 1990 education attainment data for the population over 25 years of age, approximately 32% of residents have college degrees – which is on par with the state average. Table 3-24, shows the distribution of residents by educational attainment.

Table 3-24 - Educational Attainment (Age 25+): 1990 South Region		
	#	% of Total
Less than 9th Grade	10,956	8.0%
9th to 12th Grade, No Diploma	15,770	11.5%
High School Graduate	41,571	30.2%
Some College, No Degree	25,776	18.7%
Associate Degree	11,557	8.4%
Bachelor's Degree	21,899	15.9%
Graduate or Prof. Degree	10,129	7.4%
Total	137,658	
Source: Claritas, Inc.		

3.11.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (SOUTH REGION)

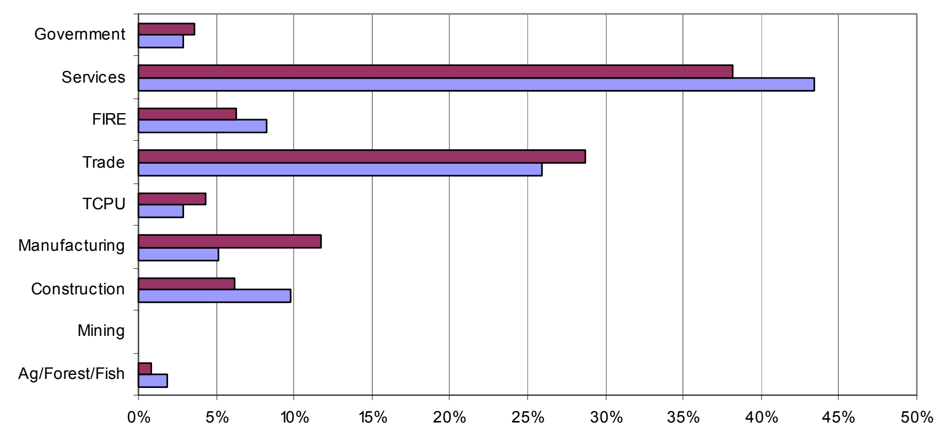
As shown in Table 3-25, between 1990 and 1999, the South region's labor force increased by approximately 3,600 (3.5%), which is 2.6% below the statewide average. Employment in the region experienced strong gains with the number of jobs increasing by 6,900 (7%) – approximately 2% below the state average during the same time period. Due to the lack of labor data for the south region (as defined within this report) the Manchester PMSA (primary metropolitan statistical area) has been used. The Manchester PMSA generally incorporates the same communities as the economic region does and is considered comparable for the purposes of this report.

Table 3-25 - Labor Force and Employment Change: 1990-1999 South Region*			
	1990	1999	% Change 90-99
Labor Force	102,000	105,560	3.5%
Employment	96,090	103,010	7.2%
*Note: Comprised of the Manchester PMSA			

Employment in the region is concentrated within the service (46,900 or 38% of total) and trade (35,200 or 29% of total) sectors. The manufacturing sector still maintains a strong employment base in the southern region with approximately 14,500 jobs (12%) – representing the third largest employing industrial sector behind trade and services.

As shown in Figure 3-15, the sectors with the highest proportion of establishments are the service (4,600 or 43% of total) and the trade sectors (2,800 or 26% of total). Compared to other economic regions, the southern region has a large concentration of construction (10% of total) and financial, insurance and real estate businesses (8% of total).

Figure 3-15 - Establishments and Employment: 1999 South Region



Source: Claritas, Inc. and RKG Associates, Inc.

As shown in Table 3-26, the South Region is home to several very large employers who are concentrated in the retail, health care, utility and manufacturing sectors. The City of Manchester is the location of choice for large employers in the southern region.

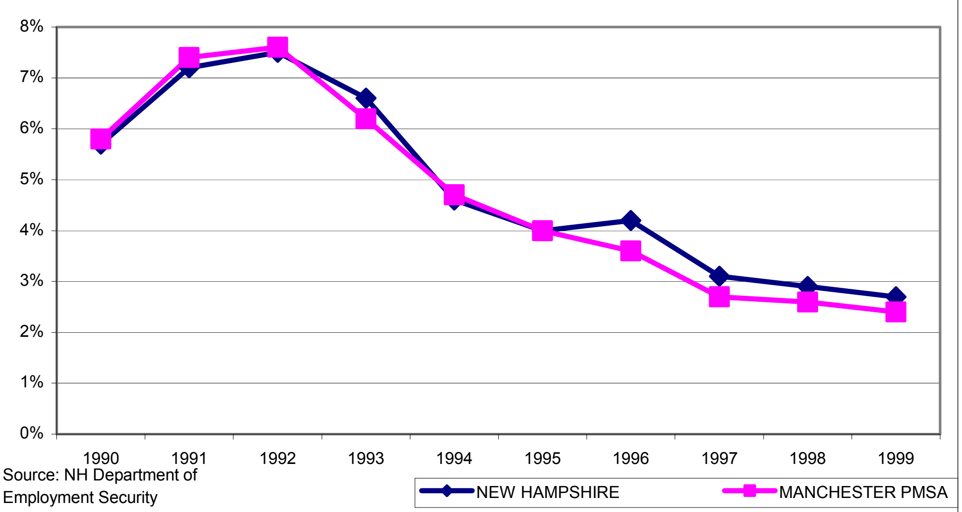
Table 3-26 - Largest Employers: South Region New Hampshire

City/Town	Employer	Product/Service	# Employees
Manchester	Hannaford Bros.	Grocery/Food	3,983
Manchester	Bell Atlantic	Communications	2,150
Manchester/Hillsboro	Osram-Sylvania		2,069
Manchester	Freudenberg-NOK		1,937
Manchester	Elliot Hospital	Health Care	1,800
Manchester	Cath. Med. Center	Health Care	1,600
Bedford	Wal-Mart	Retail	1,500
Somersworth/Hooksett	General Electric	Electrical Components	1,350
Manchester	Citzens Bank	Financial	1,300
Manchester	PSNH	Utility	1,234
Derry	Ames Inc.	Retail	1,200
Manchester	Framatome	Electronic Parts	724
Manchester	Velcro USA Inc.	Fasteners	700

Source: NH Employment Security and Business NH Magazine

As the population, industrial and commercial hub of the state throughout the 1990s, the region has experienced unemployment rates, which have been virtually identical to the New Hampshire rates. As shown in Figure 3-16, between 1990 and 1999, the region had an annual unemployment rate which was, on average, 0.2% below the state annual average. Compared to the state, the region has experienced a slightly greater reduction in unemployment between 1990 and 1999 – a reduction of 3.4% as compared the state's unemployment reduction of 3%.

Figure 3-16 - Unemployment Rates: 1990-1999 New Hampshire and Manchester PMSA



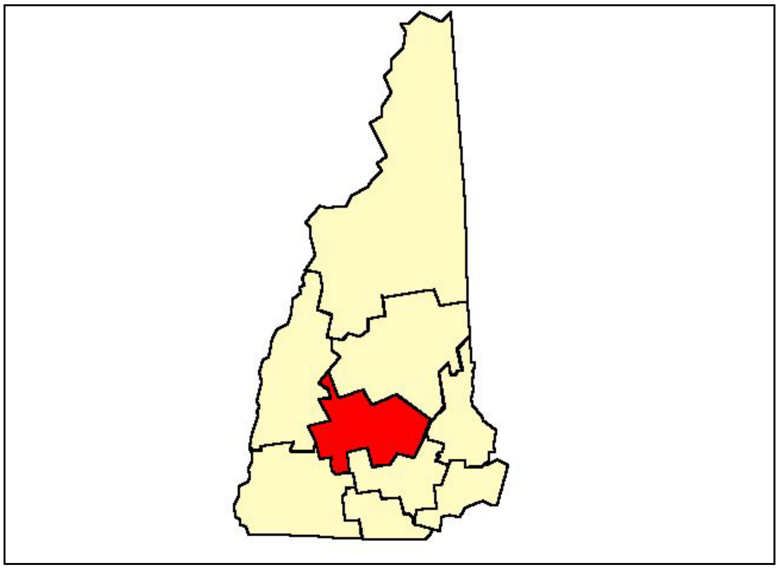
Source: NH Department of Employment Security

3.12 CENTRAL REGION

The Central economic region is home to the city of Concord – the State's third largest city (population approximately 40,700) and the State capital. In addition to Concord, the region contains several small urban centers including Pembroke (population 6,900) and Bow (population 6,300). Figure 3-17 shows the central region's location in the center of the state.

As the center of governmental activity for the State, the Central region's economy is focused primarily on government administrative activities and business services, which usually complement government activities. Additionally, manufacturing has historically been a strong component to the region's economy.

Figure 3-17 – Central Region



3.12.1 TRANSPORTATION (CENTRAL REGION)

Being centrally located, the region has three major highways – Interstate 93, Interstate 89 and Route 4. Interstate 93 bisects the region and provides access to northern New Hampshire as well as Massachusetts and southern points beyond. Interstate 89 provides access to the Upper Valley region and Vermont. Route 4 provides access to eastern New Hampshire and the Seacoast area.

In terms of airport facilities, the region is home to one public use airport – Concord Airport (see Table 3-27). Concord Airport is a general aviation facility that is owned by the City of Concord. It has 81 based aircraft, including a helicopter and airplane (Cessna 182) used by the State Police, as well as the NH Army National Guard, which operates UH-60 Blackhawks for medevac and search and rescue. Due to the location and proximity of other airports nearby (Nashua and Manchester), Concord Airport has not experienced significant growth over the past ten years, although the region has grown demographically. The primary users of the airport include personal, training, air taxi and corporate operators, as well as military operators. Concord used to have scheduled airline service, but no longer has such service.

Table 3-27 – Airport Facilities - Central Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Concord	Public	Concord	2	Asphalt	3,200 & 6,005

Source: Federal Aviation Administration and RKG Associates, Inc.

3.12.2 POPULATION (CENTRAL REGION)

As shown in Table 3-28, current population estimate calculate that the region has a population of approximately 104,100. Between 1980 and 1990, the population in the region grew by approximately 18,800 (25%) – in-line with the significant population growth experienced in the Nashua (24%) and Southern (26%) regions. With the economic decline of the early 1990s, population growth in the region slowed by approximately one-third - increasing by approximately 8,300 residents (9% or less than 1% per year). Population projections estimate that the region should modestly increase its rate of population growth to approximately 1% per year over the next four years.

Table 3-28 - Population Trends and Projections: 1980-2005 Central Region	
2005 Projection	109,929
2000 Total	104,152
1990 Total	95,836
1980 Total	77,005
% Change 90-00	8.7%
% Change 80-90	24.5%
Source: Claritas, Inc.	

3.12.3 HOUSEHOLD INCOME (CENTRAL REGION)

Based on current household income data, the current median household income in the region is approximately $49,000. This represents an increase of approximately $13,000 (36%) since 1990. Although household incomes in the region have kept ahead of inflation throughout the 1990s, the median household income in the central region is more than $10,000 less than incomes in its southern regional neighbors (Nashua and Southern regions). Table 3-29 shows the change in median household income within the Central region between 1990 and 2000.

Table 3-29 - Median Household Income Central Region	
2000 Med HH Income	$49,042
1990	$35,994
% Change 90-00	36.3%
Source: Claritas, Inc.	

3.12.4 EDUCATIONAL ATTAINMENT (CENTRAL REGION)

As shown in Table 3-30, for the population over 25 years of age, approximately 34% of the population have graduated from a post secondary educational institution. Approximately 9% of those graduating have graduate level or professional degrees. Compared to the rest of the state, the Central region has a higher educational attainment level. For example, the region has approximately 2% fewer people who have not completed high school and 2% more who have graduated from college as compared to the entire state.

Table 3-30 - Educational Attainment (Age 25+): 1990 Central Region		
	#	% of Total
Less than 9th Grade	3,739	6.0%
9th to 12th Grade, No Diploma	6,242	10.0%
High School Graduate	19,773	31.6%
Some College, No Degree	11,333	18.1%
Associate Degree	5,122	8.2%
Bachelor's Degree	10,577	16.9%
Graduate or Prof. Degree	5,826	9.3%
Total	62,612	
Source: Claritas, Inc.		

3.12.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (CENTRAL REGION)

Based on current employment estimates, between 1990 and 1999, the Central region[4] experienced an explosive increase in labor force and employment. During the 1990s, the region increased its labor force by approximately 14,300 (24%) – four times the state average over the same time period (see Table 3-31). Employment growth in the region was also explosive. During the 1990s, employment grew by 16,000 jobs (28%) – approximately three times the state average. The strong labor force and employment numbers indicate that the Central region has been viewed as a good place to invest in terms of expanding established businesses and starting new businesses.

Table 3-31 - Labor Force and Employment Change: 1990-1999 Central Region*

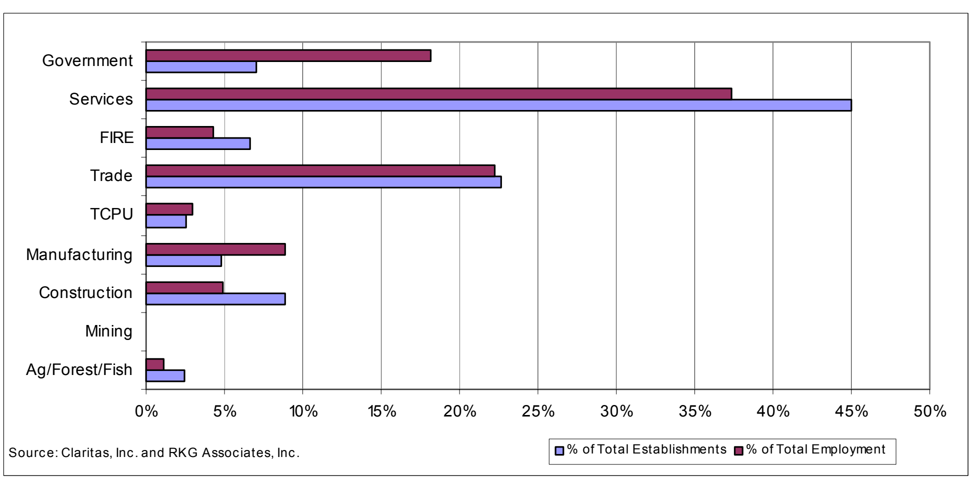
	1990	1999	% Change 90-99
Labor Force	61,010	75,350	23.5%
Employment	57,820	73,780	27.6%

*Note: Comprised of Merrimack County

Employment in the region is concentrated within the service (25,100 or 37% of total) and the trade (15,000 or 22% of total) sectors. As the State capital, the City and region are home to many State and Federal departments and agencies. Government employment accounts for over 18% (12,200) of the jobs in the region. Areas with high concentrations of government employment tend to have larger proportions of jobs in supportive sectors such as services. This is evident in the Central region as the percentage of jobs in the service sector (37%) is slightly higher than the other economic regions (with the exception of the South region which has 38% of its jobs based in the service sector).

In terms of businesses, the sectors with the highest concentrations of establishments include the service (2,430 or 45% of total) and the trade (1,230 or 23% of total) sectors (see Figure 3-18). The government sector contains approximately 380 establishments (7%), but, as previously mentioned, employs 18% of the labor force. Based on these estimates, each government establishment employs approximately 32 workers – the second largest employment generator per establishment compared to the other economic regions.

Figure 3-18 - Employment and Business Establishments: 1999 Central Region



[4] For the purposes of the analysis of labor force, employment and unemployment, data for Merrimack County was used.

As shown in Table 3-32, the Central region is home to a handful of large employers, which are primarily concentrated in the health care sector. Although government is not listed as a large employer within the sources consulted, it is assumed that the State government could be considered one of the largest single employers in the region.

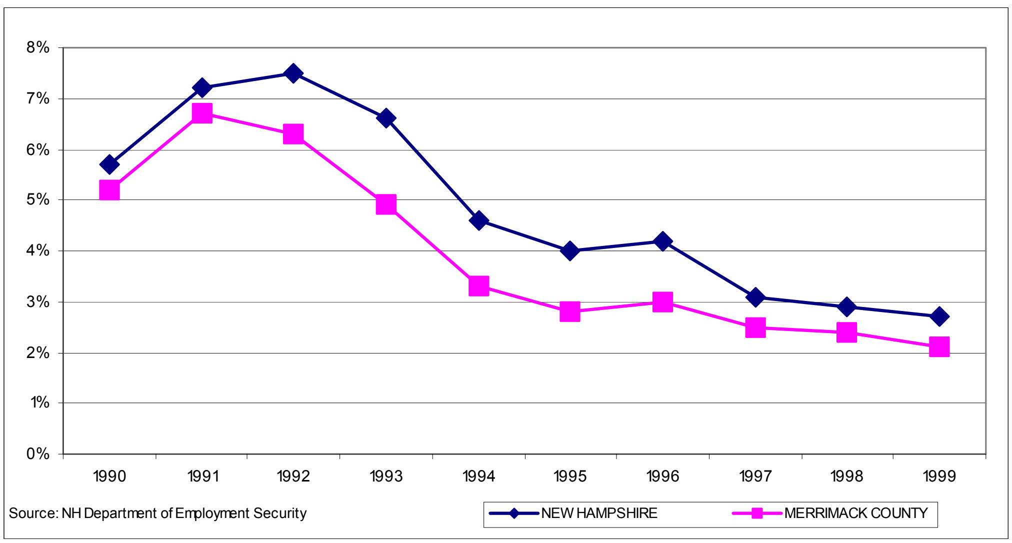
Table 3-32 - Largest Employers: Central Region New Hampshire

City/Town	Employer	Product/Service	# Employees
Concord	Concord Hospital	Health Care	1,840
Concord	Genesis Health	Health Care	1,504
Loudon	NH Intl. Speedway	Racetrack	1,200
Concord	Aavid Thermal Tech.		730

Source: NH Employment Security and Business NH Magazine

Between 1990 and 1999, unemployment in the region has averaged, approximately 1% below the statewide average (see Figure 3-19). Additionally, during the same time period, the region experienced a net reduction in its unemployment rate of 3.1%, close to the statewide reduction in unemployment (-3%).

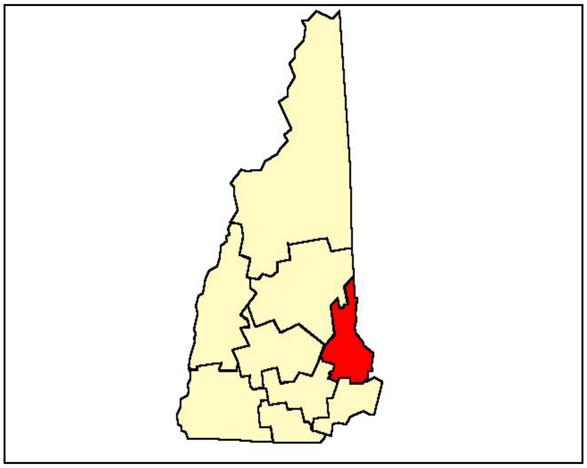
Figure 3-19 - Unemployment Rates: 1990-1999 New Hampshire and Merrimack County



3.13 STRAFFORD REGION

The Strafford region is located north of the Rockingham region in New Hampshire's seacoast region (Figure 3-20). Several medium-sized cities are found within the region including Rochester (population 28,400), Dover (27,000), and Somersworth (11,400). In similar fashion to other southern New Hampshire regions (Rockingham, Southern and Nashua), the Strafford region has taken advantage of the influence of the strong economic activity, which has taken place in the greater Boston area. Furthermore, the region has significant cross-border influence from southern Maine (York County in particular). Like the other regions, which border other states, the Strafford region has a large retail base, which has developed due to the lack of sales tax in the state.

Figure 3-20 – Strafford Region



Historically the region has had its economic roots in manufacturing by taking advantage of the extensive network of rivers in the area (Cocheco and Salmon Falls) through the development of many millworks, as well as agriculture, relying on these same rivers for access to markets.

3.13.1 TRANSPORTATION (STRAFFORD REGION)

The region has access to Interstate 95 via Route 16 (Spaulding Turnpike) and to Interstate 93 via Route 4. Access to Interstate 95 provides the region with highway connections north into Maine and south into the greater Boston region.

In terms of airport facilities, the region is home to Skyhaven Airport in Rochester (Table 3-33). Skyhaven is a general aviation facility that serves as a base for personal and training operations, as well as some business and corporate activity. The facility, currently owned and operated by the State of New Hampshire, is home to more than 60 based aircraft, including 3 multi-engine aircraft. There is an extensive waiting list for additional hangar storage space at the airport. The airport is in close proximity to three other airports, including Sanford Airport in Maine, Pease International Tradeport, and Laconia Airport, all of which offer full service FBOs, charter services, and longer runways. In 2002, the NH General Court passed legislation requiring the NHDOT to transfer ownership of the airport to another public entity, if such an entity is willing to take the facility. The City of Rochester is considering the option, but has made no commitment to do so.

Table 3-33 - Airport Facilities - Strafford Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Skyhaven	Public	Rochester	1	Asphalt	4,001
Source: Federal Aviation Administration and RKG Associates, Inc.					

3.13.2 POPULATION (STRAFFORD REGION)

Based on current population estimates, the Strafford region has a population of approximately 135,000 (see Table 3-34). As with the other economic regions in southern New Hampshire, the Strafford region experienced substantial growth during the 1980s. Between 1980 and 1990, the region increased its population by approximately 24,000 (25% - or an average annual increase of 2.5%). During the 1990s, region's population grew modestly by approximately 9,100 (7.6% or less than 1% per year throughout the decade). Population projections indicate that that the region's population should increase by 5,700 residents (4.4%) by 2005 – continuing the average annual growth rate of less than 1% experienced throughout the 1990s).

Table 3-34 - Population Trends and Projections: 1980-2005 Strafford Region	
2005 Projection	135,338
2000 Total	129,663
1990 Total	120,510
1980 Total	96,348
% Change 90-00	7.6%
% Change 80-90	25.1%
Source: Claritas, Inc.	

3.13.3 HOUSEHOLD INCOME (STRAFFORD REGION)

As shown in Table 3-35, the current median household income in the region is approximately $45,500. This represents an increase of approximately $12,600 (38%) since 1990. Based on an average annual inflation increase of approximately 3% throughout the 1990s, household incomes in the region have kept ahead of rising prices.

Table 3-35 - Median Household Income Strafford Region	
2000 Med HH Income	$45,486
1990	$32,894
% Change 90-00	38.3%
Source: Claritas, Inc.	

3.13.4 EDUCATIONAL ATTAINMENT (STRAFFORD REGION)

Estimates indicate that the region is slightly below the state average for educational attainment. For example as shown in Table 3-36, for the population over the age of 25, approximately 30% have college degrees – which is approximately 2% less than the state average. Furthermore, approximately 20% of residents over the age of 25 have not completed high school – approximately 2% less than the state average.

Table 3-36 - Educational Attainment (Age 25+): 1990 Strafford Region		
	#	% of Total
Less than 9th Grade	5,690	7.7%
9th to 12th Grade, No Diploma	8,781	12.0%
High School Graduate	23,921	32.6%
Some College, No Degree	13,262	18.1%
Associate Degree	5,673	7.7%
Bachelor's Degree	10,528	14.3%
Graduate or Prof. Degree	5,596	7.6%
Total	73,451	
Source: Claritas, Inc.		

3.13.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (STRAFFORD REGION)

The economic downturn of the early 1990s hit the Strafford region especially hard. As shown in Table 3-37, between 1990 and 1999, while most of the region experienced growth, Strafford region's labor force was virtually unchanged (-0.2%). Although the region's labor force was static throughout the 1990s, employment increased modestly by 1,900 jobs – representing an increase of 3.5%. Having a stable labor force and increasing employment indicates that the region is drawing workers from outside the region.

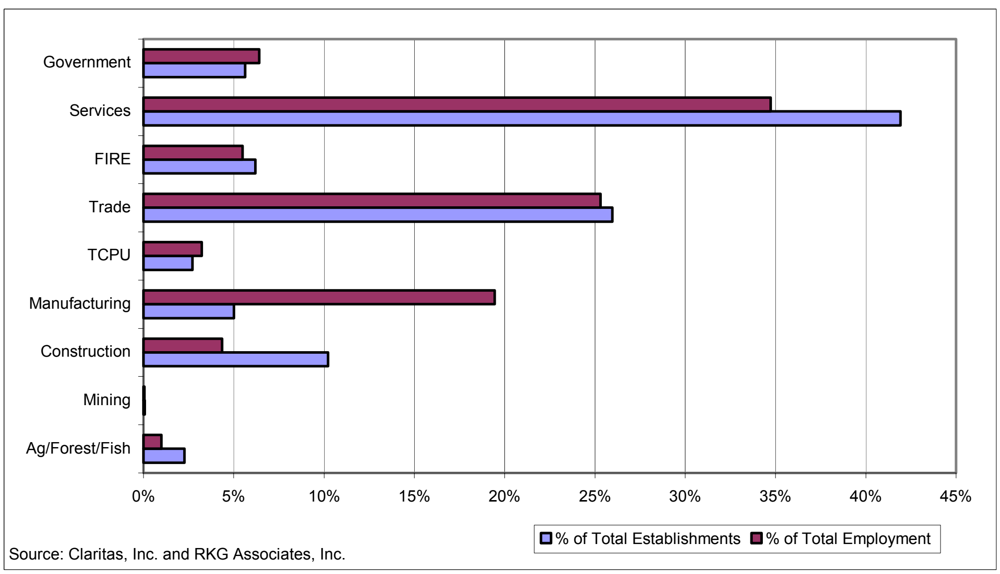
Table 3-37 - Labor Force and Employment Change: 1990-1999 Strafford Region*

	1990	1999	% Change 90-99
Labor Force	57,850	57,710	-0.2%
Employment	54,420	56,330	3.5%

*Note: Comprised of Strafford County

As shown in Figure 3-21, employment in the region is concentrated in the service (19,600 or 35% of total) and trade (14,300 or 25%) sectors. Compared to the other economic regions, the Strafford region has the highest concentration of jobs in the manufacturing sector (11,000 jobs or 19%). As most of New Hampshire's economic regions have had, at one time or another, major economic contributions from the manufacturing sector, the Strafford region continues to rely heavily on the contributions of manufacturing on the local economy.

Figure 3-21 - Establishments and Employment: 1999 Strafford Region



Like other New Hampshire economic regions, the Strafford region relies heavily on service and trade establishments. Current (1999) business establishment data indicates that over 40% (2,000) of the region's businesses are service related (see Figure 3-21). The trade sector has the second largest number of establishments with approximately 1,230 (26%). Although the manufacturing sector incorporates 19% of the jobs in the region, it has only 5% of the business establishments which translates into each establishment employing approximately 46 workers – the largest employment generator per establishment of any economic region in the state.

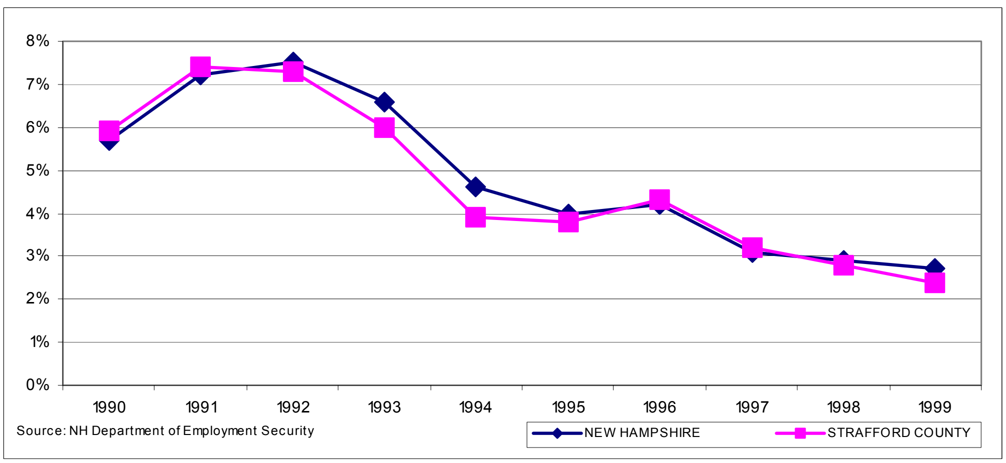
As shown in Table 3-38, the largest employers in the Strafford region are concentrated in the manufacturing sector. However the region has a significant high technology presence with the largest employer in the region, Cabletron Systems, being a leading-edge information technology firm.

Table 3-38 - Largest Employers: Strafford Region

City/Town	Employer	Product/Service	# Employees
Rochester	Cabletron Sys.	Communications	1,850
Somersworth/Hooksett	General Electric	Electrical Components	1,350
Dover	Heidelberg	Press Manufacturer	865
Farmington	Textron Auto.	Auto Parts Man.	845
Source: New Hampshire Office of State Planning Community Profiles			

Between 1990 and 1999, unemployment in the region has been, on average, 0.2% below the statewide unemployment rate (as shown in Figure 3-22). Furthermore, during the 1990s, the region declined its unemployment rate by 3.5% - 0.5% more than the State over the same time period.

Figure 3-22 - Unemployment Rates: 1990-1999 New Hampshire and Strafford County

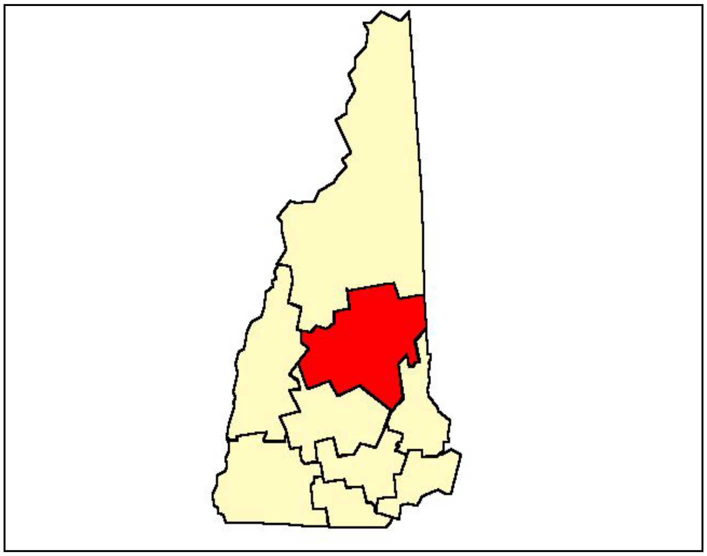


3.14 LAKES REGION

The Lakes Region, located in north-central New Hampshire, is, as the name implies, rich in natural resources and features (Figure 3-23). Primarily a tourism-based economy, the region is home to a number of small cities and towns including Laconia (population 16,400), Gilford (6,000) and, Alton (3,500).

For decades the region has been the recreation and vacation area for not only New Hampshire residents, but for residents in communities throughout the eastern seaboard. Besides the tourism industry, the region has also historically relied on the extraction of primary resources (lumber) as a prime driver of its economy.

Figure 3-23 – Lakes Region



3.14.1 TRANSPORTATION (LAKES REGION)

The region has interstate access from Interstate 93 which provides access to northern New Hampshire as well as access to southern markets including the greater Boston area. A series of secondary State highways (Route 25 and 28) traverse the mottled topography and provide connections to points in Maine and the Upper Valley region and Vermont.

As shown in Table 3-39, the region is home to four airports – Laconia Airport, which is located in Gilford, Lakes Region Airport in the town of Wolfeboro, Newfound Valley Airport in Bristol, and Moultonboro Airport. Laconia Airport, the largest of the region's airports, is a general aviation facility that has two full-service FBOs. Due to the proximity of Laconia Airport to the large seasonal homes on Lake Winnipesaukee, many corporate and business aircraft operators use the airport to shuttle clients and family into an out of the area. As part of an on-going master plan, the airport is considering a possible runway extension and construction of runway safety areas. Moultonboro Airport is a small general aviation facility used primarily by recreational operators. Lakes Region Airport is a small general aviation facility that offers a 2,540 asphalt runway. The single FBO left the airport in 2001, and the airport was recently offered for sale. NHDOT has formally said that it wants to acquire the airport in order to keep it open, however, the airport owner does not want to sell the airport to the state. Newfound Valley Airport in Bristol is a seasonal facility with three based aircraft.

Table 3-39 - Airport Facilities in the Lakes Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Laconia	Public	Laconia	1	Asphalt	5,286
Lakes Region	Private	Wolfeboro	2	Asphalt	2,540
Newfound Valley	Private	Bristol	1	Asphalt	1,835
Moultonboro	Private	Moultonboro	1	Asphalt	3,625

Source: Federal Aviation Administration and RKG Associates, Inc.

3.14.2 POPULATION (LAKES REGION)

The Lakes Region has a current population of approximately 94,700. Compared to the other economic regions in southern New Hampshire, the Lakes Region did not have a large population influx during the 1980s. Between 1980 and 1990, the region increased its population by approximately 12,400 (17%) or roughly 1.7% per year. Growth slowed somewhat during the 1990s as the population increased by 8,600 (10%) representing an average annual growth rate of 1% per year. Population projections indicate that the region should continue its average annual growth rate of approximately 1% over the next four years. Table 3-40 shows population trends and projections for the region.

Table 3-40 - Population Trends and Projections: 1980-2005 Lakes Region	
2005 Projection	100,302
2000 Total	94,690
1990 Total	86,100
1980 Total	73,718
% Change 90-00	10.0%
% Change 80-90	16.8%
Source: Claritas, Inc.	

3.14.3 HOUSEHOLD INCOME (LAKES REGION)

The current median household income in the region is approximately $38,400 (see Table 3-41). This represents an increase of approximately $8,000 (27%) since 1990. While median household incomes in economic regions in southern New Hampshire increased by at least 30% throughout the 1990s (thus staying ahead of inflation based on an average increase in inflation of 3% per year), households in the Lakes Region have lost ground income-wise.

Table 3-41 - Median Household Income Trends Lakes Region	
2000 Med HH Income	$38,404
1990	$30,326
% Change 90-00	26.60%
Source: Claritas, Inc.	

3.14.4 EDUCATIONAL ATTAINMENT (LAKES REGION)

Based on 1990 estimates, the Lakes Region is below average when compared to the educational attainment level of the state as a whole. As shown in Table 3-42 approximately 28% of residents over the age of 25 have college degrees – approximately 4% below the state average. Conversely, approximately 20% of residents have not graduated from high school – which is 2% above the statewide average.

Table 3-42 - Educational Attainment (Population over 25 Years) Lakes Region		
	#	% of Total
Less than 9th Grade	3,885	6.8%
9th to 12th Grade, No Diploma	7,753	13.5%
High School Graduate	19,636	34.2%
Some College, No Degree	9,787	17.1%
Associate Degree	4,527	7.9%
Bachelor's Degree	8,246	14.4%
Graduate or Prof. Degree	3,530	6.2%
Total	57,364	
Source: Claritas, Inc.		

3.14.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (LAKES REGION)

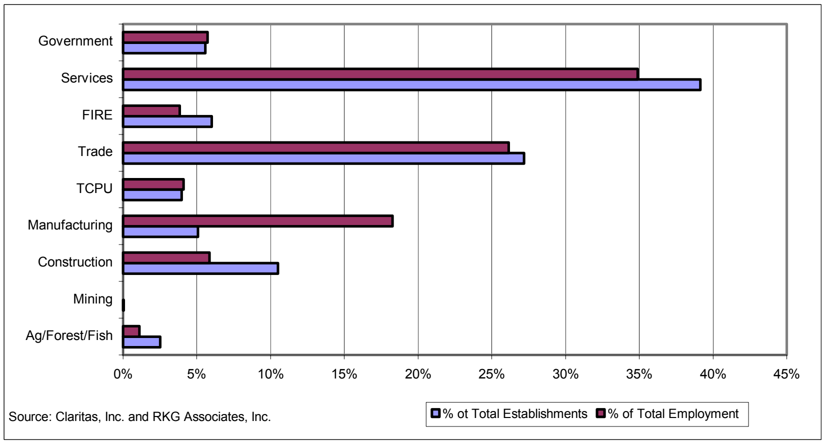
Based on current employment estimates, the Lakes Region has a labor force of approximately 30,000 people which is an increase of approximately 3,100 (11%) since 1990 – almost twice the statewide rate. In addition to experiencing significant increases in labor force throughout the 1990s, the Lakes Region also experienced sizeable increases in employment. As shown in Table 3-43, between 1990 and 1999, employment in the region increased by approximately 4,000 jobs (16%). It should be noted that because labor and employment change data for the Lakes Region (as defined within this report) were unavailable, values for Belknap County have used instead.

Table 3-43 - Labor Force and Employment Change: 1990-1999 Lakes Region*			
	1990	1999	% Change 90-99
Labor Force	26,950	30,030	11.4%
Employment	25,300	29,320	15.9%
*Note: Comprised of Belknap County			

Employment within the Lakes Region is similar to other New Hampshire economic regions with the service (18,000 or 35% of total) and trade (13,400 or 27% of total) having the highest concentrations. The manufacturing sector still maintains a significant employment presence within the region having approximately 9,400 jobs (18%). Furthermore, as the region's economy was once heavily reliant on the extraction of primary resources, currently only 570 (1%) of the employment base is concentrated within the agriculture, fishing and forestry sector.

In terms of business establishments, majority of businesses within the region are within the service (2,000 or 39% of total) and trade sectors (1,400 or 27% of total) – with both percentage values similar to other economic regions. However, the region has over 540 construction establishments (11% of total) which may be attributed to the surge in development of seasonal homes in the region. Figure 3-24 shows the distribution of employment and business establishments within the region.

Figure 3-24 - Employment and Establishments: 1999 Lakes Region



As shown in Table 3-44, the largest employers in the region employ significantly fewer people as compared to the largest employers in the southern regions of the state with the largest establishment employing 640 people. Large employers in the Lakes Region are concentrated heavily within the manufacturing sector.

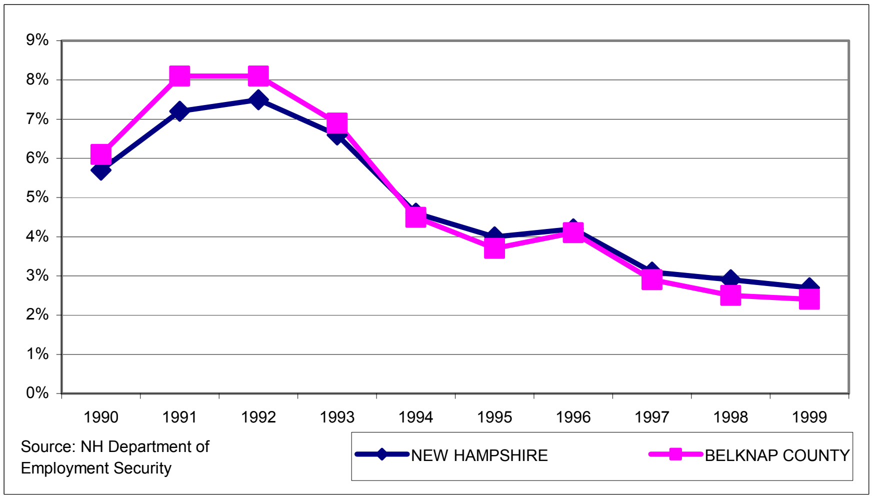
Table 3-44 - Largest Employers: Lakes Region New Hampshire

City/Town	Employer	Product/Service	# Employees
Franklin	Polyclad Laminates	Laminates	640
Franklin	Webster Valve and Foundry	Valve Man.	565
Laconia	MacNeil Worldwide	Sports Equipment	147
Laconia	Lewis and Sanders Inc.	Metal Fabrication	130
Alton	Alton Education Department	Public Education	116
Alton	Town of Alton	Government	110

Source: NH Employment Security and Business NH Magazine

As shown in Figure 3-25, notwithstanding an approximate 0.5% increase in unemployment during the early 1990s, unemployment in the region has been consistent with the statewide unemployment rate. Additionally, between 1990 and 1999, unemployment has decreased by 3.7% - 0.7% more than the statewide average.

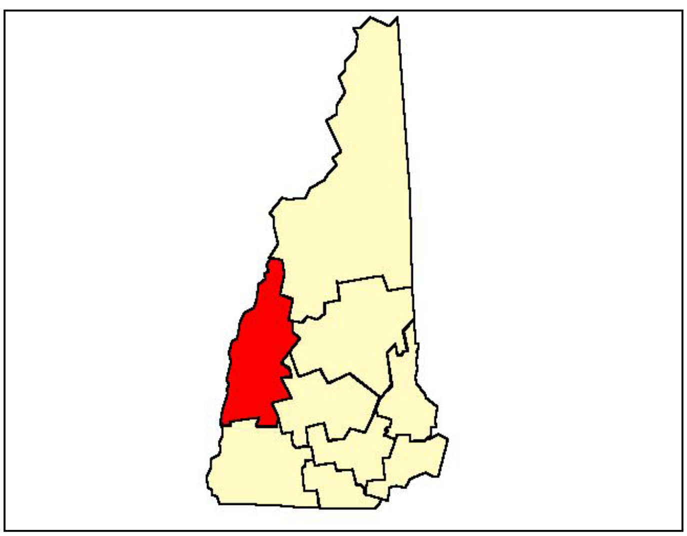
Figure 3-25 - Unemployment Rates: 1990-1999 New Hampshire and Belknap County



3.15 UPPER VALLEY REGION

As shown in Figure 3-26, the Upper Valley region is located in west-central New Hampshire. The region is comprised of mostly small towns with a handful of medium-sized cities and towns including Claremont (population 13,900), Lebanon (12,900) and Hanover (9,600). The region is characterized as primarily rural in character with small farms and lakes being commonplace. Medical and other research conducted at Dartmouth College, located in Lebanon, has help spur the development of some medical and information technology parks in the Lebanon area.

Figure 3-26 - Upper Valley Region



3.15.1 TRANSPORTATION (UPPER VALLEY REGION)

Interstate access is provided by Interstate 89, which runs from the southeast to the northwest – essentially bisecting the region. Several smaller highways, including Route 11 for example, provide access west into Vermont and east into the Lakes Region.

As shown in Table 3-45, three airports are located within the Upper Valley region including Claremont Airport, Parlin Field in Newport, and the state's third commercial airport, Lebanon Airport in west Lebanon. Claremont Airport is a general aviation facility, which primarily serves as a base for recreational operations, although the facility does handle a small percentage of corporate aircraft. Parlin Field is a small general aviation facility, which serves the needs of recreational flyers. Lebanon Airport is one of three commercial service airports in the state, which provides regional commuter passenger service to Philadelphia, New York and Boston. Additionally, the facility has a large FBO that provides fuel, repair and charter services, flight training, as well as serves corporate aircraft.

Table 3-45 - Airport Facilities - Upper Valley Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Lebanon	Public	Lebanon	2	Asphalt	5,496 & 5,200
Parlin Field	Public	Newport	2	Turf & Asphalt	1,950 & 3,450
Claremont	Public	Claremont	1	Asphalt	3,100

Source: Federal Aviation Administration and RKG Associates, Inc.

Lebanon Airport has experienced a decline in passenger traffic due to low-fare jet service Manchester, Bradley, and Burlington Airports. According to the Airport Manager at Lebanon Airport, Southwest Airlines' discount airfares have drawn passengers away from the Upper Valley to the point where the commuter carrier serving Lebanon cannot compete effectively. In order to keep commercial service in Lebanon, a non-profit organization called Fly Lebanon, Inc. has been formed with the sole purpose of retaining commercial flights at the facility.

3.15.2 POPULATION (UPPER VALLEY REGION)

As shown in Table 3-46, the Upper Valley region has a current population of approximately 81,300. Compared to the other economic regions, the Upper Valley region has experienced slow population growth over the past twenty years. Between 1980 and 1990, while most of New Hampshire's economic regions were growing at an average annual rate of 1% or more, the Upper Valley region grew by approximately 6,500 residents or 0.9% per year. The 1990s brought about even slower population growth. Between 1990 and 2000, the region grew in population by approximately 4,800 residents (6.2% or 0.6% per year). Population projections indicate that the region's population should increase at a rate of 0.7% per year over the next four years.

Table 3-46 - Population Trends and Projections Upper Valley Region

2005 Projection	84,372
2000 Total	81,326
1990 Total	76,573
1980 Total	70,046
% Change 90-00	6.2%
% Change 80-90	9.3%

Source: Claritas, Inc.

3.15.3 HOUSEHOLD INCOME (UPPER VALLEY REGION)

Based on current household income data, the current median household income in the region is approximately $44,700 (see Table 3-47). This represents an increase of approximately $12,800 (40%) since 1990. Based on an average inflation increase of 3% per year throughout the 1990s, households in the region have more than kept pace with inflation.

Table 3-47 - Median Household Income Upper Valley Region	
2000 Med HH Income	$44,672
1990	$31,867
% Change 89-00	40.2%
Source: Claritas, Inc.	

3.15.4 EDUCATIONAL ATTAINMENT (UPPER VALLEY REGION)

In terms of educational attainment for the population over 25 years of age, over 33% of the population have graduated from a post-secondary educational institution (see Table 3-48). The region has approximately 3% more residents with graduate or professional degrees as compared to the statewide average indicating that the region has a high level of educational attainment.

Table 3-48 - Educational Attainment (Population over 25 Years) Upper Valley Region

	#	% of Total
Less than 9th Grade	3,704	7.6%
9th to 12th Grade, No Diploma	6,041	12.4%
High School Graduate	16,011	32.8%
Some College, No Degree	6,792	13.9%
Associate Degree	3,517	7.2%
Bachelor's Degree	7,562	15.5%
Graduate or Prof. Degree	5,151	10.6%
Total	48,778	
Source: Claritas, Inc.		

3.15.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (UPPER VALLEY REGION)

As shown in Table 3-49, between 1990 and 1999, the Upper Valley region's labor force increased modestly by approximately 1,600 (4%) while employment increased by approximately 2,900 jobs (7%). Throughout the 1990s, the growth in the Upper Valley's labor force and employment were approximately 2% less than the growth on a statewide basis. Table shows the growth in labor force and employment in the region throughout the 1990s.

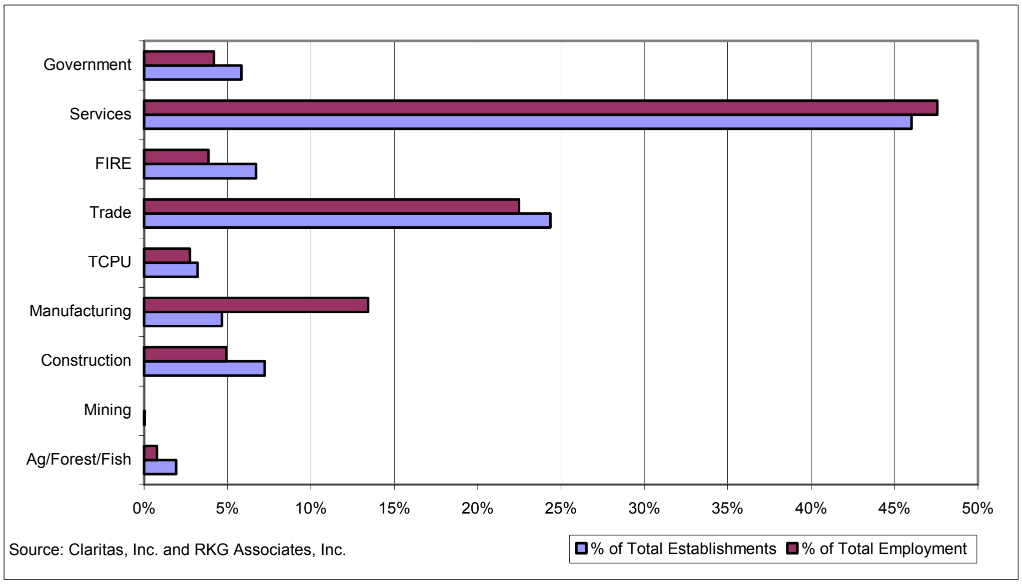
Table 3-49 - Labor Force and Employment Change: 1990-1999 Upper Valley Region*

	1990	1999	% Change 90-99
Labor Force	42,050	43,650	3.8%
Employment	39,970	42,820	7.1%
*Note: Comprised of Claremont LMA and NH portion of Lebanon LMA			

Employment in the region is heavily concentrated in the service sector with approximately 27,000 jobs (48%) or one out of every two jobs being service oriented. Interestingly, the region still supports a large manufacturing employment base with approximately 7,600 jobs (13%) the respective industrial sector.

As shown in Figure 3-27, similar to the distribution of employment in the region, approximately 46% (2,200) of business establishments are within the service sector. Trade establishments comprise approximately 22% (1,200) of the total businesses, which is the second largest in terms of percentage of establishments.

Figure 3-27 - Establishments and Employment: 1999 Upper Valley Region



As with the other regions which border neighboring states, a large retail base has been established in the Upper Valley region due to the lack of sales tax which draw consumers from east-central Vermont.

As shown in Table 3-50, the institutional sector is by far the largest employer in the region with the Dartmouth Hitchcock medical center and Dartmouth College employing over 8,000 people.

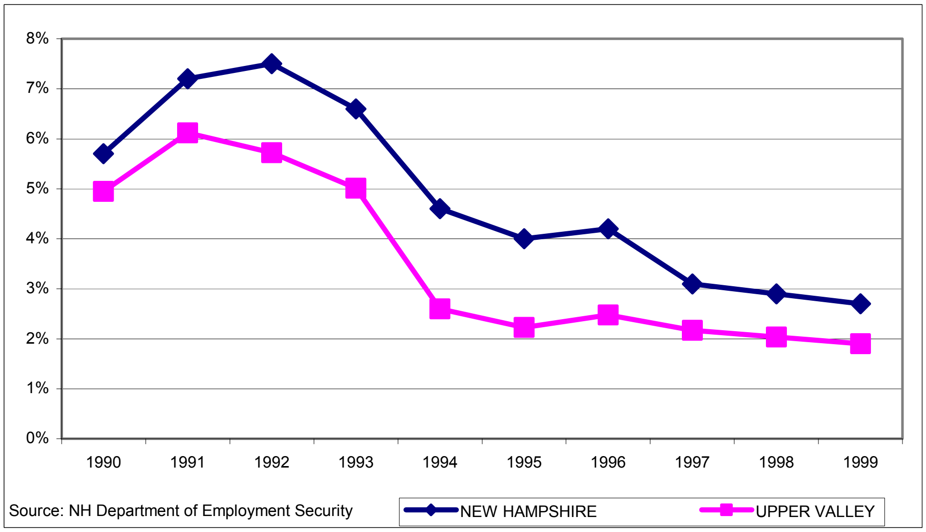
Table 3-50 - Largest Employers: Upper Valley Region New Hampshire

City/Town	Employer	Product/Service	# Employees
Lebanon	Dartmouth Hitchcock	Medical Center	4,393
Hanover	Dartmouth College	Education	3,650
Newport	Sturm, Ruger Co.		1,211
Hanover	Hypertherm, Inc.		575

Source: NH Employment Security and Business NH Magazine

Based on an analysis of unemployment rates throughout the 1990s, the Upper Valley region has consistently maintained unemployment which is at least 1% (and sometimes up to 2%) below the state average (see Figure 3-28). However, in terms of change in unemployment, throughout the 1990s, unemployment in the region decreased by the same rate as the statewide average (3%).

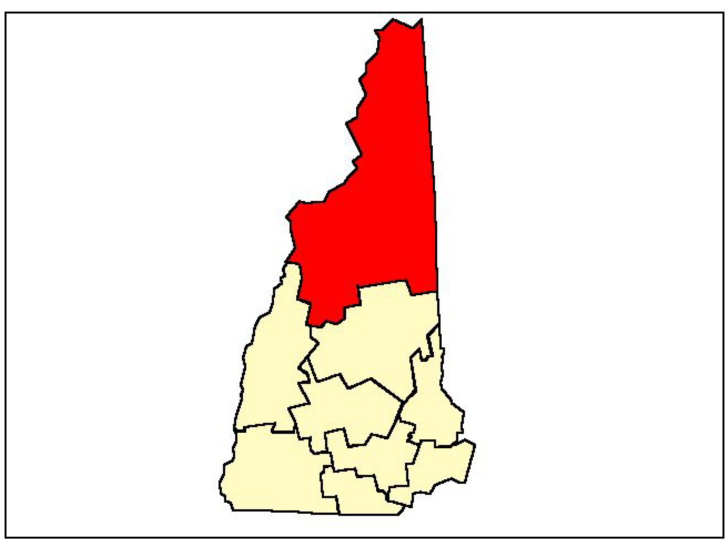
Figure 3-28 - Unemployment Rates: 1990-1999 New Hampshire and Upper Valley Region



3.16 NORTH COUNTRY REGION

The North Country region, which represents the upper half of the state (see Figure 3-29), contains mountains and wilderness that is synonymous with the New Hampshire landscape. With the exception of the city of Berlin (population 10,300), the region contains mostly small towns and villages. Compared to southern New Hampshire, the North Country region has been dependent on the forest products industry and therefore been more susceptible to layoffs during downturns in the economy. To that end, the region typically has remained an unstable economic environment as compared to the rest of the state. The region has historically been built upon the extraction of timber for processing into pulp and paper products. However, competition from other pulp and paper facilities throughout North America has placed pressure on the industry within the North Country region to a point of extreme volatility.

Figure 3-29 - North Country Region



In order to compensate for the volatility in the regional economy, efforts have been made to become less reliant on the resource industry. For example, the tourism industry in the region has become a multi-million dollar industry for the region.

3.16.1 TRANSPORTATION (NORTH COUNTRY REGION)

The region is serviced by Interstate 93 and two main highways (Route 3 and Route 16) which connect the region to southern New Hampshire as well as Vermont, Maine and Canada.

In terms of airport facilities, the North Country region has nine general aviation airports – the largest concentration of facilities of any region in the state (see Table 3-51). The largest facility is located in Berlin, which serves as a corporate and recreational operation hub for the region. The remaining eight airports, five of which have either turf or gravel runways, primarily function as bases to serve private, recreational, and tourism related operations. Interviews with airport management at both Berlin and the Mt. Washington Regional Airports indicate that the airports are seen as a key component of the regional economy. Management at each facility has drafted marketing and development strategies in order to take advantage of what they see as the undeveloped potential that the airports offer.

Table 3-51 - Airport Facilities - North Country Region

Name	Ownership	Location	# Runways	Surface Type	Runway Length (ft)
Berlin	Public	Milan	1	Asphalt	5,200
Colebrook	Private	Colebrook	1	Turf	2,440
Errol	Private	Errol	1	Gravel	3,680
Franconia	Private	Franconia	1	Turf	2,305
Gorham	Public	Gorham	1	Turf	2,800
Mt. Washington Regional	Public	Whitefield	1	Asphalt	3,495
Plymouth	Public	Plymouth	1	Turf	2,380
Twin Mountain	Private	Twin Mountain	1	Asphalt	2,640
Dean Memorial	Public	Haverhill	1	Asphalt	2,500

Source: Federal Aviation Administration and RKG Associates, Inc.

3.16.2 POPULATION (NORTH COUNTRY REGION)

As shown in Table 3-52, the North Country region has a current population of approximately 81,300. Since 1980, the region has experienced very slow population growth (7,500 residents representing an increase of approximately 10%). With approximately 9% of the total growth occurring in the 1980s, the 1990s have been a decade of virtual population stagnation for the region. Population projections for the next four years indicate that the region should continue with stagnant growth with an average annual growth rate of 0.3%.

Table 3-52 - Population Trends and Projections North Country Region

2005 Projection	82,478
2000 Total	81,327
1990 Total	80,290
1980 Total	73,798
% Change 90-00	1.3%
% Change 80-90	8.8%

Source: Claritas, Inc.

3.16.3 HOUSEHOLD INCOME (NORTH COUNTRY REGION)

Based on current household income data, the current median household income in the region is approximately $34,200 (see Table 3-53). Comparatively, the North Country region has the lowest median household income in the state – approximately $4,200 less than the next lowest region (Lakes Region). The current median household income level for the region represents an increase of approximately $7,700 (29%) since 1990. Based on an increase in inflation of 3% annually, households in the North Country region have lost ground in terms of spending power.

Table 3-53 - Median Household Income North Country Region	
2000 Med HH Income	$34,195
1990	$26,512
% Change 90-00	29.0%
Source: Claritas, Inc.	

3.16.4 EDUCATIONAL ATTAINMENT (NORTH COUNTRY REGION)

Compared to both the individual economic regions and the entire state, the North Country region has the lowest educational attainment level. For the population over 25 years of age, 24% are college graduates (8% less than the statewide average) – a value which is coincidentally the same percentage of residents who have not completed high school. As mentioned earlier, one of the motivating factors for many information technology firms moving into the economic regions of southern New Hampshire has been the supply of skilled workers. It appears that the low educational attainment level of the North Country region's population may be a limiting factor in promoting the area to prospective businesses seeking sites for expansion. Table 3-54 shows the distribution of educational attainment levels for the region's population over the age of 25.

Table 3-54 - Educational Attainment (Population Over 25 Years) North Country Region

	#	% of Total
Less than 9th Grade	5,302	10.1%
9th to 12th Grade, No Diploma	7,136	13.6%
High School Graduate	20,036	38.3%
Some College, No Degree	7,468	14.3%
Associate Degree	3,728	7.1%
Bachelor's Degree	6,010	11.5%
Graduate or Prof. Degree	2,628	5.0%
Total	52,308	
Source: Claritas, Inc.		

3.16.5 LABOR FORCE, EMPLOYMENT AND UNEMPLOYMENT (NORTH COUNTRY REGION)

As shown in Table 3-55, between 1990 and 1999, the North Country region has experienced a modest increase in its labor force of approximately 3,300 (5.6%). Furthermore, employment growth in the region has been in-line with the statewide average increasing by 5,200 jobs (9.4%) over the same time period.

Table 3-55 - Labor Force and Employment Change: 1990-1999 North Country Region*			
	1990	**1999**	**% Change 90-99**
Labor Force	59,130	62,430	5.6%
Employment	55,380	60,590	9.4%
*Note: Comprised of Colebrook, Lancaster, Berlin, Littleton, Conway and Plymouth LMAs			

Employment in the region is concentrated heavily in the service sector with approximately 23,200 (44%) jobs falling within this respective sector. The trade sector is the second highest employer with approximately 15,200 jobs – representing approximately 29% of the employment base. Manufacturing has a significant presence employing approximately 5,400 (10%) of the employment base. For a region that has its historical roots in resource extraction, currently only 1% of the North Country's jobs are in resource industries (agriculture, forestry and fishing).

As with employment, majority of the region's business establishments are concentrated within the service (2,330 43% of total) and trade (1,600 or 30% of total) sectors. Figure 3-30 shows the distribution of employment and business establishments by industrial sector for the North Country region.

Establishments in the North Country region serve a market, which crosses two state borders (Maine and Vermont) and one international border with Canada.

As shown in Table 3-56, the largest employers in the North Country region are significantly smaller than the southern economic regions (with the exception of the Lakes Region). The pulp and paper processor, Pulp and Paper of America, located in Berlin is the region's largest employer with close to 900 jobs. Concentrated in entirely in Berlin, other large employers within the region are distributed in the health care, retail, government and manufacturing sectors.

Figure 3-30 - Employment and Establishments: 1999 North Country Region

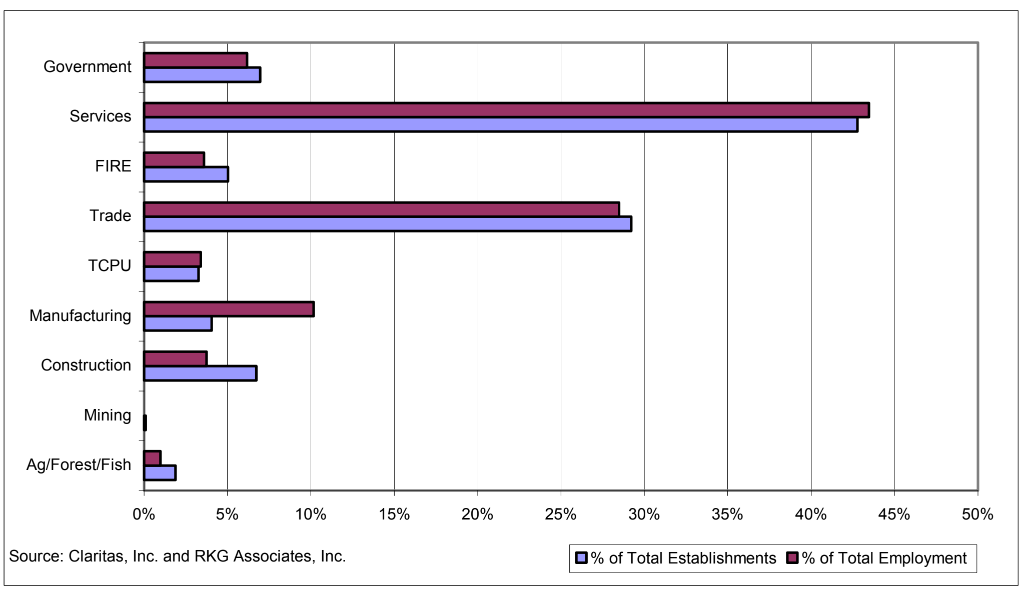
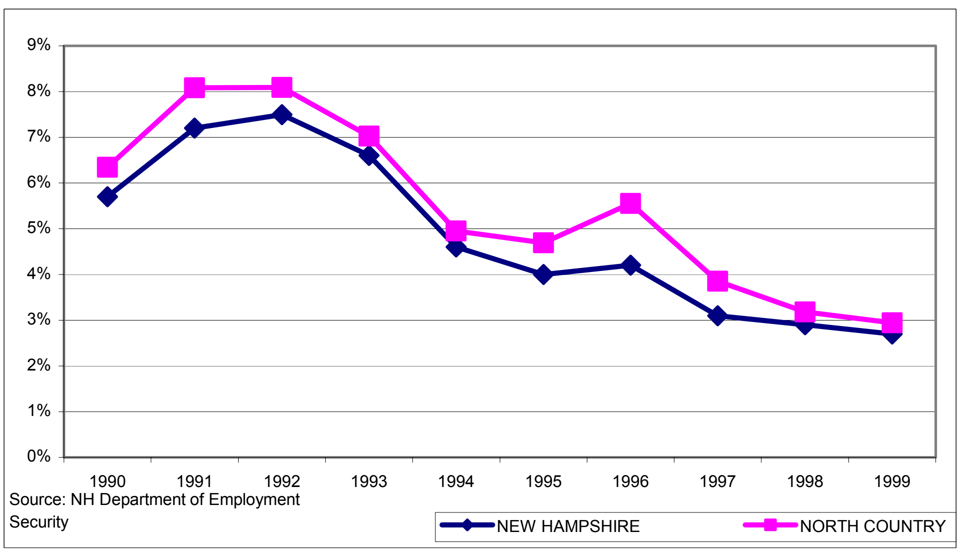


Table 3-56 - Largest Employers: North Country Region New Hampshire			
City/Town	**Employer**	**Product/Service**	**# Employees**
Berlin	Pulp and Paper of America *	Pulp/Paper	892
Berlin	Androscoggen Valley Hospital	Health Care	336
Berlin	Berlin City Dealerships	Auto Dealer	205
Berlin	City of Berlin	Government	170
Berlin	Isaacson Steel	Steel Fabricators	147
Source: NH Employment Security * Pulp & Paper of America sold the mills to Fraser Papers of Connecticut			

Between 1990 and 1999, unemployment in the region has been high with the average annual unemployment rate being approximately 0.5% higher than the annual average for the state. However, although the region has had higher unemployment than the rest of the state, the North Country region has experienced a net decrease in unemployment of 3.4% during the 1990s – 0.4% more then the state during the same time period. Figure 3-31 compares the average annual unemployment rates for both the region and the state during the 1990s.

Figure 3-31 - Unemployment Rates: 1990-1999 New Hampshire and North Country



CHAPTER 4 - CURRENT AND FUTURE AVIATION TRENDS

4.1 INTRODUCTION

Future trends in the aviation industry are the key indicator of future airport roles and facility requirements, as well as funding needs. This chapter explores what has occurred in the aviation industry and compares national trends with activity in New Hampshire over the past ten years. This chapter also assesses national changes to both commercial aviation, including cargo activity, and general aviation. Trends in activity within the State were obtained through available data from the airports and the airport interviews that were conducted as part of the inventory process described in Chapter 2.

4.2 CURRENT STATE AVIATION SYSTEM

The airport system within New Hampshire is comprised of twenty-two general aviation and three commercial service airports. Ten of the airports are privately owned, public use, and eleven of the 25 airports are eligible for federal grants. Boire Field in Nashua is the only designated reliever airport in the state, and accommodates more based aircraft (400+) than any other airport in New Hampshire. Of the three commercial service airports (Manchester, Lebanon, and Pease International Tradeport), the large majority of passenger and cargo traffic is handled at Manchester. There are as many as 100 privately-owned, private use landing facilities (airports, heliports, and seaplane bases) in the state that are not included in the System Plan, some of which are registered with the Division of Aeronautics.

4.3 NATIONAL AVIATION TRENDS

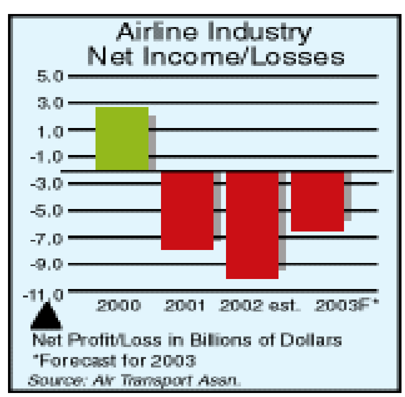
The most efficient way to assess aviation trends is to address each component of the industry separately, namely, commercial service, general aviation, and military activity. One overview of the industry is presented in Federal Aviation Administration (FAA) Annual Aerospace Forecasts.

4.3.1 COMMERCIAL AVIATION - NATIONAL TRENDS

Commercial aviation is comprised of passenger airline service provided by major and regional airlines, as well as all-cargo carriers. The airline industry has changed significantly just within the last two years, since September 11, 2001.

Major Airlines

Major airlines, as defined by the FAA, are companies that generate more than $1 Billion in revenue annually, and include passenger operators United, American, Delta, Southwest, Northwest and Continental, and cargo carriers such as FedEx and UPS.



The major airlines experienced unparalleled growth both domestically and internationally between 1993-2001 due to the rapidly expanding economy over a relatively long period, and as a result were very profitable during that period.

However, a combination of factors drastically changed that situation:

- The U.S. and world economies were starting to slow down in early 2001, particularly in the high tech industry, and business travel had already started to decline by September of that year.

- The attacks on September 11, 2001, resulted in the complete shutdown of the aviation system in the US for three days, which had a worldwide impact. In 2001, revenue passenger miles in the U.S. dropped by 5.9%, the largest drop in the industry's history. The U.S. Congress passed emergency legislation providing federal grants to airlines to cover some of the financial impact of the loss of traffic, but that did not cover the full cost to the industry.
- Both the U.S. and many foreign economies went into a deep recession in late 2001 and throughout 2002, significantly decreasing demand for air travel, particularly by business travelers. Over that same period, both labor costs and fuel prices rose sharply, as did security costs, resulting in severe financial losses for airline industry – with the sole exception being low-fare carriers such as Southwest, AirTran, and JetBlue.
- The Air Transport Association (ATA), the airline industry's trade organization, has characterized the state of the industry as of early 2003 as being in a severe crisis. Since September 11, almost 100,000 airline employees have been put out of work, 300 aircraft (6% of the whole fleet) have been grounded, \$5.6B in capital expenditures have been deferred, two major airlines (United and US Airways) have filed for Chapter 11 bankruptcy (others may file for Chapter 11 protection), the industry has lost more than \$18B, and total corporate airline debt has increased to \$100B.
- In 2003, the bad news continued. The stock market continued to decline – as did corporate profits, the U.S. went to war in Iraq, and most recently the outbreak of a worldwide epidemic of Severe Acute Respiratory Syndrome (SARS), have all impacted both domestic and international traffic.

It is interesting to note that in stark contrast to that bad news, low-fare airlines such as Southwest, AirTran, and JetBlue have been profitable over this same period due to several factors: discretionary travel has not declined as much as business travel; some business travelers have switched to low-fare carriers to lower their travel costs; and low-fare airlines have kept their operating costs low, in part by operating new fuel-efficient aircraft and hedging on fuel prices, for example.

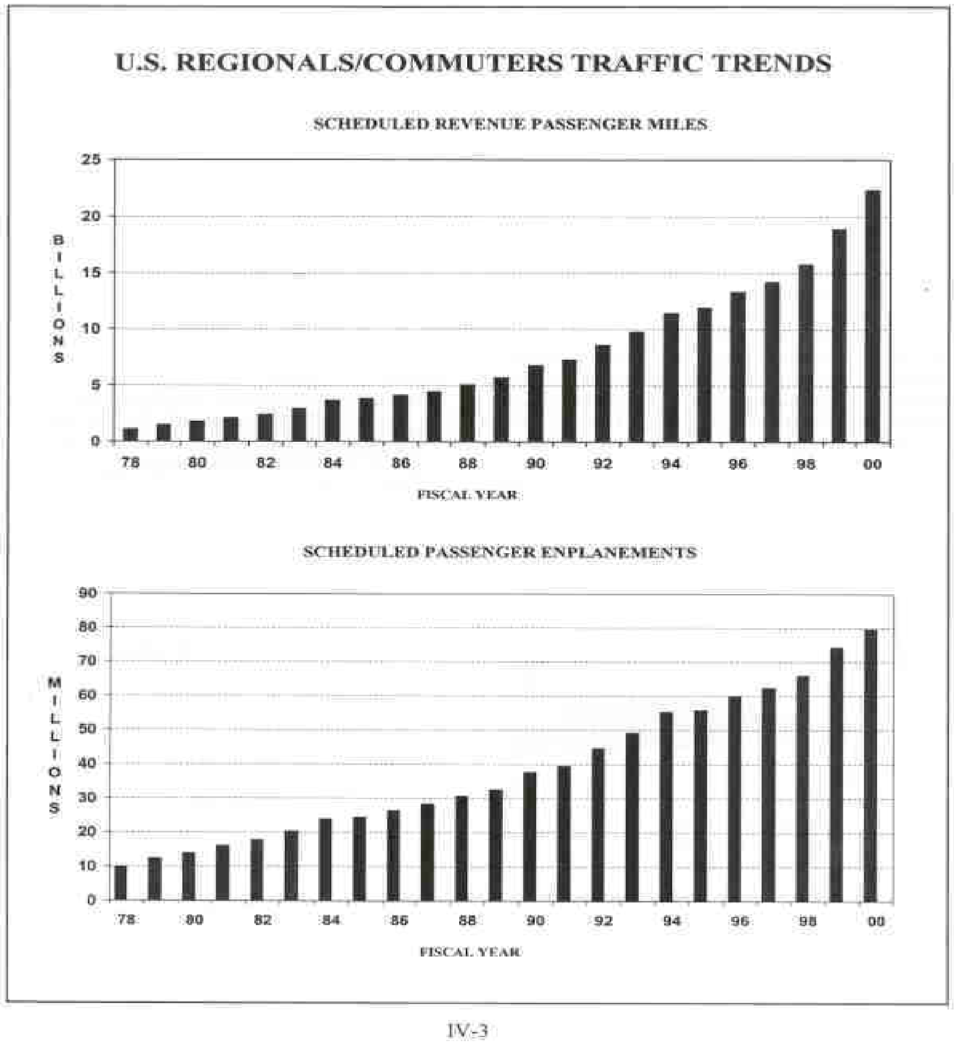
While traffic at Manchester Airport declined in late 2001, it started rebounding in 2002 and has since increased to levels seen before September 11. Part of this growth has come from passengers diverting to Manchester Airport from Boston Logan Airport due to increased convenience and fewer delays. In 2002, there were 3.36 million total passengers at Manchester, a 4.01% increase over 2001. Passenger traffic at Pease International Tradeport remained relatively flat over that period, while Lebanon Airport has seen a steady decline in passenger traffic.

Regional Commuter Airlines

Between 1993-2001, the growth that occurred in the major airlines was outpaced by the regional (commuter) airline industry. The growth in air travel and the advent of regional jets (particularly the Canadair CRJ-200 and the Embraer ERJ-145) spurned rapid growth in the regional airlines. Figure 4-1 shows the dramatic growth in the regional airlines between 1978 and 2000.

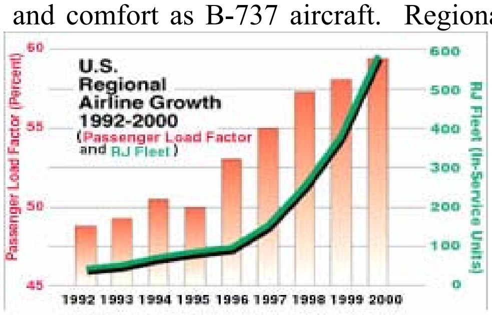
New technology has been one of the major factors in the commuter industry's growth. The industry has traditionally used small 19 to 30 seat propeller-driven (both piston and turboprop) aircraft to move their passengers to and from the hub airports served by major airlines. Passengers were not fond of these aircraft because of their relatively cramped cabins, loud interior noise levels, and safety record, particularly compared to jet aircraft such as the B-737. The airframe manufacturers noted the inherent problems with small turboprop aircraft (Beech 1900, DH Twin Otter, etc.) and developed larger and quieter turboprop aircraft to meet the growing demand for larger aircraft by the commuter operators.

Figure 4-1 – Regional Commuter Historical Growth



Source: FAA Aerospace Forecasts 2001-2012

The commuter industry went through an even more dramatic change with the advent of the regional jet. Bombardier Aircraft Company introduced the regional jet in the early 1990's. This aircraft, the CRJ-200, was a converted corporate jet capable of carrying 50 people and flying longer commuter legs (up to 800 – 1,000 miles). Regional jets have revolutionized the industry by providing passengers with the same level of service and comfort as B-737 aircraft. Regional jets have replaced many turboprops on both longer and even

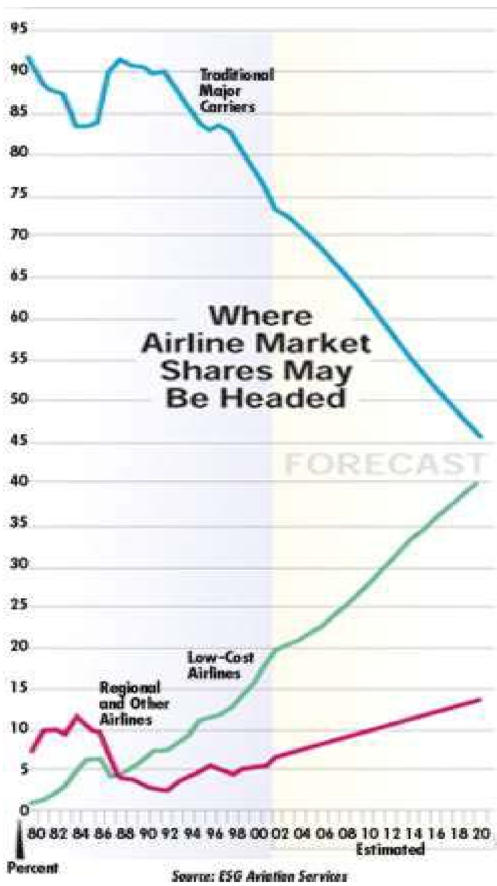


relatively short routes (500 miles and less). Further advancements in regional jet technology have developed a variety of aircraft seating from 30 to 70 people that will ultimately replace most turboprop aircraft in current use. As a result, there are relatively few commuter airlines flying 19-seat Beech 1900 and the 30-seat Saab SF-340. The FAA notes that the number of regional jet aircraft in service in 1996 totaled 90, and by 2000 they had increased to 569 aircraft (see graph).

With the advent of regional jet aircraft, commuter airlines have significantly increased their passenger enplanements, revenue passenger miles, and average stage length flown. This success has spurned a number of consolidations within the commuter industry. In 1990, there were 151 regional and commuter airlines, while in 2001 there were 90.

As the economy grew and enplanement increased in the 1990s, consolidations resulted in larger commuter airlines that served large regions. Most of the regional airlines are associated with or owned by the major airlines. The regional airlines that have been acquired by major airlines include Atlantic Southeast Airlines and Comair, purchased by Delta, American Eagle purchased by AMR Corp., and Allegheny and PSA were purchased by US Airways. FAA notes that the top twenty regional carriers account for almost 98 percent of the total passenger enplanements within the regional/commuter industry. Manchester Airport has experienced an interesting trend with regional carriers starting service to new markets, and that service being taken over by major carriers as traffic increases. As a result, regional airline service has not experienced the same rate of growth at Manchester Airport as it has elsewhere.

Although the factors described above that have significantly impacted major airlines, regional carriers have not been as severely impacted. As part of their downsizing program, major airlines have shifted many of their routes to their regional partners and as a result, regional traffic has not declined as much as it has for the major carriers. FAA forecasts that between2001 and 2012, the regional airlines will continue to outpace the growth of the major carriers. This will be due in part to transfer of short haul routes (500-1000 nm) from the major airlines to their regional partners, and continued route rationalization by the major airlines that is intended to reduce costs. Over time, the rate of growth will slow as route structures mature and fewer aircraft are acquired. FAA predicts that passenger enplanements will grow 5.6 percent annually through 2012. However, if the economy does not rebound and if fuel prices continue to rise, then it is not likely that growth will be realized.



Low-Fare Carriers

Throughout the 1990's there were a number of low-fare/low-cost airline startups. The FAA noted that since 1988 there have been 88 new low-cost airline entrants to the market, and as of 2000 there are 17 still operating. Although a number of them have since gone out of business, among the most notable being MetroJet operated by US Airways, the most successful low-fare carriers still operating include Southwest, AirTran, and JetBlue. In addition, Delta announced the formation of new low-fare airline-within-an-airline, named "Song" that will be flying Boeing B-757 aircraft primarily along the East Coast. These carriers provide service at considerably lower cost than service charged by 'traditional' major airlines, and they typically fly point-to-point from small and medium hubs (such as Manchester, Providence, Bradley, etc.). As a result they avoid the congestion and high cost of operating at traditional hub airports such as Boston Logan, Philadelphia, Pittsburgh, etc. FAA has calculated that low cost carriers saved the flying public $6.3 billion.

The major airlines have attempted to restructure their operations to more effectively compete with the low costs carriers and have, in some cases started their own low-fare airline within an airline, such as Delta Airlines noted above.

However, low-cost/low-fare carriers are gaining market share, while traditional major airlines are losing market share (see graph).

The most successful of the low cost carriers is, by far, Southwest Airlines. Southwest started flying in 1972 in Texas as an interstate airline, and expanded slowly to become a dominant airline in that region. Throughout the 1990's, Southwest expanded its route structure nationally, moving most recently throughout the East Coast, starting an operation centered around Baltimore-Washington Airport (BWI). Once established at BWI, Southwest began service to small- and non-hub airports including Manchester, NH, Providence, RI, Albany, NY, Buffalo, NY, Islip, NY, and Bradley International in Hartford, CT. Since its founding, Southwest has only discontinued service in four markets, has never had an employee furlough or layoff, and has never had an unprofitable year.

When Southwest enters a new market, overall fares often drop significantly and total passenger enplanements increase dramatically. This has been termed "the Southwest Effect", and often occurs during the first 3-5 years after low-fare service starts. One of the effects on airports is an immediate increase in the total number of passengers and often airports must build new facilities in order to meet rapidly increasing demand. All three of the airports in New England with service by Southwest have had to build new terminal space, parking facilities, and other infrastructure improvements to accommodate the demand generated by the 'Southwest Effect'.

Air Cargo

Air cargo comprises several different types of freight: express package (typically small packages), heavy/bulk cargo, and U.S. mail. All-cargo carriers such as Federal Express, Untied Parcel Service (UPS), DHL, and Emery, provide both express package and heavy/bulk cargo throughout the United States. The major airlines also carry packages, bulk cargo, and mail through the use of belly space in passenger aircraft (so-called belly-cargo). There are also numerous charter aircraft that provide high priority cargo services (mail, bank checks, just in time cargo) that operate at many of the general aviation as well as the larger air carrier airports.

Air cargo has been one of the fastest growing elements in aviation over the past ten years. From 1990 to 2000, the annual growth rate for cargo carried by commercial airlines has been 6.3 percent, and has outpaced the growth in passenger growth. For all cargo operators (Federal Express, UPS, etc.), that growth has represented 4.9 percent annually. Airports with among the highest growth in cargo operations have been the hubs for Federal Express (Memphis) and UPS (Louisville). Manchester Airport has seen a dramatic increase in air cargo since the early 1990s, driven in large part by FedEx and UPS, both of which have constructed mini-sorting facilities at MHT. Eight all-cargo carriers serve Manchester, and the airport handled over 181 million pounds of freight in 2002, an 8.94% increase over the record numbers attained during 2001.

Manchester Airport has seen a dramatic increase in air cargo since the early 1990s, driven in large part by FedEx and UPS, both of which have constructed mini-sorting facilities at MHT. Manchester is served by six all cargo carriers (United Parcel Service, FedEx, Airborne Express, Telford Aviation, Mountain Air Cargo, and Wiggins Airways), and the airport handled over 181 million pounds of freight in 2002, an 8.94% increase over the record numbers attained during 2001.

Cargo is forecasted to continue to grow both domestically and internationally in the future. The FAA uses revenue ton-miles (RTM) as the unit of measure for cargo activity. Over their 12-year forecast period from 2000 to 2012, domestic freight and express revenue-ton-miles will increase from 12.1 billion to 22.2 billion RTMs by 2012. This represents an annual average increase of 5.2 percent over the forecast period. FAA also indicates that much of the growth will occur for the all-cargo carriers such as Federal Express and United Parcel Service. Belly cargo for the airlines will increase at a lesser rate.

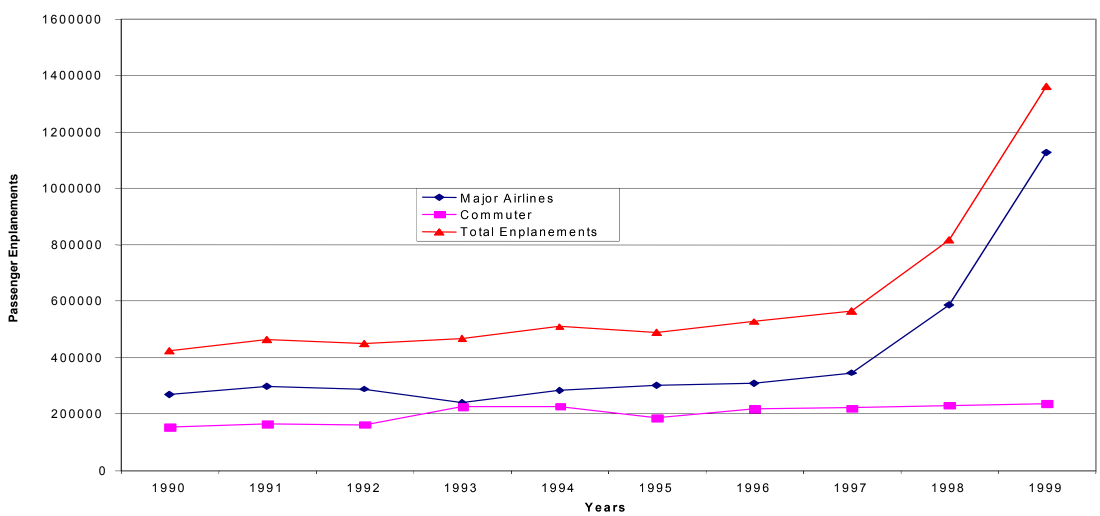
4.3.2 COMMERCIAL AVIATION – STATEWIDE TRENDS

Passenger Service

There are three airports in New Hampshire that have commercial airline service; Manchester, Pease International Tradeport, and Lebanon. Section 2.7 in Chapter 2 provided a detailed description of past and present service provided at these airports and within the state. As was discussed earlier, air service in the state has changed significantly over the past 30 years. Airports such as Laconia, Concord, Berlin, and Dillant-Hopkins had scheduled air service in previous years, but as the airline industry changed, service was dropped or shifted to other airports in the state. Today, Manchester Airport accommodates the large majority of passengers and airline service in the state.

Since 1990, airline service has grown dramatically in the state, particularly since 1998. In 1981, after Delta Airlines withdrew service, Manchester had less than 43,000 enplanements. Passenger growth started at Manchester when United Airlines jet service to Chicago O'Hare in 1984 and shortly thereafter by US Airways initiating jet service to Philadelphia and Pittsburgh in 1986. As traffic continued to grow, Manchester Airport opened the new terminal building in 1994, and in 1998, Southwest, Metrojet, Northwest and Continental Airlines all started service. Figure 4-2 summarizes the passenger enplanement trends in the State.

Figure 4-2 - Passenger Enplanements – Manchester Airport: 1990-1999



Source: FAA Terminal Area Forecast

For a two-year period, Manchester had the highest growth rate of passenger enplanements of any airport in the country, and as of early 2003, growth continues, albeit at a slower rate as the market matures. Manchester Airport has exceeded the passenger levels needed to be classified as a medium-hub airport, and based on projections prepared for airport bond documents, passenger enplanements could increase to 2 million per year by 2010.

Since MetroJet discontinued service in 2001, Southwest has increased its market share at Manchester Airport, and as of late 2002, captured approximately 40% of the passenger traffic. Based on the projected growth of low-fare service nationally, it is anticipated that Southwest will continue to increase their market share at Manchester throughout the forecast period, and that other low-fare airlines, such as JetBlue, may start service at Manchester as well.

In response to the rapid growth in air service throughout the 1990s, as well as the anticipated growth over the next decade, Manchester Airport has undertaken a major expansion program, the major components of which include:

- Reconstructing and extending both runways. Runway 17-35 will eventually be 9,250 feet long, and will be able to accommodate non-stop, trans-continental and Trans-Atlantic service. In addition, a Category IIIB precision instrument approach (ILS) is being installed to Runway 35, which allow much greater reliability in airline service.

- The existing 228,000 square foot passenger terminal is being expanded by approximately 70,000 square feet. The addition includes four new jet gates, ticket counters, baggage claim and new food/gift concessions. Construction started in spring 2003 and is scheduled to be completed in the fall of 2003.

- A six-level parking garage has been constructed in front of the terminal. The 4,800 space parking structure includes 4,000 public parking spaces and 800 rental car spaces. The airport also constructed a 520 foot long elevated pedestrian walkway connecting the parking garage to the passenger terminal. The project included "moving sidewalks" to conveniently move passengers between the garage and the terminal.

- Manchester Airport opened a portion of its new multi-lane entrance roadway that further improves traffic flow and access to the airport. The new airport entrance road design includes a new Brown Avenue intersection and a connecting point for the NHDOT Airport Access Road project. NHDOT continues to move ahead with the Airport Access Road project connecting Manchester Airport to the F.E. Everett Turnpike. NHDOT officials expect to have the new road open in 2006.

- The Federal Aviation Administration (FAA) plans to construct a new 160-foot air traffic control tower at Manchester Airport in 2004. The new tower will be three times as tall as the existing.

- To date, over 650 eligible homes located in neighborhoods surrounding the airport have received sound insulation modifications under the Residential Sound Insulation Program. Manchester Airport has spent more than $20 million on the program, and improvements have included:
  - replacing existing windows with double-pane acoustical window units
  - replacing existing exterior doors with 1 3/4" solid-core doors
  - wall and ceiling modifications
  - installing extra layers of insulation in attics and crawl spaces
  - installing central air conditioning

Once the current expansion program has been completed, additional terminal expansion phases are anticipated, as well as a second parking garage.

Since its conversion to a civilian airport, Pease International Tradeport has completed $26 million in infrastructure improvements (pavement, electrical, & facilities) in the past seven years. During that period, Pease International Tradeport also accommodated both passenger and cargo airlines. Pease International Tradeport served as the base of Business Express before it was acquired by American Eagle, and currently serves as the base of Pan Am (Boston-Maine Airways). Pease International Tradeport is situated within the market area of three other commercial service airports: Manchester, Boston Logan, and Portland Jetport, with good highway access to all three airports. The existing low-fare service by Pan Am is point-to-point versus hub-oriented, and is focused on discretionary versus business travelers. Pan Am operates B-727 and Jetstream J-31 aircraft for passenger service. In 2001 there were 37,235 passenger enplanements, which was a small decrease from 2000 (37,786).

Lebanon Airport is also impacted by similar factors as Pease International Tradeport because it too is situated within the market area of four other airports: Manchester, Bradley Field CT, Boston Logan (primarily for international service), and Burlington, VT. Passenger enplanements at Lebanon have declined steadily since 1993.

Air Cargo

Air cargo in New Hampshire has grown significantly in the past ten years, however, it has been primarily at Manchester Airport. Manchester has traditionally had the air cargo operators in New Hampshire, namely Federal Express and UPS. Over the past seven years, both Federal Express and UPS have significantly increased their storage and sorting facilities, making them regional facilities for express package collection and distribution. They have also increased the size and number of aircraft they use. Federal Express used primarily narrow-body Boeing B-727s throughout most of the 1990's, but now use wide-body Airbus A300s supplemented by DC-10s. Regional companies under contract to FedEx use Cessna Caravan and Beech 99 turboprops to move express packages within the region, with scheduled flights to airports in Maine and Vermont. UPS also operated B-727s and DC-8s at Manchester for a number of years, but now operates B-757s, B-767s, and A-300 aircraft. Airborne Express also operates DC-9 aircraft at Manchester.

4.3.3 GENERAL AVIATION – NATIONAL TRENDS

General Aviation (GA) comprises all civilian aviation activities except for commercial airline service. GA includes a wide variety of activities, such as personal/recreational, flight training, sightseeing, aerial patrol, filming and photography, utility/construction support, electronic news gathering, law enforcement, , aerial ambulance, business and corporate flying. GA aircraft range from single and multi-engine piston aircraft, to corporate jets, helicopters, gliders, balloons, and experimental (homebuilt) aircraft. There are more than 16,000 airports in the U.S., all of which accommodate general aviation aircraft, however, the scheduled airlines only serve 500 of those airports. GA also has a significant economic impact on the nation. The FAA completed an economic benefit study of GA activity and concluded that general aviation generated $64.5 billion for the national economy annually, and represented 6.6 percent of the aviation industry's total contribution to the economy.

GA activity has historically exhibited cyclical trends during which activity has risen and declined with changing economic times. GA pilots and passengers are relatively price sensitive since a large portion of GA flying is dependent upon personal disposable income.

The cyclical nature of the industry can be seen most graphically in terms of aircraft deliveries. While the GA industry as a whole rebounded with the strong national economy in the mid to late 1990s, due in part to factors such as record low unemployment rates and rising per capita income.

4.3.4 GENERAL AVIATION – NH TRENDS

New Hampshire has seen a reduction in statewide general aviation activity over the past ten years. Although there is a lack of historical data to accurately track GA activity in the state, two sources indicate that activity levels in the state have declined. First is the comparison between the statewide activity levels noted in the last State Airport System Plan (1990) compared to data compiled by the Division of Aeronautics in the year 2000, clearly indicates that GA aviation activity has decreased.

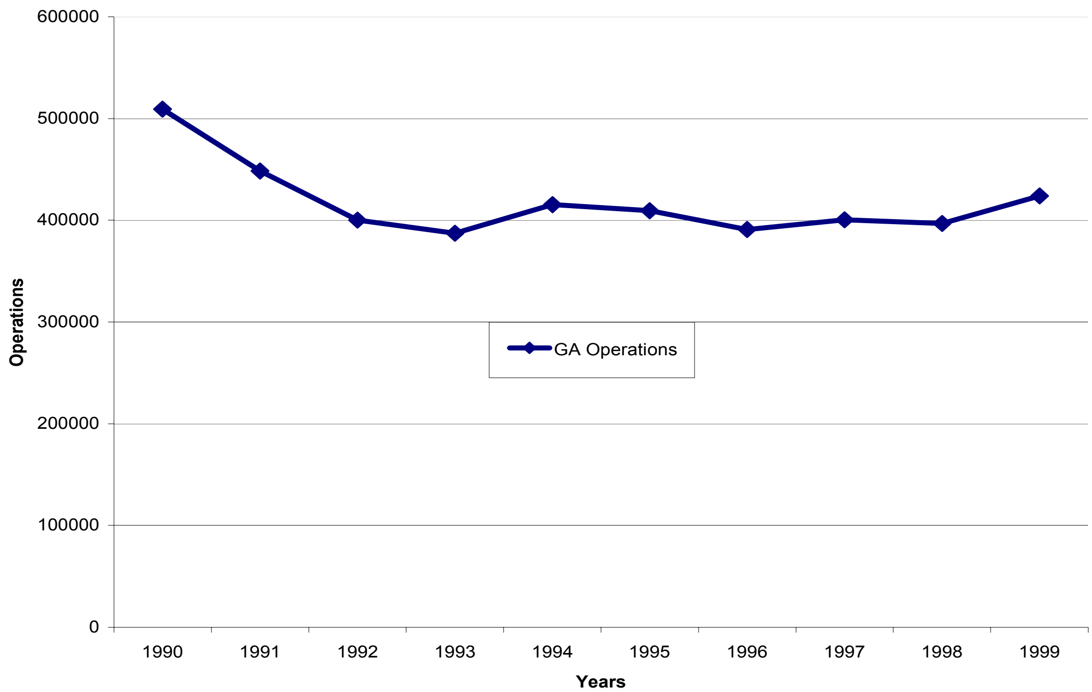
Table 4-1 – NH General Aviation Activity- 1990-1999			
Region	**1990**	**2000**	**% change**
Central	48,929	56,700	15.9%
Lakes	91,254	54,503	-40.3%
Nashua	112,191	101,633	-9.4%
North Country	43,079	33,250	-22.8%
Rockingham	39,001	62,366	59.9%
South	95,525	45,740	-52.1%
Southwest	76,813	66,442	-13.5%
Strafford	23,736	18,592	-21.7%
Upper Valley	74,355	58,938	-20.7%
Total Operations	**604,883**	**498,164**	**-17.6%**
Sources: 1990 NH Airport System Plan 2000 data Division of Aeronautics			

The second source of historical information used was the FAA Terminal Area Forecast (TAF). FAA records are consistent with the findings shown in Table 4-1. Table 4-2 presents annual activity levels between 1990–1999, which is also depicted in Figure 4-3. Table 4-3 shows the percent change in local and itinerant operations between 1990 and 1999.

Table 4-2 – NH General Aviation Operations			
Year	**GA Itinerant**	**GA Local**	**GA Total**
1990	256,553	252,521	509,074
1991	223,513	224,988	448,501
1992	199,919	200,266	400,185
1993	203,413	183,782	387,195
1994	214,784	200,398	415,182
1995	214,455	195,026	409,481
1996	193,613	197,398	391,011
1997	194,323	206,255	400,578
1998	194,260	202,465	396,725
1999	199,161	224,798	423,959
Source: FAA 5010			

Table 4-3 – Change in Local and Itinerant Operations			
	1990	**1999**	**% change**
GA Itinerant	256,553	199,161	-22%
GA Local	252,521	224,798	-11%
Total	509,074	423,959	-17%
Source: FAA 5010			

Figure 4-3 – TAF GA Activity Summary: 1990-1999



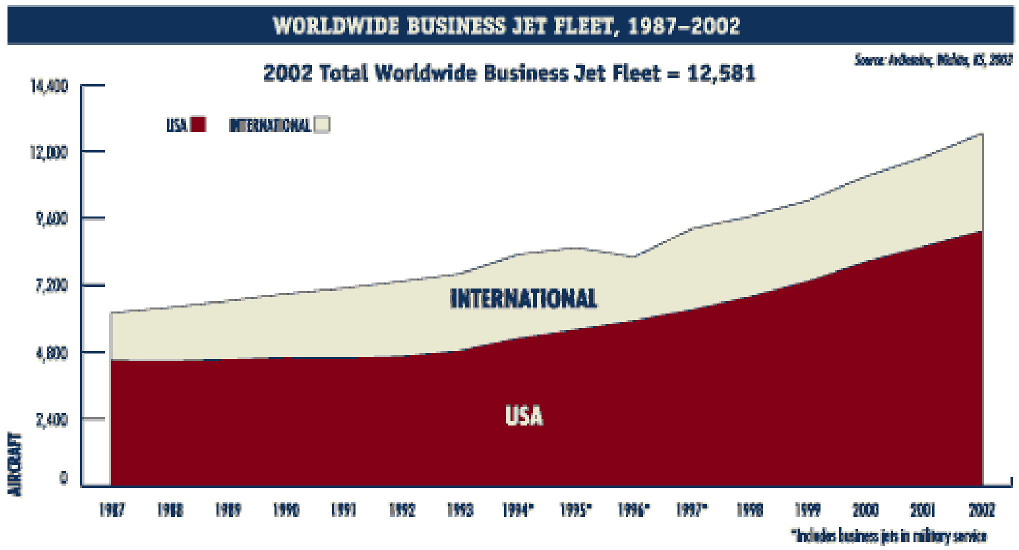
Source: FAA Terminal Area Forecasts

The airport site visits completed as part of the inventory process provided a clearer understanding of how the trends in GA activity have affected the airports within the state. The majority of airport managers that were interviewed indicated that their number of operations and based aircraft had remained steady or increased between 1997 – 2000. This appears to be supported by FAA's TAF data that indicates an increase of activity in 1998 and 1999. It is interesting to note that between 1992 – 1997, overall GA activity declined even while the state's economy was growing at a rapid pace. The upturn in GA activity since 1998, however, indicates that the robust economy is finally having a positive impact on GA traffic and demand.

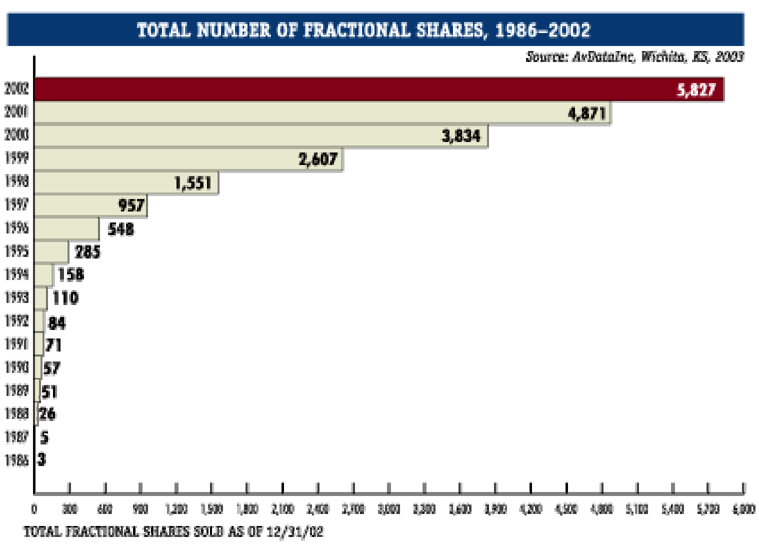
Corporate activity appears to be the strongest segment of GA activity in the state, both in terms of based aircraft as well as transient operations. Corporate activity is strongest at airports in the southern portion of the state: Manchester, Boire Field, Concord, Dillant-Hopkins, Lebanon, Laconia, and Pease International Tradeport. There are several reasons for that:

a) As noted previously, the state's population, employment, and business establishments are concentrated in the southern portion of the state;
b) Those airports have the necessary facilities (such as runway length, terminals, and hangars), services (fuel, ground transportation, etc.), and instrument approaches to accommodate corporate aircraft;
c) Fixed base operators (FBO) actively market and solicit corporate traffic at those airports.

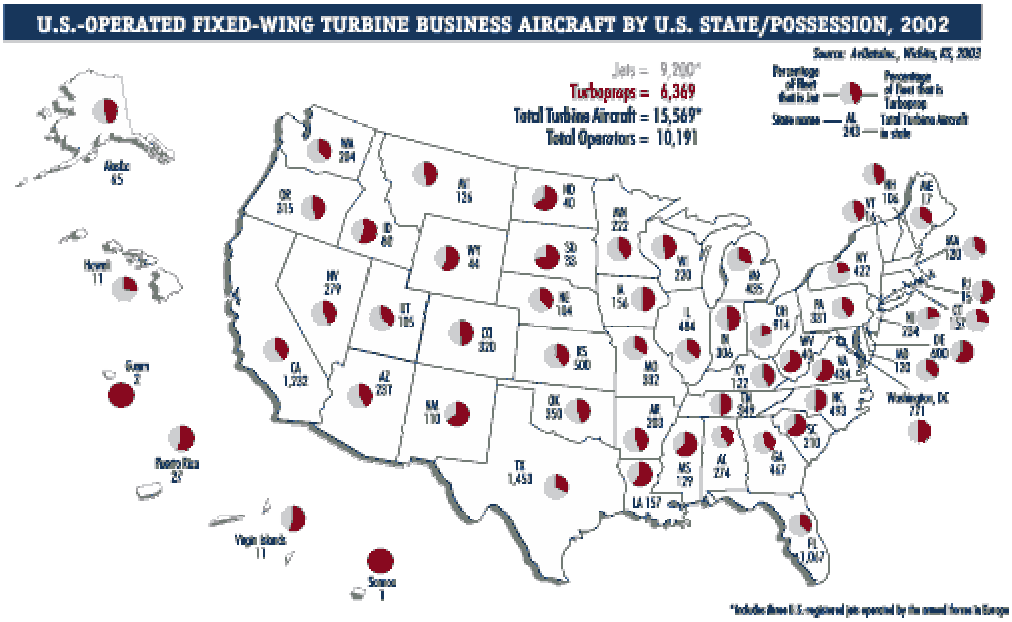
The number of corporate jets has increased steadily since 1987, particularly in the U.S. (see following chart). According to the National Business Aircraft Association (NBAA), there were 15,569 corporate turbine-powered aircraft in the U.S. in 2002, 106 (0.7%) of which were based in New Hampshire.



Between 1992-2001, there were three primary factors that stimulated corporate aircraft activity, nationally and in New Hampshire. First and foremost was the steady rise of the stock market and corporate profits until early 2001. Rising stock prices and corporate profits provided the financial resources for companies to own and operate aircraft. Second was the advent of fractional aircraft ownership (see chart below), in which the cost of owning and operating an airplane was divided among a number of firms. Third, delays at airline hub airports increased dramatically, as did airline ticket prices, and the level of service provided by airlines deteriorated, providing strong incentives for business travelers to find alternatives.



Locally, the lack of a state sales tax was also a strong incentive for corporate and business airplane owners, particularly in Massachusetts, to base their aircraft in New Hampshire. In early 2002, Massachusetts exempted aircraft and parts from the state sales tax in an effort to prevent further airplanes from being based out-of-state.



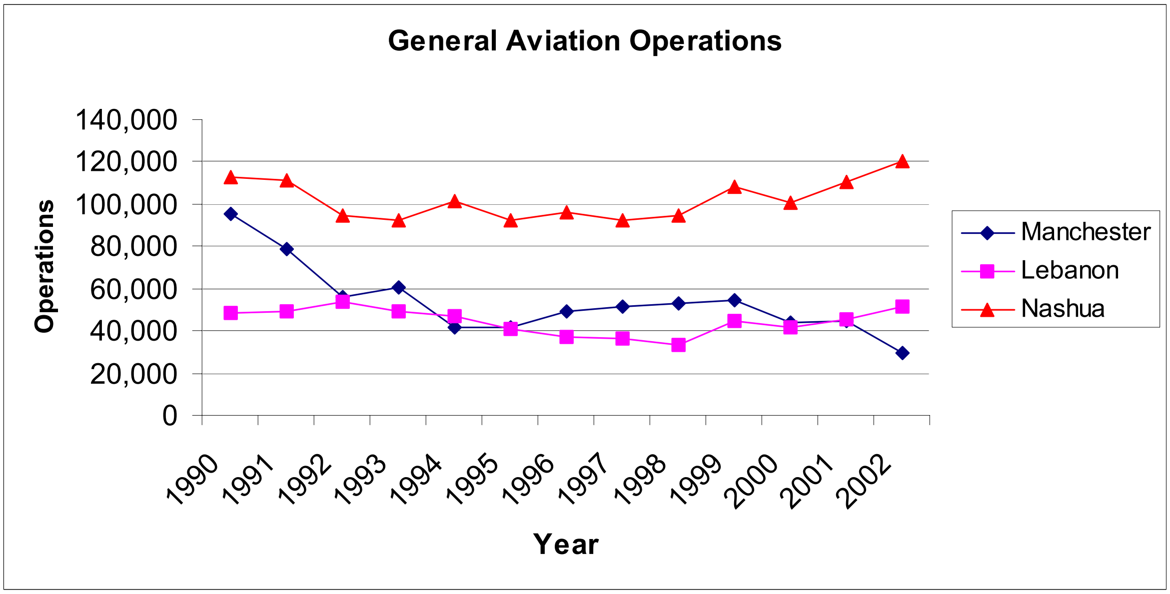
4.3.5 CURRENT EVENTS AFFECTING GENERAL AVIATION

By the end of 2002, there were three significant events that directly impacted the General Aviation industry, including corporate aviation:

a) The rapid downturn in the economy, which was greatly exacerbated by the dramatic downturn in the stock market. The U.S. was in an economic recession in late 2001 and early 2002, and the subsequent recovery has been extremely weak, with unemployment and the national budget deficit continuing to grow. The economic recession in the US impacted the rest of the world, and as a result demand for American goods and services has decreased significantly, and international travel has greatly declined. U.S. and international corporate profits have plummeted, and combined with the drop in the stock market, demand for general aviation has been declining rapidly. This is evidenced by declines in new aircraft deliveries, cutbacks in GA aircraft production, and reductions in GA manufacturing employment.

b) The terrorist attacks on the U.S. on Sept. 11, 2001, the subsequent international war on terrorism, and the new airport and airspace security procedures, have all combined to dampen demand. Most of the airport security regulations were targeted at commercial service versus general aviation airports, and the increased passenger scrutiny initially provided a stimulus for corporate aviation. However, recurring airspace restrictions, some of which have become permanent, including lack of GA access to Regan National Airport for example, and new proposals by the Transportation Security Administration (TSA) to screen corporate aircraft passengers, all have had a negative impact on GA activity. Additionally, states such as New Jersey, Massachusetts, Florida, and Michigan, among others, have adopted their own security procedures for GA airports, aircraft, and pilots, and most recently, Mayor Richard Daley unilaterally closed Meigs Field, a GA airport located near downtown Chicago, citing security concerns.

c) Dramatically rising fuel prices and insurance rates. Coinciding with the impacts described above, aircraft operating costs have been rising as well, driven primarily by rising fuel and insurance costs. Historically, those costs have been cyclical and as a result they may decrease again, however, the cost of new aircraft and operating expenses have been increasing significantly faster than the consumer price index (CPI).



Source: FAA Air Traffic Control Tower Records

General aviation operations at three airports in New Hampshire, as shown above, have remained relatively steady since the mid-1990s, although there was a drop at Manchester Airport in 2002, part of which might be attributed to the on-going construction program during which one runway was closed for much of that year. Operations at Boire Field have actually increased over the last several years, representing one of the few airports that has experienced an increase.

4.4 AIRPORT USER SURVEYS

A number of New Hampshire airport user surveys were developed to obtain additional information on how airports and aircraft are used in New Hampshire. Three separate user surveys were developed for this study: an aircraft owner survey, an itinerant aircraft survey, and a business survey. These surveys were designed to document out how aircraft owners and users, and businesses within the state, use the system of airports in New Hampshire. Some of the specific issues addressed in the surveys were:

- Ownership of the aircraft
- Specific use(s) of the aircraft (e.g. recreational, business, etc.)
- Where maintenance and fuel services are purchased
- Use of specific facilities at an airport such as parking aprons, hangars, etc.

The surveys were used as an indicator of activity and preferences as opposed to a statistical survey. As such, the results of the surveys were not used to adjust forecasts of activity but were used to identify issues support the forecasting effort. The results of the surveys are detailed in the following sections.

4.4.1 AIRCRAFT OWNER SURVEY

The purpose of this survey was to document the types of aircraft operated, the types of missions flown, and what facilities and services were used at airports around the state. The survey also provided information on where aircraft owners purchase fuel and have their maintenance completed. A copy of the survey form and the detailed results are provided in Appendix 4-A.

The list of aircraft owners was obtained from the Division of Aeronautics. Six hundred surveys were sent to owners that represented a mix of aircraft from small single engine aircraft to corporate jets and helicopters. There were 135 surveys responses received and adjusting for surveys returned undeliverable, the response rate was 28%, which was very good.

The results of the aircraft owner survey are summarized below:

- Owners of single and multi-engine aircraft represented 90 percent of the survey responses, while owners of turboprops, jets, and helicopters represented the remaining 10 percent.
- Aircraft ownership was split 77% private/joint ownership, and 23% owned by businesses. The businesses ranged from small private business owners to large corporations. Additionally, business aircraft ranged from small single engine aircraft to corporate turboprop and jet aircraft.
- 68% of the aircraft owners used their aircraft for recreational purposes, and 27% of the owners used their airplanes for business purposes. The remaining 5% was for 'other' purposes.
- Owners indicated that 80% of the aircraft maintenance was performed in-state, from which three conclusions were drawn: a) existing services within the state are adequate to meet the maintenance requirements of aircraft owners; b) the high percentage of maintenance performed in-state greatly supports local FBOs and airports; c) there is no significant price or service differential with out-of-state operators drawing significant maintenance business out-of-state.
- Owners indicated that 92% of their fuel was purchased in-state, which indicates that fuel prices are in line with surrounding states, and New Hampshire is not losing potential fuel revenue to out-of-state airports. Several airports in NH (Dillant-Hopkins, Silver Ranch in Jaffery, and Boire Field) derive some of their fuel sales from airplanes based in neighboring states due to favorable price differential.

4.4.2 ITINERANT AIRCRAFT SURVEY

An itinerant (or transient) aircraft is one that operates at an airport on a temporary basis and is not based at that airport. Surveys were sent to several general aviation airports in the state that were representative of varying sizes and activity levels in the state. Airport managers were asked to distribute the surveys to itinerant aircraft pilots at their airports. A copy of the survey and detailed results are provided in Appendix 4-B.

Twenty-five surveys were completed and returned, which represented small single and twin-engine aircraft and several corporate jet aircraft. Aircraft usage included recreational, business, and training. The data was segregated into two groups, small single engine aircraft, and twin engine and jet aircraft. This was done for several reasons. The small single engine aircraft were used for both recreational and business usage and it was felt that this point is an important point to identify. Second, ownership of the aircraft was another point that needed to be identified, since there are small businesses that use single engine aircraft as a means of transportation for their businesses. For the jet aircraft, it was important to identify where they were flying from in order to understand how corporate aircraft are used. The results of the surveys are summarized below by type of aircraft operated.

Single Engine Aircraft

- 16 aircraft privately owned, four were owned by businesses, and one that was a rental aircraft.
- Seven aircraft flew from outside New England while 14 flew from New England states.
- Of the 16 privately owned aircraft, eight (50%) were used for recreation while the other eight (50%) were used for business purposes.
- The average dollars spent for trip for the privately owned aircraft was $65.

- Aircraft businesses owners included an FBO, an engineering company, and privately owned company, and an aerial advertising company.
- The average dollars spent by the business owned aircraft on business trips was $318

A key finding of the survey was that the average dollars spent by similar types of aircraft on business trips is almost 400% greater than the amount spent by aircraft owners on recreational trips.

Multi-Engine and Corporate Jet Aircraft

- All four survey respondents said that their aircraft were used for corporate transport
- Two jets were fractional ownership aircraft, a rapidly growing sector in business aviation
- Most of the flights originated in the United States, although one aircraft flew from Bermuda
- Two of the four respondents indicated they spent an average of $2,000 per trip, a major portion of which includes fuel (Jet A).

It is apparent that the amount of money spent by corporate aircraft operators is much greater than by operators of piston-engine airplanes, and that corporate operators represent a potentially significant source of revenue for FBOs and airports.

4.4.3 BUSINESS SURVEY

When analyzing the impact of airports on local, regional, and state economy, it is important to understand the linkages, if any, between airports and local (non-aviation) business establishments. Several aspects of such linkages and impacts include the types of airports (commercial or general aviation) used by businesses, the frequency and type of use (passenger or cargo), the importance of corporate or charter aircraft for businesses, and the importance and influence of airport facilities in business site selection. In an effort to gauge these impacts and define the linkages, a questionnaire was distributed to approximately 1,400 business establishments across New Hampshire. The questionnaire and detailed results are provided in Appendix 4-C. The Business and Industry Association of New Hampshire (BIA), the Nashua Chamber of Commerce and the Mt. Washington Valley Chamber of Commerce distributed the questionnaires through a combination of email, fax and mail-out distribution methods.

The purpose of the survey was not to statistically define the economic relationship between airports and businesses, but rather to describe the characteristics of the existing relationship. The survey results indicate that businesses primarily use airline services at Manchester Airport, and secondarily use corporate aviation at Lebanon and Pease International Tradeport, as well as the larger general aviation airports such as Boire Field, Concord, Dillant-Hopkins, and Laconia for business purposes. Specifically, there appears to be a direct connection between businesses and Manchester Airport, and an indirect connection between businesses and most general aviation airports. When respondents think of airports, by in large, they think of Manchester Airport. For example, when asked to name the nearest general aviation airport, one-third of respondents stated that Manchester Airport was the closest – which is unlikely given that only 9% of respondents were from the Manchester area. This finding is further substantiated by over 93% of respondents indicating that they use one of New Hampshire's commercial airports for business purposes (with 76% indicating they use Manchester Airport). The results indicate two possible recommendations. First, standardized data and information for each airport in the state is desperately needed. Second, it appears that outside of an awareness of Manchester Airport (and possibly to a lesser extent Pease International Tradeport and Lebanon) there is an apparent lack of knowledge within the business community relative to local airports. Their awareness of GA airports could potentially be increased with focused promotional and outreach efforts by the airports and the Division of Aeronautics.

Respondents overwhelmingly indicated that businesses use commercial airports to transport people rather than material, products or receive supplies. Approximately 77% of the respondents who use one of New Hampshire's commercial airports indicated that they use facility for the transportation of staff and clients. Only 16% of respondents indicated that they use commercial airports for delivering products or receiving supplies.

In order to gauge the importance of airports in business location decisions, businesses were asked to rank commercial airport accessibility within a list of site selection criteria. Responding businesses indicated that although commercial air travel is crucial to their business, commercial airport accessibility was not a consideration in locating their business and was ranked ninth out of ten respective site selection criteria. Factors such as a skilled labor force, the availability of land, and access to highways were top site selection criteria for businesses. This finding is further substantiated by 46% of respondents indicating that if their nearest general aviation airport were no longer available for use, they would simply go to the next closest airport. No respondents indicated that they would go out of business if the airport they use for business were no longer available.

Findings

Forty-five business establishments responded to the survey, indicating a response rate of approximately 3.2%. Business establishments responding had an average of 47 years in business and 39 years at their current or responding location, which indicates that although the survey response rate was low, responses were from an experienced establishment base. The sample of responding businesses ranged from very small consulting operations (with 1 employee) to very large multi-national corporations with thousands of employees. The average respondent has approximately 490 employees, however, it should be noted that this value includes several large employers (Dartmouth Hitchcock Medical Center and the University of New Hampshire), which skews with average-per-establishment total employment value upward. A summary of the findings is as follows:

- Businesses from all economic regions responded, however, most came from the North Country (24%), Nashua (20%), and Rockingham (11%) regions;

- Approximately one third (31%) of respondents were service establishments while durable and non-durable goods manufacturers comprised 24% and 13% respectively;

- None of the responding businesses were directly aviation related;

- One third (33%) of respondents indicated that Manchester Airport was the nearest general aviation airport to their business. This suggests that even though many general aviation facilities exists across the state (even in the "backyard" of respondents), Manchester Airport is perceived as the primary aviation facility in New Hampshire;

- Only one respondent was located on an airport facility. 36% indicated that they were within 11 to 25 miles of an airport while 18% indicated that they were over 25 miles away from an airport;

- 62% of responding businesses indicated that they use their local airport for business purposes (although one third of respondents indicated that their local airport was Manchester Airport);

- For establishments that use their local airport, approximately one quarter (24%) indicated that they use the facility 11 times or more annually;

- Approximately 70% of respondents indicated that they do not charter, own or rent corporate aircraft. For the respondents who use corporate aircraft, a variety of airports were listed as being utilized (Pease International Tradeport, Dillant-Hopkins, Lebanon, Skyhaven, Berlin) however, Manchester Airport and Concord Municipal Airport were sighted the most;

- Those respondents who charter or lease aircraft, approximately 60% take fewer than 5 trips annually;

- Businesses appear to rely heavily on commercial airports (primarily Manchester Airport) as a mode to reach clients with 47% using commercial facilities 11 or more times per year;

- Only 26% of respondents indicated that accessibility to commercial airports was either "very important" or "important" in terms of locating their business. The following are the top ten criteria listed as either "very important" or "important" for businesses selecting the current location for their business establishment:

  1) Skilled labor;
  2) Availability of land;
  3) Highway accessibility;
  4) Labor Costs;
  5) Close to population centers;
  6) Location (good exposure);
  7) Construction costs;
  8) Tax exemptions;
  9) Commercial airport accessibility;
  10) State and local incentives.

<u>Tourism Related Establishment Survey Introductions And Summary</u>

It is estimated that approximately 8% of the state GDP is generated by, and 64,000 individuals are employed within New Hampshire's tourism industry. Therefore, identifying the economic impact and linkage between those industry and local airports is important to regions with large tourism-based economies. In order to identify the link, if any, between tourist destinations and local airports, a survey of tourism-related businesses establishments was distributed through Ski New Hampshire (SkiNH) – an association representing ski resorts and tourism establishments in central and northern New Hampshire. In an effort to gauge the linkage and potential impacts, questionnaires were e-mailed to all 15 of SkiNH members.

Although many ski resort operators are unclear as to how their customers arrive at their establishment, the results of the survey indicate that those who travel to New Hampshire to ski usually access their destinations via automobile. For example, three quarters of the respondents indicated that the automobile was the most common form of transportation used by their customers. Furthermore, 50% of respondents indicated that between 1% and 10% of their customers fly into a New Hampshire airport in order to utilize their facility. Interestingly, when asked what types of airports are used by those customers who choose to fly, half indicated that commercial service airports are used (primarily Manchester Airport and Boston/Logan). None of the respondents indicated that general aviation airports are used, and none could provide the names of any general aviation facilities used by customers using their establishment.

Surveys conducted for the Division of Travel and Tourism Development have documented that the large majority of tourists visiting New Hampshire come from New England, New York, and Eastern Canada, and drive to the state, as opposed to fly in commercially or via general aviation. As a tourist destination, New Hampshire is different than other large seasonal tourist destinations such as the ski resorts in the Rocky Mountains, and major cities on the West Coast, where large percentages of their visitors travel via airlines.

Although it appears that airports are not a significant access point for tourists utilizing New Hampshire's ski destinations, it is unclear as to the perceived importance of airports by resort operators. When asked about the importance of New Hampshire's airports in bringing customers to their establishment, 50% indicated that airports were "important". However, 25% indicated that airports were "unimportant". Furthermore, respondents were split 50/50 when asked if the potential exits to use their local airport as a vehicle to bring more customers to their resort. Therefore, although a small sample of resort operators was used, indications are that the majority of tourists traveling to New Hampshire to ski use the automobile as their primary source of transportation while a very small number use air travel. This is in sharp contrast to Vail-Beavercreek (Colorado) ski region in which an estimated 80% of tourists fly into the region to ski.[1] This heavy reliance on air travel could be attributed to relative distance of the region to large population centers which is in sharp contrast to New Hampshire's ski areas.

Findings

A total of 4 business establishments responded to the survey, indicating a response rate of approximately 27%. All of the respondents are ski resort operators located in the North Country region and have been in operation for an average of 42 years. All of the respondents experience great fluctuations in employment due to the seasonal nature of skiing, however, each resort can employ between 30 and 600 during peak season. A summary of the findings is as follows:

- 100% of respondents indicated that 75% or more of their sales are tourism-based;
- Similar to the results of the business survey outlined previously in which respondents correlated New Hampshire airport activity to Manchester Airport, 25% of respondents indicated that Manchester Airport was the nearest general aviation facility. However, 2 respondents indicated nearby general aviation facilities (Berlin Airport and Whitefield Airport);
- 50% of respondents indicated that they do not use their local general aviation airport for business purposes;
- 75% of respondents indicated that they use one of New Hampshire's commercial airports with most using Manchester Airport. Again, in a similar fashion to the business survey, 75% of respondents indicated that they use the commercial airport for transporting staff;
- Use of commercial airports by resort personnel is common but is not relied upon as other businesses do. 50% of respondents indicated that they use a commercial airport between 1 and 5 times annually.

[1] Based on current estimates provided by the Vail-Beavercreek Tourism and Convention Bureau.

CHAPTER 5 - AVIATION FORECASTS

5.1 INTRODUCTION

This chapter presents the demographic forecasts for each region, as well as projections of aviation activity on a statewide, regional, and individual airport level. The purpose of developing these forecasts is to analyze the growth potential of aviation activity within the state, and to determine future airport roles, facilities, and financial needs of the airport system.

Aviation forecasts typically analyze historical trends and correlate those trends to socioeconomic indicators. The first part of this analysis assesses historical aviation trends, as well as socioeconomic characteristics statewide and within each region, and then presents the forecasts of socioeconomic indicators. The aviation forecasts were developed using socioeconomic indicators, along with other methodologies to project potential demand.

5.2 ECONOMIC ASSESSMENT OF THE STATE AVIATION SYSTEM

The strength and vitality of local, regional, state and national economies depend on the effectiveness and efficiency of the transportation system. With manufacturing and retail companies relying on just-in-time technologies and integrated supply chains, integrated intermodal transportation systems are crucial to the movement of materials and products and thus, economic stability and growth. Added to the movement of materials and products, the information age and the exchange of ideas also demand the efficient movement of people.

The linkage between economic activity and airports is such that positive economic activity generates spending within business and industry, which in turn generates spending on commercial air travel (to move materials, products or people). With the lost time and inconvenience experienced by business travelers due to congestion encountered at commercial airports, as well as concern about security at many large airports, businesses are turning away from the use of commercial airliners and are choosing to use private corporate aircraft. Along with the rising popularity of fractional aircraft ownership, positive economic activity has stimulated the lease and purchase of corporate aircraft for business purposes throughout the 1990s, up until 2002. A recent aviation industry study indicates that of the 500 largest U.S. industrial business establishments (Fortune 500), nearly two-thirds employ corporate aircraft in their business operations[1]. Furthermore, periods of positive economic growth generate increases in disposable income that stimulates the purchase and use of recreational aircraft, which are stored and maintained at local airports.

In order to define the linkage between New Hampshire's airports and the local and statewide economy, local and regional economic activity must be placed within the context of the national, New England, and statewide economic growth. As local and regional economic performance is reliant on decisions made by local politicians and policy makers, state, national and international policy makers also affect local economic performance. Therefore, in order to provide context for the linkage between New Hampshire's airports and economic activity, five interconnected elements are provided. First, a growth model was developed to provide an analysis of how New Hampshire's regions have performed based on employment growth, population growth and per capita income.

Analyzing past economic performance provides a more stable foundation for forecasting future economic performance. Second, forecasts of future economic performance are provided for both the national, New England and New Hampshire economies. Third, following the projections, detailed forecasts of New Hampshire's population, employment and income are provided. The past economic performance of the

[1] Aviation Data Service (AvData), *Business Aviation and the Fortune 500 Industrials*.

regions and the projected performance of the New England and national economies provide the context for the fourth element that provides forecasts for each of New Hampshire's regions. Finally, a summary of economic development activities and programs by New Hampshire's Department of Resources and Economic Development are provided. The State's economic development programs are designed to encourage economic activity throughout the state, which potentially impacts the use of local airports.

5.2.1 NEW HAMPSHIRE REGIONAL ECONOMIC ANALYSIS

As past economic performance within the regions provides lessons for predicting future performance, analysis of regional economic trend data throughout the 1990s is crucial in understanding potential economic direction. Typically, economic performance is determined through an analysis of indicators such as gross domestic/state product, employment, exports and total income – indicators that are, unfortunately, not tracked on a regional basis in New Hampshire. Due to the lack of typical regional economic performance indicators, the best available economic indicators were used in order to determine the level of economic growth within a respective region. These indicators included change in employment, population and per capita income between 1990 and 1999. Change in employment, population and per capita income were selected because they are credible representations of a region's economic performance and are also available on a regional basis throughout New Hampshire.

To analyze the performance of each of the regions, a growth model was developed. The model describes each of the regions in the context of the others terms of growth within the indicator categories. The methodology used within the growth model is not unlike that used in the Places Rated Almanac publication, which regularly analyzes and rates communities based on a predetermined set of indicators (criteria). However, in order to analyze economic performance, employment, population and per capita income values were substituted for crime, weather and other indicators used in Places Rated.

Specifically, the method used for the growth model is as follows. First, employment growth was determined for each of the regions. Once the growth rates were determined, point values (1 through 9) were assigned to each of the regions with the region with the highest growth receiving 9 points and the region with the lowest growth receiving 1 point. After assigning points, each region was ranked. The process was repeated for population growth and per capita income growth.

Upon ranking each region within the three indicator categories, the sum of each region's rankings were averaged to generate a mean score. Finally, the nine regions were then ranked based on the mean score of each individual economic category. Appendix 5-A provides a summary of each respective region's economic growth performance.

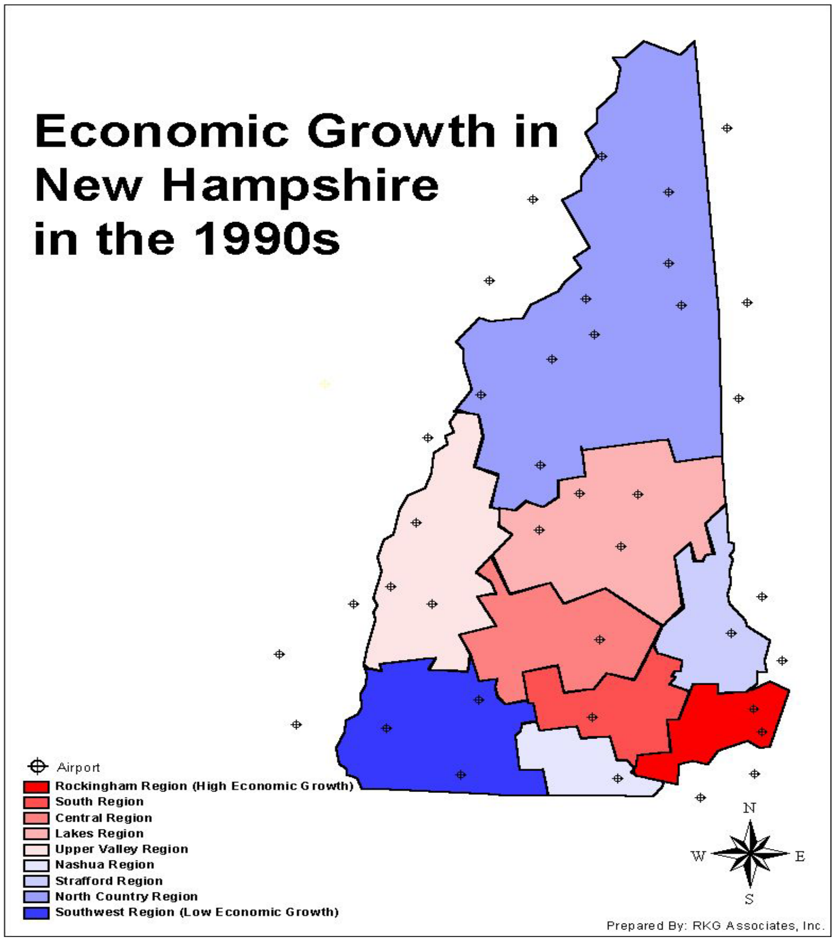
Table 5-1 - Ranking of Regions based on Economic Growth - New Hampshire Economic Regions

Overall Ranking	Region	Mean Score
1	Rockingham	8.3
2	South	6.7
3	Central	6.3
4	Lakes	5.0
5	Upper Valley	5.0
6	Nashua	4.7
7	Stafford	4.0
8	North Country	3.3
9	Southwest	1.7

It should be noted that the methodology used measures of economic growth that are not necessarily a measure of economic output for a respective region. For example, although the Nashua region is ranked comparatively low in terms of economic growth, it would be considered one of the highest generators of economic output (total employment, total wages, total sales, etc).

As shown in Table 5-1, the areas exhibiting the most economic growth include Rockingham, South and Central regions. Surprisingly, the Nashua and Strafford regions, typically considered economic growth regions, were near the bottom of the list. Figure 5-1 shows the relationship of the economic growth of each of New Hampshire's regions in relation to the state's 25 airports as well as airports in neighboring states.

Figure 5-1 – Economic Growth in New Hampshire in the 1990s



Due to the lack of consistent and reliable airport data, the traditional approach to determine the economic impact (direct, indirect and induced) of airports is not applicable, therefore prompting a different approach. The traditional methodology used in determining economic impact uses very narrow, specific set of criteria to determine the final answer – essentially casting the net quite narrowly. This formula produces a product (economic impact) that is measured as a dollar value.

However, the traditional method does not identify the qualitative value or utility an airport may have – which may be important for some New Hampshire airports. Therefore, in order to determine the qualitative and quantitative economic impact of the state's airports, another model was used - an impact analysis model. This model incorporated a scorecard for each airport in which five economic criteria were rated based on initial research (interviews, business surveys, etc.). Table 5-2 provides an example of the impact model scorecard used for each airport. The five metrics used for each airport included:

- Direct and indirect employment generation (does the airport directly employ or stimulate "spin-off" employment?);
- Tourism impact (does the airport handle significant tourist flight operations?);
- Business stimulation, growth and support (do local businesses establishments regularly use the airport?);
- Public utility (does the airport serve a community function for use by government agencies or public institutions?); and,
- Disappearance impact factor (what would be the economic impact to the region if the airport were to hypothetically discontinue operations).

Table 5-2 - Economic Impact Analysis Model Example - Twin Mountain Airport

Criteria	Low Value				High Value	Total
Direct and Indirect Employment Generation	1	2	3	4	5	1
Tourism Impact	1	2	3	4	5	1
Business Stimulation, Growth or Support	1	2	3	4	5	1
Public Utility	1	2	3	4	5	2
Disappearance Impact Factor	1	2	3	4	5	1
Total						6

The results of running each of the airports through the impact analysis model indicate that although there may be correlation between the economic impact of a local New Hampshire airport and its regional economy, in most instances the correlation appears to be weak and in some cases nonexistent. There are airports that have a noticeable economic impact which happen to be located in regions with high economic growth (Manchester Airport, Concord Airport and Pease International Tradeport, for example).

However, there also appear to be airports that have a high economic impact that are located in regions with relatively low economic growth potential, such as Boire Field. In fact, in some respects, both Boire Field and the City of Nashua appear to be reaching saturation in terms of developable land, so both of their respective rates of growth will slow in the future. Therefore, the relationship between the economic impact of the airport and the strength of the local economy could best be described as a "chicken and egg" scenario.

Based on quantitative and qualitative economic and airport-specific information collected for each region and airport, it appears that the majority of the System Plan's 25 airports (with the exception of Manchester Airport and Pease International Tradeport) play a supportive economic role within each region's economy, as opposed to being an economic engine or driver. A summary of the relationship between the economic growth of the regions compared to the estimated economic impact of each airport is shown in Appendix 5-A. A breakdown by airport is also provided in this appendix detailing specific economic benefits brought about by the airports.

5.2.2 NATIONAL, NEW ENGLAND, AND NEW HAMPSHIRE ECONOMIC FORECASTS

As previously mentioned, the strength and direction of the state, New England-wide, and national economies affects New Hampshire's airports through business spending to move materials, products or people through by air carriers. Economic activity is assumed to affect airport demand differently depending on the size and type of airport. For example, it is generally assumed that commercial service airports experience increases in commercial passenger enplanements as well as cargo volume handled during economic growth periods. Although Manchester Airport has been the most documented example of that characteristic, there are also exceptions to that rule of thumb.

The Rockingham Region has experienced significant growth throughout the 1990s and is projected to see the highest economic growth in the state through 2010. However, that demographic growth has not been reflected in the passenger traffic at Pease International Tradeport, and the primary reason is that the Seacoast Region is actually served by three commercial airports in addition to Pease International Tradeport: Manchester, Boston-Logan, and Portland International Jetport. Lebanon Municipal Airport is in a similar situation with regards to competition from other airports serving the Upper Valley Region.

In a growing economy, general aviation airports also experience increases in corporate and recreational operations. Based on the findings of the impact analysis model, and the generally assumed linkage between airports and the economy, two specific assumptions were used in formulating the economic forecasts. First, it is often assumed that aviation activity, and therefore airports, impact the performance of the economy. Second, while some general aviation airports play a substantial role in New Hampshire's economy, most actually play a supportive role, and some (such as privately owned airports with no services or facilities) have almost no impact on the local economy.

The following are forecasts for the national, New England, and New Hampshire state economies based on information provided by the New England Economic Project (NEEP). The forecasts are intended to provide a general framework for the potential demand for New Hampshire's regional airports.

5.2.3 NATIONAL ECONOMIC OUTLOOK

As of late 2000, the national economy continues to struggle with lackluster retail sales, falling capital investment and deteriorating export growth. Job growth has stalled (forecasted annual growth at 1.2% to 2005) and unemployment is rising, indicators which point to a slowing economy, fueled in large part by the collapse of the information technology sector. A broad spectrum of economic indicators (unemployment claims, personal bankruptcy filings and the stock market) point to a possible downturn of the national economy. Furthermore, Gross Domestic Product (GDP), although continuing to grow, is expected to increase by only 1.8% in 2001 – a relatively sluggish increase compared to annual increases in the mid 4% range during the late 1990s. However, as the number of mortgage applications has remained strong thus sustaining a strong housing market, the economy has been able to remain recession-free through the spring.

In terms of the outlook for economy, the New England Economic Project (NEEP), a non-profit economic think tank made up of chief economists from all New England states who maintain an economic forecast model, projects that indicators should continue to support the continued slowing of economic growth. For example, capital investment in equipment, an indicator that affects corporate aircraft investment, experienced annual growth rates of 11% to 15% between 1996 and 2000. However, forecasts project these rates to be cut in half (between 4% and 6%) between 2001 and 2005. Although the indicators should continue to signal the downturn in the economy, a recession could still be avoided. The avoidance of a full-blown recession is predicated on the Federal Reserve Board remaining aggressive in easing monetary policy and the government cutting taxes. Additionally, NEEP suggests that the economy may slide into recession if any one of the indicators continues to erode in the short term[2].

Between 2000 and 2002, the U.S. economy did slide into a mild and short-lived recession, and recover before the end of 2002. However, the economic recovery has been anemic, due in part to the sluggish stock market, the rising federal budget deficit, as well as the war on terrorism and new fast-spreading diseases such as SARS (severe acute respiratory syndrome). Economists now warn of a possibility of deflation, during which prices and income experience an extended period of decline. Deflationary periods, when they occur, can last

[2] Note that the economic forecasts provided are a"snapshot" of the forecasted economy at the time of preparation of this chapter. Since the time of preparation of the chapter, the national economy has slipped into a recession and has subsequently moved out of recession and into recovery/growth

for a long time.

5.2.4 NEW ENGLAND ECONOMIC OUTLOOK

Although still growing, the New England economy is mirroring the economic slowdown exhibited across the nation. The New England economy has outperformed the national economy in terms of annual GDP growth. For example, GDP growth in New England throughout the late 1990s outperformed the national average by between 0.5% and 2.3%. Currently, New England's GDP growth has declined to 2.2%, which is still 0.4% more than the national average.

NEEP suggests that the outlook for the New England economy is for continued positive growth and for the regional economy to begin to improve in the latter half of 2001. Although job growth to 2005 is expected to be 0.2% lower than the national average of 1%, the New England economy should model the national economy in terms of annual GDP growth over the same time period.

Throughout the late 1990s, annual growth in personal per capita income in New England has been strong, rising by an average of 3.9%. However, through 2005, per capita income is projected to slow by approximately 2% to an average annual growth of 1.8%.

Many of the factors that positioned the region to take advantage of the long economic expansion of the 1990s are currently putting the region in a relatively vulnerable position. The concentration of high technology oriented businesses was an advantage relative to business capital investment spending, particularly with investments in information technology, software and telecommunications equipment. Additionally, the growth of the high technology sector fuelled growth in the business service sector. The strong stock market helped the financial services industry and also contributed to large increases in income. The rise in income and wealth contributed to high consumer spending and therefore strong retail and tourism sectors. However, the same industries that contributed to a robust New England economy during the period of expansion may become liabilities if the national economy experiences a substantial slowdown.

5.2.5 NEW HAMPSHIRE ECONOMIC OUTLOOK

Compared to New England and the nation, New Hampshire's economy has yet to feel the effects of an economic slowdown. Employment growth is expected to increase by an average annual rate of 1.5% - outperforming the nation and the region. Although New Hampshire's projected employment growth rate is comparatively strong, it is down from an annual growth rate of 2.8% between 1995 and 2000. The slower employment growth is attributed in part to the downsizing of the high technology sector. Interestingly, as the high technology sector attempts to stabilize itself, many more traditional manufacturing industries in New Hampshire have experienced and continue to experience labor shortages. Through 2005, growth in New Hampshire's Gross State Product (GSP) is projected to decline to more modest levels, which will be slightly higher than GDP growth in both New England and nationally over the same period. Further reinforcing the strong state economy, population growth in New Hampshire is expected to increase by approximately 1% (0.6% more than New England) annually to 2005.

Although the national and New England economies have experienced a slowdown, indicators signal that New Hampshire has been able to weather the ill effects of the downturn. For example, with the establishment of foreign trade zones at Manchester Airport and Pease International Tradeport, New Hampshire's diversified economy led the six New England states in 2000 in growth of international trade. Although tourism is one area that typically is affected by a slowing economy, tourism-based revenue and tourist visits hit record levels during winter 2001. The state's tourism economy is expected to continue its strong performance throughout the rest of the year. Additionally, the residential real estate economy continues to show growth with a lack of supply of homes increasing housing prices. Interestingly, although the volume of sales has slowed in recent months, prices continue to climb.

NEEP forecasts that New Hampshire's cost of living and quality of life advantages over the other New England states should ensure a better than average performance in employment growth in the future, as has been the trend.

5.2.6 NEW HAMPSHIRE POPULATION, EMPLOYMENT AND INCOME PROJECTIONS

According to population projections provided by the New Hampshire Office of State Planning and the U.S. Census, between 2000 and 2010, New Hampshire's population is projected to increase by approximately 12,300 residents per year – representing an annual growth rate of approximately 1% (see Table 5-3).

Table 5-3 - Population Projections 2000-2010 State of New Hampshire

	1990	2000	2005	2010
New Hampshire	1,103,252	1,235,786	1,306,637	1,358,746
Total Growth Rate	--	12.0%	5.7%	4.0%
Annual Growth Rate	--	1.2%	1.1%	0.8%
Source: New Hampshire Office of State Planning and U.S. Census				

Based on New England and statewide annual per capita income and growth rates provided by the New England Economic Project, income projections for five and ten-year time frames were calculated. Between 2000 and 2005, per capita income in New Hampshire is projected to increase by an average annual rate of 1.95%. Therefore, based on this average annual increase, the statewide per capita income should be approximately $33,989 by 2005 and $37,218 by 2010. Comparatively, per capita income in New England, although slightly higher, should increase by 0.5% less than the New Hampshire rate between 2005 and 2010. Table 5-4 shows a comparison between projected per capita income for both New Hampshire and New England.

Table 5-4 - Per Capita Income Projections: 2000-2010 United States and New Hampshire

	2000	2005	2010
New Hampshire	$30,959	$33,989	$37,218
% Increase	--	9.8%	9.5%
New England	$33,847	$36,958	$40,284
% Increase	--	9.2%	9.0%
Source: New England Economic Project and RKG Associates, Inc.			

According to employment projections provided by New Hampshire Employment Security, over a ten year period between 1998 and 2008, total employment is projected to increase by approximately 105,000 – representing an average annual increase of 1.5% (see Table 5-5).

Table 5-5 - Employment Projections: 1998-2008 New Hampshire

	1998	2008	# Change	% Change	Avg. Ann. % Increase
New Hampshire	632,560	737,560	105,000	16.6%	1.5%
Source: New Hampshire Employment Security and RKG Associates, Inc.					

In terms of employment growth within specific occupation sectors, New Hampshire's Office of Employment Security projects that between 1998 and 2008, the fastest growing occupations will be within the information technology and medical service sectors. Table 5-6 shows the projected top ten fastest growing occupations in New Hampshire between 1998 and 2008. However, the data supporting this projection may not accurately reflect the recent structural shift occurring in the high tech/information sectors.

Table 5-6 - Ten Fastest Growing Occupations (1998 Employment Greater Than 100) New Hampshire

Title	Employment		Total Change	
	1998	2008	Number	Percent
Computer Support Specialists	1,942	3,649	1,707	87.9%
Systems Analysts	2,706	5,070	2,364	87.4%
Desktop Publishing Specialists	180	332	152	84.4%
Database Administrators	296	511	215	72.6%
Home Health Aides	2,166	3,515	1,349	62.3%
Instructional Coordinators	303	486	183	60.4%
Physician Assistants	217	347	130	59.9%
Computer Engineers	2,585	4,061	1,476	57.1%
Medical Assistants	791	1,241	450	56.9%
Medical Records Technicians	349	535	186	53.3%

Source: New Hampshire Employment Security

5.2.7 REGIONAL ECONOMIC FORECASTS

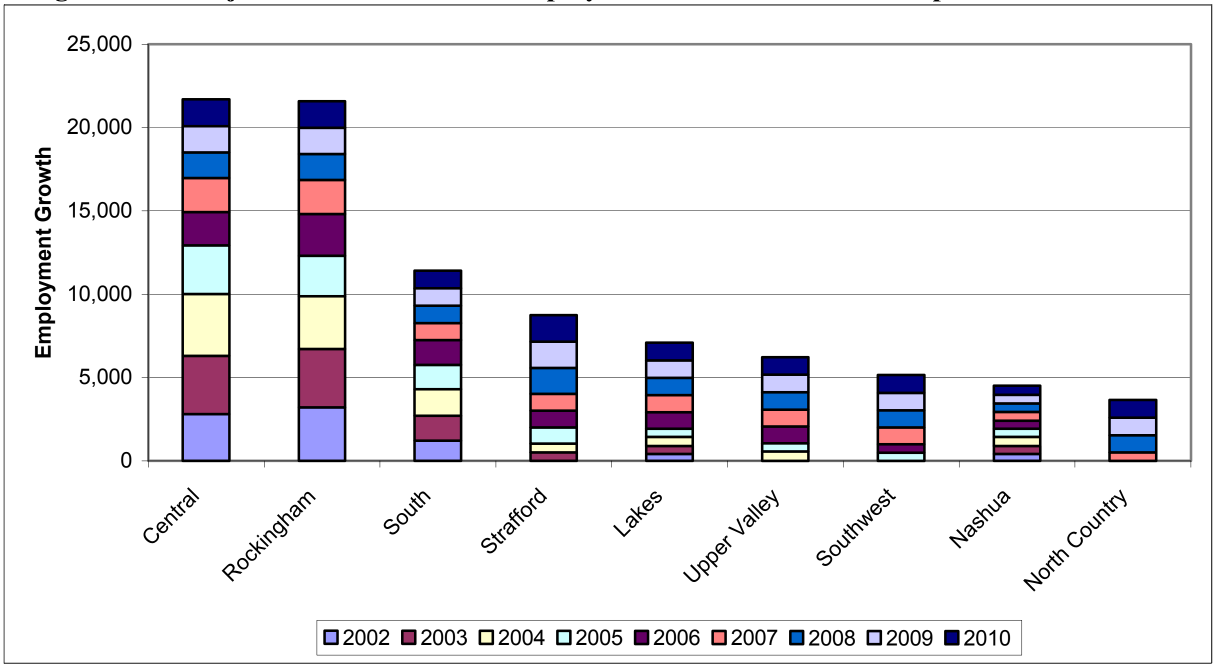
The following forecasts for New Hampshire's economic regions are based upon three criteria:

- historical economic performance of the region over the past decade;
- projected short-term economic performance of the New England region; and,
- projected short-term performance of the national economy.

What the forecasts intend to do is provide a broad-brush description of projected short to medium term (1 to 2 years) economic performance based on local, regional and national economic indicators. As such, specific indicator numbers for forecasted economic performance are not provided, however, trend graphs are provided for projected long-term (2 to 10 years) population and employment growth. Generally, those regions that have surplus infrastructure capacity with a diversified base of establishments that employ a large number of people, a well-educated workforce and a strong tourism component, should remain strong. It is uncertain whether regions with a high concentration of information technology or manufacturing establishments can remain competitive during an economic slowdown, however, preliminary indications are that while there may be a net reduction in jobs in these sectors, the overall impact will be relatively small as new companies are created and as surviving firms absorb these skilled employees.

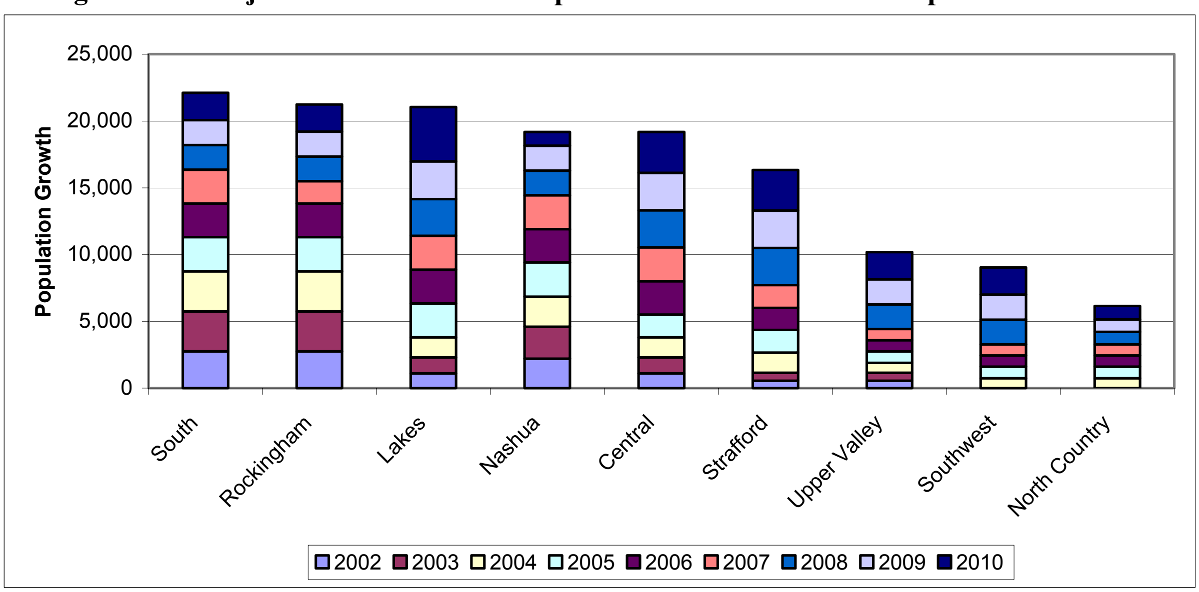
Projected employment growth within a region is based upon a number of assumptions including the projected economic outlook for New England and the country, type of existing business establishments, access to transportation networks, the availability of developable land and the type and availability of regional infrastructure. Besides the region's employment track record, the type and availability of infrastructure is assumed to be the most influential determinant of potential employment growth in a region. As such, business establishments looking to expand operations or create new facilities are assumed to locate to regions with existing infrastructure in place and/or infrastructure capacity rather than locate in regions without infrastructure capacity. Therefore, as shown in Figure 5-2, based on the assumptions outlined above, the regions that have typically experienced employment growth (southern regions), should continue to attract employment.

Figure 5-2 - Projected Distribution of Employment Growth in New Hampshire: 2002-2010



Interestingly, the Nashua region, typically considered an area of economic growth, should experience low employment growth due to limited infrastructure and developable land. As the development capacity within the southern regions becomes constrained, it is anticipated that neighboring regions with surplus capacity will capture this growth – thus relatively large employment gains for the Southwest, Strafford, Lakes and Upper Valley regions.

Figure 5-3 - Projected Distribution of Population Growth in New Hampshire: 2002-2010



The assumptions used to forecast employment growth within the regions are similar to those used to forecast population growth. However, in addition to the economic assumptions, population growth may be more directly correlated to quality of life factors within each of the respective regions. For example, the Lakes Region's high quality of life is projected to capture approximately 15% of New Hampshire's entire population growth over the next ten years – almost double its capture rate of the 1990s.

As with projected employment growth, regions that have typically captured population growth are anticipated to continue to capture future population growth. Furthermore, development pressure on existing infrastructure and land supply in the southern regions will force development to move into neighboring regions. Figure 5-3 provides projected population growth within New Hampshire's regions over the next 10 years.

In addition to descriptions of projected economic performance, the projected indicators for each region have been "boiled down" on a scale that simply indicates the relative strength of the region's economic future over the short term. The scale ratings used are described as follows:

STRONG:	very positive economic performance is expected;
MODERATE STRONG:	modest economic growth is expected;
STABLE:	neither growth nor decline is expected;
MODERATE WEAK:	modest economic decline is expected;
WEAK:	very negative economic performance is expected.

5.2.8 ROCKINGHAM REGION

In terms of economic growth, the Rockingham Region has been the strongest of any region in the state. From an economic indicator perspective, the region has remained competitive due to factors such as strong employment growth, strong infrastructure capacity, highly educated workforce and a diversified business establishment base (information technology; finance, insurance and real estate (FIRE); health care; manufacturing and services) that includes many larger employers.

Additionally, the region attracts many new residents from the greater Boston area due to its high quality of life, which fuels retail sales and a strong local real estate market. Due to its diversified establishment base, the region should remain economically strong in the short term even if the national or New England economies stall. **ECONOMIC FORECAST: STRONG**

Figure 5-4A - Projected Employment Growth: Rockingham Region 2002-2010

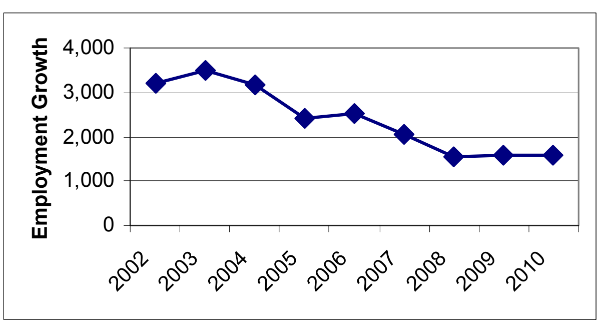
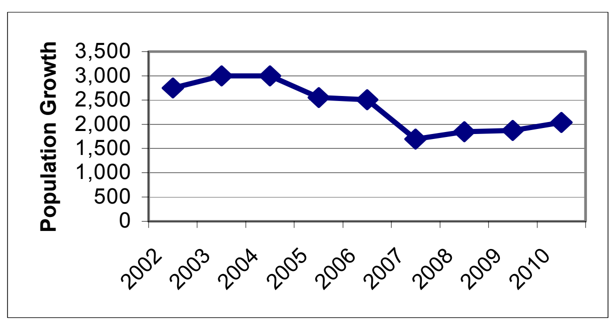


Figure 5-4B - Projected Population Growth: Rockingham Region 2002-2010



5.2.9 NASHUA REGION

Similar to the Rockingham Region, the Nashua Region has many strengths which have contributed to a strong local economy including a highly educated workforce, a diversified business establishment base and geographic proximity (commuting distance) to the greater Boston region. Additionally, the region enjoys the economic strength of many large employers that are spread across many industry sectors (FIRE, health care, and manufacturing). However, the region may become susceptible during a slowing in the national and/or New England economy due to the strong presence of the information technology firms throughout the region as well as limitations due to infrastructure capacity. **ECONOMIC FORECAST: MODERATE STRONG**

Figure 5-5A - Projected Employment Growth: Nashua Region 2002-2010

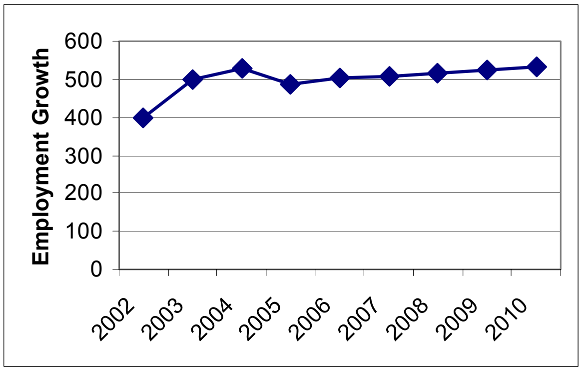
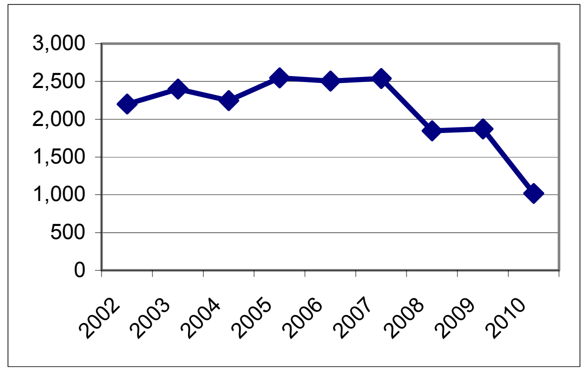


Figure 5-5B - Projected Population Growth: Nashua Region 2002-2010



5.2.10 SOUTHWEST REGION

In terms of economic growth, the Southwest Region has not achieved the growth experienced throughout New Hampshire's other economic regions. In light of the slowing national and New England economies, and based on the region's track record over the past decade, indications are that the region should continue to under-perform economically. The lack of a diversified economy combined with only a handful of large employers further accentuates the susceptibility of the region during a period of economic slowdown. Furthermore, the region is not perceived as a definitive tourist destination, which compounds the susceptibility. However, the region may be able to tap into the economic strength of the greater Boston area and the abutting regions of New Hampshire due to its geographic proximity. **ECONOMIC FORECAST: MODERATE WEAK**

Figure 5-6A - Projected Employment Growth: Southwest Region 2002-2010

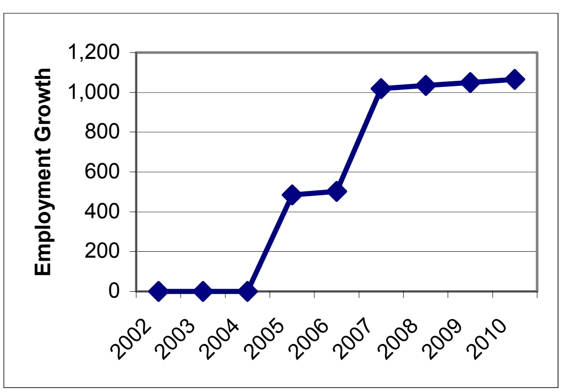
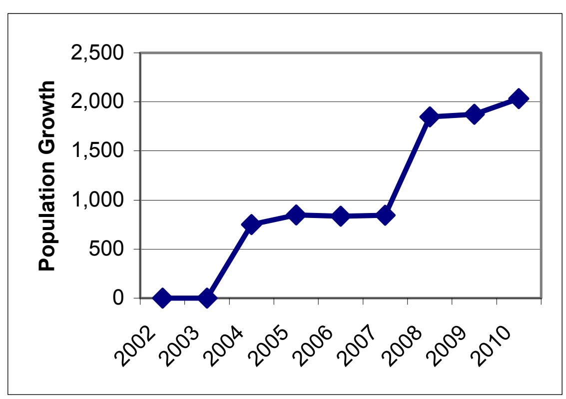


Figure 5-6B - Projected Population Growth: Southwest Region 2002-2010



5.2.11 SOUTH REGION

Similar to both the Rockingham and Nashua Regions, the South Region has enjoyed a strong economy during late 1990s and early 2000s. The factors that have contributed to the strong growth (income growth, large employment growth and diversified economy) should continue to help the region remain economically strong in the short term. Furthermore, the region has a large number of employers that are spread across many industry sectors (service, FIRE, health care and manufacturing) that add to the region's continued strong economic position. **ECONOMIC FORECAST: STRONG**

Figure 5-7A - Projected Employment Growth: South Region 2002-2010

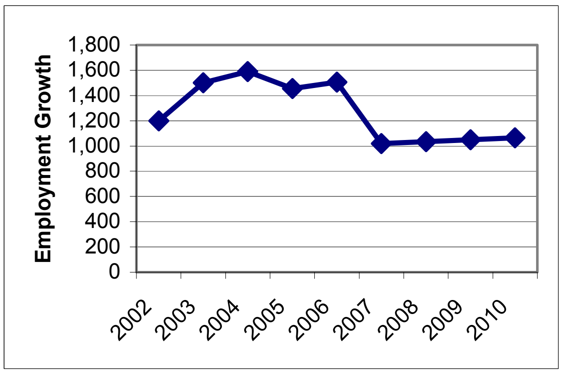
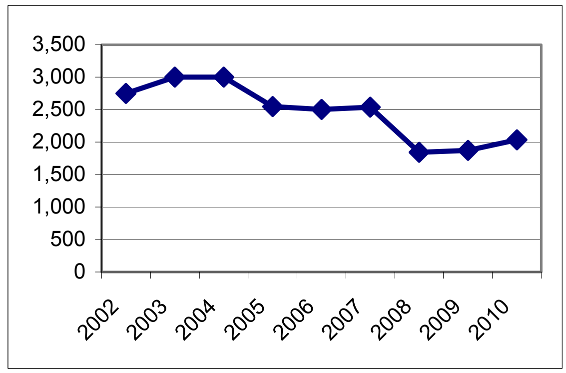


Figure 5-7B - Projected Population Growth: South Region 2002-2010



5.2.12 CENTRAL REGION

Three of the biggest factors that have contributed to the strong economic performance of the Central Region over the past five years have been the strong employment growth, the highly educated workforce, and the stable influence of the state government on the regional economy. Additionally, the influence of the health care industry on the region should continue to create stable to positive economic growth. **ECONOMIC FORECAST: MODERATE STRONG**

Figure 5-8A - Projected Employment Growth: Central Region 2002-2010

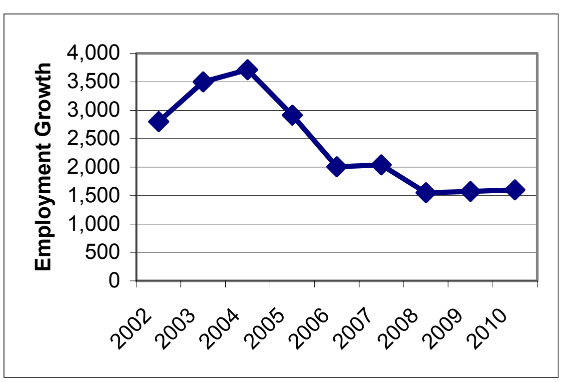
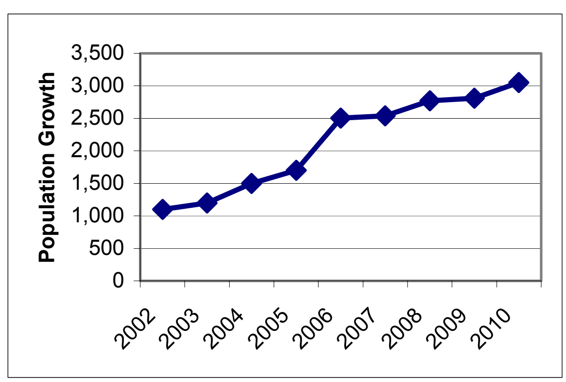


Figure 5-8B - Projected Population Growth: Central Region 2002-2010



5.2.13 STRAFFORD REGION

Throughout the 1990s, the Strafford Region has experienced relatively modest economic growth compared to the other economic regions. The strong concentration of employment within the manufacturing and information technology industries makes the region susceptible to a weakening economy. For example, the region's largest employer (the former Cabletron Systems) is a large information technology firm, which may be subject to pressure during an economic slowdown fuelled by a collapse in the information technology industry. Similarly, other large employers are tied to the automotive and insurance industries, which are also susceptible to shifts based on the national economy. **ECONOMIC FORECAST: STABLE**

Figure 5-9A - Projected Employment Growth: Strafford Region 2002-2010

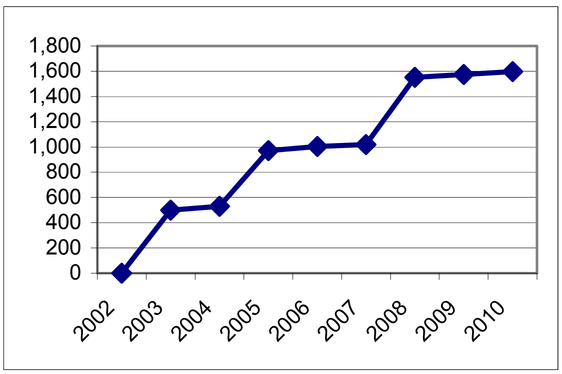
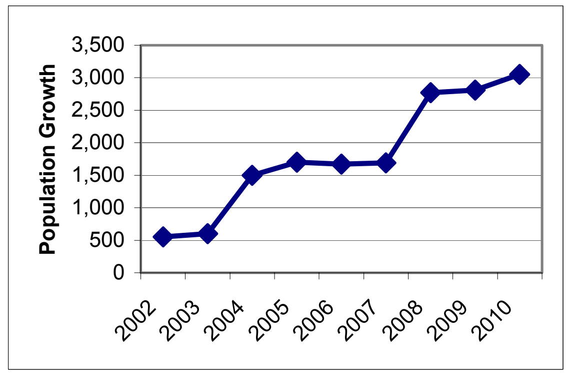


Figure 5-9B - Projected Population Growth: Strafford Region 2002-2010



5.2.14 LAKES REGION

The growth of the Lakes Region's economy has been predicated on the attractiveness and high quality of life associated with the region. The attractiveness of the region combined with the increasing number of tourists visiting the state, has fueled strong growth in seasonal home construction and retailing that, in turn, has created opportunities for the construction industry. However, the small number of larger employers makes the region susceptible to the negative influence of a slowdown of the nation or New England economies. **ECONOMIC FORECAST: STABLE**

Figure 5-10A - Projected Employment Growth: Lakes Region 2002-2010

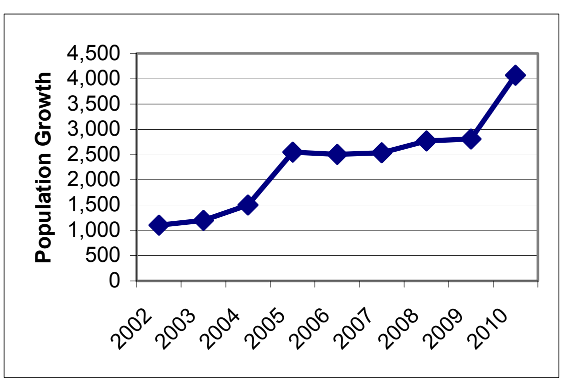
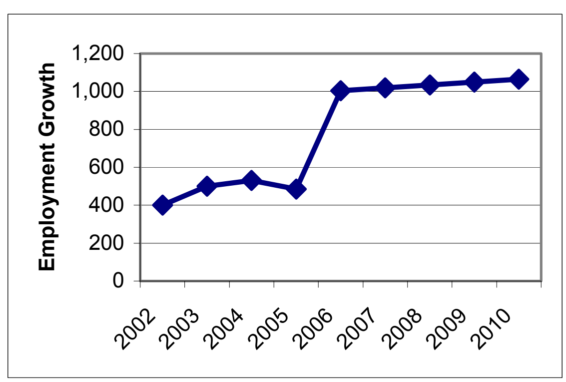


Figure 5-10B - Projected Population Growth: Lakes Region 2002-2010



5.2.15 UPPER VALLEY REGION

Two very large employers, Dartmouth-Hitchcock Medical Center and Dartmouth College, have a large influence the Upper Valley's economy. The influence is such that the region has enjoyed high workforce education levels and strong income growth throughout the 1990s. It is anticipated that the stabilizing influence of the large employers in the region should reduce the impact of downturn of the national or New England economies over the short term. Furthermore, the attraction of the region to tourists also stabilizes the regional economy. **ECONOMIC FORECAST: STABLE**

Figure 5-11A - Projected Employment Growth: Upper Valley Region 2002-02010

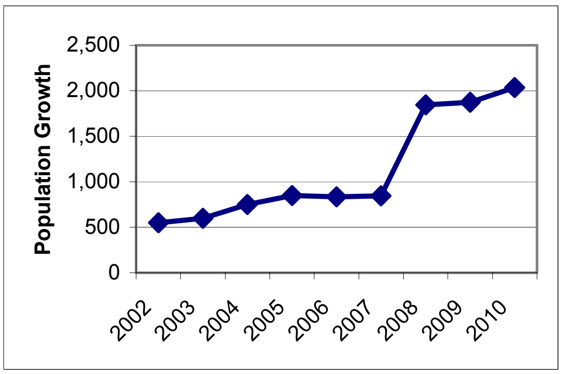
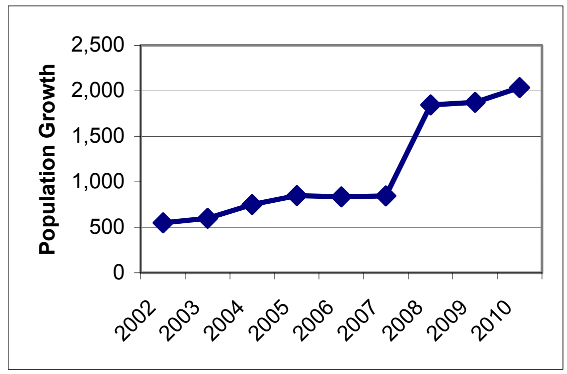


Figure 5-11B - Projected Population Growth: Upper Valley Region 2002-2010



5.2.16 NORTH COUNTRY REGION

The North Country shares many of the same economic indicators (lack of economic diversity and relatively few large employers) with the Southwest Region, which makes the region susceptible during an economic slowdown. Furthermore, the future of the region's largest employer (Pulp and Paper Mill of America in Berlin) is in serious jeopardy due to the company's unstable financial condition. The fallout from the instability associated with the mill could hurt the regional economy over the short term due to lack of consumer confidence and outside investment. However, the region differs from the Southwest in one respect in that it is seen as a destination for tourists, which is a positive influence on the economy. **ECONOMIC FORECAST: MODERATE WEAK**

Figure 5-12A - Projected Employment Growth: North Country Region 2002-2010

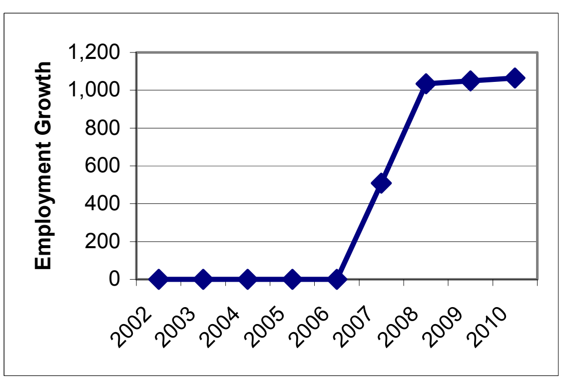
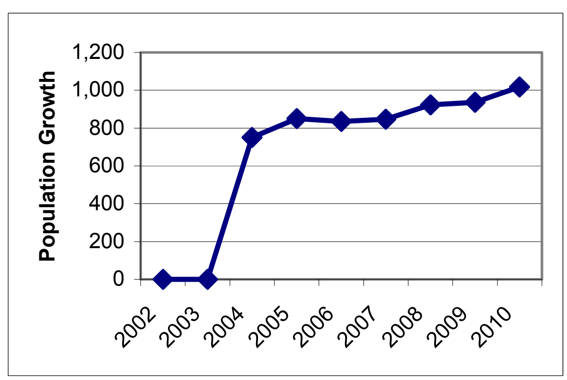


Figure 5-12B - Projected Population Growth: North Country Region 2002-2010



5.3 AVIATION ACTIVITY FORECASTS

This section presents the aviation activity forecasts for the System's 25 airports. Forecasts were developed for both commercial service and general aviation airports. Forecasts of passenger enplanements at commercial service airports, general aviation activity, and cargo were developed. Where airports had recently prepared and adopted aviation forecasts in master plans or other documents, those projections were used in this analysis.

5.3.1 HISTORICAL ACTIVITY STATISTICS

Historical trends in aviation activity, as well as the socioeconomic factors described above, provide effective ways to understand the forces acting on demand for aviation services and the resulting levels of activity within a given region. Correlating aviation activity with socioeconomic indicators provides an important methodology for developing forecasts. However, it is sometimes difficult to develop statistical correlation between general aviation (GA) activity and socioeconomic indicators on a local or regional level, in part because GA activity represents a relatively small segment of overall transportation services.

It was found during the inventory process of this System Plan that there is no consistent historical data on aviation activity for many of the system airports. There are three sources for aviation data for airports in the state, FAA Airport Master Record Form 5010 data, airport master plans, and air traffic control tower counts for the four airports with active towers: Manchester, Pease International Tradeport, Lebanon, and Boire Field.

FAA Airport Master Record Form 5010 includes estimates of numbers of aircraft operations and based aircraft. The Division of Aeronautics collects the data when they inspect each airport. The information is typically provided by airport managers, and represents estimates of activity if there is no air traffic control tower.

Airport master plans have been completed for most of the 11 airports that are included in FAA's National Plan of Integrated Airport System (NPIAS), although some master plans are more than five years old. However, the 14 non-NPIAS airports have not completed master plans, and without air traffic control towers, their operational data are based on estimates versus traffic counts, and those estimates are included in the FAA 5010 data.

Of the four airports with control towers (Manchester, Pease International Tradeport, Lebanon, and Boire Field) only two (Manchester and Pease International Tradeport) are open 24 hours a day, seven days a week. Lebanon Tower is open 6am – 10pm daily[1], and Boire Field control tower is open from 7am – 9pm daily[3], although Boire's hours may be extended due to growing traffic levels. As a result, ATC personnel do not count aircraft operations conducted at Lebanon Airport and Boire Field during the period when the towers are closed, so the tower in effect undercounts total operations.

It was found that for the airports that have not prepared master plans, historical data was not available. In fact, the only data that was available for those airports included current year statistics, as well as traffic estimates from the previous State Airport System Plan prepared in 1992. As a result, only limited amounts of operational data were available, but not sufficient information to develop statistically significant trend-lines.

<u>*Other Data Sources*</u>

In order to compile additional data about based aircraft and operations, other sources were consulted. FAA

[1] Source: FAA, Airport/Facility Directory, Northeast US

conducts a nationwide survey of aircraft owners every two years (the General Aviation and Air Taxi Activity Survey), and compiles the results on a national, statewide, and FAA region level. That information provides an indication of activity levels on a large scale, but it is not broken down by airport or local region, as shown below. Although New Hampshire has the second highest number of based aircraft in New England (behind Massachusetts), it has the third highest number of hours flown (behind Massachusetts and Connecticut).

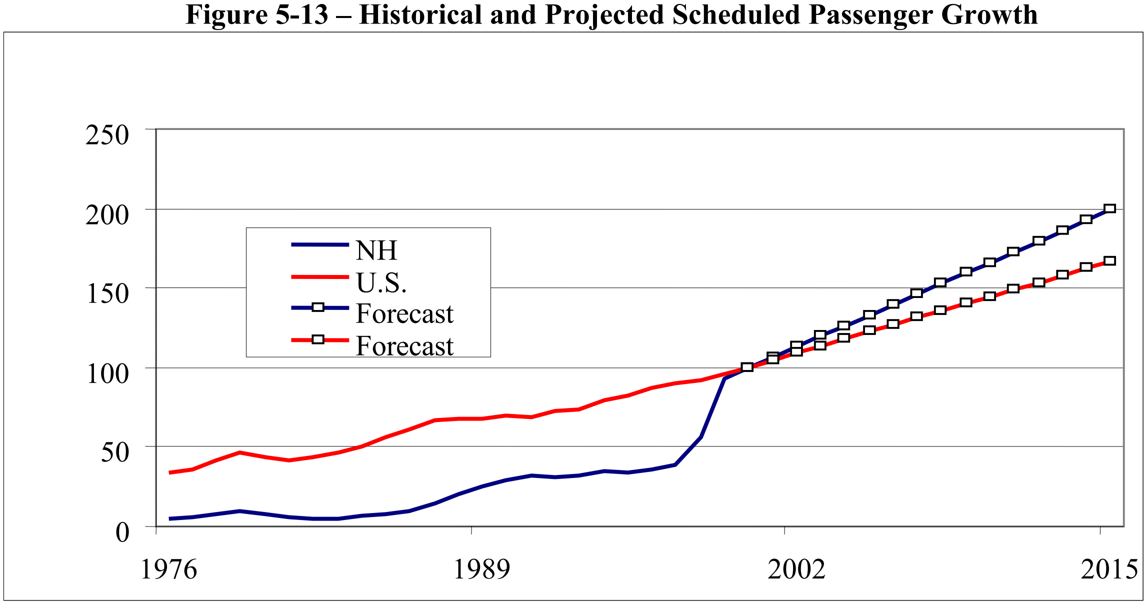
State	Based Aircraft	Hours Flown (x1,000)
Connecticut	1,573	203
Maine	1,207	143
Massachusetts	2,600	366
New Hampshire	1,753	196
Rhode Island	232	27
Vermont	546	40
New England - Total	**7,910**	**975**
Source: FAA General Aviation and Air Taxi Activity Survey, 2001		

Another source of information that was examined was the aircraft registration data compiled by the NH Division of Aeronautics. The registration data, however, was not maintained consistently over given time periods, so it does not provide an accurate trend-line of based aircraft. Many states have also addressed the issue of based airplanes that do not register with the state as required by law, and enforcing registration requirements. However, enforcement is both time-consuming and labor-intensive, and many state agencies have limited resources.

5.3.2 PASSENGER ENPLANEMENT FORECASTS

As noted previously, there are three commercial service airports in the State - Manchester Airport, Pease International Tradeport, and Lebanon Airport. More than 96% of all passenger enplanements occur at Manchester Airport, which also accommodates the large majority of air cargo as well. Lebanon Airport is currently served by USAirways Express, while Pease International Tradeport is served by Pan American Airways (Boston-Maine Airways).

Figure 5-13 – Historical and Projected Scheduled Passenger Growth



FAA prepares Terminal Area Forecasts (TAF) for airports in the NPIAS. The TAF includes both historical and forecast data, and as such provides a useful tool to show how aircraft operations and passenger growth in New Hampshire compares to national trends. The TAF shows total passenger enplanements at the three commercial service airports and also presents national passenger statistics as well (Figure 5-13). Figure 5-13 shows historical and future passenger levels in relation to the base year (2001), which is indexed at 100. Although passenger growth in New Hampshire increased at a lower rate than the U.S. between 1976 – 2000, Manchester is projected to outpace the U.S. through 2015 in terms of future growth rates.

The sharp rise in traffic in 1998 was due to the introduction of service by Southwest, MetroJet, Northwest, and Continental Airlines at Manchester Airport, and although MetroJet has since discontinued service, Southwest has more than compensated for their departure. With the advent of low-fare service, Manchester Airport's market area increased significantly, and now encompasses all of New Hampshire, northeastern Massachusetts, southern Maine and southern/central Vermont.

Based on trends in the airline industry and discussions with each of the commercial service airport managers, it was concluded that Manchester Airport will continue to be the primary commercial service airport in the state through the end of the planning period.

Southwest's marketing strategies are evident in their selection of both Manchester and Providence, and subsequently Bradley International Airport in Connecticut. These airports allow Southwest to capture traffic in all of southern, central, and eastern New England, while avoiding the hub airport, in this case, Boston Logan.

Although Pease International Tradeport and Lebanon will continue to be commercial service airports throughout the planning period, the fact that their market area overlaps several other commercial airport market areas, including Manchester, will continue to have an impact on their ability to attract additional airline service. Due to the significant financial problems and retrenchment of the airline industry in 2001 and 2002, it is not anticipated that any other airports in New Hampshire will attract airline service through 2010. Each of the three commercial service airports – Manchester, Pease International Tradeport, and Lebanon - is discussed individually below.

Manchester Airport

Manchester Airport has been the fastest growing commercial service airport in the State since the early 1990s, and was the fastest growing airport in the country in 1999 and 2000. Manchester has transformed over time from a small commercial service airport served by one airline to a small-hub airport being served by nine major commuter airlines. The addition of Southwest Airlines, MetroJet, Northwest, and Delta in late 1998 was a major turning point in the airport's growth. As shown in the table below, Manchester's activity levels jumped significantly with the addition of low-fare service and the subsequent competition generated by Southwest and MetroJet in 1998.

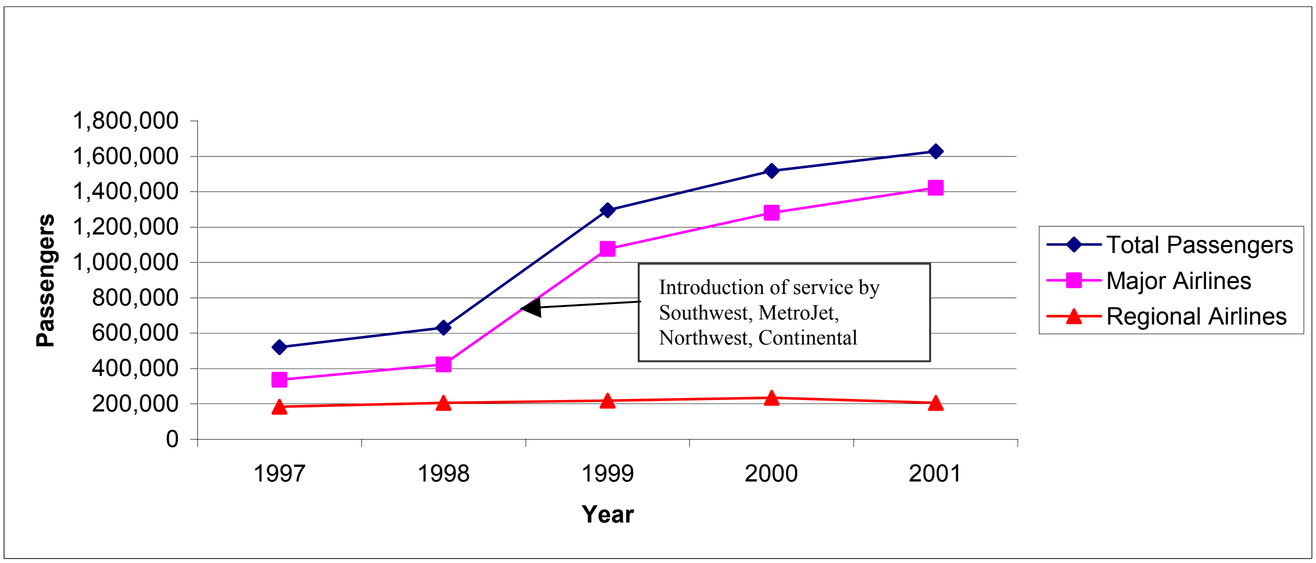
Table 5-7 and Figure 5-14 show historical enplaned passengers. It can be seen that the growth has been exclusively by major airlines as opposed to regional/commuter passengers.

Table 5-7 –Enplaned Passengers at Manchester Airport				
Year	Major Airlines	Regional/Other Airlines	Total	Annual % Increase
1997	336,107	184,460	520,567	8.8
1998	423,866	206,943	630,809	21.2
1999	1,077,073	218,671	1,295,744	105.4 *
2000	1,281,698	235,321	1,517,019	17.1
2001	1,421,640	205,708	1,627,348	7.3

Source: Manchester Airport Bond Documentation Series 2001
* Highest growth rate in the United States

Airlines such as United, US Airways, Delta, and Continental have used their regional airline partners to start service and/or generate additional traffic at Manchester, and the mainline carrier takes over their routes shortly thereafter due to the strong traffic growth. Some of the growth in traffic at Manchester Airport since September 11, 2001 has come from former Boston Logan Airport passengers who take advantage of the better ground access, fewer delays, and stronger sense of security at Manchester.

Figure 5-14 – Passenger Enplanements – Manchester Airport



As shown in Table 5-7, the annual percentage increase in 1999 was dramatic, although the growth rate has decreased since 1999 as the market stabilized. It should also be noted that the growth experienced in 2001 was still above the national average.

Leigh Fisher & Associates, who developed the airport's bond documents, developed forecast of activity from 2002 to 2007. Their forecasts incorporated the impact of recent events, including the September 11 2001 terrorist attacks, and the assumptions below describe how the forecasts were developed:

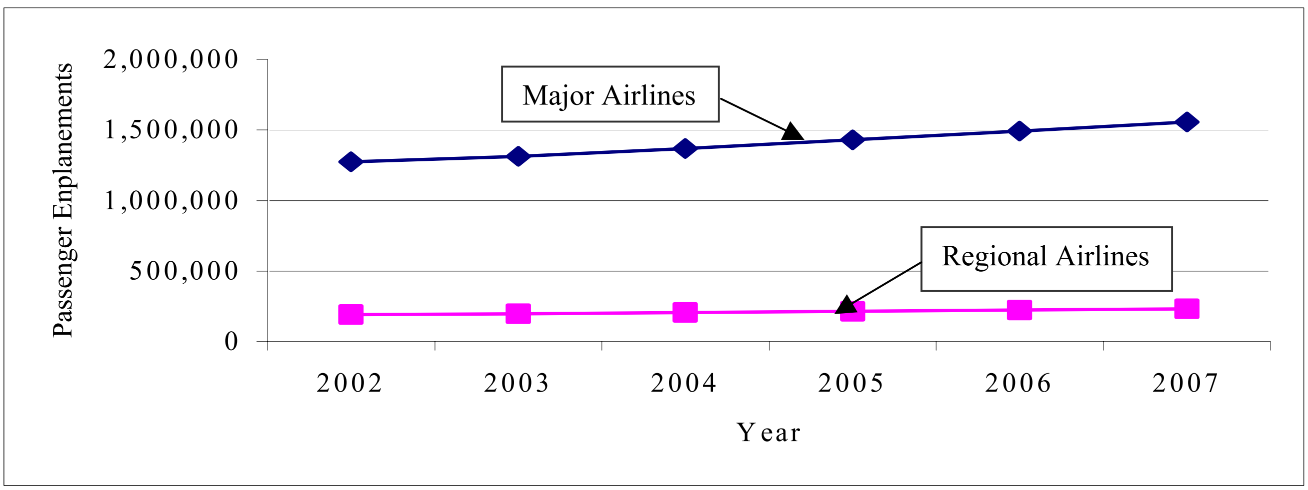
- For Fiscal Year (FY) 2002, the airport will be 10 percent below FY 2001 activity levels which accounts for the lost passenger volumes and effects of the current recession.

- It is assumed that in FY2003, the airport will regain most activity levels experienced in FY 2001.

Table 5-8 – Forecast Enplaned Passengers Manchester Airport				
Year	Major Airlines	Regional/Commuter/ Other Airlines	Total	Annual % Increase
2002	1,275,000	190,000	1,465,000	(10)
2003	1,314,000	196,000	1,510,000	3.1
2004	1,370,000	205,000	1,575,000	4.3
2005	1,429,000	214,000	1,643,000	4.3
2006	1,491,000	223,000	1,714,000	4.3
2007	1,556,000	232,000	1,788,000	4.3
Source: Manchester Airport Bond Documentation Series 2001				

- For FY 2003-2007, it was assumed that the national economy will rise 2.0-2.5 percent annually, the general economy of the Manchester region will also continue to increase and attract diversified mix of industry and businesses, and that service by Southwest and other airlines will continue to be offered. Based on these assumptions, Table 5-8 presents the forecast developed by Leigh Fisher Associates and shown graphically in Figure 5-15.

Figure 5-15 – Forecast Enplaned Passengers Manchester Airport



As shown in the table above, passenger enplanements are expected to grow from 1.5 million passengers in 2002 to almost 1.8 million passengers by 2007. Although the forecasts extend to only 2007, it can be assumed that if Manchester's economy maintains a strong growth as assumed, then the growth rate of 4.3 percent could be sustained. However, it must also assume that additional service is provided and with the extension of Runway 17/35 to 9.250 feet, there is a likelihood that Manchester will continue to provide facilities that can meet demands of the airline's providing service at the airport.

For comparative purposes, the FAA Terminal Area Forecast (TAF) for Manchester Airport was examined. As shown in the following table, FAA projected a much higher growth for the airport than did Leigh Fisher. Actual passenger enplanements in 2002 and early 2003 indicate that FAA's projections are closer to actual trends at Manchester.

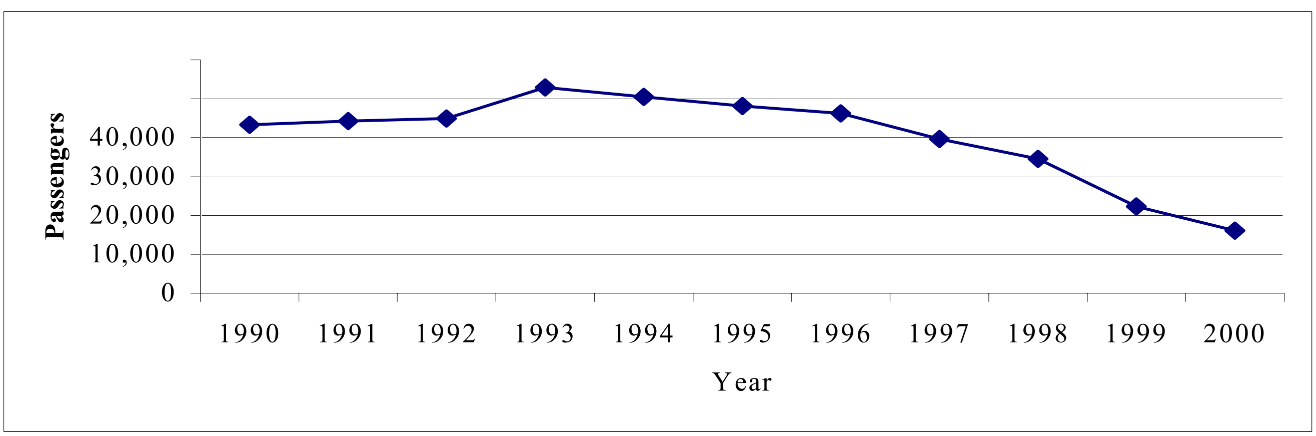
Table 5-9 – TAF Forecast Enplaned Passengers Manchester Airport				
Year	Major Airlines	Regional/Commuter/ Other Airlines	Total	Annual % Increase
2002	1,411,956	259,695	1,671,651	
2003	1,494,542	272,933	1,767,475	5.7
2004	1,577,129	286,171	1,863,300	5.4
2005	1,659,715	299,409	1,959,124	5.1
2006	1,742,302	312,647	2,054,949	4.9
2007	1,824,888	325,885	2,150,773	4.7
Source: 2001 FAA Terminal Area Forecast				

Leban on Municipal Airport

Since 1994, Lebanon Airport has seen a steady decline in passenger enplanements. This has been primarily related to the loss of airline service over the years. Today, the airport is served by one airline, USAirways Express, flying Beech 1900 19-seat commuter aircraft. The historical enplanements maintained by the Airport are presented in Table 5-10, and shown graphically in Figure 5-16.

Table 5-10 – Enplaned Passengers Lebanon Airport	
Year	Enplanements
1990	43,365
1991	44,241
1992	44,933
1993	52,929
1994	50,487
1995	48,164
1996	46,208
1997	39,627
1998	34,587
1999	22,278
2000	16,088
Source: Lebanon Airport Records	

Figure 5-16 –Enplaned Passengers - Lebanon Municipal Airport



FAA's Terminal Area Forecast (TAF), which were prepared after September 11, 2001 and take into account the impact of that event, projects that passenger enplanements will decrease to 7,602 annually, and remain at the level through the year 2020. That forecast scenario assumes no growth in scheduled service at the airport for an extended period, although it does acknowledge that the airport will retain regional airline service. However, that level of passenger enplanements will fall below the threshold for designation as a primary airport be FAA, which will means that the airport would not receive entitlement grants from FAA, thereby significantly decreasing the funding available for capital improvements.

Lebanon Airport completed an air service analysis in 1998. This assessment did not provide detailed forecasts, but presented several forecast scenarios that could have an effect on commercial service at the airport.

The first scenario described the status quo in which the airport would retain its single commuter airline (US Airways Express), providing limited turboprop service. Under the status quo scenario, future growth would be limited to the success of the airline's marketing efforts, which historically have not been focused on the Upper Valley Region. The second scenario assumed that there would be an expansion of service with regional jet aircraft to additional hub markets, such as Pittsburgh, along with the possible addition of a second airline. The third scenario assumed a total loss of scheduled service.

Based on the historic levels of service, the first (status quo) scenario was identified as the most likely. No other airline has initiated service since the air service study was completed in 1998, despite extensive marketing efforts undertaken by the Airport and the City. Passenger enplanements had increased in 2001 over 2000 levels, until the September 11th attacks. Discussions with the airport manager have indicated that the airport continues to aggressively seek better service from USAirways Express and hopes to attract a second carrier. However, it is likely in the near and mid term, the airport will remain with one air carrier. Based on this analysis, the forecast of enplanements will remain flat for the remainder of the planning period.

However, FAA has put additional financial pressures on the Airport and the City, particularly with a determination that the Airport will have to pay a share of the cost of running the air traffic control tower[2]. Additional costs to meet FAR Part 139 airport certification requirements put even more financial pressure on the airport, all at the same time that revenues have been declining due to declining passenger traffic. The Airport has undertaken an aggressive marketing campaign to attract more airline service, including working with local travel agents and businesses. The financial distress of the airline industry since September 11, and the industry's severe contraction due to the drop in overall travel demand, significantly increased the difficulty to attract new airline service.

Pease Internation al Tradeport

Pease International Tradeport, the former Pease Air Force Base, was opened for civilian use in March of 1991. The Tradeport, which has the second longest runway in New England (11,321' – only Bangor International Airport has a longer runway at 11,441'), is owned and operated by the State of New Hampshire and is run by a regional authority. Extensive capital improvements have brought the airport into full compliance with FAA standards. A new terminal building has been constructed, and a number of corporate flight departments are based at the airport. The NH Air National Guard's 157th Air Refueling Wing, which operates KC-135 aircraft, is also based at the airport. The Guard operates the control tower and maintains the on-airport radio and navigation equipment, and also assists with the crash fire rescue facilities and services.

Since 1991, there have been several commuter airlines that have served the airport, and Business Express based its headquarters at Pease International Tradeport for a period of time. Retention of airline service has

[2] Based on a cost-benefit formula that FAA uses to justify subsidizing the cost of contract control towers.

been difficult (as shown in the table below) due to the competition from adjacent airports such as Manchester, Boston Logan, and Portland Jetport. The completion of the expansion of Route 101 from Hampton to Manchester, for example, has decreased the driving time between the Seacoast and Manchester Airport, making Manchester and its low-fare, hub-oriented jet service even more accessible.

Since 1999 Pease International Tradeport has been served by Pan American Airways (Boston-Maine Airways), and has also made the airport their base. Pan Am offers low-fare jet service with Boeing B-727s to non-hub destinations in Florida, the Northeast, and Midwest, as well as regional airline service with Jetstream turboprops in the Northeast. Pan Am is a privately-held company operating relatively old equipment focusing on non-hub markets, and has left a number of markets that it originally served in 1999 and 2000. As a result, its long-term future or marketing strategy is hard to predict.

Table 5-11 presents the historical enplanement data available for the airport. For a number of years, Pease International Tradeport did not generate sufficient passengers to be classified as a primary airport by FAA (a minimum of 10,000 enplanements per year are required). As a result, the airport did not qualify for FAA entitlement grants, although it is included in FAA's Military Airport Program (MAP) that provides a separate source of funding for the military-civilian conversion process. If Pan Am were to discontinue service, the level of passenger enplanements would again decrease to below the threshold of a primary airport. Regardless of the future of Pan Am, the Tradeport Authority is committed to maintaining a commercial service airport.

Table 5-11 – Historical Enplaned Passengers
Pease International Tradeport

Year	Enplanements
1992	270
1993	21,140
1994	19,993
1995	9,445
1996	2,788
1997	0
1998	75
1999	68
2000	29,405

Sources: FAA Terminal Area Forecast 92-99
Airport Records (revenue. enpl. only) 2000

Forecasts of passenger enplanements have been completed for the airport and were obtained from the 1995 Master Plan Update for the airport. The master plan noted that because the airport has gained and lost commuter service prior to 1995, it was difficult to develop forecasts for the airport. Thus, three forecast scenarios were developed based upon different assumptions, as follows:

- High Scenario – service grows to levels similar to Manchester Airport
- Medium Scenario – service grows to levels similar to Worcester Airport
- Low Scenario – no jet service, but growth in commuter turboprop service

The forecasts resulted in a five-year enplanement range of 57,711 (low) to 175,383 (high). Based on the 2000 enplanements, the low range was the closest forecast in relation to actual enplanements.

Discussions with the airport manager indicated that the Tradeport is actively marketing other air carriers, including international charters. Throughout the planning period of this System Plan, Pease International

Tradeport will continue to feel the effects of competition from other airports, particularly Manchester, even though Pease International Tradeport offers all of the facilities and services required by airlines. The on-going expansion program at Manchester will increase its operating capacity and capabilities, making it even more competitive for future airline service. However, since the Rockingham Region is projected to experience significant demographic growth (population, employment, per capita income, etc.) over the next five to ten years, travel demand in the region will also increase as well. But how much of that future growth in air travel demand will be served by Pease International Tradeport is still to be seen.

5.4 GENERAL AVIATION FORECASTS

General Aviation is defined as all aviation activity other than commercial airlines and military. General Aviation encompasses a myriad of activities including flight training, public and emergency service (law enforcement, medical evacuation, disaster relief), personal/pleasure, utility (power-line patrol, traffic reporting, electronic news gathering, aerial photography, construction support, etc.), as well as business/corporate flying. General Aviation makes up a significant portion of the total aviation activity in the nation. For example, in 2001 there were 211,446 general aviation aircraft in the US (96% of the all of the civil aircraft), while there were 7,935 air carrier aircraft.

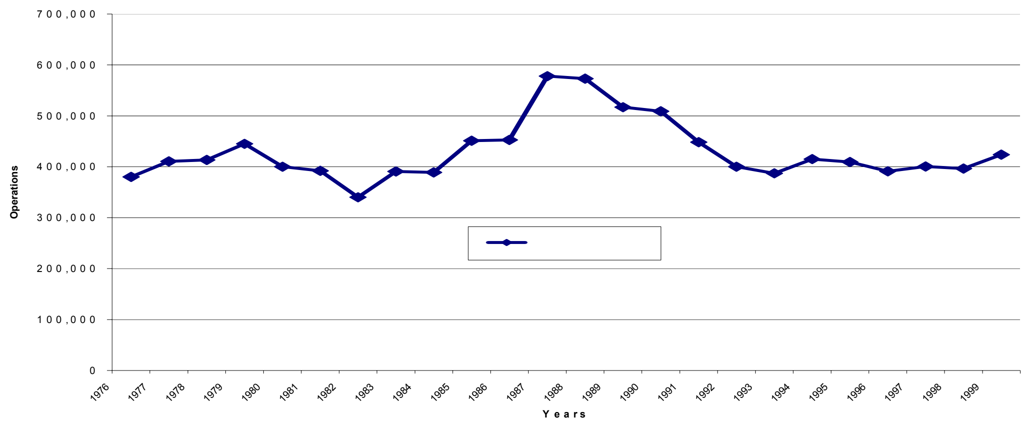
GA activity on the national and state level lagged behind economic indicators by several years. While both the national and state economy grew at a rapid pace in the early and mid-1990s, GA activity did not show a marked increase until after 1996/97. Corporate activity grew at a rapid pace, and in fact, represented the fastest growing segment of the GA industry in response to the significant rise in the stock market as well as corporate profits. Since the economic downturn in 2001/2002, a drop in GA activity has also been experienced. See Appendix 5-B for a presentation given by FAA concerning the factors that are impacting future GA activity. In general, however, several factors will constrain future GA activity growth in the short-term:

- Weakness in the national and state economy, exacerbated by a very weak stock market and declining corporate profits, both of which have impacted corporate/business aviation in particular
- Rising costs, including fuel prices, insurance, maintenance, parts, etc. The cost of acquisition and ownership of general aviation airplanes has rinsed significantly faster than the consumer price index.
- Increased security regulations, both at airports and also airspace restrictions. While commercial service airports have borne the bulk of the high cost of new security procedures, GA aircraft owners are also affected as well, particularly by temporary flight restrictions and new airspace access restrictions.
- The average age of a general aviation piston airplane is increasing – now almost 28 years old. That results in higher maintenance costs, lower utilization, and increased pressure on safety. Replacement costs for GA airplanes have risen at a rate much higher than the CPI. For example, a new four-seat, single piston engine, IFR-equipped, fixed-gear airplane (such as a Cessna 172 and Piper Archer) costs an average of $200,000 (an average of $50,000 per seat), and the cost of new airplanes is not anticipated to decline in the near term.

The only consistent historical data regarding GA activity on a statewide level is presented in the FAA's Terminal Area Forecasts (TAF). Although this data represents only eleven of the twenty-five airports, those eleven airports (which are included in FAA's NPIAS) represent approximately 80% of the total GA activity in the state. For this reason, the TAF data provides the most effective basis to measure historical trends in GA activity at the State level.

General aviation aircraft operations from 1976 to 1999 are shown in Figure 5-17. The data is based upon the summation of activity at the eleven NPIAS airports, the basis for which are tower counts from the four airports with control towers, and the remaining data from the FAA Airport Master Record 5010 forms.

Figure 5-17 – G.A. Aircraft Operations – State of NH



It should be noted that the figure represents only GA activity; no commercial service or military data was included. It is apparent that GA activity peaked in the late 1980s, and after 1990 declined sharply, in part due to severe economic recession of the early 1990s. GA traffic, however, only showed signs of rebounding since 1998; five years after the state's economy had been expanding at an unprecedented rate.

A breakdown of regional data is provided for the year 2000. As shown in Table 5-12, the Nashua Region has the largest share of operations, all conducted at Boire Field, followed by the Rockingham and Upper Valley Regions. Compared to activity data in the 1990 State Airport System Plan, there were fewer aircraft operations in 2000 than in 1990, which was largely due to the severe economic recession in New Hampshire, and nationally, from 1989-1992.

Table 5-12 – GA Operations by Region – Year 2000

Region	Operations	% of Total
Central	50,430	10.5%
Lakes	53,968	11.3%
Nashua	100,972	21.1%
North Country	33,250	6.9%
Rockingham	62,360	13.0%
South	45,740	9.5%
Southwest	54,794	11.4%
Strafford	18,592	3.9%
Upper Valley	58,938	12.3%
Total Operations	**479,044**	**100%**

5.4.1 GENERAL AVIATION FORECAST TECHNIQUES

There are a number of techniques that can be used to forecast GA activity that include regression analysis, trend line analysis, application of growth rates extrapolated from various socioeconomic and FAA forecasts, and the use of FAA Operations Per Based Aircraft (OPBA). The lack of consistent historical data eliminates some of the forecast techniques that could be used, such as regression analysis. As a result, only selected techniques were chosen for these forecasts. Two elements of activity were projected: based aircraft and aircraft operations. Tables 5-13 and 5-14 present a comparison of historical based aircraft and operations data for each region versus growth in four socioeconomic sectors.

Based aircraft increased in four of the nine regions, and the regions with the most significant growth were Nashua and Rockingham. Boire Field in the Nashua Region has grown over the past ten years to become one of the busiest GA airports in the State. The increase in the Rockingham Region was due to the conversion of Pease Air Force Base to a public use airport in 1991. All other regions showed declines in based aircraft.

Table 5-13 – Comparison of Socioeconomic Growth and Based Aircraft 1990-2000

Region	Socioeconomic Factor	% Change 1990-20000	Based Aircraft 1990	Based Aircraft 2000	% Change 90-00
Central	Population	8.7	92	81	-12.0%
	Income	36.3			
	Labor	23.5			
	Employment	27.5			
Lakes	Population	10	183	132	-27.9%
	Income	26.6			
	Labor	11.4			
	Employment	15.9			
Nashua	Population	10.9	303	403	33.0%
	Income	31.7			
	Labor	2.7			
	Employment	5.7			
North Country	Population	1.3	93	122	31.2%
	Income	29			
	Labor	5.6			
	Employment	9.4			
Rockingham	Population	12.9	121	161	33.1%
	Income	46.1			
	Labor	7.8			
	Employment	11.1			
South	Population	11.2	228	85	-62.7%
	Income	38.3			
	Labor	3.5			
	Employment	7.2			
Southwest	Population	4.9	110	108	-1.8%
	Income	31.9			
	Labor	-1.0			
	Employment	0.8			
Strafford	Population	7.6	72	68	-5.6%
	Income	38.3			
	Labor	-0.2			
	Employment	3.5			
Upper Valley	Population	6.2	105	109	3.8%
	Income	40.2			
	Labor	3.8			
	Employment	7.1			
Total			1,307	1,269	-2.9%

Table 5-14 - Comparison of Socioeconomic and GA Operations 1990-2000					
Region	**Socioeconomic Sector**	**% Change 1990-2000**	**Operations 1990**	**Operations 2000**	**% Change 1990-2000**
Central	Population	8.7	70,570	50,430	-28.5%
	Income	36.3			
	Labor	23.5			
	Employment	27.5			
Lakes	Population	10	83,168	53,968	-35.1%
	Income	26.6			
	Labor	11.4			
	Employment	15.9			
Nashua	Population	10.9	243,340	100,972	-58.5%
	Income	31.7			
	Labor	2.7			
	Employment	5.7			
North Country	Population	1.3	49,579	33,250	-32.9%
	Income	29			
	Labor	5.6			
	Employment	9.4			
Rockingham	Population	12.9	45,508	62,360	37.0%
	Income	46.1			
	Labor	7.8			
	Employment	11.1			
South	Population	11.2	165,822	45,740	-72.4%
	Income	38.3			
	Labor	3.5			
	Employment	7.2			
Southwest	Population	4.9	71,420	54,794	-23.3%
	Income	31.9			
	Labor	-1			
	Employment	0.8			
Strafford	Population	7.6	23,736	18,592	-21.7%
	Income	38.3			
	Labor	-0.2			
	Employment	3.5			
Upper Valley	Population	6.2	97,805	58,938	-39.7%
	Income	40.2			
	Labor	3.8			
	Employment	7.1			
State Total			850,948	479,044	-43.7%

Although several of the regions showed an increase in based aircraft in Table 5-13, this table shows the decline in the aircraft operations versus the growth in population and employment within each of the regions. .

There are a number of different methods that can be used to derive forecasts. All of these methodologies use historical information in some way to generate the forecasts, either through correlation, applied growth rates, trends, or simply professional judgment. A brief discussion of these methodologies is described below:

- **Socioeconomic Regression Analysis** - Socioeconomic regression analysis is a statistical methodology that is based upon an assumed relationship (or correlation) between socioeconomic variables such as population, income, or employment, and aviation activity. The resulting set of regression equations, coupled with independent projections of future socioeconomic data, produces forecasts of airport operations, based aircraft, or other activity. When adequate data are available to use this methodology, regression analysis is a powerful tool for forecasting.

  A key statistical correlation used to evaluate the results between socioeconomic variables and aviation activity is defined by a correlation coefficient, or the R^2 value, that is derived from the regression equation. The R2 values range between 0 and 1. An R^2 value that approaches 1 indicates a strong statistical correlation while an R2 of 0 indicates no statistical correlation.

- **Market Share Analysis** - This methodology estimates or calculates an airport's or region's market share of aviation activity and applies this share to related aviation forecasts. The constant share methodology applies a fixed market share factor to generate a projection. The dynamic share methodology uses a changing market share, based upon various judgmental considerations, to develop a projection.

- **Applied Growth Rate** - This methodology applies growth rates extrapolated from forecasts developed for other applications. In this case, growth rates from socioeconomic forecasts of forecasts developed by the FAA can be used and applied to develop a new forecast.

- **Trend Line Analysis** - Trend line analysis methodology assumes that historical aviation trends over time can be used to project future aviation activity levels. The type of trend analysis used here is a simple linear trend.

- **Professional Judgment** - In some cases, there are inadequate or inconsistent data for a statistical forecasts. In other cases, the region served by an airport(s) has significantly changed, making historical trend analysis irrelevant. For these situations, professional judgement based on experience at similar airports must be used.

5.4.2 BASED GENERAL AVIATION AIRCRAFT

Table 5-13 presented the historical based aircraft within each region. Based on the available information, it is difficult to statistically correlate the growth of based aircraft in several of the regions to the growth in any one of the socioeconomic sectors. Therefore, four methodologies were used to forecast based aircraft; applied socioeconomic growth rates, FAA's national growth rates, market share analysis, and trend line analysis. Regression analysis was not applicable as there was not enough historical data to provide a valid statistical result. Each methodology is presented in the following sections. Appendix 5-C provides detailed breakdowns of the forecasts.

Applied Socioeconomic Growth Rate

This forecast of based aircraft was based upon the projected growth of the statewide population, and further broken down by region in the following manner:

- Based aircraft statewide were projected using population growth rates presented in Section 5.2
- Based aircraft were subsequently distributed to each region based upon the anticipated rate of

population growth within each of the nine regions, as shown in Table 5-15.

Table 5-15 - Forecast of Based Aircraft - Applied Socioeconomic Growth Rates					
Region	**2000**	**2005**	**% Change 2000-2005**	**2010**	**% Change 2005-2010**
Central	81	90	11.1%	105	16.7%
Lakes	132	155	17.4%	170	9.7%
Nashua	403	423	5.0%	433	2.4%
North Country	122	124	1.6%	128	3.2%
Rockingham	161	171	6.2%	182	6.4%
South	85	106	24.7%	117	10.4%
Southwest	108	110	1.9%	117	6.4%
Strafford	68	80	17.6%	93	16.3%
Upper Valley	109	119	9.2%	126	5.9%
Total	1,269	1,378	8.6%	1,472	6.8%
Source: Edwards and Kelcey and RKG Associates					

It can be seen that in most regions the rate of growth will decline between 2005 and 2010 compared to the first five years (including Lakes, Nashua, and South, Upper Valley Region, for example), while in other regions the rate of growth will increase in the last five years (Central, Southwest, Rockingham, for example).

Applied FAA Forecast Growth Rates

The FAA develops forecasts of aviation activity annually. Growth rates were extrapolated from the FAA Aerospace Forecasts of active general aviation aircraft, and applied to the number of based aircraft in 2000, by each region as presented in Table 5-16. FAA's projected growth rates are lower than the applied socio-economic factors, above, due in part to FAA's assumptions that various factors such as rising costs, increased security, airspace restrictions, etc. will constrain future GA growth.

Table 5-16 - Forecast of Based Aircraft - Applied FAA Forecast Growth Rates					
Region	**2000**	**2005**	**% Change 2000-2005**	**2010**	**% Change 2005-2010**
Central	81	85	4.9%	88	3.5%
Lakes	132	145	9.8%	151	4.1%
Nashua	403	423	5.0%	440	4.0%
North Country	122	131	7.4%	136	3.8%
Rockingham	161	169	5.0%	176	4.1%
South	85	89	4.7%	93	4.5%
Southwest	108	113	4.6%	118	4.4%
Strafford	68	71	4.4%	74	4.2%
Upper Valley	109	114	4.6%	119	4.4%
Total	1,269	1,341	5.7%	1,395	4.0%
Source: Edwards and Kelcey and RKG Associates					

Population Market Share Forecast

This forecast uses the same population data as the Applied Socioeconomic Growth Rate Forecasts, but used a different methodology develop the projection of based aircraft, and the results of this methodology are presented in Table 5-17:

- The population forecast for the State and each regions presented in Section 5.2 was used as the basis of this forecast
- A population ratio was derived by taking Year 2000 population data by each region and dividing by number of based aircraft in that region
- The ratio was then applied to the forecast of population by each region, resulting in the forecast of based aircraft
- The population/based aircraft ratio was held constant throughout the forecast period

Table 5-17 - Based Aircraft Forecast - Population Market Share					
Region	**2000**	**2005**	**% Change 2000-2005**	**2010**	**% Change 2005-2010**
Central	81	89	9.9%	99	11.2%
Lakes	132	146	10.6%	166	13.7%
Nashua	403	438	8.7%	458	4.6%
North Country	122	124	1.6%	131	5.6%
Rockingham	161	179	11.2%	188	5.0%
South	85	92	8.2%	96	4.3%
Southwest	108	110	1.9%	119	8.2%
Strafford	68	71	4.4%	78	9.9%
Upper Valley	109	115	5.5%	125	8.7%
Total	1,269	1,364	7.5%	1,461	7.1%
Source: Edwards and Kelcey and RKG Associates					

Trend Line Analysis

Trend Line Analysis assumes that the growth rate (i.e. trend line) of Based Aircraft between 1990 and 2000 will remain constant throughout the planning period.

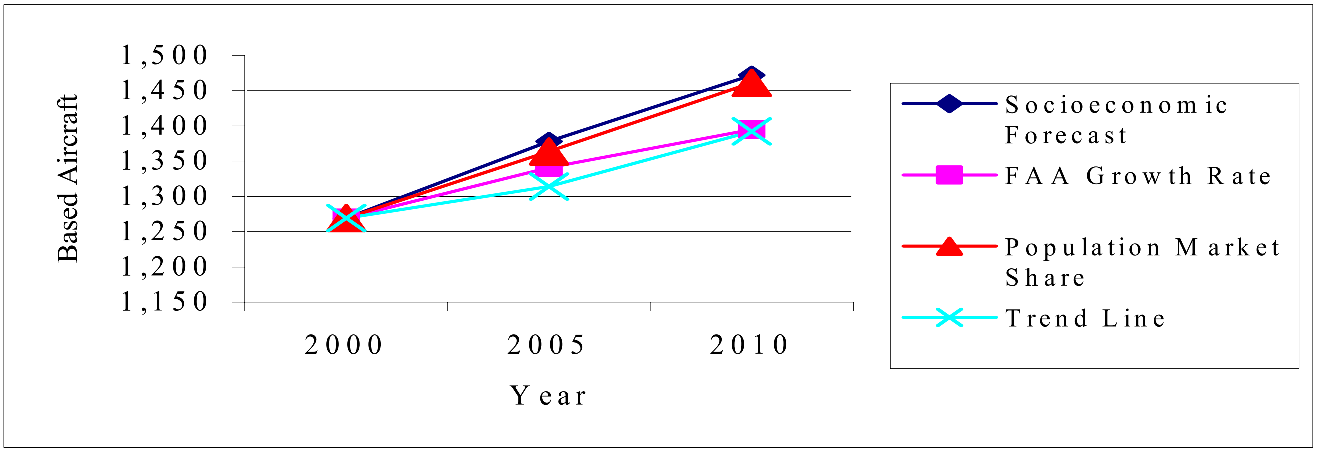
Table 5-18 - Based Aircraft Forecast - Trend Line Analysis					
Regions	**2000**	**2005**	**% Change 2000-2005**	**2010**	**% Change 2005-2010**
Central	81	76	-6.2%	71	-6.6%
Lakes	132	113	-14.4%	97	-14.2%
Nashua	403	465	15.4%	536	15.3%
North Country	122	139	13.9%	158	13.7%
Rockingham	161	186	15.5%	214	15.1%
South	85	52	-38.8%	32	-38.5%
Southwest	108	107	-0.9%	106	-0.9%
Strafford	68	66	-2.9%	64	-3.0%
Upper Valley	109	111	1.8%	113	1.8%
State Total	1,269	1,314	3.5%	1,392	5.9%
Source: Edwards and Kelcey and RKG Associates					

The trend line was derived as follows: the rate of change of based aircraft in each region between 1990-2000 were annualized and the annual rate of change was then applied to the year 2000 based aircraft in each region, as shown in Table 5-18.

Recom mended Based Aircraft Forecast

The four forecast scenarios presented above are summarized in Figure 5-18, below.

Figure 5-18 – Forecast of Based Aircraft – Four Scenarios



Source: Edwards and Kelcey and RKG Associates

After reviewing the results of the four forecast scenarios, the recommended one was the Population Market Share forecast. The four forecast scenarios fall within a narrow range over the planning period, and the following factors were used to select the likeliest scenario:

- In spite of the potential constraints to General Aviation activity discussed above, the relatively strong demographic growth projected for the state, and certain regions in particular, will generate increasing demand for GA services, particularly corporate/business traffic. If the airports, FBOs, and the State of NH actively market general aviation users (pilots, aircraft owners, passengers, etc.), and the national and state economy rebounds, it is possible that based aircraft could increase even faster than projected, as has been the case with airline passengers at Manchester Airport.

- Although Massachusetts recently changed their state law to exempt aircraft and parts from the sales tax in an effort to discourage airplane owners from basing their airplane in New Hampshire, NH is still very competitive with adjacent states in terms of pricing and facilities.

- The population market share scenario takes into full account that each region will grow at different rates, as discussed in Section 5.2.

5.4.3 GA AIRCRAFT OPERATIONS

The forecast of GA aircraft operations were developed in a similar fashion as the based aircraft forecasts. Three forecast scenarios were developed for aircraft operations: application of socioeconomic growth rates, the FAA's Operations-Per-Based-Aircraft (OPBA) methodology, and trend line analysis. Each forecast scenario is described below, and details are provided in Appendix 5-C.

Applied Socioeconomic Growth Rates

This forecast technique utilized socioeconomic growth rates developed in Section 5.2. Because the state and in particular certain regions in the southern portion of the state are projected to experience a consistent increase in demographic indicators (population, employment, and per capita income), it can be reasonably expected that demand for GA services will increase as well. Although changes in GA activity have not mirrored demographic trends consistently in the last 15 years, an expanding economy does provide a growing population base and generate increased disposable income, both of which are key elements in stimulating GA demand.

Although factors such as the rising cost of aircraft ownership and operation, increased airport security and airspace restrictions, and fluctuations in the insurance market may serve to constrain some growth potential, under this scenario it is assumed that the constraints will diminish with time and demand for GA services will keep pace with growing demographic indicators.

The forecasts were developed in the following manner, and are presented in Table 5-19:

- Statewide aircraft operations were forecasted using extrapolated state level population growth presented in Section 5.2
- The additional growth in aircraft operations for each year was then distributed to each region based upon the expected share of growth over the nine regions. The resulting forecast shows that GA operations will increase by 6.8% over a ten-year period, with the Strafford Region showing the highest percentage increase. Although Nashua Region has the largest number of GA aircraft operations, it is projected to experience relatively little growth because the region is almost built-out in terms of developable land, as is Boire Field. As a result, the region is projected to experience relatively little demographic growth through 2010.

Table 5-19 - Forecast of GA Aircraft Operations - Applied Socioeconomic Growth Rates

	Operations			% Change		
Region	**2000**	**2005**	**2010**	**2000-2005**	**2005-2010**	**2000-2010**
Central	50,430	53,874	59,247	6.8%	10.0%	17.5%
Lakes	53,968	66,420	72,191	23.1%	8.7%	33.8%
Nashua	100,972	109,184	113,027	8.1%	3.5%	11.9%
North Country	33,250	33,879	35,670	1.9%	5.3%	7.3%
Rockingham	62,360	66,109	70,019	6.0%	5.9%	12.3%
South	45,740	53,388	57,630	16.7%	7.9%	26.0%
Southwest	54,794	55,423	58,344	1.1%	5.3%	6.5%
Strafford	18,592	24,328	29,040	30.9%	19.4%	56.2%
Upper Valley	58,938	61,981	64,901	5.2%	4.7%	10.1%
State Total	**479,044**	**524,587**	**560,068**	**9.5%**	**6.8%**	**16.9%**
Source: Edwards and Kelcey and RKG Associates						

Operations Per Based Aircraft (OPBA) Forecasts

This technique utilizes the FAA's operations per based aircraft methodology. This methodology divided the number of aircraft operations by the number of based aircraft to develop an average number of operations per based aircraft (OPBA), and that ratio was then applied to the forecast of based aircraft presented in the previous section to derive the forecast of operations (see Table 5-20).
This technique assumes that the ratio of operations per based aircraft will remain constant throughout the

forecast period. This methodology results in a slightly higher growth rate through 2010 compared with applied demographic trends, above.

Table 5-20 - Forecast of GA Aircraft Operations Operations-Per-Based-Aircraft (OPBA) Methodology

	Operations			% Change		
Region	**2000**	**2005**	**2010**	**2000-2005**	**2005-2010**	**2000-2010**
Central	50,430	55,447	61,677	9.9%	11.2%	22.3%
Lakes	53,968	59,714	67,894	10.6%	13.7%	25.9%
Nashua	100,972	109,938	114,958	8.9%	4.6%	13.8%
North Country	33,250	33,852	35,763	1.8%	5.6%	7.6%
Rockingham	62,360	69,273	72,756	11.1%	5.0%	16.7%
South	45,740	49,496	51,648	8.2%	4.3%	12.9%
Southwest	54,794	55,770	60,333	1.8%	8.2%	10.1%
Strafford	18,592	19,383	21,294	4.3%	9.9%	14.5%
Upper Valley	58,938	62,215	67,625	5.6%	8.7%	14.7%
State Total	**479,044**	**515,088**	**553,948**	**7.5%**	**7.5%**	**15.6%**

Source: Edwards and Kelcey and RKG Associates

Trend L ine Analysis

The Trend Line Analysis assumes that the growth rate exhibited by GA operations between 1990 and 2000 will remain constant throughout the planning period. GA operations between 1990-2000 actually declined, with most of the decline occurring in the early 1990s in the midst of the deep economic recession in that period. GA activity was slow to recover after the state's economy rebounded in 1993/94, and the recovery in GA activity did not overcome the decline.

With the state's economy experiencing another downturn in 2001/2002, and the national economy bordering on a 'double-dip' recession along with a growing budget deficit, it is possible that GA activity will decline once again. In addition, it is possible that the constraints identified above, including the rising cost of aircraft ownership, increased security and airspace restrictions, and growing volatility in the insurance markets, could become more severe throughout this decade, further depressing demand for GA services.

Based on this forecast scenario, some regions are projected to experience a steep decline by 2010, while others will see a modest increase. This forecast technique appears to overstate the potential decline, except in a worst-case scenario (i.e. rapidly rising prices – fuel costs, new aircraft and parts, etc., along with greatly increased security and access restrictions, as well as declining availability of insurance, and a declining market for commercial pilots.) Another shock similar in magnitude to September 11, 2001 would be needed in order for this confluence of negative pressures to occur.

However, it should be noted that in other countries around the world, particularly in Europe and Japan, factors such as numerous user fees, very high fuel prices, airspace and airport access restrictions, etc. all combine to significantly depress demand for GA services. If those same constraints were adopted in the U.S., as has been proposed by some Administrations in Washington DC, then the same negative impact on the demand for GA services could be expected. The resulting forecast is shown in Table 5-21.

Table 5-21 - Forecast of GA Aircraft Operations Trend Analysis						
	Operations			% Change		
Region	**2000**	**2005**	**2010**	**2000-2005**	**2005-2010**	**2000-2010**
Central	50,430	42,631	36,038	-15.5%	-15.5%	-28.5%
Lakes	53,968	45,772	40,623	-15.2%	-11.2%	-24.7%
Nashua	100,972	65,042	41,898	-35.6%	-35.6%	-58.5%
North Country	33,250	33,086	35,866	-0.5%	8.4%	7.9%
Rockingham	62,360	63,962	65,632	2.6%	2.6%	4.8%
South	45,740	24,023	12,617	-47.5%	-47.5%	-72.4%
Southwest	54,794	50,880	48,041	-7.1%	-5.6%	-12.3%
Strafford	18,592	16,455	14,563	-11.5%	-11.5%	-21.7%
Upper Valley	58,938	46,764	37,806	-20.7%	-19.2%	-35.8%
State Total	479,044	388,614	333,083	-18.9%	-14.3%	-30.5%
Source: Edwards and Kelcey and RKG Associates						

Recommended GA Aircraft Operations Forecast

The three forecast scenarios presented above are summarized in Figure 5-19.

Figure 5-19 – Forecast of GA Aircraft Operations – Three Scenarios

Source: Edwards and Kelcey and RKG Associates

The recommended forecast of aircraft operations was the OPBA forecast scenario, for the following reasons:

- It appears that the chances for an improved economy and increasing demand for GA services, as reflected in the first two forecast scenarios, outweigh the potential for constraints on GA activity as reflected in the trend line projection.

- The OPBA forecast takes into account the projected growth in each region as presented in the demographic forecasts.

5.4.4 BASED AIRCRAFT AND OPERATIONS FORECASTS BY AIRPORT

The individual airport forecasts were developed from the recommended forecasts of Based Aircraft and GA Aircraft operations presented in Sections 5.4.2 and 5.4.3, above. The forecasts were derived by taking the market share of each airport within each region and holding that market share constant throughout the forecast period.

Table 5-22 – Based Aircraft Forecast Summary By Airport

Region	Airport	2000	2005	2010
Central				
	Concord	81	89	99
Lakes				
	Newfound Valley	3	3	4
	Laconia	97	107	122
	Lakes Region	15	17	19
	Moultonboro	17	19	21
Nashua				
	Boire Field	403	438	458
North Country				
	Berlin	26	26	28
	Colebrook	6	6	6
	Errol	6	6	6
	Franconia	12	12	13
	Gorham	4	4	4
	Dean Memorial	13	13	14
	Mt. Washington Regional	36	37	39
	Plymouth	16	16	17
	Twin Mountain	3	3	3
Rockingham				
	Hampton	70	78	82
	Pease Int. Tradeport	91	101	106
South				
	Manchester	85	92	96
Southwest				
	Hillsboro	13	13	14
	Silver Ranch	41	42	45
	Dillant- Hopkins	54	55	60
Strafford				
	Skyhaven	68	71	78
Upper Valley				
	Claremont	22	23	25
	Lebanon	76	80	87
	Newport	11	12	13
Statewide Based Aircraft		1,269	1,364	1,460
Source: Edwards and Kelcey and RKG Associates				

There were no indications from discussions with airport managers around the state that operational capacity would be exceeded at any individual airport within the next ten years. However, it is possible that Boire Field could reach parking capacity in terms of accommodating based aircraft shortly after the planning period if the number of based aircraft continues to grow.

Table 5-23 – G.A. Operations Forecast Summary By Airport

Region	Airport	2000	2005	2010
Central				
	Concord	50,430	55,447	61,677
Lakes				
	Newfound Valley	1,200	1,328	1,510
	Laconia	34,898	38,614	43,903
	Lakes Region	6,000	6,639	7,548
	Moultonboro	11,870	13,134	14,933
Nashua				
	Boire Field	100,972	109,938	114,958
North Country				
	Berlin	14,000	14,253	15,058
	Colebrook	1,500	1,527	1,613
	Errol	750	764	807
	Franconia	4,500	4,581	4,840
	Gorham	1,000	1,018	1,076
	Dean Memorial	4,000	4,072	4,302
	Mr. Washington Reg.*	6,500	9,989	10,553
	Plymouth	4,000	4,072	4,302
	Twin Mountain	1,000	1,018	1,076
Rockingham				
	Hampton	37,500	41,657	43,752
	Pease Int. Tradeport	24,860	27,616	29,004
South				
	Manchester	45,740	49,496	51,648
Southwest				
	Hillsboro	1,500	1,527	1,652
	Silver Ranch	10,648	10,838	11,724
	Dillant-Hopkins *	52,600	57,500	62,900
Strafford				
	Skyhaven	18,592	19,412	21,326
Upper Valley				
	Claremont	10,459	11,041	12,001
	Lebanon	42,749	45,126	49,050
	Newport	5,730	6,049	6,575
State Aircraft Operations		479,044	522,561	561,844

Sources: * Dufresne-Henry Airport Master Plan. Remaining - Edwards and Kelcey and RKG Associates

Even if Boire Field reaches capacity shortly after 2010, however, there should not be a shift in based aircraft or aircraft operations within any of the regions through the end of this decade. As such, it is expected that each airport will retain their current market share throughout the planning period as shown in Tables 5-22 and 5-23.

5.4.5 AIR CARGO FORECASTS

The only airport with scheduled air cargo service is Manchester Airport. Pease International Tradeport has had air cargo service in the past, however, they recently have lost cargo service and it is unknown if that service will be provided again in the future. Some additional cargo is handled at GA airports, however, it represents only a small volume of the total shipped in the state. A major reason that Manchester Airport captures such a large share of the state's air cargo market is that both Federal Express (Fedex) and United Parcel Service (UPS) have made Manchester a mini-hub for their operation in New Hampshire. Based on current trends in the air cargo market, it is not anticipated that any other airport in the state will receive scheduled cargo service within the forecast period. There were six cargo airlines at Manchester Airport as of late 2002/early 2003:

- United Parcel Service (UPS)
- FedEx
- Airborne Express
- Telford Aviation
- Mountain Air Cargo
- Wiggins Airways

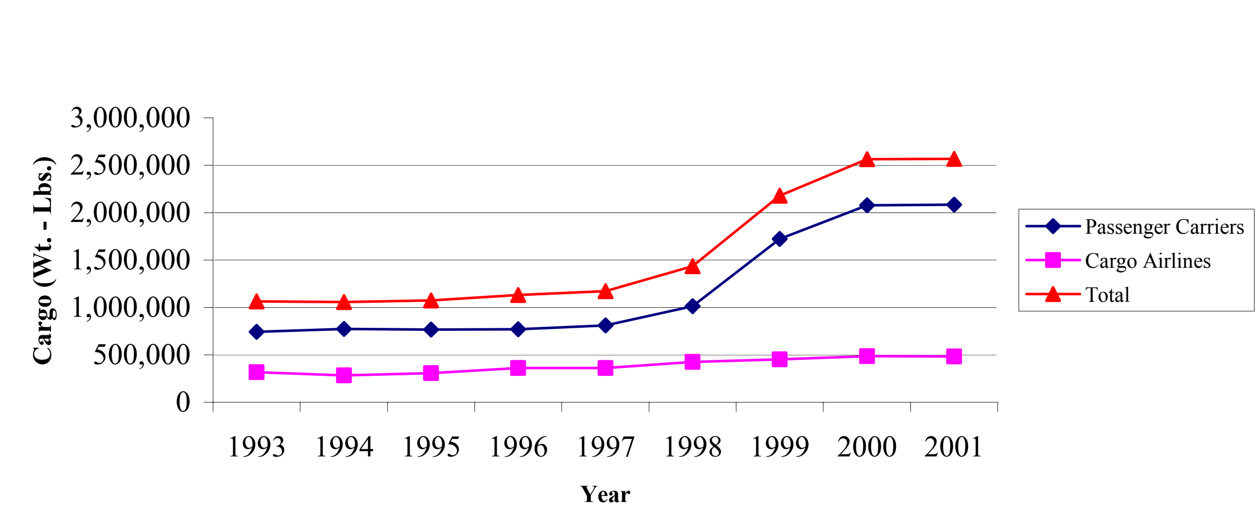
Manchester Airport has developed forecasts of cargo activity as part of their most recent financial bond documents. Their data indicates that historical cargo activity (landed weight) has increased an average of 11.7% annually (presented in Table 5-24 and shown graphically in Figure 5-20). Cargo activity at the airport is made up of freight carried on passenger aircraft (so-called belly cargo) as well as dedicated cargo operators such as Federal Express and United Parcel Service.

Table 5-24 - Air Cargo (Landed Weight - Lbs.) - Manchester Airport

Fiscal Year	Passenger Airlines	Cargo Airlines	Total	Annual % Increase
1993	744,127	318,954	1,063,081	NA
1994	773,409	283,352	1,056,761	-.6%
1995	766,205	308,573	1,074,778	1.7%
1996	769,754	361,807	1,131,561	5.3%
1997	811,180	361,560	1,172,740	3.6%
1998	1,012,699	424,472	1,437,171	22.5%
1999	1,723,188	454,248	2,177,436	51.5%
2000	2,077,161	487,029	2,564,190	10.1%
2001	2,084,246	483,246	2,567,874	7.1%
Average Annual Percentage Increase 1993-2001				11.7%
Source: Manchester Airport				

As can be seen in this table, passenger airlines have traditionally carried more cargo than the all-cargo carriers (such as FedEx and UPS). The amount of cargo remained relatively steady from 1993 to 1996, and then increased steadily from 1997 until the present time.

Figure 5-20 – Air Cargo – Manchester Airport



Source: Manchester Airport

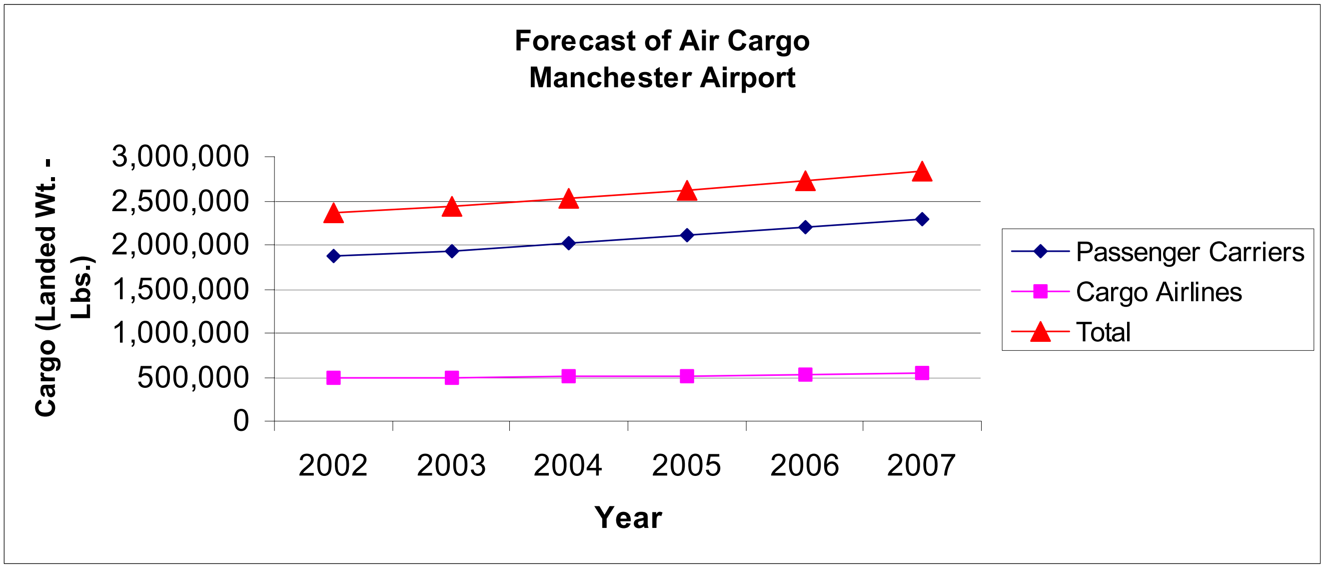
The forecast of cargo activity is primarily based upon the expected growth in the Manchester area and region, matched with a corresponding increase in activity of the airlines. The expected growth in the cargo activity is expected to increase annually at about 3.9 percent. The forecasts derived for the airport covered through 2007. That forecast is presented in Table 5-25 below and show graphically in Figure 5-21.

Table 5-25 - Forecast of Air Cargo (Landed Weight - Lbs.) - Manchester Airport

Fiscal Year	Passenger Airlines	Cargo Airlines	Total	Annual % Increase
2002	1,877,000	484,000	2,361,000	8.1
2003	1,935,000	494,000	2,429,000	2.9
2004	2,018,000	505,000	2,523,000	3.9
2005	2,106,000	515,000	2,621,000	3.9
2006	2,196,000	526,000	2,722,000	3.9
2007	2,291,000	537,000	2,828,000	3.9

Source: Manchester Airport

Figure 5-21 – Forecast of Air Cargo – Manchester Airport



Source: Manchester Airport

CHAPTER 6 - INTERMODAL ASSESSMENT

6.1 INTRODUCTION

Airports are, by their very function, true intermodal transportation facilities, a key component of which is ground access. Ground access (both in terms of physical facilities and available services) is an extremely important element of the aviation system, particularly in terms of an airport's ability to fulfill its role and to effectively serve its market area. Each one of the 25 airports in the State System Plan can be accessed by public-use roads, and private automobiles are by far the predominant mode of transportation to and from airports.

As noted in New Hampshire DOT's Long Range Statewide Transportation Plan:

> "Historically, communities developed in densely built areas encompassing all essential services. This development pattern lent itself to connections between towns by bus and rail, and within communities through a variety of options, including streetcars, buses, and easy pedestrian access. Since World War II, housing and employment opportunities have moved outward from the cities to the countryside. The result is that New Hampshire now relies on automobiles and trucks, and has built the highway system to meet that need. In turn, modern residential development has not provided the density essential for successful public transportation."

In addition, the Plan notes that in 1990 only 1% of all commuters used public transportation in New Hampshire, and that the percentage of car-poolers had steadily declined since 1980. As a result, the share of the State's population that drove to work alone had increased to 78% between 1980-1990, and according to the recent 2000 U.S. Census results, the percentage of commuters driving alone has increased even further over the last decade, to 82%. As a result, the predominant use of private automobiles to access airports is very consistent with overall travel patterns in the state.

The lack of ground transportation services does have an impact on aviation activity, particularly by transient aircraft; i.e., visiting pilots and passengers who fly into an airport. At airports where transient pilots and passengers do not have access to taxis, rental cars, or buses, it is very difficult to travel to local destinations, even though they can fly into the airport.

As noted in more detail below (particularly in Tables 6-1 and 6-2) of the 25 airports in the State System:

- Five airports (Colebrook, Errol, Dean Memorial, Franconia, and Newfound Valley) have virtually no service by taxis, rental cars, buses, limos, or courtesy cars.
- Only three general aviation airports (Laconia, Concord, and Dillant-Hopkins) have rental car and/or taxi companies located on the airport.
- An intercity bus carrier serves only one airport (Manchester).
- Three airports (Manchester, Pease International Tradeport, and Skyhaven) are served by local transit systems.
- None of the airports in the state have rail service.

Three key questions are addressed in this chapter, listed below, and a summary of the findings are presented under each question. A more detailed discussion about each issue is also presented.

1. Is the level of service provided by any airport in the State negatively impacted by the lack of ground transportation services?

Based on discussions with airport managers and FBOs, the majority of airports in the State are not negatively impacted by the lack of public transportation. The large majority of general aviation pilots and passengers use private automobiles, taxis, and rental cars to access local destinations, and most GA airports have some form of rental car and/or taxi service available. However, there was a need expressed by a number of FBOs for improved service by taxi and rental car companies. Only three of the general aviation airports (Laconia, Concord, and Dillant-Hopkins) have rental car companies located on the airport, while 14 other GA airports rely on drop-offs and pick-ups by rental car and taxi companies located off-airport. Five GA airports have no service by taxi or rental car companies. A number of FBOs and airport managers also noted that local taxi companies, while available, often operate old cars and are not as reliable as their customers (who fly in) would like.

Scheduled airline passengers also use private automobiles, taxis and rental cars, as well as limousines, vans, and to a much lesser extent, buses. The three commercial service airports (Manchester, Lebanon, and Pease International Tradeport) have rental car companies located on-airport, and local taxi companies also serve all three. Surveys at Manchester Airport indicated that 71% of their passengers accessed the airport in a private automobile, 13% in a rental car, 3% in a limousine, 2.5% via taxi, and 2% in a courtesy van. Almost 8% of the passengers used 'other' travel means, while 0.1% (one tenth of one percent) used public transportation.

By comparison:

a) Nationally, personal vehicles generated 98.1% of all urban travel in 2000, while public transportation captured only 1.9%.
b) New Hampshire ranked 47th among the states in terms of passenger miles traveled on public transportation (5.1 million in 1997), and 26th in terms of subsidies per passenger mile (0.371cents).

Manchester is the only airport of the three served by intercity buses (Vermont Transit), while Pease International Tradeport and Manchester are both served by a local transit operator (Portsmouth-Pease Trolley and MTA respectively).

Interviews conducted with a number of intercity bus companies (including the Coach Company, Concord Trailways, Vermont Transit, and C&J Trailways) consistently indicated that there is insufficient demand at any airport other than Manchester to justify providing bus service, even when existing routes proceed close to airports such as Lebanon and Pease International Tradeport. In 2001, Manchester Airport handled more than 3,000,000 passengers (inbound and outbound).

2. Is there sufficient demand and are there opportunities to increase public transportation to airports in the state?

Based on the surveys conducted of intercity bus companies, airport managers, and FBOs, as well as other data sources, with the exception of Manchester Airport, there is not sufficient demand at airports to support scheduled service by bus companies or other common carriers. When bus companies were asked what level of demand and/or subsidies would be required to initiate service to selected airports, they said that it was unlikely that government agencies could provide the level of subsidies needed, and the cost per-passenger would be very high. In fact, they noted that serving airports would increase trip times, and thereby hurt ridership on existing markets. Other intercity bus companies may serve Manchester Airport in the future, but there was no interest expressed in either subsidized or non-subsidized service to any other airport in the state.

3. What role does the airport sponsor, State of NH, and/or FAA play in improving ground transportation?

Rental car, taxi, and intercity bus companies are private for-profit entities, unlike local transit companies that are either municipally-owned and operated, or run by a non-profit organization. Private companies make their own decisions about routes, frequencies, and fares, and they have indicated that they will not provide additional service to general aviation airports because there is insufficient demand to support increased service.

At those general aviation airports that have a lack of service by rental car and/or taxi companies (Colebrook, Errol, Dean Memorial, Franconia, and Newfound Valley), and also at those airports that have some, but inadequate taxi/rental car service (Claremont, Parlin, Whitefield, Hawthorne, and Gorham), either the State or municipality could base one or two courtesy cars at each airport for use by transient pilots and passengers. Large FBOs located at some commercial service airports provide courtesy cars for their customers, primarily for the pilots who wait at the airport for their passengers. At the GA airports in New Hampshire listed above, FBOs will not provide courtesy cars, and in fact a number of airports do not have FBOs. As a result, if the State or municipalities do not provide courtesy cars at those airports, it is very unlikely that any private companies will provide them.

The State and municipalities auction surplus equipment, including cars, and instead of auctioning all of the cars (such as used police cars, for example) some could be based at airports. At airports with FBOs, the FBO personnel can track who uses the cars, check driver's licenses, and oversee fuel and maintenance. At airports without FBOs, an on-line registration system could be established using the internet, but the actual use of the car by transient pilots and passengers would be on the 'honor system'. Personnel from the municipality or state would have to monitor the car for fuel and maintenance. Another issue is liability insurance, and it is not known whether the municipality or State could acquire adequate coverage.

6.2 INTERMODAL AND MULTIMODAL DEFINED

In order to promote multi-modal transportation, which decreases highway congestion and offers both economic and environmental benefits, intermodal facilities are needed. As noted above, airports are by their very function inter-modal transfer facilities. Like bus and train stations, airports are the points at which people and cargo transfer from one mode of transportation to another. A key factor in the design of commercial airports is the efficiency of the transfer process between airplanes and automobiles, buses, etc. In addition, separate inter-modal transfer facilities have been constructed on airports, such as the Portsmouth Transportation Center, which is a park-and-ride lot and bus station located on Pease International Tradeport, although it is not adjacent to the airline terminal.

The U.S. Department of Transportation defines six separate modes of transportation:

- Highway (private automobiles, taxis, intra-state buses, limousines, etc.)
- Air (commercial service [passenger and cargo] and general aviation)
- Rail (inter-state)
- Urban Transit (includes light, heavy, and commuter rail; motor bus; trolley bus; van pools; automated guideway; and demand-responsive vehicles)
- Water (transport of freight and/or people by commercial vessels under U.S. Coast Guard jurisdiction)
- Pipeline

Of those six, this analysis focused on three modes:

- Highway
- Rail
- Urban Transit

At 21 of the 25 airports (84%) in New Hampshire, available ground access is only via a single mode - highway (private/rental car, taxi, or limousine). By comparison, some large-hub airports such as Boston Logan International, enjoy true multi-modal access a) highway - private cars, taxis, intercity buses, shuttle vans, and limousines; b) urban transit - buses and light rail (MBTA); and c) water shuttle).

In New Hampshire, only three airports (12%) are served by local transit (bus) service (Manchester, Pease International Tradeport, and Skyhaven). A fourth, Laconia Airport, is actually the home base of the Greater Laconia Transit Agency (GLTA) although the airport is not listed on its route map. A number of other cities have both airports and local transit (bus) service (such as Concord, Nashua, Berlin, Lebanon, and Keene), however, the transit network does not serve the airport. Although in some cases, the transit route runs very close to the airport. In addition, only one airport, Manchester, is served by an interstate common carrier (Vermont Transit). There is trolley service between the terminal at Pease International Tradeport and the Portsmouth Transportation Center, which has intercity bus service. Figure 6-1 shows the existing intermodal transit lines within New Hampshire.

The U.S. Department of Transportation has actively promoted multi-modal transportation planning, which is consistent with the intent of Congress as codified in two key pieces of federal legislation: the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA - PL 102-240), and the Transportation Equity Act for the 21st Century (TEA-21 - PL 105-178). Congress has promoted increased use of public transportation because it offers a number of benefits, such as more efficient use of energy (see Table 6-1); decreased automobile traffic, which results in lower emissions and better air quality, less road congestion, and fewer highway fatalities; and, potentially, less demand for highway construction and capacity enhancements.

Table 6-1 - US Energy Intensity by Mode: 1999

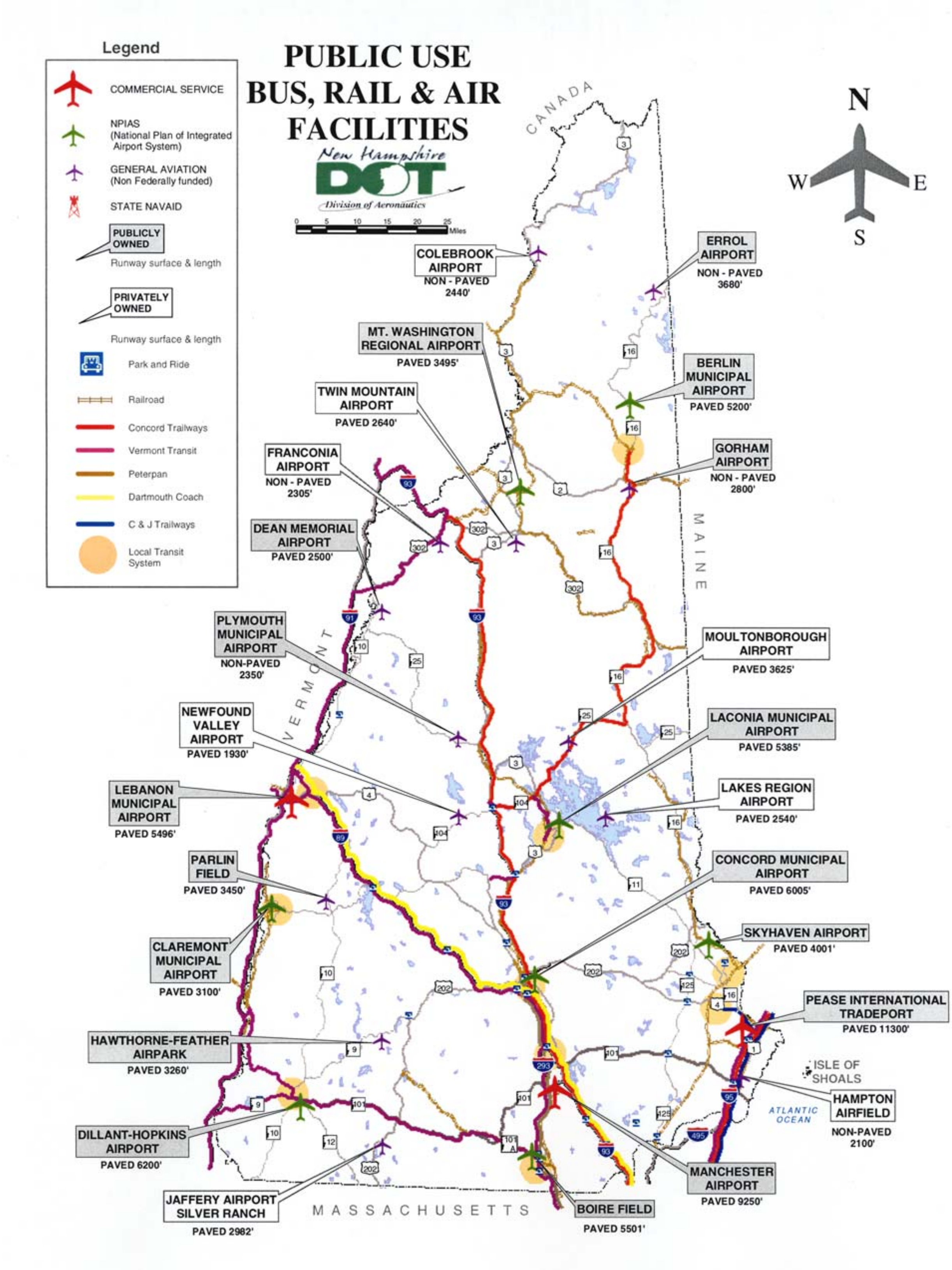
Mode	BTUs per Passenger Mile
Intercity Bus	1,128
Motorcycles	2,079
Transit: Commuter Rail	2,932
Intercity Rail	3,063
Transit: Rail	3,168
Automobile	3,635
Airline: Commercial	4,116
Personal Truck	4,511
Transit: Bus	4,802
Transit: Overall	3,853

Source: Transportation Energy Data Book (Edition 21), September 2001

Public transportation falls into two broad categories: common carriers and for-hire vehicles. Common carriers are buses, light-rail (e.g., the MBTA in Boston), trains (e.g., Amtrak), trolleys, vans, etc., while (private) for-hire modes include taxis, rental cars, shuttle vans, and limousines. In aviation by comparison, scheduled airlines serve as common carriers, while charter/air taxi and Part 135 charter operators provide for-hire aircraft.

In general, urban transit systems (light rail and buses) are owned and operated by government agencies, or are operated by non-profit organizations that rely on subsidies from government agencies. On the other hand, intercity and interstate bus companies are primarily private, for-profit companies. Amtrak provides intercity passenger rail, which is an independent agency that relies heavily on federal subsidies for its capital improvement program and operating income. By comparison, passenger and cargo airlines are exclusively privately owned and operated, for-profit companies.

Figure 6-1 – Public Transit in New Hampshire



All interstate transportation services (both ground and air) have been deregulated by the federal government, and receive varying amounts of subsidies from Washington, D.C. As a result of deregulation, private for-profit transportation companies (which include bus companies and airlines) structure their services (routes, schedules, equipment type, and fares) based on anticipated demand and revenue potential. As a result, a key factor considered by bus companies and airlines when deciding whether to serve new destinations, such as airports, is the ability to generate sufficient revenue to cover their additional expenses (so-called residual expenses). It is interesting to note that a number of bus routes in New Hampshire presently run adjacent to airports, for example:

- Dartmouth Coach along I-89 adjacent to Lebanon Airport.
- Concord Trailways adjacent to Concord and Manchester Airports along I-93.
- The Coach Company and Concord Trailways adjacent to Pease International Tradeport (I-95).
- Vermont Transit adjacent to Dillant-Hopkins Airport on Routes 9 and 12

However, the bus companies stated that they do not serve those airports because they cannot generate sufficient ridership to cover their residual costs and also the potential decrease in ridership due to longer trip times if they stop at airports.

Intercity Bus Service

Six private bus companies (Concord Trailways, Vermont Transit, C&J Trailways, Peter Pan, Coach Company, and Dartmouth Coach) provide the majority of intercity public transportation in New Hampshire (see Figure 6-1). The bus networks are primarily hub-and-spoke oriented, meaning that the bulk of service is to and from the primary hub in Boston, with smaller hubs in cities such as Manchester, Concord, Nashua, Portsmouth, Laconia, and Hanover. Only one airport in the state is served by an intercity bus carrier, Manchester Airport by Vermont Transit. As noted above, the lack of service to other airports in the state by bus carriers, even though some of their routes lie very close to airports, is a strong indication that there is insufficient demand to support bus service to other airports.

Intercity Rail Service

There are two scheduled rail services in the state, both operated by Amtrak. The first is the Vermonter that runs from Washington, D.C. to Montreal, Canada, and runs along the Vermont - New Hampshire border. The train has two stops in New Hampshire, Lebanon and Claremont. However the airports in Lebanon and Claremont do not have connections with the rail stops, and there are no plans to provide connections.

The second rail service that was recently initiated by Amtrak is known as the Downeaster. The service operates within a 114-mile corridor between Boston and Portland, ME and includes stops in Exeter, Durham, and Dover, NH. The train runs four trips daily between Boston and Portland, 365 days a year. A one-way trip takes two hours 45 minutes. Through Spring 2002, ridership has exceeded projections, and the level of rail service is projected to increase with consideration being given to extending the service north of Portland. However, no airports in NH are connected to the train service, and there are no plans to connect any NH airports along the seacoast with the rail service.

There are plans to extend MBTA commuter rail service from Boston to Nashua, and eventually to Manchester along the west side of the Merrimack River. A possible shuttle bus connection from a future train station in Bedford or Manchester to Manchester Airport may be considered, although no connection is anticipated to Boire Field, Nashua Airport. Manchester Airport has expressed a strong desire to see a connection with the rail service if the line is extended to Manchester. Discussions with FBOs and other airport operators, however, indicated that the lack of connections between their airport and rail or bus service does not appear to have impacted their airport's level of service.

Public Transit

As noted in the introduction, a number of cities in New Hampshire have local transit bus systems (Manchester, Nashua, Concord, Laconia, Keene, Portsmouth, Lebanon, Berlin) as shown in Figure 6-1, and each of these cities also have airports. However, except for Manchester, Pease International Tradeport, and Skyhaven, the local transit system does not serve the airport due to low ridership potential, even though the systems are government subsidized. Discussions with FBOs indicated that the lack of transit service to the airport has not had a significant impact on any airport's role or service level.

6.3 REGIONAL GROUND TRANSPORTATION SERVICES

This section summarizes the various transportation infrastructure and services within each of the economic regions and how each links with each region's airports. The various transportation modes that serve the regions were identified and include major roadway access, rail and bus service.

6.3.1 NORTH COUNTRY REGION

There are nine general aviation airports in this region (Berlin, Colebrook, Errol, Franconia, Gorham, Dean Memorial, Mt. Washington Regional, Plymouth, and Twin Mountain), and not one airport has service by a scheduled common carrier (bus, rail, or transit). All of the airports are located on public roads, and highway access to the region includes Interstate 93, US Route 3, and State Route 16, which are major north-south thoroughfares within the Region. East-west access is afforded by US Routes 2, and 302, and State Routes 26, 110, 112.

Concord Trailways provides intercity bus service from Berlin, Conway, Littleton, Franconia, Lincoln, and Plymouth, to Concord and Manchester, NH, and Boston, MA, including Logan Airport. The cities of Berlin and Gorham are served by a public transit system, the Tri-County CAP Freedom Express, however, none of the airports in the area are served by this transit system, or by Concord Trailways which also serves the region.

Although none of the airports in the North Country have dedicated public transportation service, prior arrangements can be made with the airports that have airport managers (such as Berlin and Mt. Washington Regional) for ground transportation. For example, rental cars from a local automobile dealership may be provided at Mt. Washington Regional Airport, but prior notification is required. There is also a privately owned taxi service in Whitefield that also requires either prior notification or can provide on-demand services depending upon time of day. There are no taxis or rental cars available at any of the other airports in the region, which significantly decreases the utility of the airport by transient pilots and their passengers.

6.3.2 UPPER VALLEY REGION

Two major roadways, Interstate 89 and US Route 4, connect the Upper Valley region to the state capital in Concord. There are three airports in this region: Lebanon Airport is the region's only commercial service airport, and is situated adjacent to Interstate 89 and close to I-91 in Vermont; Claremont Airport and Parlin Field (Newport) are general aviation airports in the southern portion of the region, and are accessed by via State Route 10. There are rental cars and taxis available at Lebanon Airport, but no scheduled public transportation. Lebanon Airport's close proximity to two interstate highways exacerbates the impact of competition from other commercial service airports, including Manchester, Bradley Field CT, Burlington VT, and even Boston Logan (particularly for international passengers).

Dartmouth Coach provides intercity bus service from Hanover to Lebanon and New London, to Boston, MA, including Logan International Airport. Vermont Transit also serves the city of Lebanon with a similar bus service to Boston, along with a stop at Manchester Airport. Additionally, the city of Lebanon is served by Advance Transit, a local public transit company. However, none of the bus companies serve Lebanon Airport.

Lebanon and Claremont are also served by Amtrak's Vermonter, which runs from Washington D.C. to Montreal, Canada. This service has two stops in New Hampshire, Lebanon (via White River Junction), and Claremont, however, there are no connections between the rail service and any of the airports in the region.

6.3.3 LAKES REGION

I-93, State Route 28, State Route 106, and US Route 3 traverse the Lakes Region north-south, connecting the region with the White Mountain and Merrimack Valley regions. State Route 11 crosses the central section of the region from east to west. Concord Trailways, an intercity bus company, serves the Lakes Region towns of Laconia, Tilton, and Meredith, NH with service to Concord, Manchester, and Boston, MA.

Laconia has a public transit system (Greater Laconia Transit Agency – GLTA) that services Laconia, Belmont, Tilton, Franklin, Meredith, Ashland, and Plymouth. Primary service is provided to downtown Laconia, and van service is provided to the other locations noted above. They also provide shuttle to Manchester Airport that can be accessed on-demand. The GLTA is based at Laconia Airport, although the airport is not listed on the routes they serve.

There are four general aviation airports within the region. Laconia Airport is the busiest and has two Fixed Based Operators, and is also served by taxis and rental cars, while the other three airports in the region, Newfound Valley, Lakes Region, and Moultonboro Airports, are privately owned and have no public transportation services (taxis, rental cars, buses, etc.) available.

6.3.4 STRAFFORD REGION

The Strafford Region's major north-south access is Route 16 that leads to the Lakes Region and the eastern side of the North County Region. There are several state routes, including 202A, 125 and 11 providing east-west access.

A portion of the COAST (Cooperative Alliance for Seacoast Transportation) public transit system, located in Portsmouth, serves the region. Bus service is provided to Rochester and Farmington. Another smaller transit service, Wildcat Transit, run by the University of New Hampshire, provides students with access to the University, Dover, Durham and Newmarket. There is no intercity bus line serving the Strafford Region.

The only airport in this region is Skyhaven Airport, which is owned by the State of NH. COAST provides a stop at the airport as per their published schedule, however, information obtained from COAST indicated that there is little activity associated with this stop. Taxi service is available at Skyhaven Airport, but on an on-call basis.

6.3.5 ROCKINGHAM REGION

State Route 16 traverses the region in a north-south direction and connects with the White Mountain region. US Route 1 and Interstate 95 connect the region with neighboring Massachusetts and Maine. East-west access to the region is through State Routes 101 and 107 and US Route 4.

Several intercity bus lines serve the region. The Portsmouth Transportation Center, a large intermodal center (bus station and park-and-ride lot) was built several years ago adjacent to Pease International Tradeport. The bus station is run by C&J Trailways bus line, which provides service to points west and south, including Boston and Logan Airport. Additional bus service in the region is provided by the Coach Company from the "park-and-rides" in Epping and Hampton to Boston. Concord Trailways and Vermont Transit pass through the region linking Portland, Maine and Boston, but do not stop in the region.

Local public transit is provided by COAST. COAST runs several local bus lines in the Portsmouth, Dover, Berwick (ME), and Rochester areas, with runs to Farmington, and Exeter. COAST also operates a 'trolley' that circulates on a year-round basis between the terminal and other locations at Pease International Tradeport, downtown Portsmouth, and the Portsmouth Transportation Center (C&J Trailways Terminal).
As noted above, new rail service linking Boston and Portland, Maine began operations in the region. The Downeaster rail service has three stops in New Hampshire: Exeter, Durham, and Dover and has four daily trips. The service has been successful and is expected to grow over the next few years.

Two airports are located in this region, Pease International Tradeport and Hampton Airfield. Pease International Tradeport is one of three commercial service airports in the State. There is public transportation to the airport via the trolley service provided by COAST, which links the airport terminal with the Portsmouth Transportation Center and the City of Portsmouth. There is no direct link from the airport to the Downeaster rail service, however. The terminal building can be accessed by the trolley via C&J's transportation center.

Hampton Airfield, a small but busy GA airport in North Hampton, has access to local taxi service, but no rental cars, buses, or other public transportation links at this time.

6.3.6 SOUTH REGION

Manchester Airport, which is the only airport in the region, has by far the most service by public transportation companies of any airport in New Hampshire. The Manchester Transit Authority (MTA) currently serves Manchester Airport, with one bus route stopping at the airline terminal building. General aviation pilots and passengers must use the fixed base operator (Wiggins Airways), that is located on the east side of Manchester Airport, on the other side of Runway 17-35 from the airline terminal. Wiggins provides shuttle van service between their facility and the airline terminal for pilots and passengers who need to travel from one area to the other. There is no public transportation service to Wiggins, although the FBO is served by taxi companies and they can arrange to have rental cars waiting for inbound GA pilots and passengers at their facility.

Manchester Airport has numerous taxi, limousine, and van services available at the airline terminal, as well as numerous rental car agencies. The only intercity bus service that stops at Manchester Airport is Vermont Transit, which has two daily stops at the airport. The remaining intercity bus lines (such as Concord Trailways, Dartmouth Coach, Peter Pan, etc.) do not stop at Manchester Airport, as their primary service is focused on Boston.

The South Region is accessed primarily by Interstate 93 and US Route 3 (Everett Turnpike) for those people traveling in a north-south direction, and by State Routes 101 and 9 for those traveling east-west. The Everett Turnpike, unlike I-93, is a toll road. New Hampshire DOT is actively exploring widening I-93 to ease the congestion on the highway between the Massachusetts border and the City of Manchester.

Manchester Airport is served primarily by Brown Avenue, which is accessed from I-293. Brown Avenue is a local arterial with residential and commercial development, and is heavily congested, particularly during peak morning and afternoon periods. The City of Manchester is currently working to widen Brown Avenue to two lanes in each direction, and has acquired a number of homes along the road as part of the widening program. The New Hampshire DOT has completed the planning for a new airport access road/bridge to be constructed from the F.E. Everett Turnpike across the Merrimack River to the airport terminal building. The proposed schedule anticipates the road being completed by 2006.

The City of Manchester is served by a number of intercity bus lines that include Concord Trailways, The Coach Company, Dartmouth Coach, and Vermont Transit, all of which provide service to Boston and Logan Airport. Both Concord Trailways and Vermont Transit stop at the Manchester Transportation Center located downtown, while the other lines run through the region or stop at designated "park-and-ride" facilities. Peter Pan bus line runs through the region as well, and provides service to Worcester, MA.

The City of Manchester is also served by the Manchester Transit Authority (MTA) and provides public transit along thirteen routes in the city. Additionally, Flightline, a small van service, provides service to both Manchester Airport and Boston Logan Airport with several intermediate stops in Nashua, Londonderry and Salem.

The region, however, is not currently serviced by passenger rail. Consideration has been given to extending the Massachusetts Bay Transportation Authority's (MBTA) commuter rail service to the City of Manchester sometime in the future as part of the proposed new rail service between Nashua and Boston. A study is planned to begin in 2002 to assess the option of extending the rail line and service to the City of Manchester. Initially, there may be three additional stops on the proposed rail line north of Nashua, including Merrimack and Bedford.

The Bedford train stop may be located adjacent to the proposed access road connecting the Everett Turnpike and Route 3 to Manchester Airport. Discussions with the NHDOT Bureau of Rail and Transit indicated that there could be bus or shuttle service between the train station and Manchester Airport, if a rail stop were constructed near the airport. Although there are no plans to provide commuter rail service directly to the airport if the line is extended to the City of Manchester in the future, Manchester Airport has expressed a strong interest in seeing a connection made between the airport and rail station.

6.3.7 SOUTHWEST REGION

Within this region, State Routes 101, 10, 12, and 9 converge in the City of Keene, NH, which is a central location within the region. Intercity bus service is provided by Vermont Transit, which has a stop in the City of Keene.

There are three airports in the region; Dillant-Hopkins Airport, Hawthorne, and Silver Ranch Airport. Dillant Hopkins Airport has both taxi and rental car services, and both can be accessed from the airport either through calls made from the airport, or scheduled by prior arrangement. There is taxi service available at Silver Ranch Airport, however, there are no taxis, buses, or rental cars available at Hawthorne.

There is one local public transit system in the region, the HCS Community Care/City Express transit system which serves downtown Keene, however, it does not serve Dillant-Hopkins Airport.

There is no direct rail service in the region, however, Amtrak's Vermonter does travel along the western border of the region and is accessed via the station in Brattleboro, VT. However, there is no public transportation between any of the airports in the region and the rail station in Brattleboro.

6.3.8 NASHUA REGION

The Nashua Region's major north-south highways are the F.E. Everett Turnpike and State Route 3, which parallels the turnpike. The major east-west routes are comprised of State Routes 101A, 111, 130 and 102. Boire Field, which is located near Route 101 and the Everett Turnpike, has taxi service available, and rental cars by prior arrangement with an FBO, but no scheduled public transportation service.

The region is served by the Nashua Transit System's Citybus. Citybus has a number of fixed routes in and around the City of Nashua, but does not have a stop at or near the airport. There are no intercity lines that serve the City, but just pass through on the F.E Everett highway. Flightline, a small van service, does provide service to both Manchester Airport and Boston Logan Airport from several park-and-ride lots in the region.

Rail service is expected to begin sometime in 2002 with the extension of the MBTA's commuter rail service to and from Boston, MA. A new rail terminal is to be built in the southern portion of the City of Nashua, however, there are no plans to connect the airport or to provide public transportation between the train station and the airport. A feasibility study of the rail service is planned to begin in 2002 to assess the viability of extending the rail line to the city of Manchester, which could include three additional stops in Merrimack, Bedford, and Manchester.

6.3.9 CENTRAL REGION

The primary north-south roadway in this region is Interstate 93. Major east-west routes include Interstate 89 and State Routes 202 and 4. Like others, this region also has only one airport, Concord Airport. Hertz recently established a rental car facility in the FBO terminal building at Concord Airport in conjunction with Concord Aviation. There are taxi companies located in the city, and both taxis and car rentals are available by prior arrangement at the airport. However, the city's transit service, Concord Area Transit, does not provide bus service to or from the airport, although it runs close to the airport along Loudon Road.

A new park-and-ride lot and bus station was recently constructed adjacent to I-93. Concord Trailways and Vermont Transit provide intercity bus service, and Dartmouth Coach transits through the region via Interstate 89 and 93. However, none of the intercity bus lines serve Concord Airport, and there is no scheduled public transportation between the airport and the bus station.

6.4 INTERMODAL INITIATIVES

The New Hampshire Department of Transportation developed a long-range, statewide transportation plan in January 1995 that presented a number of intermodal transportation goals.

Seven goals were presented in the Plan, with specific initiatives under each goal, as shown below:

1. Maintain, enhance and manage the existing transportation network.
2. Foster an interactive and cooperative approach to integrating land use and transportation planning issues.
3. Improve the safety of the traveling public.
4. Increase the availability of transportation options and connectivity.
5. Maintain the environmental quality of New Hampshire through the development of an intermodal transportation system.
6. Promote the judicious use of financial resources to enhance the intermodal transportation system.
7. Establish a public education program.

The effectiveness of this plan is reliant upon the cooperation between the State and the regional planning commissions to effectively integrate planning to enhance the intermodal development within each of the regions.

Some of the improvements that have been made as part of the initiatives described above include the development of additional "park-and-ride" lots in the State and the intermodal bus station adjacent to Pease International Tradeport, among others. Therefore, the goals of the long-range transportation plan are being realized in the State.

6.5 TRANSPORTATION ISSUES FACING AIRPORTS

There are several issues that must be addressed regarding public transportation to and from airports in New Hampshire. The lack of public transportation has a number of consequences:

- It decreases utilization of airports, primarily by transient pilots and passengers, because they cannot access their ultimate destination after they've arrived at the airport.
- The only means of ground access is via automobile, which adversely impacts road capacity and air quality.

The following facts clearly illustrate the existing situation at airports:

- Only one airport in the state has interstate/intercity bus service (Manchester). Intercity bus lines run in very close proximity to, but do not stop at, Lebanon, Pease International Tradeport, Concord, Dillant-Hopkins, and Laconia Airports.
- Only three airports have local transit bus service (Manchester, Pease International Tradeport, and Skyhaven Airport). The GLTA is based at Laconia Airport, but does not list the airport on its route network. The cities of Concord, Keene, Berlin, Lebanon, and Nashua all have transit systems and airports, but the transit network does not serve the airports.
- Five airports in the state (Colebrook, Errol, Franconia, Newfound Valley, and Dean Memorial) have no taxis, rental cars, or buses available to provide ground transportation. In addition, none of those airports have an FBO on the field.

A number of conclusions can be drawn from this situation:

- The large majority of all ground trips to airports in NH are via automobile (private cars, taxis, and limos), which is very consistent with travel patterns/modal choices statewide.
- There is insufficient demand to support public transportation to most of the airports in the state, either by intercity bus service provided by private companies, or by local transit service provided by municipalities.

In addition, although intercity passenger rail service exists in New Hampshire (Amtrak's Downeaster and the Vermont service), and options for providing new rail service to Nashua and Manchester are being actively explored, there are no plans to directly connect airports in New Hampshire to either existing or future rail lines.

The primary issue regarding GA airports is that they do not generate a sufficient number of passengers to support scheduled public transportation services. For example, a number of airports in cities that have public transit systems (Concord, Dillant-Hopkins, Boire Field, Berlin, Lebanon, etc.) are not served by the system's bus route. The reason for this is that the airport does not generate sufficient ridership to include the airport on their route system.

For example, Concord Airport generates an estimated 63,000 pilot and passenger enplanements per year (based on an industry average of 2.5 pilots and passengers per GA aircraft departure). Based on the statewide trend of 82% of all commuter trips conducted by private automobile with a sole occupant, and only 1% of all commuter trips conducted by public transportation, Concord Airport could generate between 630 – 1,200 passengers per year for public transportation service. Spread over a year, that would represent an average of between two to four passenger enplanements per day for a bus service.

Further, there are issues relating to relatively low frequency of scheduled service from small transit operations that limits the level of service that can be offered. Thus, airports like Dillant-Hopkins, Boire Field, or Berlin are not typically serviced by the local bus service as they are either located on the outer perimeter of the bus network, or are located in adjacent towns. These airports could derive a benefit if they were located in their region's public transit system and would serve as an advantage for those passengers arriving by air to access the respective cities. However, economic factors will drive the potential service, and given that ridership would be low, the public transit systems must focus their limited resources on routes that serve the greater public.

Another issue facing both the GA and commercial service airports is intercity bus service. All of the intercity bus service provided in the State is by for-profit companies. Discussions with the Bureau of Rail and Transit indicate that for-profit companies will only serve routes or locations based upon ridership and revenue potential. As a result, it is unlikely that intercity bus service would be provided at any of the general aviation airports.

Based on the relatively low revenue potential, intercity bus service could only be provided to the airports in the state, other than Manchester, if the service were subsidized by a government agency, as is presently done with a number of local transit systems, and also with Amtrak by the federal government. Subsidies, however, are very costly on a per-passenger basis (see Table 6-2) and will not address the underlying issue of relatively small market potential for the service. As a result, it is unlikely that future bus service at most of the airports could ever be financially self-supporting, and subsidies will be required for as long as the service continues.

Table 6-2 - 1996 US Public Transport & Highway Costs & Subsidies (Amounts in Billions)

Factor	Highway	Urban Public Transport	Airline
User Payments	$661,626	$6,965	$58,250
Tax Subsidies	($1,525)	$16,292	-
Total Costs	$660,101	$23,257	$58,250
Person Miles	3,652,000	38,984	434,700
User Payments per Person Mile	$0.181	$0.179	$0.134
Tax Subsidies per Person Mile	($0.000)	$0.418	$0.00
Cost per Person Mile	$0.181	$0.597	$0.134
Calculated from US Department of Transportation data.			

6.6 OBSERVATIONS AND CONCLUSIONS

In response to the three questions that were raised at the beginning of this task:

1. Is the level of service provided by any airport in the state negatively impacted by the lack of ground transportation services?

At those airports with no public ground transportation services available (Colebrook, Errol, Franconia, Newfound Valley, and Dean Memorial), yes. All of those airports are privately owned-public use, and none have FBOs located on the field. The provision of ground transportation services will likely not significantly increase utilization of the airports, although it is hard to quantify exactly how much additional traffic could be generated by better ground transportation. Private taxi and rental car companies do not serve the area in the vicinity of any of the airports, so there appears to be insufficient demand to support any level of public transportation in those areas without some form of government subsidy. Subsidies, however, as noted above, are expensive and do not address the underlying issue of low market potential.

A number of airports have taxi and rental car services available, however, they are not located on the airport. That requires in-bound pilots to arrange ahead of their arrival to have their ground transportation waiting for them, or else to wait for the car to be delivered after they arrive at the airport. Making such arrangements is particularly difficult after normal business hours, weekends, and on holidays. In addition, a number of FBOs and airport managers have indicated that the in-town taxi and car rental companies often provide poor service, thereby discouraging potential airport customers. However, the taxi and rental car companies located off-airport also serve a local and regional market beyond the airport, and the airport typically does not generate sufficient business (i.e., passenger traffic) to support a separate office at the airport, or longer business hours just for incoming pilots. Again, without some form of government subsidies, which are not recommended, it is unlikely that additional ground transportation services will be provided at those airports.

2. If so, what role does the airport sponsor, State of NH, and/or FAA play in improving those services?

As noted above, there is a very limited role for local, state, or federal agencies in increasing ground transportation services to airports. Financial subsidies are not recommended, even at airports where there are no public transportation services available. The level of ground transportation services provided is largely market-driven and supported by the local and regional customer base, not just the airport, with the exception of Manchester Airport.

One possible option is that either NHDOT or local municipality could base one or two courtesy cars at each airport for use by transient pilots and passengers. The State and municipalities auction surplus equipment, including cars, and instead of auctioning all of the cars (such as used police cars, for example) some could be based at airports. At airports with FBOs, the FBO personnel can track who uses the cars, check driver's licenses, and oversee fuel and maintenance. At airports without FBOs, an on-line registration system could be established using the internet, but the actual use of the car by transient pilots and passengers would be on the 'honor system'. Personnel from the municipality or State would have to monitor the car for fuel and maintenance. Another issue is liability insurance, and it is not known whether the municipality or State could acquire adequate coverage.

3. Is there sufficient demand and are there opportunities to increase public transportation to airports in the state?

Both intercity bus and local transit companies, with few exceptions, cannot generate sufficient ridership at airports to justify serving them, even when the airport is very close to an existing route. Numerous other factors directly affect traffic levels at airports, other than bus service, so it does not appear likely that either scheduled intercity or local transit service will be provided to airports in the foreseeable future, particularly without government subsidies. The possible exceptions being at Lebanon and Pease International Tradeport if, through their on-going marketing efforts, they generate additional airline service and passengers at the airports, they could potentially reach traffic levels that would attract intercity and/or local transit service, as is provided at Manchester Airport presently.

Commercial Service Airports

Table 6-3 summarizes the public transportation services that are provided at the three commercial service airports in the State. All three of the airports have more than one public transportation service available. Of the three, Lebanon is the only airport that does not have scheduled public transportation, while both Manchester and Pease International Tradeport have intercity bus service. At Manchester, there is direct service by Vermont Transit, and at Pease International Tradeport, the trolley system provided by COAST connects the terminal with C&J Trailways at the Transportation Center.

Table 6-3 – Public Transportation Services - Commercial Service Airports

Airport	Rail	Taxi	Rental Car 1/	Van/Limo/Shuttle/ Courtesy Car	Scheduled Bus/Trolley
Pease International Tradeport	--	X	X	X	X
Manchester	--	X	X	X	X
Lebanon	--	X	X	X	--

1/ (D) Rental cars provided by automobile dealerships
Source: Airport interviews and AOPA

Manchester Airport's passenger counts are strong enough that additional public transit opportunities could be considered in the future planning for the facility and the region. The growth opportunities for the airport are in the form of additional intercity bus service. However, at this time, the intercity bus lines are focused on the Greater Boston Region and have not developed the market to transport passengers to and from Manchester Airport. The likelihood of such service is also in question given that the intercity bus lines are providing services along routes that are profitable today. Thus, on the surface, it would appear that servicing Manchester Airport might not be profitable.

This, however, is unknown and based on our discussions with State DOT, it would appear that the intercity bus lines do not have immediate plans to develop service to Manchester Airport. Another consideration is future commuter rail service extending to Manchester. It is foreseeable that, if a rail station were developed in the Bedford area and shuttle service provided to the airport, some passengers would use the commuter rail as an alternate transportation mode. Further studies are expected to be completed for the extension of the commuter rail line, and the Division of Aeronautics and Manchester Airport should be involved in the study to provide input regarding public access to Manchester Airport

General Aviation Airports

Table 6-4 provides a chart indicating the public transportation services provided at the GA airports in the State.

In this table, there are only four airports that do not have any public transportation services, all of which are privately owned-public use. Of the remaining airports, eleven do not have taxi service, which is not provided in those towns. Only one airport (Skyhaven in Rochester) has scheduled public transportation service.

Table 6-4 – Public Transportation Access – General Aviation Airports				
Airport	**Taxi**	**Rental Car [1/]**	**Van/Limo/Shuttle/ Courtesy Car**	**Public Transportation**
Concord	X	X	--	--
Newfound Valley	--	--	X	--
Laconia	X	X	--	--
Lakes Region	--	X (D)	--	--
Moultonboro	--	X (D)	--	--
Boire Field	X	X	X	--
Berlin	X	X (D)	--	--
Colebrook	--	--	--	--
Errol	--	--	--	--
Franconia	--	--	--	--
Gorham	--	X (D)	--	--
Dean Memorial	--	--	--	--
Mt. Washington Regional	X	X (D)	--	--
Plymouth	X	X (D)	--	--
Twin Mountain	X	X (D)	--	--
Hampton Airfield	X	X	--	--
Hawthorne	--	X (D)	--	--
Silver Ranch	X	X (D)	--	--
Dillant-Hopkins	X	X	--	--
Skyhaven	X	X	--	X
Claremont	--	X (D)	--	--
Parlin Field	--	X (D)	--	--

1/ (D) Rental cars provided by automobile dealerships off-airport
Sources: Airport interviews, and AOPA's Airports Directory, 2001

CHAPTER 7 - ENVIRONMENTAL OVERVIEW

7.1 INTRODUCTION

This chapter presents a discussion of the environmental issues affecting the State's system of airports. This discussion does not identify specific environmental issues at each airport, as the data for such a comprehensive analysis was not included in the scope of this project. Rather, this section identifies environmental issues facing airports system-wide, and also describes the existing environmental process, summarizing when an environmental analysis is required and what needs to be studied in that analysis. Finally, recommendations are presented to address airport environmental compliance issues and procedures.

7.2 ENVIRONMENTAL REVIEW PROCESS

Airports, whether public or privately owned, are subject to local, state, and federal environmental regulations. The enabling federal legislation dates back to the 1969 National Environmental Policy Act (NEPA - Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982). Since that time, all levels of government have assumed some level of responsibility for balancing economic development with protecting the environment.

It is important to note that the jurisdiction of government agencies regarding environmental review and permitting is not dependent on funding sources. As a result, all 25 airports in the State System, including privately owned, private use facilities that receive no federal funds, are subject to the same federal environmental regulations as Manchester Airport, which has received more federal grants than any other airport in the state. In addition, all 25 airports in the State System are also subject to local and state environmental regulations, even if they receive no state or local funding.

Before discussing the environmental issues affecting airports, it is prudent to summarize the environmental review process associated with airport development. By understanding that process first, addressing environmental issues can be better understood. There are two environmental procedures that are discussed in this section: the Federal review process, and the State and local procedures that must be followed.

Federal Environmental Process

In response to and under the umbrella of NEPA, each federal agency has adopted its own environmental review, coordination, and permitting procedures. The FAA is part of the U.S. Department of Transportation, and as a result, has developed environmental procedures consistent with DOT's overall policy and mandate. Two FAA orders outline the requirements for environmental reviews for airport projects: Order 1050.1D*, Policies and Procedures for Considering Environmental Impacts*, and Order 5050.4A, *Airport Environmental Handbook*. The first order describes the policies associated with preparing environmental documentation, while the second order describes the specific actions that need to be assessed as part of environmental reviews.

The focus of these two orders is on federally funded or federally approved actions (referred to as a 'federal action'), even if it is a project (or series of projects) being undertaken by an airport. Although airport projects that do not involve FAA grants or approvals are not subject to these orders, those projects are still subject to federal environmental laws and regulations regarding protection of wetlands, air quality, rare and endangered species, etc. The two orders focus on FAA's role and procedures in reviewing and assessing potential environmental impacts, as well as the need for agency and public coordination. The orders do not, however, prescribe any requirements or standards that must be followed by other federal, state, or local agencies.

The FAA orders specify which actions undertaken by airport sponsors require environmental study, and to what level of detail the analysis should be done. There are three types of environmental 'actions'; Categorical Exclusions (CE), Environmental Assessments (EA), and Environmental Impact Statements (EIS).

Projects that qualify as CE require no environmental review based on the premise that there will be no environmental impacts. Projects that typically qualify as CE include:

(1) Runway, taxiway, apron, or loading ramp construction or repair work including extension, strengthening, reconstruction, resurfacing, marking, grooving, fillets and jet blast facilities, and new heliports on existing airports, except where such action will create environmental impacts off airport property.

(2) Installation or upgrading of airfield lighting systems, including runway end identification lights, visual approach aids, beacons and electrical distribution systems.

(3) Installation of miscellaneous items including segmented circles, wind or landing direction indicators or measuring devices, or fencing.

(4) Construction or expansion of passenger handling facilities.

(5) Construction, relocation or repair of entrance and service roadway.

(6) Grading or removal of obstructions on airport property and erosion control actions with no off airport impacts.

(7) Landscaping generally, and landscaping or construction of physical barriers to diminish impact of airport blast and noise.

(8) Projects to carry out noise compatibility programs.

(9) Land acquisition and relocation associated with any of the above items.

(10) Federal release of airport land.

(11) Removal of a displaced threshold.

As noted in the FAA Order, the following items are also categorically excluded:

(1) Acquisition of an existing privately owned airport, as long as acquisition only involves change of ownership.

(2) Acquisition of: security equipment required by rule or regulation for the safety or security of personnel and property on the airport (14 CFR Part 107), safety equipment required by rule or regulation for certification of an airport (14 CFR Part 139) or snow removal equipment.

(3) Issuance of airport planning grants.

(4) Airport Improvement Program actions which are tentative and conditional and clearly taken as a preliminary action to establish a sponsor's eligibility under the Program.

(5) Retirement of the principal of bond or other indebtedness for terminal development.

(6) Issuance of airport policy and planning documents including the National Plan of Integrated Airport Systems (NPIAS), Airport Improvement Program (AIP) priority system, advisory circulars on planning, design, and development programs which are not intended for direct implementation or which are issued by FAA as administrative and technical guidance to the public.

(7) Issuance of certificates and related actions under the Airport Certification Program (14 CFR Part 139).

(8) Issuance of grants for preparation of noise exposure maps and noise compatibility programs per sections 103(a) and 104(a) of the Aviation Safety and Noise Abatement Act of 1979 and 14 CFR Part 150 determinations on noise exposure maps and approval of noise compatibility programs.

(9) Airspace determinations

An Environmental Assessment (EA) requires data collection and environmental analysis, agency coordination, as well as a clear statement of project need and justification. EAs are reviewed and approved by FAA, and typically result in one of three determinations:

a) that the proposed actions will not generate environmental impacts, and therefore a Finding of No Significant Impact (FONSI) can be issued;
b) that the proposed actions will result in significant impacts, and therefore an Environmental Impact Statement (EIS) is required;
c) there will be environmental impacts, however, they can be addressed with mitigation techniques and permitting, and an EIS is not required.

As noted in FAA's Order: "Federal financial participation in, or airport layout plan approval of, the following categories of actions shall be subject to the analysis of an environmental assessment (EA) and subsequent decision as to whether to prepare an environmental impact statement (EIS) or a finding of no significant impact (FONSI)."

(1) Airport location.
(2) New runway.
(3) Major runway extension.
(4) Runway strengthening which would result in a 1.5 Ldn or greater increase in noise over any noise sensitive area located within the 65 Ldn contour.
(5) Construction or relocation of entrance or service road connections to public roads which adversely affect the capacity of such public roads.
(6) Land acquisition associated with any of the above items plus land acquisition which results in relocation of residential units when there is evidence of insufficient comparable replacement dwellings, major disruption of business activities, or acquisition which involves land covered under section 4(f) of the DOT Act (recodified 49 USC Subtitle I, section 303, January 12, 1983).
(7) Establishment or relocation of an instrument landing system, or an approach lighting system.
(8) An airport development action that involves any of the following:
   (a) Use of section 4(f) land.
   (b) Effect on property included in or eligible for inclusion in the National Register of Historic Places or other property of state or local historical, architectural, archeological, or cultural significance.
   (c) Land acquisition for conversion of farmland, scoring over 160 on Form AD-1006, protected under the Farmland Protection Policy Act (FPPA) to nonagricultural use through Federal financial assistance or through conveyance of government land.
   (d) Wetlands, coastal zones, or floodplains.
   (e) Endangered or threatened species.
   (f) FAA requests for conveyance of government land for airport purposes under section 516 of the 1982 Airport Act.

When an EIS is determined to be required, it must be sponsored, funded, and managed by the FAA. FAA will include the airport sponsor in the study, but unlike an EA or other projects, an EIS is a federal action.

In cases where a project triggers either an EA or an EIS, the analysis must address twenty separate environmental categories, as shown below:

- Noise
- Compatible Land Use
- Social Impacts
- Induced Socioeconomic Impacts
- Air Quality
- Water Quality
- Section 4(f)
- Historic, Architectural, Archeological, and Cultural Resources
- Biotic Communities
- Endangered and Threatened Species of Flora and Fauna
- Wetlands
- Floodplains
- Coastal Zone Management Program
- Coastal Barriers
- Wild and Scenic Rivers
- Farmland
- Energy Supply and Natural Resources
- Light Emissions
- Solid Waste Impact
- Construction Impacts

Potential impacts in any one or more of those categories may require additional coordination with and permitting by other federal agencies, such as the U.S. Army Corps of Engineers, U.S. EPA, U.S. Fish & Wildlife Service, etc., as well as by state and local agencies where appropriate. The permitting process is separate from the preparation of the EA and EIS, although permits may be obtained while the EA or EIS is on-going. It should also be noted that even when FAA approves an EA or an EIS, that approval does not commit any other agency to issue an approval or a permit for airport projects. However, the coordination process completed during the preparation of the EA or EIS will typically determine whether other agencies will issue permits, which will be considered by FAA when they are reviewing the EA or EIS.

It should be noted that, as part of the airport master planning process, environmental overviews are often developed, the purpose of which is to identify where environmental problems could occur, and to recommend further in-depth environmental study if needed, such as an EA or EIS. If further analysis is required, it usually culminates in an EA that covers projects listed in a five-year airport capital improvement program (ACIP). Master plans sometimes also include EAs covering the first five years of capital projects. These EAs are sometimes similar to overviews, where projects requiring in-depth studies are noted and projects that do not have significant environmental effects are given a FONSI. An EA will be recommended for projects that may affect environmental resources.

There is another environmental study that is funded by FAA. If an airport determines that there are significant land use compatibility and noise impacts as a result of an airport's operation, then a Federal Aviation Regulation (FAR) Part 150 Noise Control and Compatibility Planning study may be prepared. FAR Part 150 Studies consist of two basic elements – a noise exposure map (NEM) and a noise compatibility plan, both of which are reviewed and approved by FAA. FAA requires the preparation of a FAR Part 150 Study by airports in order to be eligible for federal funding for property acquisition and/or soundproofing in order to address non-compatible land use issues.

This study goes a step beyond the requirements of the noise assessment in the EA or EIS by making specific recommendations to address noise impacts to the surrounding community. Typically, those recommendations include soundproofing homes impacted by specific aircraft noise levels, identifying noise abatement procedures such as runway use configuration, specific arrival and departure tracks, etc., as well as property acquisition. Public involvement is also a major component of the Part 150 study process, and public input must be taken into account when developing and implementing recommendations.

It is apparent when considering the amount of information that must be collected and analyzed, and the level of coordination that is required to undertake an environmental analysis, that this process is both time consuming and expensive. It requires airports, therefore, to budget for and schedule the time to complete these studies, which increases the time it takes to implement capital improvement programs.

The analysis also requires extensive knowledge of environmental regulations and permitting procedures, which require expert analysis above and beyond the level that most airport managers can accomplish internally. As a result, an airport that is not eligible for federal assistance (14 of the 25 airports in the NH State Airport System are not eligible) typically does not have the resources to undertake the necessary environmental analysis, coordination, and permitting process.

There are eleven airports in the NH State Airport System that are included in the NPIAS and that currently receive Federal funding. All of those airports have completed airport master plans and several of those airports have also completed EAs, EISs, and Part 150 studies, as shown in Table 7-1.

Table 7-1 – Airport Environmental Studies

Airport	Master Plan	EA	EIS	Part 150 Study
Berlin	X			
Concord	X			
Claremont	X			
Dillant-Hopkins	X			
Laconia	X	X		
Lebanon	X		X	X
Manchester	X		X	X
Boire Field	X			X
Pease International Tradeport	X		X	X
Skyhaven	X	X [1/]		
Mt. Washington Regional	X	X		

1/ EA to be completed in 2003 (est.)
Source: NHDOT – Division of Aeronautics Library

State Environmental Process

The NH Department of Environmental Services (DES) oversees the state's environmental review and enforcement process. As noted by DES:

> "The protection and wise management of the State of New Hampshire's environment are the important goals of the NH Department of Environmental Services (DES). The department's responsibilities range from ensuring high levels of water quality for water supplies, ecological balance, and recreational benefits, to regulating the emissions of air pollutants, to fostering the proper management of municipal and industrial waste, to managing water resources for future generations.
>
> Formed in January 1987 by state statute RSA 21-O, DES was legislatively created through the consolidation and reorganization of four previously separate agencies: the Air Resources Agency, the Office of Waste Management, the Water Supply and Pollution Control Commission, and the Water Resources Board. Each of these groups is now represented within the department's three divisions: Air Resources, Waste Management, and Water. Also, DES has units within the Office of the Commissioner whose roles are to coordinate such activities as agency-wide planning, enforcement, permitting, public information, laboratory services, geologic services, information resources, and financial and personnel management. "

All of the airports in the state are subject to DES regulations. The state's environmental regulations incorporate key elements of NEPA, and the state process is similar to the federal environmental process described above, particularly since there are three classes of environmental actions: those that represent categorical exclusions, and those that require either an EA or an EIS level of study. NH DES has the authority to promulgate regulations and enforce environmental standards, including issuing permits, similar to federal agencies.

Examples of permits that are issued by DES include State Wetlands Permit issued by the Wetland Division of NHDES. There are also other state regulations that must be taken into account. Examples of these regulations may include Coastal Zone Management Consistency, NH Rivers Management and Protection Program, or the NH Lakes Management and Protection Program.

The NHDES has developed a package that includes all of the necessary forms and provides a guide to determine the level of analysis that would be necessary for a given project. These forms must be filled out for projects that are federally funded, as well state and locally funded. The airport sponsor is responsible for completing the forms and any analyses required to complete the forms.

7.3 ENVIRONMENTAL ISSUES AFFECTING AIRPORTS

Addressing environmental issues has become an integral part of airport development throughout the nation. Environmental issues have become so complex that they have stopped projects from being developed. Over the past twenty years, the Federal Aviation Administration (FAA) has become more focused on environmental issues and has required airports to complete rigorous environmental studies to ensure environmental compliance.

Two environmental issues are predominant in terms of implementing ACIPs: wetlands and aircraft noise. Other environmental issues that have affected airports in New Hampshire include rare and endangered animal species and habitat (such as the Karner Blue Butterfly at Concord Airport and the Bald Eagle in the vicinity of Manchester Airport), as well as endangered and threatened species of flora and fauna, etc. Wetlands are classified as an important natural resource that needs to be preserved, however, in the 1930s and 1940s wetlands were considered to be good locations for airports since they were not considered to be suitable for other land uses. Thus, many airports are actually located in the middle of what are now considered to be valuable natural resources, and a high level of importance has been given to addressing wetland impacts associated with ongoing activity at an airport and impacts associated with airport development.

The second environmental factor is associated with aircraft noise. Aircraft noise has a significant effect on the surrounding community of an airport. Aircraft on the ground, aircraft arriving or departing an airport, or aircraft flying within the airport's flight pattern, generates aircraft noise. The level of noise generated by an airport is dependent upon the number of operations occurring at the airport, coupled with the types of aircraft that operate at the airport.

Associated with noise is land use surrounding airports. The FAA has defined land uses that are compatible and incompatible with airport activity. Commercial and industrial land uses are typically compatible with airports as they are not noise sensitive. Uses that are incompatible with airports include residential development, hospitals, schools, outdoor recreational facilities, or nursing homes, which are very sensitive to noise.

Land use, however, is controlled by the surrounding communities through zoning and building permits, as well as by market forces, and airports have relatively little, if any, direct control over development patterns. Some municipalities have adopted zoning ordinances that protect airport approaches (imaginary surfaces), limited types of development within the vicinity of airports to minimize non-compatible development, as well

as prevent land uses that could impact aircraft operations such as the generation of smoke, light, or electronic signals.
One factor that complicates the ability to control land use adjacent to airports is the fact that airports and their approaches (imaginary surfaces) and aircraft traffic patterns overlie numerous different communities, all of which must adopt zoning ordinances and building permit review procedures to promote compatible development adjacent to airports. Communities are under pressure, however, to increase their tax base to enhance their revenue stream, and adopting standards to maintain compatible land uses with airports often limits their development and tax revenue potential.

In response to many legal challenges dating back to the 1950s, state and federal courts have consistently held that airport sponsors are responsible for the noise generated by aircraft arriving and departing from their facility, and if noise impacts reach certain levels, adjacent property owners can recover damages from airport sponsors. As a result, airports have undertaken strategies such as acquiring easements (so-called 'avigation' <aviation & navigation> easements), that allow for aircraft over flights and the right to make noise. Easements are also acquired to remove penetrations to imaginary surfaces. Easements, however, are often expensive and time consuming to acquire, and unless a municipality is willing to exercise its right of eminent domain, which they are often reluctant to do, airports frequently cannot acquire easements from all of the property owners in the vicinity of an airport, because some owners will not voluntarily sell easements.

7.4 AVAILABLE ENVIRONMENTAL INFORMATION FOR AIRPORTS

During the inventory phase of this System Plan, it was found that, while there is adequate environmental information for airports that receive federal funding (the eleven NPIAS airports), little environmental data exists for airports that do not receive federal funding. For example, to document the presence, extent and quality of wetlands on an airport often requires field work and mapping by a registered environmental professional, and non-federal airports often do not have the resources to hire such professionals. The same is true regarding developing noise contours and land use compatibility studies. Furthermore, in discussions with those airports that do not receive federal funding, managers were either not aware of potential environmental issues on their airport, or had limited knowledge of environmental regulations and laws that pertain to their facility.

Assessing Available Environmental Data

To understand the general environmental issues facing airports in the State, the available environmental documents were reviewed. As noted previously, the eleven airports receiving federal funds are almost the only ones that have prepared EAs or an EIS. Although the information obtained from the review of these documents may be specific to one airport, it does provide a perspective on some of the common issues facing NH airports, in general. Table 7-1 presented in Section 7.2 details the available information for those airports receiving Federal funds. As shown in this table, all of the airports have completed a master plan. Typically, airport master plans address environmental issues as part of an environmental overview section, where information regarding environmental issues is presented and recommendations made for follow-on studies, if necessary.

Going beyond the environmental overviews, six airports have completed extensive environmental studies since 1985. Those studies addressed single projects, as well as all projects listed in various five-year capital improvement programs. Federal Environmental Assessments (EAs) were completed for Laconia, and Mt. Washington Regional Airports. Airports that completed even more detailed environmental studies - comprehensive Environmental Impact Statements (EISs) - include Lebanon, Manchester, and Pease International Tradeport. The EA for Skyhaven is expected to be completed in late 2003.

Several of the federally funded airports have addressed impacts associated with aircraft noise in their adjacent communities. Federal Aviation Regulation (FAR) Part 150 noise studies have been completed by Lebanon, Manchester, Pease International Tradeport, and Boire Field. Pease has also prepared one of the first FAR Part 161 studies in the country dealing with access restrictions for Stage 3 aircraft.

A number of the most recent airport master plans were reviewed to identify environmental issues that are common to NH airports as show in Table 7-2.

Table 7-2 – Environmental Impacts of Proposed Development at Federally Funded Airports

Airport	Environmental Impact
Berlin Airport	Wetlands east of the airport that could affect tree clearing project. Also wetlands could be affected by new approach light system.
Claremont Airport	No effects of proposed projects, but manage runoff effects on nearby stream.
Concord Airport	Presence of the Karner Blue Butterfly, a federally endangered species. Concord reached agreement with U.S. Fish & Wildlife Service & NH DES to set aside property for Blue Lupine (habitat) to allow development of new NH Army Guard Aviation Support Facility.
Dillant-Hopkins Airport	Future projects must address on-airport wetlands and floodplain areas.
Laconia Airport	Potential wetlands impacts from runway safety areas and runway extension .
Lebanon Airport	No significant environmental issues .
Manchester Airport	EIS covering the Multi-Year Development Program implementation.
Boire Field	Potential wetland impacts associated with tree clearing off Runway 14.
Skyhaven Airport	Wetlands impacts associated with future airport improvement projects.
Pease International Tradeport	EIS for base reuse addressed wetlands, aircraft noise, and hazardous materials.
Mt. Washington Regional	Wetlands affecting runway extension and tree clearing projects.
Source: Individual Airport Master Plans	

As noted earlier, this list represents the environmental overviews included in the most recent master plans completed for the individual airports. The EA and EIS studies listed in Table 7-2 were completed either as an outgrowth of previous master plans or the most recent master plans for the airports. This listing of environmental concerns does not represent all of the environmental issues at airports in the state, but it does provide a good indication of what the most common issues are.

Wetlands

As seen in Table 7-2, the primary environmental issue facing NH airports concerns wetlands. These wetland issues are extensive in several cases (e.g., Mt. Washington Regional, Dillant-Hopkins, Laconia, Manchester, Skyhaven Airports, Boire Field, etc.), many of which will require in-depth study to assess the problem and, if necessary, mitigate the impacts. A review of available data on the NH Department of Transportation's Geographical Information System (GIS) provided one source of information concerning the extent of wetlands within the State. Additionally, it also provided information on rivers, coastal zone area, and floodplains that could also be used to assess the existence of potential wetland impacts. However, airports are not included in the database, therefore specific information about potential airport related impacts cannot be readily accessed from the GIS data.

Aircraft Noise

As noted in the master plans, aircraft noise was not a significant issue at many of the smaller General Aviation airports. The relatively low level of activity at many of the smaller airports was insufficient to create significant noise impacts on the neighboring community. However, during the site visits conducted as part of this study, several airport managers noted that the public was aware of the noise created by aircraft flights.

Aircraft noise at several NH airports has been an issue with neighbors. Four airports have completed detailed Part 150 noise and land use compatibility studies since 1986, including Lebanon, Manchester, Boire Field, and Pease International Tradeport. These four airports had sufficient levels of activity that generated aircraft noise affecting the adjacent communities. Each Part 150 study developed noise exposure maps based on five-year forecasts of operations, as well as land use compatibility plans, and also recommended specific actions to address problems. The recommendations included changes to arrival and departure flight tracks, runway use patterns, voluntary curfews, and in the case of Manchester Airport, residential property acquisitions and soundproofing. As noted by Manchester Airport, over 650 eligible homes located in neighborhoods surrounding the airport have received sound insulation modifications. The City of Manchester has received over $20 million dedicated to the Manchester Airport Residential Sound Insulation Program. Improvements to homes included:

- replacing existing windows with double-pane acoustical window units
- replacing existing exterior doors with 1 3/4" solid-core doors
- wall and ceiling modifications
- extra layers of insulation in attics and crawl spaces
- central air conditioning

Land Use and Zoning

Discussions with airport managers also revealed that land use and zoning are often addressed in master plans, even though airports have limited jurisdiction over them. Although there is no comprehensive land use information available at the State level for each city and town, site visits conducted for this study provided an understanding of land use around the airports. Airports in the State are typically set in rural, residential, and mixed-use (residential, commercial, industrial) areas. The list presented in Table 7-3 identifies the primary land uses around airports in the State.

Table 7-3 – Surrounding Land Use By Airport

Rural and Residential Land Use	Mixed Land Use
Lakes Region	Concord
Moultonboro	Laconia
Skyhaven	Newfound Valley
Twin Mountain	Boire Field
Franconia Soaring Center	Dean Memorial
Errol	Gorham
Plymouth	Mt. Washington Regional
Colebrook	Hampton Airfield
Berlin	Manchester Airport
Dillant-Hopkins	Pease International Tradeport
Silver Ranch	Hawthorne
	Lebanon
	Parlin
	Claremont

As noted above, almost half of the airports lie within rural and residential districts, while the remaining airports lie within mixed-use areas. Residential encroachment has occurred near many of these airports, as noted by several of the managers during the airport interviews. Airports that specifically expressed concern were Dillant-Hopkins and Lakes Region, which are located primarily in areas that have seen an increase in population and housing development over the last decade.

Any zoning information that was available from each of the airports was collected as part of this analysis. The information revealed that there are few airports that have airport specific zoning (Table 7-4).

Only four airports have airport-specific zoning in which the airport is a separate district within the zoning regulations. Five airports have overlay zones that are specifically used to control the height of objects around the airports. The overlay zoning is an additional restriction upon the underlying zoning. Thus, 36% of the airports within the system of airports have airport related zoning.

Table 7-4 –Airport Zoning

Region/Airport	Zoning
Central	
Concord	Airport
Lakes	
Lakes Region	No Zoning
Laconia	Industrial / Airport Overlay Zone
Newfound Valley	Industrial
Moultonboro	Residential
Strafford	
Skyhaven	Agricultural / Airport Overlay Zone
Nashua	
Boire Field	Airport
North Country	
Twin Mountain	Residential/Business
Dean Memorial	Airport Zoning
Franconia Soaring Center	No Zoning
Errol	Residential
Gorham	Residential
Plymouth	Residential / Airport Overlay Zone
Mount Washington Regional	No Zoning
Colebrook	No Zoning
Berlin	Residential/Agricultural
Rockingham	
Hampton Airfield	Industrial/ Business/ Commercial
Pease International Tradeport	Airport – Specific to Tradeport only, no local regs.
Southern	
Manchester	Airport
Southwest	
Dillant-Hopkins	Airport
Hawthorne	Commercial
Silver Ranch	Residential
Upper Valley	
Lebanon	Light Industrial
Parlin Field	Rural / Airport Overlay Zone
Claremont	Airport Approach District
Source: Airport Interviews	

Of the remaining airports, four have no zoning because the towns in which they are located have not adopted zoning ordinances. In the case of Mt. Washington Regional Airport, however, the town has created a development plan for the airport and surrounding area that is similar to airport specific zoning, and also defines an overlay zone restricting object heights. The remaining airports are zoned residential or commercial/industrial, many of which are located in smaller districts that are primarily residential in character, with limited commercial and industrial development.

Overlay zoning brings to bear another problem facing NH airports, obstructed approaches. The Division of Aeronautics undertakes a visual obstruction analysis when an inspector visits each airport annually. Obstructions are identified and noted by the inspector and airports are made aware of potential problems, however, no survey or photogrammetry is complied as part of these inspections.

The responsibility for maintaining unobstructed approaches rests with the airport sponsor. In several master plans obstruction analyses were completed, and where there were extensive problems identified, the airports completed a more detailed study subsequently. Claremont Airport, for example, recently completed a study of one of their approaches. Dillant-Hopkins Airport has also completed an extensive obstruction study, and they are close to completing the removal program with the acquisition of land and easements to clear the remaining obstructions. These types of projects highlight the on-going problems in protecting an airport's airspace, but they do not necessarily address controls to limit future obstructions, be they natural or manmade.

There are four airports that have an overlay zoning that incorporates limiting obstructions. The State does have a statute that discusses the need for such overlay zoning and addresses the requirements needed for these zones. This is outlined in the New Hampshire Statue Title XXXIX Airports, Chapter 424 *Airport Zoning* (see Appendix 7-A). Given that only four airports have developed such overlay zones, other airports should become familiar with this concept and implement similar measures in adjacent towns and cities. Given the extent of urban and suburban sprawl in New Hampshire, it is increasingly important that airports have such zoning in place to try to limit development of structures such as cellular phone towers that have the potential to affect existing and future instrument approaches to airports throughout the State.

It is not uncommon for certain constituencies to oppose instituting zoning changes, including overlay zoning. For example, real estate agents and developers have claimed that changes to zoning ordinances negatively impact property values, and city councilors and managers have expressed concern about constraints on development that may impact the municipal tax base. Consequently, the economic impact of implementing airport specific or overlay zoning around airports that currently do not have such zoning is of concern. In addition, given the size of the imaginary surfaces around an airport, as well as the size of the 65 Ldn noise contour around certain airports, multiple jurisdictions are often impacted and therefore zoning changes have to be adopted by many communities, not just the municipality that owns the airport.

However, airport managers noted during the site visits conducted for this study, that their experience indicates that implementing such zoning changes has not had a negative economic impact on the surrounding communities. They noted that there are many other factors that impact property values in a given location, and that zoning changes are not the sole or even primary factor impacting property values. The acquisition of avigation (aviation-navigation) easements is intended to compensate property owners for the financial impact on their property, and other studies have documented that the value of property adjacent to an airport is not lowered by the presence of the airport.

7.5 SUMMARY AND RECOMMENDATIONS

Environmental issues facing airports are increasing in complexity, cost, and the time needed to address them. Environmental issues are relatively well documented and analyzed by airports receiving Federal funding (NPIAS Airports). A series of meetings held with airports in the Upper Valley and North Country regions focused in part on the environmental review and approval process, and several airports (including ones listed in the NPIAS) specifically asked NHDOT and the Executive Council to provide more assistance in coordinating with state and federal permitting agencies to ensure that their projects can proceed in a timely manner.

Based on the site visits, it was also apparent that the 14 non-Federally funded airports have much fewer resources (financial, technical, or logistical) with which to address environmental issues on their airports. Given the discussions held during the site visits, it appeared that non-federally funded airports are not fully aware of environmental laws and regulations affecting their facility, or the environmental process they must follow to obtain agency approval for development projects.

A number of recommendations were made based upon the findings described above, primarily to ensure that airports are made aware of environmental laws and regulations that apply to them, and what procedures they should follow to ensure appropriate resource agency review and approvals.

Federally funded (NPIAS) airports in the State System have a defined environmental process they must complete as part of implementing their ongoing capital improvement programs (FAA Orders 5050.4A and 1050.1D, described above). However, non-Federally funded airports in the state are not subject to those Orders and do not have access to FAA grants to fund EA's or EIS's, or to hire experts in the permitting process.

It is recommended that the Division of Aeronautics develop an education program specifically targeted at non-Federally funded airports to make them aware of their environmental responsibilities, and to ensure they comply with appropriate local, state, and federal environmental procedures. NHDES has prepared a package (Appendix 7-B) that outlines which projects will and will not have environmental consequences. NH DOT should require airports to complete these forms as a condition of receiving grants from the State to ensure that they are in compliance with appropriate environmental regulations, as shown below:

A. The Division of Aeronautics should approach NHDES and the Office of Environment to discuss their existing environmental procedures vis-à-vis airports, and to develop an airport-specific review process whereby airports would submit environmental information when they begin implementing their capital improvement programs. Related to this process, it is also recommended that the Division of Aeronautics undertake a series of mini-master plans for non-federal airports. Such mini-master plans would have a very focused scope of work to produce a current Airport Layout Plan (ALP), capital improvement plan (CIP), and environmental overview. Such mini-master plans would provide an extremely useful database for the Division of Aeronautics and the non-federal airports, which is not presently available.

B. The Division of Aeronautics should obtain information packages from NHDES and ensure that all airports are aware of the environmental process undertaken by DES and federal environmental agencies. This can be done as part of the annual inspection program, or through trade groups such as the Granite State Airport Managers Association (GSAMA).

C. As each airport requests a grant, either a categorical exclusion form or the environmental review form should be provided outlining the criteria for either a categorical exclusion or the need to complete additional environmental study.

D. If there is a potential environmental impact from the proposed project(s), the Division of Aeronautics should work with the airport to coordinate with NHDES and the Office of Environment to complete the required analyses.

The Division of Aeronautics should review the existing land use and zoning for all of the airports within the System during their airport inspection process. The purpose of this review is to develop recommendations to limit further incompatible land use and to protect each airport's airspace by limiting man-made towers and vegetation from penetrating protected airspace. The Division of Aeronautics should evaluate each airport's surrounding land use and zoning regulations, if they exist.

In cases where an airport does not have airport specific zoning or overlay zoning to protect airspace, the Division of Aeronautics should review with the airports the opportunity to develop such zoning. If airport specific zoning is unable to be developed or does not make sense, then overlay zoning should be developed to protect airspace.

Regional planning agencies can play a lead role in this process, for several reasons. They have in-house expertise on land use and zoning, they deal with regional development and transportation issues, and the multiple municipalities that are affected by airport imaginary surfaces and noise contours are often represented on a single RPA.

Information on current zoning and overlay zones was collected as part of this study and provided to the Division of Aeronautics. It was found that not all airports have zoning or overlay zoning for their airports. This type of zoning is important to have as it ensures the protection of the airports and their related airspace. Also, airports that are federally funded are required by the grant assurances to maintain such zoning. The Division of Aeronautics should develop an educational pamphlet addressing this issue and provide them to airports during the airport inspections.

The Division of Aeronautics should ensure that the 25 airports in the State System comply with current state statutes regarding land use and airspace controls, and:

A. If the airport has airport specific zoning, ensure that the language includes elements of FAA advisory circular AC 150/5190-4A, *A Model Zoning Ordinance to Limit Height of Objects Around Airports*.
B. If the airport has overlay zoning, ensure that it meets NH State statutes, as well as the above referenced advisory circular.

A number of airports and states across the country have adopted zoning ordinances that protect airports, and those examples can serve as models, along with FAA's advisory circulars, for municipalities that will consider amending their ordinances. Such information can also be provided to the Regional Planning Agencies so that they can work with their municipal members to adopt such changes, as well. Sample zoning ordinance language form AC 150/5190-4A is presented in Appendix 7-C.

CHAPTER 8 - RECOMMENDED AIRPORT SYSTEM

8.1 INTRODUCTION

This chapter presents the findings and recommendations concerning the existing New Hampshire Airport System, as well as implementation strategies for the future state airport system plan. This analysis examines statewide issues, as well as regional and airport-specific issues. Throughout the preparation of this Airport System Plan, input was solicited from a wide variety of constituencies, including airport users and tenants; airport sponsors, authorities, and managers; state and federal agencies; regional planning agencies; environmental agencies; city managers and economic development directors; and corporate officers.

A variety of techniques were used to collect and analyze data, including compiling existing published sources, conducting mail-out surveys, site visits, telephone surveys, one-on-one interviews with key parties, presentations and meetings with airport authorities and regional planning agencies, meetings with city managers and economic development directors, etc.

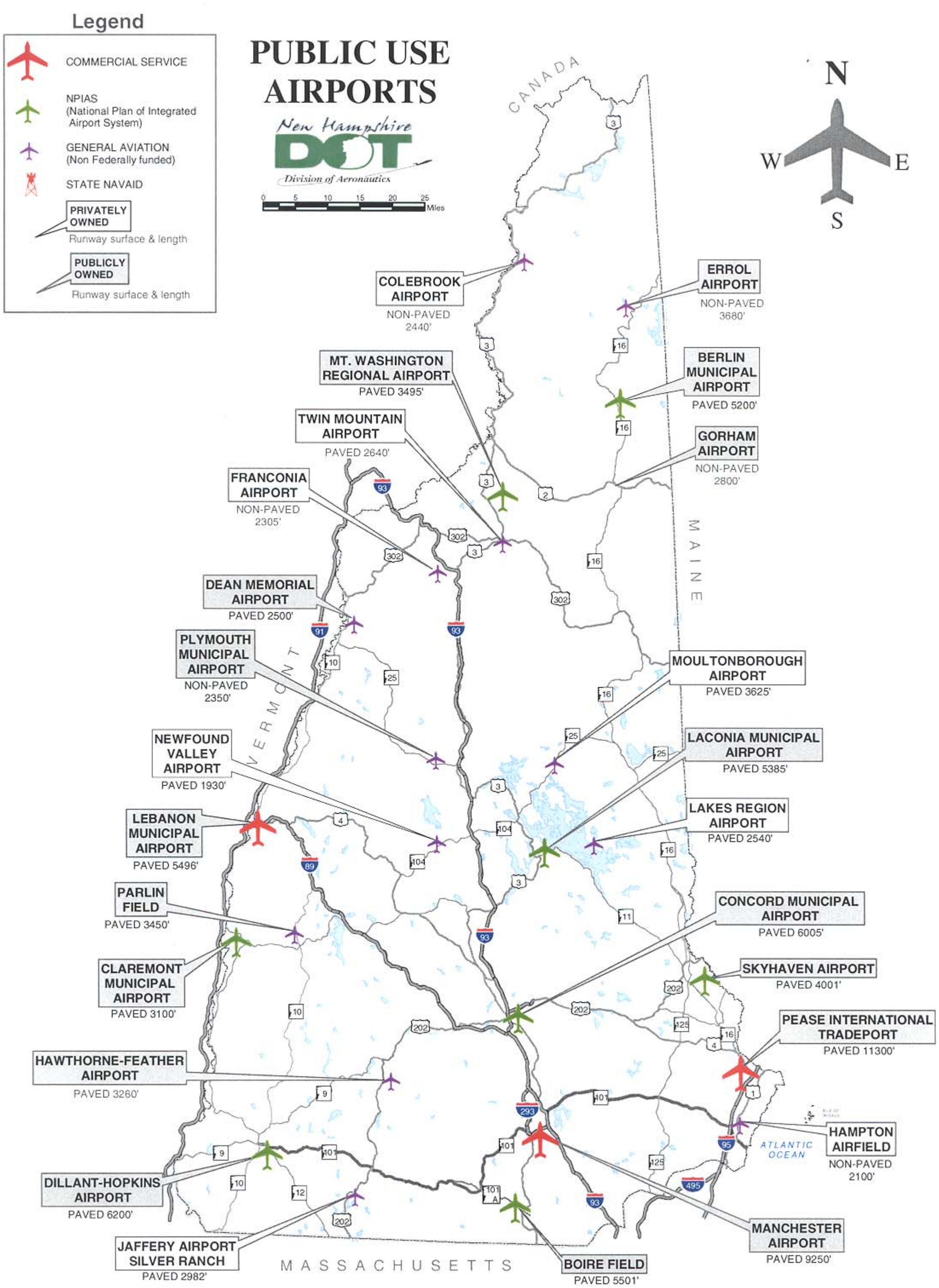
As noted previously, the state was divided into nine regions based on their socio-economic characteristics, and each region was analyzed in terms of its future economic, demographic, and aviation trends.

As of 2003, there are 25 airports in the State Airport System Plan (See Figure 8-1). To briefly summarize the System:

- Three (12%) are commercial service airports (Manchester, Pease International Tradeport, and Lebanon).
- Manchester Airport captures more than 98% of all passenger enplanements and more than 95% of all cargo enplanements in the state.
- Ten of the airports (40%) are privately owned, public use.
- Fourteen airports (56%) are listed in the FAA's National Plan of Integrated Airport Systems (NPIAS), of which 11 (44%) are eligible to receive FAA grants.
- Boire Field, Nashua, has the most based aircraft (approx. 400) - 33% of all based aircraft in the state.
- The North Country Region has the most airports of any of the study regions – nine total, including the most privately owned – public use airports (four).

Although there are more than 50 helipads and more than 10 seaplane bases in New Hampshire, most of which – although not all - are privately owned, private use, none are included in this Plan, however they are discussed in this Chapter.

Figure 8-1 – Existing System of Airports



8.2 STUDY OBJECTIVES

Three broad objectives were identified for this Airport System Plan Update, as summarized below.

1. Clearly identify the relationship between airports and economic development

Based on surveys conducted at each airport, as well as other data sources, it is estimated that approximately 3,200 people are employed by 115 separate aviation-related businesses located on airports in New Hampshire (that represents one half of one percent of total employment in the state). However, 78% of airport-related employees and 92% of airport-related businesses are located on two airports: Manchester and Pease International Tradeport. Of the 25 airports in the State Airport System Plan, the analysis in this study confirmed that Manchester Airport has the most dramatic impact on the state's economy, and in fact, is the only airport in the System Plan that has a significant statewide economic impact:

- Gross Annual Payroll (in 1998 with 1,388 employees)…….................. .... $31,816,000
- Airport Expenditures (1998).. .... $504,231,000
- Airport Expenditures (Year 2010)... ....$628,971,000
- Total Economic Impact (Year 2010)... ....$1,035,554,000

(Source: *Economic Impact Study Final Report for Manchester Airport*, Leigh Fisher & Assoc., Dec. 1999)

Boire Field also prepared an economic impact study and noted that the airport is: "a major factor in the economy of Nashua and its surrounding communities. During 1999, the airport had a total economic impact of $21,528,940 and is projected to have a total benefit of $131,436,334 over the next five years".

An extensive outreach program was conducted for this study. That program included both mail-out and telephone surveys, numerous one-on-one meetings and interviews, presentations at industry association meetings, etc., to determine how companies throughout the state use airports, and also to measure their perception of the value of airports to their operation in New Hampshire. In addition to the outreach program, existing studies on the state's economy were reviewed and documented.

A system was developed by which each airport was ranked in terms of their role in supporting tourism, business development, and/or as a public utility. A series of measures were devised to rank each airport as high, medium, or low in terms of its level of support, as shown below. One key element of the ranking process was the input provided by officials (city managers, councilors, and economic development directors) of municipalities that own and operate airports.

System Airports Classified by Level of Support			
	Low	Medium	High
Tourism Support	19	3	3
Business Support	15	4	6
Public Utility	15	6	4

The definition of low, medium or high for each category is presented below:

- Low Tourism Support = unidentified or infrequent use of the airport by tourists.
- Medium Tourism Support = occasional use of the airport by tourists.
- High Tourism Support = frequent use of the airport by tourists.
- Low Business Support = unidentified or no aviation-dependent business establishments or jobs, infrequent transient corporate aircraft operations, and no based corporate aircraft.

- Medium Business Support = Less than five aviation dependent business establishments, and/or less than thirty aviation dependent jobs, and/or 500 corporate aircraft operations annually (estimated), and/or less than five based corporate aircraft.
- High Business Support = Five or more aviation dependent businesses, thirty or more aviation dependent jobs, established and regular corporate operations, and more than five based corporate jets, along with significant corporate operations.

Public Utility is a measure of known use by military units, public institutions, and government agencies (such as the state and federal forest service, police, fire protection, emergency medical operations):

- Low Public Utility = unidentified or no use of the airport by any military, public agency, or government aircraft.
- Medium Public Utility = occasional use of the airport by military, public agency, or government aircraft.
- High Public Utility = regular or high use of the airport by military, public agency, and/or government aircraft, including the NH Air and Army National Guard units at Pease International Tradeport and Concord.

That data and analysis led to the conclusion that while some of the other 24 airports in the New Hampshire System Plan (other than Manchester Airport) support local and regional economic development, and also generate economic activity through employment and sales, they do not drive regional economic growth and investment. Company executives that were surveyed noted that factors such as the availability of skilled labor, labor costs, taxes (e.g. the business profits tax – BPT, and the business enterprise tax – BET), the cost of energy (particularly electricity), communications and ground transportation infrastructure, are much more important to their decision to locate and expand, as well as the local and regional economy, than most airports.

The majority of businesses that responded to the surveys in this study use airline service at Manchester Airport and some companies, such as Fidelity Investments, indicated that the presence of Manchester Airport was a major factor in their decision to locate a large operation in New Hampshire.

Other examples of companies that made their location decisions based on the presence of an airport include C&S Wholesale Grocers in Dillant-Hopkins Airport, Keene; White Mountain Insurance Group - Manchester Airport; Presby Environmental Plastics - Mt. Washington Regional Airport; and Energex Pellet Fuel - Lebanon Airport.

Some airports have developed joint marketing programs with adjacent businesses, examples of which include the Franconia Airport with the Franconia Inn, and Mt. Washington Regional Airport with the Mount Washington Hotel. Additionally, the race teams that use the New Hampshire International Speedway (NHIS) fly into Concord and Laconia Airports during the two NASCAR races held at NHIS each season (see Appendix 8-A). As many as 80 aircraft use the two airports during race weekends.

There are also a number of companies based in New Hampshire, or with offices in the state, that operate company airplanes, some of which include:

- Graphics Packaging at Concord Airport
- Jefferson Pilot Insurance at Concord Airport
- Kalwall Corporation at Manchester Airport
- Fisher Scientific and Tyco Corporation at Pease International Tradeport
- Pulp & Paper of America at Berlin Airport (since left the area)

Some survey respondents indicated that while they use airports other than Manchester because they are convenient transportation facilities, those airports serve a supporting versus a primary role in decisions concerning office/plant location and investment. Municipal and state economic development officials also shared the same perception of the role of airports in their community.

2. Develop a program to increase investments by local and state agencies in airports

There are two separate issues regarding financial investment in airports:

a) The need for funding for capital improvements (such as constructing new, rehabilitating and expanding existing facilities).
b) Subsidies provided by airport owners (sponsors) for operations and maintenance (O&M). This is an important issue because most of the 25 airports in the State Airport System Plan are not financially self-supporting in terms of their annual operating budgets.

Regarding investments for capital improvements, both the federal Airport Improvement Program (AIP) and the State of NH have limited resources and cannot meet the needs identified by the federally-funded airports in the state. Through 2007, there will be an estimated shortfall of approximately $700,000 per year even if FAA's AIP program is re-authorized at the same funding level as FY 2002. However, if money is diverted from AIP for transportation security or other purposes, then the shortfall will be even larger.

It is important to note that 72% of all federal and state investment in capital improvements has gone to Manchester Airport to support its $500 million expansion program. The level of FAA funding that has been provided is based on their established priority ranking system, and rapidly growing commercial service airports are given high priority by FAA. Certain phases of Manchester's program will be completed by 2005, while other projects, including additional terminal expansion, second parking garage, airport access road, an airport master plan update, etc. will be completed subsequently. As a result, Manchester Airport will continue to apply for FAA grants beyond the end of this planning period (2010).

It should be noted that even if Manchester Airport did not apply for additional FAA grants, that money would not be re-allocated by FAA to other airports in New Hampshire. It would go instead to other commercial service airports similar in size and activity to Manchester, located in other states.

In addition to capital improvements, airport sponsors (owners) are responsible for annual operating and maintenance (O&M) budgets, and when there is a shortfall they use local appropriations to make up the balance. Based on numerous interviews with municipal officials and airport managers, there is a very clear relationship between local political support for an airport and its ability to be financially self-supporting. Those facilities that rely on subsidies, particularly for annual operating and maintenance expenses, experience significantly less political support and greatly increased scrutiny from city councilors and managers.

As a result, airport managers are pro-actively adopting best-business practices (such as using industry rates and charges based on benchmarking, identifying cost-centers and revenue streams, and controlling overhead costs) in order to balance their budgets. However, many general aviation airports have limited revenue sources, particularly those airports that do not have fixed base operators (FBOs), and consequently many airports are unable to balance their annual O&M budgets.

Unfortunately, budget deficits are common among GA airports across the country, according to the results of a national survey conducted by the American Association of Airport Executives (AAAE). Nationally, GA airports generate an average of $8.99 in revenue per aircraft operation, while their operating expense averages $10.74 per aircraft operation, which is a gap of 19.5%.

3. Identify the key constituencies and make them aware of the value of airports to the states economy

There are a number of different constituencies that have a direct impact on airports in New Hampshire. The most obvious ones are:

- Airport users and tenants (pilots, passengers, fixed base operators, other businesses)
- Airport sponsors (owners) – city and town councils, managers, economic development officers
- NHDOT Division of Aeronautics – funding, technical support, enforcement
- Federal Aviation Administration (FAA) – funding, technical support, enforcement

In addition to those constituencies, however, there are a number of others that have very important roles to play regarding airport operation and development:

- NH General Court – funding, regulatory and policy issues.
- NH Congressional Delegation – input to federal airport legislation and funding.
- Regional Planning Agencies – land use and zoning, multi-modal transportation planning.
- Environmental agencies, including NH Department of Environmental Services (DES) – review and permitting of airport development projects.
- State and local economic development agencies, including NH Department of Resources and Economic Development (DRED) – airport marketing and technical support.
- Citizens groups – provide input on airport operations and development.
- Aircraft Users Advisory Board (AUAB).
- NH Legislative Aviation Group

In terms of implementing the recommendations presented in this chapter, all of the parties listed above must have clearly defined roles in the on-going process. There are a number of existing organizations in the state that represent aviation constituencies, including the Granite State Airport Management Association (GSAMA), the Aviation Users Advisory Board (AUAB), the Aviation Association of New Hampshire (AANH), the Aviation and Space Education Council, among others. However, those groups are aviation oriented, and no one organization includes all of the key constituencies identified in this study.

8.3 SUMMARY OF FINDINGS, RECOMMENDATIONS, AND IMPLEMENTATION

This section presents the summary of the findings that were developed as a result of the analysis of the airport system in New Hampshire. A number of specific recommendations were developed in response to the findings, as well as implementation guidelines directed towards all of the key constituencies identified above. The conclusions, recommendations, and implementation guidelines were divided into six broad categories, as summarized below:

1. <u>System Capacity</u> – Includes airport facilities and operations.
2. <u>Financial/Economic</u> – Both capital improvements and operating and maintenance budgets
3. <u>Division of Aeronautics</u> – Funding, operations, and policy issues such as right-of-first-refusal and data collection.
4. <u>Intermodal</u> – Ground transportation issues, including scheduled public transportation.
5. <u>Environmental</u> – Resource agency coordination, review, and permitting.
6. <u>Security</u> – Since September 11, 2001 new security regulations and procedures have had an enormous impact on both airport operations and costs, particularly on the three FAR Part 139 airports (Manchester, Pease International Tradeport, and Lebanon).

The format for each section presents the finding, recommendations concerning the finding, and then the implementation strategy to address the each finding.

8.3.1 SYSTEM CAPACITY

1. Airport Service Area Coverage

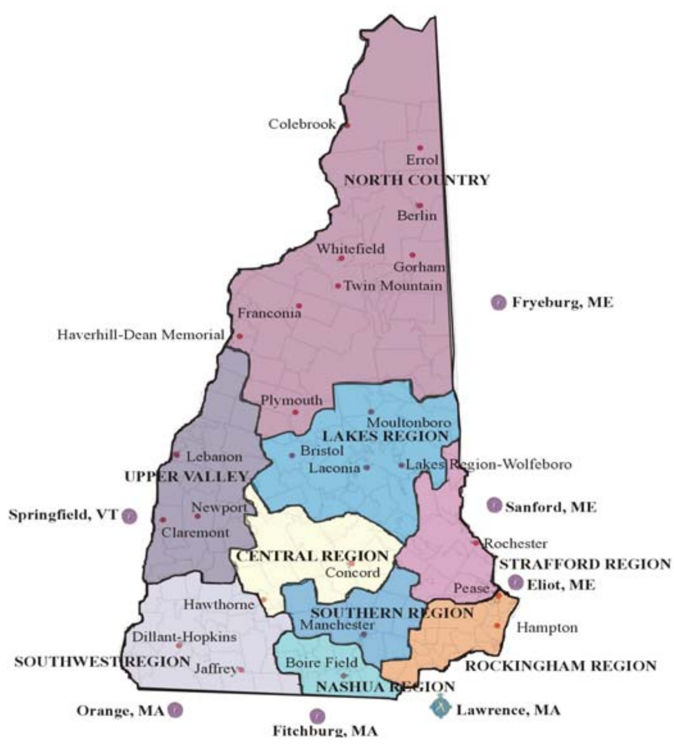
Finding: Currently, the existing twenty-five airports in the State System Plan provide more than adequate service area coverage in each of the nine regions, with the exception of the North Conway area in the North Country. An out of state airport, Eastern Slopes Regional Airport in Fryeburg, ME, provides service area coverage for the North Conway region. Because it is publicly owned and encumbered by federal and state grant assurances, it is anticipated that Fryeburg will continue to provide service area coverage beyond this planning period (2010).

Recommendation: Based upon the current system of airports, as well as the current financial and demographic conditions, no new airports are needed in the State Airport System Plan to provide additional service area coverage.

2. Adjacent Out-of-State Airports

Finding: The service areas of seven out-of-state airports (Sanford, Eliot, and Fryeburg Airports in Maine, Springfield Airport, VT, as well as Orange, Fitchburg, and Lawrence Airports in Massachusetts) extend into New Hampshire (Figure 8-2). All of those airports, with the exception of Eliot, are publicly owned and operated, and are encumbered by state and federal grants. Some of the out of state airports (Sanford, Eliot, Springfield, Orange, Fitchburg, and Lawrence) compete against New Hampshire airports (including Skyhaven, Lebanon, Claremont, Dillant-Hopkins, Silver Ranch, and Boire Field), and FBOs at those airports, for traffic and business.

Figure 8-2 – Out of State Airports



It should be noted that out-of-state airports do not have to be close to New Hampshire's border to compete against in-state fixed base operators. FBOs at airports such as Hanscom Field, MA, for example, can draw maintenance and flight training business away from NH airports. Other out-of-state airports such as Eastern Mountain Slopes Regional in Fryeburg, ME, provide coverage for the North Conway area where there is no in-state airport.

The State of Massachusetts recently changed its law (effective March 1, 2002) to exempt aircraft and parts from the state's 5% sales tax, thereby eliminating a strong incentive for aircraft owners, particularly of larger corporate aircraft, to base those airplanes in New Hampshire. The change is temporary (until 2006) unless it is extended or made permanent by the Massachusetts state legislature. It should be noted that the State of Connecticut adopted a similar change to its tax law in 1997 in response to lost business due to airplanes moving out of state. Since the change in Massachusetts tax law was adopted in early 2002, few if any corporate aircraft have left New Hampshire and returned to Massachusetts, in part because existing flight departments have already invested in hangars and other facilities in New Hampshire. However, the change in Massachusetts tax law will likely result in significantly fewer Massachusetts airplanes being located in New Hampshire in the future, which will decrease the growth of based aircraft in this state.

Recommendation: The Division of Aeronautics should monitor the neighboring airports in terms of any changes in their role, facilities, and services, as well as any changes in adjacent state laws, as well as the overall economy, and determine whether New Hampshire airports may be penalized or suffer from increased out-of-state competition. For example, if an adjacent state were to significantly lower taxes on avgas and/or Jet-A fuel (which is considered unlikely given the budget deficits faced by most states), the resulting lower fuel prices would attract a number of New Hampshire aircraft, resulting in lower fuel sales and revenues for in-state FBOs.

Implementation: The Division of Aeronautics should consider appropriate responses to changes in adjacent state laws, such as the recently passed exemption for airplanes and parts from Massachusetts state sales tax, and determine whether a response would be warranted by the Division, DOT, or the General Court. In general, any changes that bring adjacent state tax laws in line with existing New Hampshire laws and procedures, such as what Massachusetts did recently, does not warrant a response by New Hampshire. However, if an adjacent state creates a significant advantage for their airport tenants and businesses that will impact New Hampshire airports, then a response by Division of Aeronautics or the NH General Court may be warranted, similar to what was done in Massachusetts and Connecticut.

3. System Constraints

Finding: Demand for additional hangar space was identified at many airports throughout the state. In assessing each airport's ability to add new facilities, it was found that all but one airport has the space available to accommodate projected demand. Boire Field in Nashua is close to its build-out capacity in terms of based aircraft because it is physically constrained by wetlands (the Pennichuck Water Works to the north) and adjacent residential, industrial, and commercial development.

If Boire Field reaches saturation, the 'overflow' of based aircraft after 2010 could be accommodated at Jaffrey, Manchester, and/or Concord Airports. It is also possible that some based aircraft could locate at Orange, Fitchburg, and Lawrence Airports in Massachusetts, particularly since that states' law was changed in early 2002 exempting aircraft and parts from the Massachusetts state sales tax. That change in the tax law is temporary (until January 1, 2006), unless it is extended or made permanent by the state legislature.

Recommendation: Monitor Boire Field to assess future growth of based aircraft vs. available hangar and tiedown capacity. If the airport reaches capacity in terms of based aircraft within the next ten years, the Division of Aeronautics should work closely with airport sponsors at Silver Ranch, Concord, and Manchester to ensure that they can accommodate any 'overflow' of based aircraft. The primary goal is to retain as many based aircraft within NH as possible.

Implementation: The Division of Aeronautics should, as part of their annual review of the System Plan, assess the demand-capacity of Boire Field and Dillant-Hopkins Airport, and identify when they will reach their limits in terms of based aircraft. The Division of Aeronautics should also work with Silver Ranch, Concord, and Manchester Airports to provide additional tiedown and hangar capacity.

4. <u>Airport Roles</u>

Findings: Based on current trends in the airline industry, none of the existing 22 general aviation (GA) airports in the State System Plan will receive scheduled airline service through the end of the planning period (2010). As a result, all existing GA airports will retain that role throughout the planning period, and Lebanon, Pease International Tradeport, and Manchester will remain as the three commercial service airports in NH.

Although no significant changes in airport roles are anticipated, a number of airports will enhance their facilities to better serve aviation demand.

- Manchester Airport will grow from small-hub to a medium-hub commercial service airport based on the growth in passenger enplanements (FAA defines medium hub airports as those that accommodate more than 0.25% but less than 1% of total national enplanements. In 2001, that represented between 1,652,674 to 6,610,695 passenger enplanements.) In 2002, more than 1.6 million passengers enplaned at Manchester Airport, which means that it is very close to the threshold as a medium hub airport.

  With the completion of the expansion program, particularly the extension of Runway 17-35 to 9,250 feet and the installation of a Category IIIB instrument landing system (ILS), the airport will be able to accommodate non-stop transcontinental and transatlantic service. Therefore, its haul length (as defined by FAA) will increase from medium to long range (more than 1,500 miles), which will open new non-stop markets not presently served from Manchester. As a result, its potential passenger and cargo traffic will increase even further, and Manchester will maintain its dominant role as the primary commercial service airport in the state and the Northern New England region.

- Mt. Washington Regional Airport is examining a proposed runway extension to 5,000 feet, and has also expressed a desire to upgrade its non-precision localizer instrument approach to a full Instrument Landing System (ILS) or precision GPS approach to Runway 10 to accommodate more jet and turboprop corporate aircraft. Issues such as wetland impacts will have to be addressed, and may require obtaining permits. The airport will remain a general aviation facility, but would be capable of accommodating corporate traffic that is not now served if the proposed improvements are implemented.

- Skyhaven Airport is proposing a runway extension to 5,000 feet to accommodate increased corporate aircraft, but will also remain a general aviation facility. As with Mt. Washington Regional, the runway extension will accommodate more corporate jet aircraft than are currently using the facility.

- Laconia Airport is examining a runway extension, as well as constructing FAA-standard runway safety areas, to provide more operational capability (in the form of increased payload and fuel) for corporate jet aircraft that currently use the airport. It will also remain a general aviation facility, and these enhancements will benefit the current mix of aircraft using the facility. Issues such as wetland impacts will have to be addressed and may require obtaining permits. The FBOs at Laconia Airport indicated that the upgrade of the non-precision approach to a full precision instrument landing system

(ILS) several years previously resulted in an increase in corporate traffic at the airport. Similar upgrades to non-precision approaches at other airports would likely see similar results.

- Boire Field has identified a need for a parallel runway (3,200 feet long, visual daytime only) to serve training aircraft (touch and go traffic) and increase the airport's peak hour operational capacity. Boire will remain a general aviation reliever airport, and as of 2003 the only designated reliever in the state.

- Berlin Airport is examining publishing a precision instrument approach (either an ILS or GPS) to Runway 18, including the installation of a medium intensity approach light system (MALSR). Issues such as wetland impacts will have to be addressed, and may require obtaining permits.

- Dean Memorial Airport is actively working to publish a non-precision straight-in GPS instrument approach, which will increase the airport's operational utility. The Airport has contacted FAA about starting the process.

Recommendation: The Division of Aeronautics should support the proposed development described above as part of each airport's capital improvement program, including assisting the coordination process with NH-DES as part of the environmental review and permitting process.

Implementation: The Division of Aeronautics should fund the Capital Improvement Program to the extent feasible, and also amend Concord Airport's role in the NPIAS.

5. Entry Criteria for New Facilities in the State Airport System Plan

Finding: Current procedures allow any public use facility (airport, heliport, or seaplane base) – private or publicly owned - to enter the State's Airport System Plan if they meet two criteria: **a)** declare that the facility is open for public use, and **b)** a request for state funding is submitted by the facility owner.

As a result, the existing criteria for entry into the New Hampshire Airport System Plan is too broad, and too much discretion is given to airport sponsors to decide when they will enter the system, and hence become eligible for state financial assistance. There are no formal guidelines established for the Division of Aeronautics regarding entry into the state system. However, policy has been established by the Division of Aeronautics to use applicable FAA guidelines for airports requesting to enter the system.

Recommendation: The requirements for future entry into the State Airport System should be formalized. The Division of Aeronautics should be given the authority to exercise discretion in determining which facilities (airport, heliport, or seaplane base) can be admitted into the State System Plan by establishing performance-based entry criteria. The entry criteria should be similar to FAA's for inclusion in the National Plan of Integrated Airport Systems (NPIAS), for example: the facility may be required to have a minimum of ten based aircraft; be located at least 20 miles from the nearest other facility also included in the State System Plan; be in close proximity to a town, city, or location (including important resource or recreational facility) not presently served by another airport in the State System; the facility develop a plan to comply with FAA design criteria within a two year period; and the Division of Aeronautics may make a specific determination whether that particular facility is needed based on special circumstances.

Based on the analysis presented in this study, no additional facilities are needed in the State System Plan to meet projected demand and/or meet the stated goals of the NHDOT.

In addition, the Division of Aeronautics should require that any public-use facility (airport, heliport, or seaplane base) that wishes to enter the State System Plan should meet FAA design standards appropriate for their specific type and role of facility. A "grandfather" clause should be added to either exempt existing airports in the system that do not meet appropriate design standards, or set a time period within which they must comply.

Any new facility included in the System Plan should either have, or be able to develop, within two years of inclusion in the System, an airport layout plan (ALP) and capital improvement program (CIP) describing whether they meet appropriate design standards, or if not, how the facility will be brought up to standard. Both the ALP and CIP must be developed within a given time period, and should prepared as part of the group master plans concept described in the Financial/Economic section. If additional facilities meet those criteria and are included in the State System, then the Division of Aeronautics will require additional funding to accommodate the needs of the new facilities, as well as to enhance airports presently in the System that do not meet design standards.

Implementation: The Division of Aeronautics should institute changes to the entry criteria by, a) either amending the current administrative rules and procedures, or b) draft legislation for adoption by the Court and Governor and Council if appropriate. Such changes should be in place by 2005 at the latest.

6. <u>NPIAS Airports</u>

Finding: Currently there are 14 airports in New Hampshire that are included in FAA's National Plan of Integrated Airport System (NPIAS), 11 of which have received FAA grants. Silver Ranch, Parlin Field, and Plymouth Municipal Airport have NPIAS numbers but do not qualify for federal grants for capital improvement projects. The State currently manages the apportionment, discretionary and GA entitlement funding from FAA for the eight general aviation airports in the NPIAS (Boire Field, Dillant-Hopkins, Concord, Skyhaven, Laconia, Claremont, Berlin, and Mt. Washington Regional). By contrast, the Division of Aeronautics serves essentially as a pass-through of FAA discretionary and entitlement funds for the three commercial service airports (Manchester, Pease International Tradeport, Lebanon). In addition, revenues generated by passenger facility charges (PFCs) at those airports do not pass through the Division, nor does the Division have any role in the bonds issued by the commercial service airports.

The amount of FAA grant money available for the eight general aviation airports presently in the NPIAS does not meet the existing needs as identified in the state or individual airport capital improvement programs. Because FAA grants are tied to the annual federal budget cycle, even when multi-year programs are in place (such as the current Airport Improvement Program – AIR-21), the Division of Aeronautics and individual airports have limited ability to control how much money Congress appropriates. In addition, there are several factors that point to lower appropriations from Congress in the near future, including the growing federal budget deficit and the increased funding needed for the Departments of Homeland Security and Defense. The Transportation Security Administration, which is part of the Department of Homeland Security, has received as much as $500 million from FAA discretionary money in FY 2002 and 2003, which decreased the amount available for airport capital improvements.

More than 70% of FAA's grant money awarded to NH airports since 1999 supported Manchester Airport's on-going $500 million development program The current phase of the program should be completed by 2005, however, Manchester Airport has additional projects that it will undertake beyond that period, thereby continuing to apply for FAA grants. Adding more NH airports to the NPIAS and making them eligible for federal grants will not necessarily result in more grant funds awarded to New Hampshire, in large part because additional airports will not receive the same federal priority ranking as Manchester Airport. However, because it meets the criteria and is interested in being included in the NPIAS, Dean Memorial Airport should be considered for inclusion in the near future.

If passenger enplanements at Pease International Tradeport and or Lebanon fall below 10,000 per year, they would no longer be designated as primary airport and they could lose their FAA entitlement money, which would mean that they would receive less federal funding (approximately $500,000 annually).

Recommendation: At this time, only one other airport should be considered for inclusion into the NPIAS program, Dean Memorial Airport. Dean Memorial Airport is municipally owned, serves the Upper Connecticut River Valley region, and is located between two other NPIAS airports, Plymouth and Mt. Washington Regional Airport (although Plymouth does not presently qualify to receive federal funding). Dean Memorial Airport is well maintained, is financially self sufficient, has more than 10 based aircraft and can accommodate additional based airplanes. The airport also has political support from the town, and the commission is actively promoting the facility to increase its use and visibility within the community as an important and beneficial transportation facility. The commission is also actively pursuing the publication of a new straight-in non-precision GPS instrument approach.

In the future, should the ownership status for Silver Ranch (Jaffrey), Moultonboro, and/or Wolfeboro change, consideration should also be given to include these airports in the NPIAS.

However, the Division of Aeronautics should assess the option and evaluate the potential impact to current funding levels. This can be done through a coordinated effort with the airport to determine what is required over the next five years and to assess the funding availability within the Division of Aeronautics' current Capital Improvement Program. The Division of Aeronautics should discuss including the airport in the NPIAS with the FAA if it is a viable option.

Implementation: The Division of Aeronautics should discuss the future development requirements of Dean Memorial Airport and determine how it will effect current funding requirements of the State's current Capital Improvement Program. If it is a viable option, the Division of Aeronautics should then discuss the option of adding Dean Memorial Airport to the NPIAS with the FAA, as well as future levels of state apportionment funding. Discussions must also be held to determine if the Town is willing to abide by the federal grant assurances that will encumber the Town for a twenty-year period after each federal grant has been awarded and accepted. If the Town is willing and able to comply with the grant assurances, then the Division of Aeronautics could recommend adding Dean Memorial Airport to the NPIAS. In the future, should the ownership status for Silver Ranch (Jaffrey), Moultonboro, and/or Wolfeboro change, consideration should also be given to include these airports in the NPIAS.

7. North Country Airports

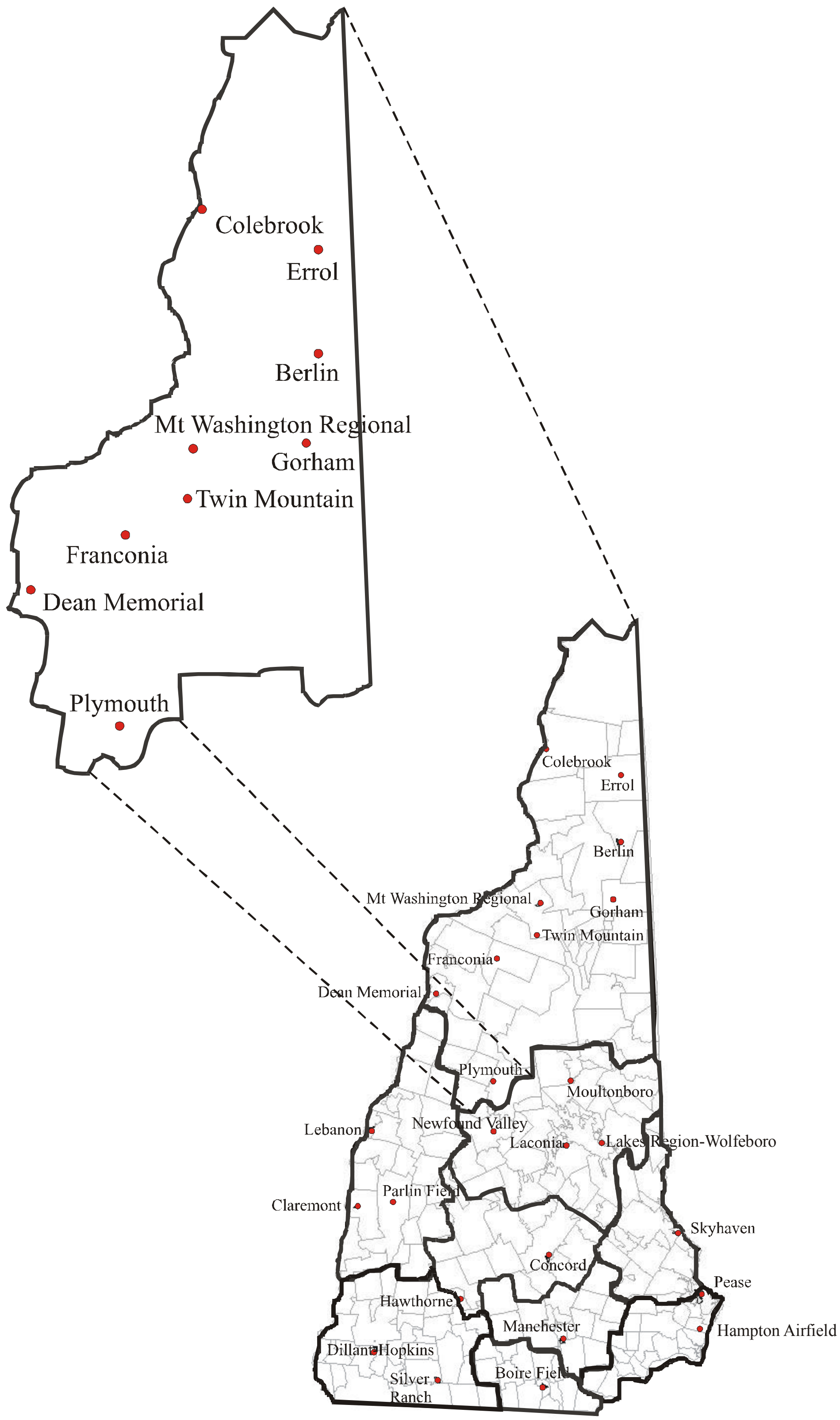
Finding: As noted above, the North Country has the most airports of any region in the state (see Figure 8-3), but also has the lowest population density as well as the lowest median household income. Four of the nine airports are privately-owned, and only two in the region (Mt. Washington Regional and Berlin Municipal Airports) are included in FAA's NPIAS and eligible for federal assistance, although Dean Memorial Airport has been recommended for entry in the NPIAS as noted in the previous section.

Airports located in the North Country Region face unique challenges in terms of attracting more traffic, particularly corporate aircraft, due to a number of factors:

- The lack of precision instrument approaches and relatively high minimums on the existing procedures.
- The presence of the Yankee One and Two Military Operating Areas (MOA) and the regular use of that airspace by military aircraft training at both low and high altitudes. Surveys conducted for this study, as well as interviews with Manchester ATC personnel, indicated that the presence of the MOAs has the ability to potentially constrain access to the North Country because some pilots are concerned about their ability to see and avoid military aircraft. The Aircraft Owners and Pilots Association (AOPA) has protested the creation of additional MOAs around the country because of

the negative impact that they have on general aviation aircraft operations.

Figure 8-3 – North Country Airports



- The lack of FAA Air Traffic Control (ATC) towers and radar coverage, and services (such as flight following) in the region.
- The lack of direct communications with FAA ATC for instrument approach and flight clearances.
- Only Berlin Airport has a runway long enough to accommodate most corporate jet operations.

Some airports, such as Mt. Washington Regional, have taken a pro-active approach to joint marketing with area businesses such as the Mount Washington Hotel, in addition to creating a regional authority, as well as adopting an aggressive business plan. The Authority is actively considering a runway extension and an improved instrument approach to attract more corporate traffic, although state or federal agencies have made no funding commitments. In addition, environmental issues – particularly wetland impacts – must be addressed. Berlin Airport would also like to improve its instrument approach minimums with a GPS precision approach and installation of an approach lighting system to Runway 18, but also must address wetland issues as well.

As noted above, the North Country has more airports than any other region, and yet also has the lowest population density and per capita income of any region in the state. Colebrook, Errol, and Gorham Airports overlap the service areas of Mt. Washington Regional, Berlin and Twin Mountain Airports, accommodate relatively low levels of activity, and are seasonal operations. If those airports remain open and operational, they will remain in the State System Plan. However, if the owners decide not to continue the operation of those facilities, they should be dropped from the System Plan.

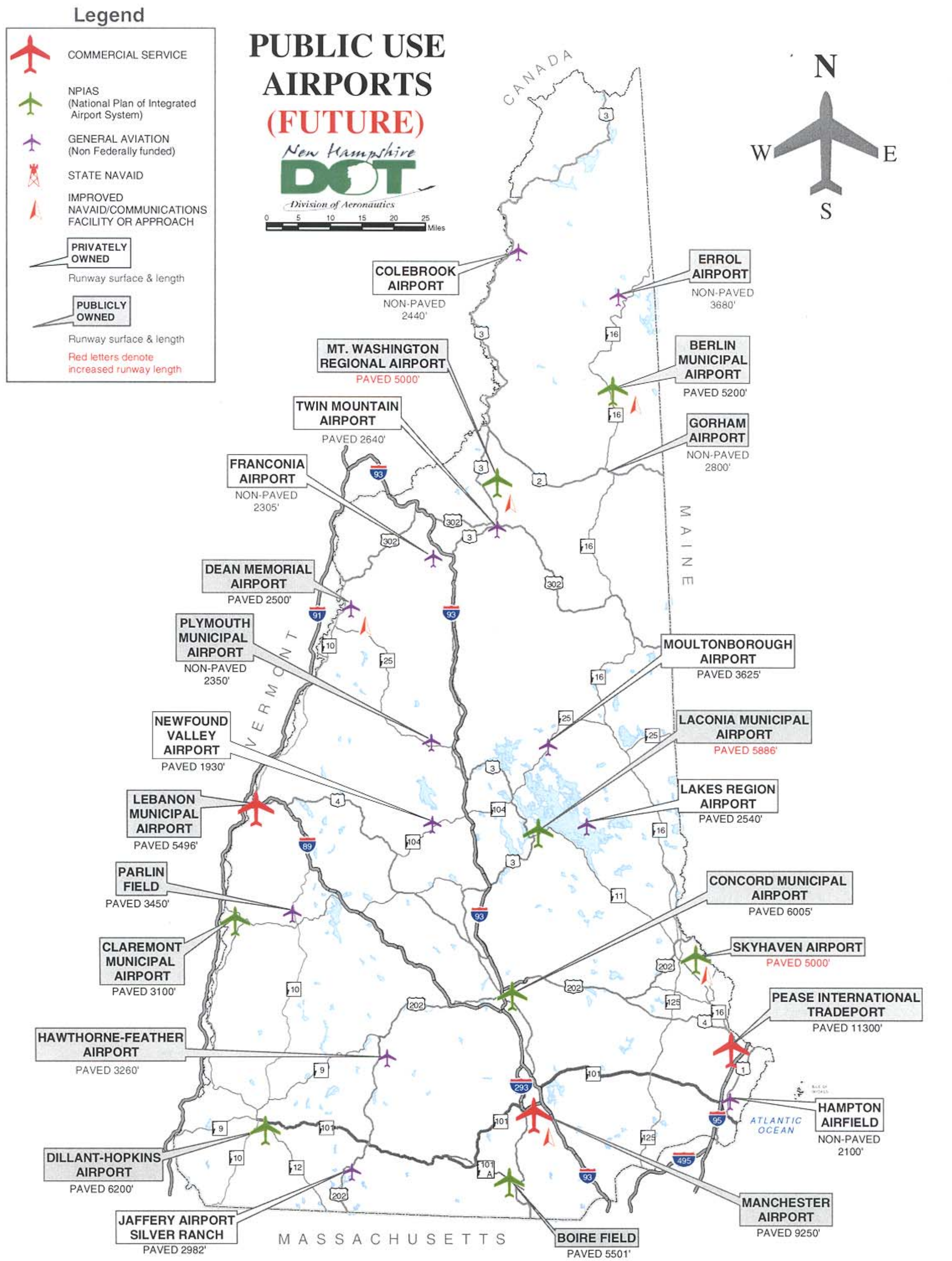
FAA has sole jurisdiction over airspace and air traffic control issues, and no changes to the Yankee One and Two MOAs are anticipated by the end of this planning period (2010). In addition, discussions with FAA ATC personnel indicated that FAA has no plans to install additional radars for improved flight following or ATC services in the region due to the high cost and relatively low traffic levels.

Recommendation: The Division of Aeronautics should:

- Actively support both Mt. Washington Regional and Berlin Airport in their efforts to improve their instrument approaches, lower their approach minimums, install medium intensity approach light systems with runway alignment indicator lights (MALSR) at each airport, and remove obstructions. Such support will take several forms: fund the state's share of the necessary environmental and planning studies; assist in the coordination and permitting process with environmental agencies; and provide funding for the associated construction projects.
- Lobby FAA for at least one precision approach facility (ILS) in the North Country. Two potential candidate airports are Mount Washington Regional Airport and Berlin Airport.
- Support Dean Memorial Airport's efforts to have FAA publish a new straight-in GPS non-precision instrument approach to that airport.
- Strongly encourage FAA to install additional remote communications outlets (RCO) in the North Country to provide direct aircraft-ATC communications. Both Berlin and Mt. Washington Regional Airports have RCOs located at their facilities that connect with Bangor Flight Service Station (FSS), but that is not as efficient as direct communications with FAA ATC.
- Maintain coordination with the military to monitor any changes to the Yankee One and Two MOAs in terms of their size, hours of operation, and/or military aircraft operating characteristics. This will be dependent upon, in part, for funded staff travel under the Division's current and future budget.

Implementation: The Division of Aeronautics should focus an effort to improve the airports within the North Country Region to better enhance accessibility to the region. Improvements to the airports and the navigational/communications facilities in the region, will be accomplished through coordination with the airports and the various divisions within the FAA. Based on the previous discussions, the recommended system of airports will include all of the current airports within the system as shown in Figure 8-4.

Figure 8-4 – Recommended System of Airports



8.3.2 FINANCIAL/ECONOMIC

1. **Federal and State Funding**

Finding: Comparing anticipated development needs identified in airport capital improvement programs with existing federal funding levels, it is apparent that there is insufficient money between FY 2002 and FY 2007 for the eight general aviation NPIAS airports. This is due, in part, to New Hampshire's limited apportionment from FAA's Airport Improvement Program for general aviation airports, which is determined by a set formula based in part on the state's population. As a result, some projects are being deferred until funding is available.

As noted previously, the three commercial service airports (Manchester, Pease International Tradeport, and Lebanon) receive separate funding from the FAA (such as passenger entitlements), and also revenue from passenger facility charges (PFC), neither of which are available for general aviation airports. Pease International Tradeport is also included in the FAA's military airport program (MAP). The NH Court appropriates sufficient money to provide the state's matching share for federal grants awarded to the NPIAS airports, however, there is insufficient state funding to meet all of the airports capital improvement needs.

It is interesting to note that the other airports that are not included in the NPIAS have not prepared airport layout plans (ALP) or capital improvement programs (CIP). As a result, it is very difficult for the Division of Aeronautics to accurately identify their capital improvement needs, the amount of state or local funding required, or when such funding will be needed.

Recommendation: In terms of increasing FAA grants, the Division of Aeronautics should work closely with the state's congressional delegation to promote adequate funding through FAA's Airport Improvement Program (AIP), promote the passage of multi-year funding programs, and also to include New Hampshire airports as 'named' airports in authorizing legislation for targeted appropriations, where feasible and appropriate.

A similar effort should be made to better fund the Division of Aeronautics so that they may fund airport development at the airports that do not receive federal assistance. In order to do this, though, the Division of Aeronautics needs to have a current capital improvement program for every airport in the System, which it does not presently have. The eleven NPIAS airports have current CIPs and ALPS, but very few of the other 14 airports have that detailed information.

One way in which this can be accomplished is for the Division of Aeronautics to develop short-term "mini" master plans for the state-funded (non-NPIAS) airports. None of the state funded airports have current airport layout plans or capital improvement programs, and as a result, neither the airport owner nor the Division of Aeronautics know what overall capital improvements are required, the cost for such improvements, or the possible funding sources. The "mini" master plans would develop an airport layout plan for each airport, generate a capital improvement program, and identify key issues associated with developing the airport over a ten-year period. By completing these mini master plans, the Division of Aeronautics would have a definitive understanding of what would be involved in maintaining the airports within the current system and define the financial requirements to meet the needs of these airports.

Implementation: The Division of Aeronautics and NHDOT should keep the state's congressional delegation informed of the funding needs of the NPIAS airports, and that they should lobby for increased AIP funding as well as the passage of multi-year programs, particularly when the current AIR-21 program expires in FY 2003.

The Division of Aeronautics should also implement a program to develop mini-master plans to develop ALPs and identify future funding needs for the non-NPIAS airports. These mini master plans can be done separately, or several combined within a group of studies. The Division of Aeronautics will need to assess if current staff can do these mini-master plans or if outside consulting services will be required.

2. Increase State Funding for Airports

Finding: As noted previously, there is insufficient funding for the capital improvements identified by individual airports and the Division of Aeronautics. The State of New Hampshire, and the municipalities in the state, presently has few financial resources with which to increase investment in airports to cover the shortfalls in state and federal capital improvement funding. The NH Center for Public Policy Studies has documented that the state suffers from a "structural deficit", which is defined as a situation "where, with no change in the tax laws or public services, tax revenues do not increase as fast as expenditures." The state is currently projecting a budget deficit approaching $250 million in the next Biennium, and significant cuts in agency budgets are anticipated. At present, the state charges tax on aviation fuel (2 cents/gal. on Jet A and 4cents/gal. on Avgas), but the revenue generated goes into the State's General Fund and is not earmarked for airport or aviation related expenses.

Municipalities have even fewer revenue sources than the state. As a result, in order to increase investment in airport infrastructure by the state and municipalities, new revenue sources will be required such as aviation user fees/taxes that could include additional fuel taxes, aircraft registration fees, aviation services taxes (landing and parking fees, land and building lease rates, etc.)

However, aircraft owners, operators, and passengers are price-sensitive, and a significant increase in user fees/taxes would decrease aviation activity in the state (and therefore revenues) and divert traffic to out-of-state airports. Such was the case when Massachusetts state sales tax provided a strong incentive for aircraft owners to base their airplanes in New Hampshire, which has no sales tax, particularly by owners of larger, more expensive airplanes. As a result, Massachusetts recently changed its tax law to exempt airplanes and parts from its sales tax specifically to eliminate the incentive to move out-of-state, and also to attract airplanes presently based in New Hampshire to return to Massachusetts.

Recommendation: The State should direct the revenue from aviation fuel tax from its General Fund to airport-specific expenses. Such a move would increase funding for airports without involving a tax increase. While instituting user fees and creating a statewide aviation trust fund would provide additional revenue for airports in New Hampshire, there are two significant problems: first, most airport users and tenants are price sensitive, and increased fees will decrease aviation traffic and business at airports in the state, thereby negating the benefits of any new user fees. A primary motivation for the State of Massachusetts in eliminating aircraft and parts from the state sales tax, for example, was specifically to eliminate the cost differential with New Hampshire and increase traffic at Massachusetts airports. Secondly, changes in New Hampshire's tax law will require legislation to be adopted by the General Court and Governor and Council, which have historically opposed any new broad-based taxes.

Implementation:

3. Innovative Funding Sources

Finding: A good example of innovative funding sources is this State System Plan Update. The Division of Aeronautics utilized funding from the federal intermodal transportation program under the Transportation Efficiency Act (TEA-21) to undertake this System Plan Update. Typically, funding for the FAA provides these types of studies.

Because the state and municipalities have relatively few revenue sources, other 'non-traditional' funding sources have been identified:

- Explore additional grants from the U.S. Department Transportation through the Transportation Efficiency Act (TEA-21) intermodal program for airport studies and programs.
- The U.S. Department of Commerce funds a number of programs that airports may utilize when FAA grants are not available, such as Community Development Block Grants for capital improvements, Community Economic Development Strategy Grants, and Grants for Public Works and Economic Development Facilities, which are all handled through the Department's Economic Development Administration (EDA). In addition, the Small Business Administration (SBA) funds start-up business planning and capital investments with low interest loans that could be used by FBOs locating on an airport.
- Other state agencies, such as the Department of Resources and Economic Development (DRED), may provide both financial and technical assistance with airport marketing programs, as well as market the state's airports in their existing materials.
- A General Aviation Airport Support should be established in which all of the airports within the designated airport system share information and resources to enhance operating and administrative activities. Currently, this is done at meetings held by the Granite State Airport Managers Association (GSAMA). However, due to limited travel budgets, not all airport managers can attend. Thus a program, in concert with GSAMA, should be developed that can reach all airport managers, through the State's website, or through quarterly meetings to be held in different regions within the state. The GSAMA meetings provide a basis for the types of information that is typically shared and should be used as a guide to determine what types of information is shared. Managers who are unable to make many of the GSAMA meetings should be contacted to also determine their needs and to obtain their input.
- Increased private investment in airports from FBOs and other companies that wish to establish or expand businesses or flight departments on the airport. All of the hangars and FBO buildings at Boire Field, for example, are constructed by private companies that pay ground leases to the Nashua Airport Authority. In addition, the leases have reversion clauses so that the ownership of those hangars and buildings revert to the Airport Authority twenty years after the lease is executed.

Recommendation: The Division of Aeronautics and the AUAB should work with airport sponsors to explore the funding sources noted above, assist with completing and filing grant applications where appropriate, provide coordination with other state agencies (such as DRED), as well as with appropriate federal agencies.

Implementation: The Division of Aeronautics should coordinate with other state agencies to collect specific data about grants that NH airports may qualify for and be eligible to receive, and disseminate that information to airports around the state. The Division of Aeronautics can also assist with the completion and submission of federal and state grant application forms, where appropriate, and coordinate with other state agencies, such as DRED, to provide marketing support to airports.

4. <u>Airport Sponsorship and Funding Options</u>

Finding: All of the airports within the state are owned and operated by municipalities, private owners or the State of New Hampshire. As a result, the burdens of operating, maintaining, and funding capital improvements are the sole responsibility of these airport sponsors. With regard to the municipally-owned facilities, there were a limited number of airports that were financially self-sufficient. Thus, many of the airports operated at a deficit, which required various levels of funding affecting the overall town budgets.

Many airports throughout the nation have addressed the financial and operational impacts of their airports through the development of an airport authority or an airport commission to operate the airport. These authorities or commissions are either state or municipally chartered or are recognized as an extension of local government. These authorities or commissions, typically made up of a host community and surrounding towns that use, or benefit from the airport, provides a multi-town funding and operating mechanism that spreads the burden of the airport over the member towns rather than the host town. This “sharing of resources” such as financial support or in-kind support such as snow plowing, etc. is one way in which towns can operate an airport economically while benefiting from having an additional transportation gateway to their communities.

One such example of an airport run by an authority in New Hampshire is Mt. Washington Regional Airport Commission. The airport is located in the Town of Whitefield and provides air transportation access to this part of the North Country region. Because many of the towns in this region have a limited population base and limited financial means, the Town of Whitefield reached out to the other surrounding towns to help support and operate the airport. As a result, many of the surrounding towns indicated their willingness to develop an airport authority based upon the benefits of providing an additional transportation link to their communities. The Commission operates through an inter-municipal agreement t budget, collect, and disperse operating funds to maintain and operate the airport. Over the years, there have been as many as 12 towns participating in the authority, however that number has fluctuated over the years. In 2003, the authority was made up of nine towns: Whitefield, Lancaster, Jefferson, Franconia, Lincoln, Bethlehem, Littleton, Dalton and Twin Mountain. Funding the airport budget is based upon a specified rate per person for each of the participating towns. The current rate is 75 cents per person in each of the town’s budget has a budget line item for the airport. This rate is a recommended rate and most towns are able to support the airport.

The Mt. Washington Regional Airport Commission is one example in which to maintain, develop and fund an airport. There are other examples around the country that use various methods to fund and share the burden of the airport. In cases where a municipality is unable to fully fund the operation of an airport, an airport authority is a unique opportunity to do so.

Recommendation: The Division of Aeronautics regularly monitors airports through annual inspections, grant requests and offers, and various projects such as master plans and engineering projects. The Division should monitor the airports and if it is found that municipalities are struggling financially or operationally, then the Division should discuss with the municipality the options to look beyond the town to those communities that are using, or would benefit from the airport, to develop an airport authority or airport commission.

Implementation: If the Division of Aeronautics finds, or is approached by, a municipality that is having difficulty in operating or funding their airport, then it is suggested that options be discussed with the municipality about an airport authority or airport commission. If the development of an airport authority or commission is an option, the Division of Aeronautics should work with the municipality providing information and guidance. Information can be obtained from various state department of transportation agencies who may have regulations and guidelines on airport authorities. Additional sources also may include various state airport management associations who may provide contacts to other airport authorities in the various states.

The Division of Aeronautics should also work with the Granite State Airport Managers Association (GSAMA) and develop forums to gauge the ability of the various airports within the state if airport authorities or commission could be an option to operate airports within the state. Additionally, the Mt. Washington Regional Airport Commission should also be contacted to provide their experience with the advantages and disadvantages of the authority. GSAMA provides a good forum for such a discussion.

5. Business Use of Airports

Finding: A statewide survey of businesses was conducted with the assistance of various Chambers of Commerce and the Business and Industry Association (BIA). The majority of survey respondents indicated that they use Manchester Airport for their air travel needs, however, many respondents were also unaware of the presence of general aviation airports relatively close to their facility. The survey results also indicated that most corporate location and expansion decisions were not based on the presence of airports, with the exceptions noted below.

However, the following companies indicated in the survey that they made their location decision based on the proximity of an airport, and/or indicated that a GA airport was very important to their line of business:

- C & S Wholesale Grocers, Inc. – Brattleboro, Vermont/Keene, NH
- Fidelity – Merrimack, NH
- New Hampshire International Speedway – Loudon, NH[1]
- The Franconia Inn – Franconia, NH
- Energex - West Lebanon, NH

Recommendation: The surveys highlighted a significant problem of how airports are viewed by business and the general public. Most businesses recognize Manchester as the key airport within the state. That focus on Manchester Airport was reflected in a report prepared by the University of New Hampshire Whittemore School of Business regarding opportunities for the City of Concord to attract more high-tech and incubator industries. The report highlighted Concord's proximity to Manchester Airport, including the fact that the city was far enough away to not be affected by aircraft noise, however, did not mention that there is an airport in Concord large enough to accommodate corporate jets.

The value and possible use of general aviation airports by most business travelers in the state are not well known or understood. The advent of fractional ownership of business aircraft has greatly increased corporate aircraft utilization nationally, stimulated in part by increased security and inconvenience levels at commercial service airports. However, even with such growth only a fraction of all business travelers have access to corporate aircraft – the large majority still use airline service. Thus, in order to obtain increased utilization of, and support for GA airports, a comprehensive education process will be needed to make the business community, as well as local communities and governments aware of the benefits of each airport.

Implementation: The Division of Aeronautics has defined, as part of the system plan update, materials that can be used to educate the public and elected officials. The Division of Aeronautics may also work with state agencies like the Department of Resources and Economic Development (DRED), as well as local economic development directors and chambers of commerce, to make business leaders aware of their local airport, and that it is an economic resource.

6. Airport Financial Performance and Local Political Support for Airports

Finding: Surveys of city and town managers and economic development directors consistently indicated that local political support for an airport is dependent on the financial performance of each airport. Airports that require annual subsidies to balance their budgets receive less political support than airports that break-even or are financially self-sufficient. As a result, financially under-performing airports do not receive as much money for maintenance, capital improvements, or marketing, and come under much more scrutiny by city and town councils and budget committees.

[1] The NASCAR race teams

It should be noted that some municipalities that own airports have developed portions of the airport property for non-aviation purposes, typically commercial and industrial development. That development is generally compatible with airport operations and provides a significant source of revenue for the municipality in the form of taxes, leases, or sometimes revenue from the sale of property. According to FAA grant assurances, however, all of the revenue generated on airport property – including from commercial and industrial land uses - must be used for airport-related purposes, and cannot be used for other non-airport purposes such as for police or fire departments, for example. Some municipalities, however, have not adhered strictly to that requirement, and as a result, some airports have not received the credit for revenue generation that they should have.

In terms of airport operating and maintenance (O&M) budgets, of the 25 airports in the State System Plan:

- Manchester Airport generates the largest operating revenue stream, due primarily to growing passenger and cargo service.
- Boire Field, Laconia Airport, and Haverhill-Dean Memorial operate at or above break-even levels, even though they generate much smaller revenue levels than Manchester Airport.
- Lebanon, Dillant-Hopkins, Concord, and Skyhaven Airports have been, or are close to break-even.
- The remaining 17 airports are not as close to being financially self-supporting.

Airports that do not have fixed base operators (who provide aviation services such as fueling, aircraft maintenance, flight training, etc.) generate very little revenue. As a result, it is very difficult to break-even financially, although Dean Memorial Airport in Haverhill has achieved that goal. Nine airports in the state do not have FBOs, although some airports do sell fuel: Newfound Valley, Errol, Gorham, Moultonboro, Parlin Field (sells fuel), Hawthorne-Feather (sells fuel), Colebrook, Dean Memorial (sells fuel), Lakes Region (sells fuel) and Twin Mountain (sells fuel). Claremont has a part-time FBO and also sells fuel.

Improved financial performance at most airports is based on attracting well-managed fixed base operators that offer a variety of goods and services, and that effectively market their business (and by extension, the airport itself). Airport sponsors can assist FBOs in marketing campaigns, and by adequately maintaining their physical facility. Additionally, if services such as fuel and/or aircraft maintenance are provided at airports that do not currently have fuel or services, then their ability to break even or become financially self sufficient could be significantly improved.

Recommendation: In order to gain political support, airports will need to run more like a business and less like a public utility. As noted, there are 17 airports that must be subsidized in order to cover their annual operating expenses. There are a number of actions that can be taken to enhance the financial performance of airports. The Division of Aeronautics should work with airports to identify best business practices at airports around the state, particularly those airports that are financially self sufficient, and disseminate those ideas and practices to all of the airport managers in the state.

Airports with operating deficits typically have few, if any services available, nor do they have FBOs to market the airport. FBOs provide the most effective means of increasing both traffic and revenue at airports, based in part on the services they offer and their marketing programs. However, the airports themselves must market their facilities and services to attract businesses as well. Airports should also market companies in the local area since it was very apparent from the business and industry survey that general aviation airports are relatively unknown to the business community.

The Division of Aeronautics, in association with the Department of Resources and Economic Development (DRED), could help develop marketing programs for airports within the State Airport System to attract more users. Such marketing programs could include websites of the airports with links on DRED's website, available land to develop non-aviation related land uses, and available services at airports, etc.

The burden of developing marketing plans, however, cannot rest solely upon the Division of Aeronautics or DRED. Airport managers must rethink how they operate their facilities and should develop business plans with a number of strategic goals:

1. Use "best-practices" from private industry (where appropriate) in terms of day-to-day management: adopt business plans, create balanced budgets, use industry benchmarks when setting rates and charges and negotiating leases.
2. Set break-even targets at a minimum, or become financially self sufficient, as the airport budget's primary goal, with the following milestones:
   - Maximize efficiency and cost effectiveness of airport management
   - Control costs, particularly overhead expenses (e.g. salaries, utilities, etc.)
   - Use benchmarking: compare the airport with industry rates & charges (AAAE surveys)
   - Develop property designated as surplus for aviation purposes to maximize revenue
   - Ensure that non-aviation development/revenue is credited to airport
   - Maximize revenue-generating sources, both aviation and non-aviation

Other keys to achieving financial self-sufficiency include cost-controls and maximizing revenues, and an essential element of revenue generation is having a good fixed base operator. Because some airports do not have an FBO, or have recognized a need for additional services even if they have an FBO, the Division should consider developing an incentive program to attract FBOs to airports. Such a program could include allowing FBOs access to the state's revolving loan fund, as well as providing state assistance for capital improvements for FBO buildings, hangars, and ramps. Such assistance would lower the overhead cost for a start-up business, and provide an opportunity to attract FBOs that might otherwise not move to that airport.

The Division of Aeronautics should also examine the possibility of placing self-service fuel (100 LL avgas) tanks at airports that currently do not have an FBO or fuel as a way to generate revenue. Such airports could include Newfound Valley, Colebrook, Plymouth, Errol, and Colebrook. These fuel tanks cost between $50,000 - $100,000 each to install, and it may not be financially feasible for these airports to invest this amount of money into such a project. Another option would be to purchase a mobile fueler (tank truck), such as Twin Mountain has done, to provide 100LL fuel. This option is less expensive and may be a viable option for airports with little financial resources. The revolving loan program from the Division of Aeronautics may be the primary source of funding for such a program, and should be discussed with airport sponsors as a way to afford self-service fuel tanks or a tank truck.

Implementation: The Division of Aeronautics, in conjunctions with other state agencies, should develop programs for airports to increase utilization of their current facilities through dissemination of information about their airports through existing marketing channels and programs. This could be done through a cooperative effort between the Division of Aeronautics and DRED to develop marketing packages and providing information about the airports on various state websites.

In order to collect meaningful data about how the airports are performing financially, the Division of Aeronautics should develop standardized forms in order for the airports to submit comprehensive data on an annual basis. The Division could require that the forms be completed and submitted annually as a condition of receiving state financial assistance. Commercial service airports (Manchester, Lebanon, and Pease International Tradeport) presently provide such information to FAA on Form 5100-125, *Operating and Financial Summary*, and Form 5100-126, *Financial Government Payment Report*, and similar forms could be developed and used by the Division.

The financial data would provide the Division of Aeronautics with an accurate indication of how the airports are performing in terms of their operating budgets, expenses, and revenues. The data would also provide a useful tool for benchmarking the financial performance of the airports in the State System, and help identify which airports have recurring financial problems, and also how some airports achieve better performance. The American Association of Airport Executives (AAAE) collects similar financial data every two years with a comprehensive national survey of member airports, and such information can be used as a benchmarking tool on a national level.

In addition, the Division of Aeronautics should consider making state funding programs such as the revolving loan program and/or the 50/50 program available for new businesses (FBOs) on airports that need to increase revenues to achieve consistent break-even results or become financially self sufficient.

8.3.3 DIVISION OF AERONAUTICS

1. **Preservation of Public Airports**

Finding: The Division of Aeronautics has the right of first refusal to acquire an airport if the owner of the airport sells the facility. Under current law (RSA Title XXXIX, Chapter 422, Section 422:19), an airport owner that puts their property up for sale must offer it to the State of New Hampshire "in the first instance". The state has the right to match "any verifiable bona fide offer made for such airports, within the funds available to the director for this purpose". There are 10 privately-owned airports in the State System Plan. If the State were to acquire any additional airports, the Division of Aeronautics would need to create two additional internal positions (airport operations personnel) to oversee the airports, as well as create operating and maintenance budgets for each airport (approximately $30,000 per year, per airport, which does not include capital improvements). In addition, issues such as obstruction removal, runway and taxiway grades, airfield lighting, and runway safety areas would have to be addressed, and could require a substantial financial investment to bring airports up to current FAA standards.

According to New Hampshire Statutes Revised, Title XXXIX, Aeronautics, Chapter 422, New Hampshire Aeronautics Act, Section 422:19, *Purchase or Transfer of Airports*: "Airports purchased under this section shall be held and maintained as airports in the statewide airport system and shall be offered for sale or transfer to a local municipality, county, or airport authority. If the state is unable to sell or transfer an airport to a local municipality, county, or airport authority within 10 years, the airport shall be offered for sale to private enterprise."

The NH General Court has noted that the State should not be an airport owner or operator, with the exception of Pease International Tradeport. However, since the 1980s, municipalities in New Hampshire have been very reluctant to assume ownership of airports, and if the state were to acquire any airports under the right of first refusal, it is possible that they will be unable to transfer ownership to another public entity.

The General Court passed legislation requiring the state to transfer ownership and operation of Skyhaven Airport to another public entity by July 2003, if such an entity is willing to take the airport. The City of Rochester is considering taking the airport from the State, but has expressed concern about the financial burden of owning and operating the airport. In the past, other towns have considered taking ownership of privately owned airports, such as Hillsboro and the Hawthorne-Feather Airport, as well as Wolfeboro and the Lakes Region Airport, and both declined the option to take ownership of the airport. If the City of Rochester does not accept Skyhaven Airport from the state, then the state will remain as the airport sponsor for the foreseeable future.

In general, the DOT needs flexibility when considering whether to acquire public-use airports if they are to be discontinued or abandoned by their owner.

Recommendation: Before exercising the right-of-first-refusal to acquire public use airports that would be abandoned or discontinued, the Division of Aeronautics should consider a number of factors such as the proximity of other airports, levels of activity/based aircraft, economic benefits, services and/or FBOs, financial performance, and the need for financial investment to bring the airport up to standard. It is recommended that Legislation be enacted to preserve the existing public use airports within the state. That under this legislation, it would adopt a clear and straightforward procedures similar to that used for railroads in RSA 228:60-b, so that alternate modes of transportation are treated in a similar fashion under the law.

Implementation: The Division of Aeronautics should support legislation to preserve the existing public use airports within the system. Should any airport owner exercising a right to discontinue or abandon the public use of an airport, and the airport meets the criteria established by the legislation, the Division should exercise its right of first refusal for that airport.

2. Airport Database

Finding: During the data collection phase of the System Plan, it was found that there is a lack of accurate data regarding the total number of aircraft operations, the number or type of corporate aircraft operations, and the number and types of based aircraft, particularly at airports without control towers. Currently, only four airports out of 25 in the State System have control towers (Manchester, Pease International Tradeport, Boire Field, and Lebanon), and it is not anticipated that any additional airports will receive control towers in the future. Additionally, there is very little historical operational data for any of the non-towered airports.

Recommendation: The Division of Aeronautics should develop a program to collect data from all of the airports regarding aircraft operations and based aircraft. Presently, the Division of Aeronautics collects much of the data that is available during their annual inspection of each airport based on discussions with airport managers. At airports that do not have control towers, the Division of Aeronautics should implement a data collection system that involves several elements:

- Use acoustical counters, or similar devices, to take sample counts of aircraft operations during different periods of the year. The results from the counters should then be compared with data and input from airport managers and FBOs.
- Conduct surveys every two years with the assistance of FBOs and organizations such as Aviation Association of New Hampshire (AANH) to identify where transient pilots are flying in from, what missions they conduct, and how much they spend in the local economy.

Implementation: The Division of Aeronautics should develop a program with the airports to count traffic on a seasonal basis. This can be done with aircraft acoustical counters that can be acquired (two or more are recommended) and set up at non-towered airports for periods ranging from one week to one month during the peak period of the year. For most airports in New Hampshire, that is during the summer and fall. The acoustical counter would also record operations at night when airports are typically unattended. The data results can then be annualized and compared with input from airport managers and FBOs to determine the number of aircraft operations and type of aircraft, which will provide a much higher level of confidence in aircraft operations data than is presently available.

3. Continuation of the Statewide Steering Committee

Finding: A number of key constituencies, both in and outside of the aviation industry, have been identified that have a direct impact on the State Airport System Plan. Due to the complexity of the recommendations presented, and the need to fully involve representatives of that broad constituency, the implementation program must not only maintain the coordination process that was developed as part of the Statewide Steering Committee, but also expand and extend it beyond the end of this study.

While there are a number of organizations that presently represent aviation interests in the state, including the Aviation Users Advisory Board (AUAB), the Granite State Airport Management Association (GSAMA), the Aviation Association of New Hampshire (AANH), and various representatives of local airport or regional flying clubs/groups, these groups are focused on specific aviation issues pertinent to their constituents and mission. In addition, they do not include representatives from outside of the aviation industry. Although the Steering Committee for this study was made up of a diverse group of agencies, including representatives from the organizations noted above, the follow-on Committee should be expanded to include representatives from the existing Steering Committee as well as from other key constituencies not presently included.

Recommendation: A Standing Steering Committee should be created to oversee the implementation of the System Plan recommendations. A number of the recommendations made as part of the system plan will:

- Require multi-agency coordination
- Take a period of time to implement and,
- Are interrelated and will have an impact on other recommendations.

As a result, it is recommended that a Standing Steering Committee be formed by the Division of Aeronautics to meet on a semi-annual basis (every six months) to review the status of the implementation process. The Division should act as chair of the committee. The membership of the Standing Committee should include all of members of the existing Steering Committee (including representatives from GSAMA and AUAB), as well as the addition of representatives from:

- FAA (both Airports and Air Traffic Divisions)
- NH DES
- NH DRED
- NH Municipal Association
- Fixed Base Operators
- Citizen Organizations
- Regional Planning Agencies
- NH Legislature Aviation Group

Implementation: The Division of Aeronautics should identify the additional representatives to be included on the Standing Committee, and they along with existing members of the Statewide Steering Committee should be invited to serve on the Standing Committee. The Director of the Division of Aeronautics should serve as chair of the committee, and the committee will be charged to oversee the implementation of the recommendations presented in the System Plan.

8.3.4 INTERMODAL TRANSPORTATION

Airports are, by their very function, intermodal transportation facilities. The large majority of all pilots, passengers, and airport employees access the 25 airports in New Hampshire by private automobile. Only three airports in the state have scheduled bus service, and none have rail service. Based on discussions with airport managers and pilots and passengers, there is a need to improve ground transportation services to a number of airports in the state.

1. Airport Access

Finding: Only three airports (Manchester, Pease International Tradeport, and Skyhaven) are served by scheduled bus lines, although Skyhaven Airport generates little ridership on the bus line. Surveys of inter-city bus lines and local transit companies, as well as GA airport managers, indicated that there is not sufficient demand at the 22 remaining airports to attract and maintain public transportation such as scheduled bus service. Bus companies that were interviewed were not interested in possible subsidies to serve airports, with some companies stating that maintaining their schedule (and by-passing the airport) was more important than potential subsidies.

At present, there is no rail service to airports in the state. Commuter rail service provided by the Massachusetts Bay Transportation Authority (MBTA) from Boston will be extended from Lowell MA to Nashua, and eventually be extended up to the City of Manchester. Based on discussions with the regional planning agencies, there are no plans at this time to tie airports into the proposed stations at either Nashua or Manchester.

Manchester, Pease International Tradeport, Concord, Lebanon, and Laconia Airports have rental car agencies located on the airport in the terminal building, as well as local taxi service. By contrast, eleven airports have no public ground transportation services such as rental cars, taxis, limos, buses, rail, available for transient pilots and passengers. In addition, some airport managers indicated that although rental car and taxi service is available from companies located off-airport, the level and quality of service provided is poor, which limits the ability of transient pilots and passengers to travel off-airport and visit the local region.

Recommendation: Based on input from the bus companies and airport managers, extending scheduled bus service to airports that presently do not have any will be expensive and inefficient due to the low level of demand for such service. As a result, the state should not consider subsidies or other incentives to attract scheduled bus service to airports that presently do not have such service.

However, the Division of Aeronautics, along with municipalities (airport sponsors), should provide cars that are designated surplus and available for auction as courtesy vehicles at those airports that either do not have access to rental cars or taxis, or that have poor service. A number of FBOs across the state provide courtesy vehicles for their customers, however, not all airports have FBOs and not all FBOs provide such service. Issues such as insurance and liability, vehicle maintenance and security, fuel and maintenance costs, etc., will need to be addressed.

Another recommendation is to examine the potential to subsidize shuttle service to Manchester Airport when the new park-and-ride facility is built near Exit 4 on Interstate 93. Inter-city bus lines indicated that they could provide a stop at Exit 4 that could be used by potential passengers traveling from other parts of the state to connect to Manchester Airport. This would enhance accessibility to Manchester Airport and reduce a portion of trips now provided by personal vehicles.

And finally, it is suggested that the Division of Aeronautics review the option of providing shuttle service to Manchester Airport at the proposed rail stops at Merrimack and Manchester for the extension of MBTA rail service.

Implementation: The Division of Aeronautics should investigate the ability of the DOT to provide surplus automobiles to the various airports around the state for use as courtesy cars. The Division of Aeronautics should also work with the airports to improve existing intermodal services such as local taxi and rental cars to ensure that these agencies respond in a timely manner to provide their services at the airports. The Division of Aeronautics should also work with other Divisions within DOT, as well as regional planning agencies, to enhance access to Manchester Airport via a park-and-ride facility at Exit 4 of Interstate 93 and from proposed stations for the extension of MBTA rail service to Nashua and Manchester.

8.3.5 ENVIRONMENTAL ISSUES

Finding: Almost every airport in the state faces environmental constraints, particularly due to wetlands. Airports such as Boire Field, Concord, Dillant-Hopkins, Laconia, Manchester, Mt. Washington Regional, Skyhaven, Parlin Field, and Berlin Airport have recently dealt with environmental agency coordination and permitting issues. Permitting and agency coordination was identified by many airport mangers as significant factors in terms of implementing their capital improvement programs, in part because they resulted in higher costs and longer implementation periods. In addition, it is anticipated that state and federal environmental laws will increase in the future, and that compliance for airports will become more expensive and time-consuming.

Recommendation: The Division of Aeronautics should provide detailed guidelines and assistance to non-federally funded airports in terms of appropriate environmental review, coordination, and permitting procedures. The Division of Aeronautics should fund such projects and where appropriate, help the sponsors understand how to select consultants to complete the work.

Implementation: The Division of Aeronautics should work with the Department of Environmental Services and develop a package similar to the agencies package that contains discussions about the environmental process, contacts, other agencies and the appropriate forms that can be given to airports throughout the state. The Division of Aeronautics should also develop a program to monitor and provide assistance to the airports to ensure that they comply with the appropriate environmental regulations pertaining to their proposed projects. Additionally, the Division of Aeronautics should also require environmental coordination as a mandatory element of receiving funding from the State.

8.3.6 AIRPORT SECURITY

Finding: Post September 11, 2001 has seen drastic changes in the security procedures in effect at airports around the country. The creation of the Transportation Security Administration (TSA), as well as the new Homeland Security Department, has seen the responsibility for airport security shifted from FAA and the airlines to the TSA. To date, most of the new security procedures and requirements have been applied to FAR Part 139 certificated airports (Manchester, Pease International Tradeport, and Lebanon), which has significantly increased their operating costs, only some of which has been reimbursed by the federal government. The three airports have met the deadlines imposed by TSA, and mandated by Congress, for new security procedures.

General aviation airports have not been subject to similar security regulations as Part 139 airports yet, although some states have adopted various security measures at GA airports. Organizations such as the National Association of State Aviation Officials (NASAO) have studied the issue of GA airport security. Measures adopted by some states include full perimeter fencing and electronic gate card access; video monitors; flood lighting on ramps, fuel farms, terminal area, and hangars; as well as pilot identification cards. New security procedures increase capital improvement costs, as well as the cost to operate and maintain GA airports. Security procedures also potentially decrease airport utilization (and therefore revenues and income for FBOs and sponsors) due to increased inconvenience, and make it more difficult for GA airports to break-even financially.

In addition, the Aircraft Owners and Pilots Association (AOPA) has adopted a GA airport security program called "Airport Watch". As noted on AOPA's web site:

> "The Transportation Security Administration (TSA) has partnered with the Aircraft Owners and Pilots Association (AOPA) to develop a nationwide aviation watch system. Key to the program will be a toll-free hotline and a centralized system for reporting and acting on

information supplied by general aviation pilots.
AOPA's Airport Watch will enlist the support of some 550,000 general aviation pilots to watch for and report suspicious activities that might have security implications. The hotline was formally launched in December 2002."

The TSA has rule-making authority, and can adopt new rules and procedures without going through the public notification, review, and comment process that applies to other federal agencies. As a result, it is difficult to predict, or even anticipate, when new security rules and procedures may be adopted for general aviation airports, what they will cost to implement, how they will affect airport design criteria or facility requirements, and what the net impact will be on airport utilization and income. Additional rule changes could also apply to the three Part 139 airports in the state as well, and further increase their operating costs.

FAA continues to implement temporary flight restrictions (TFRs) based on certain events (major public sports activities for example), threats to public safety (such as to nuclear power plants), movement of key officials such as the President, etc. General aviation aircraft, for example, are not allowed access to Washington National Airport. TFRs have been implemented in very short periods of time, and have resulted in the closure of airports, as well as certain parts of the national airspace system, which adversely impacts aviation activity. It is difficult to predict when particular TFRs will be implemented, how extensive any particular restriction will be, how long it will be in effect, or how much of an impact it will have on aviation activity.

The U.S. Congress recently passed legislation to create the new Department of Homeland Security, and considered implementing permanent airspace restrictions around certain large public events, including NASCAR races. Such restrictions could have potentially prevented aircraft from using either Laconia or Concord Airports, for example, during race weekend, which would have had significant financial impacts on the fixed base operators (FBOs) at those airports. The continued implementation of TFRs will decrease GA activity, both because of the restriction itself, as well as pilots' concerns about the consequences of inadvertently violating restricted airspace.

Recommendation: The Division of Aeronautics should continue to work closely with trade organizations such as NASAO, AAAE, AOPA, and EAA, etc., as well as with FAA and the TSA, to monitor possible changes in security rules and procedures that may apply to GA airports, and also monitor what impact those changes may have on the airports' operating costs and revenue potential. The Division should promote adoption of reasonable rules and procedures that will not adversely impact the users or the tenants of the airports.

Implementation: The Division of Aeronautics should maintain a working knowledge of the various changes in security standards set by FAA, TSA, and other agencies. This will require staff to coordinate closely with the various agencies to comment on proposed security rules and procedures that might be implemented within the State.

8.4 HELIPORTS AND SEAPLANE BASES

Although there are a number of heliports and seaplane bases in New Hampshire, none of those facilities are included in the State Airport System Plan. There are 53 heliports and six seaplane bases listed by Helicopter Association International (HAI) throughout the state, although discussions with helicopter operators indicate that there may be as many as 120 heliports/ helipads throughout the state. The helipads are almost all privately owned and operated, and many are located in the Connecticut River Valley area of the state.

There are six hospital helipads (Concord, Dartmouth-Hitchcock Medical Center, Exeter, Franklin Regional, Wentworth-Douglass, and North Conway Memorial). In order to be certified as a Level 1 Trauma Facility by the state, hospitals are required to have a helipad.

Many heliports are owned and operated by corporations and businesses for company use, and one heliport (Wharf, located in Portsmouth) is publicly owned by the NH Port Authority, but is private use. Companies such as Tyco, Norden Systems, Digital Equipment (now part of Hewlett Packard), PSNH, as well as individuals such as Dean Kamen, have constructed heliports in NH. Local zoning ordinances in the state vary widely in terms of allowing or prohibiting the development and operation of heliports. Some communities allow heliports in industrial and commercial districts, while others do not allow heliports anywhere in the community. Some zoning ordinances do not specifically address heliports as either a permitted or an exempted use, and planning boards often interpret that as not allowing heliports anywhere in the community.

Helicopters also use the airports in the state, particularly the support facilities and services (such as fuel, hangars, maintenance, etc.), and many helicopters are based at airports, including those operated by the NH Army Guard and the NH State Police at Concord Airport.

Helicopters provide a wide variety of services in New Hampshire from executive transportation (including shuttling race teams between Concord Airport and NHIS during the races), to emergency medical evacuation, airborne law enforcement, search and rescue, construction, heavy lift, aerial photography, power line patrol, air cargo, etc. For example, the Dartmouth-Hitchcock Air Response Team (DHART), initiated in 1994, operates an EC-135 turbine helicopter (shown at left) for rapid emergency response to the more remote regions of northern New England. As noted by DAHRT: “The helicopter, which cruises at 150 mph, and its crew have transported over 1,300 patients to date.”

All of the seaplane bases are privately-owned, although the waterway is public. There is one public-use seaplane base, Alton Bay, which is listed in the Airport/Facility Directory published by FAA. During the winter, the waterway becomes an ice runway. All of the heliports and seaplane bases are visual, none have an instrument approach, and none have control towers or fixed base operators.

Although none of the facilities discussed above are listed in the State System Plan, some could be included if the facility owner declared them public-use (as noted, the Alton Bay Seaplane base is presently public use), and if the owner requested state assistance. It is possible, therefore, that Division of Aeronautics could receive a number of requests from heliport and seaplane base owners for inclusion in the State System Plan. However, it is proposed that the entry criteria for the State System Plan be changed, and that any facility wishing to be listed in the State System Plan at a minimum meet the appropriate design criteria specified by FAA for that type and category of facility.

AIRPORT ECONOMIC, FINANCIAL, AND MANAGEMENT INFORMATION

ERROL AIRPORT

Airport Ownership and Management

The Errol Airport is a privately owned facility. The gravel runway at Errol is open seasonally spring through fall.

Airport Financial Summary

	FY01	FY02	FY03	FY04
Operating Revenue	N/A			
Operating Expenses	N/A			
Capital Revenues	N/A			
Capital Expenditures	N/A			

Use of State Grant to Airport Sponsors/Airport Operating Funds and View of Sponsor Relative to Airport Maintenance

N/A

Fixed Base Operator (FBO)

No FBO

Airport Contact Information

D.C. Heasley (Airport Owner)
Everett Eans (Airport Manager)

New Hampshire Aviation Airport System Plan 2003

Visit the Past,
Experience the Future!

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