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.

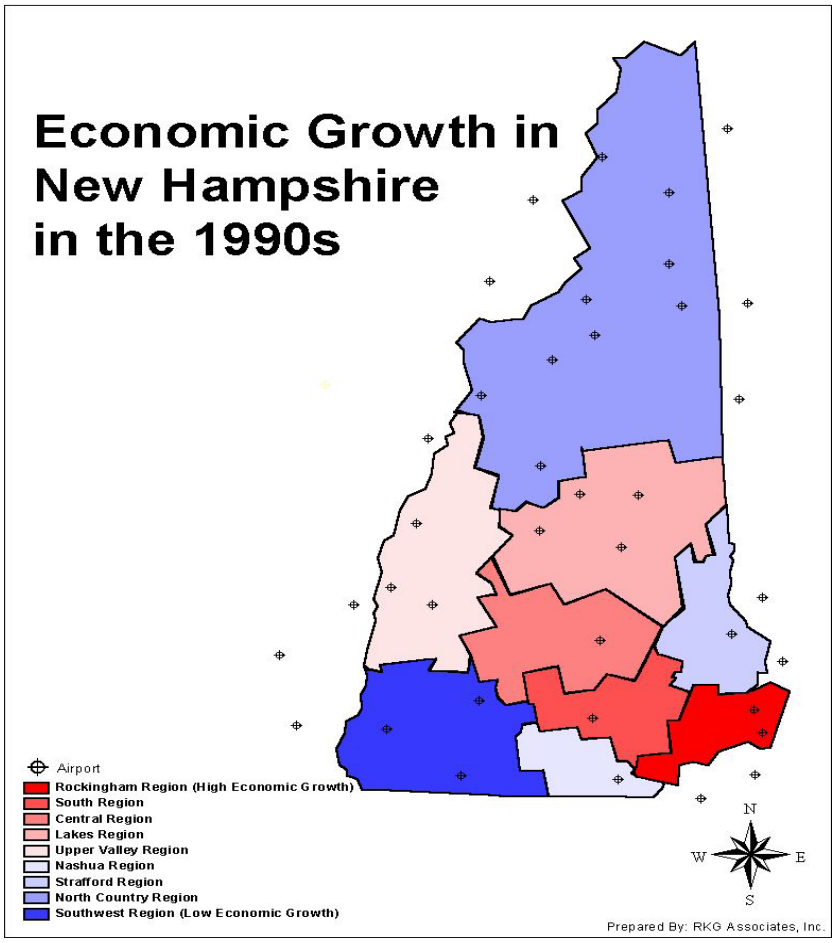
Table 5-1 - Ranking of Regions based on Economic Growth - New Hampshire Economic Regions

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:

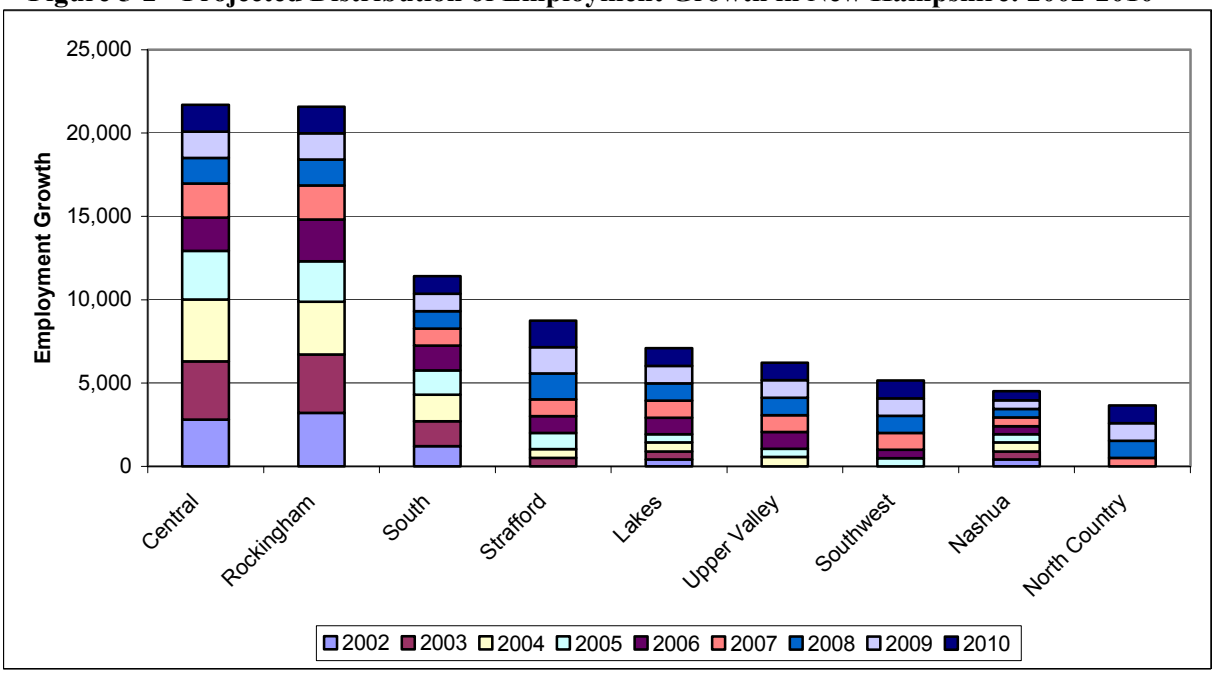
- historical economic performance of the region over the past decade;
- projected short-term economic performance of the New England region; and,
- projected short-term performance of the national economy.

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

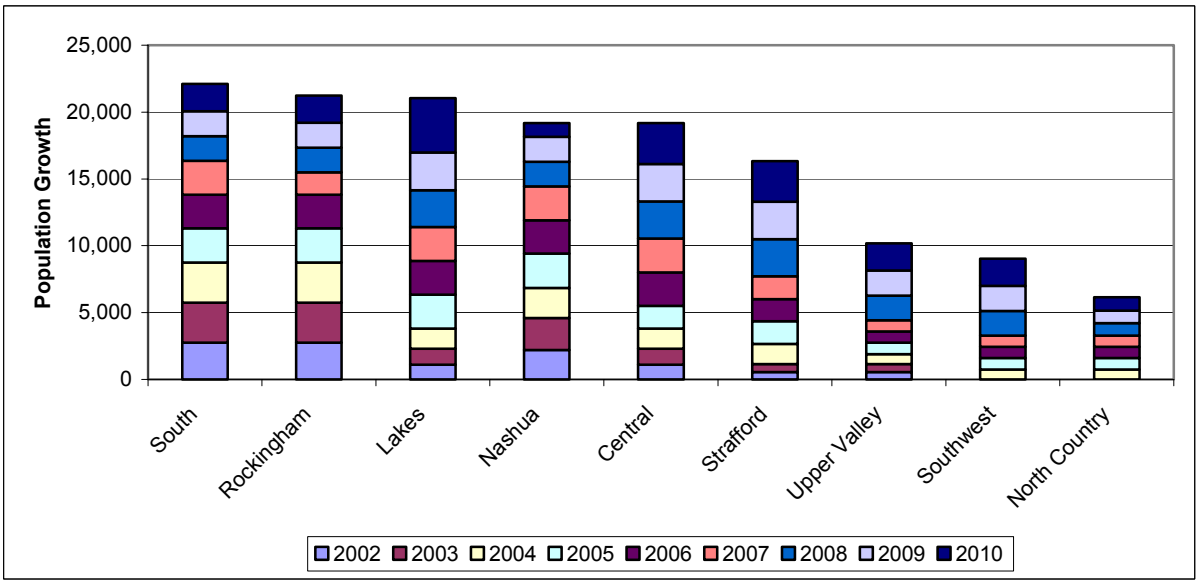
employment.

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

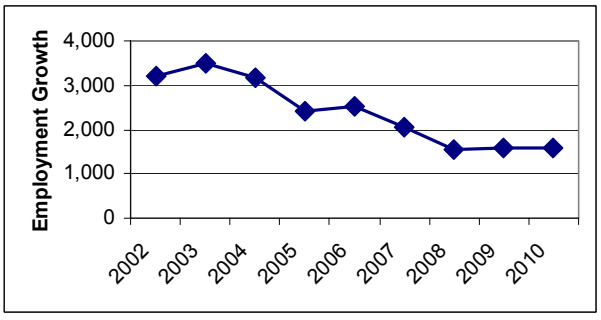
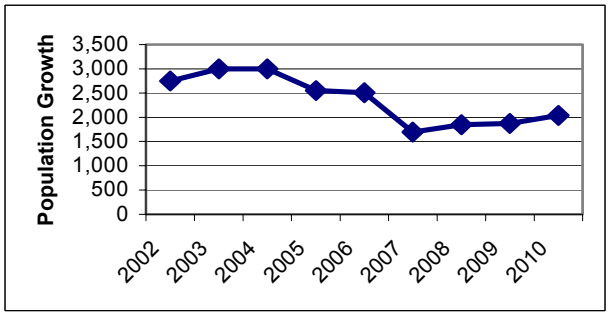


Figure 5-4B - Projected Population Growth: Rockingham Region 2002-2010



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

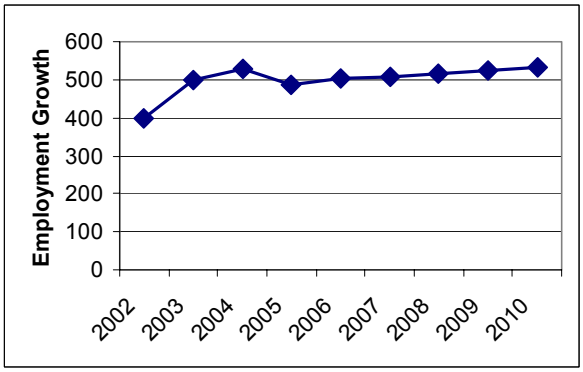
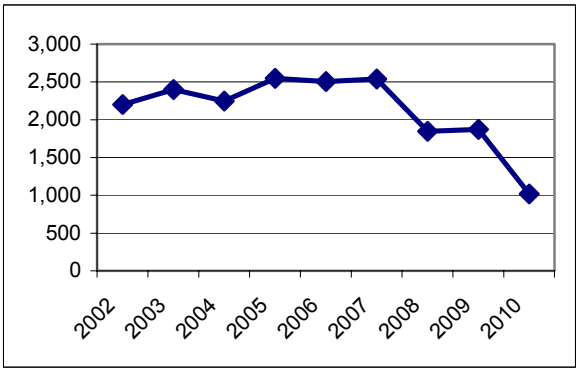


Figure 5-5B - Projected Population Growth: Nashua Region 2002-2010



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

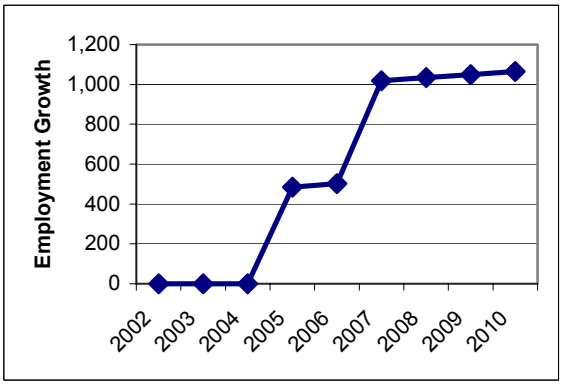
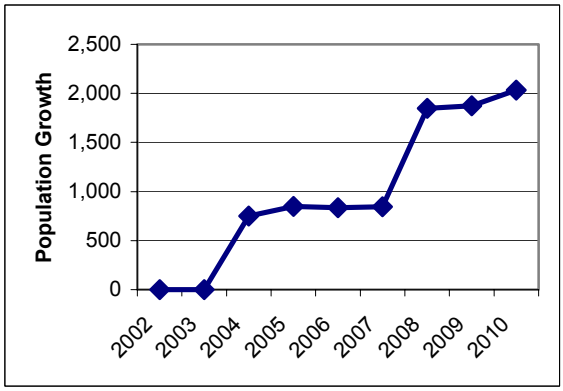


Figure 5-6B - Projected Population Growth: Southwest Region 2002-2010



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

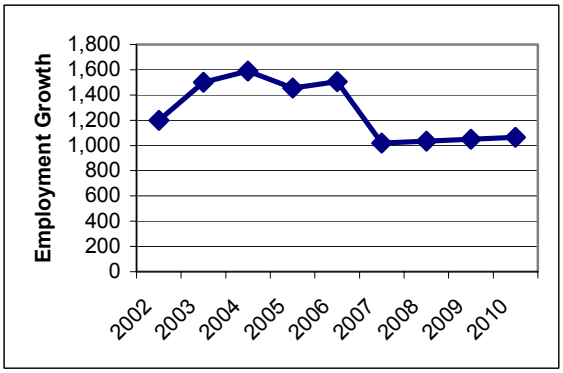
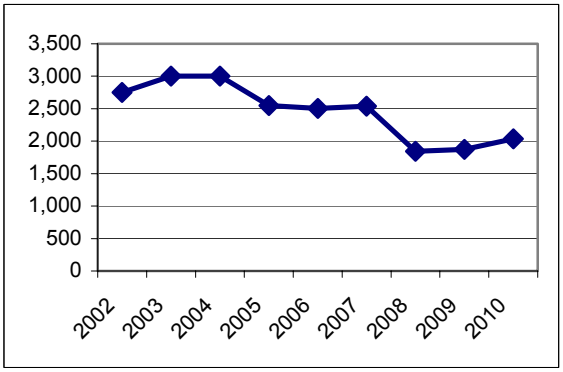


Figure 5-7B - Projected Population Growth: South Region 2002-2010



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

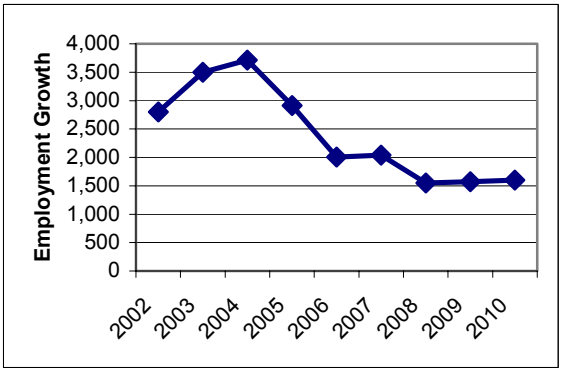
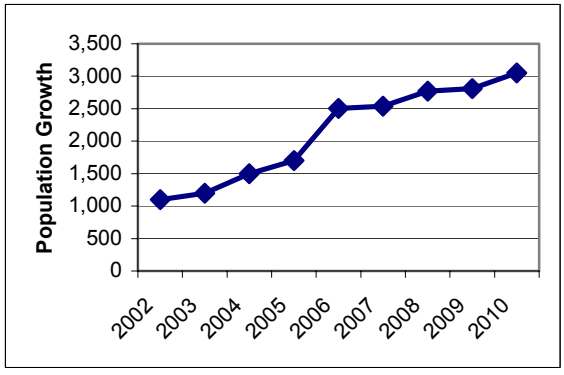


Figure 5-8B - Projected Population Growth: Central Region 2002-2010



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

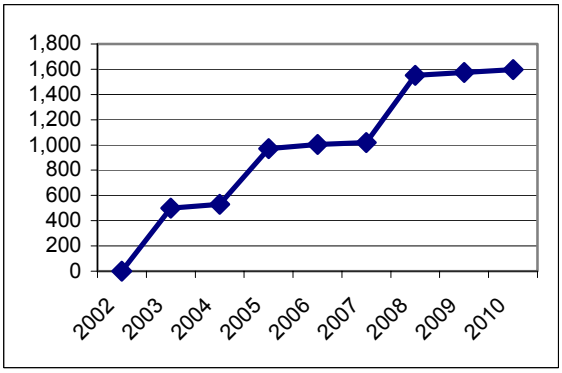
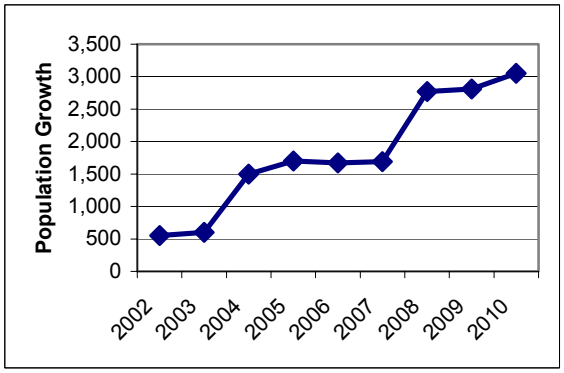


Figure 5-9B - Projected Population Growth: Strafford Region 2002-2010



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

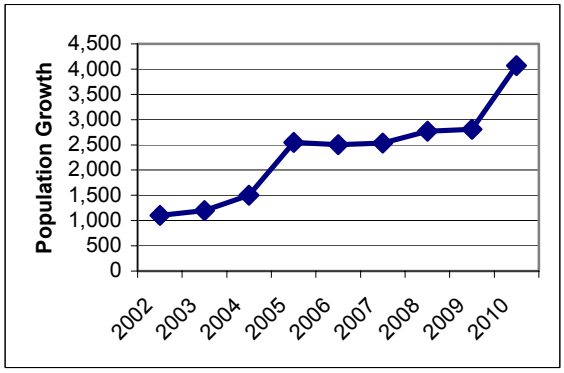
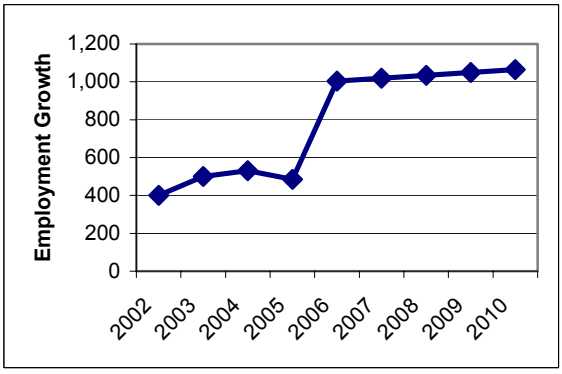


Figure 5-10B - Projected Population Growth: Lakes Region 2002-2010



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

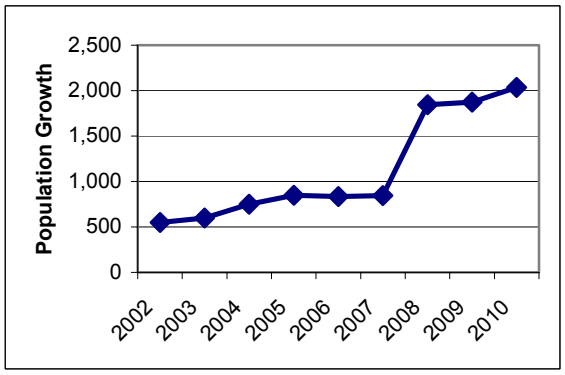
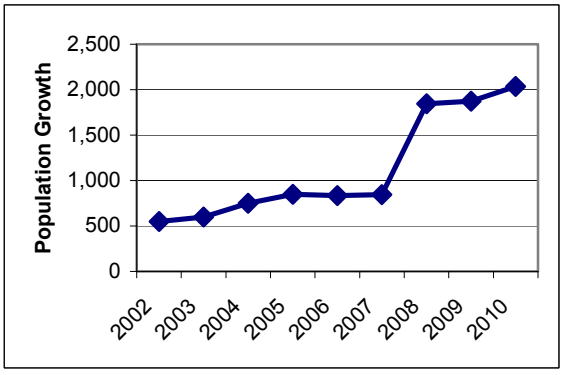


Figure 5-11B - Projected Population Growth: Upper Valley Region 2002-2010



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

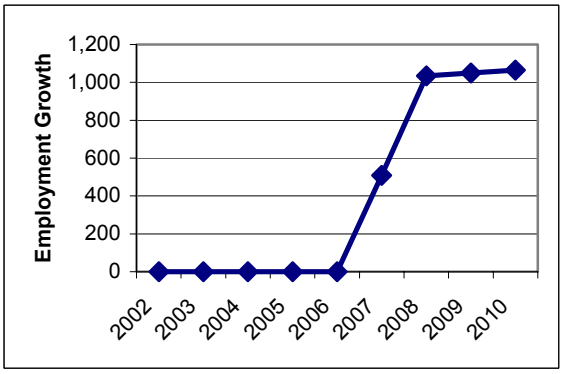
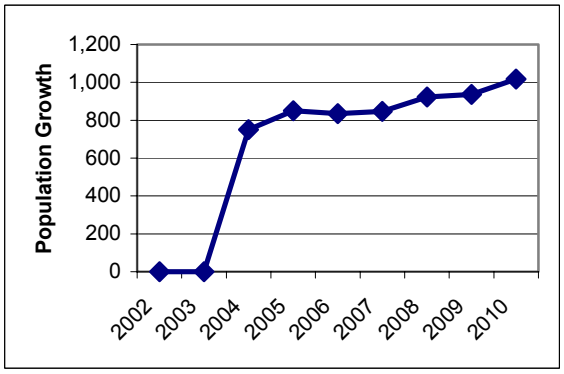


Figure 5-12B - Projected Population Growth: North Country Region 2002-2010



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.

Other Data Sources

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).

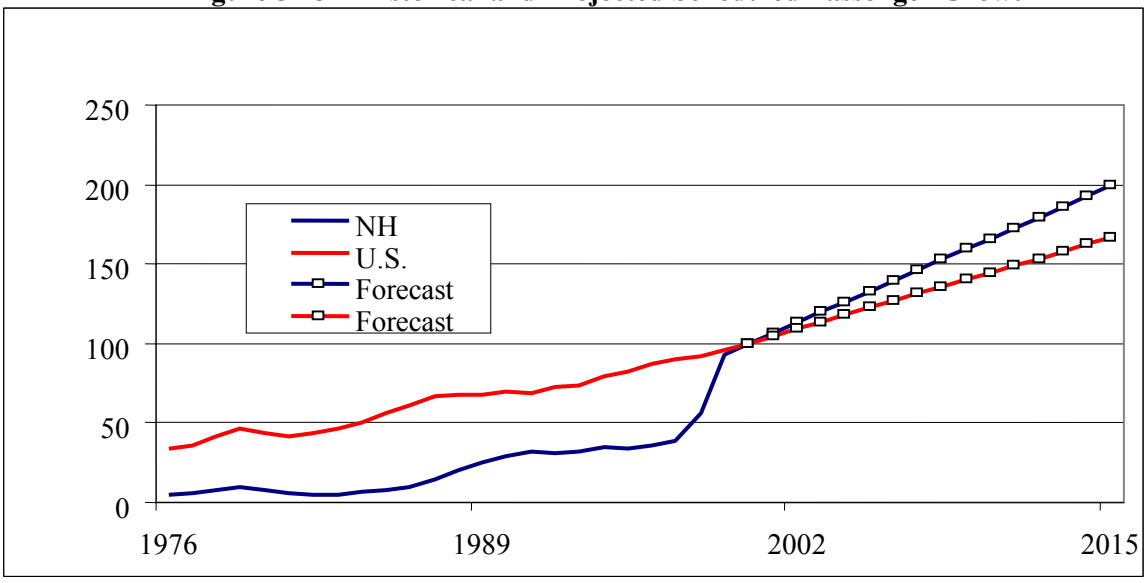
State	Based Aircraft	Hours Flown (x1,000)
Connecticut	1,573	203
Maine	1,207	143
Massachusetts	2,600	366
New Hampshire	1,753	196
Rhode Island	232	27
Vermont	546	40
New England - Total	**7,910**	**975**
Source: FAA General Aviation and Air Taxi Activity Survey, 2001		

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

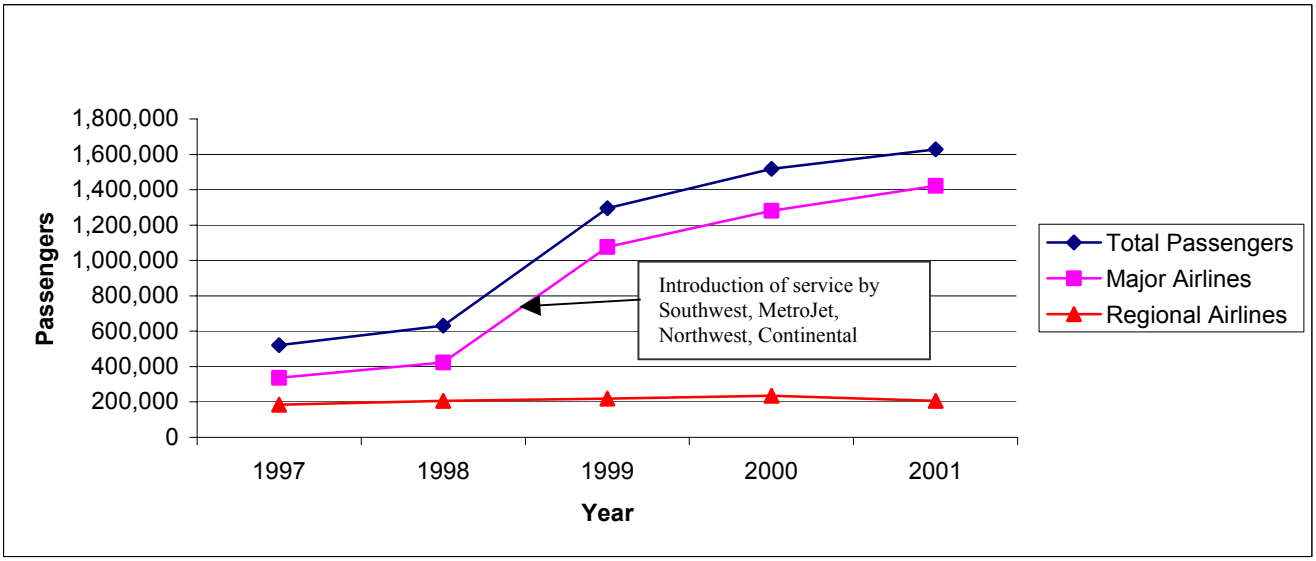
Manchester Airport has been the fastest growing commercial service airport in the State since the early 1990s, and was the fastest growing airport in the country in 1999 and 2000. Manchester has transformed over time from a small commercial service airport served by one airline to a small-hub airport 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:

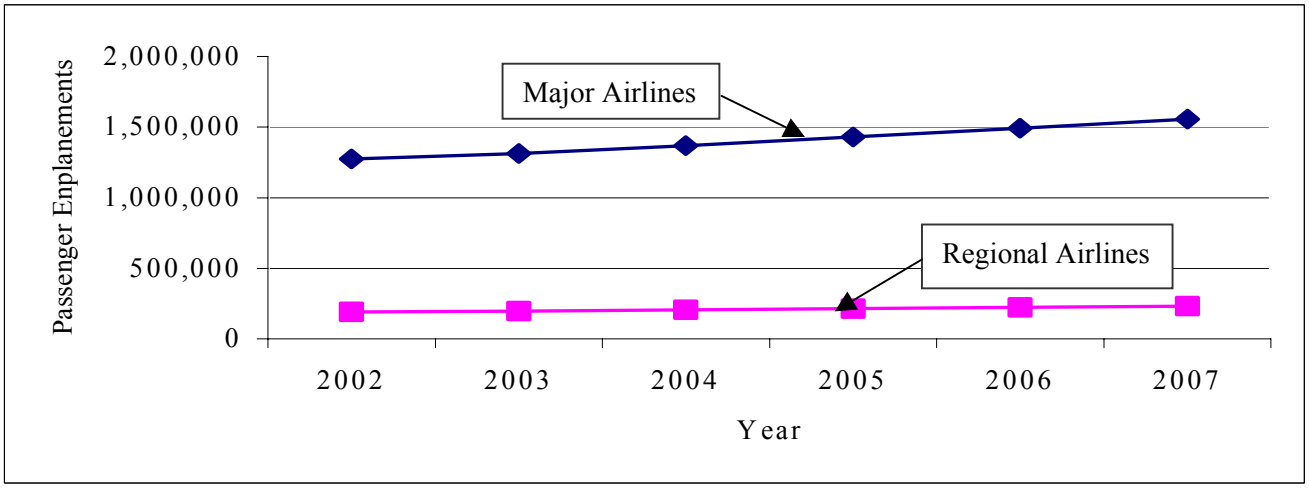
- For Fiscal Year (FY) 2002, the airport will be 10 percent below FY 2001 activity levels which accounts for the lost passenger volumes and effects of the current recession.

- 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.

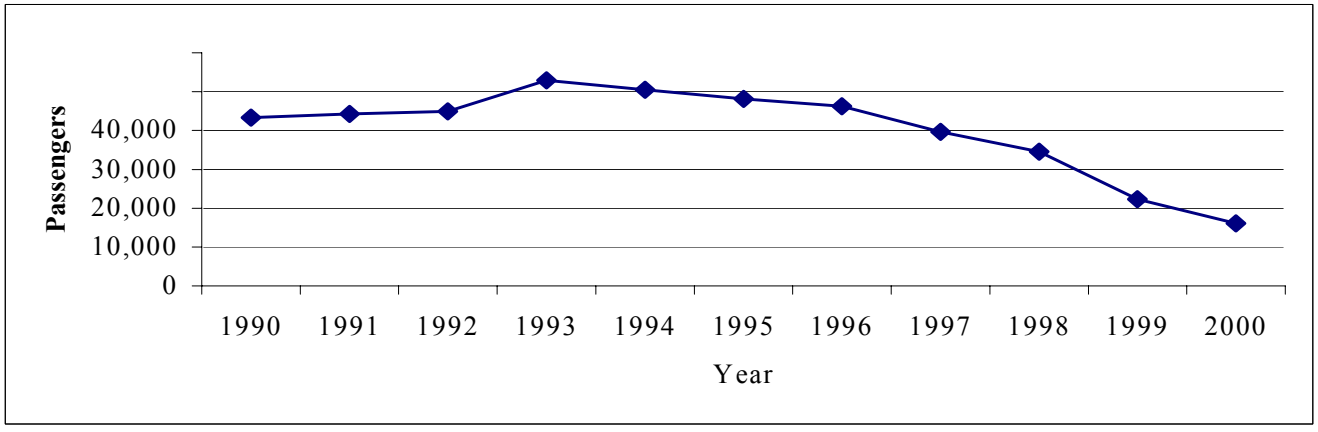
Table 5-9 – TAF Forecast Enplaned Passengers Manchester Airport				
Year	Major Airlines	Regional/Commuter/ Other Airlines	Total	Annual % Increase
2002	1,411,956	259,695	1,671,651	
2003	1,494,542	272,933	1,767,475	5.7
2004	1,577,129	286,171	1,863,300	5.4
2005	1,659,715	299,409	1,959,124	5.1
2006	1,742,302	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:

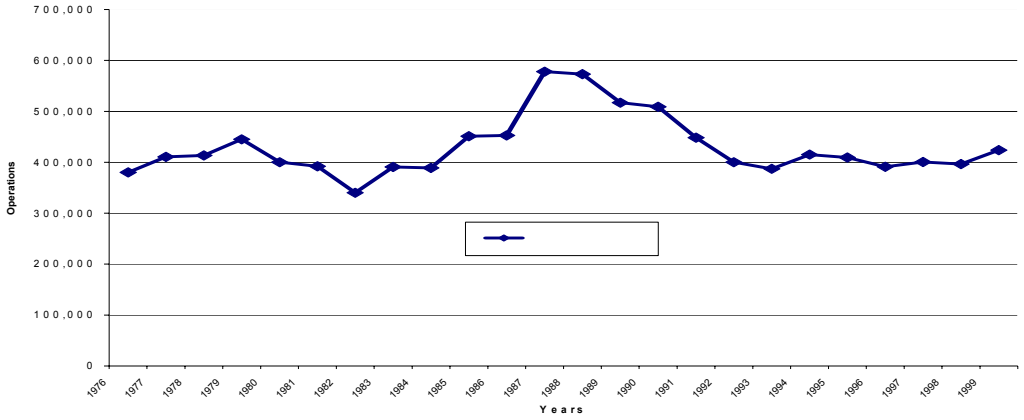
- Weakness in the national and state economy, exacerbated by a very weak stock market and declining corporate profits, both of which have impacted corporate/business aviation in particular
- Rising costs, including fuel prices, insurance, maintenance, parts, etc. The cost of acquisition and ownership 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.

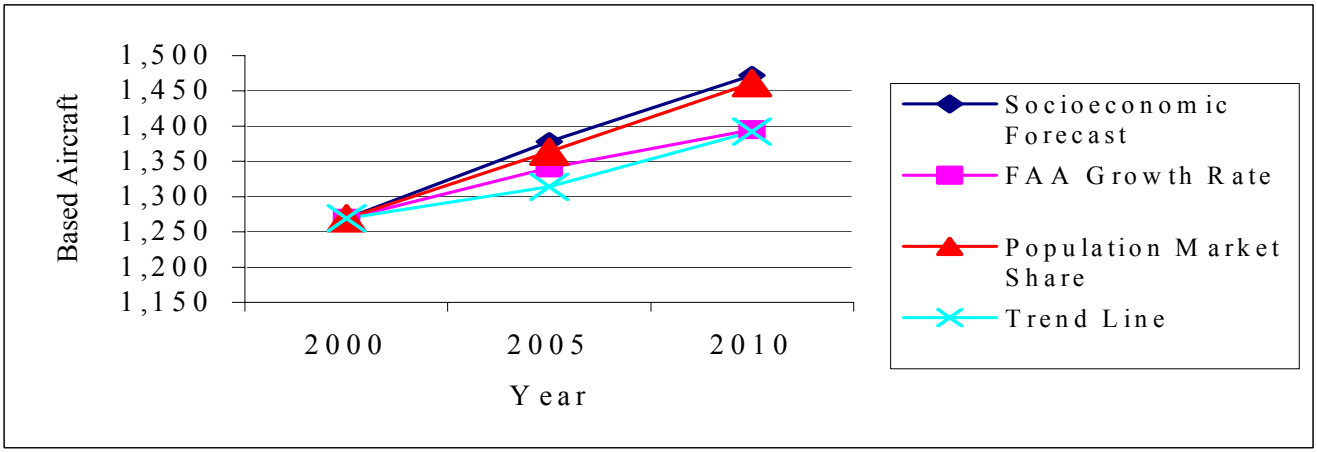
Table 5-18 - Based Aircraft Forecast - Trend Line Analysis					
Regions	**2000**	**2005**	**% Change 2000-2005**	**2010**	**% Change 2005-2010**
Central	81	76	-6.2%	71	-6.6%
Lakes	132	113	-14.4%	97	-14.2%
Nashua	403	465	15.4%	536	15.3%
North Country	122	139	13.9%	158	13.7%
Rockingham	161	186	15.5%	214	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.

Recommended 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 Line 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.

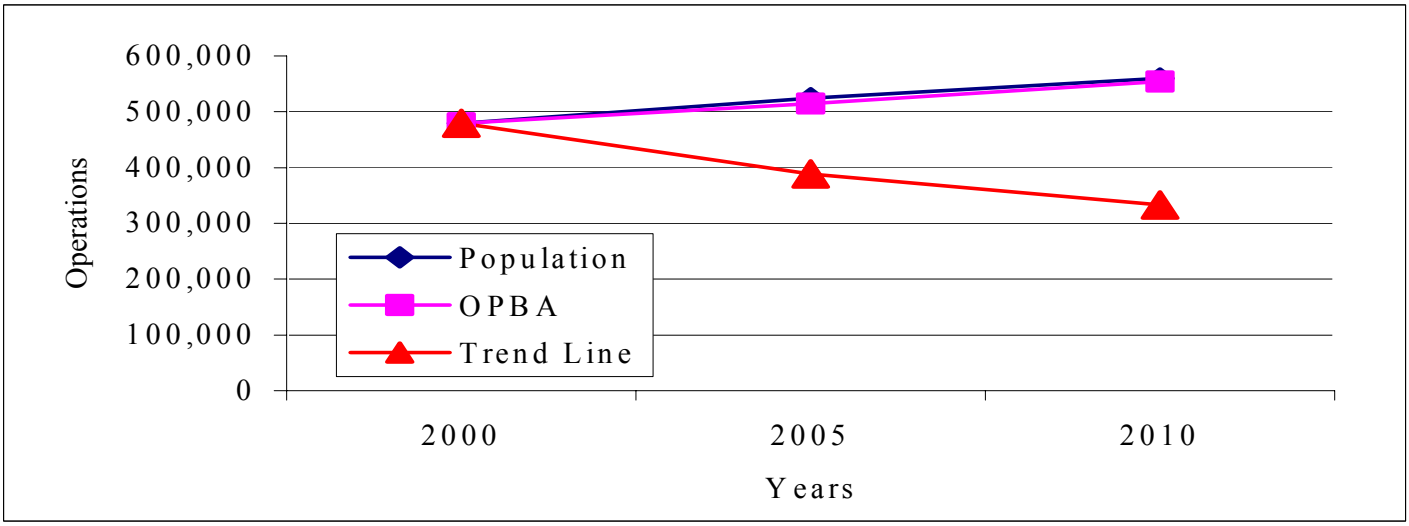
However, it should be noted that in other countries around the world, particularly in Europe and Japan, factors such as numerous user fees, very high fuel prices, airspace and airport access restrictions, etc. all combine to significantly depress demand for GA services. If those same constraints were 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.

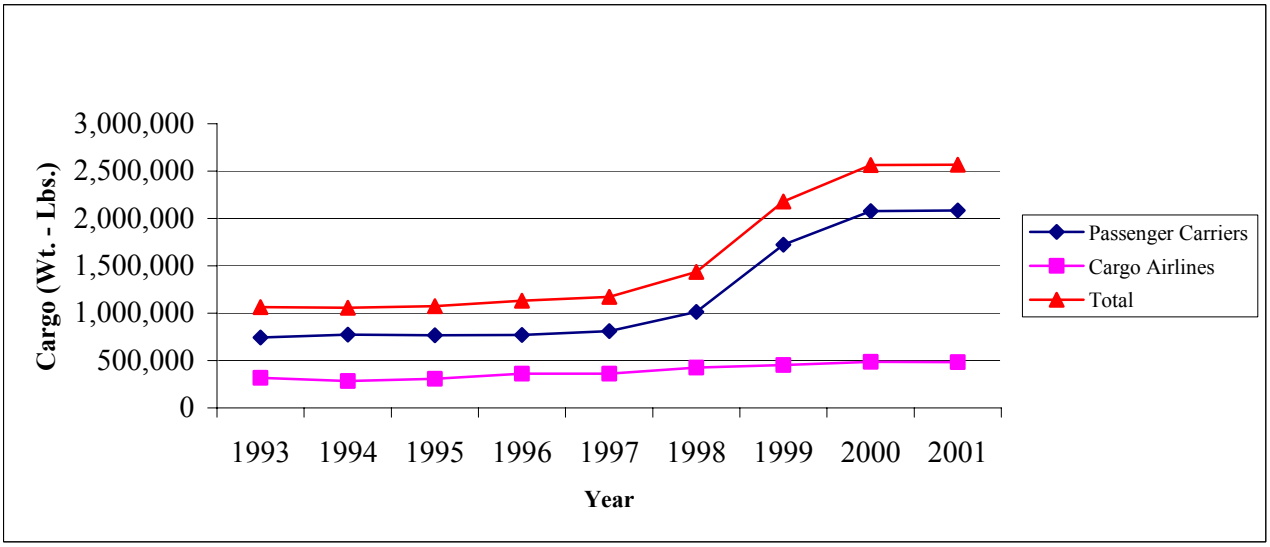
Table 5-24 - Air Cargo (Landed Weight - Lbs.) - Manchester Airport

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

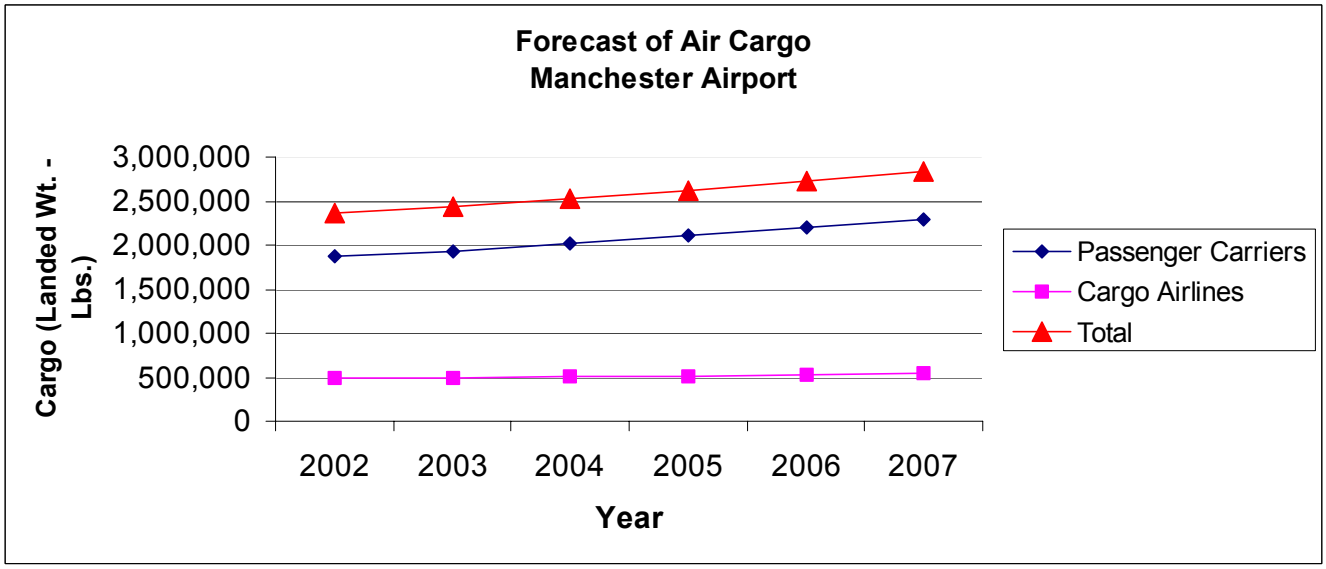
The forecast of cargo activity is primarily based upon the expected growth in the Manchester area and region, matched with a corresponding increase in activity of the airlines. The expected growth in the cargo activity is expected to increase annually at about 3.9 percent. The forecasts derived for the 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