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# **Preliminary Market Assessment/Feasibility Study (Second Fixed Base Operation)**

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Pease Development Authority

*Portsmouth International Airport at Pease*

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November 20, 2008



Aviation Management Consulting Group

November 20, 2008

Mr. David R. Mullen  
Acting Executive Director  
Pease Development Authority  
360 Corporate Drive  
Portsmouth, NH 03801

RE: Preliminary FBO Market Assessment/Feasibility

Dear Mr. Mullen:

Pursuant to our engagement, this report will convey to you Aviation Management Consulting Group's (AMCG) preliminary observations, opinions, findings, and conclusions relating to the market for and feasibility of a second Fixed Base Operation at the Portsmouth International Airport at Pease (Airport).

We are pleased to have been called upon to conduct this preliminary assessment. Please contact me if you have any questions about the findings our firm has reached.

Sincerely,

Jeff A. Kohlman  
Principal

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**I. LIMITING CONDITIONS**

This report is subject to the following assumptions and limiting conditions:

1. The data utilized in compiling this report was provided by and/or obtained from sources considered reliable and authentic. Aviation Management Consulting Group (AMCG) has accepted the information provided by and/or obtained from others without audit or cross verification. As such, AMCG assumes no liability for its accuracy or correctness.
2. The estimates, conclusions, and projections contained in this report are included to assist the reader in understanding the uniqueness of the aviation services industry. As assumptions are a necessary component of future projections, the assumptions made in this report are based upon reasonable and prudent estimates. These estimates are, however, subject to unforeseen and unpredictable influences such as, competition, local, regional, national, and global economies, fuel supply volatility, pricing, and discounting, quality of management, supervision, and operating-level employees, and the implementation of effective sales, marketing, and promotional programs. Therefore, actual outcomes may vary from the estimates, projections, and conclusions contained herein.
3. It is intended that this report be considered as a total product, the components of which must not be considered independently.
4. Compensation for preparing this report is not, in any manner, contingent upon the conclusions suggested or drawn herein.
5. This report is made for the client to whom it is addressed and is delivered to the client on the condition that it is to be used by the client only for the purpose stated in the report. No reliance is to be placed on this report for any other purposes.

## **II. INTRODUCTION**

This section of the report conveys pertinent background information, identifies the scope of work, and discusses the approach to the project.

### **A. Background**

The Portsmouth International Airport at Pease (Airport) is owned and operated by the Pease Development Authority (Authority). The Authority is governed by a seven-member board, comprised of four members appointed by officials of state government, and three members appointed by the governing bodies of Portsmouth and Newington.

The Airport is located one nautical mile west of Portsmouth, New Hampshire and approximately 50 miles from the cities of Boston, Massachusetts, Portland, Maine, and Manchester, New Hampshire. The Airport is designated as a Non-Hub Primary Commercial Service Airport by the Federal Aviation Administration (FAA) in the National Plan of Integrated Airports System (NPIAS).

Additional information regarding based aircraft, aircraft operations, passenger enplanements, fuel volumes, and registered aircraft and licensed pilots is provided in Section II, Market Assessment.

There were two passenger service air carriers (airlines) that served the Airport. However, in February 2008, Boston-Maine Airways, operating as Pan Am Clipper Connection (Pan Am) ceased all flights. Further, in April 2008, Skybus Airlines discontinued operations upon filing for bankruptcy protection.

Pan Am had substantial operations and facilities at the Airport including a major aircraft maintenance facility and fixed base operation (FBO). As part of Pan Am's lease termination with the Authority, ownership to all Pan Am facilities and improvements reverted to the Authority.

Port City Air (PCA), which is currently the only (sole source) FBO located at the Airport, provides a full range of FBO products, services, and facilities (which are further outlined in Section III, Demand/Capacity Analysis. Further, PCA is managing, on behalf of the Authority, the general aviation facilities and improvements the Authority gained control of from Pan Am.

With the departure of Pan Am and the current operational vacancy of the Pan Am FBO facilities, the Authority is desirous of determining whether the market is sufficient to support the operation of a second FBO at the Airport. Further, the Authority is seeking direction on whether the Authority should solicit proposals (through a Request for Proposals process) for use of the available facilities (previously operated by Pan Am) as an FBO or an alternative use.

**B. Scope of Work**

AMCG will provide a preliminary assessment of the level of demand and capacity for FBO products, services, and facilities at the Airport. By way of this preliminary assessment, AMCG will provide a preliminary opinion as to the feasibility of the market (at the Airport) to support a second FBO. This preliminary assessment will serve as the basis for AMCG's opinion regarding whether the Authority should solicit proposals (through a Request for Proposals process) for use of the available facilities (previously operated by Pan Am) as an FBO or an alternative use.

**C. Approach**

To accomplish the scope of work, a representative of AMCG (Jeff Kohlman, Principal) met with (interviewed) Authority and Airport management and toured the Airport on Tuesday, August 19, 2008. Further AMCG met with and interviewed representatives of several general aviation commercial aeronautical activity providers including Port City Air, PlaneSense / Atlas Aircraft / Alpha Flying / Rigi, AVARAX Aviation Services, and Great Bay Aviation and toured their respective facilities on Tuesday, August 19, 2008.

On the morning of Wednesday, August 20, 2008, the Authority hosted a public informational meeting whereby tenants, users, and other interested parties were invited to provide input to AMCG on their existing (and future anticipated) levels of general aviation activities at the Airport and their required and/or desired type, level, and quality of general aviation products, services, and facilities. Representatives from Citcon, SeaCoast Aviation, Arcadia, Thermo Fisher, Alpha Flying, Carlisle Air, GAAP, Covidien, and High Tech Aircraft were present.

Prior to the meetings (interviews), AMCG provided a comprehensive request for information, data, and documentation request to the Authority. Additional information was obtained through follow-up with the Authority and during the meetings (interviews). In addition, AMCG conducted its own independent research using its own industry databases, reference libraries, and contacts within the industry.

AMCG also contacted several existing and prospective commercial and non-commercial general aviation service providers and aircraft owners/operators by telephone to seek input on their existing (and future anticipated) levels of general aviation activities at the Airport and their required and/or desired type, level, and quality of general aviation products, services, and facilities. These companies (individuals) included Arcadia Aviation, Private Jet Services, Carlisle Corporation, Mr. Craig Hopkins, Pro Star Aviation, Seacoast Aviation, High Tech Aircraft, Thermo Fisher Scientific, and Citcon.

The information garnered from the meetings, interviews, tours, public meetings, telephone calls, and independent research formed the basis for AMCG's preliminary opinions regarding the feasibility of the market to support a second FBO at the Airport and whether the Authority should solicit proposals (through a Request for Proposals process) for use of the existing available facilities (previously operated by Pan Am) as an FBO or an alternative use.

It is also important to note that the guiding principles (job creation, environmental quality, fiscal responsibility, and economic viability) established during the original planning process of the PDA were utilized as a guide for AMCG's opinions and recommendations.

### **III. MARKET ASSESSMENT**

#### **A. Aviation Industry Overview**

This section provides a limited overview of the aviation industry (with primary emphasis on the general aviation segment of the industry), general aviation airports, and the general aviation service industry. In addition to the emphasis of this section on the general aviation segment of the aviation industry, this section will provide a limited overview of the local (subject market) general aviation marketplace.

The aviation industry can be segmented into three primary areas:

- Air carriers – includes scheduled and unscheduled passenger and cargo airlines
- Government (military) – includes federal, state, and local (county and city) agencies and all branches of the military
- General aviation – includes all aviation with the exception of air carriers and government

General aviation is estimated to be a \$40 billion a year industry which generates more than \$150 billion in economic activity. While 75% of major airline flights operate out of just 46 major metropolitan airports, only about 420 airports (out of 650 U.S. airports certified for scheduled airline service) have scheduled airline service – these airports are also used by general aviation. In contrast, there are more than 19,000 landing facilities that are used exclusively by general aviation of which about 5,200 airports are available for public use (with approximately 4,000 of these airports having paved runways). Some key general aviation statistics follow:

- Over 225,000 general aviation aircraft (approximately 70% of general aviation aircraft worldwide and 95% of aircraft in the U.S.) are flying in the U.S. today
- In the U.S., general aviation aircraft fly over 27 million hours (nearly two times airline flight hours) and carry 166 million passengers annually
- General aviation and related activities employ more than 1.2 million people who collectively earn approximately \$53 billion annually

## **1. Airports**

Communities across the nation depend on general aviation airports to facilitate air transportation, which both builds and sustains local economies. While general aviation airports support a full range of activities including such important public services as medical transport, law enforcement, fire protection, etc., perhaps the most important role of a general aviation airport is to provide business access to the community.

## **2. Aviation Service Industry**

Air transportation services and/or aircraft ground services are provided by Fixed Base Operators (FBOs) and Specialized Aviation Services Operators (SASOs). Definitions for both types of operators are provided in *Section VI, Appendix A – Definitions*.

At this time, it is estimated that there are approximately 3,400 FBOs and in excess of 20,000 SASOs in operation in the U.S. at airports having a paved runway of 3,000 feet or more. The 3,000 foot runway length is important as it is normally recognized as the minimum runway length required to accommodate the majority of general aviation aircraft. For higher altitude airports, however, considering the effects of density altitude, longer runways in the 5,000 foot to 6,000 foot range are typically required to achieve the same safety and performance parameters.

Airport sponsors, airport managers, and fixed base operators (FBO) owners and operators are asking the question “how many FBOs should an airport have (or be able to support)” more frequently these days. Other related questions include: (1) If an airport has only one FBO, isn’t that a violation of Federal Aviation Administration’s (FAA’s) airport (sponsor) assurances and (2) Isn’t it best to let the “market” determine how many FBOs an airport can support? The answers to these questions are dependent upon and can only be determined by carefully and thoroughly studying the circumstances at the airport and the conditions and trends in the market.

Airports are like fingerprints – each one is unique. Therefore, in setting out to find an answer to the question of how many FBOs should an airport have (or be able to support), it is essential to carefully consider a number of key airport attributes including the availability of land (as identified and discussed in the Master Plan for the airport and/or as depicted in the Airport Layout Plan or ALP); the existence of Primary Guiding Documents (i.e.,

Lease/Rates and Charges Policy, Minimum Standards, Rules and Regulations, and Development Guidelines); airport rates and charges (rents and fees); the number of FBOs (and Specialized Aviation Service Operators or SASOs); the number and type of based aircraft, aircraft operations, and fuel volumes (general aviation by category – retail, discount, contract, and self-fueling, air carrier, and government); the types of aircraft being served (piston, turboprop, and turbojet); and a multitude of other local, regional, and national market and economic factors and trends.

There are some interesting facts that typically surprise people when it comes to FBO competition. One of the most common statements made (as it relates to having more than one FBO at an airport) is that “competition is normal”.

Based upon the data maintained by Aviation Management Consulting Group (AMCG), out of approximately 3,500 airports in the U.S. having a hard surface runway of 3,000 feet or more, approximately 72.5% of airports have “one” FBO and approximately 17.2% of airports have “no” FBO at all. Therefore, only approximately 11.2% of airports have “more than one” FBO. If all 5,190 public use airports are considered, the percentage of airports having “no” FBO increases and the percentage of airports having “more than one” FBO decreases even further.

With regard to the State of New Hampshire, out of 14 airports having a hard surface runway of 3,000 feet or more, approximately 78.6% of airports have “one” FBO and 0.0% have “no” FBO at all. Therefore, only approximately 21.4% of New Hampshire airports have “more than one” FBO. If you include Maine, Massachusetts, and Vermont into the analysis, out of 79 airports having a hard surface runway of 3,000 feet or more, approximately 75.9% of airports have “one” FBO and 5.1% have “no” FBO at all. Therefore, only approximately 19.0% of regional airports have “more than one” FBO.

In addition, even if there are no other competitive FBOs located at an airport, competition still exists. With few exceptions, each and every FBO competes with other operators located at nearby airports (in the local market) and at the airport where the flight originates.

### *Products, Services, and Facilities*

The products, services, and facilities that are offered in the general aviation marketplace have been predicated primarily upon the demand created by three distinctly separate operating classifications within the marketplace – recreational/pleasure, business/corporate, and commercial. These segments are defined and briefly examined, as follows:

#### Recreational/Pleasure

In many respects, aircraft owners and operators who have committed their time and financial resources to this segment of the industry have done so because of their sheer love of aviation. The "romance factor", which has enthralled both young and old alike, is a very important element in understanding the relationship between people and flying machines.

The aircraft utilized for recreational/pleasure flying are typically based at general aviation airports, both public and private. For the most part, the recreational/pleasure fleet of approximately 150,000 aircraft is comprised of single and "light" multi-engine piston-powered aircraft although some "medium" to "large" multi-engine aircraft, including turbine-powered aircraft, are also utilized for recreational/pleasure purposes.

#### Business/Corporate

This segment, while not as significant in terms of the number of aircraft, is viewed as integral to the long-term growth and development of the general aviation industry. It is comprised of over 36,000 active aircraft (of which approximately 10,500 are turboprop and jet aircraft) in the U.S. Business/corporate related flights make up about 25% of the 27 million hours flown by general aviation each year.

One of general aviation's most important roles in the U.S. economy is its ability to enhance the profitability and competitive strength of U.S. companies and industries. Companies that take advantage of the benefits provided by general aviation routinely outperform businesses that rely solely on the airlines for travel. Studies have shown that, on average, S&P 500 firms who use general aviation to transport employees, business partners, management teams, and customers earned 141% more than those who do not utilize general aviation.

## Commercial

Commercial aviation (not to be confused with commercial airline – scheduled service) is a significant economic engine to general aviation as it represents companies that utilize general aviation aircraft for commercial purposes (i.e., for hire). This includes flight instruction, air taxi (non-scheduled, on-demand), medical transportation, air tours, aerial observation, and many more. It is comprised of over 36,000 active aircraft. General aviation aircraft used for commercial purposes make up about 40% of the 27 million hours flown by general aviation each year.

### **B. General Aviation Statistics and Trends**

For the purposes of this analysis, national aeronautical trends, including New Aircraft Deliveries, Active General Aviation Aircraft, General Aviation Hours Flown (Total), General Aviation Hours Flown (Per Aircraft), National Active Pilots, and General Aviation Total Fuel Consumption were analyzed. The key findings follow.

#### **1. General Aviation New Aircraft Deliveries**

General aviation aircraft deliveries by U.S. manufacturers reached a high of 17,811 in 1978 and then experienced a significant decline until bottoming out in 1994 at an industry low of 928 units. The significant decline during this period can be attributed to a number of factors including:

- Increased aircraft acquisition costs
- Increased operating costs (insurance, maintenance, fuel, etc.)
- Implementation of the “luxury” tax in 1986 and repeal of the Investment Tax Credit
- Increased air carrier service capabilities including regional and commuter carriers

The growth from 928 annual shipments in 1994 to 3,279 in 2007 (an average increase of 10.2% over this 14-year period) can be attributed to several factors, as follows:

- The passage of the General Aviation Revitalization Act in 1994 that limited the liability of aircraft and aircraft parts manufacturers to 18 years
- The proliferation of fractional aircraft ownership programs
- A strong economy during the late 1990s and early 2000s (including low interest rates)
- Entrance by new aircraft manufacturing companies
- Introduction of new aircraft technologies (e.g., composite and glass cockpits).

It is important to note that general aviation aircraft shipments for the first half of 2008 are up only 1.6% (as compared to the first half of 2007). However, when breaking this down between pistons, turboprops, and turbojets a different story is told. Piston aircraft shipments are down 15.7%, turboprop aircraft shipments are up 19.4% and turbojet aircraft shipments are up 39.3%.

Piston aircraft shipments have been impacted primarily due to the high cost of aviation gasoline and the current economic environment. While turboprop and turbojet aircraft orders have also been impacted by high cost of Jet A fuel and the current economic environment, this segment of general aviation is typically impacted less. Further, the backlog of aircraft orders for these types of aircraft is extremely high and therefore impact to shipments will lag extensively. In addition, the international demand for general aviation aircraft (especially turboprop and turbojet aircraft) is extremely high. This is substantially due to the low U.S. dollar (as compared to other international currencies).

## **2. Active General Aviation Aircraft**

As with new aircraft deliveries, the number of active general aviation aircraft hit a low in 1994 of 170,600. Since that time, the number of active aircraft has increased to 225,007 (2007). This increase can be attributed to the growth of experimental aircraft, the resurgence of new aircraft manufacturing (i.e., the growth of new aircraft deliveries and the number of companies developing Supplemental Type Certificate programs to modify and keep the aging aircraft fleet active).

## **3. General Aviation Hours Flown**

The total number of general aviation hours flown in the U.S. reached a low in 1994 of 24,092,000 hours, which represents a decrease of 44.5% from the high achieved in 1979. While this downward trend seemed to reverse for a while (general aviation hours flown increased 31.8% or 5.7% each year from 1994 to a peak of 31,756,000 in 1999), in recent years general aviation hours flown have declined (on average) approximately 2.0% annually since 1999 (to 27,866,000 hours flown in 2007).

While the number of hours flown by piston-powered aircraft have fluctuated (declining for the most part) since the early 1980s, the number of turboprop and turbojet aircraft hours flown have been cyclical over this same 25-year period. However, turbojet aircraft hours have steadily grown since 1999 (32.5% total or 4.1% average annual growth). These fluctuations can be attributed, in large part, to changes in the economy.

At first glance, the increase in the number of active general aviation aircraft since 1994 and the decline in general aviation hours flown since 1999 appear to be contradictory. However, these divergent trends are supported by the decline in the average number of hours flown per aircraft which has decreased from a high of 200 hours per aircraft in 1980 to a low of 120 hours per aircraft in 2005.

#### **4. Active Pilots**

Consistent with the trends in hours flown, the number of active pilots in the U.S. decreased throughout the 1980s and 1990s. Since peaking at 827,071 in 1980, the number of active pilots has declined 28.6% or 1.2% annually to 590,349 active pilots in 2007. While the number of active pilots increased in the late 1990s and early 2000s (which can be attributed to pilot development programs), there has been a steady decrease in active pilots since 2002.

#### **5. General Aviation Fuel Consumption**

Total general aviation fuel consumption increased steadily from 1993 (702.8 million gallons) through 2000 (1,334.9 million gallons), which can be attributed to an increase in aircraft manufacturing, expansion of fractional aircraft ownership, and a robust economy (particularly in the late 1990s). While general aviation fuel consumption declined slightly from 2001 through 2003 (due to the effect from the attacks of 9/11 and the recession that followed), general aviation fuel volumes rebounded to well past 2000 levels reaching 1,998.2 million gallons in 2007.

While aviation gasoline volumes declined through 1994 (except for small increases in 1984 and 1990), Jet fuel volumes experienced several cycles of growth and decline throughout the same period. The dramatic drop in Jet fuel volumes from 1989 to 1993 and the impressive recovery since 1994 are indicative of the resurgence in activity the industry has enjoyed since that time.

Aviation gasoline volumes experienced reasonable growth in the late 1990s only to be hit hard by 9/11 and the subsequent recession. With the continued rise in oil costs this cost sensitive segment of the market continues to lose ground. FBO revenues and profits are typically driven by the turbine-powered segment of the market. As such, the recovery of Jet fuel volumes has been warmly received throughout the aviation service industry.

While specific YTD 2008 industry fuel volumes have not yet been reported, AMCG clients (airports and FBOs) have experienced significant drops in general aviation fuel volumes over the last six to nine months. This is attributed to the high cost of oil, as well as the current economic downturn. While oil prices have dropped the last few months, the cost is still high and continues to impact total general aviation fuel consumption. A change in or direction of the economic downturn has yet to be identified or understood.

#### **6. General Aviation Industry Forecasts**

The following are based upon the forecasts developed by the FAA and leading aviation industry product manufacturers.

- General aviation aircraft hours flown are forecasted to increase at an average annual rate of 2.8% from 2008 through 2010. Most of this growth will be attributed to turbine aircraft hours flown, which is anticipated to increase at an average annual rate of 7.2% from 2008 through 2010.
- General aviation aircraft fuel consumed is forecasted to increase at an average annual rate of 8.0% from 2008 through 2010. Most of this growth will be attributed to Jet A fuel consumption, which is anticipated to increase at an average annual rate of 9.4% from 2008 through 2010.
- New piston general aviation aircraft manufacturing (worldwide) increased 20.2% from 2004 to 2005, increased 11.8% from 2005 to 2006, and decreased 3.0% from 2006 to 2007. The first six months of 2008 experienced a decrease of 15.7% from the same period in 2007, which AMCG believes can be attributed to both the higher cost of aviation gasoline and the economic downturn. AMCG believes that the recovery of piston aircraft manufacturing is several years out.
- New turboprop general aviation aircraft manufacturing (worldwide) increased 17.6% from 2004 to 2005, increased 9.9% from 2005 to 2006, and increased 11.4% from 2006 to 2007, and future years are anticipated to have equally impressive growth. The first six months of 2008 experienced an increase of 19.4% from the same period in 2007.

- New turbojet general aviation aircraft manufacturing (worldwide) increased 26.9% from 2004 to 2005, increased 18.1% from 2005 to 2006, increased 28.4% from 2006 to 2007, and future years are anticipated to have equally impressive growth. The first six months of 2008 experienced an increase of 39.3% from the same period in 2007.

Approximately 14,000 new general aviation business/corporate aircraft (primarily turboprop and turbojet) are projected to be manufactured through 2017.

### **C. Local and Regional Aviation Statistics**

The local and regional aviation statistics analyzed include registered aircraft, licensed pilots, based aircraft, aircraft operations, passenger enplanements, and fuel volumes. These aviation components are generally used to determine the size, stability, and trends in the local aviation market.

#### **1. Registered Aircraft**

Based upon 1990, 2000, and 2007 (estimated) U.S. Census data and FAA registered aircraft data (as of December 31, 2007), the following table identifies the total and average number of registered aircraft per 1,000 residents for the U.S., the State of New Hampshire, Rockingham County, and other areas within the market. The total includes Portsmouth and all other areas within the region.

Location	1990 Population	2000 Population	2007 Population	2007 Registered Aircraft	Average A/C per 1,000 Population
United States	248,709,873	281,421,906	301,621,157	367,952	1.22
New Hampshire	1,109,252	1,235,786	1,315,828	2,259	1.72
Rockingham	245,845	277,359	296,543	522	1.76
York (ME)	164,587	186,742	201,341	200	0.99
Strafford	104,233	112,233	121,581	136	1.12
Merrimack	120,005	136,225	148,274	224	1.51
Belknap	49,216	56,325	61,048	138	2.26
Hillsborough	336,073	380,841	402,302	627	1.56
Essex (MA)	670,080	723,419	733,101	389	0.53
<b>Total Region</b>	<b>1,690,039</b>	<b>1,873,144</b>	<b>1,964,190</b>	<b>2,236</b>	<b>1.14</b>

## 2. Pilots

Based upon 1990, 2000, and 2007 (estimated) U.S. Census data and FAA licensed pilot data (as of December 31, 2007), the following table identifies the total and average number of licensed pilots per 1,000 residents for the U.S., the State of New Hampshire, Rockingham County, and other areas within the market. The total includes Portsmouth and all other areas within the region.

Location	1990 Population	2000 Population	2007 Population	2007 Total Pilots	Total Pilots per 1,000 Population
United States	248,709,873	281,421,906	301,621,157	763,792	2.53
New Hampshire	1,109,252	1,235,786	1,315,828	4,025	3.06
Rockingham	245,845	277,359	296,543	1,090	3.68
York (ME)	164,587	186,742	201,341	410	2.04
Strafford	104,233	112,233	121,581	284	2.34
Merrimack	120,005	136,225	148,274	350	2.36
Belknap	49,216	56,325	61,048	243	3.98
Hillsborough	336,073	380,841	402,302	1,286	3.20
Essex (MA)	670,080	723,419	733,101	1,086	1.48
<b>Total Region</b>	<b>1,690,039</b>	<b>1,873,144</b>	<b>1,964,190</b>	<b>4,749</b>	<b>2.42</b>

## 3. Based Aircraft

As indicated in the following table, the number of based aircraft at the Airport increased from 2003 to 2004 before declining from 2004 to 2006. In 2007, there were 101 aircraft based at the Airport, the majority of which (58 or 57.4%) were single-engine aircraft.

Year	Based Aircraft (2003 - 2007)					% Change
	Single-engine	Multi-engine	Jet	Helicopter	Total	
2003	60	24	19	3	106	N/A
2004	54	40	30	1	125	17.9%
2005	52	23	25	3	103	(17.6%)
2006	55	27	14	3	99	(3.9%)
2007	58	27	13	3	101	2.0%

It is significant to note that based aircraft in 2008 will most likely increase due to the relocation of Alpha Flying to the Airport and the operation of their 33 PC-12 aircraft. However, it is important to note that these aircraft are rotated through the Airport and are not regularly based at the Airport.

#### **4. Aircraft Operations**

Over the period identified, total general aviation operations at the Airport have increased an average of 1.4% per year. Over the same period, general aviation itinerant operations (including air taxi operations) have increased from 5,542 (in 2004) to 5,849 (in 2007), while general aviation local operations have increased from 23,085 (in 2004) to 24,033 (in 2007).

The following table identifies the general aviation local, general aviation itinerant (including air taxi), and total general aviation operations at the Airport over the period identified.

<b>General Aviation Operations (2004 - 2007)</b>				
<b>Year</b>	<b>Local</b>	<b>Itinerant*</b>	<b>Total</b>	<b>% Change</b>
2004	23,085	5,542	28,627	N/A
2005	22,466	5,566	28,032	(2.1%)
2006	23,319	5,690	29,009	3.5%
2007	24,033	5,849	29,882	3.0%

The reader is encouraged to review the definition of local operations and itinerant operations (provided in *Section VI, Appendix A – Definitions*) as many readers confuse these with based and transient aircraft. It is also important to remember that an operation is counted for both a takeoff and landing. Therefore, approximately only eight general aviation aircraft (on average) utilized the Airport per day on an itinerant basis. Utilizing an AMCG database (from FAA statistics), AMCG was able to determine that approximately 65% of itinerant operations are associated with transient aircraft and the remaining 35% are associated with based aircraft.

#### **5. Fuel Volumes**

Fuel volumes can be a key component to the success of an FBO. While the type and number of based aircraft reflect the composition of the customer group located at the Airport and aircraft operations reflect the aircraft activity levels at an Airport, fuel volumes are a key measure of sales activity occurring at the Airport.

The fuel volumes reported to the Authority by PCA and Pan Am were all inclusive of general aviation, air carrier, and government. Therefore, AMCG was unable to determine trends in general aviation fuel volumes over the period studied. However, it is the opinion of AMCG that general aviation fuel volumes have most likely had nominal changes over the

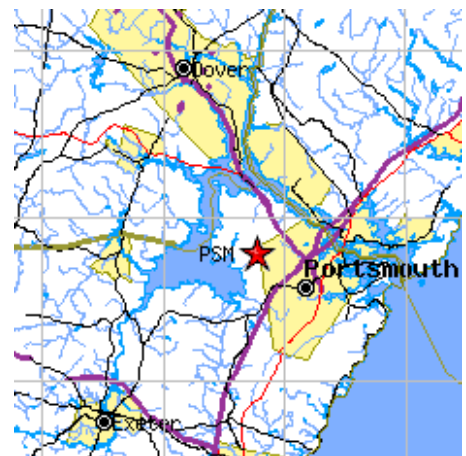
last five years as general aviation based aircraft and general aviation operations have also had nominal changes over the last five years.

Further, since Pan Am is no longer operating, AMCG was unable to segregate the fuel volumes reported by Pan Am between general aviation and air carrier for fiscal year 2008 (July 2007 through June 2008). Therefore, AMCG has estimated the general aviation fuel volumes associated with Pan Am's FY 2008 total fuel volumes of 738,101 to be approximately half (50%) – 370,000. Combined with PCA's and Executive Hangars LLC general aviation fuel volumes during the same period, the Airports total general aviation fuel volumes for FY 2007 was approximately 1,250,000.

However, of the 1,250,000 total general aviation fuel volumes at the Airport during FY 2008, approximately 250,000 gallons was not sold by the FBOs. These volumes were associated with an existing self-fueling operator (Executive Hangars LLC). Further, approximately 250,000 gallons were associated with Alpha Flying (which has rights to develop a self-fueling fuel storage facility). If Alpha Flying chooses to exercise its privilege, approximately 750,000 gallons of transient and based general aviation fuel volumes remain to be delivered by FBOs at the Airport on an annual basis.

#### D. Airport Profile

Portsmouth International Airport at Pease is owned and maintained by the Pease Development Authority. This FAA designated Non-hub Primary Commercial Service airport is located 1 mile west of Portsmouth in Rockingham County, New Hampshire. The 3,000 acre Airport is a joint use facility, as it is home to the 157th Air Refueling Wing of the New Hampshire Air National Guard.



The Airport has one runway (Runway 16/34) that is 11,321 feet long and 150 feet wide grooved asphalt and concrete in good condition. The Airport has precision approaches in both directions (ILS Runway 16 and

ILS Runway 34) and multiple non-precision approaches including RNAV/GPS, LOC, and VOR.

<b>Airport Information</b>	
Airport Name	Portsmouth International at Pease Airport
Airport Web Site	<a href="http://www.peasedev.org/pease/airport.asp">http://www.peasedev.org/pease/airport.asp</a>
FAA Identifier	PSM
City	Portsmouth
State	New Hampshire
Location (NM from CBD)	1 West of Portsmouth
Owner	Pease Development Authority
Operator	Pease Development Authority
Part of a System	No
Manager/Director	Kim W. (Bill) Hopper, A.A.E.
Size (Acres)	3,000 acres
Elevation (MSL)	100 feet MSL
Number of Runway(s)	1
Longest Runway	Runway 16/34 11,321 x 150 feet Grooved Asphalt/Concrete (Good Condition)
Precision Approach(es)	ILS Runway 16, ILS Runway 34
Non-precision Approaches	RNAV (GPS) Runway 16, RNAV (GPS) Runway 34, VOR Runway 16, VOR Runway 34, LOC Runway 16, LOC Runway 34
Air Traffic Control Tower	Yes
Airport Type	Open to public
Airport Role	Non Hub – Primary Commercial Service
Hub Category	N/A
Population Served	20,618 (Portsmouth)
Part 139	Yes
ARFF	Yes
TSA 1542	Yes
Airports (within 30 NM)	9
Airports (within 50 NM)	19
Airports (within 75 NM)	50
Airports (within 100 NM)	80

### **1. Commercial Aeronautical Operators**

As indicated previously, PCA, which is currently the only (sole source) FBO located at the Airport, provides a full range of general aviation products, services, and facilities. In addition, there are multiple SASOs located at the Airport providing a variety of products, services, and facilities including, but not limited to, flight training, aircraft maintenance and

repair, aircraft charter and management, and aircraft sales. A more detailed description of the general aviation products, services, and facilities provided at the Airport are provided in *Section III, Demand/Capacity Analysis*.

## **2. Non-Commercial Aeronautical Operators**

There are several non-commercial aeronautical tenants (i.e., individual or corporate flight departments) currently based at the Airport that operate turbojet aircraft including Covidian Limited, Thermo Fisher Scientific, High Tech Aircraft, Carlisle Capital and Citcon. There are also numerous other non-commercial aeronautical aircraft tenants and aircraft at the Airport that are either operated as stand alone operations (piston and turboprop) and those (typically turboprop and turbojet) operated under management by a commercial aeronautical operator (i.e., Great Bay Aviation, Maine Aviation, Private Jet Services, and PlaneSense / Alpha Flying).

## **E. Competitive Airport Analysis**

In order to effectively evaluate the competitiveness of an airport, it is important to fully understand the target market and the “airport” attributes desired by the target market.

AMCG identified 10 airports that would be considered the primary competitive airports with the Airport. While the airports identified serve a wide range of consumers and users (from privately owned single-engine piston aircraft used solely for recreational purposes to transport category aircraft used to provide commercial “air carrier” services), it is the opinion of AMCG that the Airport competes with other area airports for consumers (both based and transient) who own or operate the full range of general aviation aircraft.

While some general aviation aircraft can operate from runways less than 1,000 feet, as a general rule, a 3,000-foot runway is a desired minimum. Further, with the development of larger and faster aircraft, 5,000 feet has become the minimum design criteria for most airports desirous of effectively marketing to the full range of general aviation aircraft. With regard to the high end business/corporate segment of the market (which includes ultra long range intercontinental or global jets), 7,000 feet has become the minimum design criteria.

Based upon AMCG's experience and surveys conducted by industry associations and publications, the following elements are common attributes desired by the business/corporate segment of the general aviation market:

- Runway Length (minimum of 5,000')
- Approaches (precision)
- Control Tower (with radar)
- Fuel (competitive pricing)
- Hangar (capacity and clearance)
- Services (ground handling, airframe and powerplant, avionics, and instruments)

Based upon studies conducted by AMCG, the majority of local aircraft owners and operators are typically willing to drive up to 20 nautical miles to the airport where the aircraft they own/operate is based. Therefore, the based aircraft market is typically limited to approximately 20 nautical miles from the subject airport.

However, because airports outside of the 20 nautical mile radius may compete for customers within the 20 nautical mile radius, it is necessary to establish a radius from the subject airport to capture all airports that may compete for local based aircraft. Based upon the geography of the Portsmouth area, available "land based" transportation systems, and disbursement of the population, it is the opinion of AMCG that a 45 nautical mile radius around the Airport adequately captures all airports that compete with the subject airport for based aircraft customers. This is especially important for an airport in reasonable proximity to a major metropolitan area (i.e., Boston), as aircraft owners and operators consider relocating their aircraft out of the major metropolitan area for either cost savings and/or because other airports may be in close proximity to their executive's private residences.

In regards to airport selection by transient aircraft operators, there are many factors that are considered. The proximity of the airport to the final destination is certainly one of the primary considerations.

Assuming that the infrastructure, products, services, and facilities desired by the transient aircraft operator are provided by the FBOs and/or SASOs located at the airport and that the airport can safely accommodate the aircraft being operated, it is the opinion of AMCG that transient aircraft operators prefer to use the airport that is located closest to the final destination with ground travel “distance” typically being the deciding factor.

However, when the infrastructure, products, services, or facilities are not available or the airport cannot safely accommodate the aircraft being operated, transient aircraft operators will tend to seek and use alternative airports and quite frequently, the next closest or most convenient airport is selected regardless of ground travel distances.

A total of 10 airports (considered to be the primary competitive airports to the Airport) were identified within a 45 nm radius of the Airport, as follows:

- Sanford Regional Airport – Sanford, Maine
- Lawrence Municipal Airport – Lawrence, Massachusetts
- Beverly Municipal Airport – Beverly, Massachusetts
- Manchester Airport – Manchester, New Hampshire
- Concord Municipal Airport – Concord, New Hampshire
- Boire Field Airport – Nashua, New Hampshire
- Portland International Jetport – Portland, Maine
- Laconia Municipal Airport – Laconia, New Hampshire
- Laurence G. Hanscom Field – Bedford, Massachusetts
- Logan International Airport – Boston, Massachusetts

One additional airport was identified as competitive, Bangor International Airport – Bangor, Maine, as this airport receives a high level of transient/technical stops for aircraft arriving from Europe and processing through Customs and Immigrations.

#### **IV. DEMAND/CAPACITY ANALYSIS**

In this section of the report, the level of “capacity” that exists at the Airport (i.e., the FBO, SASO, and Airport general aviation facilities, products, and services) will be evaluated based upon the level of consumer “demand” that exists or can be reasonably anticipated in the market. Within this context, AMCG offers the following preliminary analysis and observations.

##### **A. Facilities**

###### **1. Land**

There are three primary areas, totaling approximately 71 acres, on the southeast quadrant of the Airport that is currently utilized for development and operation of general aviation improvements and the engagement in and provision of general aviation products and services.

The primary area where FBO improvements exist (PCA’s existing improvements and the subject improvements previously occupied by Pan Am) consists of approximately 22 acres. Also located in this area are t-hangars that are individually owned and operated as an association.

The second area, consisting of approximately 27 acres, includes privately owned corporate hangars and Authority owned community hangars.

The third area, consisting of approximately 22 acres, has a single development - Alpha Flying.

A detailed description of the improvements in each of these three land areas follows.

###### **2. Improvements**

The table that follows provides a summary of the general aviation improvements located on the Airport. All square footages are approximates or estimates.

Component			Owner	Year Built	Hangar (SF)	Office (SF)	Shop (SF)	Total (SF)
Bldg #	Improvement	Type						
205	Hangar	Comm/Maint	Authority	1996	~22,000			~22,000
205	G.A. Terminal	FBO	Authority	1996		~8,000	~5,000	~13,000
104 Grafton	Hangar	Comm/Maint	PCA	2003	~20,000			~20,000
104 Grafton	G.A. Terminal	FBO	PCA	2003		~8,000	~4,500	~12,500
212	Hangar	Community	Authority	1950s	28,400			28,400
213	Hangar	Community	Authority	1950s	28,400			28,400
215	Hangar	Community	Authority	1950s	28,400			28,400
120 Aviation Wav	Hangar	Corporate	Exec Hgr	1996	17,000	3,000		20,000
110 Aviation Wav	Hangar	Corporate	Carlisle	2008	9,260	1,300		10,560
115 Flight Line Road	Hangar	Maintenance	Alpha	2008	40,000			40,000
115 Flight Line Road	G.A. Terminal	SASO	Alpha	2008		34,000	10,000	44,000
	T-Hangars		Association	1990s	53,517			53,517
	Shade Hangars (5)		Authority	1950s	50,000			50,000

Hangars 212, 213, 215, and the shade hangars are original hangars from the military's use of the Airport (prior to the conversion). Other than significant improvements made to 215, these facilities are in relatively poor to fair condition. All other hangars on the Airport are relatively new and are in good condition.

A fuel storage facility exists adjacent to Building 227 that was previously owned and operated by Pan Am. This fuel storage facility currently is owned by the Authority and is not being utilized for fuel storage. The facility consists of six 20,000 gallon Jet A storage tanks and one 20,000 gallon storage tank divided into three compartments (one 14,000 gallon Avgas storage tank, one 3,000 gallon diesel storage tank, and one 3,000 gallon motor gasoline storage tank).

There has been interest expressed by several existing on-Airport commercial and non-commercial entities to develop additional aircraft storage facilities on the Airport. Further, interest has been expressed by off-Airport commercial and non-commercial entities to develop aircraft storage facilities and commercial operator facilities at the Airport. It is important to note that the Authority has engaged Hoyle, Tanner & Associates to develop Airport Layout Plans identifying the phased development of additional corporate and community hangars in the area between Flight Line Road and Aviation Avenue (where existing corporate and community hangars exist).

**B. Products and Services**

PCA and other SASOs are currently providing the “type” of products and services that are desired by the full range of aviation consumers (air carriers, general aviation, and government) that utilize the Airport, as follows:

Products	Port City Air	SASOs	Comments
Jet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Avgas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Air Carrier	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Government	<input checked="" type="checkbox"/>	<input type="checkbox"/>	DOD Contract
Auto Gas	<input type="checkbox"/>	<input type="checkbox"/>	
Aviation Lubricants	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Aircraft Parts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Aircraft Sales	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Avionics Sales	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Line Services			Comments
Towing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Ground Power	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lavatory	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pre-Heat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Deicing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Oxygen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Nitrogen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Compressed Air	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cleaning/Detailing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Disabled Aircraft Removal	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Passenger/Crew Services			Comments
Concierge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Catering	<input checked="" type="checkbox"/>	<input type="checkbox"/>	On-Board Catering (work with PCA)
Wifi/Internet Available	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Showers	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Customs Available	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Through U.S. CBA
Business Center	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Rental Cars	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Enterprise
Courtesy Transportation	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Passenger Lounge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Conference Room	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Flight Tracking	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Flight Planning/Weather Briefing	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Snooze/Quiet Rooms	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Crew Lounge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Crew Car	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

<b>Technical Services</b>			<b>Comments</b>
A & P Piston	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
A & P Turboprop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bell, Agusta, Eurocopter service center
A & P Turbojet	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Avionics	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Instruments	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<b>Flight Services</b>			<b>Comments</b>
Flight Instruction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	AVARAX Aviation Services
Aircraft Rental	<input type="checkbox"/>	<input checked="" type="checkbox"/>	AVARAX Aviation Services
Aircraft Charter	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Great Bay Aviation, Carlisle Air, Maine Aviation
Aircraft Management	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Carlisle Air, Maine Aviation, Private Jet Services,
Cargo Handling	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	SeaCoast Cargo, Air Cargo at Pease LLC
<b>Aircraft Sales</b>			<b>Comments</b>
Piston	<input type="checkbox"/>	<input type="checkbox"/>	
Turboprop	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pilatus
Turbojet	<input type="checkbox"/>	<input type="checkbox"/>	

### **1. Port City Air**

Port City Aircraft Repair (the predecessor of Port City Air) was founded in 1995. Port City Aircraft Repair focused on aircraft maintenance and avionics for light aircraft. This activity was performed from Hangar 212. In 2003, the owners of Port City Aircraft Repair invested approximately \$5,000,000 in the development of their existing FBO facilities, now operated as Port City Air. The FBO facility includes a 60,000 gallon fuel storage facility. In 2003, PCA was the second FBO on the Airport. Shortly after developing the FBO facilities, PCA acquired New Hampshire Helicopters, which has expanded the products and services offered to include rotor-wing aircraft maintenance and avionics installation and repair.

### **2. PlaneSense / Alpha Flying / Atlas Aircraft Center / Rigi**

These sister companies (herein identified as Alpha Flying), which began service in 1995, relocated to the Airport in 2007 from Manchester Airport and developed a substantial facility consisting of approximately 84,000 square feet of hangar, office, and shop. The facility currently has 5 hangar bays with the ability to expand to 10. Further, this facility was designed to be utilized as an FBO, if necessary. However, it is important to note that the current lease terms and conditions do not provide for use of the leased premises as an FBO.

Rigi currently buys PC-12 aircraft and resells these aircraft in the form of fractional shares. Alpha Flying manages these aircraft under the name PlaneSense. Atlas Aircraft Center is an authorized PC-12 aircraft service center for a 10 state area.

Alpha Flying currently manages 33 aircraft and has approximately 8 aircraft a year on order for expansion and replacement of the existing fleet.

It is important to note that Alpha Flying had 25 Grob aircraft on order as part of their future expansion plans. However, Grob recently filed “bankruptcy” and is currently attempting to reorganize. The impact on Alpha Flying is unknown at this time. It is anticipated that expansion plans, associated with the Grob aircraft will be delayed.

### ***3. U.S. Customs and Border Patrol***

During AMCG’s interview with existing based aircraft operators at the Airport, the availability, quality, timeliness, and location of U.S. Customs and Border Patrol (CBP) services were identified as being unacceptable and inconsistent. Several of these operators, when possible, purposely circumnavigate the Airport and utilize CBP services at Manchester Airport (Manchester, New Hampshire), Portland International Jetport (Portland, Maine), and/or Bangor International Airport (Bangor, Maine).

Further, PCA has had difficulty attracting and/or retaining transient customers that could utilize the Airport for international technical stops due to the existing level and quality of CBP services at the Airport.

### ***4. Non-Commercial Self-Fueling Entities***

In addition to PCA’s commercial fuel storage facility on the Airport, there exists one additional active fuel storage facility that is utilized for non-commercial self-fueling. This facility is owned by Executive Hangar LLC and is located adjacent to the Hangar at 120 Aviation Avenue, which is also owned by Executive Hangar LLC. Executive Hangar LLC is owned by 3 members, each with their own aircraft.

While Alpha Flying is currently not engaging in self-fueling activities, the Authority has provided Alpha Flying the right to develop a self-fueling fuel storage facility for the purpose of facilitating self-fueling of aircraft owned and managed by Alpha Flying. Currently Alpha Flying is purchasing their fuel from PCA at a discounted into-plane fee.

While there are other entities that have expressed interest in developing self-fueling fuel storage facilities and having the rights to engage in self-fueling, there are no other permitted self-fueling fuel storage facilities on the Airport. It is important to note that while an Airport is obligated to allow self-fueling activities, the Airport is not obligated to lease land for the development of self-fueling fuel storage facilities.

### **5. Previous FBOs**

Upon the conversion of the Airport from military to public use, Transoceanic developed the first FBO facilities at the Airport in 1992. Shortly thereafter (1996), Transoceanic filed bankruptcy and the facilities (FBO) were purchased by SeaCoast Aviation. Then SeaCoast Aviation FBO was purchased by Pan Am in 1999 and operated until 2008. It is significant to note that prior to Pan Am purchasing SeaCoast Aviation, Pan Am had received permission from the Authority to develop its own FBO facility. However, Pan Am instead decided to buy out SeaCoast Aviation instead of developing a second FBO on the Airport.

## **V. CONCLUSION**

This section will summarize our preliminary findings and observations and convey our preliminary opinion regarding the feasibility of operating a second FBO at the Airport.

### **A. Preliminary Findings and Observations**

#### **1. General Aviation Industry**

While the general aviation industry (particularly in the area of business and corporate aviation) had experienced phenomenal growth following 9/11, the high cost of oil and the current economic conditions has tempered this growth. While the industry is positioned for continued growth (as evidenced by the backlog orders of turboprop and turbojet aircraft, including very light jets), AMCG believes that the fuel consumption growth will be limited, if not experience some decreases, over the next few years.

#### **2. General Aviation Service Industry**

Industry data shows that having one FBO at an airport is not uncommon, nor is it a violation of FAA Airport Sponsor Assurances. In fact, it is most common for airports (of all sizes) to have only one FBO. However, AMCG understands that there are some airports where FBOs take advantage of being the sole-source FBO and both based and transient aircraft owners and operators are negatively impacted. It is incumbent upon the airport sponsor to work with sole-source FBOs and identify areas of concerns of airport/FBO customers and resolve these concerns in a timely manner.

#### **3. Local (Market) Aviation Statistics**

There are more aircraft and pilots per 1,000 population in the Rockingham County region than in the State of New Hampshire and more in the State of New Hampshire than the United States. This statistic identifies an opportunity for the Authority and the FBOs and SASOs at the Airport.

Based aircraft at the Airport has remained relatively flat over the last five years, except for the recent influx from Alpha Flying. It is the opinion of AMCG that the primary reason for lack of growth in this area is related to the lack of new aircraft storage facilities at the Airport.

With the lack of existing aircraft storage facilities, demand for aircraft storage facilities by larger business/corporate aircraft may displace (off the Airport) smaller piston, turboprop, or turbojet aircraft utilizing the larger community aircraft storage facilities. This could further impact the viability of an FBO due to reduced fuel volumes associated with displaced aircraft.

It is the opinion of AMCG that general aviation itinerant operations is the primary factor that impacts the growth or decline of an airport's general aviation fuel volumes. General aviation aircraft operations (especially general aviation itinerant operations) are low at the Airport. In comparison to aircraft operations at other towered airports, Portsmouth International Airport ranks in the bottom decile. Since the Airport would not generally be considered a destination airport for transient aircraft, it is the opinion of AMCG that the primary reason general aviation itinerant operations are low is due to the limited number of existing aircraft storage facilities and the poor service provided by U.S. Customs and Border Patrol (as discussed further herein). The Airport has excellent infrastructure (including a 24 hour towered airport and an Index E Aircraft Rescue and Fire Fighting Department, both staffed by the military) and a full range of commercial aeronautical activities.

The Airport's "retail" and "discounted" annual general aviation fuel volumes (both based and transient) range from 750,000 to 1,000,000 gallons. Based upon AMCG's experience evaluating an airport's ability to support multiple FBOs and reviewing financials of FBOs with various fuel volumes, it is the opinion of AMCG that an FBO typically requires between 1,000,000 to 1,500,000 gallons of annual general aviation fuel volumes to support the development, management, and marketing of the type, level, and quality of FBO products, services, and facilities normally desired by based and transient general aviation aircraft owners and operators at an airport the size and scope of Portsmouth International Airport and generate a reasonable return on investment and internal rate of return. However, it is important to note that there are numerous variables that can impact an FBO's ability to realize a reasonable return on investment and internal rate of return.

It was noted earlier in this report that there exists self-fueling activities on the Airport. While an airport is obligated to accommodate self-fueling for an aircraft owner (utilizing the aircraft owner's equipment and employees) to fuel their own aircraft, so long as the aircraft owner is willing to follow reasonable rules and regulations adopted by the airport sponsor, the airport sponsor is not obligated to lease land for the development of fuel storage facilities. It is the opinion of AMCG that self-fueling activities negatively impact the viability of FBOs. It is incumbent upon the Airport and FBO to ensure that the pricing of aviation fuels at the airport are reasonable for the market and the type, level and quality of the fueling services.

#### ***4. Competitive Airports***

There are numerous airports in the market area that provide significant competition to the Airport and limit the Airport's ability to expand general aviation products, services, and facilities. This is further impacted by the limited number of businesses and corporations in the immediate market area that own (or could own) business or corporate aircraft. However, it is significant to note that Laurence G. Hanscom Field and Logan International Airport in the Boston, Massachusetts area are constrained and have limited opportunities to further accommodate additional business and corporate aircraft. It is the opinion of AMCG that the Airport could be in a position to take advantage of this situation. However, the Airport and/or private enterprise will need to invest in both infrastructure and general aviation facilities to meet this demand.

#### ***5. Airport General Aviation Land***

It is the opinion of AMCG that there is sufficient land on the Airport dedicated to general aviation that will accommodate current and future demand. Further there appears to be additional land on the Airport that could be utilized to accommodate an expansion of general aviation.

#### ***6. Airport General Aviation Improvements***

It is the opinion of AMCG that the existing general aviation facilities are at (or approaching) capacity and that there is sufficient demand to support and justify the development of additional general aviation aircraft storage facilities.

### ***7. Airport Commercial Aeronautical Products and Services***

The Airport currently has a full range of general aviation products, services, and facilities. However, there are a limited number of providers of each of these products, services, and facilities. It is the opinion of AMCG that the limited number of providers is due to the current limited market size as well as the lack of general aviation facilities and designated land areas to develop general aviation facilities.

As discussed herein, the availability, quality, timeliness, and location of U.S. Customs and Border Patrol (CBP) services is a major concern of existing aircraft owners and operators, as well as current commercial aeronautical operators. It is the opinion of AMCG until this central issue is resolved or improved that the Airport will not reach its full potential and general aviation growth (operations, fuel volumes, and general aviation facility development) will be negatively impacted.

### **B. Findings and Recommendations**

#### ***1. Feasibility of Airport to Support Second FBO***

Based upon the preliminary findings and observations outlined herein, it is the opinion of AMCG that the Airport is currently not able to support a second FBO. It is important to note that this is solely based upon the size and scope of the current market and existing general aviation facilities. Therefore, AMCG does not recommend the development of an RFP for the solicitation of a second FBO to operate the facilities previously occupied by Pan Am.

#### ***2. Recommended Uses of “Pan Am” Facilities***

While, in the opinion of AMCG, the market is insufficient to support a second FBO, the facilities previously occupied by Pan Am should be reserved for commercial aeronautical activities. Based upon the research conducted by AMCG and the preliminary findings and observations outlined herein, it is the opinion of AMCG that there is sufficient demand for additional general aviation facilities to accommodate expanding demand for aircraft charter and aircraft management services and the associated aircraft storage requirements. Therefore, AMCG recommends the development of an RFP for the solicitation of an aircraft charter and/or management company to occupy and operate these facilities.

Since the location and design of this facility is appropriate for a future FBO, AMCG recommends that the Authority limit the term of the lease agreement to 5 years with sufficient notice to the lessee to vacate and make alternative arrangements (preferably construction of new facilities). This would provide the Authority with sufficient flexibility should the market be able to support a second FBO in the future.

### **3. Self-Fueling**

Several existing aircraft owners and operators are concerned about the lack of alternatives regarding aviation fuel deliveries and purchases within a sole-source FBO environment. Therefore, the Authority should develop and adopt formal rules and regulations which would govern self-fueling activities on the Airport. If self-fueling rules and regulations were to accommodate self-fueling fuel storage facilities on the Airport, AMCG recommends a centralized fuel storage facility versus fuel storage facilities adjacent to aircraft storage facilities.

## VI. APPENDIX

**Air Carrier:** all scheduled and unscheduled passenger and cargo airlines

**Air Taxi:** non-scheduled, for hire, air transport services that are subject to 14 Code of Federal Regulations (CFR) Part 135

**Aircraft Operation:** an aircraft take-off or landing

### Aviation Fuels

Avgas (Aviation Gasoline) – Specifically blended gasolines which are utilized to power reciprocating (piston) aircraft engines. Aviation gasolines are referred to as “Avgas” followed by the grade designation (e.g., Avgas 100/130 which contains less than 4.0 ml/gal of tetraethyl lead and is colored “green” and Avgas 100LL which is “low lead” 100/130 contains less than 2.0 ml/gal of tetraethyl lead and is colored “blue”).

Jet Fuel – A group of various kerosene (or wide-cut) types of fuels which are utilized to power aircraft turbine (jet) engines.

### Aviation Hangars

T-Hangar – An individual hangar which typically has the capacity of storing only one aircraft (usually not larger than a cabin class multi-engine aircraft). The hangar derives its name from its shape (in the form of a “T”) which increases the efficiency of the design so as to accommodate the wing span and the tail section of an aircraft. T-Hangars may be individual (stand alone) structures or they may be combined and “nested” so that the tail sections of the “T” configuration interlock to form a single congruous structure.

Corporate Hangar: a square or rectangular-shaped hangar which is designed to accommodate the “proprietary” aircraft operations of a single company who typically services (and stages) its own aircraft. Corporate hangars, which typically stand alone, are usually larger than executive hangars (may span upwards of 200 feet by 200 feet) and in many cases, they have an attached lean-to structure which houses shop, office, and storage areas.

Community (Common) Storage Hangar – A square or rectangular-shaped hangar which typically range in size from 5,625 (approximately 75 feet by 75 feet) to upwards of 100,000 square feet (approximately 315 feet by 315 feet). Community hangars are typically utilized to store and/or facilitate the maintenance and repair of aircraft of various sizes and configurations which are (and frequently are) owned by more than one company or individual.

### Aviation Regulations

Part 91 – General Operating and Flight Rules: This part prescribes rules governing the operation of aircraft (other than moored balloons, kites, unmanned rockets, and unmanned free balloons, which are governed by Part 101, and ultralight vehicles operated in accordance with Part 103) within the U.S., including the waters within 3 nautical miles of the U.S. coast.

Part 121 – Certification and Operations (Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft): This part prescribes rules governing the certification and operations of the following: (1) Each air carrier engaging in interstate or overseas air transportation under a certificate of public convenience and necessity or other appropriate economic authority issued by the CAB; (2) Each air carrier engaging in foreign air transportation under a certificate of public convenience and necessity or other appropriate economic authority issued by the CAB; (3) Each air carrier identified in (1) and (2) when engaging in charter flights or other special service operations; (4) Each supplemental air carrier when it engages in the carriage of persons or property in air commerce for compensation or hire; (5) Each commercial operator when it engages in the carriage of persons or property in air commerce for compensation or hire (i) with large aircraft other than airplanes; or (ii) as a common carrier solely between places entirely within any state of the U.S., with airplanes having a seating capacity of more than 30 passengers or a maximum payload capacity of more than 7,500 pounds; and (6) Each air carrier when it engages in all-cargo air service under a certificate issued by the CAB under section 418 of the Federal Aviation Act of 1958.

Part 125 – Certification and Operations (Airplanes having a seating capacity of 20 or more passengers or a maximum payload capacity of 6,000 pounds or more): This part prescribes rules governing the operations of U.S.-registered civil airplanes which have a seating configuration of 20 or more passengers, or a maximum payload capacity of 6,000 pounds or more when common carriage is not involved.

Part 127 – Certification and Operations of Scheduled Air Carriers with Helicopters: This part prescribes rules governing each air carrier holding a certificate of public convenience and necessity issued by the Civil Aeronautics Board when that air carrier engages in scheduled interstate air transportation using helicopters within the 48 contiguous States and the District of Columbia.

Part 133 – Rotorcraft External-Load Operations: This part prescribes airworthiness certification rules for rotorcraft used in; and operating and certification rules governing the conduct of rotorcraft external-load operations in the U.S. by any person.

Part 135 – Air Taxi Operators and Commercial Operators: This part prescribes rules governing: (1) Air taxi operations conducted under the exemption authority of Part 298; (2) The transportation of mail by aircraft conducted under a postal service contract awarded under section 5402c of title 39, U.S.C.; (3) The carriage in air commerce of persons or property for compensation or hire as a commercial operator (not an air carrier) in aircraft having a maximum seating capacity of less than 20 passengers or a maximum payload capacity of less than 6,000 pounds, or the carriage in air commerce of persons or property in common carriage operations solely between points entirely within any state of the U.S. in aircraft having a maximum seating capacity of 30 seats or less or a maximum payload capacity of 7,500 pounds or less; and (4) each person who applies for provisional approval of an Advanced Qualification Program curriculum, curriculum segment, or portion of a curriculum segment under SFAR no. 58 and each person employed or used by an air carrier or commercial operator under this part to perform training, qualification, or evaluation functions under an advanced Qualification Program under SFAR No. 58; and (5) Each person who is on board an aircraft being operated under this part.

Part 137 – Agricultural Aircraft Operations: This part prescribes rules governing: (1) Agricultural aircraft operations within the U.S.; and (2) the issue of commercial and private agricultural aircraft operator certificates for those operations.

**Based Aircraft:** any aircraft with an assigned parking space (tiedown or hangar) at (or on) the airport whose owner or operator is utilizing the airport as a base of operation.

**CAGR:** Compounded Annual Growth Rate

**FAA:** Federal Aviation Administration

**Fixed Base Operator:** From a practical standpoint, the term “FBO” is defined within the context of the marketplace. Accordingly, AMCG utilizes the following definition for an FBO:

An FBO is an airport-based aircraft service organization which operates under a lease, use, or operating agreement with an airport owner or operator for the specific purpose of providing aircraft fueling services (jet fuel and/or Avgas) and engaging in a minimum of one of four primary service areas.

The four primary service areas are described as follows: (1) location based services, (2) technical services, (3) flight services, and (4) aircraft sales. Within these primary categories, the products and services provided by FBOs cover a wide spectrum. It is important to note that the products and services provided by FBOs are not limited to the general aviation segment of the market (products and services are provided to air carriers and the government as well).

FBOs who provide fueling services and engage in all four primary service areas are commonly known as “full service” FBOs. FBOs who provide fueling and location based services only are known as “limited” FBOs.

**GAMA:** General Aviation Manufacturers Association

**General Aviation:** all aviation with the exception of air carriers and government

**Government:** all federal, state, and local (county and city) agencies and all branches of the military

**Itinerant Aircraft Operation:** operations not classified as “local” operations

**Local Aircraft Operation:** operations remaining in the local traffic pattern, simulated instrument approaches at the airport, and operations to or from the airport and a practice area within a 20-mile radius of the tower

### **Primary Service Categories**

Location Based Services – Includes aircraft ground handling, parking, and storage and passenger and crew services. Aircraft ground handling includes aircraft marshalling, towing, staging, and ancillary ground support functions including de-icing, pre-heating, ground power, air conditioning, aircraft cleaning, lavatory service, etc. Aircraft parking and storage encompasses tiedown and hangar (which includes T-Hangar, executive hangar, corporate hangar, and community hangar storage). Passenger and crew services include baggage handling, ground transportation, catering, and concierge services.

*Technical Services* – Includes aircraft maintenance and repair, parts sales, modifications and refurbishment, and the installation, repair, and overhaul of avionics, instruments, accessories, and propellers. Aircraft maintenance encompasses airframe and power plant inspection, repair, and overhaul. Modifications include the design, development, and installation of components for which a Supplement Type Certificate (STC) has been obtained. Refurbishment includes paint and interior services. Avionics includes the installation and repair of aircraft electrical systems that provide communication capabilities, navigation information, and aircraft performance data. Accessories include the installation, repair, and overhaul of generators, pressurization valves, inverters, lighting accessories, etc. Propeller installation, repair, and overhaul services include plating and balancing. These services can be provided by an FBO/SASO as an FAA approved repair station or by a certified (individually licensed) airframe and power plant (A & P) mechanic.

*Flight Services* – Includes flight instruction, aircraft rental, charter, management, and leasing. Flight instruction encompasses both flight and ground training from ab initio through advanced ratings. Aircraft rental involves the rental of aircraft to certified airmen (including student pilots) for personal, business, or training purposes. Aircraft charter services are provided in accordance with FAR Part 135, 121, 125, 127, 133, 137 (FAA regulations pertaining to revenue producing “charter” operations). Aircraft management services (i.e., the FBO/SASO operates an aircraft on behalf of the owner on a contract basis) are provided in accordance with FAR Part 91 (FAA regulations pertaining to “proprietary” transport or non-revenue producing operations). Aircraft leasing involves the leasing of aircraft on either a short or long term basis for personal, business, or training uses.

*Aircraft Sales* – Includes the sale of new and/or pre-owned aircraft. This category can range from the independent brokerage or consignment of pre-owned aircraft to activities associated with the marketing and sale of new aircraft.

**Specialized Aircraft Service Operator (SASO):** While FBOs are more rigidly defined (i.e., FBOs operate under a lease, use, or operating agreement with an airport owner or operator, provide fueling services and engage in a minimum of one of four primary service categories), a specialized aircraft service operator (SASO) typically provides products and/or services in only one of the four primary service categories and frequently the products and/or services provided fall within one or two sub-categories. Accordingly, SASOs provide products and services within a very narrow segment of the marketplace.

In addition, SASOs do not necessarily operate under a lease with an airport owner or operator and in many cases; SASOs are subtenants of an FBO or may even be located off-airport. Most importantly, however, SASOs do not provide fueling services (SASOs do not have the right/are not authorized to sell fuel).

**TAF:** FAA Terminal Area Forecast