

*Chapter 3 (Forecasts of Aviation Activity):* utilizing various sources of data, this chapter makes projections regarding future demand of the Airport. This chapter is essentially complete, in a draft final state (currently 30 pages in length), and the FAA has approved and accepted the forecasts that have been made. However, minor comments regarding this chapter can still be addressed at this time (as long as they do not impact/conflict with the FAA-approved forecast).

## CHAPTER THREE:

# FORECASTS OF AVIATION ACTIVITY

## 3.1 INTRODUCTION

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*Forecasts must be reasonable and defensible. They serve as the basis of future facility requirements*

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Projecting future aviation demand is a critical element in the Airport Master Plan Update (AMPU) planning process since many of the ultimate proposals and recommendations of the master plan are largely based on aviation activity demand forecasts. The forecasts of aviation activity developed in this chapter will be used in subsequent tasks to analyze the Belfast Municipal Airport's (the Airport or BST) ability to accommodate future activity and to determine the type, size, and timing of future airside and landside developments. This aspect of the master planning process, in essence, acts as the hub for the remainder of the plan. In many cases, the decision to proceed with projects is based on the anticipated levels of demand, including numbers as well as types of aircraft activity.

This chapter discusses the findings and methodologies used to project aviation demand at BST for the next 20 years (2015 through 2034). While forecasting should consider the most accurate information available at the time the projections are completed, it is not an exact science. There are always likely to be some divergences of an airport's activity from a prepared forecast due to any number of factors that simply cannot be anticipated. However, when soundly established, the forecasts developed in a master plan will provide a sound, defensible and defined rationale to guide the analysis of future airport development needs and alternatives.

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*For this AMPU, 2014 will serve as the base year since it was the last completed calendar year prior to this effort. Forecasts will be generated for the near-term (2019), mid-term (2024), and long-term (2034) timeframes.*

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While the amount and type of aviation activity occurring at an airport are dependent upon many factors, they also usually reflect the services available to aircraft operators, the businesses located on the airport or within the host community, and the prevailing general economic conditions within the surrounding area. The BST forecast analysis includes methodologies that considered historical aviation trends at the Airport, the surrounding region, and throughout the nation. Projections of aviation activity for BST were prepared for the near-term (2019), mid-term (2024), and long-term (2034) timeframes. Specifically, the aviation demand forecasts developed for BST in this study are documented in the following sections:

- Overview of the Airport Market Area
- National Aviation Trends
- Regional Trends
- Historical and Existing Aviation Activity
- Projections of Aviation Activity
- Summary

## 3.2 OVERVIEW OF THE AIRPORT MARKET AREA

It has been shown that there is a strong correlation between a given region’s demographic / economic conditions and aviation demand within that region. This section will define the BST airport market area and the factors that typically reflect and impact aviation activity projections.

### 3.2.1 Definition of the BST Airport Market Area

An airport market area is defined as the actual geographic region served by a particular airport. For the Belfast Municipal Airport, the airport market area has been established based on a 40 minute drive time from the Airport. This metric is based on the assumption that a user of an airport in Maine like BST will travel approximately up to 40 minutes to utilize the facility, given road locations and types. Based on that standard, the airport market area for BST includes approximately 37 municipalities located in five counties (Waldo, Knox, Kennebec, Penobscot, and Hancock) in eastern Maine. The municipalities that are either completely or partially contained in the BST airport market area include the following:

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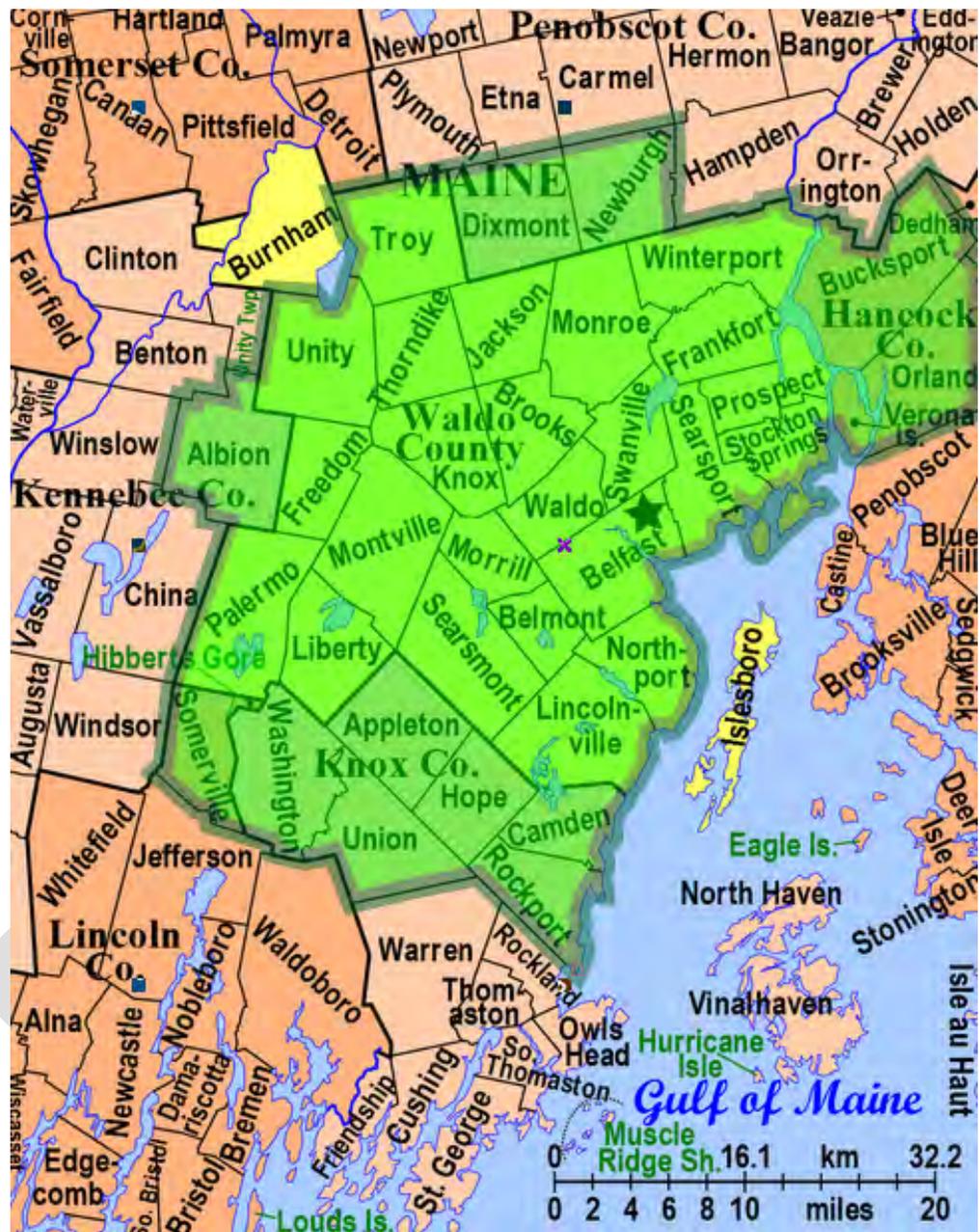
*BST’s basic market area encompasses 37 towns in five counties in Southeast Maine.*

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- | <u>Maine Municipalities</u> |                |                    |
|-----------------------------|----------------|--------------------|
| • Albion                    | • Lincolnville | • Searsport        |
| • Appleton                  | • Monroe       | • Somerville       |
| • Belfast                   | • Montville    | • Stockton Springs |
| • Brooks                    | • Morrill      | • Swanville        |
| • Bucksport                 | • Newburgh     | • Thorndike        |
| • Camden                    | • Northport    | • Troy             |
| • Dixmont                   | • Orland       | • Unity            |
| • Frankfort                 | • Palermo      | • Union            |
| • Freedom                   | • Plymouth     | • Verona Island    |
| • Hope                      | • Prospect     | • Waldo            |
| • Jackson                   | • Rockport     | • Washington       |
| • Knox                      | • Searsmont    | • Winterport       |
| • Liberty                   |                |                    |

**Figure 3-1** shows the airport market area identified for Belfast Municipal Airport. Note the graphic highlights the boundaries of the entire town even if only a portion of it is within the 40-minute drive time to BST.

Figure 3-1: Airport Market Area for BST



Source: www.familysearch.org, 2015.

### 3.2.2 National Aviation Trends

In preparing a forecast for BST, it is important to have a general understanding of recent and anticipated trends in the overall aviation industry. National trends can provide important insights that can be leveraged for the development of aviation activity projections for an airport. Various data sources were utilized and

examined to identify these trends. The sources utilized in this effort included the following:

- Federal Aviation Administration (FAA) - *FAA Aerospace Forecasts, 2014-2034*
- General Aviation Manufacturers Association (GAMA) - *General Aviation Statistical Databook, 2013*
- National Business Aircraft Association (NBAA) - *NBAA Business Aviation Fact Book, 2014* and earlier
- Honeywell Corporation – *22nd Annual Business Aviation Outlook, 2013*

The following sections provide an overview of the general aviation sector of the aviation industry.

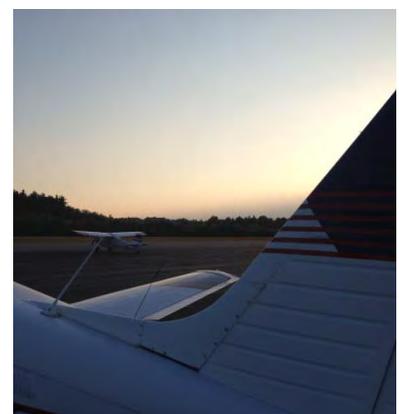
### General Aviation (GA) Trends

At the national level, fluctuating trends related to general aviation usage and economic uncertainty resulting from the nation’s and international business cycles all have significant impacts on general aviation demand levels. This section provides an overview of those general aviation trends, as well as some of the various factors that have influenced those trends in the U.S. and Maine. These are important considerations in the development of projections of aviation demand for BST.

General aviation aircraft are classified as all aircraft not flown by commercial airlines or the military. This includes an incredibly diverse array of flying that ranges from a personal vacation trip in a small single engine plane to an overnight package delivery to an emergency medical evacuation to a morning sightseeing flight to flight instruction that trains new pilots to helicopter traffic reports that keep drivers informed of rush-hour delays. Simply stated, general aviation encapsulates all of those individual unscheduled aviation activities that enrich, enhance, preserve, and protect the lives of citizens.

As defined by the FAA, general aviation activities are divided into six use categories:

- Personal - About a third of all private flying in the United States is for personal reasons, which may include practicing flight skills, personal or family travel, personal enjoyment, or personal business.
- Instructional - All private flight instruction for purposes ranging from private pilot to airline pilot is conducted through general aviation.
- Corporate - About 12 percent of the total private flying in the U.S. is done in aircraft owned by a business and piloted by a professional. The majority of these flights are in jets and cover long distances, with some flying to intercontinental and international destinations. Businesses elect to fly these trips to save time and expand the geographic markets. It is estimated that almost 11 percent of the total private flying in the U.S. is done by business persons flying themselves to meetings or other events,



primarily in piston or turboprop aircraft. Most of the pilots own or work for relatively small businesses and use the aircraft to accomplish missions that would otherwise take more time or would be infeasible.

- Air Taxi - When scheduled air service either is not available or inconvenient, businesses and individuals can charter aircraft from air taxi service providers. These flights save time and make it possible to fly directly to places that cannot be reached by scheduled service. (Note that "air taxi" is also utilized as a commercial air service classification, which is discussed later.)
- Other - All other activities are classified as being "other." Given the diverse nature of general aviation, this includes disaster relief, search and rescue, police operations, news reporting, border patrol, forest firefighting, aerial photography and surveying, crop dusting, and tourism activities, among many others.

### Business Use of General Aviation

Business and corporate aviation are the fastest growing facets of general aviation, contributing \$150 billion to U.S. economic output and employing more than 1.2 million people. Companies and individuals use aircraft as a tool to improve the efficiency and productivity of their business and personnel. Use of general aviation aircraft affords businesses direct control of their travel itineraries, their travel destinations and significantly reduces travel times and inconveniences often associated with scheduled airline service.



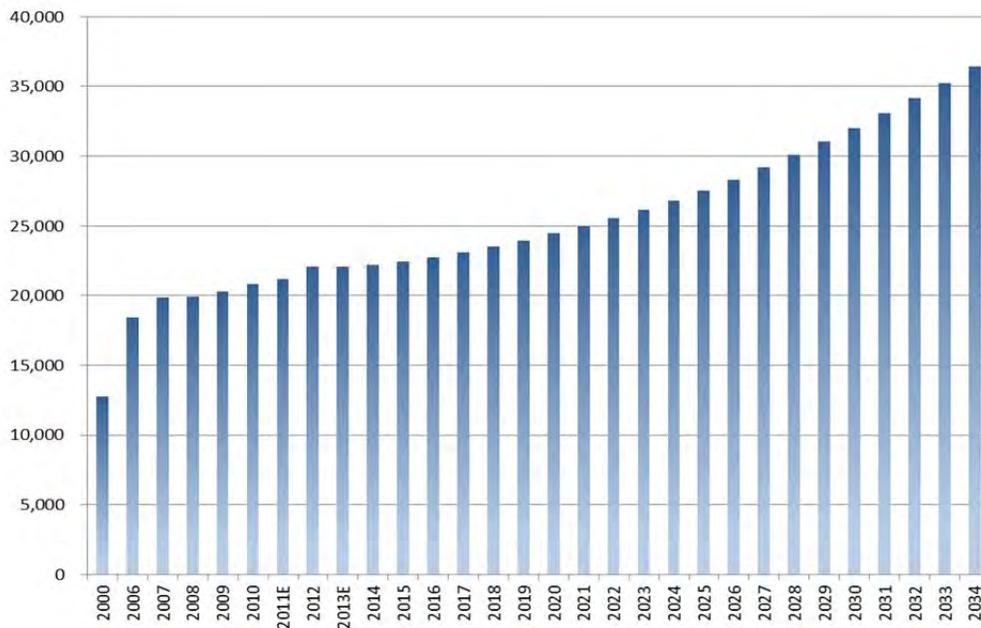
Corporate general aviation is also not the exclusive concern of Fortune 500 companies. In fact, according to the NBAA's *Business Aviation Fact Book 2014*, only 3 percent of the approximately 15,000 business aircraft registered in the U.S. are flown by these companies. The remaining 97 percent are actually operated by a broad cross-section of organizations, including government, universities, charitable organizations and businesses of all sizes. The vast majority of the U.S. companies that utilize business aircraft (85 percent) are small and mid-size businesses, many of which are based in the dozens of communities across the country where the airlines have reduced or eliminated service. The benefits of corporate general aviation are evidenced by the significant growth that business/corporate general aviation has recently experienced and are projected to continue. Honeywell's *22nd Annual Business Aviation Outlook, 2013* has projected four to five percent average annual industry growth through 2024. Additionally, the Outlook projects the following:

- Up to 9,250 deliveries of new business jets valued at over \$250 billion expected through 2023
- Operators plan to replace 28 percent of their fleets with new jets in the next five years
- BRIC countries (Brazil, Russia, India and China) country purchase plan percentage leads all world regions
- Large cabin jets account for more than 55 percent of new purchase plans

Additionally, business aviation operations are a source of good jobs. Flights made by business airplanes require significant technical and operational support. Tens of thousands of pilots, maintenance technicians, schedulers, dispatchers, flight attendants, training professionals, airport employees and other support personnel are employed in business aviation.

Business use of general aviation aircraft ranges from small, single-engine aircraft rentals to multiple aircraft corporate fleets supported by dedicated flight crews and mechanics. Business aircraft usage by smaller companies has also escalated dramatically as various chartering, leasing, fractional ownership, interchange agreements, partnerships, and management contracts have emerged. FAA statistics depicted in **Figure 3-2** show the historical and projected growth in the number of general aviation turbine aircraft used predominantly for business use.

**Figure 3-2: General Aviation Turbine Aircraft Growth 2000-2034**



Source: FAA Aerospace Forecasts, 2014-2034.

Of particular note with respect to business aviation is the immense popularity of fractional ownership operations, which began in 1986 with the creation of a program that offered aircraft owners increased flexibility in the ownership and operation of aircraft. Such programs use current aircraft acquisition concepts, including shared or joint aircraft ownership, and provide for the management of the aircraft by an aircraft management company. The aircraft owners participating in the program agree not only to share their own aircraft with others having a shared interest in that aircraft, but also to lease their aircraft to other owners in the program. The aircraft owners use a common management company to provide aviation management services including maintenance of the aircraft, pilot training and assignment, and administration of the leasing of the aircraft among the owners.

Even in an unsteady economy, fractional operators say business has continued to improve as existing customers re-enter the market or increase their fractional aircraft usage. In addition, they report an increasing number of new prospects are making the move to fractional ownership as an alternative to flying commercially or owning a business jet outright. In the U.S., fractional-share ownership makes up 15% of business-aviation flights.



Eclipse 550 Very Light Jet (VLJ)

Growing segments of the business aircraft fleet mix include business liners and very light jets (VLJ). Business liners are large business jets, such as the Boeing Business Jet and Airbus ACJ, which are reconfigured versions of passenger aircraft flown by large commercial airlines. Labeled as “personal jets,” VLJs are a relatively new category of aircraft that are small, six-seat jets costing substantially less than typical business jet aircraft. These aircraft are generally also significantly less demanding operationally in terms of runway length requirements. This has allowed VLJs to operate at smaller airports with shorter runways, resulting in those airports becoming viable options for these types of jet operations. Three such aircraft currently in operation are the Eclipse 550, Embraer Phenom 100, and Cessna Mustang, with several other models under development or awaiting certification.

#### Anticipated General Aviation Trends

Two important national general aviation activity metrics that are continually monitored and updated by the FAA on an annual basis in the *FAA Aerospace Forecasts* include active aircraft fleet and active hours flown. These are discussed below.

Single and multi-engine piston aircraft experienced a decline in the number of aircraft between 2000 and 2013. Although still the largest portion of aircraft in the active fleet, the number of single engine aircraft fell from 149,422 in 2000 to 123,730 in 2013, a 1.4 percent average annual decline. During that same period, multi-engine piston aircraft had a much steeper decline, falling from 21,091 aircraft to 14,235, a 3.0 percent annual decrease. In total, active piston aircraft decreased at 1.6 percent annually over that time period. Much of this decline is attributed to the progressive retirement of older aircraft in combination with the relative high costs for new, replacement aircraft. In its annual aviation forecast, the FAA indicated that it expects the number of active piston general aviation aircraft to continue to decline, but by a lower rate than in the past decade. Over the next decade, the decrease in the number of piston aircraft is expected to be 0.5 percent per year and 0.3 percent over the next two decades. The result of these predictions show total piston aircraft (combined single and multi-engine) falling from 141,325 in 2013 to 131,615 in 2034. This is reflected in **Figure 3-3** below.

The FAA has also established a relatively new category of piston-engine aircraft - light sport aircraft. These aircraft are very small (usually holding only one or two people) and meet certain regulations set by the FAA restricting weight and performance. Aircraft which qualify as a light sport aircraft may be operated by



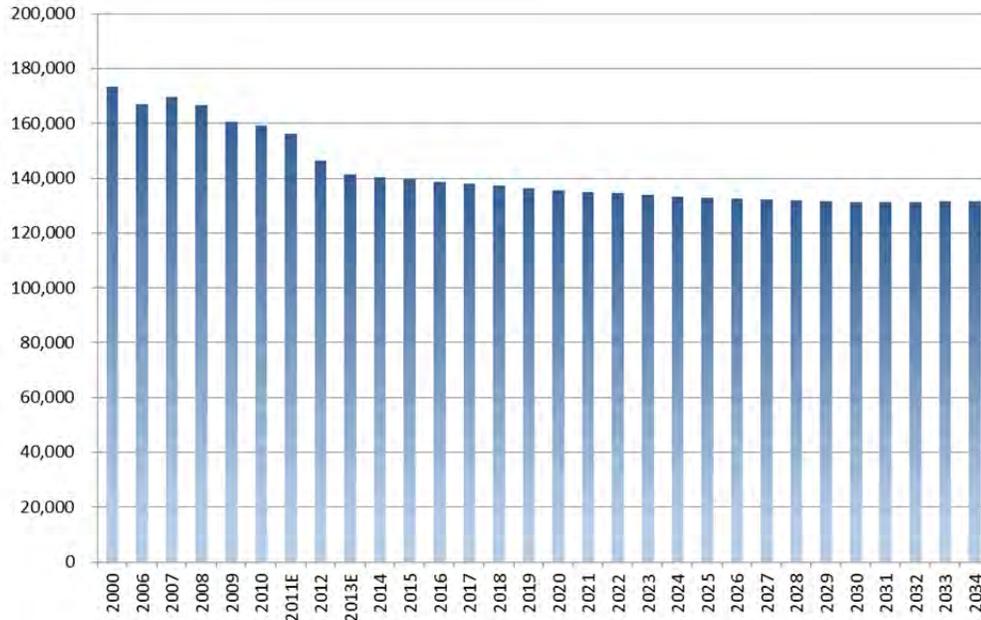
Single engine aircraft at BST



Remos GX Light Sport Aircraft

holders of a sport pilot certificate. At the end of 2012, a total of 2,001 active special light-sport aircraft were estimated in this category. The forecast assumes about 4.1 percent annual growth of the fleet by 2034, to a total of 4,880 light sport aircraft.

**Figure 3-3: General Aviation Piston Aircraft Growth 2000-2034**



Source: FAA Aerospace Forecasts, 2014-2034.

As indicated previously, turboprop and jet aircraft experienced substantial growth between 2000 and 2013, increasing from approximately 13,000 to over 22,000 aircraft, over a 4.3 percent average annual increase over that period. Between 2003 and 2004, heavily influenced by economic recession and pressures on companies to reduce controllable costs, the overall production of jet aircraft declined slightly. Since that time, however, the numbers of jet aircraft have reassumed their growth pattern. One of the most important trends identified by the FAA in these forecasts is the strong growth anticipated in active general aviation jet aircraft. The active general aviation turboprop and jet aircraft fleet is anticipated to continue to increase dramatically over the projection period, to about 27,000 aircraft in 2024, with jet aircraft doubling in numbers by 2034. As stated within the *FAA Aerospace Forecasts, 2014-2034*:

*After growing rapidly for most of the past decade, and then slowing over the past few years, the most recent shipment activity indicates the modest growth continues in the overall general aviation aircraft market. While economic uncertainties still affect the business jet market, the rate of decline slowed down and a recovery is expected in the near term. The forecast calls for robust growth in the long-term outlook, driven by higher corporate profits and the growth of worldwide GDP, though at rates slightly lower than those predicted last year. Continued concerns about*



Pilatus PC12 Turboprop at BST

safety, security, and flight delays keep business aviation attractive relative to commercial air travel. As the industry experts and prior year's survey results report a significant portion of piston aircraft hours are also used for business purposes, we predict business usage of general aviation aircraft will expand at a faster pace than that for personal and recreational use. Increased demand, especially for agricultural use turboprop aircraft also contributes to increased turbine fleet and hours.

As a whole, business aviation is expected to grow faster than private or recreational aviation, driven by a growing U.S. and world economy. Additionally, as discussed above, turboprops and jets will fare better than piston aircraft, with continuing growth of about 3 to 4 percent per year. Even with the anticipated decline of piston aircraft during the 20-year planning period, growth in jet aircraft is expected to more than make up for the decline, resulting in a gain of total general aviation aircraft of 0.5 percent per year through 2034. This trend illustrates a movement in the general aviation community toward higher-performing, more demanding aircraft.



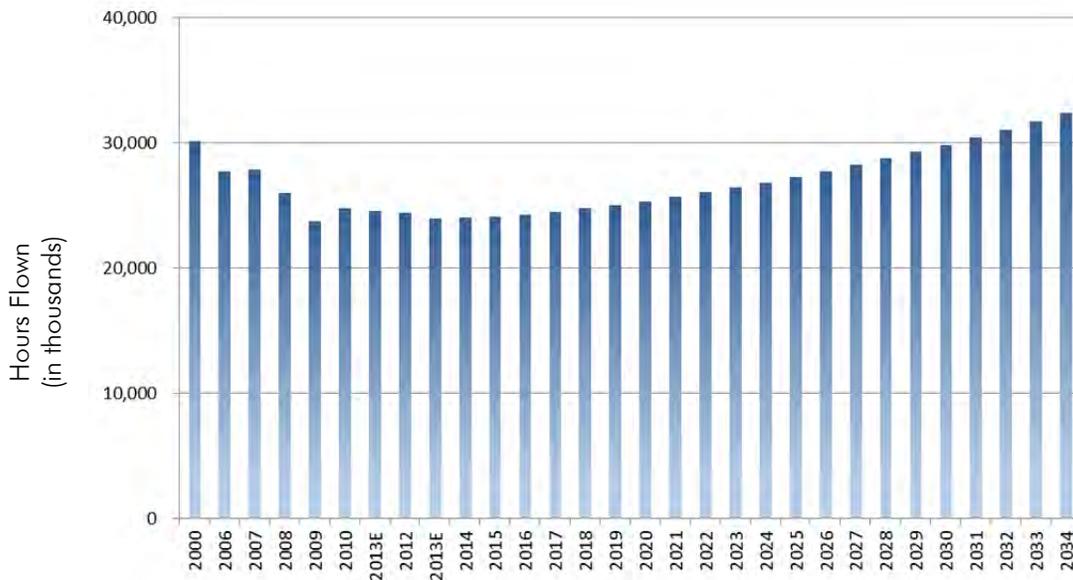
Cessna Citation Jet

The FAA also tracks and projects a valuable metric known as Active General Aviation and Air Taxi Hours Flown. This metric captures a number of activity-related data including aircraft utilization, frequency of use, and duration of use. Hours flown in general aviation piston aircraft experienced a significant decrease of 3.7 percent annually, from 2000 to 2013. Hours flown within this category are expected to continue to decline over the 20-year planning period albeit at a lesser rate of decline at 0.4 percent. For turboprop and jet aircraft, hours flown are expected to continue to grow at relative high rate of 3.2 percent per year from 2013 to 2034.

**Figure 3-4** depicts general aviation hours flown from 2000 through 2013 as well as projected hours flown through 2034. As shown by the graph, hours flown during the period from 2007 to 2009 experienced dramatic decline spurred by the economic recession, impacting piston aircraft owners the most. As presented by the FAA, the compound annual growth rate (CAGR) of hours flown over the projection period is approximately 1.4 percent. Compared to the projected average annual growth rate of the general aviation active fleet of an estimated 0.6 percent, the difference from hours flown represents anticipated increases in utilization. Total hours flown by general aviation aircraft are estimated to reach 32.3 million by 2034, compared to 23.9 million in 2013.



**Figure 3-4: Historic and Projected Total U.S. General Aviation and Air Taxi Hours Flown Hours Flown**



Source: FAA Aerospace Forecasts, 2014-2034.

### 3.2.3 Regional Trends

Not all national trends are experienced to the same degree on a regional level. Therefore, additional data was collected and reviewed to identify potential growth areas in aviation demand for BST. This data is focused heavily on socioeconomic development potential in and surrounding the BST market area, because that type of data has shown to have direct correlation with aviation activity.

#### Regional Demographics

Aviation activity has traditionally been linked to various socioeconomic factors, such as population, employment and earnings. These linkages are related to the discretionary nature of personal and business travel as well as the recreational component of general aviation activity. **Table 3-1** reflects reliable data sources to provide historical levels and projections of these key socioeconomic indicators within BST's market area. These data were taken from the *Complete Economic and Demographic Data Source* prepared by Woods and Poole Economics, Inc. In most cases, the Woods and Poole data provides a conservative estimate of growth. Additional data sources included the U.S. Census Bureau and the U.S. Bureau of Economic Analysis (BEA). It must also be noted that the data collected from these sources is aggregated on a county basis; therefore, for the purposes of this analysis, the airport market area for BST was identified as being comprised of Waldo County, Hancock County, Kennebec County, Knox County and Penobscot County in Maine (see **Figure 3-1**). This is reflected in the table below.



Downtown Belfast

**Table 3-1: Airport Market Area<sup>1</sup> Socioeconomic Data**

Year	Population	Employment	Per Capita Personal Income
<i>Historical</i>			
2000	390,192	178,446	\$27,861
2010	408,886	175,017	34,578
<i>Current</i>			
2014	407,949	178,777	\$37,836
<i>Projected</i>			
2015	407,984	178,802	\$38,554
2020	408,161	178,930	\$42,359
2025	408,337	179,058	\$46,539
2030	408,514	179,185	\$51,131
<i>CAGR<sup>2</sup> (2014-2030)</i>			
	0.01%	0.14%	1.9%
<i>Maine</i>			
<i>CAGR<sup>2</sup> (2014-2030)</i>			
	0.10%	0.23%	2.3%
<i>United States</i>			
<i>CAGR<sup>2</sup> (2010-2030)</i>			
	0.83%	0.68%	1.18%

Source: Woods & Poole Economics, Inc.; U.S. Census Bureau; U.S. Bureau of Economic Analysis

<sup>1</sup> Waldo County, ME; Hancock County, ME; Kennebec County, ME; Knox County, ME; Penobscot County, ME.

<sup>2</sup> Compound Annual Growth Rate

Population

Aviation demand is strongly tied to the number of people within an airport’s market area. For both commercial service and general aviation activity, as the number of people living in a region grows, the demands for these services typically increase. Table 3-1 presents the most recent and forecasted population for BST’s market area, including Waldo, Hancock, Kennebec, Knox, and Penobscot counties in Maine. Over the planning period, the population in BST’s market area is expected to increase 0.01 percent annually through 2030. This rate is less than that of Maine (0.10 percent) and the projected national rate (0.83 percent).

Employment

Levels of employment can also be excellent indicators for aviation demand in a geographic area. As with other metrics, current and forecasted levels for the airport market area were compiled and presented above in Table 3-1. BST’s market area accounts for approximately 30.6 percent of the total population of Maine. The market area also comprises approximately 30.2 percent of the total number of persons employed in the states as well. Employment within the BST’s airport market area over the past 10 years has increased annually by 0.014 percent. Over the next 20 years, employment levels in the airport market area are expected to be consistent with the past rate of growth.



Belfast Arts Festival

### *Personal Income*

Personal income reflects the sum of wages and salaries of workers within a defined geographic area as well as other sources of income. This is reflective of how positive the business climate is in a region. The growth in personal income relates to aviation activity in that corporate and private use of general aviation services is sometimes discretionary in nature. As with other demographic indicators, current and forecast personal income for the study area was compiled from the Woods and Poole data and presented above in Table 3-1.

Historically, the BST market area has experienced a growth rate of 1.9 percent since 2000; this is lower than that of Maine and the U.S., which are 3.3 percent and 2.9 percent, respectively. Over the next 20 years, the data shows that personal income growth in the airport market area is expected to maintain a similar growth rate.

Within the context of this master plan forecasting effort, the projected growth rates for these demographics were applied to create various forecasting methodologies. These methodologies were then compared with other forecasting approaches developed through the use of aviation industry trends and FAA, as well as generally accepted forecasting principles.



Belfast City Hall

### **3.3 HISTORICAL AND EXISTING AVIATION ACTIVITY**

Historical aircraft and operations data for BST provide the baseline from which future activity at the Airport can be projected. While historical trends are not always reflective of future periods, historical data can provide insight into how local, regional, and national demographic and aviation-related trends may be tied to a given airport. The following sections include historical overviews of BST's based aircraft (generally defined as an aircraft that is permanently stored at an airport) and aircraft operations (generally defined as either an aircraft landing or departure – hence a takeoff and a landing would count as two operations).

Since Belfast Municipal Airport does not have an Air Traffic Control Tower (ATCT), there is no formal mechanism for counting aircraft operations on a regular basis. As a result, activity levels are typically estimated by airport officials and verified by MaineDOT Aviation during their annual airfield inspections (FAA Form 5010, *Airport Master Record*). That information is ultimately provided to the FAA for storage in a centralized federal database to be used by the FAA for the development of a Terminal Area Forecast (TAF) for the Airport. (Note that the TAF is developed by the FAA and combines historical airport operations data and FAA Form 5010 data to generate a long range forecast). For BST, aircraft operational data is available for review and use through both the 5010 form, and the TAF (from 1990 to present). A copy of FAA Form 5010 as well as the FAA TAF data for BST is included in **Appendix C**. The specific sources that have been utilized include the following:

- FAA Terminal Area Forecast (TAF) data for BST (Forecast Issued January 2014)
- BST FAA 5010 Data (Inspection date 08/26/2014)



It should be noted that at general aviation airports that do not have an ATCT, it is generally accepted that the FAA TAF serves as the baseline for historical operations and based aircraft. As available, that data can also be augmented with local reports, previous planning studies, etc.

Annual aircraft operations represent the number of aircraft takeoffs and landings occurring at an airport during a calendar year. The historical operations data includes operations conducted by both based aircraft as well as operations conducted by itinerant aircraft. (Itinerant aircraft are defined as those that are based at other airports that arrive at BST for a variety of reasons, including business, recreation, or flight training purposes.) Historical aircraft operations data for BST are summarized below in **Table 3-2**.

Aircraft operations are divided into two categories: itinerant operations and local operations. The FAA defines a “local operation” as any flight performed by an aircraft flying in the local traffic pattern, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport. They are often associated with flight training operations. “Itinerant operations” are all other aircraft operations.

**Table 3-2: Historic Annual Aircraft Operations**

Year	Itinerant Air Taxi	Itinerant GA	Itinerant Military	Local GA	Local Military	Total
2005	1,000	3,000	0	9,000	0	13,000
2006	4,000	1,400	0	4,100	0	9,500
2007	4,000	1,400	0	4,100	0	9,500
2008	2,000	2,000	0	6,000	0	10,000
2009	2,000	2,000	0	6,000	0	10,000
2010	2,000	2,000	0	6,000	0	10,000
2011	2,000	2,000	0	6,000	0	10,000
2012	2,000	2,000	0	6,000	0	10,000
2013	2,000	2,000	0	6,000	0	10,000
2014 <sup>1</sup>	2,000	2,000	0	6,000	0	10,000
CAGR <sup>2</sup>	8.01%	-4.41%	0.0%	-4.41%	0.00%	-2.87%

Source: FAA Terminal Area Forecast (TAF) data for BST (2005 – 2014)

<sup>1</sup> 2014 has been identified as the Base Year for the BST Forecast. Note that 2014 operational data is a forecasted year in the TAF

<sup>2</sup> Compound Annual Growth Rate for years 2004 to 2013.

All aircraft operations at BST are conducted by general aviation aircraft, which include all aircraft that are not used for commercial service or military purposes. Consequently, general aviation encompasses pleasure flying and flight training, along with business and corporate aviation activities. Itinerant general aviation operations at BST have shown a marked decrease over the previous 10-year period; however, much of this has been attributed to a change in the operational reporting methodology. In addition, 2008 saw a severe economic recession that

dramatically impacted aviation activity, not only at BST, but also throughout the State and the country as a whole.

Local general aviation at BST has also shown a decrease in total operations, albeit to a much lesser degree than that of itinerant operations. This has also been largely attributed to an updated reporting methodology and the 2008 economic downturn. It should be noted that local operations are also heavily influenced by flight training operations based at the Airport. (The relatively recent loss of the Airport’s flight training provider will have an impact on local operational totals.) In general, total operations at BST over the 10-year historical period have decreased from 13,000 to 10,000, an average annual growth rate of -2.87 percent.

### 3.3.2 Based Aircraft

Based aircraft at Belfast Municipal Airport have generally grown over the historical period. As shown in **Table 3-3** and based on the FAA Terminal Area Forecast (TAF) data

**Table 3-3: Historic Based Aircraft**

Year	Based Aircraft
2005	15
2006	19
2007	19
2008	26
2009	26
2010	25
2011	16
2012	17
2013 <sup>1</sup>	17
<b>2014<sup>2</sup></b>	17
<b>2014<sup>2</sup></b>	<b>12</b>
CAGR <sup>3</sup>	1.40%

Source: FAA Terminal Area Forecasts

<sup>1</sup> 20143 has been identified as the Base Yea for the BST Forecast. Note that 2014 operational data is a forecasted year in the TAF

<sup>2</sup> Actual aircraft count per BST 8/26/2014.

<sup>3</sup> Compound Annual Growth Rate for years 2005 to 2014

It should also be noted that the source for the historical based aircraft data is the FAA TAF and the FAA 5010 data. The accuracy of this information is considered to be reasonable for a non-towered airport such as BST. However, it is important to recognize that occasional spot inspections have resulted in higher based aircraft totals. These are typically in the range of 22 to 25 aircraft.



Based Aircraft at BST

### 3.4 PROJECTIONS OF AVIATION ACTIVITY

Projections of aviation activity are generated by employing historical data and incorporating assumptions, conditions, and trends. In truth, forecasting of any type is as much an “art” as a “science”, and no matter how sophisticated, represents an “educated guess” of a particular point in time. Therefore, forecasts must be updated periodically and revised as necessary to reflect new conditions and developments.

During a master planning effort, aviation activity forecasts are typically established by using a variety of assumptions that result in a wide range of outcomes. This is intentionally done in order to provide a broad view of future airport utilization potentials. Once that broad view has been established, then a careful examination of those assumptions is undertaken to determine which could be reasonably applied given that particular airport’s current situation.

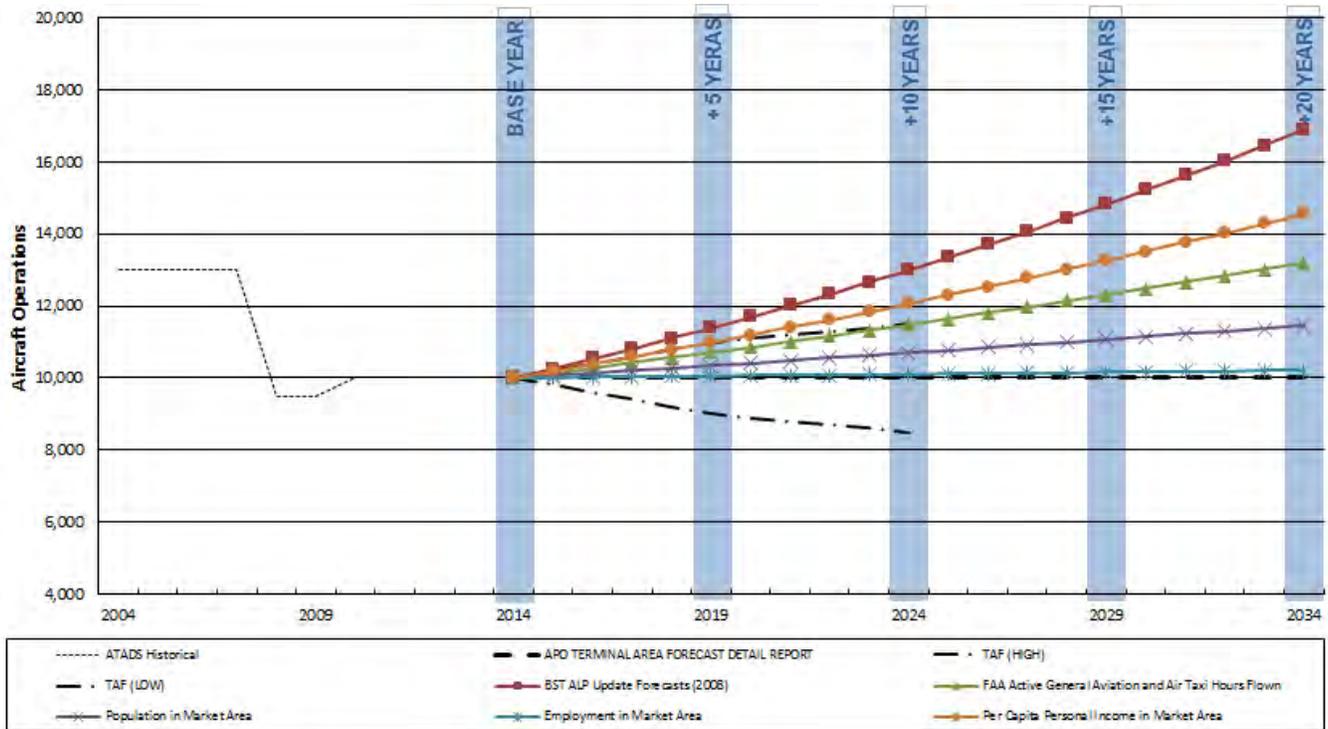
For BST, three primary forecast approaches were examined and prepared. The first is based on applying future growth rates from other relevant metrics (i.e. socioeconomic data, other forecasts, etc.) and applying those rates to Belfast. For this approach, ten different types of standard forecast methodologies and growth factors were applied to the key master plan forecast metrics for assessment. These ten methodologies included the following and are reflected in **Figure 3-5** below:

- BST Historical Data Linear Regression
- 2008 BST ALP Update Forecast Methodology
- FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034)
- Population Growth in the Airport Market Area
- Employment Growth in the Airport Market Area
- Per Capita Personal Income Growth in the Airport Market Area
- Operations Per Based Aircraft (OPBA)– Population Growth in the Airport Market Area
- Operations Per Based Aircraft (OPBA)– Employment Growth in the Airport Market Area
- Operations Per Based Aircraft (OPBA)– Per Capita Personal Income Growth in the Airport Market Area
- Operations Per Based Aircraft (OPBA)– Aircraft Operations Linear Regression

The second approach involves conducting an historical trendline analysis that projects future trends based on historical patterns of aircraft activity. For BST, aircraft operations in 2003 totaled approximately 13,000, declining to an estimated 10,000 operations by 2008. Projecting this trend (-2.87% AAG) would result in BST having no aircraft operations by 2030. This result is inconsistent with what is being currently experienced at the Airport where operations have remained largely static. Additionally, it is not supported by the FAA’s TAF which projects neither growth nor decline in operational totals.

Therefore, the trendline analysis was deemed to be inappropriate for application as part of this forecasting effort.

**Figure 3-5: GA Operations – Applied Growth Rate Forecasts**



Source: Airport Solutions Group.

The third approach, which was specifically requested by the Federal Aviation Administration (FAA), is a Market Share Analysis. This approach assumes a top-down relationship between broader (i.e. national or regional) forecasts and local forecasts. Essentially, local forecasts are a market share (percentage) of a regional forecast, which in turn can itself be a market share (percentage) of national forecasts. For BST, the FAA TAF for the State of Maine was utilized as the basis for the market share analysis. Table 3-4 below shows the total civil (i.e. non-military) aircraft operations as forecasted for Maine by the FAA. Annually, BST's civil aircraft operational total is on average 1.67 percent of the statewide total. By applying that percentage against the forecasted operational totals for Maine, a market share forecast can be established for BST (see following table).

**Table 3-4: GA Operations - Maine Market Share Projections**

Year	State of Maine Total Civil Operations	BST Total Civil Operations	BST % of Maine Total Civil Operations
<b>Historic</b>			
2009	621,723	10,000	1.61%
2010	606,766	10,000	1.65%
2011	593,538	10,000	1.68%
2012	594,534	10,000	1.68%
2013	586,192	10,000	1.71%
Avg % of Total Civil Ops			1.67%
<b>Forecasted</b>			
2014	585,816	9,783	1.67%
2019	592,062	9,887	1.67%
2024	598,800	10,000	1.67%
2029	607,076	10,138	1.67%
2034	614,076	10,255	1.67%

Source: FAA Terminal Area Forecast (TAF) (January 2015); Airport Solutions Group.

Additionally, since it is the intent of this forecasting effort to meet long term demand for aircraft that may not currently regularly operate at BST (or do so very infrequently due to physical facility limitations), it is reasonable to include their potential operations in this forecast. This can be accomplished by first identifying the existing level of jet operations within the market area. For BST, the closest airports that would reasonably accommodate existing jet demand for the Belfast area would be Bangor International Airport (BGR) and Knox County Regional Airport (RKD). **Table 3-5** details the historical and forecasted jet operational levels for both of these airports.

**Table 3-5: Projected BST Operations based on Maine Market Share**

Year	Bangor International (BGR)			Knox County Regional (RKD)			
	Jet Operations	Total Civil Operations	% Total Civil Operations	Jet Operations	Total Civil Operations	% Total Civil Operations	
<b>Historic</b>							
2009	3,469	35,809	9.69%	1,450	55,000	2.64%	
2010	3,538	33,555	10.54%	1,205	55,000	2.19%	
2011	3,533	33,707	10.48%	1,038	55,000	1.89%	
2012	3,421	35,604	9.61%	923	55,000	1.68%	
2013	3,465	30,646	11.31%	797	55,098	1.45%	
Avg % of Total Civil Ops			10.29%	Avg % of Total Civil Ops			1.97%
<b>Forecasted</b>							
2014	3,127	30,382	10.29%	1,086	55,197	1.97%	
2019	3,222	31,303	10.29%	1,096	55,707	1.97%	
2024	3,319	32,246	10.29%	1,107	56,243	1.97%	
2029	3,419	33,224	10.29%	1,118	56,814	1.97%	
2034	3,523	34,236	10.29%	1,130	57,416	1.97%	

Source: FAA Enhanced Traffic Management System Counts (ETMSC); FAA TAF (January 2015); Airport Solutions Group.

Since it is the intent of this planning effort to explore the potential implications associated with providing facilities in the future, a specific percentage of forecasted jet operations for both BGR and RKD have been assumed to be accommodated by BST in the future. For the purposes of this planning effort, it has been assumed that up to 10 percent of the jet operations from both airports could be accommodated at BST if appropriate runway length and facilities were ultimately to be made available. It must be acknowledged that this could be an aggressive assumption. Nevertheless, those totals have been added to the market share forecast presented above and are reflected in **Table 3-6**.

**Table 3-6: Projected BST Operations based on Overall Market Share**

Year	State of Maine Total Civil Operations	BST Total Civil Operations (non-jet)	BST % of Maine Total Civil Operations	BST Total Civil Operations (jet)*	BST Total Civil Operations
<b>Historic</b>					
2009	621,723	10,000	1.61%	0	10,000
2010	606,766	10,000	1.65%	0	10,000
2011	593,538	10,000	1.68%	0	10,000
2012	594,534	10,000	1.68%	0	10,000
2013	586,192	10,000	1.71%	0	10,000
	<i>Avg % of Total Civil Ops</i>		<i>1.67%</i>		
<b>Forecasted</b>					
2014	585,816	9,783	1.67%	421	10,204
2019	592,062	9,887	1.67%	432	10,319
2024	598,800	10,000	1.67%	443	10,443
2029	607,076	10,138	1.67%	454	10,592
2034	614,076	10,255	1.67%	465	10,720

Source: FAA Enhanced Traffic Management System Counts (ETMSC); FAA TAF (January 2015); Airport Solutions Group.

\* Forecasted totals based on assumption that 10% of BGR/RKD jet operations will migrate to BST.

Through this process that included coordination with key project stakeholders representing BST, MaineDOT Aviation, and the FAA, three forecast applications were identified for use in this master plan. It is also important to note that through this coordination process, it was decided that the BST forecast be portrayed as a “range” in order to better account for the variabilities that are inherent in any forecasting effort. As such, high-, medium-, and low-growth forecast scenarios were established for each metric. The bases of these three scenarios are reflected in the following:

1. **High-Growth Scenario** - FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.55% average annual growth rate
2. **Medium-Growth Scenario** – BST Market Share; 0.25% average annual growth rate
3. **Low-Growth Scenario** - APO Terminal Area Forecast (TAF) (Forecast Issued January 2015); 0.00% average annual growth rate

The identification of these three particular scenarios is important for BST for several reasons. First, the High-Growth Scenario is based directly on the FAA's national perspective of future trends for general aviation aircraft operational hours flown. Since this encompasses the entirety of all aircraft operating at BST, it is reasonable to attach the degree that general aviation aircraft are projected to fly to future growth at the Airport. Second, the Medium-Growth Scenario is based on the regional aviation market, which is a known entity. Third, the Low-Growth Scenario is based directly on the FAA TAF. This is important since, as part of the master planning process, the FAA is required to compare their TAF against any proposed master plan forecast prior to their approval for the purpose of ensuring consistency and reasonableness. Since the current TAF itself has been directly integrated into the forecast "range", this approach has been deemed appropriate and acceptable by the FAA.

It should be noted that the Market Share methodology (i.e., Medium Growth Scenario) was identified as the preferred forecast for BST aircraft operations. This methodology is based on the existing FAA TAF for the Airport and the State of Maine, since existing aircraft operational levels are not anticipated to change markedly given the existing conditions at the Airport. However, if appropriate runway and facility improvements are made at BST in the future, the Airport would likely realize some operational growth in an aircraft class that does not currently regularly operate at BST (e.g. jet aircraft). Therefore, it is reasonable and appropriate for the Market Share methodology to reflect growth above the existing TAF in the jet aircraft classification. While such facility improvements could also result in growth in other aircraft classes as well, such growth would likely be limited and difficult to quantify.

The following sections provide a review of the primary forecast metrics identified for the Belfast Municipal Airport Master Plan process. Those forecast metrics include general aviation activity (including itinerant and local operations), commercial air service activity, military activity, based aircraft, and fleet mix. Within each section, the results of the three forecast scenarios described above are presented.

### 3.4.1 General Aviation Activity Forecast

The general aviation forecasts include those operations conducted by aircraft based at BST (local) as well as operations conducted by aircraft based at other airports (itinerant). The results for the High-Growth, Medium-Growth, and Low-Growth scenarios for itinerant general aviation operations at BST for the master planning period (2015-2034) are presented in **Table 3-7**.

Generally, recessions and growth periods in the country's economic cycle have historically impacted general aviation operations more severely than air carrier operations. However, with more general aviation aircraft being used for dedicated business purposes nationally than in the past, the overall general

aviation activity levels should ultimately become less sensitive to economic fluctuations than has been previously seen.

**Table 3-7: Itinerant General Aviation Operations Forecast (2015-2034)**

Year	Scenario 1 High-Growth <sup>1</sup>	Scenario 2 Medium-Growth <sup>2</sup>	Scenario 3 Low-Growth <sup>3</sup>
2014 <sup>4</sup>	4,000	6,632	4,000
2015	4,046	6,648	4,000
2016	4,093	6,665	4,000
2017	4,140	6,681	4,000
2018	4,188	6,698	4,000
2019	4,236	6,708	4,000
2024	4,488	6,788	4,000
2029	4,755	6,884	4,000
2034	5,042	6,968	4,000
CAGR <sup>5</sup>	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

<sup>1</sup> Based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.55% AAG

<sup>2</sup> Based on BST Market Share Analysis; 0.25% AAG

<sup>3</sup> Based on APO Terminal Area Forecast (TAF) (Forecast Issued January 2015); 0.00% AAG

<sup>4</sup> Base Year

<sup>5</sup> Compound Annual Growth Rate for years 2014 to 2034

The results for the High-Growth, Medium-Growth, and Low-Growth scenarios for local general aviation operations at BST for the master planning period (2015-2034) are presented in **Table 3-8**.

**Table 3-8: Local General Aviation Operations Forecast (2015-2034)**

Year	Scenario 1 High-Growth <sup>1</sup>	Scenario 2 Medium-Growth <sup>2</sup>	Scenario 3 Low-Growth <sup>3</sup>
2014 <sup>4</sup>	6,000	3,572	6,000
2015	6,093	3,581	6,000
2016	6,188	3,590	6,000
2017	6,284	3,598	6,000
2018	6,382	3,607	6,000
2019	6,481	3,616	6,000
2024	7,000	3,661	6,000
2029	7,561	3,706	6,000
2034	8,166	3,752	6,000
CAGR <sup>5</sup>	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

<sup>1</sup> Based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.55% AAG

<sup>2</sup> Based on BST Market Share Analysis; 0.25% AAG

<sup>3</sup> Based on APO Terminal Area Forecast (TAF) (Forecast Issued January 2015); 0.00% AAG

<sup>4</sup> Base Year

<sup>5</sup> Compound Annual Growth Rate for years 2014 to 2034

The total general aviation operations (local and itinerant combined) at BST for the master planning period (2015-2034) based on the High-Growth, Medium-Growth, and Low-Growth scenarios for are presented below in **Table 3-9** and **Figure 3-6**.

**Table 3-9: Total General Aviation Operations Forecast (2015-2034)**

Year	Scenario 1 High-Growth <sup>1</sup>	Scenario 2 Medium-Growth <sup>2</sup>	Scenario 3 Low-Growth <sup>3</sup>
2014 <sup>4</sup>	10,000	10,204	10,000
2015	10,139	10,229	10,000
2016	10,281	10,254	10,000
2017	10,424	10,280	10,000
2018	10,570	10,305	10,000
2019	10,717	10,331	10,000
2024	11,488	10,443	10,000
2029	12,316	10,592	10,000
2034	13,208	10,720	10,000
CAGR <sup>5</sup>	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

<sup>1</sup> Based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.55% AAG

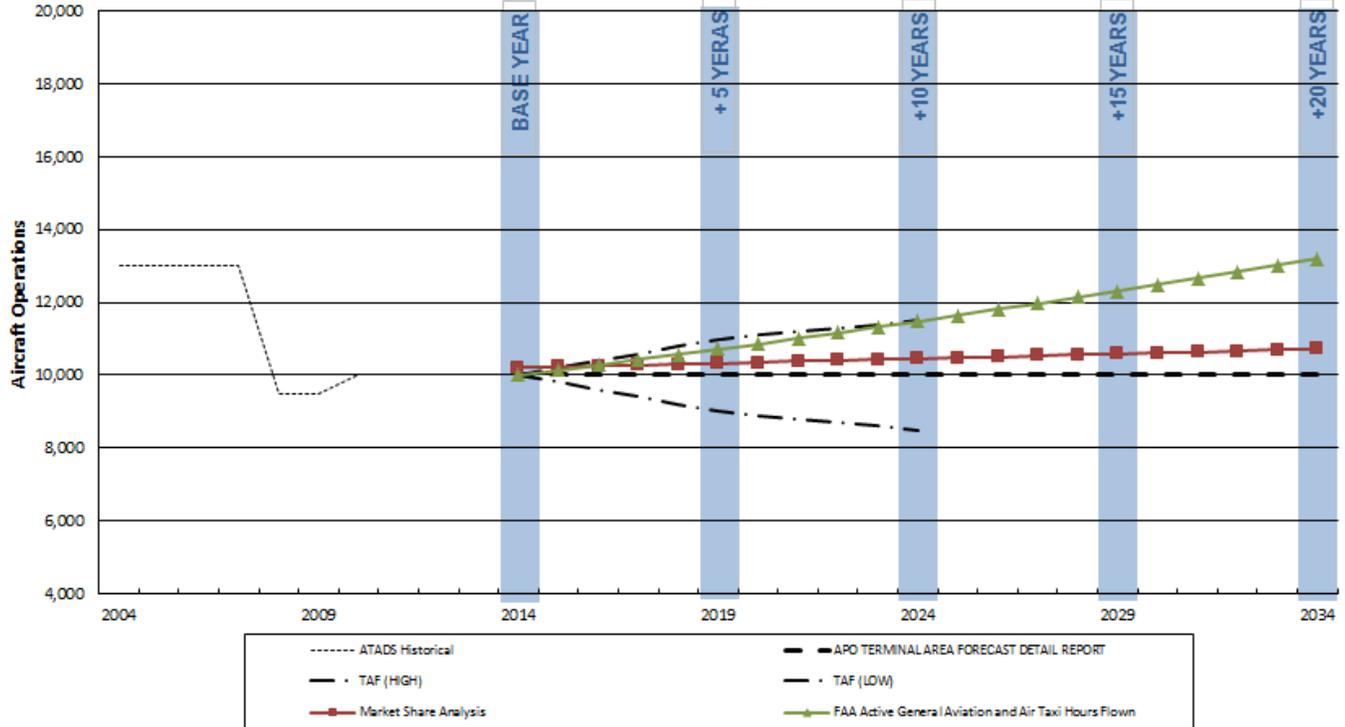
<sup>2</sup> Based on BST Market Share Analysis; 0.25% AAG

<sup>3</sup> Based on APO Terminal Area Forecast (TAF) (Forecast Issued January 2015); 0.00% AAG

<sup>4</sup> Base Year

<sup>5</sup> Compound Annual Growth Rate for years 2014 to 2034

**Figure 3-6: Total General Aviation Operations Forecast (2014-2034)**



Source: Airport Solutions Group.

### 3.4.2 Commercial Air Service Activity Forecast

The FAA TAF indicates that the Belfast Municipal Airport could experience very limited air taxi service throughout the planning period. Note that an air taxi operator is defined as one which carries cargo or mail on either a scheduled or charter basis, and/or carries passengers on an on-demand basis or limited scheduled basis. For BST, an air taxi service would generally encompass small charter operators.

### 3.4.3 Military Activity Forecast

The FAA TAF indicates that the Belfast Municipal Airport could experience very limited military activities throughout the planning period. These would only be sporadic and not part of any formal operational program.

### 3.4.4 Based Aircraft Forecast

Based aircraft are those that are permanently stored at a particular airport. Estimating the number and types of aircraft expected to be based at BST over the 20-year study period will impact the planning for future airport facility and infrastructure requirements. As the number of aircraft based at an airport

increases, so too does the aircraft storage required as well as supporting infrastructure and services.

Based aircraft at BST were projected using the three forecast scenarios described above. The results for the High-Growth, Medium-Growth, and Low-Growth scenarios for based aircraft at BST for the master planning period (2015-2034) are presented in **Table 3-7**, and in graphical form in **Figure 3-7**.

**Table 3-7: Based Aircraft Forecast (2014-2033)**

Year	Scenario 1 High-Growth <sup>1</sup>	Scenario 2 Medium-Growth <sup>2</sup>	Scenario 3 Low-Growth <sup>3</sup>
2014 <sup>4</sup>	17	17	17
2015	17	17	17
2016	18	17	17
2017	18	17	17
2018	18	17	17
2019	18	17	17
2024	20	17	17
2029	21	18	17
2034	23	19	17
CAGR <sup>5</sup>	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

<sup>1</sup> Based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.55% AAG

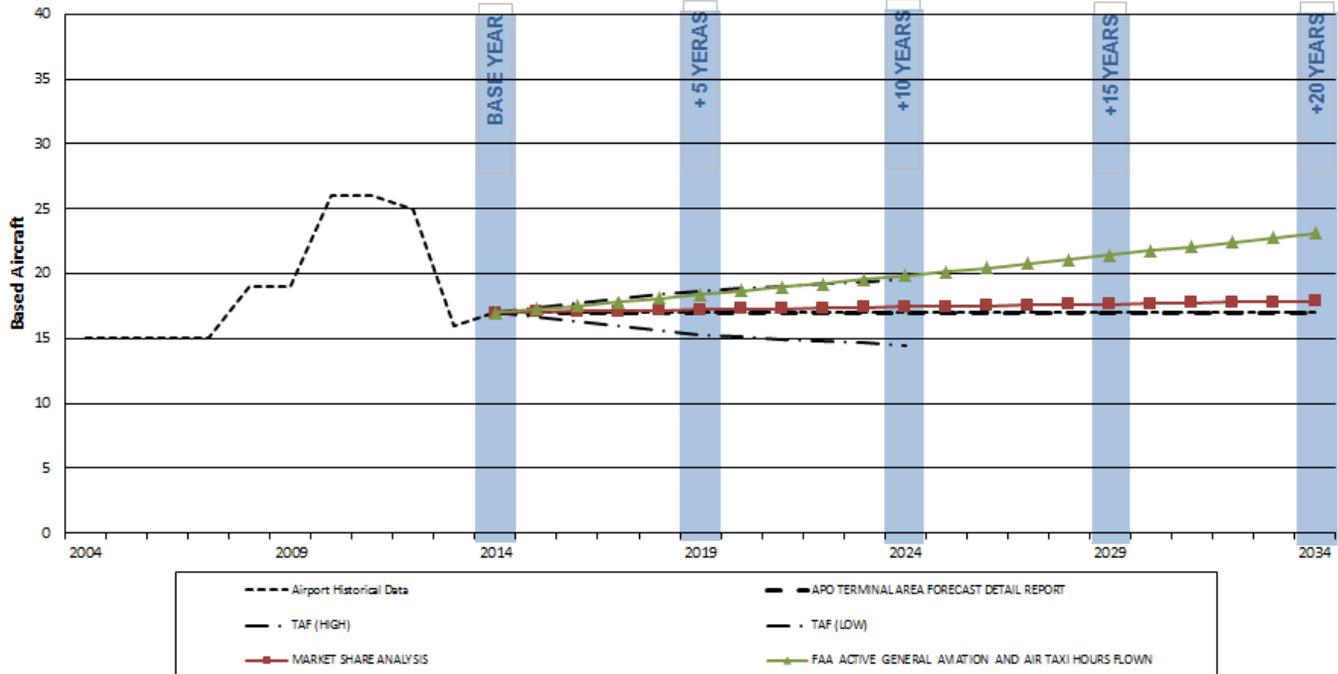
<sup>2</sup> Based on BST Market Share Analysis; 0.25% AAG

<sup>3</sup> Based on APO Terminal Area Forecast (TAF) (Forecast Issued January 2015); 0.00% AAG

<sup>4</sup> Base Year

<sup>5</sup> Compound Annual Growth Rate for years 2014 to 2034

**Figure 3-5: Total Based Aircraft (2014-2034)**



Source: Airport Solutions Group.

The total based aircraft projected for BST over the planning period were then allocated to six general aircraft categories – single-engine piston, multi-engine piston, turbine/jet, military, rotorcraft, and other – to develop a projection of BST’s based aircraft fleet mix through the planning period. The fleet mix projections were developed based on the fleet mix percentages reported by the Airport in 2015. Through the forecasting process, and based on anticipated migrations of the fleet mix, those percentages are anticipated to change slightly over the long-term. The existing and future based aircraft fleet mix percentages at BST by the following:

<u>Aircraft Categories</u>	<u>2015</u>	<u>2034</u>
Single-engine piston aircraft	97.5 percent	92.0 percent
Multi-engine piston aircraft	0.0 percent	0.5 percent
Turbine aircraft	0.5 percent	3.0 percent
Jet aircraft	0.0 percent	1.5 percent
Helicopter	2.0 percent	3.0 percent
Military / Other	<u>0.0 percent</u>	<u>0.0 percent</u>
	100 percent	100 percent

Based on projected U.S. general aviation trends found in the FAA’s *Aerospace Forecasts 2014 - 2034*, jet aircraft will continue to represent the fastest growing segment of the active aircraft fleet in the nation. Single and multi-engine aircraft, however, are predicted to grow more slowly, although they will remain the largest segments of the national fleet by number of aircraft. Helicopters are anticipated to increase their market share by two percent over the 20-year forecast period.

The projected trends in the U.S. general aviation fleet were used to develop projections of BST's future based aircraft fleet mix utilizing the preferred based aircraft projection. The fleet mix determinations by scenario are presented below in **Table 3-8**, **Table 3-9**, and **Table 3-10**.

**Table 3-8: Based Aircraft Forecast By Type (2014-2034) – Scenario 1 High Growth<sup>1</sup>**

Aircraft Type	2014 <sup>2</sup>	2019	2024	2029	2034
Single Engine	15	16	16	16	16
Multi-Engine	0	0	0	1	1
Jet/Turboprop	0	1	2	3	4
Helicopter	1	1	2	2	2
Military	0	0	0	0	0
Other	1	0	0	0	0
<b>Total Aircraft</b>	<b>17</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>23</b>

Source: Airport Solutions Group.

<sup>1</sup> Based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.55% AAG

<sup>2</sup> Base Year

**Table 3-9 Based Aircraft Forecast By Type (2014-2034) – Scenario 2 Medium Growth<sup>1</sup>**

Aircraft Type	2014 <sup>2</sup>	2019	2024	2029	2034
Single Engine	15	15	14	13	13
Multi-Engine	0	0	0	1	1
Jet/Turboprop	0	1	2	2	3
Helicopter	1	1	1	2	2
Military	0	0	0	0	0
Other	1	0	0	0	0
<b>Total Aircraft</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>19</b>

Source: Airport Solutions Group.

<sup>1</sup> Based on BST Market Share Analysis; 0.25% AAG

<sup>2</sup> Base Year

**Table 3-10: Based Aircraft Forecast By Type (2014-2034) – Scenario 3 Low Growth<sup>1</sup>**

Aircraft Type	2014 <sup>2</sup>	2019	2024	2029	2034
Single Engine	15	15	14	12	12
Multi-Engine	0	0	0	1	1
Jet/Turboprop	0	1	2	2	2
Helicopter	1	1	1	2	2
Military	0	0	0	0	0
Other	1	0	0	0	0
<b>Total Aircraft</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>

Source: Airport Solutions Group.

<sup>1</sup> Based on APO Terminal Area Forecast (TAF) (Forecast Issued January 2015); 0.00% AAG

<sup>2</sup> Base Year

Given the opportunities in this business-friendly community and positive economic initiatives and expectations in the market area, it is likely that BST will follow national trends for aircraft market share and see an influx of business aircraft and helicopters. The fleet mix projection shows a greater integration of turbines/jets over the planning period. This is consistent with FAA projections for the share of turbines/jets within the general aviation market segment. The FAA predicts that the declining market share of single and multi-engine piston aircraft at general aviation airports will be replaced by turbines/jet aircraft used for business travel.

### **3.5 SUMMARY**

It is largely anticipated that BST will see low to moderate growth during the 20-year planning period. Market area demographic trends indicate that the Airport activity will be consistent with national growth trends in general aviation. The forecasts established for this master plan are based on a range approach that identifies a high-growth, a medium-growth, and a low-growth scenario in order to help account for inherent uncertainty in the local, state and national economy. As such, **Table 3-11**, **Table 3-12**, and **Table 3-13** below provide summaries of each scenario's operational and based aircraft results, included operations by aircraft type.

It is important to note that this is an unconstrained projection which stipulates that all facilities necessary to accommodate growth will be constructed and that nothing will limit it. The following chapters of this Master Plan Update will explore the facility implications of accommodating the projected demand and design requirements.

**Table 3-11: Summary of Aviation Activity Forecasts (2014-2034) – Scenario 1 High Growth<sup>1</sup>**

	2014 <sup>2</sup>	2019	2024	2029	2034
<b>Operations</b>					
General Aviation	8,000	8,642	9,335	10,083	10,890
Single Engine	7,430	7,810	8,261	8,734	9,256
Multi-Engine	100	140	152	164	177
Turboprop	330	497	572	656	790
Jet	0	43	187	277	395
Helicopter	140	152	163	252	272
Military	0	0	0	0	0
Misc. Aircraft	0	0	0	0	0
Commercial Service	2,000	2,075	2,153	2,233	2,318
Air Taxi	2,000	2,075	2,153	2,233	2,318
<b>Total Operations</b>	<b>10,000</b>	<b>10,717</b>	<b>11,488</b>	<b>12,316</b>	<b>13,208</b>
Local Operations	6,000	6,481	7,000	7,561	8,166
Itinerant Operations	4,000	4,236	4,488	4,755	5,042
<b>Based Aircraft by Type</b>					
Single Engine	15	16	16	16	16
Multi-Engine	0	0	0	1	1
Jet/Turboprop	0	1	2	3	4
Helicopter	1	1	2	2	2
Military	0	0	0	0	0
Ultra Light	1	0	0	0	0
<b>Total Based Aircraft</b>	<b>17</b>	<b>18</b>	<b>20</b>	<b>22</b>	<b>23</b>

Source: Airport Solutions Group.

<sup>1</sup> Based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts FY 2014-2034); 1.44% AAG<sup>2</sup> Base Year

**Table 3-12: Summary of Aviation Activity Forecasts (2014-2034) – Scenario 2 Medium Growth<sup>1</sup>**

	2014 <sup>2</sup>	2019	2024	2029	2034
<b>Operations</b>					
General Aviation	8,000	8,100	8,200	8,301	8,406
Single Engine	7,430	7,320	7,257	7,191	7,146
Multi-Engine	100	132	133	135	137
Turboprop	330	466	502	540	609
Jet	0	41	164	228	305
Helicopter	140	141	144	207	209
Military	0	0	0	0	0
Misc. Aircraft	0	0	0	0	0
Commercial Service	2,000	2,025	2,050	2,075	2,100
Air Taxi	2,000	2,025	2,050	2,075	2,100
<b>Total Operations</b>	<b>10,000</b>	<b>10,125</b>	<b>10,250</b>	<b>10,376</b>	<b>10,506</b>
Local Operations	6,000	6,075	6,150	6,226	6,306
Itinerant Operations	4,000	4,050	4,100	4,150	4,200
<b>Based Aircraft by Type</b>					
Single Engine	15	15	14	13	13
Multi-Engine	0	0	0	1	1
Jet/Turboprop	0	1	2	2	3
Helicopter	1	1	1	2	2
Military	0	0	0	0	0
Ultra Light	1	0	0	0	0
<b>Total Based Aircraft</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>18</b>	<b>19</b>

Source: Airport Solutions Group.

<sup>1</sup> Based on BST Market Share Analysis; 0.25% AAG

<sup>2</sup> Base Year

**Table 3-13: Summary of Aviation Activity Forecasts (2014-2034) – Scenario 3 Low Growth<sup>1</sup>**

	2014 <sup>2</sup>	2019	2024	2029	2034
<b>Operations</b>					
General Aviation	33,400	33,400	33,400	33,400	33,400
Single Engine	7,430	7,230	7,080	6,930	6,800
Multi-Engine	100	130	130	130	130
Turboprop	330	460	490	520	580
Jet	0	40	160	220	290
Helicopter	140	140	140	200	200
Military	0	0	0	0	0
Misc. Aircraft	0	0	0	0	0
Commercial Service	2,000	2,000	2,000	2,000	2,000
Air Taxi	2,000	2,000	2,000	2,000	2,000
<b>Total Operations</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>	<b>10,000</b>
Local Operations	6,000	6,000	6,000	6,000	6,000
Itinerant Operations	4,000	4,000	4,000	4,000	4,000
<b>Based Aircraft by Type</b>					
Single Engine	15	15	14	12	12
Multi-Engine	0	0	0	1	1
Jet/Turboprop	0	1	2	2	2
Helicopter	1	1	1	2	2
Military	0	0	0	0	0
Ultra Light	1	0	0	0	0
<b>Total Based Aircraft</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>	<b>17</b>

Source: Airport Solutions Group.

<sup>1</sup> Based on APO Terminal Area Forecast (TAF) (Forecast Issued January 2014); 0.00% AAG<sup>2</sup> Base Year - Actual

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