

CHAPTER THREE:

FORECASTS OF AVIATION ACTIVITY

3.1 INTRODUCTION

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

Projecting future aviation demand is a critical element in the Airport Master Plan Update 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 ability of the Belfast Municipal Airport (the Airport or BST) 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 foundation for the remainder of the plan. In many cases, the decision to proceed with projects is based on the anticipated levels of demand, including both amounts 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.

For this Airport Master Plan Update, 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.

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 BST airport market area
- National aviation trends
- Regional trends
- Historical and current aviation activity
- Projections of aviation activity
- Summary

3.2 OVERVIEW OF THE BST AIRPORT MARKET AREA

It has been shown that there is a strong correlation between a given region’s demographic/economic conditions and the level of 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 BST, 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, depending on road locations and types. Based on that standard, the airport market area for BST includes 37 municipalities located across five counties (Waldo, Knox, Kennebec, Penobscot, and Hancock) in central, midcoast and eastern Maine. The municipalities that are either completely or partially encompassed by the BST airport market area include the following:

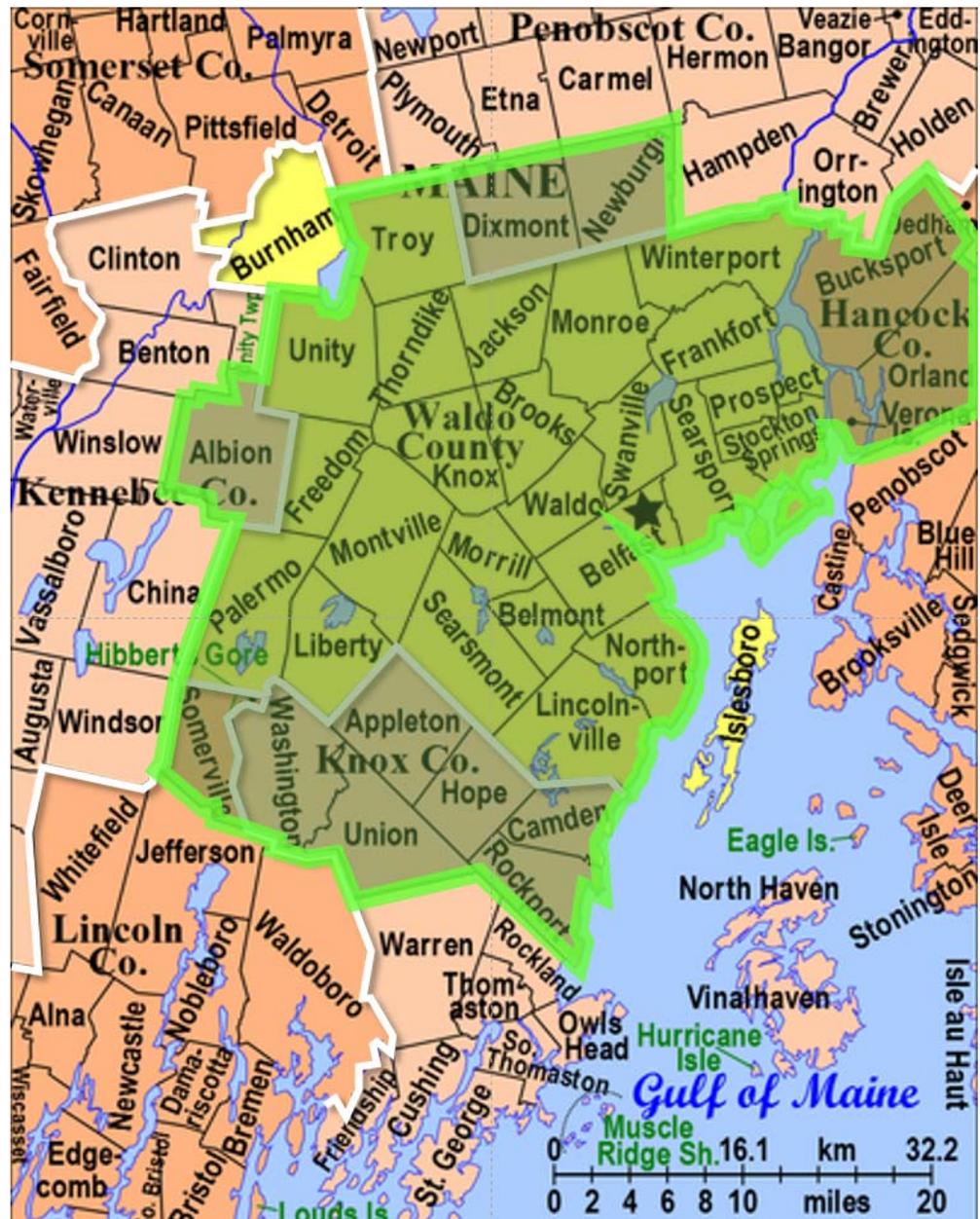
BST’s airport market area encompasses 37 municipalities in five counties in central, midcoast and eastern Maine.

Municipalities within a 40-Minute Drive Time of BST

- | | | |
|-------------|----------------|--------------------|
| • 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 BST. Note that the graphic highlights the boundaries of the entire municipality even if only a portion of it is within the 40-minute drive time to BST.

Figure 3-1: BST Airport Market Area



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 Trends

At the national level, fluctuating trends related to general aviation usage and economic uncertainty resulting from national 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 United States and in 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 either commercial airlines or by the military. These aircraft are used for an incredibly diverse array of aviation purposes ranging 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 five 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: It is estimated that 12 percent of the total private flying in the United States 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 to expand their geographic markets. An additional 11 percent of the total private flying in the United States is done by business persons flying themselves to meetings or to 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 and air charter: When scheduled air service is either not available or it is 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 the FAA can use the “air taxi” classification 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 operations, search and rescue operations, police operations, news reporting, border patrolling, 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 sectors within general aviation, contributing \$150 billion to United States 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 their personnel. Use of general aviation aircraft affords businesses direct control over their travel itineraries, and their travel destinations, significantly reducing travel times and inconveniences that are often associated with scheduled airline service.



Business Jet on a Ramp

Corporate general aviation is also not the exclusive concern of Fortune 500 companies. In fact, per the National Business Aircraft Association’s *Business Aviation Fact Book 2014*, only 3 percent of the approximately 15,000 business aircraft registered in the United States are flown by companies of this size. The remaining 97 percent are actually operated by a broad cross section of organizations, including units of government, universities, charitable organizations, and businesses of all sizes. The clear majority of the companies in the United States 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 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 which is projected to continue. Honeywell’s *22nd Annual Business Aviation Outlook, 2013* has projected average annual industry growth rates of 4 to 5 percent through 2024. Additionally, the Outlook projects the following:

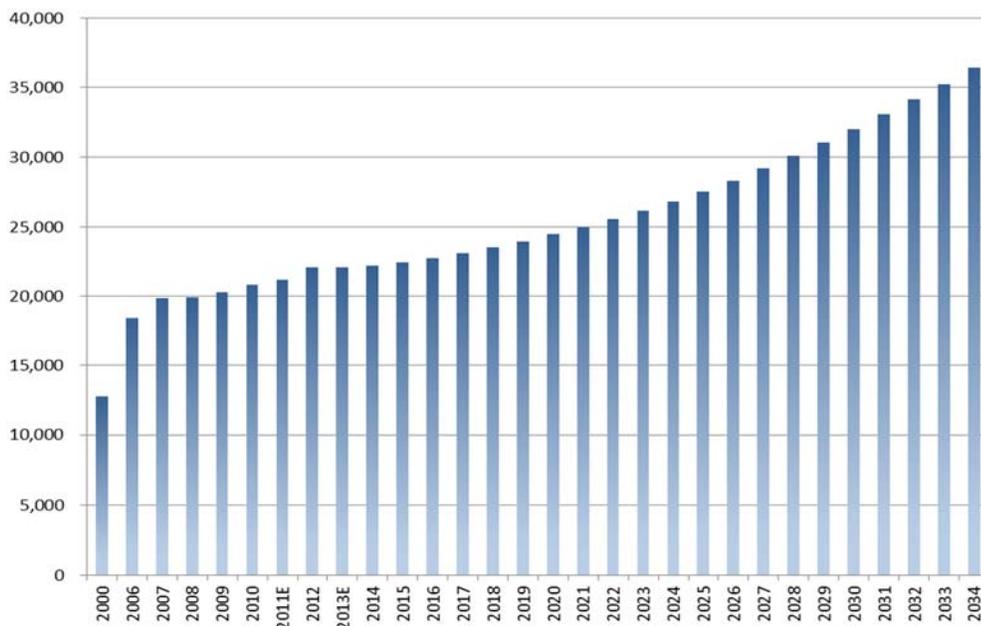
- Up to 9,250 deliveries of new business jets, valued at over \$250 billion, are expected through 2023.
- Operators plan to replace 28 percent of their fleets with new jets in the next five years.
- The totality of planned business aviation purchases for the BRIC countries (Brazil, Russia, India, and China) will lead all other world regions.

- Large cabin jets account for more than 55 percent of new purchase plans.

Additionally, business aviation operations are a source of quality 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 interchange agreements, partnerships, and management contracts, as well as various chartering, leasing, and fractional ownership operations, 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



Source: Federal Aviation Administration 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 the others who have a shared ownership interest in that particular 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 the 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 that 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 United States, fractional-share ownership currently makes up 15% of business aviation flights.



Eclipse 550 Very Light Jet

Growing segments of the business aircraft fleet mix include business liners and very light jets. Business liners are large business jets, such as the Boeing Business Jet and the Airbus ACJ, which are reconfigured versions of passenger aircraft flown by large commercial airlines. Labeled as “personal jets,” very light jets are a relatively new category of aircraft that are small, six-seat jets costing substantially less than the typical business jet aircraft. Generally, these aircraft are also significantly less demanding operationally with regards to runway length requirements. This has allowed very light jets to operate at smaller airports with shorter runways, resulting in those airports becoming viable options for these types of jet operations. Three such aircraft models currently in operation are the Eclipse 550, the Embraer Phenom 100, and the 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 the size of the active aircraft fleet and the number of active hours flown. These are discussed below.

The number of single- and multi-engine piston aircraft experienced a decline between 2000 and 2013. Although still representing the largest portion of the aircraft in the active fleet, the number of single-engine aircraft fell from 149,422 in 2000 to 123,730 in 2013, an average annual decline of 1.4 percent. During that same period, multi-engine piston aircraft experienced a much steeper decline, falling from 21,091 aircraft to 14,235, an average annual decline of 3.0 percent. 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 relatively 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 FAA predicts a decrease in the total number of piston aircraft (which includes single- and multi-engine airplanes, as well as piston engine rotorcraft) of 0.5 percent per year and 0.3 percent per year over the next two decades. The result of these predictions



Single-engine aircraft at BST

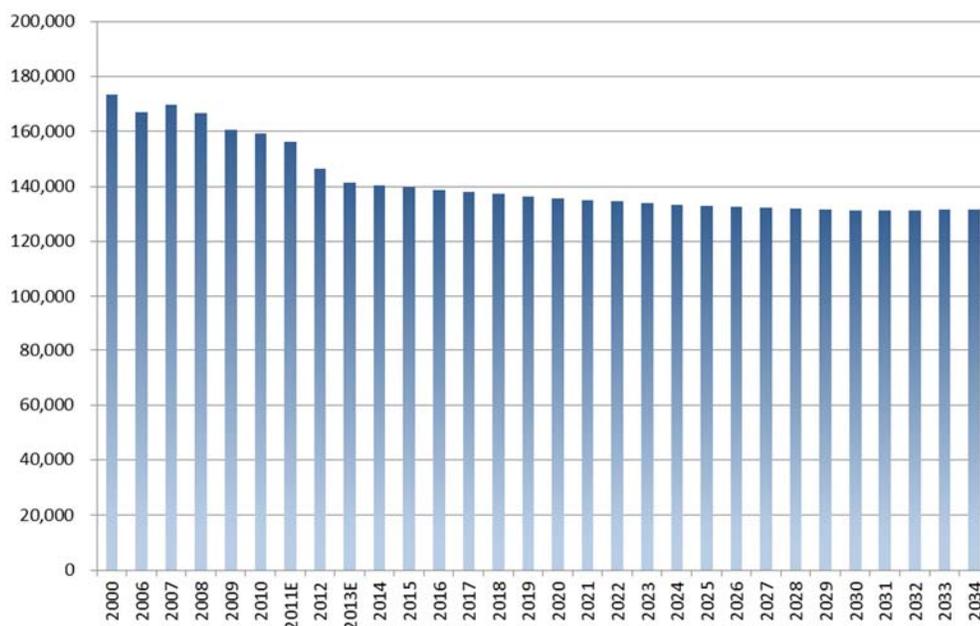
show total piston aircraft (combined single- and multi-engine) falling from 141,325 in 2013 to 131,615 in 2034. This is reflected in **Figure 3-3** below.

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 must meet certain regulations set by the FAA restricting weight and performance. Aircraft which qualify as a light sport aircraft may be operated by holders of a sport pilot certificate. At the end of 2012, it was estimated that there were a total of 2,001 active light-sport aircraft. This forecast assumes an approximate annual growth rate of 4.1 percent through 2034, reaching a total of 4,880 light sport aircraft.



Remos GX Light Sport Aircraft

Figure 3-3: General Aviation Piston Aircraft Growth



Source: Federal Aviation Administration 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, more than 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 earlier 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 number by 2034. As stated within the *FAA Aerospace Forecasts, 2014-2034*:



Pilatus PC12 Turboprop at BST

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 gross domestic product, though at rates slightly lower than those predicted last year. Continued concerns about 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 growing national and international economies. 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 net gain in 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.

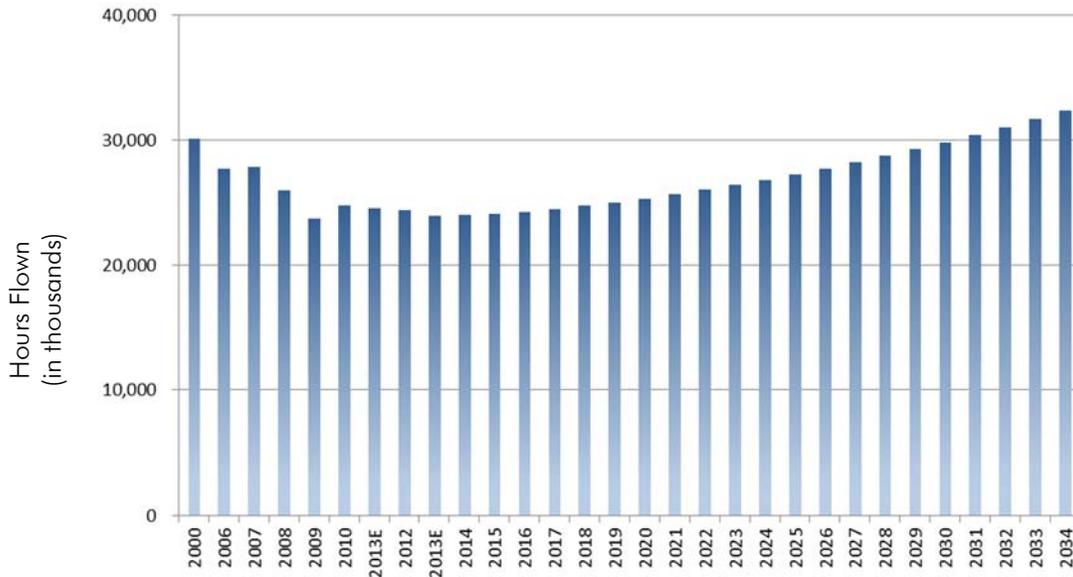


Cessna Citation Jet

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 slower rate of 0.4 percent. For turboprop and jet aircraft, hours flown are expected to continue to grow at a relatively 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 a dramatic decline spurred by the economic recession and which impacted 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 0.6 percent for the general aviation active fleet, the difference from hours flown represents anticipated increases in aircraft utilization (flying fewer aircraft longer and/or more frequently). 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 United States Active General Aviation and Air Taxi Hours Flown



Source: Federal Aviation Administration Aerospace Forecasts, 2014-2034.

3.2.3 Regional Trends

Not all national trends are experienced to the same degree down at the 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 airport market area, because that type of data has been shown to have a 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** relies upon reliable data sources to provide historical levels and projections of these key socioeconomic indicators within BST’s airport market area. This 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 United States Census Bureau and the United States Bureau of Economic Analysis. It must also be noted that the data collected from these sources is aggregated on a county and not municipal basis; therefore, for the purposes of this particular analysis, the airport market area for BST was considered as being comprised of the entireties of Hancock County, Kennebec County, Knox County, Penobscot



Downtown Belfast

County, and Waldo County in Maine (see **Figure 3-1**). This is reflected in the table below.

Table 3-1: BST Airport Market Area¹ 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>CAGR² (2014-2030)</i>			
	0.01%	0.14%	1.9%
<i>Maine</i>			
<i>CAGR² (2014-2030)</i>			
	0.10%	0.23%	2.3%
<i>United States</i>			
<i>CAGR² (2010-2030)</i>			
	0.83%	0.68%	1.18%

Sources: Woods and Poole Economics, Inc.; United States Census Bureau; United States Bureau of Economic Analysis.

¹; Hancock County, ME; Kennebec County, ME; Knox County, ME; Penobscot County, ME. Waldo County, ME.

² Compound Annual Growth Rate.

Population

It is a generally accepted principle within the aviation industry and by the FAA that aviation demand is strongly tied to the number of people within an airport market area. For both commercial service and general aviation activity, as the number of people living in a region grows, the demand for these services typically increases. Table 3-1 presents the most recent and forecasted population for the BST market area, including Hancock, Kennebec, Knox, Penobscot, and Waldo 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 airport market area accounts for approximately 30.6 percent of the total population of Maine. The airport market area also comprises approximately 30.2 percent of the total number of persons employed in the state as well. Employment within the BST airport market area over the past 10 years has increased annually by 0.14 percent. Over the next 20 years, employment levels in the airport market area are expected to be consistent with its past rate of growth.



Belfast Arts Festival

Personal Income

Personal income reflects the sum of wages and salaries of workers, as well as other sources of income, within a defined geographic area. This is reflective of how positive a region’s business climate is. 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 forecasted personal income for the study area was compiled from the Woods and Poole data and is presented above in Table 3-1.

Historically, the BST airport market area has experienced a personal income growth rate of 1.9 percent since 2000; this is lower than that of Maine and the United States, which were 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 projections, as well as with generally accepted forecasting principles.



Belfast City Hall

3.3 HISTORICAL AND EXISTING AVIATION ACTIVITY

3.3.1 Aircraft Operations

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 an aircraft departing – hence a takeoff and a landing would count as two operations).

Since BST does not have an Air Traffic Control Tower, 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 the Maine Department of Transportation – Airports and Aviation Division 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 TAF data for BST (*Forecast Issued January 2014*)
- BST FAA 5010 Data (*Inspection date 08/26/2014*)



Aircraft Arriving on Runway 33 at BST

It should be noted that at general aviation airports that do not have an air traffic control tower, 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. (Note: in 2014, BST installed a General Aviation Recording Data system to collect more accurate operational data. However, only limited data was available at the time of this forecasting effort and could not be utilized within this Airport Master Plan Update.)

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.) BST’s historical aircraft operations data for a 10-year period (2005-2014) 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 an aircraft known to be departing or arriving from flight in local practice areas, or an 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: BST General Aviation Operations History

Year	Itinerant				Local		Total
	Air Carrier	Air Taxi & Commuter	General Aviation	Military	General Aviation	Military	
2005	0	1,000	3,000	0	9,000	0	13,000
2006	0	4,000	1,400	0	4,100	0	9,500
2007	0	4,000	1,400	0	4,100	0	9,500
2008	0	2,000	2,000	0	6,000	0	10,000
2009	0	2,000	2,000	0	6,000	0	10,000
2010	0	2,000	2,000	0	6,000	0	10,000
2011	0	2,000	2,000	0	6,000	0	10,000
2012	0	2,000	2,000	0	6,000	0	10,000
2013	0	2,000	2,000	0	6,000	0	10,000
2014	0	2,000	2,000	0	6,000	0	10,000
CAGR ²	0.0%	8.01%	-4.41%	0.0%	-4.41%	0.00%	-2.87%

Source: Federal Aviation Administration Terminal Area Forecast data for BST, 2005-2014.

¹ Compound Annual Growth Rate for years 2005 to 2014.

All aircraft operations at BST are conducted by general aviation aircraft, which include all aircraft that are not used for commercial service or for 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 general aviation. 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 a negative impact on future 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 BST have generally grown over the historical period, as shown in **Table 3-3** and based on the FAA TAF data

Table 3-3: BST Based Aircraft History

Year	Based Aircraft
2005	15
2006	19
2007	19
2008	26
2009	26
2010	25
2011	17
2012	17
2013	17
2014	17
CAGR ¹	1.40%

Source: Federal Aviation Administration Terminal Area Forecasts.

¹ 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, ranging from 22 to 25 aircraft.



Based Aircraft at BST



Aircraft Ramp 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 it is 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.

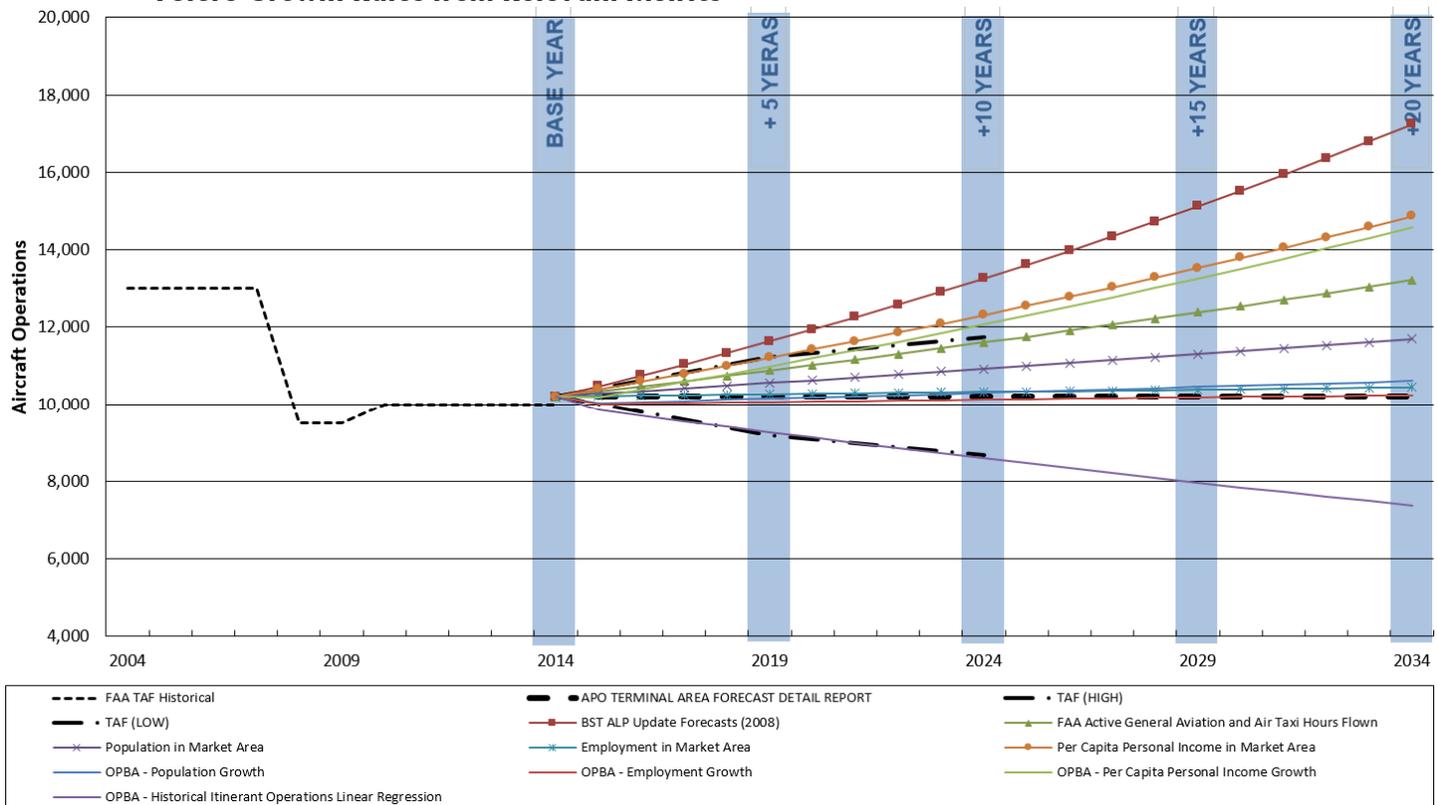
During a master planning effort, aviation activity forecasts are typically established by using a variety of assumptions that result in a wide range of outcomes. This is intentionally done in order to provide a broad view of future airport utilization potentials. Once that broad view has been established, 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 (e.g., socioeconomic data, other forecasts, etc.) and applying those rates to BST. 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 Airport Layout Plan Update forecast methodology
- FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts, Fiscal Years 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

Figure 3-5: BST Total General Aviation Operations Forecasts (2014-2034) – Future Growth Rates from Relevant Metrics



Source: Airport Solutions Group.

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% average annual growth rate) 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 and no charts or tables were included in this study.

The third approach, which was specifically requested by the 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, a local forecast is a market share (percentage) of a regional forecast, which in turn can be a market share (percentage) of a national forecast. 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 1.69 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: BST Total Civil Operations Forecast - Maine Market Share Analysis

Year	Maine Total Civil Operations	BST Total Civil Operations	BST Percentage of Maine Total Civil Operations
Historic			
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%
2014	585,816	10,000	1.71%
Average Percentage of Total Civil Operations			1.69%
Forecasted			
2015	587,050	9,921	1.69%
2019	592,062	10,006	1.69%
2024	598,800	10,120	1.69%
2029	607,076	10,260	1.69%
2034	614,076	10,378	1.69%

Sources: Federal Aviation Administration Terminal Area Forecast, February 2014; Airport Solutions Group.

Additionally, since it is the intent of this forecasting effort to meet the 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 airport market area. For BST, the closest airports that would reasonably accommodate existing jet demand for the BST Airport Market Area would be Bangor International Airport and Knox County Regional Airport. **Table 3-5** details the historical and forecasted jet operational levels for both of these airports based on FAA Enhanced Traffic Management System Counts data. (Note that this data is generated when pilots file flight plans and/or when flights are detected by the National Airspace System, usually via radar.)

Table 3-5: Bangor International Airport and Knox County Regional Airport Total Civil Operations Forecasts - Maine Market Share Analysis

Year	Bangor International			Knox County Regional		
	Total Jet Operations	Total Civil Operations	% Total Civil Operations	Total Jet Operations	Total Civil Operations	% Total Civil Operations
<i>Historic</i>						
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%
2014	3,516	30,382	11.57%	1,086	55,197	1.52%
<i>Average % of Total Civil Operations</i>			<i>10.66%</i>	<i>1.79%</i>		
<i>Forecasted</i>						
2015	3,258	30,564	10.66%	989	55,297	1.79%
2019	3,337	31,303	10.66%	997	55,707	1.79%
2024	3,438	32,246	10.66%	1,006	56,243	1.79%
2029	3,542	33,224	10.66%	1,016	56,814	1.79%
2034	3,650	34,236	10.66%	1,027	57,416	1.79%

Sources: Federal Aviation Administration Enhanced Traffic Management System Counts; Federal Aviation Administration Terminal Area Forecast, 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, it has been assumed that 10 percent of the jet operations from both Bangor International Airport and Knox County Regional Airport could be accommodated at BST if the appropriate runway length and facilities were ultimately 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: BST Total Civil Operations Forecast - Maine Market Share Analysis Plus 10% of Bangor International Airport and Knox County Regional Airport Total Civil Jet Operations

Year	Maine Total Civil Operations	BST Total Civil Operations	BST % of Maine Total Civil Operations	BST New Jet Operations ¹	Updated BST Total Civil Operations
Historic					
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%		
2014	585,816	10,000	1.71%		
<i>Average % of Total Civil Operations</i>			1.69%		
Forecasted					
2015	587,050	9,921	1.69%	424	10,345
2019	592,062	10,006	1.69%	433	10,439
2024	598,800	10,120	1.69%	444	10,564
2029	607,076	10,260	1.69%	456	10,716
2034	614,076	10,378	1.69%	468	10,846
				CARG ²	0.25%

Sources: Federal Aviation Administration Enhanced Traffic Management System Counts; Federal Aviation Administration Terminal Area Forecast, January 2015; Airport Solutions Group.

¹ Forecasted totals based on assumption that 10% of BGR and RKD civil jet operations will migrate to BST.

² Compound Annual Growth Rate for years 2015 to 2034.

Through this process that included coordination with key project stakeholders representing BST, Maine Department of Transportation - Airports and Aviation Division, and the FAA, three forecast approaches were identified for use in this master plan. It is also important to note that through this coordination process, it was decided that BST's forecasts for itinerant, local, and total general aviation operations all be portrayed as ranges 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 of the three operation categories. The bases of these three scenarios are the following:

1. **High-Growth Scenario:** 1.55% compound annual growth rate; based on FAA Active General Aviation and Air Taxi Hours Flown (FAA Aerospace Forecasts, Fiscal Years 2014-2034)
2. **Medium-Growth Scenario:** 0.25% compound annual growth rate; based on Maine Market Share Analysis
3. **Low-Growth Scenario:** 0.00% compound annual growth rate; based on FAA Office of Aviation Policy and Plans TAF (Forecast Issued January 2015)

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 analysis was the preferred approach, and the Medium-Growth Scenario was selected as the preferred scenario upon which to base BST's aircraft operations forecasts. This methodology is conservative, being primarily based on existing FAA TAF data for the Airport and the state. 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 (i.e. jet aircraft). Therefore, it is reasonable and appropriate for the market share analysis 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 BST Airport Master Plan Update 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 previously, overall general aviation activity levels should ultimately become less sensitive to economic fluctuations than has been previously observed.

Table 3-7: BST Itinerant General Aviation Operations Forecast

Year	High-Growth Scenario ¹	Medium-Growth Scenario ²	Low-Growth Scenario ³
2015	4,046	4,138	4,000
2016	4,093	4,148	4,000
2017	4,140	4,158	4,000
2018	4,188	4,169	4,000
2019	4,236	4,176	4,000
2024	4,488	4,226	4,000
2029	4,755	4,286	4,000
2034	5,042	4,338	4,000
CAGR ⁴	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

¹ Based on Federal Aviation Administration Active General Aviation and Air Taxi Hours Flown (Federal Aviation Administration Forecasts, Fiscal Years 2014-2034); 1.55% average annual growth rate.

² Based on BST Market Share Analysis; 0.25% average annual growth rate.

³ Based on Federal Aviation Administration Office of Aviation Policy and Plans Terminal Area Forecast, January 2015; 0.00% average annual growth rate.

⁴ Compound Annual Growth Rate for years 2015 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: BST Local General Aviation Operations Forecast (2015-2034)

Year	High-Growth Scenario ¹	Medium-Growth Scenario ²	Low-Growth Scenario ³
2015	6,093	6,207	6,000
2016	6,188	6,223	6,000
2017	6,284	6,238	6,000
2018	6,382	6,253	6,000
2019	6,481	6,263	6,000
2024	7,000	6,338	6,000
2029	7,561	6,430	6,000
2034	8,166	6,508	6,000
CAGR ⁴	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

¹ Based on Federal Aviation Administration Active General Aviation and Air Taxi Hours Flown (Federal Aviation Administration Forecasts, Fiscal Years 2014-2034); 1.55% average annual growth rate.

² Based on BST Market Share Analysis; 0.25% average annual growth rate.

³ Based on Federal Aviation Administration Office of Aviation Policy and Plans Terminal Area Forecast, January 2015; 0.00% average annual growth rate.

⁴ Compound Annual Growth Rate for years 2015 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: BST Total General Aviation Operations Forecast

Year	High-Growth Scenario ¹	Medium-Growth Scenario ²	Low-Growth Scenario ³
2015	10,139	10,345	10,000
2016	10,281	10,371	10,000
2017	10,424	10,396	10,000
2018	10,570	10,422	10,000
2019	10,717	10,439	10,000
2024	11,488	10,564	10,000
2029	12,316	10,716	10,000
2034	13,208	10,846	10,000
CAGR ⁴	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

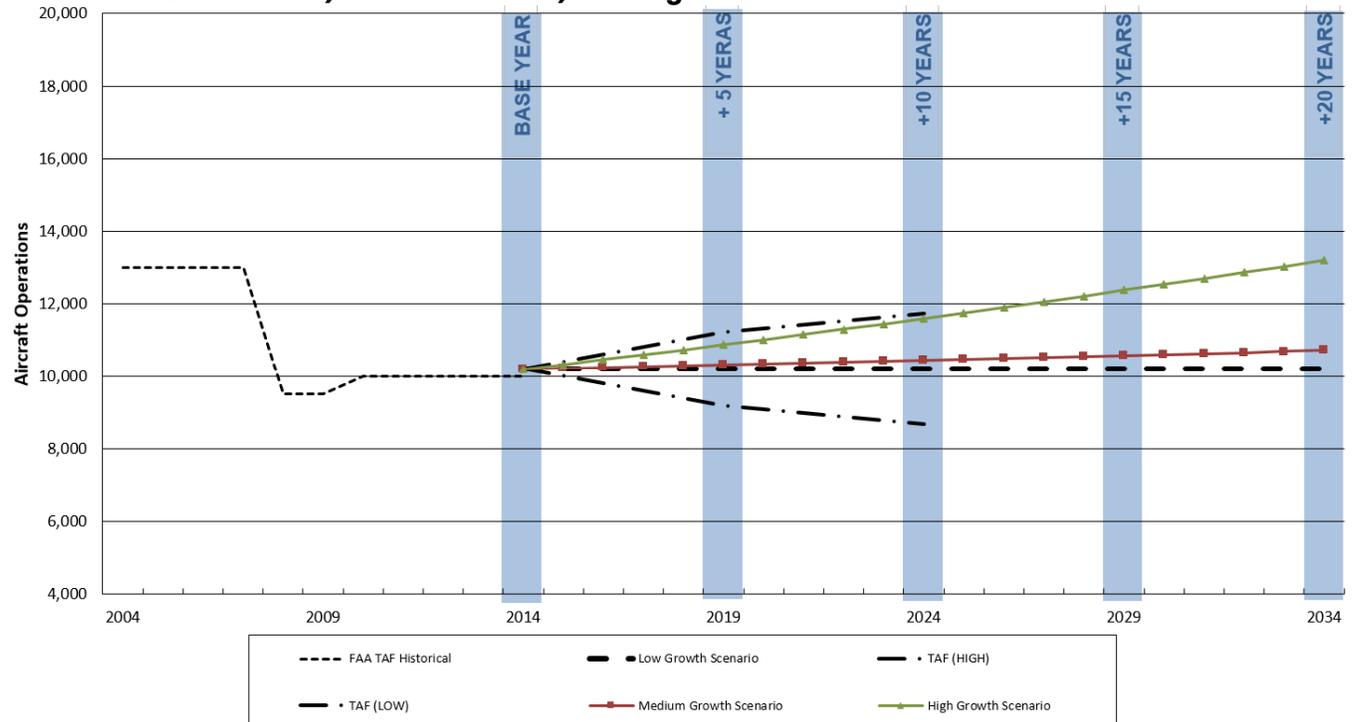
¹ Based on Federal Aviation Administration Active General Aviation and Air Taxi Hours Flown (Federal Aviation Administration Forecasts, Fiscal Years 2014-2034); 1.55% average annual growth rate.

² Based on BST Market Share Analysis; 0.25% average annual growth rate.

³ Based on Federal Aviation Administration Office of Aviation Policy and Plans Terminal Area Forecast, January 2015; 0.00% average annual growth rate.

⁴ Compound Annual Growth Rate for years 2015 to 2034.

Figure 3-6: BST Total General Aviation Operations Forecast (2015-2034) - Low-Growth, Medium-Growth, and High-Growth Scenarios



Source: Airport Solutions Group.

3.4.2 Commercial Air Service Activity Forecast

The FAA TAF indicates that BST will accommodate air taxi services 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 generally encompasses nonscheduled charter operators operating under Federal Aviation Regulations Part 135, such as the athenahealth Pilatus PC-12 shuttle service provided to Laurence G. Hanscom Field Airport, in Bedford, Massachusetts. This particular service accounts for the majority of BST's air taxi operations. Although charter operations can be classified by the FAA as a commercial service operation, since this is a private charter not open for public use, it has been considered to be part of BST's general aviation operational totals and will be reflected as such in the general aviation forecasts.

Since BST does not have any scheduled commercial airline service currently, nor is any such service reasonably expected to be started at BST within the planning period, no commercial service forecasts have been produced.

3.4.3 Military Activity Forecast

The FAA TAF indicates that BST 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 planning 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 3-10**, and in graphical form in **Figure 3-7**.

Table 3-10: BST Based Aircraft Forecast

Year	High-Growth Scenario ¹	Medium-Growth Scenario ²	Low-Growth Scenario ³
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	22	18	17
2034	23	19	17
CAGR ⁴	1.55%	0.25%	0.00%

Source: Airport Solutions Group.

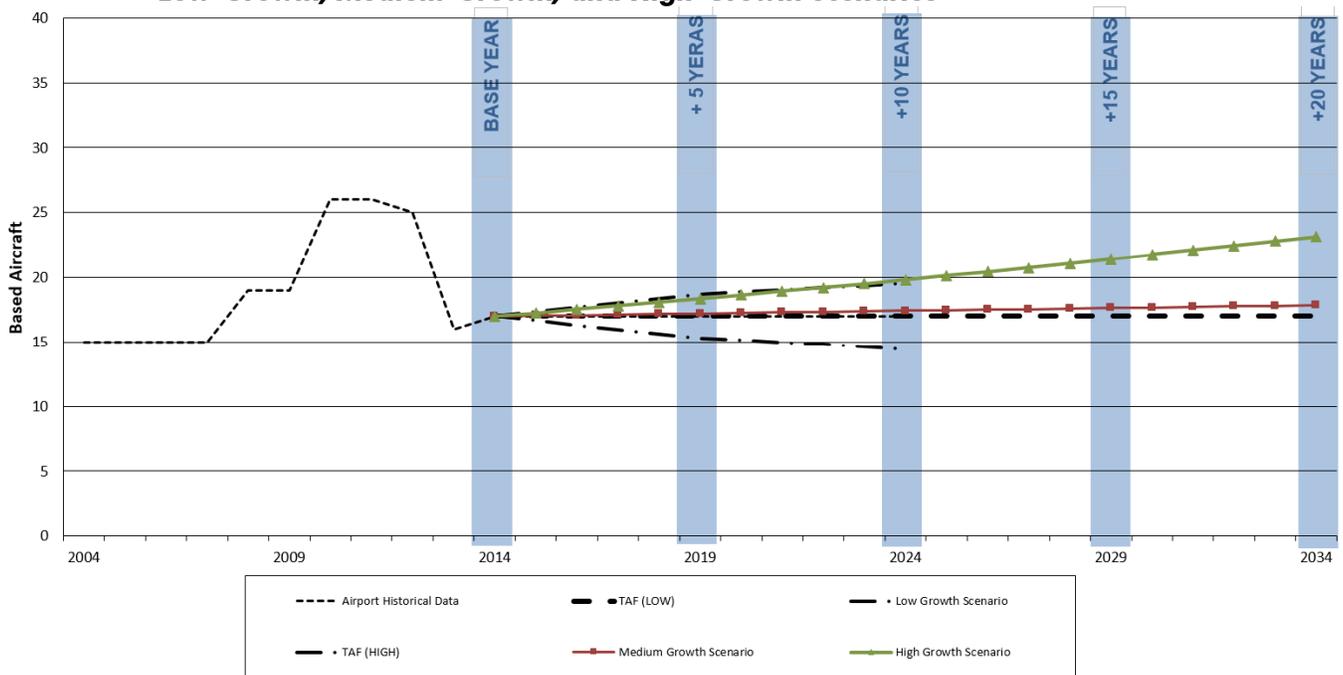
¹ Based on Federal Aviation Administration Active General Aviation and Air Taxi Hours Flown (Federal Aviation Administration Forecasts, Fiscal Years 2014-2034); 1.55% average annual growth rate.

² Based on BST Market Share Analysis; 0.25% average annual growth rate.

³ Based on Federal Aviation Administration Office of Aviation Policy and Plans Terminal Area Forecast, January 2015; 0.00% average annual growth rate.

⁴ Compound Annual Growth Rate for years 2015 to 2034.

Figure 3-7: BST Total General Aviation Operations Forecast (2015-2034) - Low-Growth, Medium-Growth, and High-Growth Scenarios



Source: Airport Solutions Group.

The total based aircraft projected for BST over the planning period were then allocated among six general aircraft categories – single-engine piston, multi-engine piston, jet/turboprop, helicopter, military, 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 2014. 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 are the following:

<u>Aircraft Categories</u>	<u>2014</u>	<u>2034</u>
Single-engine piston aircraft	97.5 percent	92.0 percent
Multi-engine piston aircraft	0.0 percent	0.5 percent
Jet/Turboprop aircraft	0.5 percent	4.5 percent
Helicopter	2.0 percent	3.0 percent
Military	0.0 percent	0.0 percent
Other	<u>0.0 percent</u>	<u>0.0 percent</u>
	100 percent	100 percent

Based on projected national 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 2.0 percent over the 20-year forecast period. The projected trends in the United States 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 3-11**, **Table 3-12**, and **Table 3-13**.

Table 3-11: BST Based Aircraft Forecast By Type – High Growth Scenario¹

Aircraft Type	2015	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
Total Aircraft	17	18	20	22	23

Source: Airport Solutions Group.

¹ Based on FAA Active General Aviation and Air Taxi Hours Flown (Federal Aviation Administration Aerospace Forecasts, Fiscal Years 2014-2034); 1.55% average annual growth rate.

Table 3-12: BST Based Aircraft Forecast By Type – Medium Growth Scenario¹

Aircraft Type	2015	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
Total Aircraft	17	17	17	18	19

Source: Airport Solutions Group.

¹ Based on BST Market Share Analysis; 0.25% average annual growth rate.

Table 3-13: BST Based Aircraft Forecast By Type – Low Growth Scenario¹

Aircraft Type	2015	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
Total Aircraft	17	17	17	17	17

Source: Airport Solutions Group.

¹ Based on Federal Aviation Administration Office of Aviation Policy and Plans Terminal Area Forecast, January 2015; 0.00% average annual growth rate.

Given the opportunities in this business-friendly community and positive economic initiatives and expectations in the airport 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 jet/turboprop aircraft over the planning period. This is consistent with FAA projections for the share of jet/turboprop aircraft 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 jet/turboprop 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. Airport market area demographic trends indicate that the Airport's 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 to help account for the inherent uncertainty in the local, state, and national economies. As such, **Table 3-14**, **Table 3-15**, and **Table 3-16** below provide summaries of each scenario's operational and based aircraft results, including 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 subsequent chapters of this Airport Master Plan Update will explore the facility implications of accommodating the projected demand and design requirements.

Table 3-14: Summary of BST General Aviation Activity Forecasts – High Growth Scenario¹

	2015	2019	2024	2029	2034
Operations					
General Aviation	<u>10,139</u>	<u>10,717</u>	<u>11,488</u>	<u>12,316</u>	<u>13,208</u>
Single Engine	9,137	9,304	9,747	10,208	10,740
Multi-Engine	202	244	259	276	293
Turboprop	637	912	1,003	1,102	1,253
Jet	4	85	294	456	627
Helicopter	159	172	185	274	295
Military	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Miscellaneous Aircraft	0	0	0	0	0
Commercial Service	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Scheduled Airline	0	0	0	0	0
Total Operations	10,139	10,717	11,488	12,316	13,208
Local Operations	6,093	6,481	7,000	7,561	8,166
Itinerant Operations	4,046	4,236	4,488	4,755	5,042
Based Aircraft by Type					
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
Total Based Aircraft	17	18	20	22	23

Source: Airport Solutions Group.

¹ Based on Federal Aviation Administration Active General Aviation and Air Taxi Hours Flown (Federal Aviation Administration Aerospace Forecasts, Fiscal Years 2014-2034); 1.55% average annual growth rate.

Table 3-15: Summary of BST General Aviation Activity Forecasts – Medium Growth Scenario¹

	2015	2019	2024	2029	2034
Operations					
General Aviation	10,345	10,439	10,564	10,716	10,846
Single Engine	9,365	9,092	8,970	8,847	8,762
Multi-Engine	207	240	243	246	249
Turboprop	652	898	941	985	1,063
Jet	4	84	275	407	531
Helicopter	117	125	135	231	241
Military	0	0	0	0	0
Miscellaneous Aircraft	0	0	0	0	0
Commercial Service	0	0	0	0	0
Scheduled Airline	0	0	0	0	0
Total Operations	10,345	10,439	10,564	10,716	10,846
Local Operations	6,207	6,263	6,338	6,430	6,508
Itinerant Operations	4,138	4,176	4,226	4,286	4,338
Based Aircraft by Type					
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
Total Based Aircraft	17	17	17	18	19

Source: Airport Solutions Group.

¹ Based on BST Market Share Analysis; 0.25% average annual growth rate.

Table 3-16: Summary of BST General Aviation Activity Forecasts – Low Growth Scenario¹

	2015	2019	2024	2029	2034
Operations					
General Aviation	10,000	10,000	10,000	10,000	10,000
Single Engine	9,010	8,670	8,460	8,250	8,080
Multi-Engine	200	230	230	230	230
Turboprop	630	860	890	920	980
Jet	4	80	260	380	490
Helicopter	156	160	160	220	220
Military	0	0	0	0	0
Miscellaneous Aircraft	0	0	0	0	0
Commercial Service	0	0	0	0	0
Scheduled Airline	0	0	0	0	0
Total Operations	10,000	10,000	10,000	10,000	10,000
Local Operations	6,000	6,000	6,000	6,000	6,000
Itinerant Operations	4,000	4,000	4,000	4,000	4,000
Based Aircraft by Type					
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
Total Based Aircraft	17	17	17	17	17

Source: Airport Solutions Group.

¹ Based on Federal Aviation Administration Office of Aviation Policy and Plans Terminal Area Forecast, January 2015; 0.00% average annual growth rate.

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