

## SECTION B FORECASTS OF AVIATION ACTIVITY

Forecasts of future levels of aviation activity are the basis for effective decisions in airport planning. These projections are used to determine the need for new or expanded facilities. In general, forecasts should be realistic, based upon the latest available data, be supported by information in the study, and provide an adequate justification for airport planning and development. It is important to stress that forecasts do not drive development; to the contrary, development is triggered by actual measured demand.

Forecasts are prepared for short-, medium- and long-term periods and specify the existing and future critical aircraft. Short-term forecasts, for up to five years, are used to justify near-term development and support operational planning and environmental improvement programs. Intermediate-term forecasts (a 6- to 10-year time frame) are typically used in planning capital improvements and long-term forecasts (beyond 10 years) are helpful in general planning.

### FORECAST ELEMENTS

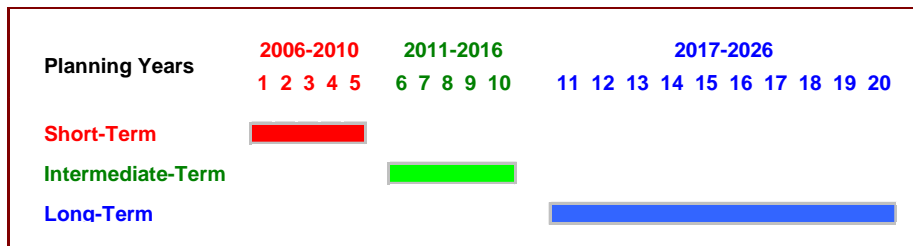
To establish the demands likely to be placed on airport facilities, forecasts should include all relevant aviation demand elements, including both the type and level of aviation activity expected at the airport over the planning period. The specific elements to be forecast will vary depending on the size and category of an airport and the objectives of the study. Forecasts for the following elements will be prepared for this study:

- Based Aircraft;
- Aircraft Fleet Mix;
- Operations; and
- Operations Fleet Mix

### BASE YEAR

The base year for this study is 2005. The short term period is through 2011; the intermediate-term is 2012 through 2016; the long term period is 2017 through 2026.

Belfast Municipal Airport - Layout Plan Update Planning Years



## **FORECAST ANALYSIS**

The primary source of aviation forecasts for this update is the Maine Aviation Systems Plan (MASP).<sup>17</sup> MeDOT completed the Phase I update of the MASP in 2001, which is a guide to assist the Office of Passenger Transportation (OPT) in allocating airport funds. Of particular interest to this update are the forecast methodologies and anticipated growth rates for BST, projected based aircraft and operations, airport reference code, the airport's functional level, and how the airport fits into the overall state plan.

This ALPU will use MASP data as a baseline and then adjust for current national trends, as well as local demographics and conditions. Base year data in the MASP will be adjusted to reflect the most recent information available.

### **MASP Airport Classifications**

The MASP classifies airports into four categories, or function levels, based on several factors, such as accessibility, population, facilities, etc. These function levels identify facilities and services that should ideally be available at airports within those four levels (I, II, III, and IV).

Level I airports accommodate commercial airline service and a full range of general aviation aircraft, while Level IV airports accommodate only single engine general aviation aircraft. Level II and III airports fall in between. BST is classified as a Level II facility, meaning it should be capable of accommodating all business and personal use single- and twin-engine general aviation aircraft, and some small corporate and business jet aircraft. Schedule commercial airline operations are not typically accommodated at Level II airports.

Level II airports should be capable of supporting:

- aircraft design group Category B aircraft (an ARC component)<sup>18</sup>,
- runways between 3,500 and 5,000 feet in length and 75 feet wide; and
- airside, landside, and service levels. Only landside needs will be addressed throughout the remaining sections of this ALPU.

In developing its forecasts, the MASP identified historic relationships between Maine aviation and U.S. aviation activity, along with actual demand trends experienced at each airport, with the state, region, and at a national level. Demand projections were then developed for both commercial and general aviation.

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<sup>17</sup> Based on the project scope of work.

<sup>18</sup> See *Airport Reference Code – Existing*, Page 8.

## MASP FORECASTS

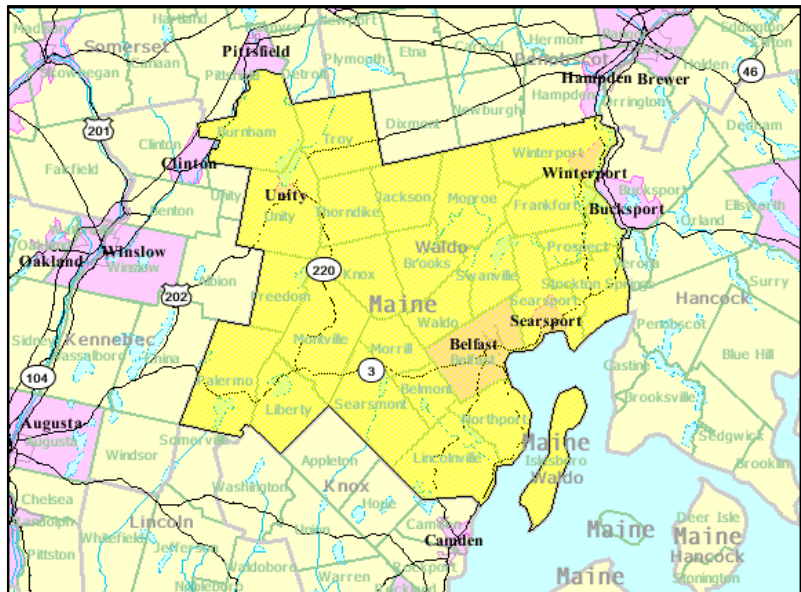
To summarize the findings, the systems plan forecasts a 2 percent average annual growth rate for based aircraft statewide. By application of the 2 percent growth rate, BST would have 33 aircraft at the end of the 20 year planning cycle (2025). The fleet-mix is forecasted to change in its composition as ultralight, sport aircraft, and jet aircraft production outpace growth in other components of the general aviation industry. The number of single-engine reciprocating and multiengine reciprocating aircraft is expected to decrease as a percentage of the whole, while jet aircraft increase, as a percentage. The report does not breakout turboprop aircraft in its analysis.

## SERVICE AREA DEMOGRAPHICS

The demographic characteristics of the service area in terms of population, income, and unemployment are reviewed to assist in the bottom-up analysis. These will be compared to trends at the national and state levels and then used to adjust the FAA's forecasts. For planning purposes demographics from Waldo County (Figure H) will be used as the service area for the airport. While some pilots and other users of the airport travel from outside Waldo County, the majority live and work within the region.

### Population

The size and composition of the service area's population - and its potential for growth - are basic elements in creating demand for air transportation services. The population in the service area grew at an average annual rate of 1.16 percent (16.3 percent overall) during the period 1990 to 2004, from 33,018 to 38,392. During the same period the state population increased at the rate of 0.27 percent annually (3.8 percent overall), and the U.S. population grew by 1.3 percent annually (16.9 percent overall).<sup>19</sup>



**Figure H – Airport Service Area (Waldo County)**

Source: U.S. Census Bureau

<sup>19</sup> U.S. Census (<http://www.census.gov>).

More important, Waldo County has a higher percentage of people in the age group 45 and older than the state and U.S., which normally equates to higher disposable personal income (see Figure I). The discretionary purchasing power available to residents over any period of time is a good indicator of consumers' financial ability to travel, including their ability to own and operate personal aircraft. High levels of average personal disposable income in the area served by the airport provide a strong basis for higher than average levels of consumer spending on air travel and other aviation products.

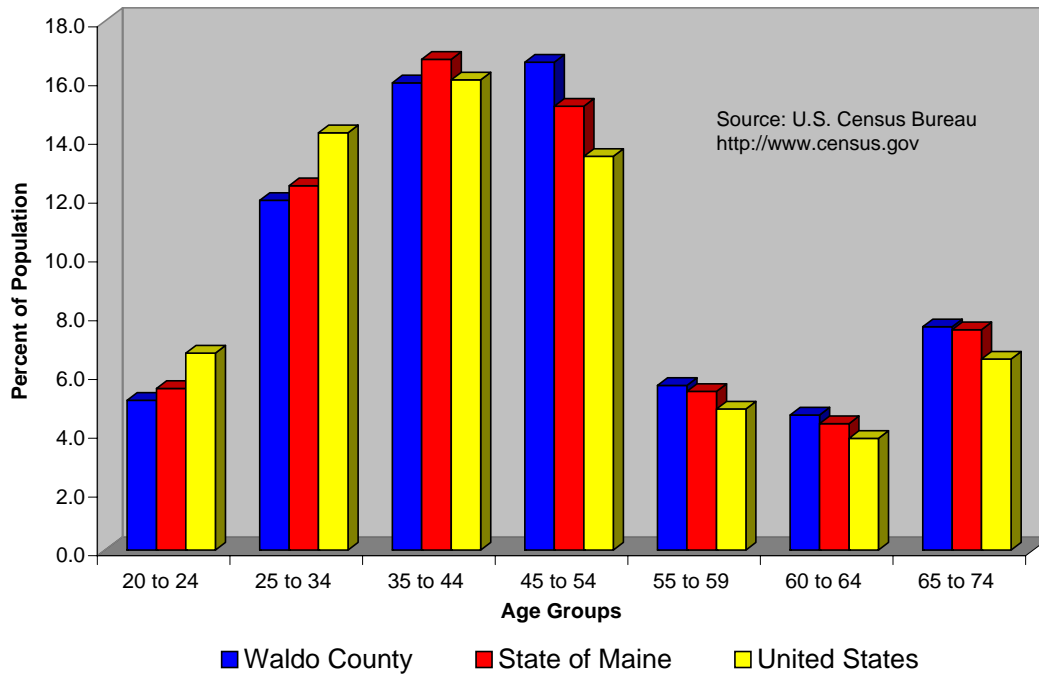
### **Income**

Income determines the ability of people to use the transportation network. In the case of general aviation, disposable income is the driving economic incentive that can be used to buy or rent aircraft and to pay for flight training, maintenance, insurance, and other related expenses. Median household income<sup>20</sup> in the service area was reviewed and compared with state and U.S. levels to determine the relationship. Our analysis shows that during the period 1989 to 2000, the median household income in Waldo County grew at a faster rate (46.8 percent) than at the state (33.7 percent); possibly a function of the age variation addressed in the previous section.

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<sup>20</sup> U.S. Census. Median household income is the amount which divides the income distribution into two equal groups, half having incomes above the median, half having incomes below the median. The medians for households, families, and unrelated individuals are based on all households, families, and unrelated individuals, respectively. The medians for people are based on people 15 years old and over with income.

**Figure I - Age Group Comparison**



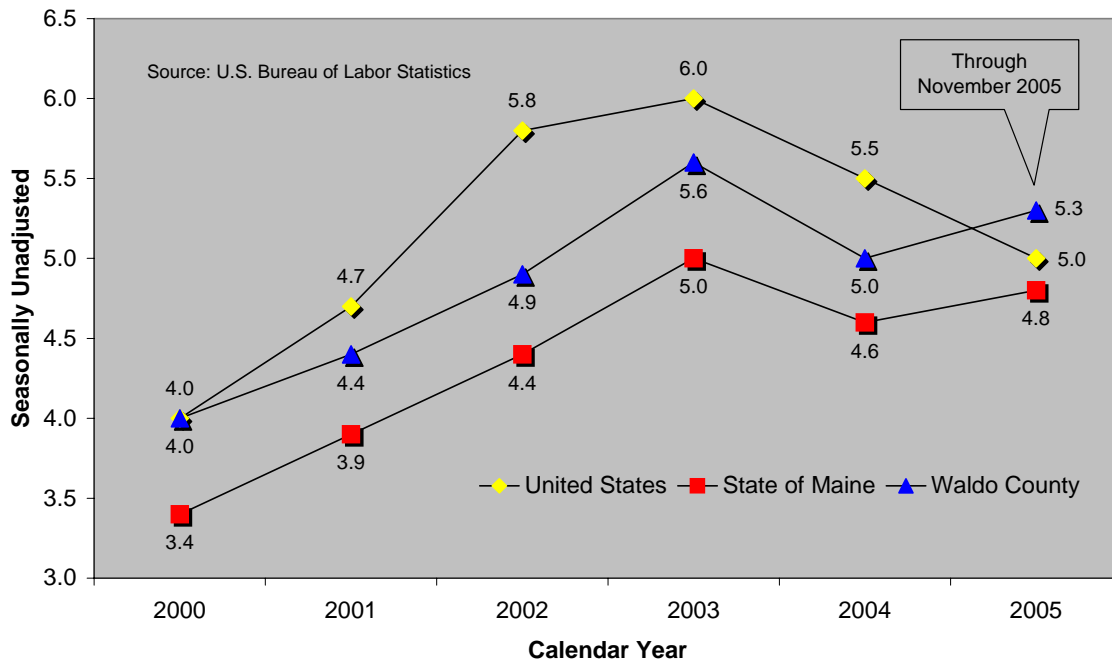
**Unemployment**

The last component reviewed was unemployment in the region as compared to national and state levels. Unemployment in the service area was reviewed and compared to state and U.S. levels during the period 2000 through November 2005. Data indicate that during this period the county has had a slightly higher level of unemployment than the state, but lower than the nation with the exception of 2005.<sup>21, 22</sup> See Figure J.

<sup>21</sup> Bureau of Labor Statistics (<http://www.bls.gov>).

<sup>22</sup> Maine Department of Labor (<http://www.state.me.us/labor/unemployment>).

**Figure J - Employment Rate**



**Demographic Summary**

The demographic analysis indicates a very strong service area in terms of potential general aviation growth in the state of Maine and the United States. Population growth since 1990 has outpaced state levels by 6.5 percentage points, and kept pace with national levels. Median household income is slightly higher than the average state income levels, but one percent less than the federal level. The unemployment rate, in this highly seasonal tourist region is slightly higher than the state rate, but historically lower than national unemployment rates.

**AVIATION FORECASTS FOR BELFAST**

National trends indicate general aviation will grow at about 2 to 3 percent per year, while MSASP forecasts indicated a 2 percent annual growth rate statewide, but local demographics suggest the service area could exceed federal and state forecasts by a wide-margin. The city of Belfast is a progressive and influential community with strong business ties, and a higher median age group, particularly those with more disposable personal income. The local government is proactive, one that aggressively promotes the airport and adjacent business park, and is keenly aware of the potential both bring to the community. The airport has undergone a complete runway construction project, relocated the FBO, is constructing new fueling facilities, and is ready to approve new hangar construction as soon

as this update is complete.<sup>23</sup> This upbeat approach to aviation is refreshing and should help stimulate aviation growth in this region, adding a measurable difference to state and national growth rates.

As discussed earlier, the airport has a hangar waiting list of 10 to 12 aircraft owners waiting to relocate to BST. Assuming they follow through, the airport can expect total based aircraft to increase from 23 to 33 or more within the next one to two years. This equates to a 50 percent growth rate in aircraft and probably a slightly lower rate of growth in operations.

For planning purposes a 50 percent increase in based aircraft and 20 percent increase in operations will be used for the first two years, followed by a more modest 6 percent growth rate for based aircraft and 4 percent operations during the remaining short and intermediate terms. This rate of growth for based aircraft will slow to 5 percent in the long-term as the airport maximizes its available infrastructure, and operations will slow to 3 percent as fuel prices continue to impact general aviation. However, this region of Maine has unlimited potential. If government and business remain strong proponents of the airport, and the population continues to grow in the 45-60 year age group, the airport can achieve unprecedented growth during and beyond the 20-year planning period.

### **Based Aircraft – Forecast**

Table 6 shows the projected growth rate for the short-, intermediate-, and long-terms. The largest growth will be in the “sport aircraft” category, which because of lower initial acquisition and operating costs, will outpace the more traditional single-engine reciprocating aircraft. Multiengine reciprocating aircraft will be replaced by turboprop and micro jets, such as the Eclipse 500.

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<sup>23</sup> See *Based Aircraft*, Page 14.

**Table 6  
Forecast Based Aircraft (Fleet-Mix)**

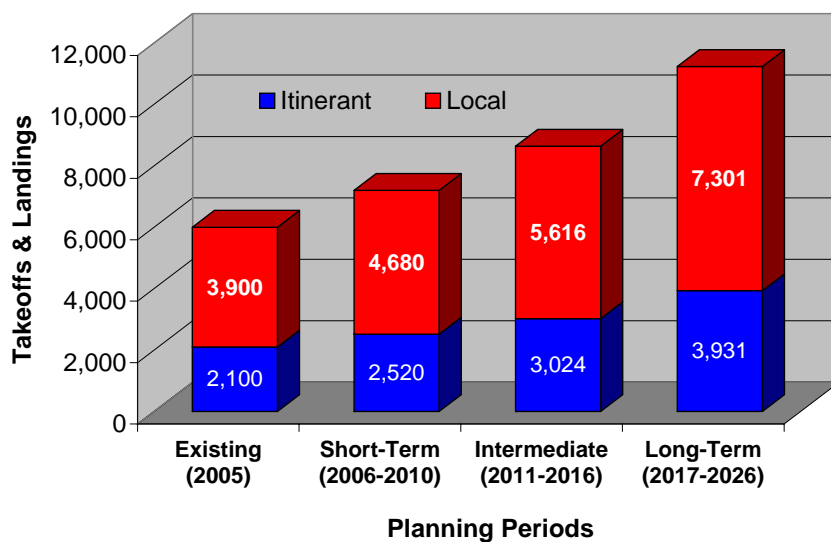
Category	Existing		Short-Term		Intermediate		Long-Term	
	Count	Mix	Count	Mix	Count	Mix	Count	Mix
Ultralight	0	0%	4	10%	5	10%	8	10%
Sport Aircraft	0	0%	10	25%	19	35%	29	35%
Single-Engine Reciprocating	22	96%	32	45%	16	29%	22	27%
Multiengine Reciprocating	0	0%	0	0%	0	0%	0	0%
Turboprop	0	0%	4	10%	5	10%	8	10%
Microjet	0	0%	1	2%	4	8%	8	10%
Helicopter	1	4%	3	8%	4	8%	7	8%
<b>Total</b>	<b>23</b>	<b>100%</b>	<b>42</b>	<b>100%</b>	<b>54</b>	<b>100%</b>	<b>82</b>	<b>100%</b>

Source: Dufresne-Henry, Inc., analysis.

**Operations – Forecast**

Aircraft operations will grow at the same annual rate as based aircraft provided long-term fuel prices increase at a rate consistent with inflation and the consumer price index. In addition, the current local/itinerant ratio of 65/35 percent will remain unchanged. Figure K and Table 7 show the projected number of operations for the three planning periods.

**Figure K - Operations Forecast**



**Table 7**  
**Forecasted Operations (Fleet-Mix)**

Category	Existing		Short-Term		Intermediate		Long-Term		
	Count	Mix	Count	Mix	Count	Mix	Count	Mix	
Itinerant	Ultralight	0	0.0%	126	5.0%	302	10.0%	590	15.0%
	Sport Aircraft	0	0.0%	252	10.0%	454	15.0%	786	20.0%
	Single-Engine Reciprocating	1,638	78.0%	1,310	52.0%	1,270	42.0%	1,337	34.0%
	Multiengine Reciprocating	105	5.0%	76	3.0%	60	2.0%	0	0.0%
	Turboprop	315	15.0%	504	20.0%	605	20.0%	786	20.0%
	Microjet	0	0.0%	126	5.0%	181	6.0%	236	6.0%
	Helicopter	42	2.0%	126	5.0%	151	5.0%	197	5.0%
	<b>Total Itinerant</b>	<b>2,100</b>		<b>2,520</b>		<b>3,024</b>		<b>3,931</b>	
Local	Ultralight	0	0.0%	468	10.0%	562	10.0%	730	10.0%
	Sport Aircraft	0	0.0%	936	20.0%	1,123	20.0%	1,460	20.0%
	Single-Engine Reciprocating	3,705	95.0%	2,574	55.0%	2,752	49.0%	3,431	47.0%
	Multiengine Reciprocating	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	Turboprop	0	0.0%	234	5.0%	281	5.0%	365	5.0%
	Microjet	0	0.0%	94	2.0%	449	8.0%	730	10.0%
	Helicopter	195	5.0%	374	8.0%	449	8.0%	584	8.0%
	<b>Total Local</b>	<b>3,900</b>		<b>4,680</b>		<b>5,616</b>		<b>7,301</b>	
Total Operations	Ultralight	0	0.0%	594	8.3%	864	10.0%	1,320	11.8%
	Sport Aircraft	0	0.0%	1,188	16.5%	1,577	18.3%	2,246	20.0%
	Single-Engine Reciprocating	5,343	89.1%	3,884	54.0%	4,022	46.6%	4,768	42.5%
	Multiengine Reciprocating	105	1.8%	76	1.1%	60	0.7%	0	0.0%
	Turboprop	315	5.3%	738	10.3%	886	10.3%	1,151	10.3%
	Microjet	0	0.0%	220	3.1%	631	7.3%	966	8.6%
	Helicopter	237	4.0%	500	7.0%	600	7.0%	781	7.0%
<b>Total</b>	<b>6,000</b>		<b>7,200</b>		<b>8,640</b>		<b>11,232</b>		

Source: Dufresne-Henry, Inc., analysis.

### Design Aircraft – Forecast

The existing critical aircraft is the Beech 90. With continued growth of the neighboring industrial park and Coastal Maine, the design aircraft will probably change to the Beech 350 or similar in the next 5-10 years. The 350 has a slightly longer wingspan and faster approach speed, putting it in the ARC B-II category

### Airport Reference Code – Forecast

The existing ARC is B-I, but will increase as demand for short-haul on-demand air taxi service increases for both business and pleasure purposes. In addition, continued development of the Belfast Business Park will result in increased demand for corporate business class aircraft. The airport can expect the ARC to change to B-II within the next 5-10 years as the design aircraft increases in size and speed from the existing Beech 90 to the Beech 350, or similar.

### Forecast Summary

Table 8 provides a forecast summary of based aircraft, operations, design aircraft, and the ARC.

**Table 8**  
**Forecast Summary**

Component	Existing	Short Term	Intermediate Term	Long Term
Based Aircraft	23	42	54	82
Local Operations	3,900	4,680	5,616	7,301
Itinerant Operations	2,100	2,520	3,024	3,931
Total Operations	6,000	7,200	8,640	11,232
Design Aircraft	Beech 90	Beech 90	Beech 350	Beech 350
Airport Reference Code	B-I	B-I	B-II	B-II

Source: Dufresne-Henry, Inc., analysis