



## SECTION 3

# AVIATION ACTIVITY FORECASTS

### 3.1 INTRODUCTION

Projecting future aviation demand is a critical element in the overall master planning process. The activity forecasts developed in this section are used in subsequent tasks to analyze the airport's ability to accommodate future activity and to determine the type, size, and timing of future airside and landside facility developments.

This section discusses the methodologies used to project aviation demand at Nampa Municipal Airport (S67) and the findings. It must be recognized that there are always short-term fluctuations in an airport's activity due to a variety of factors that cannot be anticipated. The forecasts developed as a part of this Master Plan Update provide a meaningful framework to guide the analysis of future, long-range airport development needs and alternatives.

The projections of aviation demand developed for Nampa Municipal are documented in the following sections:

- National Aviation Trends
- Regional Demographics
- FAA Aerospace Forecasts
- Nampa Municipal Historic Aviation Activity
- Projections of Aviation Demand
  - Based Aircraft
  - Aircraft Operations

This forecast analysis includes methodologies that consider historical aviation trends at Nampa Municipal and throughout the nation. Historical data was collected from FAA Terminal Area Forecast (TAF) and airport records. To provide a more accurate estimate of annual operational activity, a 2008 operational estimate was developed through a combination of visual surveys of operations on specific days and the use of pneumatic tube traffic count data collected over a period of three weeks at the Airport. A more detailed description of this process is provided in a subsequent section of this chapter.

Demographic data, including population, employment and per capita personal income, for Ada and Canyon counties was used to track local trends and conditions that can impact general aviation demand levels. Projections of aviation activity for the Airport were prepared for the near-term (2013), mid-term (2018), and long-term (2028) timeframes. These projections are generally unconstrained and assume the Airport will be able to develop the various facilities necessary to accommodate based and transient aircraft and future operations.

### 3.2 NATIONAL AVIATION TRENDS

The aviation industry and general aviation activity have experienced significant changes over the last 20 years. At the national level, fluctuating trends in general aviation usage and economic upturns/downturns resulting from the nation's business cycles have all impacted general aviation



demand. At the local level, the positive demographic and economic performance experienced in Ada and Canyon counties has impacted general aviation demand in the region. This section examines general aviation trends and the numerous factors that have influenced those trends in the U.S.

Recent trends, both national and local, are important considerations in the development of projections of aviation demand for Nampa Municipal. National trends can provide insight into the potential future of aviation activity and anticipated facility needs. Data sources that were examined and used to support this analysis of national general aviation trends included the following:

- Federal Aviation Administration, FAA Aerospace Forecasts, Fiscal Years 2008-2025
- National Business Aircraft Association (NBAA), NBAA Business Aviation Fact Book, 2004
- General Aviation Manufacturers Association (GAMA), General Aviation Statistical Databook
- Honeywell Corporation, 2007 Business Aviation Outlook

Data from these sources regarding historic and anticipated trends in general aviation are summarized in the following sections of this report:

- General Aviation Overview
- General Aviation Industry
- Business Use of General Aviation

Historic and anticipated trends related to general aviation are important considerations in

developing forecasts of general aviation demand for Nampa Municipal.

### 3.2.1 General Aviation Overview

General aviation aircraft are defined as all aircraft not flown by commercial airlines or the military. General aviation activity is divided into six use categories, as defined by the FAA. There are over 18,300 public and private airports located throughout the United States of which more than 3,300 are included in the National Airport System, indicating their eligibility for federal funding assistance. Commercial service airports (those that accommodate scheduled airline service) represent a relatively small portion (538, or roughly 16%) of the airports in the National Airport System. General aviation airports, including designated relievers, comprise more than 2,800 facilities within the National Airport System. More than 15,000 additional airports, both private and public use, supplement those airports that are included in the National Airport System.

### 3.2.2 General Aviation Industry

A pronounced decline in the general aviation industry began in 1978, and lasted into the mid-1990s. This decline resulted in the loss of over 100,000 manufacturing jobs and a drop in aircraft production from about 18,000 aircraft annually to only 928 aircraft in 1994. Contributing to the decline in general aviation during this period was the increasing number of liability claims against aircraft manufacturers, the loss of Veterans Benefits that covered many costs associated with student pilot training, and the recessionary economy. Product liability lawsuits arising from aircraft accidents resulted in dramatic increases in aircraft manufacturing costs.



Enactment of the General Aviation Revitalization Act (GARA) of 1994 provided significant relief to the aviation industry. This Act established an 18-year Statute of Repose on liability related to the manufacture of all general aviation aircraft and their components where no time limit was previously established. GARA spurred manufacturers including Cessna and Piper Aircraft to resume production of single-engine piston aircraft. Some positive impacts the Act has had on the general aviation industry are reflected in recent national statistics. Since 1994, statistics indicate an increase in general aviation activity, an increase in the active general aviation aircraft fleet, and an increase in shipments of fixed-wing general aviation aircraft.

Most recently, however, the terrorist attacks of September 11, 2001 and the recessionary national economy have had a dampening impact on these positive general aviation industry trends. Significant restrictions were placed on general aviation flying following September 11<sup>th</sup>, which resulted in severe limitations being placed on general aviation activity in many areas of the country. With the exception of the Washington, D.C. area, most of these restrictions have now been lifted. Business and corporate general aviation have experienced some positive gains resulting from additional use of general aviation aircraft for travel tied in part to new security measures implemented at commercial service airports and the increased personal travel times that have resulted.

### 3.2.3 Business Use of General Aviation

Business aviation is one of the fastest growing facets of general aviation. Companies and individuals use aircraft as a tool to improve their

businesses efficiency and productivity. The terms “business” and “corporate” aircraft are often used interchangeably, as they both refer to aircraft used to support a business enterprise. FAA defines business use as “any use of an aircraft (not for compensation or hire) by an individual for transportation required by the business in which the individual is engaged.” The FAA estimates that business aircraft conduct slightly more than 11 percent of all aviation activity. The FAA defines corporate transportation as “any use of an aircraft by a corporation, company or other organization (not for compensation or hire) for the purposes of transporting its employees and/or property, and employing professional pilots for the operation of the aircraft.” An additional 12 percent of the nation’s general aviation activity is considered corporate. Regardless of the terminology used, the business component of general aviation use is one that has experienced significant recent growth.

Increased personnel productivity is one of the most important benefits of using business aircraft. Companies flying general aviation aircraft for business have control of their travel. Itineraries can be changed as needed, and the aircraft can fly into destinations not served by scheduled airlines. Business aircraft usage provides the following:

- Employee time savings
- Increased en route productivity
- Minimized time away from home
- Enhanced industrial security
- Management control over scheduling

Many of the nation's employers who use general aviation are members of the National Business Aircraft Association (NBAA). The NBAA’s



Business Aviation Fact Book 2004 indicates that approximately 75 percent of all Fortune 500 businesses operate general aviation aircraft and 92 of the Fortune 100 companies operate general aviation aircraft. 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. General aviation aircraft use allows employers to transport personnel and cargo efficiently. Businesses often use general aviation aircraft to link multiple office locations and reach existing and potential customers. Business aircraft use by smaller companies has escalated as various chartering, leasing, time-sharing, interchange agreements, partnerships, and management contracts have emerged.

Other new, growing segments of the business aircraft fleet mix include business liners and very light jets (VLJs). 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. Very light jets are a relatively new category of aircraft that includes the new Cessna Mustang, the Honda HondaJet, and the Piper PiperJet (among others). These are small jets, seating less than 10 passengers, and that cost substantially less than typical business jet aircraft. They have been labeled as “personal jets”. VLJ aircraft represent a significant departure from the cost of previously available jet aircraft, ranging in price from approximately \$1 million to \$3.5 million.

Business aviation is projected to experience additional growth in the future. The Honeywell Business Aviation Outlook projects that more

than 14,000 new business aircraft valued at over \$233 billion will be delivered between 2007 and 2017, excluding business liners and very light jets.

The anticipated changes in the nation’s active general aviation fleet, including growth in the number of active jet aircraft, is likely to impact aviation activity at Nampa Municipal over the study period of the Master Plan Update. Recent general aviation trends and projected changes to the nation’s active general aviation fleet will be reflected in the projections of aviation demand developed for the Airport.

### 3.3 REGIONAL DEMOGRAPHICS

For an airport master plan, socioeconomic characteristics are collected and examined to derive an understanding of the dynamics of growth within the geographic area served by the Airport. This information is then used in forecasting aviation demand over the next 20 years. The types of socioeconomic data that are presented include population, employment, and personal income.

The area served by an airport, from within which most of its users come, is generally referred to as the airport’s “Service Area”. The Service Area for Nampa Municipal is based on where aircraft owners live in the area and drive times to nearby airports. For the purposes of this plan, the primary airport service area for Nampa Municipal is limited to Ada and Canyon counties.

This analysis examined the historical trends and future projections of the region’s population, employment, and personal income based on several reliable data sources. Historical and projected future population data was obtained from the U.S. Census, the U.S. Department of



Commerce, the Compass Community Planning Association of Southwest Idaho, and Woods and Poole Economics.

**Table 3.1** summarizes population growth trends experienced between 1987 and 2008. These trends are compared to population trends in Idaho.

Ada and Canyon counties, as well as the state of Idaho as a whole, have all seen steady increases in population. The population growth in the Service Area has more than doubled during the study period, and the compounded annual growth rate (CAGR) of 3.6 percent is significantly higher than the state average of 2.1 percent.

There are a number of other demographic factors that impact, to varying degrees, the demand for general aviation in any particular region. In addition to population trends, regional economic trends can also significantly impact aviation demand. Regional economic trends are summarized in this analysis through an examination of employment and earnings data. **Table 3.2** presents historic employment and earnings data for the Service Area along with the CAGR for the state of Idaho.

Data presented in Table 3.2 indicates that in the Service Area for Nampa Municipal, compound growth in employment averaged 4.0 percent annually from 1987 to 2008. This growth rate is once again higher than the state average of 3.4 percent.

Statistical analysis typically indicates that personal income is one of the most important demographic factors impacting aviation demand, illustrating an underlying assumption that as income (and consequently discretionary income)

grows, regional residents have more to spend on all goods and services, including aviation-related goods and services. The per capita personal income in the Service Area is estimated to have grown at an average annual compound growth rate of 4.5 percent between 1987 and 2008. The state of Idaho as a whole has experienced tremendous growth during this time period, and Ada and Canyon counties have followed that trend.

Projections of population, employment, and income developed for the Service Area indicate that the region is expected to experience continued high levels of growth, as shown in **Table 3.3**. Population is expected to increase steadily throughout the forecast period, but at a more conservative pace, as the area continues to attract residents with its high quality of life offerings.

Regional employment is expected to continue to grow steadily, but at a slightly slower rate than experienced since 1987. The growth in per capita personal income is expected to continue to grow at a strong pace of over 4 percent annual growth throughout the forecast period.

The projected growth rates of these demographic factors reflect strong, steady growth over the projection period. These factors will have an important influence on the projection of aviation activity at Nampa Municipal.



<b>TABLE 3.1</b>					
<b>POPULATION STATISTICS</b>					
<b>Nampa Municipal Airport</b>					
<b>Area</b>	<b>1987</b>	<b>1997</b>	<b>2007</b>	<b>2008</b>	<b>Annual Growth (1987-2008)</b>
Ada County	192,296	274,325	395,974	402,550	3.6%
Canyon County	87,587	118,124	184,251	187,170	3.7%
Service Area Total	279,883	392,449	580,225	589,720	3.6%
Idaho	984,997	1,228,520	1,493,720	1,517,250	2.1%

*Source: U.S. Census Data, Woods and Poole Economics*

<b>TABLE 3.2</b>		
<b>EMPLOYMENT AND EARNINGS STATISTICS (ADA AND CANYON COUNTIES)</b>		
<b>Nampa Municipal Airport</b>		
<b>Year</b>	<b>Employment</b>	<b>Per Capita Personal Income</b>
1987	155,760	13,409
1997	256,726	22,423
2007	349,420	30,232
2008	357,910	30,488
<b>Service Area CAGR</b>		
1987-2008	4.0%	4.5%
<b>Idaho CAGR</b>		
1987-2008	3.4%	4.7%

*Source: U.S. Department of Commerce, Woods and Poole Economics*



	Year	Population	Employment	Per Capita Personal Income
Actual	2008	553,320	357,910	\$34,081
Projected	2010	572,760	374,870	\$36,739
	2012	622,570	417,280	\$44,753
	2020	673,240	459,600	\$55,358
	2025	725,260	501,820	\$69,488
	2030	779,770	543,860	\$87,755
CAGR		1.6%	1.9%	4.4%

Source: U.S. Census Data, U.S. Department of Commerce

### 3.4 FAA AEROSPACE FORECASTS

On an annual basis, the FAA publishes forecasts that summarize anticipated trends in most components of civil aviation activity. Each published forecast revisits previous activity forecasts and updates them after examining the previous year’s trends in aviation and economic activity. Many factors are considered in the FAA’s development of forecasts, some of the most important of which are U.S. and international economic growth and anticipated trends in fuel costs. FAA forecasts generally provide one of the most detailed analyses of historic and forecasted aviation trends and provide the general framework for examining future levels of aviation activity for the nation as well as in specific states and regions.

Examples of measures of national general aviation activity that are monitored and forecasted by the FAA on an annual basis in the FAA Aerospace Forecasts include active pilots, active aircraft fleet, and active hours flown. Historic and projected activity in each of these categories is examined in

the following sections. Data presented is based on the most recent available data, contained in the FAA Aerospace Forecast, Fiscal Years 2008-2025.

#### 3.4.1 Active Pilots

Active pilots are defined by the FAA as those persons with a pilot certificate and a valid medical certificate. **Table 3.4** summarizes historic and projected U.S. active pilots by certification type. As shown in Table 3.4, the FAA projects small but steady growth in the active pilot population through 2025. Total active pilots are projected to increase from approximately 590,349 in 2007 to 663,130 in 2025, representing a CAGR of approximately 0.7 percent.

#### 3.4.2 Active Aircraft Fleet

The FAA annually tracks the number of active general aviation aircraft in the U.S. fleet. Active aircraft are those aircraft currently registered and flying at least one hour during the year. **Table 3.5** summarizes recent active aircraft trends as well as FAA projections of future aircraft activity type.



**TABLE 3.4**  
**HISTORIC AND PROJECTED U.S. ACTIVE PILOTS BY TYPE OF CERTIFICATE**

Certificate Type	2002	2007	2025	CAGR 2002-2007	CAGR 2007-2025
Students	85,991	84,339	100,200	-0.4%	1.0%
Recreational	317	239	240	-5.5%	0.02%
Sport Pilot	NA	2,031	20,600	NA	13.8%
Private	245,230	211,096	220,550	-3.0%	0.2%
Commercial	125,920	115,127	126,150	-1.8%	0.5%
Airline Transport	144,708	143,953	155,200	-0.1%	0.4%
Rotorcraft only	7,770	12,290	17,830	9.6%	2.1%
Glider only	21,826	21,274	22,360	-0.5%	0.3%
<b>Total</b>	<b>609,936</b>	<b>590,349</b>	<b>663,130</b>	<b>-0.7%</b>	<b>0.7%</b>
Instrument Rated	317,389	309,865	346,200	-0.5%	0.6%

Source: FAA Aerospace Forecasts, Fiscal Years 2008-2025

**TABLE 3.5**  
**HISTORIC AND PROJECTED U.S. REGISTERED AIRCRAFT**  
**GENERAL AVIATION FLEET MIX**

Aircraft Type	2002	2007	2025	CAGR 2002-2007	CAGR 2007-2025
Single-engine Piston	143,503	144,580	157,400	0.2%	0.5%
Multi-engine Piston	17,483	18,555	15,650	1.2%	-0.9%
Turboprop	6,841	8,190	10,820	3.7%	1.6%
Jet	8,355	10,997	29,515	5.7%	5.6%
Rotorcraft	6,648	9,685	16,855	7.8%	3.1%
Experimental	21,936	23,920	35,200	1.8%	2.2%
Sport Aircraft	NA	2,700	14,700	NA	9.9%
Other	6,478	6,380	6,360	-0.3%	-0.02%
<b>Total</b>	<b>211,244</b>	<b>225,007</b>	<b>286,500</b>	<b>1.3%</b>	<b>1.4%</b>

Source: FAA Aerospace Forecasts, Fiscal Years 2008-2025



General aviation trended upward between 2002 and 2007. Total active aircraft increased 1.3 percent annually over the last five years, with rotorcraft and jet aircraft leading the increase.

The growth of jets is an important trend. This trend illustrates a movement in the general aviation community toward higher-performing, more demanding aircraft. Growth in jet aircraft is expected to significantly outpace growth in all other segments of the general aviation aircraft fleet through the planning period.

The other aircraft category expected to experience large growth is Sport Aircraft. This category of aircraft, created by the FAA in September 2004 through its rulemaking process, targets the recreational segment of aviation, including a sizeable portion of the ultralight community. A major part of the growth of this aircraft category is expected to come from already-existing – but not registered – recreational aircraft that register under the new rule. With sport aircraft, the CAGR of the general aviation fleet is 1.4 percent annually.

### 3.4.3 Active Hours Flown

Hours flown is another statistic used by the FAA to measure and project general aviation activity. Hours flown is a valuable measure because it captures a number of activity-related data including aircraft utilization, frequency of use, and duration of use. Hours flown in general aviation aircraft declined from 1999 to 2004 by an annual average of 2.7 percent. Part of this decline is a result of the grounding of general aviation following September 11<sup>th</sup> and the follow-on restrictions imposed by the federal government.

A significant increase in flight hours is expected during the projection period. As presented by the FAA and depicted in **Table 3.6**, the compound annual growth rate of hours flown over the projection period is approximately 3 percent. Compared to the projected average annual growth rate of the general aviation active fleet, at approximately 1.4 percent, the projected increase in hours flown represents anticipated increases in aircraft utilization. Hours flown by general aviation aircraft are estimated to reach approximately 47 million by 2025, compared to almost 28 million in 2007. Part of this activity increase is expected from the introduction of very light jets, the first of which was certified by the FAA in 2006. These jets are expected to see service as air taxis with fractional ownership companies, where high utilization is a key to success.

### 3.4.4 Summary of General Aviation Trends

The cyclical nature of general aviation activity is illustrated in the historic data presented in this analysis. While general aviation activity experienced rebounded growth during the mid and late 1990s, the terrorist attacks of 2001 and the recent economic downturn caused by record-high fuel prices has dampened activity over the last several years. FAA projections of general aviation activity, including active pilots, active aircraft, and hours flown, all show varied growth through the forecast horizon of 2025. Following stalled growth and some declines during 2001 and 2002, most components of general aviation are projected to rebound and soon surpass previous activity levels. An important national trend that has the potential to impact general aviation activity at Nampa Municipal is the growing proportion of smaller jet aircraft in the active



general aviation fleet. The ability of Nampa Municipal to accommodate increasing activity by general aviation jet aircraft will be an important consideration in the Master Plan Update.

### 3.5 HISTORIC AVIATION ACTIVITY

Historic based aircraft and operations data for Nampa Municipal provides the baseline from which future activity at the Airport can be projected. While historic trends are not always reflective of future periods, historic data does provide insight into how local, regional, and national demographic and aviation-related trends may be tied to the Airport.

Historic activity data for Nampa Municipal has been compiled from several sources including airport and county records. Some activity data from years for which no actual or estimated data was available have been interpolated by the consultant.

For the purpose of the following analysis, a based aircraft is defined as an aircraft that is permanently stored at an airport. An aircraft operation represents either a landing or takeoff conducted by an aircraft. A takeoff and a landing, for example, would count as two operations.

Overall, based aircraft at Nampa Municipal have increased from 1998 to 2008, as shown in **Table 3.7**.

The numbers of single-engine piston aircraft have increased steadily through 2008, with a CAGR of 4.8 percent. Multi-engine piston aircraft have increased from nine to 13 at Nampa Municipal. Numerous ultralight and glider aircraft provide for the based aircraft designated as “Other”. The

helicopter count has gone from zero in 1998 to seven in 2008.

Historic operations data for Nampa Municipal includes operations conducted by both based aircraft as well as those conducted by itinerant aircraft stored at other airports arriving at Nampa Municipal for a variety of reasons including business and recreation. Historic aircraft operations for Nampa Municipal as available from the FAA’s Terminal Area Forecast (TAF) and 5010 forms are summarized in **Table 3.8**.

It is recognized that the operational data recorded in the FAA’s TAF and 5010 forms are estimates from different sources since there is no Airport Traffic Control Tower located on the Airport. No other operational surveys are known to have been conducted at the Airport prior to this study.

As noted previously, to provide a more accurate estimate of annual operations for Nampa Municipal Airport, a combination of visual surveys of operations on specific days and the use of pneumatic tube traffic count data collected over a period of three weeks were conducted. This operational data was extrapolated using a bottom up methodology to represent an entire estimated year 2008 as summarized in **Appendix B**. Using this methodology, it is estimated that 72,000 operations will occur at Nampa Municipal in 2008. This operational estimate will be used in subsequent forecasting efforts for the Master Plan Update.



**TABLE 3.6**  
**ACTIVE GENERAL AVIATION AND AIR TAXI HOURS FLOWN (IN THOUSANDS)**

Aircraft Type	2002	2007	2025	CAGR 2002-2007	CAGR 2007-2025
Single-engine Piston	16,325	13,501	16,233	-3.7%	1.0%
Multi-engine Piston	2,566	2,527	2,035	-0.3%	-1.2%
Turboprop	1,850	2,187	2,698	3.4%	1.2%
Jet	2,745	4,405	16,743	9.9%	7.7%
Rotorcraft	1,875	3,629	6,295	14.1%	3.1%
Experimental	1,345	1,258	1,965	-1.3%	2.5%
Sport Aircraft	NA	143	1,108	NA	12.1%
Other	333	215	235	-8.4%	0.5%
<b>Total</b>	<b>27,039</b>	<b>27,865</b>	<b>47,312</b>	<b>0.6%</b>	<b>3.0%</b>

Source: FAA Aerospace Forecasts, Fiscal Years 2008-2025

**TABLE 3.7**  
**HISTORIC BASED AIRCRAFT**  
**Nampa Municipal Airport**

Year	Single-engine	Multi-engine	Jet	Helicopter	Other	Total Based Aircraft
1998	180	9	0	0	18	207
2000	220	3	0	0	27	250
2008	288	13	0	7	22	330
<b>CAGR (1998-2008)</b>	<b>4.8%</b>	<b>3.8%</b>	<b>0.0%</b>	<b>NA</b>	<b>2.0%</b>	<b>4.8%</b>

Sources: FAA Terminal Area Forecast and FAA 5010

Nampa Municipal Airport Master Plan Update, 2001



**TABLE 3.8  
HISTORIC OPERATIONS<sup>1</sup>  
Nampa Municipal Airport**

Year	<u>Itinerant Operations</u>			<u>Local Operations</u>	Total Operations
	Air Taxi	General Aviation	Military	General Aviation	
1998	1600	54,000	100	(unknown)	55,700
1999	1623	57,235	100	25,647	84,605
2000	0	43,415	100	40,180	83,695
2001	0	44,570	100	41,038	85,708
2002	0	47,264	100	42,108	89,472
2003	0	49,959	100	43,179	93,238
2004	0	52,569	100	44,235	96,904
2005	0	55,260	100	45,306	100,666
2006	0	57,272	100	46,221	103,593
2007	0	59,358	100	47,155	106,613
2008 <sup>1</sup>	0	61,519	100	48,107	109,726

Note: <sup>1</sup> Numbers based on FAA TAF which is a projection and differs from operational estimates at the airport of approximately 72,000 operations in 2008 based on an operational survey.

Source: FAA Terminal Area Forecast and FAA 5010



### 3.6 PROJECTION OF AVIATION DEMAND

Projections of aviation demand at Nampa Municipal Airport for the 20-year planning period are presented in the following sections:

- Based Aircraft Projections
- Aircraft Operations Projections

Various methodologies were examined and used to develop these projections. The results of these forecasting methodologies are compared and a preferred projection is presented for use in the Master Plan Update.

#### 3.6.1 Based Aircraft Projections

Based aircraft are those aircraft that are permanently stored at an airport. Estimating the number and types of aircraft expected to be based at Nampa Municipal over the 20-year study period impacts 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 at the facility. Based aircraft at the Airport were projected using several different methodologies. Each methodology is summarized in the following subsections and the results are presented. These results are then compared and a preferred based aircraft projection for the Airport is selected. The preferred based aircraft projection for Nampa Municipal is carried forward in the master planning process and is used to examine future airport facility needs.

#### 3.6.2 Population Growth Methodology

Changes in area population are often a key factor that can affect aviation demand in a study area. In

many instances there tends to be a direct correlation between an area's population and number of based aircraft in that area. A based aircraft projection was developed for Nampa Municipal that reflects the anticipated steady increase in population for the airport's general market area.

Population within the Service Area is expected to increase at a rate of 1.6 percent annually. This rate of growth was applied to the number of based aircraft currently at Nampa Municipal. The results of the population methodology are summarized in **Table 3.9**.

The results of this methodology indicate that as population in the Service Area increases during the forecast period, total based aircraft at Nampa Municipal are projected to increase to 453, representing a CAGR of 1.6 percent.

#### 3.6.3 FAA Active Growth Methodology

This based aircraft methodology is used to develop projections of future based aircraft at Nampa Municipal by assuming that the growth of based aircraft will correspond to the rate forecast by the FAA for active general aviation aircraft. The results of the FAA active aircraft methodology are summarized in **Table 3.10**. This methodology projects the growth of total based aircraft from 330 to 411 by the end of the planning period.

#### 3.6.4 Personal Income Growth Methodology

A based aircraft projection was developed that mirrors the projections for the Service Area. Personal income, which is a good indicator of aviation activity, is projected to grow at 4.4



percent per year over the planning period in the Airport’s Service Area. Applying this ratio to Nampa Municipal Airport, based aircraft indicate an increase from 330 to 781 over the planning period, as shown in **Table 3.11**.

### **3.6.5 Comparison of Based Aircraft Projections**

**Table 3.12** and **Exhibit 3.1** show the three based aircraft projections and compare them to the FAA Terminal Area Forecast for Nampa Municipal.

Growth rates in the based aircraft projections range from 1.1 to 4.4 percent. With the substantial growth expected in population in the Service Area, it is unlikely that the Airport will be limited to the 1.1 percent growth expected nationally. However it is equally unlikely that the Airport will experience the 4.4 percent growth forecast in the personal income growth methodology. If this were to occur, the number of based aircraft would more than double over the planning period.

Based on this analysis, the preferred based aircraft forecast for Nampa Municipal is the FAA TAF-based projection, which assumes 2.7 percent growth over the planning period applied the based aircraft number of 330. This forecast will be submitted to FAA for their approval and used to determine future facility requirements.



<b>TABLE 3.9</b> <b>BASED AIRCRAFT PROJECTION BASED ON POPULATION GROWTH</b> <b>Nampa Municipal Airport</b>		
	<b>Year</b>	<b>Total Based Aircraft</b>
Historic	2008	330
<b>Population Annual Growth Rate 2008-2030</b>		<b>1.6 percent</b>
Projected	2013	357
	2018	387
	2028	453

Source: Wilbur Smith Associates, U.S. Census Data

<b>TABLE 3.10</b> <b>BASED AIRCRAFT PROJECTION BASED ON FAA GROWTH OF ACTIVE GENERAL AVIATION AIRCRAFT</b> <b>Nampa Municipal Airport</b>		
	<b>Year</b>	<b>Total Based Aircraft</b>
Historic	2008	330
<b>Active GA Aircraft Annual Growth Rate 2008-2030</b>		<b>1.1%</b>
Projected	2013	349
	2018	368
	2028	411

Source: Wilbur Smith Associates, FAA Terminal Area Forecast

<b>TABLE 3.11</b> <b>BASED AIRCRAFT PROJECTION BASED ON PER CAPITA PERSONAL INCOME GROWTH</b> <b>Nampa Municipal Airport</b>		
	<b>Year</b>	<b>Total Based Aircraft</b>
Historic	2008	330
<b>Per Capita Personal Income Annual Growth Rate 2008-2030</b>		<b>4.4%</b>
Projected	2013	409
	2018	508
	2028	781

Source: Wilbur Smith Associates, U.S. Department of Commerce



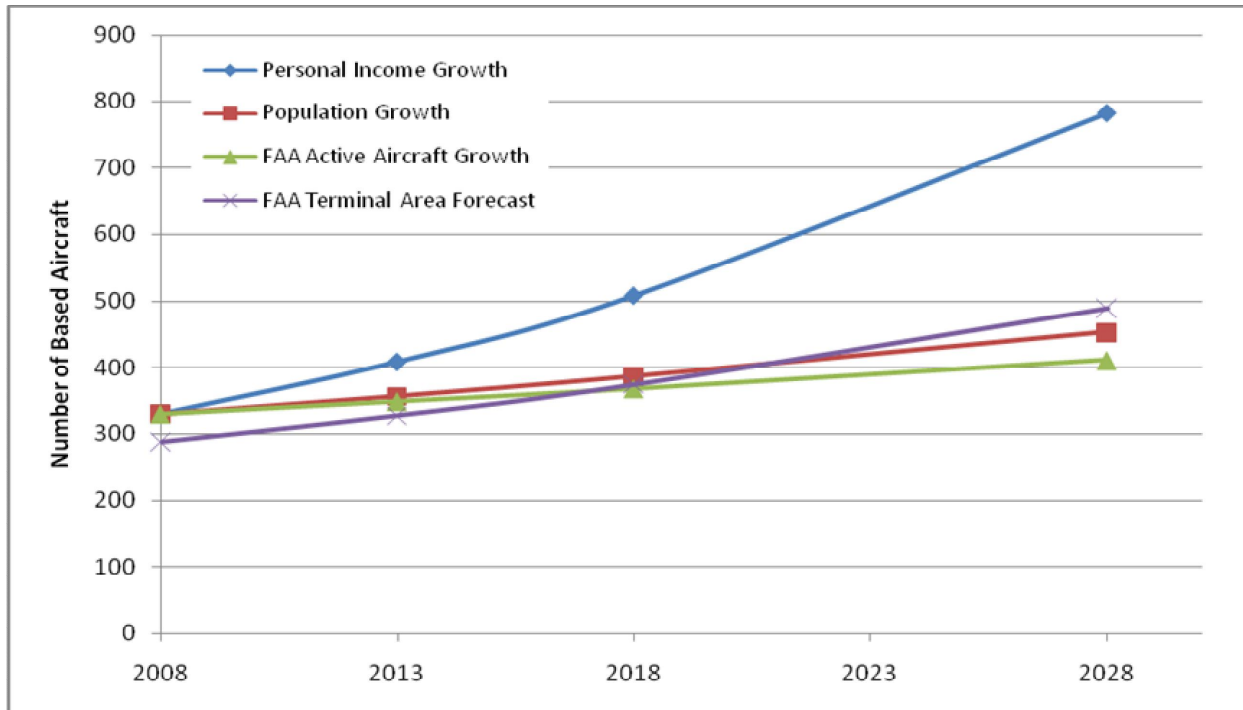
**TABLE 3.12**  
**COMPARISON OF BASED AIRCRAFT PROJECTIONS**  
**Nampa Municipal Airport**

	Year	Personal Income Growth	Population Growth	FAA Active Aircraft Growth	FAA Terminal Area Forecast
Actual	2008	330	330	330	287
Projected	2013	409	357	349	327
	2018	508	387	368	374
	2028	781	453	411	489*
	CAGR	4.4%	1.6%	1.1%	2.7%

Source: Wilbur Smith Associates, FAA Terminal Forecast and FAA Aerospace Forecast 2008-2025

\* Estimate

**EXHIBIT 3.1**  
**COMPARISON OF BASED AIRCRAFT PROJECTIONS**  
**Nampa Municipal Airport**





### 3.6.6 Forecast Scenarios

In addition to the recommended forecast, “high” and “low” forecast projections were prepared to conduct sensitivity tests throughout the master planning process. The Per Capita Personal Income projection for Nampa Municipal will serve as the high forecast and will be used to test whether space is available to store 781 aircraft in 2028. This scenario will represent the upper potential for Nampa Municipal Airport. The FAA Active Aircraft projection will be used as the low forecast (411 aircraft) and will test the financial feasibility of the recommended capital improvement program if the number of based aircraft grows at a much slower rate than expected.

### 3.6.7 Based Aircraft Fleet Mix Projections

Total based aircraft projected for Nampa Municipal over the planning period using the preferred based aircraft projection were allocated to five aircraft categories – single-engine, multi-engine, turboprop, jet, and helicopter – to develop a projection of the airport’s based aircraft fleet mix through the planning period. The fleet mix projections were developed based on the fleet mix percentages exhibited at the Airport in 2008 and consideration of the rates of growth by aircraft type the FAA Aerospace Forecasts. The existing based aircraft fleet mix at Nampa Municipal is summarized as follows:

- Single-engine aircraft – 95 percent of total based aircraft
- Multi-engine aircraft – 2 percent of total based aircraft
- Turboprop – 1 percent of total based aircraft

- Jet aircraft – 0 percent of total based aircraft
- Helicopters – 2 percent of total based aircraft

Based on projected U.S. general aviation trends found in the FAA’s Aerospace Forecasts for years 2008 to 2025, jet aircraft are expected to continue to represent a growing percentage of the active aircraft fleet in the nation. Single and multi-engine aircraft are predicted to keep their current market share, or lose market share during the planning period, while helicopters are expected to slightly increase their current market share. The projected trends in the U.S. general aviation fleet were used to develop projections of Nampa Municipal’s future based aircraft fleet mix based on the Master Plan Update’s preferred projection of based aircraft. The preferred based aircraft fleet mix projections are presented in **Table 3.13**.



**TABLE 3.13**  
**PREFERRED BASED AIRCRAFT FLEET MIX PROJECTION**  
**Nampa Municipal Airport**

	Year	Total Based Aircraft	Single-engine <sup>1</sup>	Multi-engine	Turboprop	Jet	Helicopter
Actual	2008	330	310	11	2	0	7
Projected	2013	377	353	12	3	2	7
	2018	431	400	13	5	5	8
	2028	562	521	15	7	9	10

Source: Wilbur Smith Associates

<sup>1</sup>Includes Ultralights and Gliders

### 3.6.8 Aircraft Operations Projections

Many different factors impact the number of aircraft operations at the Airport, including, but not limited to: total based aircraft, area demographics, activity and policies at neighboring airports, and national aviation trends. These factors are examined in the following sections and two methodologies are used to develop projections of future aircraft operations at Nampa Municipal through the forecast period.

The result of each projection methodology is compared and a preferred projection scenario is selected. The preferred aircraft operations projection for Nampa Municipal will be used to subsequently conduct a demand/capacity analysis in which the adequacy of existing airfield facilities is evaluated to determine if capacity-enhancing projects may be required to support future levels of aircraft operations at the Airport.

### 3.6.9 Operations per Based Aircraft Methodology

The operations per based aircraft (OPBA) methodology is recognized by the FAA as an accepted means for relating the total number of aircraft operations to a known variable; in this case, based aircraft. OPBA is calculated by dividing the number of total general aviation operations that occur at an airport by the number of aircraft based at the airport. Future total operations at Nampa Municipal are projected by applying the airport’s OPBA ratio to the preferred projection of based aircraft. The results of this projection scenario are summarized in **Table 3.14**.

As previously noted, a base year estimate for 2008 operations at the Airport was established to be approximately 72,000 operations based on extensive on-site survey and analysis. This estimate is lower than the estimated operations numbers contained in the FAA Terminal Area Forecast for Nampa Municipal in 2008, which were 109,726. For the purposes of the operations projections presented here, 72,000 annual operations is used for 2008.



The 2008 OPBA of 218 was held constant throughout the 20-year forecast period and multiplied by the preferred based aircraft projection to obtain the projection of aircraft operations of 112,000 (rounded to the nearest one hundred).

### 3.6.10 FAA Hours Flown Methodology

The second aircraft operations projection methodology was based on the FAA's forecast of active general aviation and air taxi hours flown. It assumes that Nampa Municipal would experience growth in operations consistent with growth in the number of hours flown nationally by general aviation and air taxi aircraft, according to FAA forecasts.

Growth in hours flown is expected to total approximately 3 percent annually through the planning period. Applying that growth rate to Nampa Municipal operations through the forecast period resulted in growth from the 2008 estimate of 72,000 operations to 130,000 by 2028, as shown in **Table 3.15**.

### 3.6.11 Comparison of Aircraft Operations Projections

The results of the two aircraft operations projection scenarios examined in this analysis are summarized and compared with the FAA Terminal Forecast for Nampa Municipal in **Table 3.16** and **Exhibit 3.2**. Forecasted annual operations at Nampa Municipal in 2028 ranged from 112,000 to 194,400 operations. The FAA's Terminal Area Forecast does not extend out to 2028, and the forecasted operations were estimated based on the CAGR. For comparison, a forecast was also performed using the CAGR of

the FAA Terminal Area Forecast and applying it to the base operations estimate for the Airport in 2008. This led to an estimated increase in operations from 72,000 in 2008 to over 127,000 in 2028.

The FAA hours flown growth rate forecasts results in a CAGR of 3.0 percent, slightly above the OPBA forecast of 2.7 percent, and nearly identical to the FAA Terminal Area Forecast of 2.9 percent. A 3.0 percent growth can be reasonably expected considering the above-average demographic growth that is projected to continue in the region during the planning period.

Therefore, the FAA Hours Flown Methodology is the preferred forecast.

It should be noted that the preferred aircraft operations projection for Nampa Municipal represents an unconstrained projection and presumes that airport development needed to accommodate growth will be undertaken in a timely manner. Without continued infrastructure support and development for aviation activity at the Airport, growth of operations could be anticipated to stabilize and/or decline in the later years, which, in turn, could result in fewer total operations accordingly.

### 3.6.12 Projected Local/Itinerant Split

An important consideration when examining projected airport operations is whether they are local or itinerant. Local operations are those conducted by aircraft remaining in the airport's traffic pattern. It should be noted that almost all local operations are training-related, whether it is primarily flight training or proficiency training that is occurring. Itinerant operations are those



conducted by aircraft coming from outside the traffic pattern. Changes in the local/itinerant operations split at an airport are an indicator of changes in the nature of activity occurring at the facility.

According to TAF and 5010 data for Nampa Municipal, since 1998, the percentage of itinerant flights at the airport has remained nearly constant at 55 percent, increasing by less than 1 percent per year.

For the projection of itinerant and local traffic, it was assumed that this ratio would continue throughout the planning period. The results of these projections are shown in **Table 3.17**.

**3.6.13 Instrument Approach Forecasts**

Forecasts of annual instrument approaches are used by the FAA in evaluating an airport’s requirements for navigational aid facilities. The

FAA defines an instrument approach as an approach to an airport with the intent to land by an aircraft in accordance with an instrument flight rule (IFR) flight plan, when visibility is less than three miles and/or when the ceiling is at or below the minimum initial approach altitude.

Current data on instrument approaches at Nampa Municipal Airport was gathered from the Airport IQ database. **Table 3.18** presents the current data as well as the projection of annual instrument operations through 2028. To project future annual instrument operations, the ratio of instrument operations to total operations was considered. In 2007; this ratio was approximately 1 percent. To project future instrument operations, a similar ratio was anticipated over the 20-year planning period, with a slight increase expected in the percentage of instrument operations due to growth in turbine equipment and transient aircraft activity at the airport.

TABLE 3.14 PREFERRED AIRCRAFT OPERATIONS BASED ON OPERATIONS PER BASED AIRCRAFT Nampa Municipal Airport				
	Year	Total Based Aircraft	OPBA	Total Operations
Actual	2008	330	218	72,000
Projected	2013	377	218	82,200
	2018	431	218	94,000
	2028	562	218	122,500

Source: Wilbur Smith Associates



**TABLE 3.15**  
**PREFERRED AIRCRAFT OPERATIONS BASED ON FAA HOURS FLOWN FORECAST**  
**Nampa Municipal Airport**

	Year	FAA Active General Aviation and Air Taxi Hours Flown <sup>1</sup>	Nampa Municipal Operations Projection
Actual	2008	28,241,000	72,000
Projected	2013	32,954,000	83,500
	2018	38,134,000	96,800
	2028	50,159,000	130,000
Average Annual Growth Rate		3.0%	3.0%

Note: <sup>1</sup> Years 2013 and 2018 interpolated from Table 3.6, and year 2028 extrapolated from Table 3.6.

Source: Wilbur Smith Associates, FAA Terminal Area Forecast, FAA Aerospace Forecasts 2008-2025

**TABLE 3.16**  
**COMPARISON OF AIRCRAFT OPERATIONS PROJECTIONS**  
**Nampa Municipal Airport**

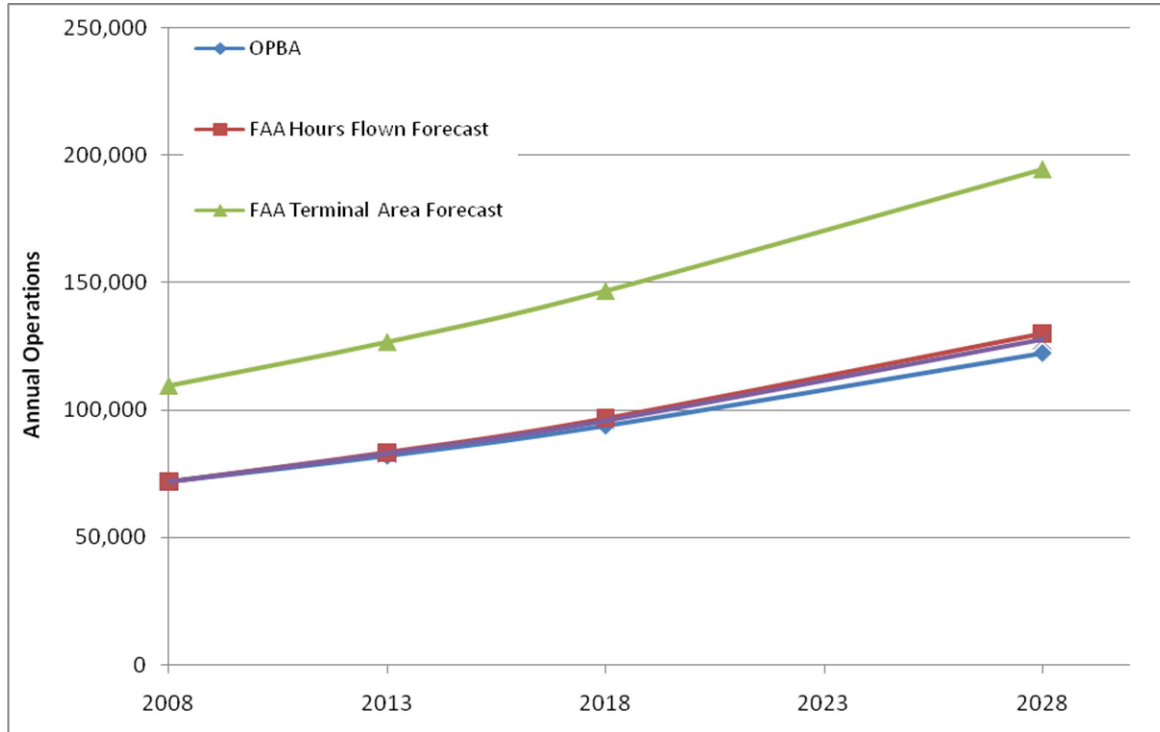
	Year	OPBA	FAA Hours Flown Forecast	FAA Terminal Area Forecast	FAA TAF Growth Rate Applied to Operations Estimate
Actual	2008	72,000	72,000	109,726	72,000
Projected	2013	82,200	83,500	126,836	83,063
	2018	94,000	96,800	146,838	95,826
	2028	122,500	130,000	194,364*	127,538
CAGR		2.7%	3.0%	2.9%	2.9%

Source: Wilbur Smith Associates, FAA Terminal Area Forecast

\* Estimate



**EXHIBIT 3.2  
COMPARISON OF AIRCRAFT OPERATIONS PROJECTIONS  
Nampa Municipal Airport**



**TABLE 3.17  
LOCAL AND ITINERANT OPERATIONS PROJECTIONS  
Nampa Municipal Airport**

	Year	Itinerant	Local	Total Operations
Actual	2008	39,600	32,400	72,000
Projected	2013	45,900	37,600	83,500
	2018	53,300	43,500	96,800
	2028	71,500	58,500	130,000
Percentage of Total Operations		55%	45%	100%

Source: Wilbur Smith Associates, FAA Terminal Area Forecast



<b>TABLE 3.18</b> <b>INSTRUMENT OPERATIONS FORECAST</b> <b>Nampa Municipal Airport</b>				
	Year	Instrument Operations	Total Operations	Instrument Ops Percentage
Actual	2008	720	72,000	1.0%
Projected	2013	835	83,500	1.0%
	2018	1,064	96,800	1.1%
	2028	1,560	130,000	1.2%

Source: Wilbur Smith Associates, FAA Terminal Area Forecast, Airport IQ database

### 3.6.14 Peaking Analysis

Another primary consideration for facility planning at airports relates to the peak hour, also referred to as design level activity. This operational characteristic is important to understand because some facilities should be sized to accommodate the peaks in activity, for example, the aircraft apron or terminal areas. Standard airport planning practices use the peak hour of the average day of the peak month (ADPM) as the peak level to plan for, instead of the absolute peak level that occurs throughout the entire year.

To develop a portrait of peak operational demands, a peaking factor was applied to the preferred operational forecasts presented in this chapter. Generally, peak month operations have been found to represent approximately 13 percent of annual operations. It is assumed that this monthly peaking factor will gradually decline during the planning period due to increasing turboprop and turbine aircraft operations in the future which are not unduly influenced by weather conditions. Average daily operations were estimated by dividing the peak month figure

by 30 – the average number of days in any month throughout the year. To estimate peak hour operations, another peaking factor, the estimated percentage of daily activity occurring in the peak hour, was applied to the number of average daily operations. The current peak hour factor of 12 percent is anticipated to decline to approximately nine percent over the course of the planning period with peak hour spreading.

The results of applying these peaking figures to the preferred operational forecast are shown in **Table 3.19**.

Based on field observations and the forecast figures presented here, the airport will likely experience a peak hour of 45 operations by the end of the planning period.

### 3.7 SUMMARY

It is anticipated that Nampa Municipal Airport will see increasingly strong growth during the 20-year planning period. Market area demographic trends indicate that the airport is likely to outpace state and national growth in general aviation. Based aircraft are expected to increase from 330 in



2008 to 562 by 2028. The airport will also see an increase in the number of operations. By the end of the planning period, approximately 130,000 operations are projected to occur. Table 3.20

summarizes the projections contained in this chapter.

<b>TABLE 3.19</b>				
<b>PEAK HOUR DEMAND</b>				
<b>Nampa Municipal Airport</b>				
<b>Demand</b>	<b>2008</b>	<b>2013</b>	<b>2018</b>	<b>2028</b>
Annual	72,000	83,500	96,800	130,000
Peak Month	9,360	10,438	11,616	14,950
Average Day	312	348	387	498
Peak Hour	37	38	39	45

*Source: Wilbur Smith Associates*

<b>TABLE 3.20</b>			
<b>SUMMARY OF NAMPA MUNICIPAL PROJECTIONS</b>			
<b>Nampa Municipal Airport</b>			
	<b>Year</b>	<b>Based Aircraft Total</b>	<b>Total Operations</b>
Actual	2008	330	72,000
Projected	2013	377	83,500
	2018	431	96,800
	2028	562	130,000

*Source: Wilbur Smith Associates and airport records*