Forecasts of
B. Aviation Activity

Master
Plan

Nephi
Municipal Airport

B. Forecasts of Aviation Activity

INTRODUCTION. Forecasting is a key element in the master planning process. The forecasts are essential for analyzing existing airport facilities and identifying future needs and requirements for these facilities. Forecasting, by its very nature, is not exact, but it does establish some general parameters for development and, when soundly established, provides a defined rationale for various development activities as demands increase. The amount and kind of aviation activities occurring at an airport are dependent upon many factors but are usually reflective of the services available to aircraft operators, the meteorological conditions under which the Airport operates (daily and seasonally), the businesses located on the Airport or within the community the Airport serves, and the general economic conditions prevalent within the surrounding area.

Forecasting generally commences by obtaining accurate historical and existing data. Utilizing the present time as an initial point, certain quantifiable facts and trends can be identified, along with many intangible factors, which will impact the aviation activity forecasts. This data has evolved from a comprehensive examination of historical airport records and recent planning documents relative to the Airport (i.e., the *FAA Terminal Area Forecasts, 2008-2025* and the *FAA Aerospace Forecasts Fiscal Years 2008-2025*). These documents were assembled in different years, making the data quite variable and emphasizing the need for establishing a well-defined and well-documented set of base information from which to develop aviation activity forecasts.

Forecast Assumptions and Conditions

Prior to an examination of current and future activity levels at the Airport, there are several conditions and assumptions that should be noted that form the basis, or foundation, for the development of the forecasts contained here. These variables represent a variety of physical, operational, and socioeconomic considerations and, to varying degrees, relate to and affect aviation activity at Nephi Municipal Airport.

Weather Conditions

Though tabulated weather from the National Oceanic and Atmospheric Administration, National Climatic Data Center, was unavailable for analysis, the Airport, with the exception of very few days annually, is not adversely affected by poor weather conditions. According to local observations, the Airport rarely fogs-in when valley airports located further north (i.e., Provo Municipal Airport) experience fog. In addition, for comparison, Visual Flight Rules (VFR) meteorological conditions are experienced at South Valley Regional Airport, on average, approximately 96.4% of the time annually. Therefore, aircraft can operate at Nephi Municipal Airport on a regular basis throughout the year, with limited interruption due to weather. The potential negative impact of poor weather conditions on the operational capability of the Airport will be analyzed in the following chapter of this document.

Socioeconomic Conditions

Historically, aviation activity occurring at airports has been directly influenced by regional, state, and national socioeconomic conditions. The most-often analyzed conditions are population, employment, and income.

Population. According to US Census Bureau data, the population of Nephi was approximately 3,515 in 1990. By 2000, the population had increased to 4,733. In 1990, the population of Juab County was 5,817. By 2000, Juab County increased to approximately 8,238. The State of Utah population was 1,722,850 in 1990 and increased to 2,233,169 in 2000. The State of Utah Governor's Office of Planning and Budget, projects that the population of Juab County will increase to 10,112 by the year 2010, which is an increase of 22.7% from 2000, and an average annual growth rate of 2.07%. By comparison, the State of Utah is projected to increase from 2,233,169 (2000 population) to 2,833,337 in 2010, an overall increase of 21.2% and an average annual growth rate of 2.41%. The US Census Bureau estimates that the national population will increase from 281,421,906 in 2000 to some 363,584,435 by the year 2030. This is an approximate increase of 22.6% and an annual growth rate of 0.86%.

Subsequent to publication date of this section of the Master Plan, 2010 US Census data has been published and is included here for reference. Nephi City and Juab County recorded a 2010 population of 5,389 and 10,246 respectively. This resulted in an average annual growth rate of 1.3% for Nephi City and 2.2% for Juab County between 2000 and 2010. These average annual growth rates for population over the past 10 years compare to 2.15% for the State of Utah.

Employment. Nephi and the surrounding area have a diverse and broad range of employment opportunities. According to the US Census Bureau, manufacturing accounted for 17.5% of all nonfarm payroll jobs in 2000 within Juab County. Educational, health, and social services (17.4%); retail trade (11.7%); and, arts, entertainment, recreation, accommodation, and food services (11.7%) follow manufacturing as the leading employment sectors within the County. In 2000, the number of nonfarm payroll jobs was 3,382 in Juab County. Subsequent to publication date of this section of the Master Plan, the projected July 2010 nonfarm payroll statistics show manufacturing increasing to 20.8%; educational, health, and social services declining to 13.6%; retail trade declining to 8.7%; and, arts, entertainment, recreation, accommodation, and food services declining to 8.9% within the County.

According to the Utah Department of Workforce Services, the 2007 unemployment rate was approximately 3.1% for Juab County, and increased to 5.0% in 2008. This compares to the unemployment rate within the State of Utah, which was 2.6% in 2007, and increased to 3.4% by 2008[1]. Nationwide, the unemployment rate was 3.7% in 2000, increasing to 5.1% in 2005 (US Department of Labor, Bureau of Labor Statistics). Subsequent to publication date of this section of the Master Plan, the seasonally adjusted unemployment rate for Juab County was 10.9% in July of 2011. This compares to a rate of 7.5% for the State of Utah and 9.1% Nationwide.

Income. According to the Utah Department of Work Services, the 2004 per capita personal income for Juab County was approximately $20,016; and, the State of Utah was $26,149[2]. By 2007[3], the per capita personal income for Juab County had increased to $22,954, which was overall increase of 3.5%. The 2007 State of Utah per capita personal income was approximately $30,563, representing a 4.0% overall increase from 2004.

Subsequent to publication date of this section of the Master Plan, forecasted per capita personal income for Juab County for 2009 totaled $24,500, which compares to $31,584 for the overall State average.

Community Support

Nephi Municipal Airport benefits from the support of the city and county governments, as well as local industries and citizens. The Airport is recognized as a vital infrastructure asset that contributes to the stability and future expansion of the area's economy. The overall position of the community

[1] Not seasonally adjusted.

[2] 1990 income data for Nephi is currently unavailable.

[3] Forecasted.

is one of continued growth and development, with special focus on the impetus that the Airport can provide to attract additional economic and industrial development to the area. Additionally, many smaller communities surrounding Nephi benefit from a quality general aviation airport. These communities provide an economic base that can attract additional aviation activity, as well as industrial/business development to the area.

Nephi Municipal Airport, which is the "front door" for many business and recreational travelers, is located roughly three (3) miles northwest of the Nephi Central Business District (CBD). The Airport currently consists of 555 acres and offers some vacant property to provide aviation or non-aviation development areas. Currently, the Airport is not constrained by incompatible land uses within the surrounding area.

Regulatory Climate

For purposes of forecasting in this Master Plan, it is assumed that the regulatory climate regarding the general aviation industry will not change dramatically. Specifically, it is assumed that noise and emissions requirements on business aircraft will remain within the bounds prescribed by current rules and regulations. It is also assumed that the general aviation community will not be subject to new user fees, access to airports and airspace will not be limited, and general aviation airports will not be subject to security restrictions that are currently imposed on air carrier airports.

Negative or Neutral Factors

As a general comment, the Airport has very few negative factors and is in an enviable position, due to its many positive features and conditions. However, there are some broad factors that can have a negative impact on the Airport, and the aviation industry, and these are considered in the planning process. The first issue is the overall condition of the general aviation industry in the United States. Beginning in 1978, many sectors of the general aviation industry have been in a recession, and the FAA has identified several factors that precipitated this downturn, including: economic recessions, fuel crises, termination of the GI Bill, and the repeal of the Investment Tax Credit.

More obvious contributing factors include: the rising expense of owning and operating an aircraft (i.e., costs of insurance, fuel, and maintenance), competition from discount air carriers since airline deregulation, changes in disposable discretionary income, increases in air space restrictions affecting fair-weather flying, reductions in personal leisure time, and shifts in personal preference as to how leisure time is spent. These factors have restricted the single-engine light aircraft segment of the industry, in particular.

From a national perspective, one negative trend is the current state of the national economy including record high oil prices, contributing to higher jet and aviation fuel prices. The FAA is also proposing a major change in how the agency is funded. The impacts of this change are dependent on final changes to congressional bills related to FAA reauthorization; however, there is the potential for an increase in either general aviation user fees and/or general aviation fuel taxes, which could negatively affect general aviation activity nationwide.

However, there are a number of bright spots having a positive impact in certain segments of the general aviation industry, including the passage of the General Aviation Revitalization Act (GARA) of 1994. This legislation has caused renewed interest and optimism among US aircraft manufacturers, who are either re-entering the single-engine aircraft market after several years' absence, or are increasing future production schedules to meet expected renewed demand. The growth in the amateur-built aircraft market, and the strength of the used aircraft market, indicate that demand for inexpensive personal aircraft is still relatively strong.

The FAA's efforts to aid general aviation revitalization include streamlining the certification process for new entry-level aircraft and implementing measures to provide regulatory relief and reduce user costs (i.e., reduced rules, improving the delivery of FAA services by decreasing excess layers of management, and the elimination of unneeded programs and processes). Groups such as the Aircraft Owners & Pilots Association (AOPA) are sponsoring programs that aggressively promote the benefits of general aviation and learning to fly.

On a more recent note, since the 9/11 terrorist attacks, Temporary Flight Restrictions (TFRs), and the lingering concerns of some regarding the use of general aviation aircraft in potential future acts of terrorism, have had an added short-term negative impact on the industry. On the positive side for General Aviation (GA), heightened airport security has had a dramatic impact on the "nuisance factor" of commercial air travel; as a result, some travelers have turned to general aviation as a more efficient means of air travel.

An additional factor having a negative impact on Nephi Municipal Airport is the lack of an instrument approach procedure, which inhibits the ability of the more sophisticated general aviation business aircraft to utilize the Airport during adverse weather conditions. This issue is important and requires attention during the preparation of this Master Plan.

Historical and Existing Aviation Activity

A tabulation of historical aviation activity since 1997 at Nephi Municipal Airport is presented in Table B1, entitled *HISTORICAL AVIATION ACTIVITY, 1998-2008*. This table presents the numbers of aircraft operations (an operation is defined as either a takeoff or a landing) in four categories that include air taxi, general aviation, military, and total operations.

Table B1
HISTORICAL AVIATION ACTIVITY, 1998-2008

Year	Air Taxi		General Aviation		Military		Total Operations	
1998	0	---	4,500	0%	1,000	0%	5,500	0%
1999	0	---	4,500	0%	1,000	0%	5,500	0%
2000	0	---	4,500	0%	1,000	0%	5,500	0%
2001	0	---	4,500	0%	1,000	0%	5,500	0%
2002	0	---	4,500	0%	1,000	0%	5,500	0%
2003	0	---	4,500	0%	1,000	0%	5,500	0%
2004[1]	20	100%	9,411	52%	0	---	9,411	52%
2005[2]	20	0%	9,702	3%	0	---	9,702	3%
2006[2]	0	---	6,010	-61%	0	---	6,010	-61%
2007[1]	30	100%	6,040	0.5%	1,000[3]	---	7,040	0.5%
2008[1]	30	0%	6,040	0%	1,000[3]	---	7,040	0%

Sources: Federal Aviation Administration, *Terminal Area Forecasts*, 1998-2025.
[1] FAA Form 5010-1, *Airport master Record*
[2] *Utah Continuous Airport System Plan 2007*.
[3] Estimated following discussions with National Guard Armory personnel.

Accurate counts of airport operations are often unavailable for analysis at non-towered general aviation airports. However, portions of the historical operational data available for Nephi Municipal Airport are represented by reasonably accurate estimates of the actual general aviation activity occurring at the Airport due to the use of acoustical counting equipment that was administered by the UDOT Aviation Division. In addition, the operations estimate during 2006-2007 was negatively impacted due to the construction of the new runway facility. It should be noted that the data for 2008 (i.e., the last row of data in Table B3) will be utilized as the base-line data for the aircraft operations forecast in this document.

Air Taxi Operations. Nephi Municipal Airport does not have scheduled passenger service, but has historically had occasional air taxi service. Air taxi operations consist of any operations by aircraft for commercial or for-hire activity. Historically, the amount of air taxi activity at the Airport has been

estimated to be relatively inconsistent (based upon historic *Utah Continuous Airport System Plan 2007* data), varying from zero to 30 annual operations. Based upon this level and type of activity at the Airport, air taxi operations will be included in the general aviation operations category for purposes of this study.

General Aviation Operations. General aviation aircraft conduct the majority of the aircraft operations at Nephi Municipal Airport. General aviation is the branch of aeronautical activity that is not commercial or military. Thus, general aviation encompasses pleasure flying and flight training, along with business and corporate aviation activity.

Military Operations. The majority of military operations can be attributed to training activity, predominantly helicopters, but also includes small fixed-wing transport aircraft. Due to the presence of the Utah Army National Guard facility located at South Valley Regional Airport, the number of military operations at the Airport has fluctuated over the years in response to variations in training levels. However, the majority of military activity is represented by helicopter touch-and-go and approach training.

Existing Operations by Aircraft Type

The current level of aviation activity by aircraft type is summarized in the following table, entitled *EXISTING OPERATIONS BY AIRCRAFT TYPE, 2008.* This summary indicates that the majority of activity at the Airport is associated with multi-engine turboprop aircraft, accounting for approximately 42% of the general aviation operations. Approximately 31.5% of the general aviation operations can be attributed to single-engine aircraft (including both single-engine piston and turboprop aircraft), with 19% allocated to multi-engine piston aircraft. It is estimated that business jets conduct approximately 2.5% of the operations, while helicopter operations constitute 5%. In addition, military activity represents approximately 14% of the Airport's activity, the majority of which are helicopter operations.

Table B2
EXISTING OPERATIONS BY AIRCRAFT TYPE, 2008

Aircraft Type	Operations	Percent of Category
General Aviation	*6,040*	*85.8%*
Single-Engine [1]	1,903	31.5%
Multi-Engine Piston	1,148	19.0%
Multi-Engine Turboprop	2,537	42.0%
Business Jet	151	2.5%
Helicopter	302	5.0%
Military	*1,000*	*14.2%*
TOTAL	**7,040**	**(100.0%)**

Source: Estimates of operational breakdown were generated by BARNARD DUNKELBERG & COMPANY.
[1] Includes single-engine turboprop operations.

Based Aircraft

Currently, there are ten (10) civilian aircraft based at Nephi Municipal Airport. These include seven (7) single-engine aircraft, one (1) multi-engine turboprop aircraft, and two (2) helicopters. A historical summary of based aircraft is provided in the following table, entitled *SUMMARY OF BASED AIRCRAFT, 1998-2008*. The data were compiled from FAA records, the *Utah Continuous Airport System Plan 2007*, and airport tabulations.

Table B3
SUMMARY OF BASED AIRCRAFT, 1998-2008

Year	Single Engine	Multi-Engine Piston and Turbine	Business Jet	Helicopters	Total
1998[(1)]	---	---	---	---	9
1999[(1)]	---	---	---	---	9
2000[(1)]	---	---	---	---	9
2001[(1)]	---	---	---	---	9
2002[(1)]	---	---	---	---	9
2003[(1)]	---	---	---	---	9
2004[(1)]	---	---	---	---	9
2005[(1)]	---	---	---	---	9
2006[(2)]	6	2	1	---	9
2007[(3)]	7	1	0	2	10
2008[(3)*]	7	1	0	2	10

Sources:
[(1)] FAA *Terminal Area Forecasts*, 1998– 2025.
[(2)] *Utah Continuous Airport System Plan 2007*.
[(3)] FAA National Based Aircraft Inventory Program.

Aviation Activity Forecasts

Using the historical data and incorporating the previously stated assumptions and conditions, aviation forecasts can be developed. Several forecasting elements are pertinent to this planning effort: general aviation operations, local and itinerant operations, operations by aircraft type, and based aircraft. According to forecasts contained in the FAA *Aerospace Forecasts Fiscal Years 2008-2025*, nationwide general aviation operations are projected to grow at approximately 1.3% annually[4].

General Aviation Activity Forecast

As discussed earlier, fluctuations within the country's economic cycle historically impact general aviation operations more severely than air carrier operations. However, with more of the general aviation aircraft fleet being used for business purposes now than it was in the past, the economy should have somewhat less of an effect upon overall general aviation activity. Because of the prevailing economic conditions in Nephi and the surrounding area, it is anticipated that itinerant traffic will become an integral part of the aviation activity at the Airport. These factors, combined

[4] 1.3% increase at towered airports.

with the previously mentioned GARA legislative action, should have a positive impact on general aviation activity.

In developing the aviation activity forecasts, several general aviation forecasts and national trends were reviewed. Included in this assessment, and, as presented in the following table, entitled *GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2008-2028*, is a straight line trend projection (TP) based on historical data and three forecast scenarios developed for this Master Plan. As can be noted, the trend projection shows minimal growth throughout the planning period.

Scenario One. This forecast scenario illustrates an average annual growth rate of 0.8%, which is the average annual growth rate of the FAA Terminal Area Forecasts (TAF) itinerant general aviation operations from 2008 to 2025, nationally.

Scenario Two. This forecast postulates an average annual growth rate of 1.5%, which is the average annual rate of change of forecasted general aviation operations from 2006-2026 at Nephi Municipal Airport as indicated in the *Utah Continuous Airport System Plan*, 2007.

Scenario Three. This scenario utilizes a 3.54% average annual growth rate, which is the average annual growth rate of Juab County population from 1990 to 2000. ***This is the selected operations forecast scenario for the Master Plan.***

Scenario Three was selected as the operations forecast scenario in part to reflect the sharp increase in overall fuel sales at the Airport over the last five years. It is anticipated that, with additional facilities (hangars, fuel storage capabilities, etc.) and the recent airside improvements (runway extension), operations could double over the existing level during the 20-year planning period. Additionally, it is also assumed that the ability to accommodate instrument operations at some point will attract individuals who would otherwise use surrounding airports for training and/or storage of aircraft.

Table B4
GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2008-2028

Year	Historical TP 0.90%	Scenario One 0.80%	Scenario Two 1.50%	Scenario Three 3.54%
2008[1]	6,040	6,040	6,040	6,040
2009	6,094	6,088	6,131	6,254
2010	6,149	6,137	6,223	6,475
2011	6,205	6,186	6,316	6,704
2012	6,260	6,236	6,411	6,942
2013	6,317	6,285	6,507	7,187
2018	6,606	6,541	7,010	8,553
2023	6,909	6,807	7,551	10,178
2028	7,225	7,083	8,135	12,112

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
TP = Trend Projection.

Military Activity Forecast

There are generally three components in determining military aircraft use at an airport. The first is Department of Defense (DOD) funding, which has been increasing in recent years. The second is a fueling contract the Airport or FBO may have with the DOD. The third is the location, or proximity to the Airport with adjacent aviation-related military bases or training areas. As identified in the previously, South Valley Regional Airport is home to the Utah National Guard Army Aviation Support Facility, which primarily operates a combination of AH-64 Apache and UH-60 Blackhawk helicopters. This National Guard facility has historically utilized Nephi Municipal Airport for a limited amount of touch-and-go training operations, estimated at 1,000 annual operations, which originate from South Valley Regional Airport, but also includes operations to and from the Utah Test and Training Range (UTTR) located in Utah's West Desert.

As noted in the previous chapter of this document, preliminary planning is underway for the possible future development of a new National Guard Armory adjacent to the Airport. According to Guard personnel, the new Armory could accommodate a variety of Aviation and Aviation-Support Roles for the Utah National Guard. A possible development scenario could include the relocation/dispersal of some of the aviation assets from South Valley Regional Airport (i.e., a percentage of the AH-64 Apache and/or UH-60 Blackhawk helicopters and their associated support functions) to Nephi Municipal Airport, which would increase the military helicopter operational activity levels at the Airport. However, based upon current planning schedules, the development of

the new Armory is anticipated midway through the 20-year planning period of this document, with helicopter operations ranging from near 5,000 by 2018 to 8,000 by 2028. In addition, it should be noted that the Armory operation could also include fixed-wing aircraft, depending on the specific mission that is established for the facility, and it is likely that operations will fluctuate from year to year in response to changing missions and training levels. The following table, entitled *MILITARY OPERATIONS FORECAST, 2008-2028*, presents the projected operational forecast scenario for military operations at Nephi Municipal Airport.

Table B5
MILITARY OPERATIONS FORECAST, 2008-2028

Year	Total Operations
2008[1]	1,000
2013	1,000
2018	5,000
2023	6,500
2028	8,000

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA *Terminal Area Forecasts* – 2003 military activity total.

Local and Itinerant Operations Forecast

Forecasts of operations have also been categorized accordingly into local and itinerant operations. Since Nephi Municipal Airport will continue to transition into a center for business-related general aviation operations, local operations will continue to be the dominant aircraft activity at the Airport. However, with this transition, it is expected that the existing estimate of 78% local operations will decrease and the existing estimate of 22% of itinerant operations will increase throughout the end of the planning period. Based on these considerations, forecasts of local and itinerant operations are shown on the following table entitled *SUMMARY OF LOCAL AND ITINERANT GA OPERATIONS, 2008-2028*.

Table B6
SUMMARY OF LOCAL AND ITINERANT GA OPERATIONS, 2008-2028

Year	Local		Itinerant		Total
2008[1] [2]	4,711	*(78%)*	1,329	*(22%)*	6,040
2013	5,462	*(76%)*	1,725	*(24%)*	7,187
2018	6,329	*(74%)*	2,224	*(26%)*	8,553
2023	7,328	*(72%)*	2,850	*(28%)*	10,178
2028	8,478	*(70%)*	3,633	*(30%)*	12,112

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
[2] Average breakdown of local and itinerant operations based on FAA Form 5010-1, *Airport Master Record* and FAA *Terminal Area Forecasts*, between years 1998 to 2008.

Operations Forecast By Aircraft Type

A further assessment of the forecasts involves the individual and collective use of the Airport by various types of aircraft. Supplementary to an assessment of the local and itinerant use of the Airport, the types of aircraft expected to use the Airport assist in determining the amount and type of facilities needed to meet the aviation demand.

The following table, entitled *SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2008-2028*, depicts the approximate level of use by aircraft types that are projected to use Nephi Municipal Airport. This table reflects the growing percentage of turbine-powered aircraft anticipated to operate at the Airport, as well as the decreasing percentage of piston-powered aircraft. This is indicative of the type of facility the Airport is expected to become, and the prevailing local economic conditions. It is also in line with overall national trends in general aviation and parallels the FAA expectations and projections characteristic of the general aviation fleet.

Table B7
SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2008-2028

Operations by Type	2008 [1]	2013	2018	2023	2028
General Aviation	*6,040*	*7,187*	*8,553*	*10,178*	*12,112*
Single-Engine[2]	1,903	2,192	2,523	2,850	3,270
Multi-Engine	1,148	1,330	1,540	1,832	2,120
Turboprop	2,537	3,127	3,806	4,631	5,632
Business Jet	151	216	342	509	727
Helicopter	302	323	342	356	363
Military [3]	*1,000*	*1,000*	*5,000*	*6,500*	*8,000*
TOTAL	**7,040**	**8,187**	**13,553**	**16,678**	**20,112**

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
[2] Includes single-engine piston and turboprop operations.
[3] Existing activity is represented by Utah National Guard helicopter touch & go training operations.

Based Aircraft Forecasts

The number and type of aircraft anticipated to be based at an airport are vital components in developing a plan for the Airport. Depending on the potential market and forecast, the Airport will tailor the plan in response to anticipated demand. Generally, there is a relationship between aviation activity and based aircraft, stated in terms of Operations Per Based Aircraft (OPBA). Sometimes, a trend can be established from historical information on operations and based aircraft. The national trend has been changing, with more aircraft being used for business purposes and fewer for pleasure flying. The impacts to the OPBA are that business aircraft are usually flown more often than pleasure aircraft.

Historical data (1998-2008) for the Airport indicate that the OPBA has fluctuated from 500 to 1,078, with an average of 616. With the addition of hangar facilities and an upgrade in airside facilities, it is expected that the number of OPBA will decrease at the Airport, as more aircraft based there are used for business purposes. The OPBA is expected to decrease from 604 in 2008 to 583 by the end of the planning period.

The based aircraft forecasts are presented in the following table entitled *BASED AIRCRAFT FORECAST, 2008-2028*. As can be seen, based aircraft forecasted in this Master Plan are expected to increase from 10 presently to 20 by 2028, an average annual growth rate of 3.54%. As mentioned previously, preliminary planning is underway for the possible future development of a new National Guard Armory adjacent to the Airport, which could potentially base military aircraft, including helicopters

and fixed-wing aircraft. However, since the new Armory is in the preliminary planning phase, no based military aircraft are included in the following table.

Table B8
BASED AIRCRAFT FORECAST, 2008-2028

Year	Based Aircraft	OPBA
2008 [1]	10	604
2013	12	604
2018	14	583
2023	17	583
2028	20	583

Source: BARNARD DUNKELBERG & COMPANY.
OPBA – Operations per Based Aircraft.
[1] FAA National Based Aircraft Inventory Program.

Note: Depending upon the establishment of a National Guard Armory facility, military aircraft could potentially be based at the Airport midway through the planning period of this document.

The mix of based aircraft for incremental periods is shown in the following table entitled *BASED AIRCRAFT FORECAST BY TYPE, 2008-2028*. As with the trend nationally, the percentage of piston-powered aircraft is expected to decrease as a portion of the total based aircraft population at the Airport.

Table B9
BASED AIRCRAFT FORECAST BY TYPE, 2008-2028

Aircraft Type	2008 [1]		2013		2018		2023		2028	
Single-Engine[2]	7	*70.0(%)*	8	*69.0(%)*	9	*63.0(%)*	10	*58.0(%)*	11	*56.0(%)*
Multi-Engine	0	*0.0(%)*	1	*6.0(%)*	1	*7.0(%)*	1	*8.5(%)*	2	*10.0(%)*
Turboprop	1	*10.0(%)*	1	*12.0(%)*	2	*14.0(%)*	3	*15.0(%)*	3	*15.0(%)*
Business Jet	0	*0.0(%)*	0	*0.0(%)*	1	*5.0(%)*	1	*7.5(%)*	2	*8.0(%)*
Helicopter	2	*20.0(%)*	2	*13.0(%)*	2	*11.0(%)*	2	*11.0(%)*	2	*11.0(%)*
TOTAL	**10**		**12**		**14**		**17**		**20**	

Source: BARNARD DUNKELBERG & COMPANY.
[1] FAA National Based Aircraft Inventory Program.
[2] Includes single-engine piston and single-engine turboprop.

Note: Depending upon the establishment of a National Guard Armory facility, military aircraft could potentially be based at the Airport midway through the planning period of this document.

Summary

A summary of the aviation forecasts prepared for this study is presented in the following table entitled *SUMMARY OF AVIATION ACTIVITY FORECASTS, 2008-2028.* This information will be used in the following chapters to analyze the capacity of the Airport and to develop facility requirements. In other words, the aviation activity forecasts are the foundation from which future plans will develop and implementation decisions will be made.

Table B10
SUMMARY OF AVIATION ACTIVITY FORECASTS, 2008-2028

Operations	2008[1]	2013	2018	2023	2028
General Aviation	*6,040*	*7,187*	*8,553*	*10,178*	*12,112*
Single-Engine[2]	1,903	2,192	2,523	2,850	3,270
Multi-Engine (Piston)	1,148	1,330	1,540	1,832	2,120
Multi-Engine (Turboprop)	2,537	3,127	3,806	4,631	5,632
Business Jet	151	216	342	509	727
Helicopter	302	323	342	356	363
Military[3]	*1,000*	*1,000*	*5,000*	*6,500*	*8,000*
TOTAL OPERATIONS	**7,040**	**8,187**	**13,553**	**16,678**	**20,112**
Local GA Operations	4,711	5,462	6,329	7,328	8,478
Itinerant GA Operations	1,329	1,725	2,224	2,850	3,633

Based Aircraft By Type	2008[4]	2013	2018	2023	2028
Single-Engine[2]	7	8	9	10	11
Multi-Engine (Piston)	0	1	1	1	2
Multi-Engine (Turboprop)	1	1	2	3	3
Business Jet	0	0	1	1	2
Helicopter	2	2	2	2	2
TOTAL	**10**	**12**	**14**	**17**	**20**

Sources: BARNARD DUNKELBERG & COMPANY.
[1] FAA Form 5010-1, *Airport Master Record*.
[2] Includes single-engine piston and single-engine turboprop.
[3] Existing activity is represented by Utah National Guard helicopter touch & go training operations.
[4] FAA National Based Aircraft Inventory Program.

Note: Depending upon the establishment of a National Guard Armory facility, military aircraft could potentially be based at the Airport midway through the planning period of this document.

Airport Reference Code (ARC)/Critical Aircraft Analysis

The types of aircraft presently utilizing an airport and those projected to utilize the facility in the future are important considerations for planning airport facilities. An airport should be designed in accordance with the Airport Reference Code (ARC) standards that are described in *AC 150/5300-13 Airport Design*. The ARC is a coding system used to relate and compare airport design criteria to the operational and physical characteristics of the aircraft intended to operate at the Airport. The ARC has two components that relate to the Airport's "Design Aircraft". The first component, depicted by a letter (i.e., A, B, C, D, or E), is the aircraft approach category and relates to aircraft approach speed based upon operational characteristics. The second component, depicted by a Roman numeral (i.e., I, II, III, IV, or V), is the aircraft design group and relates to aircraft wingspan (physical characteristic).

Generally speaking, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan is primarily related to separation criteria associated with taxiways and taxilanes.

Based on an examination of the current operation information for Nephi Municipal Airport, which consists of numerous Category B turboprops and some business jet operations, and projected increases in Category C business jet operations, the Airport should be maintained at the existing ARC C-II dimensional criteria standard. The following table, entitled *SUMMARY OF AIRCRAFT OPERATIONS BY AIRPORT REFERENCE CODE (ARC), 2008-2028*, provides an estimate (no exact historic or forecast data is available) of the breakdown of aircraft operations by Airport Reference Code. These estimates are derived by using existing based aircraft and operational data for Nephi Municipal Airport, along with general data available for the national aircraft fleet. As a general reference, Approach Category C aircraft have an approach speed in the landing configuration ranging between 121 and 141 knots, which compares to 91 and 121 knots for Approach Category B aircraft. In addition, Airplane Design Group (ADG) II aircraft have wingspans that range from 49 to less than 79 feet.

At present, the Airport has seven based single-engine aircraft, two helicopters, and one based multi-engine turboprop aircraft. The based multi-engine aircraft (Cessna 320B), has an ARC of A-I. An analysis of 2007 Aircraft Situation Display to Industry[5] (ASDI) for the Airport was conducted to estimate the number of business turboprop and business jet operations by specific aircraft type occurring annually. The ASDI analysis[6] showed that the majority of the operations were conducted by A-I and B-I multi-engine turboprop aircraft, and some operations were performed by B-II business jets (such as the Cessna Citation 560XL).

[5] ASDI is a data service available through the U.S. Department of Transportation that provides information on the position and flight plans of aircraft within the U.S. However, the system may not contain all flight plans due to a program developed by the National Business Aviation Association (NBAA) entitled Block Aircraft Registration Request (BARR) which allows its membership to block flight plans from entering the ASDI system.

[6] The 2007 ASDI analysis performed at Nephi Municipal Airport does not reflect an accurate total of aircraft operations.

Table B11
SUMMARY OF OPERATIONS BY AIRPORT REFERENCE CODE (ARC), 2008-2028

Operations by ARC	2008	2013	2018	2023	2028
A-I through B-I	3,050	3,535	4,188	4,989	5,815
B-II [1]	2,688	3,123	3,695	4,322	5,228
A-III through C-IV [2]	0	206	328	511	705
TOTAL	**5,738**	**6,864**	**8,211**	**9,822**	**11,748**

Sources: Operational estimates generated by BARNARD DUNKELBERG & COMPANY and Airport Staff.
[1] Operation count is represented by a combination of multi-engine turboprops and small business jets.
[2] Operation count is represented by a combination of ARC C-II and D-II business jets.

Note: Estimated operations by ARC do not include military or helicopter operations.

Forecast Approval

In accordance with language specified in *Aviation Forecast Guidance APP-400*, local aviation forecasts are approved by regional airports division offices or airports district offices (ADOs). Local forecasts that are consistent with the Terminal Area Forecasts (TAF) (i.e., forecast differs by less than 10% in the first five years, differs by less than 15% in the remaining forecast periods, and does not affect the timing or scale of an airport project), do not need to be coordinated with APP-400 and APO-110. Local forecasts that are not consistent with the TAF, but do not affect the timing or scale of an airport project and do not impact the analysis of a National Environmental Policy Act (NEPA) document or Benefit Cost Analysis (BCA), may be accepted (not approved) for information purposes by the regional office/ADO without APP/APO coordination. As noted on the following table, entitled *SUMMARY OF MASTER PLAN & TAF FORECAST COMPARISON, 2008-2023*, the Master Plan forecasts for total operations exceed the specified TAF thresholds for acceptance, but would not affect the timing or scale of an airport project.

Table B12
SUMMARY OF MASTER PLAN & TAF FORECAST COMPARISON, 2008-2023

AIRPORT NAME: Nephi Municipal Airport

Total Operations	Year	MPU Forecast	TAF [1]	MPU/TAF (% Difference)
Base yr.	2008	7,040	5,500	28.0%
Base yr. + 5 yrs.	2013	8,187	5,500	48.8%
Base yr. + 10 yrs.	2018	13,553	5,500	146.4%
Base yr. + 15 yrs.	2023	16,678	5,500	203.2%

Source: BARNARD DUNKELBERG & COMPANY.

Notes: TAF data is on the U.S. Government fiscal year basis (October through September).
[1] Does not include military operations.