

CHAPTER 3 – FORECASTS OF AVIATION ACTIVITY

The aviation forecasts and air service analysis were prepared by Mead & Hunt, under contract to Jviation. Forecasting aviation demand is a key element in the airport planning process. Forecasts are essential for analyzing existing airport facilities, and identifying future needs and requirements for these facilities. Forecasting, by nature, is not exact, but it does identify general parameters for development and provide a defined rationale for various development activities as demand increases. The amount and kind of aviation activity occurring at an airport is dependent upon many factors, but is usually reflective of the services available to aircraft operators, the businesses located on the airport or within the community, and the general economic conditions prevalent within the surrounding area.

3.1 Recent Statistics

The forecasts included in this chapter were prepared in 2015 with calendar year 2014 being considered the base year for purposes of formulating the aviation activity projections. Woods and Poole Economics estimates that the 2014 population of Gunnison County was 16,018. The 2014 population estimate is in line with the projected growth rates presented on the following page for Gunnison County. According to the Bureau of Labor Statistics, the December 2014 unemployment rate for Gunnison County was 3.4%. The local economy is largely based on the resort and tourism industries. The Crested Butte Mountain Resort, approximately two miles north of the Town of Crested Butte, is a major attraction for skiing and other outdoor activities. Western State Colorado University is located in the City of Gunnison and is a major employer in the area. Gunnison is also home to the annual Gunnison Balloon Rally held every July.

According to the FAA Terminal Area Forecast (TAF) issued in January of 2015, Gunnison-Crested Butte Regional Airport (GUC) enplaned 38,175 passengers in 2004, decreasing to 30,321 passengers by 2014. TAF reported aircraft operations at the Airport totaled 30,024 in 2004, decreasing to 5,590 in 2014. The FAA TAF is also significantly underreporting the number of annual commercial service operations at GUC. According to airline schedule data for 2014 (from Diio Mi), the Airport accommodated 1,292 commercial passenger jet operations while the TAF is only reporting 601.

Also according to the TAF, based aircraft at the Airport have decreased from 29 in 2004 to 26 in 2014, although Airport Management estimates the based aircraft fleet at approximately 25 total aircraft in 2014. It is important to note that a number of aircraft only base at GUC seasonally and the number of based aircraft at given time can range from 15 to 25. Enplanements have increased at a slower rate than was projected in the 2006 Master Plan Update. Total aircraft operations and based aircraft levels are significantly lower than those projected in previous planning efforts.

3.2 Regional Socioeconomic Conditions

Historically, the socioeconomic conditions of a particular region influence aviation activity within that region. The most often analyzed indicators are population, employment, and income. Population figures indicate the general number of persons served by the airport, and therefore the potential customer base,

while employment and income indicate the degree to which the population served by the airport has sufficient disposable income to put toward the purchasing of airfares. Economic information has also been included to help describe the economic environment of the airport's service area.

Population. Source: Woods & Poole.

- **Gunnison County:** 10,340 (in the year 1990), 14,068 (2000), and 15,314 (2010). County population is projected to reach 19,305 by the year 2030 (a 2013-2030 average annual growth rate of 1.2%).
- **State of Colorado:** 3,307,618 (1990), 4,326,921 (2000), and 5,047,692 (2010). Population for the state is projected to reach 6,616,547 by the year 2030 (a 2013-2030 average annual growth rate of 1.4%).

Employment. Sources: U.S. Department of Labor Bureau of Labor Statistics.

- **Gunnison County:** unemployment rate of 3.4% in December 2014.
- **State of Colorado:** unemployment rate of 4.0% in December 2014.

Income. Woods and Poole.

- **Gunnison County:** \$36,033 per capita income (2013).
- **State of Colorado:** \$46,240 per capita income (2013).

Economics. Gunnison County; Woods and Poole; Gunnison-Crested Butte Tourism Association.

- **Major Industries in Gunnison County:** Tourism, education, ranching.
- **National Parks and Recreation Areas in the Vicinity of Gunnison County:** Gunnison National Forest/Taylor Park Reservoir, Black Canyon of the Gunnison National Park, Curecanti National Recreation Area/Blue Mesa Reservoir, Hartman Rocks Recreation Area.
- **Popular Tourist Activities:** Skiing, snowboarding, snowmobiling, hiking, camping, biking, fishing, hunting, boating, hot-air ballooning, heritage tourism.
- **Gunnison County:** \$671,736,000 Gross Regional Product (GRP) (2013).
- **State of Colorado:** \$266,519,253 GRP (2013).

3.3 Conditions and Assumptions

Prior to an examination of current and future activity levels at Gunnison Airport, there are several conditions and assumptions that should be noted that form a basis or foundation for the development of the forecasts contained herein. These statements cover a wide variety of physical, operational, and socioeconomic considerations and, although not necessarily in order of importance or priority, are discussed individually below

3.4 Regional Trends and Projections

Aviation serves a critical role in the state of Colorado's overall transportation system. According to the FAA's current Terminal Area Forecast (TAF) for the state, commercial air carrier operations are projected to increase at an average annual growth rate of 1.2% to a total of 911,156 operations by 2034. Also according to the TAF for the state, enplanements are projected to increase at an average annual growth rate of 2.2% to a total of 39,636,225 by 2034. The TAF also projects air carrier (more than 60 seats) operations and enplanements to grow at a faster rate than commuter (less than 60 seats) operations and enplanements. The 2011 Colorado Airport System Plan projects 0.4% average annual growth in commercial operations at GUC to a total of 1,850 by 2030 and 2.5% average annual growth in enplanements at GUC to a total of 55,800 by 2030.

3.5 National Trends and Projections

The long-term national outlook for commercial aviation and enplanements is considered favorable. The FAA is forecasting passenger demand to increase at an average annual growth rate of 2.2% per year through 2034 with mainline carriers growing at a higher rate (up to 2.3% per year) than regional carriers (up 1.9%). By 2034, U.S. commercial air carriers are projected to transport 1.15 billion enplaned passengers (*FAA Aerospace Forecast Fiscal Years 2014-2034*).

After years of declining numbers, the long-term national outlook for general aviation is also considered favorable, particularly for the turbojet sector. The growth in business aviation demand over the long term continues, driven by a growing U.S. and world economy, especially in the turbojet (Cessna Citation type), turboprop (Beechcraft King Air type), and turbine rotorcraft (Bell 206 helicopter type) markets. General aviation activity at towered airports is projected to increase an average of 0.5% a year, to 28.7 million operations by 2034. The number of active general aviation pilots is projected to be 484,425 by 2034, an increase of over 35,000 (up 0.4% yearly) over the 20-year planning period.

The number of student pilots is forecast to decrease at an average annual rate of 0.2% over the planning period, declining from 120,285 in 2013 to 116,050 in 2034 (*FAA Aerospace Forecast Fiscal Years 2014-2034*). Based on figures released by the General Aviation Manufacturers Association (GAMA), U.S. manufacturers of general aviation aircraft manufacturers delivered 2,454 aircraft in 2014, 4.4% more than 2013.

Overall piston deliveries increased by 9.6% while turbojet deliveries increased by 6.5%. The total number of general aviation hours flown is projected to increase by 1.4% yearly over the 20-year planning period. The FAA projects faster growth in hours will occur after 2023 with increases in the fixed wing turbine aircraft fleet, as well as increasing utilization of both single and multi-engine piston as the aging of this fleet starts to slow down.

Hours flown by turbine aircraft (including rotorcraft) are forecast to increase 3.2% yearly over the 20-year planning period, compared with a decline of 0.4% for piston-powered aircraft. Jet aircraft are forecast to

account for most of the increase, with hours flown increasing at an average annual rate of 4.2% over the planning period (*FAA Aerospace Forecast Fiscal Years 2014-2034*).

3.6 Historic Airport Activity

A tabulation of historical aviation activity information since 2004 is presented in the following table, entitled *Historical Aviation Activity, 2004-2014*. This table includes a combination of the best available data sources including Airport Management records and the FAA Traffic Flow Management System Counts (TFMSC).

Total aircraft operations (an operation is defined as either a takeoff or a landing) at Gunnison-Crested Butte Regional Airport have fluctuated since 2004 and have generally declined through 2014. Passenger enplanements have experienced an overall decrease of approximately 7,300 enplanements since 2004.

TABLE 3-1 - HISTORICAL AVIATION ACTIVITY, 2004-2014

Year	Passenger Enplanements	Commercial Passenger Operations	General Aviation/ Air Taxi Operations	Military Operations	Total Operations
2004	38,175	928	28,946	150	30,024
2005	43,250	939	29,079	150	30,168
2006	48,775	950	29,450	150	30,550
2007	42,927	961	29,828	150	30,939
2008	37,742	2426	9,380	0	11,806
2009	41,102	1263	6,675	50	7,988
2010	37,135	2336	5,664	400	8,400
2011	36,730	845	5,682	98	6,625
2012	32,228	837	6,745	50	7,632
2013	30,771	272	5,220	22	5,514
2014	30,831 ¹	1,292 ¹	5,235 ²	1,100 ²	7,627

Source: FAA Terminal Area Forecast (TAF), January 2015.

¹ Dijo Mi data based on published airline schedules.

² Estimated using FAA Traffic Flow Management System Counts (TFMSC)/Airport Management estimate.

3.7 Existing Operations by Aircraft Type

The following table, entitled *Existing Operations by Aircraft Type (2014)*, summarizes 2014 operations by aircraft type at Gunnison-Crested Butte Regional Airport. As described in detail in the *Passenger Demand Analysis* and the *Air Service Market Research* reports by Mead & Hunt, commercial passenger service is provided by United Airlines and American Airlines, which currently offer service to Denver, Houston, Chicago, and Dallas/Fort Worth. The changing aircraft fleets at United and American were also discussed in the report. A key trend taking place with all U.S. airlines is the replacement of turboprop and smaller 50 seat regional jet aircraft with narrow-body and larger capacity regional jet aircraft.

This trend is based on a number of factors including the replacement of aging aircraft, the better fuel efficiency of newer aircraft, and airline strategies to reduce the number of flights resulting in fuller airplanes and higher profitability. Locally, this trend has been evident for a number of years and as of 2014, airlines serving Gunnison-Crested Butte Regional Airport are now exclusively operating regional jet (ERJ145 and CRJ700 type aircraft) and narrow-body aircraft (A319 type aircraft).

According to Diio Mi data based on published airlines schedules from both United and American at Gunnison, the Airport accommodated 678 ERJ145 operations, 354 CRJ700 operations and 262 A319 operations in 2014. Additional trends discussed in the reports include higher average fares and capacity constraints leading to higher yields and higher load factors for the airlines. On the general aviation side, there has also been a trend toward larger aircraft as fewer smaller aircraft are flying and businesses are continually operating larger capacity, higher performance aircraft.

TABLE 3-2 - EXISTING OPERATIONS BY AIRCRAFT TYPE (2014)

Aircraft Type	Operations	Percentages
Commercial Service	1,292 ²	16.9%
Regional Jet	1,030	79.7%
Narrow-Body	262	20.3%
General Aviation and Air Taxi¹	5,235 ³	68.6%
Single-Engine Piston	181	3.5%
Multi-Engine Piston	367	7.0%
Turboprop	1,850	35.3%
Business Jet	2,137	40.8%
Helicopter	700	13.4%
Military	1,100 ³	14.4%
Fixed Wing	1,000	90.9%
Helicopter	100	9.1%
Total	7,627	100.0%

Source: Mead & Hunt.

Note: 2014 aircraft type breakdown estimated using FAA Traffic Flow Management System Counts (TFMSC).

¹ Includes those operations conducted within the air taxi category not associated with passenger activity.

² Diio Mi data based on published airline schedules.

³ Airport Management estimate.

3.8 Historical Based Aircraft Summary

There are currently 25 based aircraft at Gunnison-Crested Butte Regional Airport. The number of based aircraft at the Airport has fluctuated slightly over the past ten years. Historic based aircraft numbers were obtained from the FAA TAF and from information provided by Airport Management and are presented in the following table, entitled *Historical Based Aircraft, 2004-2014*. It is also important to note that a number of aircraft are based at GUC seasonally.

TABLE 3-3 - HISTORICAL BASED AIRCRAFT, 2004-2014

Year	Based Aircraft
2004	29
2005	27
2006	31
2007	30
2008	30
2009	30
2010	23
2011	25
2012	25
2013	25
2014	25 ¹

Source: FAA Terminal Area Forecast (TAF), January 2015.

¹ Airport Master Record Form 5010, 1/1/2014.

3.9 Aviation Activity Forecasts

The following sections include aviation activity forecasts for passenger enplanements, commercial service aircraft operations, general aviation and military operations, local and itinerant operations, operations by aircraft type (fleet mix), peak period operations, and general aviation based aircraft.

3.9.1 Passenger Enplanements Forecast

The Gunnison-Crested Butte Regional Airport is served by two airlines, American and United, with highly seasonal service. American provides seasonal winter service to Dallas/Fort Worth International Airport (DFW). United provides year-round service to Denver International Airport (DEN), and seasonal service to Chicago O’Hare International Airport (ORD) and Houston’s George Bush Intercontinental Airport (IAH).

As described in the *Passenger Demand Analysis* by Mead & Hunt, the true market for passenger service is estimated at 245,457 annual origin and destination passengers. Of that true market, the Airport is currently retaining only slightly more than 23% of those passengers, with the remaining passengers primarily using DEN, but some passengers also choose to utilize nearby commercial service airports in Grand Junction, Montrose, and Colorado Springs.

The Airport and Gunnison County have been working cooperatively with Crested Butte Mountain Resort (CBMR) and the Gunnison Valley Rural Transportation Authority (RTA) to continue to subsidize and market existing service and to proactively pursue additional service and destinations as well as additional carriers. It is assumed that the commercial airline service subsidies will continue and even be enhanced in the future, and even a very small change in the current retention rate could have a dramatic impact on annual passenger enplanements at GUC. Based on these assumptions, a number of potential growth scenarios for passenger enplanements were considered for the purposes of this Master Plan Update. Recognizing that straight-line growth never occurs over time, the following scenarios likely represent the potential range in which enplanements growth will occur over the 20-year planning period.

Each of the following forecast scenarios includes the further assumption that the true market for GUC passengers overall (both enplanements and deplanements) will increase at an average annual growth rate of 1% to 299,504 by 2034. This increase recognizes that the true market is not stagnant and will fluctuate based on multiple variables. Population change is not the only variable, but is certainly an important component of this change.

The 1% annual growth rate is slightly less than the expected population growth rate for Gunnison County (i.e., 1.2%), but slightly more than the national population growth rate (i.e., 0.9%), as projected by Woods and Poole Economics, Inc. 2014. Additionally, each scenario assumes that GUC will capture an increasing percentage of the increasing true market (i.e., retention rates) during the forecast period.

Scenario One assumes a minimal 1% increase in the overall retention rate and also assumes that enplanement growth will be based almost entirely on the growth of the true market. Scenario Two assumes an approximate 4% increase in the retention rate through additional marketing efforts touting the benefits of using GUC for air travel within the catchment area, or the increase in frequency of existing commercial service flights, or the successful expansion of service to additional markets. Finally, Scenario Three assumes an approximate 9% increase in the retention rate through additional marketing efforts, the increase in frequency of existing commercial service flights, and the successful expansion of service to additional markets.

Scenario One (Low): Represents a low growth rate scenario based on a minimal increase in the retention rate and results in an average annual growth rate (AAGR) of approximately 1.2%. Scenario One is likely to occur if air service opportunities do not materialize and the Airport essentially maintains existing service levels.

Scenario Two (Medium): Represents a medium growth rate scenario based on an approximate 4% increase in the retention rate to over 27% and results in an AAGR of approximately 1.7%. Scenario Two is likely to occur if airfares begin to stabilize and air service opportunities involving addition frequency to Houston and/or Dallas materialize.

Scenario Three (High): Represents a high growth rate scenario based on an approximate 9% increase in the retention rate to over 32% and results in an AAGR of approximately 2.5%. Scenario Three is likely to occur if a combination of factors materialize like lower fares, higher frequency and possibly additional seasonal service to new hubs like Phoenix, Salt Lake City or Atlanta.

The passenger enplanement scenarios are included in the following table and graphically depicted in the following table and figure, both entitled *Passenger Enplanements Forecast Scenarios, 2014-2034*. Also included in the table for comparison purposes are the GUC enplanement forecasts from the January 2015 FAA TAF and the 2011 State Airport System Plan.

Gunnison-Crested Butte Regional Airport
Master Plan

TABLE 3-4 - PASSENGER ENPLANEMENTS FORECAST SCENARIOS, 2014-2034

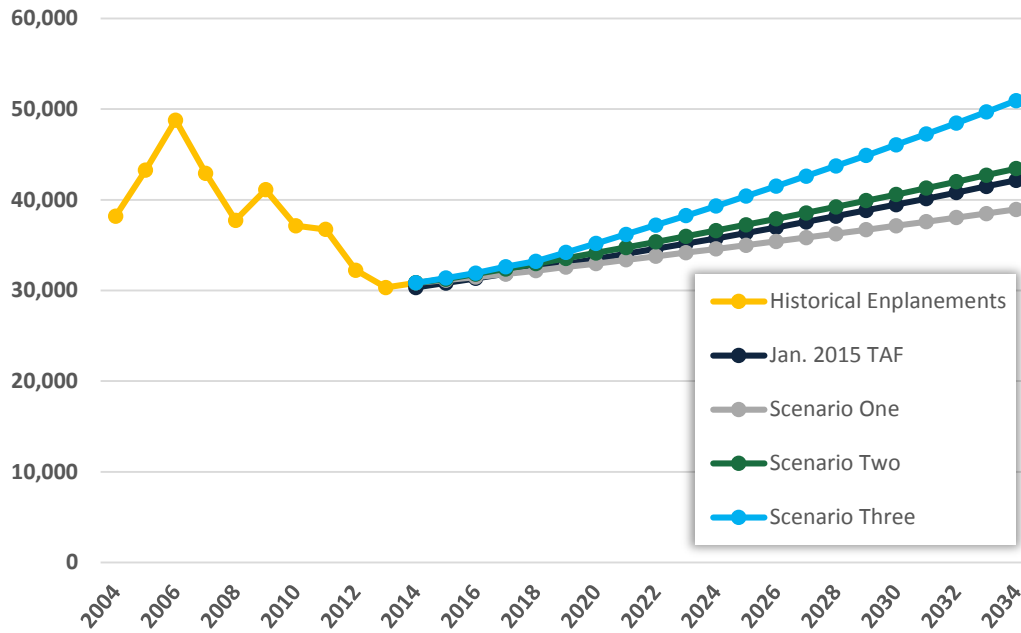
Year	FAA TAF	2011 Colorado State System Plan ¹	Scenario One 1.2%	Scenario Two 1.7%	Scenario Three 2.5%
2014	30,321	41,700	30,831 ²	30,831 ²	30,831 ²
2015	30,824	---	31,140	31,240	31,360
2016	31,337	---	31,470	31,800	31,920
2017	31,856	---	31,810	32,370	32,620
2018	32,383	---	32,180	33,950	33,210
2019	32,921	45,900	32,580	33,540	34,180
2024	35,744	---	34,570	36,600	39,310
2029	38,819	55,800	36,700	39,900	44,880
2034	42,151	---	38,940	43,430	50,920

Source: Mead & Hunt.

¹ Colorado State Airport System Plan forecast years are 2015, 2020 and 2030.

² Airport records.

FIGURE 3-1 - PASSENGER ENPLANEMENTS FORECAST SCENARIOS, 2014-2034



Source: Mead & Hunt

Scenario Two, the medium growth rate scenario, is the preferred enplanements forecast for this Master Plan Update for a number of reasons. Given the historic trend of declining enplanements since 2006, it will likely take time for current initiatives designed to improve and increase commercial air service to produce results.

Also, as described in the Passenger Demand Analysis by Mead & Hunt, there are a number of factors currently limiting air service at GUC and it will likely take changes to multiple factors to reverse the current trend of declining enplanements. Finally, as illustrated on the previous chart, Scenario Two represents a middle line between the high and low scenarios.

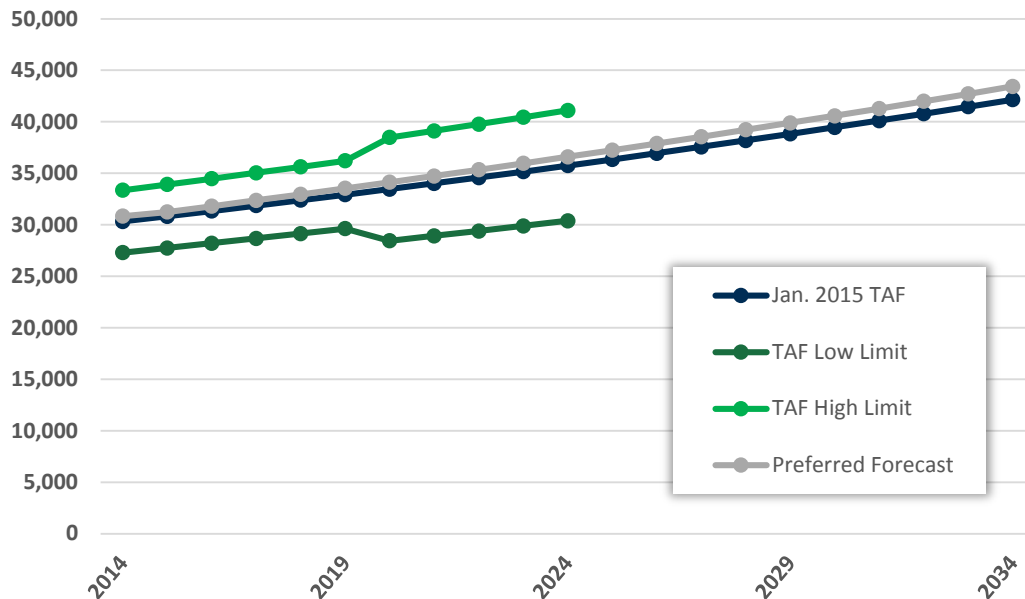
Use of Various Forecasts. The preferred forecast for passenger enplanements will be submitted to FAA for approval, and if approved, will be utilized throughout the remainder of this Master Plan Update as the basis for facility needs documentation. However, the low and high scenario forecasts have recognized value. Given the historical trend of declining enplanements, future growth in passenger enplanements is not a certainty. It is possible that enplanements will continue to hover around existing levels for a number of years.

The high scenario forecast is expected to represent the maximum passenger growth that can reasonably be expected at the Airport. The high and low scenario numbers can be utilized to help test Master Plan Update recommendations for feasibility and flexibility. For example, the low scenario is often used to test for financial feasibility.

The question, “If activity is lower than anticipated, can the development plan be funded?” can only be answered if low growth forecast numbers are known. The high forecast numbers are required to answer the question, “Will programmed facilities have adequate capacity if activity grows similar to the high projected rate?”

According to FAA’s June 2008 guidance, *Review and Approval of Aviation Forecasts*, “For all classes of airports, forecasts for total enplanements and total operations are considered consistent with the FAA’s TAF” if the forecasts are within 10% of the TAF figures during the first five years and within 15% during the first 10 years. “If the forecast is not consistent with the TAF, differences must be resolved if the forecast is to be used in FAA decision-making. This may involve revisions to the airport sponsor’s submitted forecasts, adjustments to the TAF, or both.” The comparison of the preferred forecast for passenger enplanements with the TAF limits is presented in the following figure, entitled *Preferred Passenger Enplanements Forecast Compared with TAF Limits, 2014-2034*. As indicated in the figure, the preferred enplanement forecast is within the TAF limits and thus, consistent with the TAF.

FIGURE 3-2 - PREFERRED PASSENGER ENPLANEMENTS FORECAST
COMPARED WITH TAF LIMITS, 2014-2034



Source: Mead & Hunt.

3.9.2 Commercial Passenger Service Operations Forecast

The relationship between passenger enplanements and commercial service operations can vary significantly, in that enplanements can increase without a corresponding increase in aircraft operations, or even increase following a decrease in operations. Often, this results from the use of larger aircraft with greater seating capacity and/or more efficient scheduling that increases the number of passengers boarded per flight. These variables make commercial service operations forecasting challenging.

Fleet Mix. Currently, GUC’s seasonal service is operated by United and American from December through March, utilizing 50- and 69-seat regional jets, and narrow body aircraft with 128 seats. Summer service by United is operated entirely with regional jet aircraft. It is anticipated that larger regional jets will be utilized in the future as airlines continue to move away from 50-seat regional jet aircraft (i.e., the ERJ145) and toward larger capacity regional jet aircraft (i.e., the CRJ7 and CRJ9). Operations by narrow body aircraft like the A319 (or equivalent seating capacity aircraft) are anticipated to remain relatively constant throughout the forecast period.

Boarding Load Factor. The BLF is the ratio of seats available for passenger boarding on a particular aircraft compared to the number of passengers actually boarding (for example, if an aircraft has fifty seats available and twenty-five passengers board, the BLF is 50%). According to recent FAA estimates included in the *FAA Aerospace Forecast Fiscal Years 2014-2034*, average load factors of approximately 83.2% were achieved by the air carrier industry in 2013 and are expected to increase to 83.8% by 2034. The BLF for Gunnison-Crested Butte Regional Airport was approximately 67.4% in 2014.

The establishment of projected passenger enplanements can be translated to aircraft operations by identifying the current fleet mix and projecting the type of aircraft that may potentially serve the airport in the future. With the type of aircraft established, average seating capacity and load factors can be formulated, which can then be equated to a quantity of aircraft operations that will be required to accommodate forecast enplanement demand.

The following table, entitled *Commercial Passenger Service Operations Forecast, 2014-2034*, presents the commercial service operational forecasts, as well as the preferred enplanements forecast, the average seats per departure, and the projected BLFs used in formulating the commercial service aircraft operations forecast. As can be seen in the table, the average seats per departure is anticipated to increase as larger capacity 69- and 76-seat regional jet aircraft replace the 50-seat aircraft entirely by 2024, and continue to increase in frequency throughout the forecast time period.

It is not expected that significant increases in the BLF are likely, as it is anticipated that increased flight frequencies will entice more passengers from the study area to utilize the Airport. Consequently, the average weekly departures will increase from 12.4 in 2014 to 15.5 by the end of the 20-year planning period to accommodate the forecast increase in enplanements. Commercial service aircraft operations are projected to increase from 1,292 in 2014 to 1,612 by 2034, which is a 24.8% increase and an AAGR of 1.1%.

TABLE 3-5 - COMMERCIAL PASSENGER SERVICE OPERATIONS FORECAST, 2014-2034

Aircraft	2014 ¹	2019	2024	2029	2034
ERJ145 (50 seats)	339	156	0	0	0
CRJ7 (69 Seats)	177	312	429	442	468
CRJ9 (76 seats)	0	52	117	182	208
A319 (128 seats)	131	130	130	130	130
Departures	646	650	676	754	806
Operations	1,292	1,300	1,352	1,508	1,612
Average Seats/Departure	70.79	76.80	81.56	80.86	80.32
Enplanements	30,831	33,540	36,600	39,900	43,430
BLF	67.4%	67.2%	66.4%	65.4%	67.1%
Departures/Week					
ERJ145	6.5	3	0	0	0
CRJ7	3.4	6	8.25	8.5	9
CRJ9	0	1	2.25	3.5	4
A319	2.5	2.5	2.5	2.5	2.5
Total Departures/Week	12.4	12.5	13.0	14.5	15.5

Source: Mead & Hunt

¹ Actual.

3.9.3 General Aviation Operations Forecast

As with enplanements, local and national trends were reviewed in developing the general aviation forecasts. The FAA TAF is included in the table and figure below, both entitled *General Aviation Operations Forecast Scenarios, 2014-2034*, for comparison purposes. Three forecast scenarios were developed for general aviation operations. It is important to note that non-scheduled operations conducted under the category of “Air Taxi” that were not related to scheduled commercial passenger activity have been included in this general aviation operations forecast.

Scenario One: Assumes an average annual growth rate of 0.5% throughout in accordance with the projected growth rate of itinerant general aviation operations at towered airports, as reported in the *FAA Aerospace Forecast Fiscal Years 2014-2034*.

Scenario Two: Forecasts operations to increase at 1.2% throughout in accordance with Woods & Poole population projections for Gunnison County for the years 2013-2030.

Scenario Three: Uses a growth rate of 1.4% through 2019 in accordance with FAA Terminal Area Forecast (TAF) projections for GUC general aviation and air taxi operations, then follows the active general aviation and air taxi turboprop hours flown forecast growth rate of 1.8% from the *FAA Aerospace Forecast, Fiscal Years 2014-2034*, resulting in an overall growth rate of 1.7%.

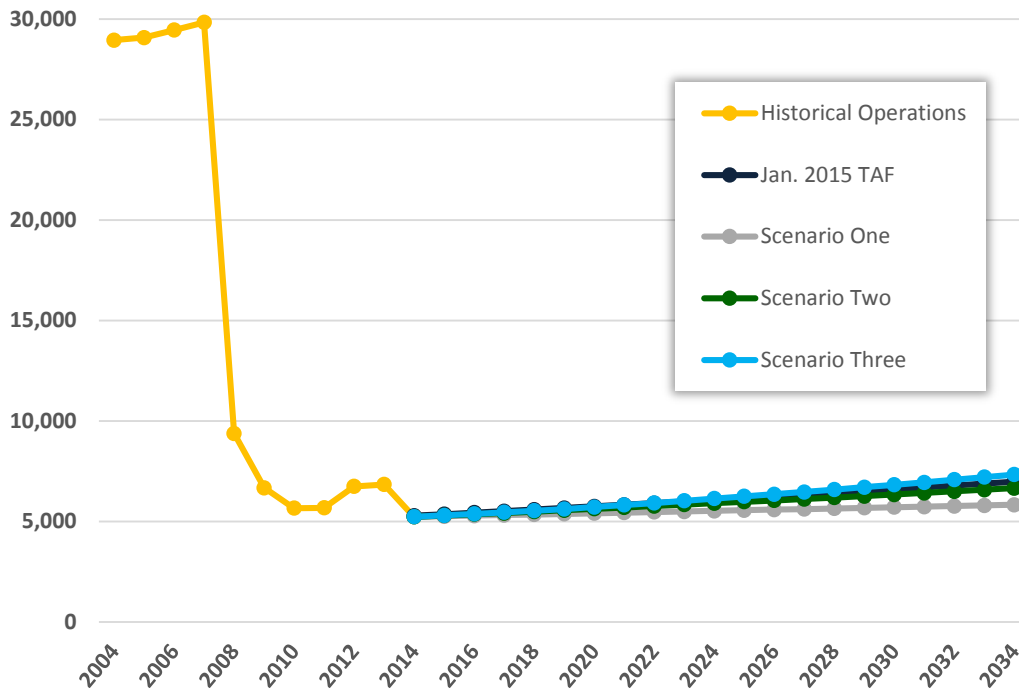
TABLE 3-6 - GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2014-2034

Year	TAF	Scenario One 0.5%	Scenario Two 1.2%	Scenario Three 1.7%
2014	5,293	5,235 ¹	5,235 ¹	5,235 ¹
2019	5,670	5,380	5,560	5,620
2024	6,077	5,530	5,910	6,140
2029	6,513	5,680	6,260	6,710
2034	6,983	5,830	6,660	7,340

Source: Mead & Hunt.

¹ FAA Traffic Flow Management System Counts (TFMSC)/Airport Management estimate.

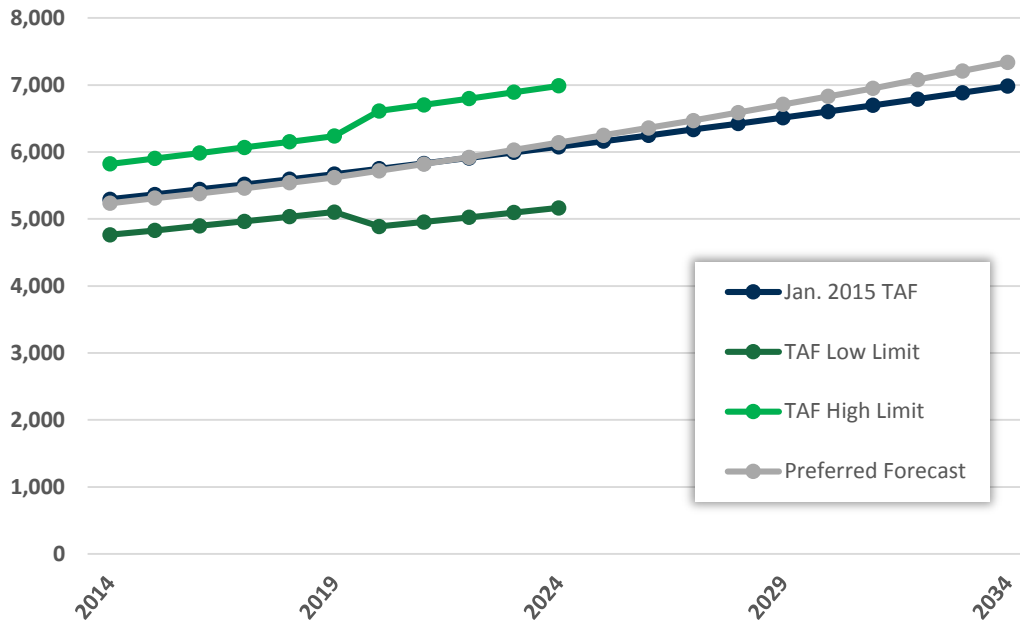
FIGURE 3-3 - GENERAL AVIATION OPERATIONS FORECAST SCENARIOS, 2014-2034



Source: Mead & Hunt.

Scenario Three, based on a combination of growth rates projected in the TAF and *FAA Aerospace Forecast*, is the preferred general aviation operations forecast for a number of reasons. This historical decreases in general aviation operations at GUC have resulted in an operational fleet mix highly skewed toward higher performance turboprop and business jet type aircraft. FAA forecasts for this portion of the GA fleet are very optimistic and operations by turboprop and business jet aircraft will likely continue to increase at GUC as the Airport strives to provide services desired by this type of GA user. Much of this turboprop and business jet activity at GUC is related to second homeowners and both winter and summer tourist activity.

FIGURE 3-4 - PREFERRED GENERAL AVIATION OPERATIONS FORECAST
COMPARED WITH TAF LIMITS, 2014-2034



Source: Mead & Hunt.

3.9.4 Military Operations Forecast

As a percentage of total annual aircraft operations, the number of estimated military operations at the Gunnison-Crested Butte Regional Airport has fluctuated. Airport Management has noted that observed military operations in the past year have been much higher than what has historically been reported in the TAF and on the Airport's 5010 form. Airport Management estimates annual military helicopter operations of approximately 100 and annual military fixed wing activity of approximately 1,000. Much of this military activity is related to high altitude training activities at GUC.

Given that the Department of Defense does not publicly share information about projected military operations, these operations have been projected to remain constant at the 2014 estimated level of 1,100 operations per year throughout the planning period.

3.9.5 Operations Forecast by Aircraft Type

The following table, entitled *Summary of Operations Forecast by Aircraft Type, 2014-2034*, depicts the approximate levels of use by aircraft types that currently use and are projected to use Gunnison-Crested Butte Regional Airport. In general, this table reflects a slight decline in single-engine piston and a slight increase in turboprop and business jet operations as a percentage of total operations. The single-engine piston market has been in decline for a number of years nationally.

This particular portion of the fleet mix also experiences significant challenges in operating at GUC given the challenges of mountain flying and high density altitude. As mentioned previously, there is no projected growth in military operations from the base year level (2014).

TABLE 3-7 - SUMMARY OF OPERATIONS FORECAST BY AIRCRAFT TYPE, 2014-2034

Operations	2014 ¹	2019	2024	2029	2034
Commercial Service	1,292²	1,300	1,352	1,508	1,612
– Regional Jet	1,030	1,040	1,092	1,248	1,352
– Narrow Body	262	260	260	260	260
General Aviation	5,235³	5,620	6,140	6,710	7,340
– Single-Engine Piston	181	195	235	260	300
– Multi-Engine Piston	367	390	400	410	415
– Turboprop	1,850	1,990	2,180	2,410	2,650
– Business Jet	2,137	2,290	2,500	2,735	2,990
– Helicopter	700	755	825	895	985
Military	1,100³	1,100	1,100	1,100	1,100
– Fixed Wing	1,000	1,000	1,000	1,000	1,000
– Helicopter	100	100	100	100	100
Total Operations	7,627	8,020	8,592	9,318	10,052

Source: Mead & Hunt.

¹ Actual/estimated.

² Diio Mi data based on published airline schedules.

³ FAA Traffic Flow Management System Counts (TFMSC)/Airport Management estimate.

3.9.6 Local and Itinerant Operations Forecast

Forecasts of operations have also been categorized accordingly into local and itinerant operations. Local operations are defined as any operation performed by an aircraft operating in the local traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from a local practice area or aircraft executing practice instrument approaches at an airport.

The current percentage breakdown at GUC is estimated at 18% local operations and 82% itinerant operations. This percentage breakdown is not expected to change dramatically over the course of the planning period; however, the proportion of itinerant operations is forecasted to increase by 0.5% every five years. Forecasts of local and itinerant operations are shown in the following table, entitled *Summary of Local and Itinerant Operations Forecast, 2014-2034*.

TABLE 3-8 - SUMMARY OF LOCAL AND ITINERANT
OPERATIONS FORECAST, 2014-2034

Year	Local	Itinerant	Total
2014	1,373	6,254	7,627 ¹
2019	1,404	6,616	8,020
2024	1,461	7,131	8,592
2029	1,537	7,781	9,318
2034	1,608	8,444	10,052

Source: Mead & Hunt.

¹ Actual/estimate. Aircraft operations data compiled from Airport records/estimates and FAA Traffic Flow Management System Counts (TFMSC).

3.9.7 Peak Period Forecast

An additional element in assessing airport use and determining various capacity and demand considerations is to ascertain peak period activities. In lieu of air traffic records or other reliable sources of information, FAA statistics and assumptions from airports with similar activity and operational characteristics have been applied to Gunnison-Crested Butte Regional Airport. These include: 10% of annual operations occur in the peak month, a 31-day peak month is assumed, and existing peak hour operations are 11% of the average day of the peak month. July is assumed to be the peak month as the Airport reports that during the July 4th weekend, the demand for aircraft parking often exceed space available. The peak period operational activities are illustrated in the following table, entitled *Peak Period Aircraft Operations, 2014-2034*.

TABLE 3-9 - PEAK PERIOD AIRCRAFT OPERATIONS, 2014-2034

Year	Annual	Peak Month	Average Day of Peak Month	Peak Hour / Average Day Ratio	Average Peak Hour
2014	7,627 ¹	763	25	11%	3
2019	8,020	802	26	11%	3
2024	8,592	859	28	12%	3
2029	9,318	932	30	13%	4
2034	10,052	1,005	32	14%	5

Source: Mead & Hunt.

¹ Actual/estimate. Aircraft operations data compiled from Airport records/estimates and FAA Traffic Flow Management System Counts (TFMSC).

3.9.8 General Aviation Based Aircraft Forecast

The number of general aviation aircraft that can be expected to base at an airport facility is dependent on several factors, such as airport radio communications, available facilities, airport operator services, airport proximity and access, aircraft basing capacity available at adjacent airports, and similar considerations. General aviation operators are particularly sensitive to both the quality and location of their basing facilities, with proximity of home and work often being identified as the primary considerations in the selection of an aircraft basing location.

There is currently sufficient hangar storage to accommodate existing demand, although as privately owned facilities, each hangar may accommodate less than its maximum capacity of stored aircraft, and thus the excess capacity may not be available to accommodate future demand. However, it is important to recognize that hangars will only be built to accommodate the actual demand for additional hangar facilities. In developing the based aircraft forecasts, local and national trends were reviewed. The scenarios are presented in the following table and figure, both entitled *General Aviation Based Aircraft Forecast Scenarios, 2014-2034*. The FAA TAF was included for comparison purposes.

- **Scenario One:** Presents a projection in which the 2014 OPBA figure of 209 was applied to the selected general aviation forecast, resulting in a 1.7% growth rate.
- **Scenario Two:** This scenario is reflective of a gradually increasing operations per based aircraft (OPBA) figure that was applied to the selected general aviation forecast in order to project future based aircraft levels, resulting in a 1.9% growth rate.
- **Scenario Three:** Applies the 2014-2034 FAA TAF projected growth rate for based aircraft of 2.7%.

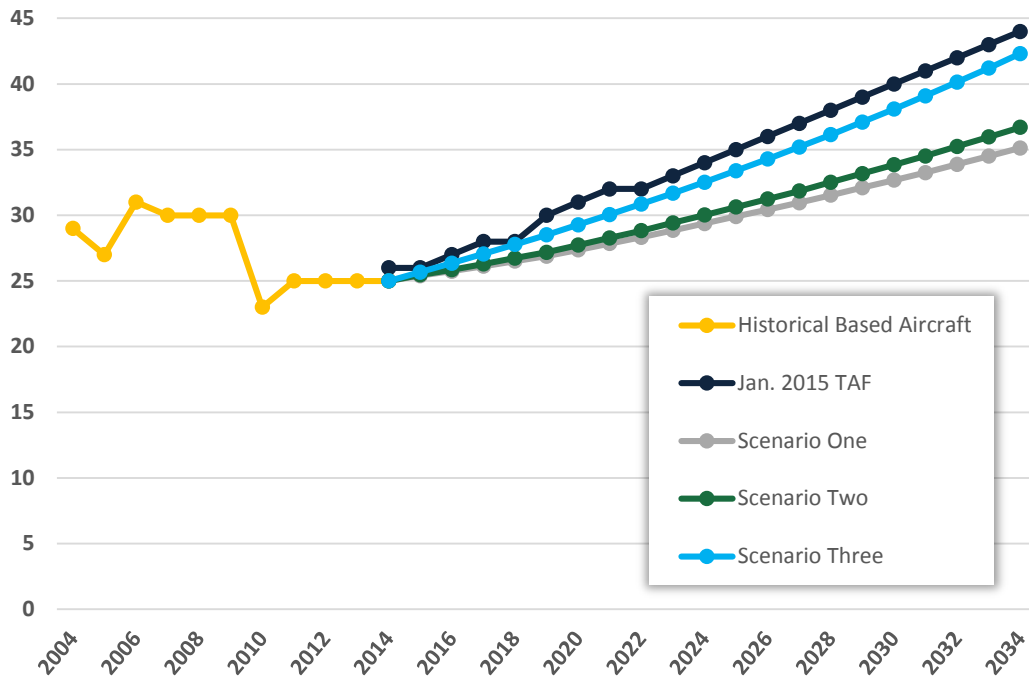
TABLE 3-10 - GENERAL AVIATION BASED AIRCRAFT FORECAST SCENARIOS, 2014-2034

Year	TAF	Scenario One 1.7%	Scenario Two 1.9%	Scenario Three 2.7%
2014	26	25 ¹	25 ¹	25 ¹
2019	30	27	27	29
2024	34	29	30	33
2029	39	32	33	37
2034	44	35	37	42

Source: Mead & Hunt.

¹ 2014 base year figure from Airport Master Record Form 5010, 1/1/2014.

FIGURE 3-5 - GENERAL AVIATION BASED AIRCRAFT FORECAST SCENARIOS, 2014-2034

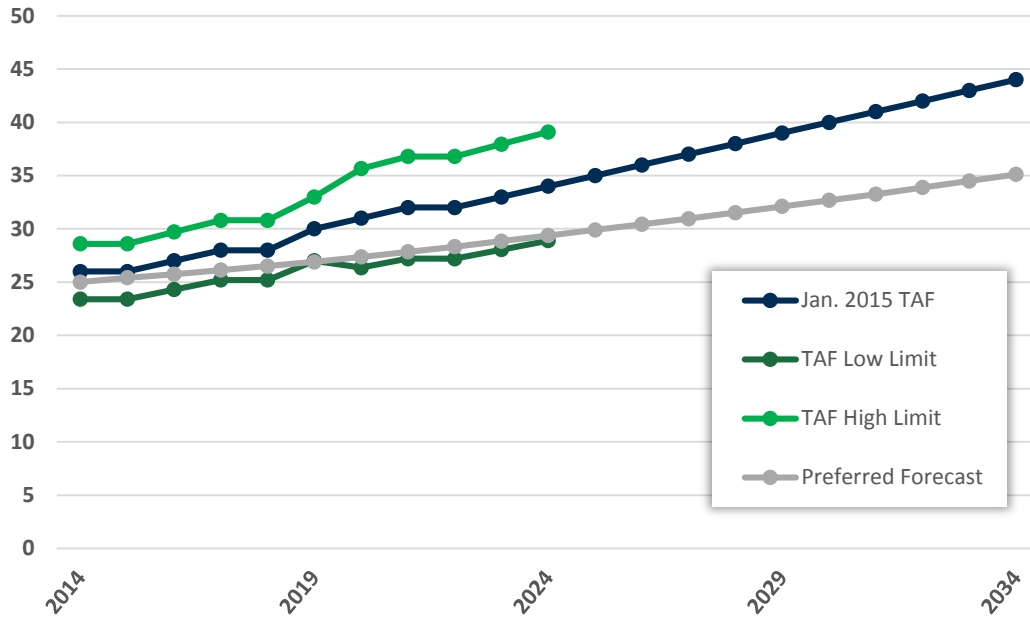


Source: Mead & Hunt.

Scenario One, based on the 2014 OPBA, is the selected based aircraft forecast for this Master Plan Update. As stated previously, there doesn't appear to be significant demand for permanent based aircraft storage at GUC, but rather continued demand for seasonal and part time basing of aircraft. The based aircraft forecast scenarios are presented in the following table and figure, both entitled *General Aviation Based Aircraft Forecast Scenarios, 2014-2034*.

The comparison of the preferred forecast for based aircraft with the TAF limits is presented in the following figure, entitled *Preferred General Aviation Based Aircraft Forecast Compared with TAF Limits, 2014-2034*.

FIGURE 3-6 - PREFERRED GENERAL AVIATION BASED AIRCRAFT FORECAST
COMPARED WITH TAF LIMITS 2014-2034



Source: Mead & Hunt.

The mix of based aircraft for incremental periods throughout the planning period is presented in the following table, entitled *General Aviation Based Aircraft Fleet Mix, 2014-2034*. In line with historical based aircraft growth, the percentages of based aircraft are expected to remain relatively constant.

An increase in the proportion of business jets and turboprop aircraft is projected, with a corresponding decrease in the proportion of single-engine piston and multi-engine piston aircraft.

TABLE 3-11 - GENERAL AVIATION BASED AIRCRAFT FLEET MIX, 2014-2034

Aircraft Type	2014	2019	2024	2029	2034
Single-Engine Piston	20 (80.0%)	21 (77.8%)	22 (75.9%)	23 (71.9%)	25 (71.4%)
Multi-Engine Piston	4 (16.0%)	4 (14.8%)	4 (13.8%)	4 (12.5%)	3 (8.6%)
Helicopter	1 (4.0%)	1 (3.7%)	1 (3.4%)	1 (3.1%)	1 (2.9%)
Turboprop	0 (0.0%)	1 (3.7%)	1 (3.4%)	2 (6.3%)	3 (8.6%)
Business Jet	0 (0.0%)	0 (0.0%)	1 (3.4%)	2 (6.3%)	3 (8.6%)
TOTAL	25 (100%)	27 (100%)	29 (100%)	32 (100%)	35 (100%)

Source: Mead & Hunt.

3.10 Runway Design Code (RDC)/Critical Aircraft Analysis

The types of aircraft presently utilizing each runway and those projected to utilize each runway in the future are important considerations for airport planning. Runway Design Code (RDC) standards are described in AC 150/5300-13A, *Airport Design*. The RDC 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 RDC has two components that relate to the Airport’s “Design Aircraft” or critical 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).

In general, aircraft approach speed applies to runways and runway-related facilities, while aircraft wingspan is primarily related to separation criteria associated with taxiways and taxilanes. A third component of the RDC related to the lowed approach minimums available for the runway and is expressed in feet of runway visual range (for example, 1-mile visibility minimum = 5,000 feet).

As described in the previous chapter, the current RDC for Runway 6/24 is C-IV-5000 while the RDC for Runway 17/35 is B-I-5000. Based on FAA’s Traffic Flow Management System Counts (TFMSC) database of IFR filed flight plans in 2014, GUC received 2,182 operations by Category C aircraft and 81 operations by Group IV aircraft. While the total number of Group IV operations do not meet the FAA’s substantial use threshold of 500, C-IV-5000 is still considered the appropriate RDC because the Airport already meets most design standards for this RDC and maintaining the Airport to these standards will provide the airlines maximum flexibility in choosing the type of aircraft they use to serve the Gunnison market. The breakdown of existing operations by RDC and a forecast of future operations by RDC is shown in the following table, entitled *Summary of Operations Forecast by RDC, 2014-2034*.

TABLE 3-12 - SUMMARY OF OPERATIONS FORECAST BY RDC, 2014-2034

RDC	2014	2019	2024	2029	2034
A-I, A-II, B-I, B-II	3,339	3,633	3,952	4,300	4,678
C-I, C-II	1,793	1,951	2,122	2,309	2,515
D-I, D-II	314	342	372	404	440
A-III, B-III, C-III	329	329	329	329	329
C-IV	81	81	81	81	81
Unknown RDC (including helo, military, etc.)	1,771	1,684	1,736	1,895	2,009
TOTAL	7,627	8,020	8,592	9,318	10,052

Source: Mead & Hunt analysis. Extrapolated using FAA Traffic Flow Management System Counts (TFMSC).

3.11 Aviation Forecast Summary

A summary of the aviation forecasts prepared for this Master Plan Update is presented in the following table, entitled *Summary of Aviation Activity Forecasts, 2014-2034*. This information is used to develop the remaining portions of the report (to analyze facility requirements, aid development of alternatives, and to guide the preparation of the plan and program of future airport facilities). In other words, the aviation activity forecasts are the foundation from which plans will be developed and implementation decisions will be made.

In addition, a comparison of the selected forecasts for passenger enplanements, commercial operations, and total operations with the FAA TAF is summarized in the following table, entitled *Comparison of Forecasts and TAF Forecasts, 2014-2029 (FAA Format)*.

As shown in Table 3-13, the passenger enplanements forecast is within the TAF limits. However, the commercial operations forecast and the total operations forecast are outside the TAF limits for a couple of reasons. First, as described in previous sections of this chapter, the FAA TAF is significantly underreporting commercial operations for Gunnison. The FAA TAF lists 601 commercial operations in 2014.

The actual number based on Diio Mi data from published airline schedules is actually 1,292 commercial operations. Second, as described in this chapter, the historical estimates of annual military operations are substantially less than what current airport management has estimated.

TABLE 3-13 - SUMMARY OF AVIATION ACTIVITY FORECASTS, 2014-2034

Operations	2014 ¹	2019	2024	2029	2034
Commercial Service	1,292²	1,300	1,352	1,508	1,612
– Regional Jet	1,032	1,040	1,092	1,248	1,352
– Narrow Body	262	260	260	260	260
General Aviation	5,235	5,620	6,140	6,710	7,340
– Single-Engine Piston	181	195	235	260	300
– Multi-Engine Piston	367	390	400	410	415
– Turboprop	1,850	1,990	2,180	2,410	2,650
– Business Jet	2,137	2,290	2,500	2,735	2,990
– Helicopter	700	755	825	895	985
Military	1,100	1,100	1,100	1,100	1,100
– Fixed Wing	1,000	1,000	1,000	1,000	1,000
– Helicopter	100	100	100	100	100
Total Operations	7,267	8,020	8,592	9,318	10,052
– Local Operations	1,373	1,404	1,461	1,537	1,608
– Itinerant Operations	6,254	6,616	7,131	7,781	8,444
Passenger Enplanements	30,831	33,540	36,600	39,900	43,430
Based Aircraft by Type	25	27	29	32	35
– Single-Engine Piston	20	21	22	23	25
– Multi-Engine Piston	4	4	4	4	3
– Helicopter	1	1	1	1	1
– Turboprop	0	1	1	2	3
– Business Jet	0	0	1	2	3

Source: Mead & Hunt.

¹ Actual/estimated.

² Diio Mi data based on published airline schedules.

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TABLE 3-14 - COMPARISON OF FORECASTS AND TAF FORECASTS, 2014-2029 (FAA FORMAT)

Operations	Airport Forecast	TAF ¹	Airport Forecast / TAF % Difference
Passenger Enplanements			
– Base Year (2014)	30,831	30,771	0.2%
– 2019	33,540	32,921	1.9%
– 2024	36,600	35,744	2.4%
– 2029	39,900	38,819	2.8%
Commercial Operations			
– Base Year (2014)	1,292	601	115.0%
– 2019	1,300	616	111.0%
– 2024	1,352	632	113.9%
– 2029	1,508	650	132.0%
Total Operations			
– Base Year (2014)	7,627	5,590	36.4%
– 2019	8,020	5,982	34.1%
– 2024	8,592	6,405	34.1%
– 2029	9,318	6,859	35.9%

Source: Mead & Hunt.

¹ TAF data is on a U.S. Government fiscal year basis (October through September).