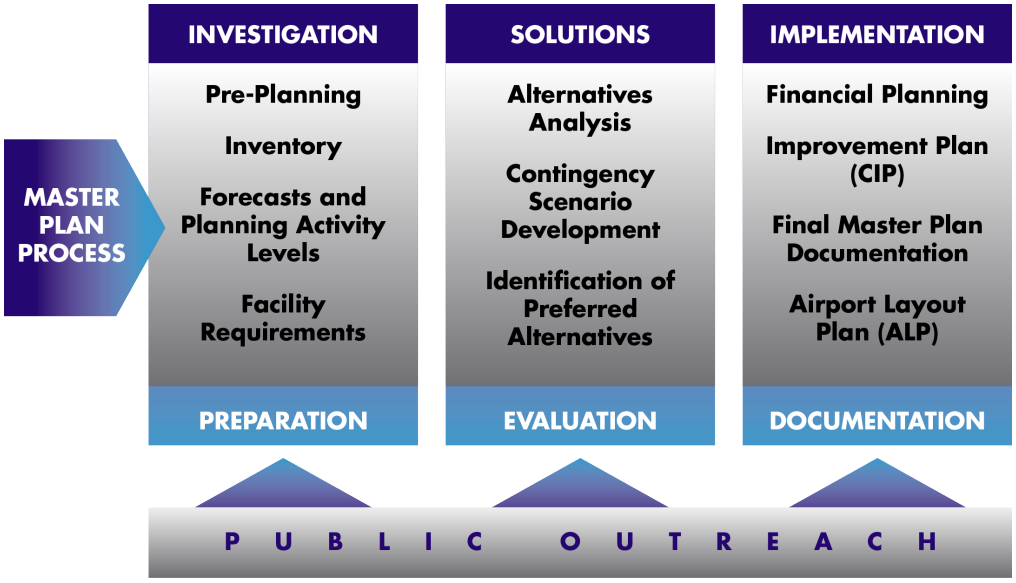
3.0 FORECAST OF AVIATION ACTIVITY

Aviation activity forecasts are essential for airport master plans because they directly impact a number of important factors at an airport such as:

- Future facility requirements needed to accommodate projected demand, identified through the demand-capacity analysis;
- Future design aircraft and FAA airport design criteria;
- Capital investments, priorities, and timing;
- Future aeronautical revenue potential; and
- Potential environmental issues.

In the master planning process forecasts are typically the second element of the investigation phase of the study, after the inventory, see **Figure 3-1**. Once developed, aviation activity forecasts are used to determine the need for new or improved airport facilities. According to FAA's Advisory Circular (AC) 150/5070-6B: *Airport Master Plans*, aviation forecasts should be "realistic, based upon the latest available data, reflect current airport conditions, and provide adequate justification for airport planning and development."

FIGURE 3-1 - MASTER PLAN ELEMENTS



Source: Jviation

Once the aviation forecasts have been accepted by the Town of Buena Vista and the FAA, the Master Plan will examine the facility requirements based on anticipated aviation demand for the 20-year planning period, which concludes the investigation phase of the Master Plan, and initiates the solutions phase to accommodate future aviation demand on airport facilities.

Aviation forecasts are typically prepared for short- (0-5 year), medium- (6-10 year), and long-term (11-20 year) planning periods. The forecast period for this Master Plan is between 2014 and 2034.

As discussed in the following text, the forecast periods are directly related to forecast validity. While forecasting is essential for a successful master plan, it only serves as an approximation of future activity. Forecasts are developed accounting for historical data and trends, present conditions, and future outlooks based on a number of variables.

Historical trend lines are an important tool in forecasting, but prior activity levels at non-towered airports such as Central Colorado Regional Airport (AEJ)[1] are estimates, not actual counts. For example, FAA's estimates of activity at AEJ between 1990 and 2012 show significant fluctuations in aircraft operations[2] and based aircraft over the 22-year period (see **Figure 3-2** and **Figure** 3-3), but do not indicate why those changes occurred or why operations decreased sharply in 1996, and again in 2004 when based aircraft were increasing. The fluctuations in activity do not appear to correspond with demographic changes in Chaffee County, which experienced steady increase in both population and employment over that period, see **Section 3.3**.

In addition, the FAA's Terminal Area Forecast (TAF) and Form 5010[3] do not agree on current activity levels at AEJ; typically these two FAA data sources are equal. However, as the FAA does not provide any site specific explanation for their forecast at individual GA airports, nor identify the specific local or national factors that they anticipate will influence future activity at AEJ, it is unknown why they differ. The FAA's Traffic Flow Management System Counts (TFMSC), which tracks aircraft activity via filed instrument (IFR) flight plans and Air Traffic Control (ATC) clearances, did not record any activity at AEJ, and as a result there are no FAA records of corporate aircraft activity at AEJ, other than what the town has counted. Given the discrepancies in the data and the lack of explanation concerning the variations, the historical trends shown do not provide statistically reliable models for future trend line or regression analysis forecasts.[4]

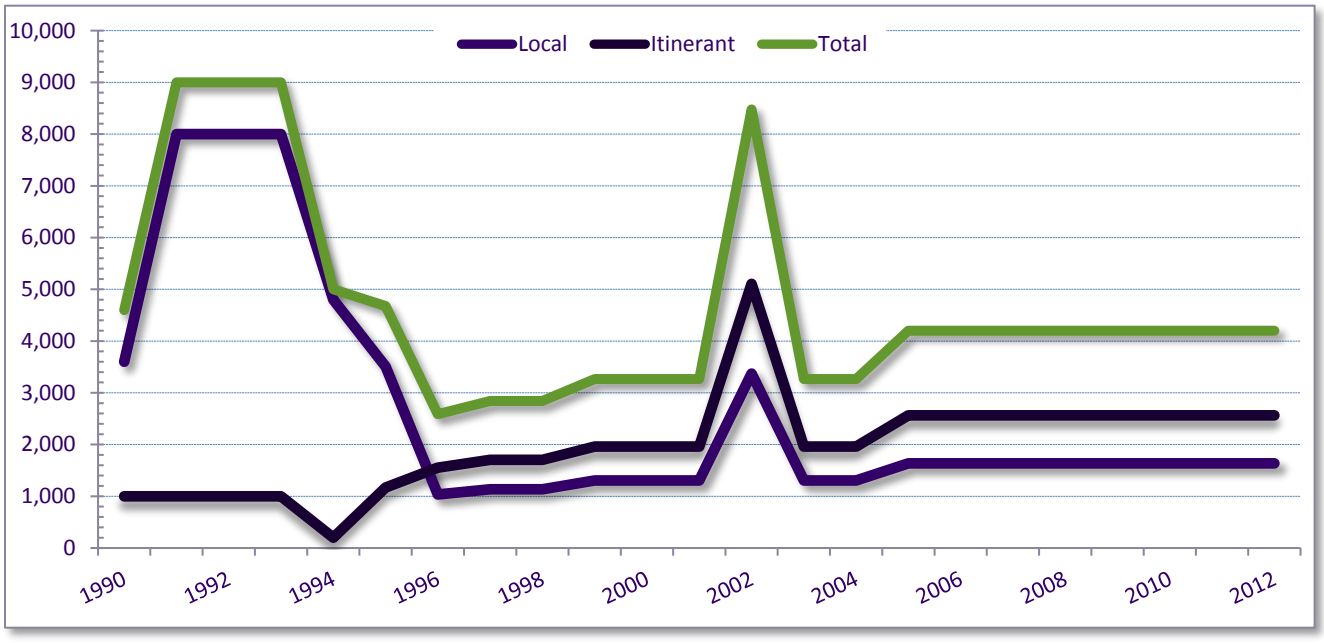
[1] FAA identifier for Central Colorado Regional Airport

[2] An aircraft operation is either a take-off or landing.

[3] FAA Airport Master Record, Form 5010-1

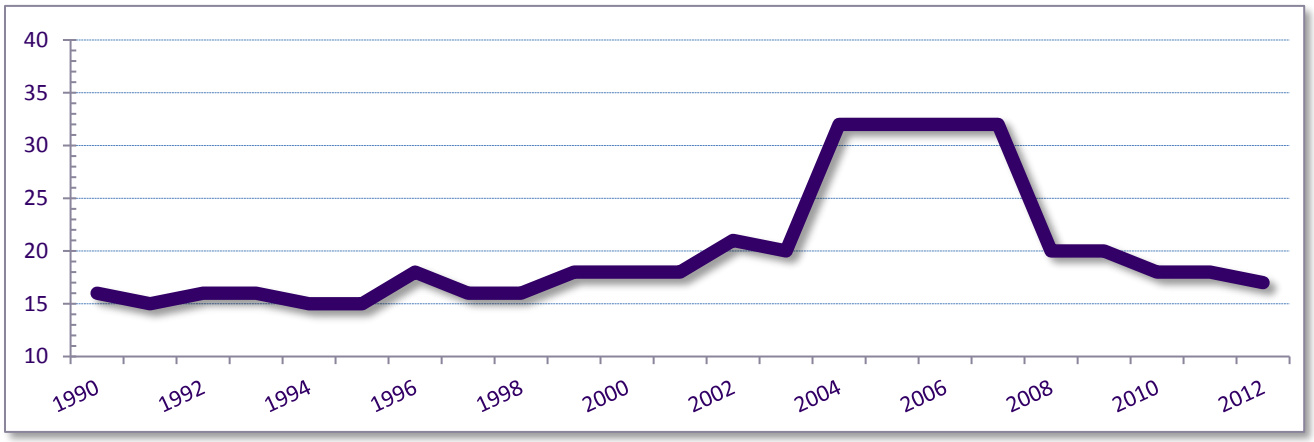
[4] **Trend analysis** uses a technique called least squares to fit a trend line to a set of time series data and then project the line into the future for a forecast. **Regression analysis** is used to understand which among the independent variables are related to the dependent variable, and to explore the forms of these relationships.

FIGURE 3-2 – AIRCRAFT OPERATIONS, AEJ



Source: FAA Terminal Area Forecast (TAF)[1]

FIGURE 3-3 – BASED AIRCRAFT, AEJ



Source: FAA Terminal Area Forecast

[1] **Local** operations are performed by aircraft which: (a) operate in the local traffic pattern or within sight of the airport; (b) are known to be departing for, or arriving from, flight in local practice areas located within a 20-mile radius of the airport; (c) execute simulated instrument approaches or low passes at the airport. **Itinerant** operations are all aircraft operations other than local operations.

According to Jill Van Deel, the airport manager, the number of based aircraft at AEJ as of January 2015 is 27, as detailed below. Because these aircraft were counted by the airport manager, there is a higher level of confidence that this number is more accurate than FAA's estimate.

- Jet Turbine - 2
- Turbo Prop - 1
- Multi Engine - 2
- Single Engine – 22

Fuel sales records maintained by the Airport between 2009 and 2013 indicate a fluctuation in the amount of 17,718 gallons of fuel sold, see **Table 3-1**. Changes in fuel sales occurred during periods when FAA's estimate of aircraft operations at AEJ was relatively stable. A possible factor for the variation is that high altitude aircraft testing, during the summer season, may result in additional fuel sales that fluctuate from year to year, while that activity was not captured in FAA's estimates.

TABLE 3-1 – AEJ FUEL SOLD (GALLONS)

FY	Total
2013	59,847
2012	58,180
2011	60,374
2010	53,094
2009	42,656

Source: Airport Administration Records, 2014

The FAA maintains detailed aircraft activity records at airports with control towers. FAA's records of aircraft activity between 2000 and 2013 [1] at towered airports throughout Colorado[2] indicate that general aviation activity declined steadily by 23 percent, see **Table 3-2**. Itinerant and local GA operations[3] both declined by a similar percentage over the 14-year period. Over that same period however, both air carrier and air taxi operations increased.

Although aircraft operations at non-towered airports have not been accurately documented, the decline in GA activity at towered airports was likely mirrored by similar trends at many non-towered airports over the same period. The decline in GA operations between 2000 and 2013 experienced at towered airports is not unique to Colorado nor to the FAA's Northwest Mountain Region as it was seen throughout the nation.

The decrease in GA activity also predates the national recession that began in late 2007 and officially ended in 2010. Industry analysts have noted factors such as rapidly rising aviation fuel prices, the rising cost of airplane ownership and maintenance, the decline in airline hiring, and declining pilot

[1] FAA's Air Traffic Activity Data System (ATADS). Compiles traffic counts maintained by tower controllers.
[2] Towered airports include: DIA, COS, PUB, APA, FTG, BJC, ASE, EGE, GJT. Military control towers including Buckley, USAF Academy, and Fort Carson AAF are not included in FAA's data.
[3] An operation is a take-off or landing. Local operations are those that operate in the local traffic pattern or within site of the airport and itinerant operations are all other aircraft operations other than local.

population among the factors affecting GA activity. The recession between 2007 and 2010 also greatly impacted GA activity nationally and statewide, including corporate aircraft.

TABLE 3-2 – AIRCRAFT OPERATIONS AT COLORADO TOWERED AIRPORTS

CY	Itinerant					Local			Total	Total
	Air Carrier	Air Taxi	GA	Military	Total	GA	Military	Total	Operations	GA
2000	412,879	236,708	445,999	26,963	1,122,549	434,622	31,852	466,474	1,589,023	880,621
2001	390,555	235,274	418,758	29,298	1,073,885	426,228	34,148	460,376	1,534,261	844,986
2002	374,308	273,728	444,190	30,647	1,122,873	455,508	32,447	487,955	1,610,828	899,698
2003	355,790	292,844	384,711	40,901	1,074,246	373,763	52,070	425,833	1,500,079	758,474
2004	360,576	356,864	380,908	33,798	1,132,146	370,602	44,060	414,662	1,546,808	751,510
2005	416,819	306,041	388,104	33,536	1,144,500	382,310	39,076	421,386	1,565,886	770,414
2006	461,093	295,393	399,241	29,749	1,185,476	377,134	35,384	412,518	1,597,994	776,375
2007	483,621	288,310	408,008	32,925	1,212,864	419,313	52,361	471,674	1,684,538	827,321
2008	497,163	274,848	390,220	29,707	1,191,938	420,438	23,291	443,729	1,635,667	810,658
2009	490,944	244,966	344,828	31,091	1,111,829	353,448	28,250	381,698	1,493,527	698,276
2010	504,157	250,752	356,739	30,323	1,141,971	365,179	39,123	404,302	1,546,273	721,918
2011	486,789	272,228	360,292	26,894	1,146,203	326,168	31,628	357,796	1,503,999	686,460
2012	476,426	260,952	362,857	28,526	1,128,761	341,314	36,085	377,399	1,506,160	704,171
2013	449,575	247,959	347,269	25,116	1,069,919	330,950	33,164	364,114	1,434,033	678,219
Percent Change CY 2000 – 2013										
	8.9%	4.8%	-22.1%	-6.9%	-4.7%	-23.9%	4.1%	-21.9%	-9.8%	-23.0%

Source: FAA's Air Traffic Activity Data System (ATADS)

There are many factors/changes that will influence future aviation activity at AEJ as time progresses, both positively and negatively. A number of these changes are beyond any single airport or state to control, and many changes are also difficult to anticipate when and if they will occur. These factors include:

- aviation fuel prices;
- availability of 100LL avgas and a drop-in replacement[1];
- cost of airplane ownership: acquisition, maintenance, storage, insurance, etc.;
- airport and/or airspace security regulations;
- the number of licensed pilots, and pilot demographics; and
- local and regional economy.

One local example is the availability of FBO services (fuel and aircraft servicing/handling), which are provided by the Town of Buena Vista, and directly support aircraft activity. If for any reason the

[1] Drop in replacement means another fuel can be used in the same storage tanks and aircraft engines with no modifications

FBO services were no longer available, as has happened at other GA airports, overall activity levels at AEJ would likely decline. Conversely, if new aviation-related businesses were to locate at AEJ in the future, including a restaurant, then it is likely that overall activity would increase. Presently, AEJ accommodates specialty activity including high altitude testing by aircraft and component manufacturers, which could increase in the future.

There are two factors that directly impact the accuracy of every forecast (including meteorology, economics, demographics, and aviation activity). First, forecast accuracy is closely correlated to time, and the level of confidence in every forecast diminishes the further it moves into the future, primarily because more unknown or unanticipated events may occur. As a result, the forecasts with the highest level of confidence are short-term (typically one to five years). Medium and long range forecasts should be treated as outlooks and updated regularly. Secondly, the size of the database being projected affects forecast accuracy. In general, the level of confidence increases as the forecasted population increases. General aviation activity on an airport-specific level represents a relatively small population, which reduces the level of confidence in specific forecast numbers.

Another factor that affects forecast validity is that general aviation is a very broad and generic term that encompasses a wide variety of activity. As a GA airport, AEJ accommodates a broad spectrum of different missions including:

- personal/discretionary flying;
- business/corporate activity; [1]
- high altitude aircraft flight testing;
- air taxi/on-demand commercial services;[2]
- flight training;
- aerial observation/photography/filming;
- agricultural support;
- public services including law enforcement, medical evacuation, patient transportation; and
- military aircraft operations – transient (there are no based military aircraft at AEJ).

Per FAA's latest General Aviation and Air Taxi Survey conducted in 2012, the percent of GA hours flown by type of mission is shown in **Table 3-3**. The single largest GA mission in terms of hours flown is personal (discretionary) flying, followed by instructional, air taxi, corporate, and business. All those missions are flown at AEJ, but likely at different rates than measured nationally and shown in **Table 3-3**.

TABLE 3-3 – GA HOURS FLOWN BY ACTUAL USE (NATIONALLY)

GA Actual Use	Percent	GA Actual Use	Percent
Personal	33.5%	Part 135 Air Medical	3.0%
Instructional	15.3%	Air Tours	1.4%

[1] 14 CFR 91, General Operating and Flight Rules
[2] 14 CFR 135, Operating Requirements: Commuter And On Demand Operations And Rules Governing Persons On Board Such Aircraft

GA Actual Use	Percent	GA Actual Use	Percent
Air Taxi (Part 135)	10.0%	Other Work	1.1%
Corporate	9.7%	External Load	0.9%
Business	8.7%	Aerial App. – Other	0.8%
Aerial Observation	5.4%	Sightseeing	0.7%
Other	5.2%	Air Medical (Part 91)	0.4%
Aerial App. – Ag.	3.9%		

Note: FAA defines corporate as professionally flown aircraft, and business as flown by the aircraft owner
Source: FAA GA and Air Taxi Activity Survey, 2012.

A number of GA missions are closely tied to local and regional socioeconomic trends such as discretionary/personal flying and flight training, while other missions such as public service - law enforcement, emergency medical, etc. - are less affected by local socioeconomic factors. Corporate aviation activity is directly affected by factors such as the performance of the stock market, corporate profits, and the strength of specific industries such as the oil and gas market. As a consequence, the level of activity by each mission will change at different rates in the future; some missions will expand over time while others will remain flat or decline. In addition, every airport has different activity levels by various types of mission, and in some cases no activity by specific missions. For example, some GA airports have no agricultural (application) or construction support (external load) activity.

Given the many variables noted above, activity forecasts and the projects that they justify should be revisited and updated annually and compared against actual data (or estimates), and the forecast assumptions reviewed for continued validity.

3.1 Aviation Activity Forecasts Guidance Documents

3.1.1 FAA Advisory Circular 150/5070-6B, Airport Master Plans

The AC describes the forecast methodology that complies with FAA requirements for the development of airport master plans. The AC provides a flexible approach to preparing forecasts, based on the data that's available while focusing on critical issues unique to each airport.

3.1.2 FAA Form 5010-1, Airport Master Record

Form 5010 provides current estimated aircraft operations and based aircraft data for airports, as filed with/by the FAA. It is primarily used for navigational publications, such as the Airport Facility Directory (AFD) and is also used by FAA as the basis for historical data in the FAA's TAF. The latest Form 5010 for AEJ (dated July, 2014) lists 14 based airplanes, two based helicopters, and an estimated 10,000 aircraft operations – 3,893 local ops, and 5,970 itinerant ops for the calendar year ending December 31, 2012.

3.1.3 ACRP - Counting Aircraft Operations at Non-Towered Airports[1]

This 2007 report was prepared for the Airport Cooperative Research Program (ACRP), a research branch of the Transportation Research Board of the National Academies. This report describes the various methodologies used to estimate and count aircraft operations at non-towered airports. The report notes that where actual traffic counts had been done, either using an acoustical counter, video monitors, or manual counts, the number of aircraft operations recorded were typically less than the number estimated by the FBO and/or airport manager. Given the uncertainties and variability's associated with estimating traffic at non-towered airports, consideration could be given to using electronic counters at AEJ in the future to validate the forecasts and more accurately track activity levels.

3.1.4 ACRP - Airport Aviation Activity Forecasting[2]

This 2007 discusses various methods, including different forecast modeling and practices, for forecasting aviation activity and identifies ways to evaluate forecast, particularly the uncertainty and accuracy in forecasts. This ACRP report also identifies common aviation metrics, such as average operations per based aircraft (OPBA), as well as issues in data collection and preparation, and data sources.

3.1.5 Forecasting Aviation Activity by Airport[3]

Written by GRA, Inc. under contract to the FAA, this 2001 document provides guidance to airports, consultants, and the FAA when preparing airport activity forecasts, as well as those who review the forecasts. Further, the FAA utilizes this guidance when developing the TAF. This report utilizes a number of statistical methodologies that require substantial databases that are often not available at non-towered airports.

3.2 Previous AEJ Aviation Forecasts

A number of prior studies projected aviation activity at AEJ, which are summarized below.

3.2.1 AEJ Airport Master Plan, 2004

The previous AEJ Airport Master Plan was prepared in 2004 by Washington Infrastructure Services. The 2004 Master Plan projected that annual aircraft operations would increase from 6,124 in 2002 to 8,240 operations by 2021, an increase of 34.6 percent. Based aircraft were projected to increase from 23 in 2002 to 48 by 2021, an increase of 109 percent.

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[1] Airport Cooperative Research Program Synthesis 4, *Counting Aircraft Operations at Non-Towered Airports*, http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_004.pdf

[2] Airport Cooperative Research Program Synthesis 1, *Airport Aviation Activity Forecasting*, http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_002.pdf

[3] FAA Aviation Data & Statistics, http://www.faa.gov/data_research/aviation_data_statistics/index.cfm?print=go

3.2.2 Colorado Aviation System Plan, 2011

CDOT's Aviation System Plan examined a variety of performance measures at every airport in the state's system, including AEJ. The plan also included forecasts of activity at each individual airport through 2030. CDOT projected that activity at AEJ would increase by approximately 10 percent over 20 years (**Table 3-4**), which is a relatively conservative growth rate that is consistent with other GA airports in the state.

TABLE 3-4 – AEJ FORECASTS (CDOT)

Year	Based Aircraft	Aircraft Operations
2010	20	4,140
2015	20	4,210
2020	21	4,290
2030	22	4,470
Forecast Period	**Percent Change**	
2010-2015	0%	1.7%
2015-2020	0%	1.9%
2020-2030	5%	4.1%
2010-2030/a/	10%	7.9%

Source: Colorado DOT, Division of Aeronautics, 2011 Aviation System Plan

3.2.3 FAA Terminal Area Forecast (TAF)[1]

The FAA prepares the TAF for every airport in its National Plan of Integrated Airport Systems (NPIAS), including AEJ (**Table 3-5**). The TAF is updated annually, and is used by the FAA to determine facility and budget needs for the NPIAS, as well as serving as a resource for airport operators and state agencies.

The TAF serves as a guideline for other forecasts, and is utilized for comparison with scenario-driven projections in airport master plans. The FAA requires that master plan forecasts be compared to the TAF, and any discrepancies between the two that exceed pre-established limits be explained and justified prior to FAA approval of the master plan forecasts.[2]

The current TAF for AEJ covers the period Fiscal Year (FY) 2013 – 2040 (see **Appendix F**). FAA does not provide any explanation for their forecast at individual GA airports, nor do they identify the specific local or national factors that they anticipate will influence future activity.

The TAF projected based aircraft at AEJ would increase by 22 between 2013 and 2040, an increase of 122 percent. However, annual operations were shown to remain level over the same period. Typically, operations and based aircraft trend in similar directions (i.e. they decline or rise over the

[1] FAA Terminal Area Forecast, http://aspm.faa.gov/main/taf.asp
[2] FAA AC 150/5070-6B, *Airport Master Plans*, http://www.faa.gov/documentLibrary/media/advisory_circular/150-5070-6B/150_5070_6b_chg1.pdf

same period). The FAA did not offer an explanation of their forecast methodology or the underlying assumptions.

TABLE 3-5 – AEJ ACTIVITY FORECASTS (FAA TAF)

Year	Based Aircraft	Aircraft Operations
2013	18	4,200
2015	19	4,200
2020	22	4,200
2030	30	4,200
2040	40	4,200
Forecast Period	**Percent Change**	
2013-2015	5.6%	0%
2015-2020	15.8%	0%
2020-2030	36.4%	0%
2030-2040	33.3%	0%
2010-2040	**122.2%**	**0%**

Source: FAA Terminal Area Forecast (TAF), Issued Feb. 2014

3.2.4 Summary of FAA and CDOT Forecasts

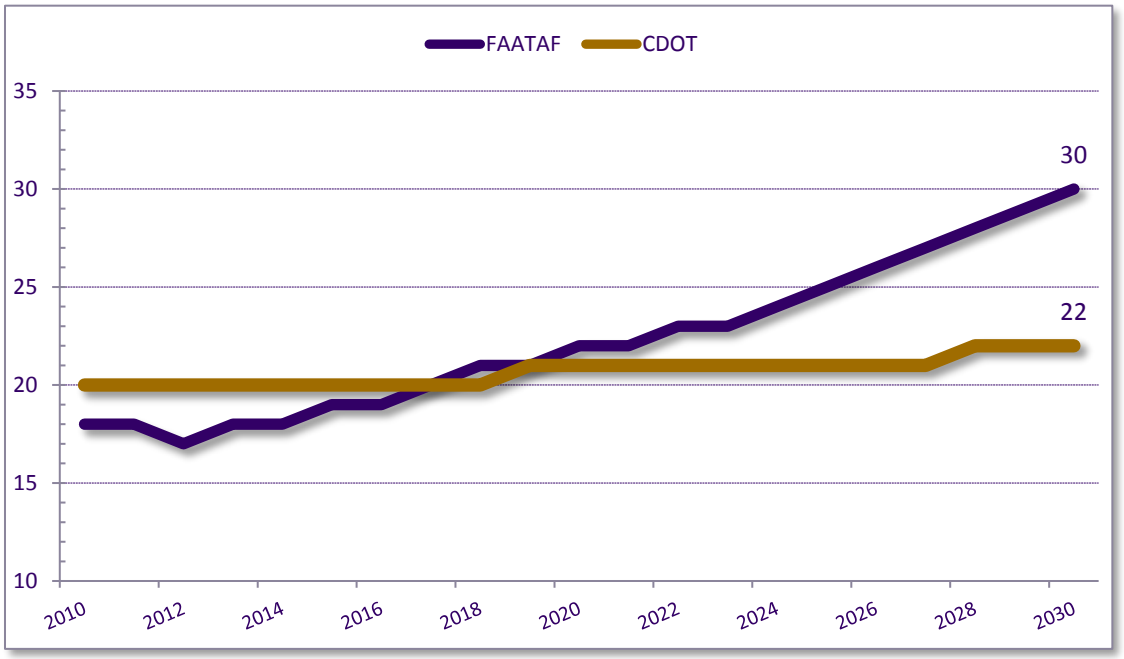
While the TAF for AEJ projected 4,200 annual operations through 2040, FAA's Form 5010 estimated approximately 10,000 annual operations for the calendar year ending December 31, 2012. Additionally, the TAF estimated 18 based aircraft against Form 5010's estimated 14 based aircraft, but there is no explanation as to why the sources differ.

Comparing CDOT's forecast against the TAF illustrates that the FAA was more optimistic about future growth of based aircraft at AEJ, while CDOT projected more growth in aircraft operations. See **Figure 3-4** and **Figure 3-5** for a comparison of projected growth through the end of CDOT's forecasted year, 2030. However, there is insufficient information to compare the underlying assumptions for the CDOT and FAA forecasts.

3.2.5 Based Aircraft – Airport Counts

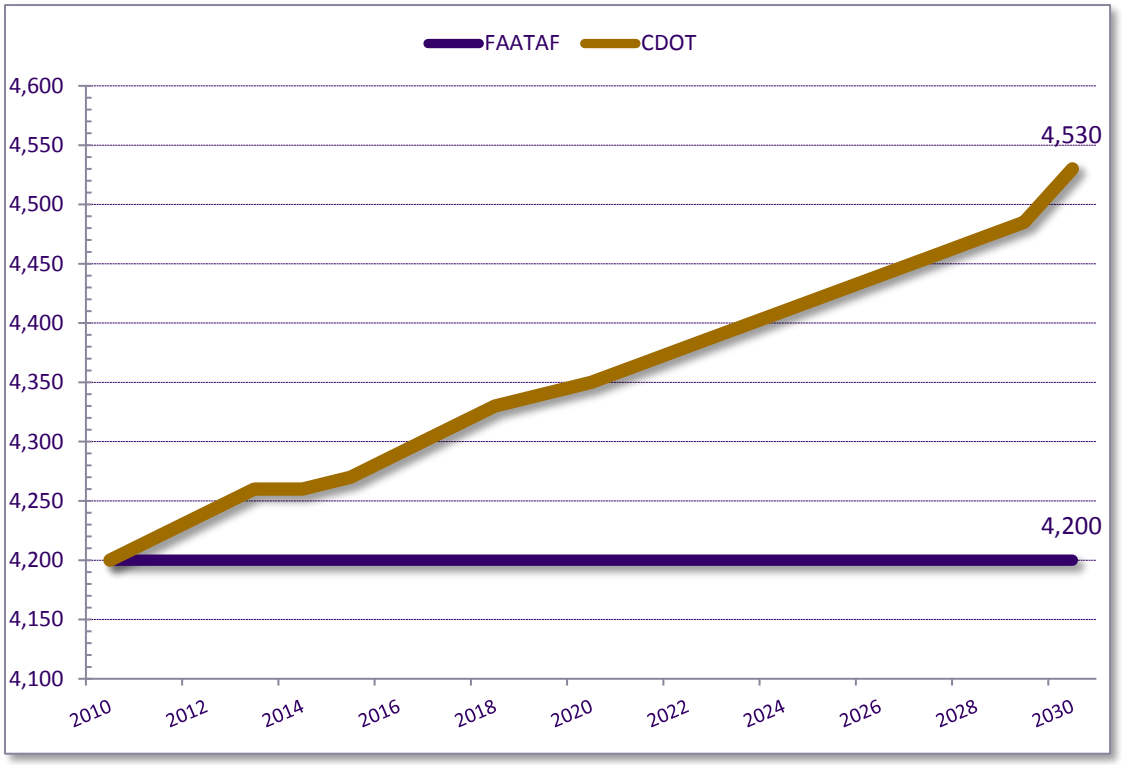
As noted previously, the airport manager counted 27 based aircraft as of January 2015, which is higher than both the FAA or CDOT estimates. Due to the higher confidence level compared to FAA's estimate, that number (28) is used as the base year number for these forecasts which accounts for one additional aircraft to be based at AEJ in 2015.

FIGURE 3-4 – FAA AND CDOT FORECAST OF BASED AIRCRAFT, AEJ



Sources: FAA TAF, Issued Feb. 2014 and CDOT 2011 Aviation System Plan

FIGURE 3-5 - FAA AND CDOT FORECAST OF AIRCRAFT OPERATIONS, AEJ



Note: An operation consists of a landing or take-off.
Sources: FAA TAF, Issued Feb. 2014 and CDOT 2011 Aviation System Plan

3.2.6 Operations-Per-Based-Aircraft (OPBA)

The previous edition of FAA Advisory Circular 150/5300-13, *Airport Design*, noted that activity at non-towered airports could be estimated by using a factor (range) of operations-per-based-aircraft (OPBA). FAA noted that GA activity could range between an average of 492 OPBA at GA airports, up to 637 OPBA at designated reliever GA airports. Applying the low OPBA average of 492 to the current27 based aircraft at AEJ, results in an estimated 13,284 operations annually. That calculation is significantly higher than both FAA's TAF and CDOT's estimate at AEJ, but it is relatively close to FAA's current Form 5010 estimate of 10,000 annual operations.

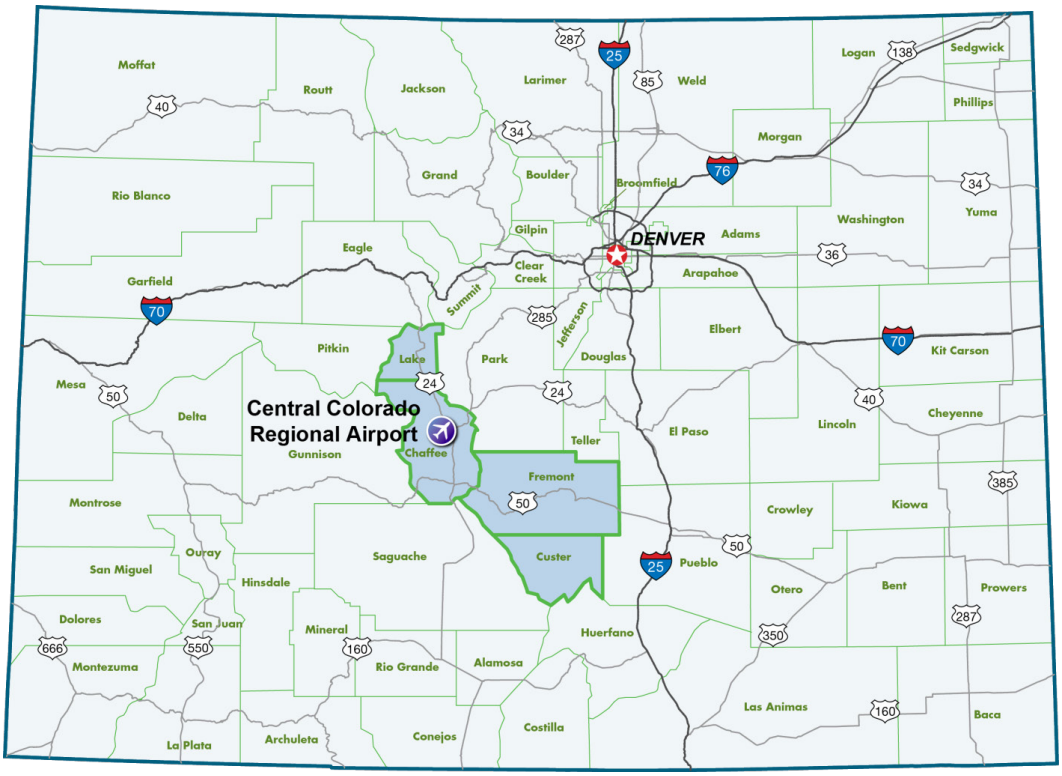
Given the uncertainties about actual aircraft operations at non-towered airports, a variety of electronic counters have been developed to track activity at non-towered airports. While the counters provide a way to measure takeoffs and landings, they also require an investment of capital to acquire, operate and maintain, as well as labor to monitor and create databases.

3.3 Demographic and Socioeconomic Factors

Demand for aviation services is greatly affected by local and regional demographic trends and socioeconomic activity. A variety of different types of aviation activity occur at AEJ, and each type of GA activity responds to different socioeconomic and demographic factors.

The Town of Buena Vista is situated in Chaffee County, and both the Town and the County are part of the Upper Arkansas Region. As defined by the State of Colorado, the Upper Arkansas Region includes Chaffee, Lake, Fremont, and Custer Counties (**Figure 3-6**). The Upper Arkansas Region is also referred to as State Region 13.

FIGURE 3-6 – COUNTIES IN THE UPPER ARKANSAS REGION

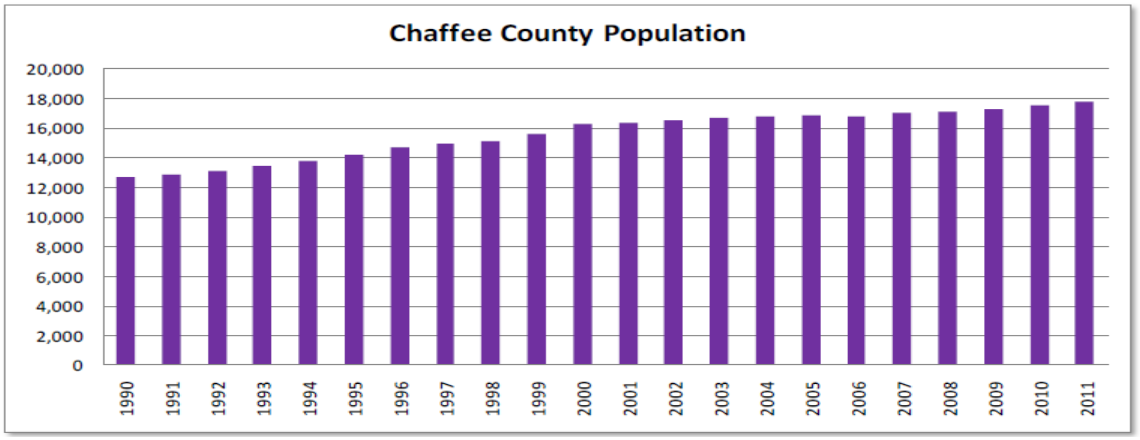


Note: Not to scale
Source: Jviation, Inc.

The Southern Colorado Economic Development District published the Chaffee County 2010 CEDS report (Report) which noted that Chaffee County has experienced steady population growth since 1990 (**Figure 3-7**).

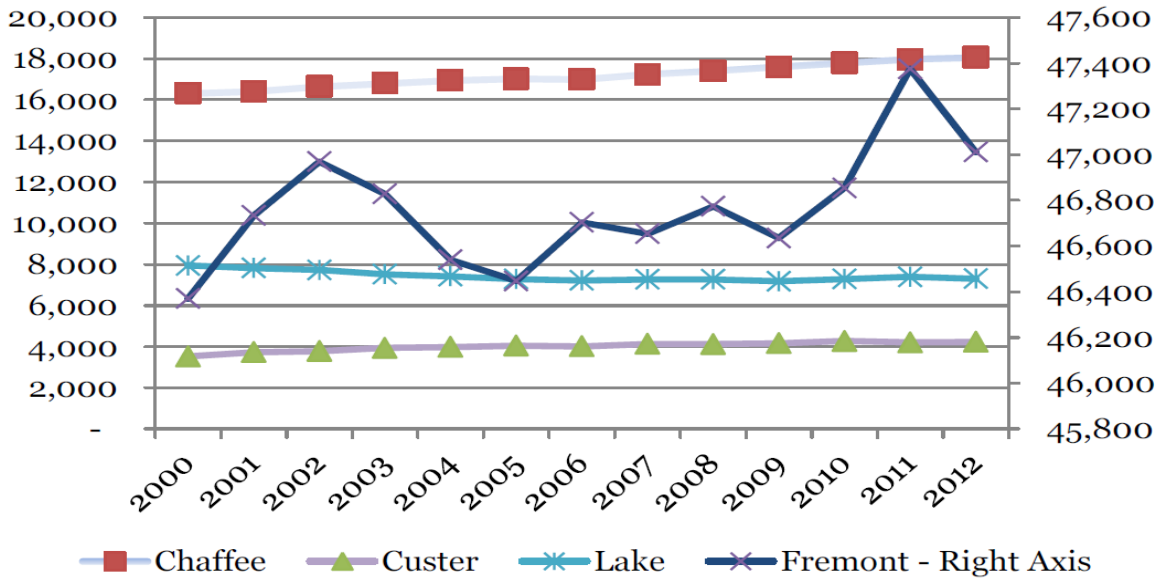
The State Demography Office noted that the population of Chaffee County increased steadily between 2000 and 2012, by approximately 11 percent. Population growth was only outpaced by Fremont County, which experienced population fluctuations of nearly 1,000 persons within a decade. The county experienced a significant growth period since the Great Recession but has shown a steep decline in population since 2011; that decline is uncharacteristic of the steady growth experienced by Chaffee County (**Figure 3-8**).

FIGURE 3-7 – CHAFFEE COUNTY POPULATION



Source: Chaffee County CEDS Report, 2010, Southern Colorado Economic Development District. http://www.scedd.com/Chaffee-County, accessed August 2014.

FIGURE 3-8 – POPULATION ESTIMATES BY COUNTY



Source: Chaffee County CEDS Report, 2010, Southern Colorado Economic Development District. http://www.scedd.com/Chaffee-County, accessed August 2014.

The Report also noted that Chaffee County's unemployment rate typically matched that of Colorado; however, their rates have been lower than the state average since 2006. A high number of those working in the county maintain seasonal employment in the service industry and part- or full-time jobs attributed to travel and tourism. Seasonal employment may be a contributing factor to the median per capita income for Chaffee County also being below the state average. In 2009, average personal income for the county was 22 percent below the state average at $32,766, as opposed to Colorado's average of $41,895.

Chaffee County's and the Upper Arkansas Region's economies are heavily dependent on tourism. The Report noted that travel spending generated a significant amount of revenue in Chaffee County,

in part because it serves the tourist industry. Travel has a significant impact on the county and monies spent have annually surpassed $50 million since 2007. A reported $53 million was spent by Chaffee County visitors in 2009. The strong tourism

base is supported by an efficient network of transportation. AEJ is a vital component of the region's transportation network that accommodates tourism and travel demand.

The county's strengths, particularly its transportation network and strong tourist market, serve to stimulate GA activity at AEJ. In contrast, as shown **Table 3-6,** their weaknesses could serve to dampen demand for GA services.

TABLE 3-6 – CHAFFEE COUNTY TRANSPORTATION ANALYSIS

Strengths	Weaknesses
– Central Colorado Regional Airport (AEJ) – Highway access – Local economic development groups	– High cost of living – Low wages – Shrinking middle class – Economy dependent on tourism – Possible closure of major employers

Source: Chaffee County CEDS Report, 2010, Southern Colorado Economic Development District. http://www.scedd.com/Chaffee-County, accessed August 2014.

Based on a Chaffee County-wide survey, the primary economic development focus in the future was identified to 'attract new businesses, and support and assist existing businesses to expand.' The Report included a Chaffee County 2010 CEDS study which identified a number of goals and strategies that would support business attraction and expansion. Improving transportation by way of the airports in Buena Vista and Salida therefore became a focal point. Hangar development, high altitude testing, and facilitating a hub environment for regional and emergency services are a few of the opportunities considered by Buena Vista to further develop AEJ.

The Report identified strategies and goals for the Upper Arkansas Region, which could stimulate economic development (**Table 3-7**). One of the top five economic development strategies is to assure that infrastructure (including AEJ) can accommodate future growth. Should the five major goals be achieved, it is likely that Chaffee County's economy and the regional economy would expand, and activity at AEJ would increase throughout the forecast period. Population forecasts prepared by the Colorado Department of Local Affairs anticipate that Chaffee County will experience higher rates of growth through 2040 than the state (**Table 3-8**).

TABLE 3-7 – TOP FIVE ECONOMIC DEVELOPMENT GOALS AND STRATEGIES

"Bottom-Up" 2011 County Economic Development Summary RED = Priority Action Plan Items			
	Goal(s)	**Strategy(ies)**	**Action(s)**
#1	Close the gap between the cost of living and average wages	– Create living wage jobs – Create affordable housing – Educate the workforce	-Expansion and creation of new businesses -Develop partnerships with schools -Find more affordable housing options (tie to new commercial development?) -Fix up available rental housing -Financial assistance for first time buyers

"Bottom-Up" 2011 County Economic Development Summary RED = Priority Action Plan Items			
#2	Diversify the Economic Base	– Expand existing businesses – Attract new businesses – Economic gardening – Health and Wellness Study – Support the DOC facility	– Identify gaps – Identify growth businesses – Recruit businesses that appreciate CC and fit the character – Support/training for entrepreneurs and lone eagles – Streamline processes to establish businesses in CC – Create Ambassador programs – Extend the tourist season
#3	Increase Access to Capital	– Find more public funding – Increase private funding – Tax incentives/credits	– Research available funding – Grant writing – Identify private investment opportunities – Work with State on incentives – Work with local banks
#4	Assure Infrastructure can handle growth	– Meet IT/Broadband needs – Enhance transportation – Complete current Municipal projects	– Apply for State funding to develop redundant and higher capacity Broadband – Highway improvements – -Airports strategy – Train transport (?) – Public/tourist transportation – Warehousing – New high school – Wastewater treatment plant – River improvements – Other municipal projects underway
#5	Excel at Education	– Meet public school needs – Add more higher education opportunities – Educate the workforce	– Find funding for teachers – Expand CMC-high school crossover courses – Attract major university satellite/research campus – SBDC and Colorado Workforce job training – Employer sponsored job training

Source: Chaffee County CEDS Report, 2010, Southern Colorado Economic Development District. http://www.scedd.com/Chaffee-County, accessed August 2014.

TABLE 3-8 – POPULATION GROWTH COMPARISON

Population Forecast					
Year	Chaffee CO.	Colorado	Year	Chaffee CO.	Colorado
2015	19,329	5,456,067	2028	26,191	6,735,672
2016	19,902	5,554,079	2029	26,640	6,830,911
2017	20,475	5,652,091	2030	27,090	6,926,150
2018	21,048	5,750,103	2031	27,412	7,013,641
2019	21,621	5,848,115	2032	27,734	7,101,132
2020	22,197	5,946,128	2033	28,056	7,188,623
2021	22,726	6,046,893	2034	28,378	7,276,114
2022	23,255	6,147,658	2035	28,699	7,363,604
2023	23,784	6,248,423	2036	28,967	7,445,376
2024	24,313	6,349,188	2037	29,235	7,527,148

Population Forecast					
2025	24,844	6,449,955	2038	29,503	7,608,920
2026	25,293	6,545,194	2039	29,771	7,690,692
2027	25,742	6,640,433	2040	30,038	7,772,466

Percent Growth		
Time Period	Chaffee CO.	Colorado
2015-2020	14.8%	9.0%
2020-2030	22.0%	16.5%
2015-2040	55%	42%

Source: Colorado Department of Local Affairs. http://www.colorado.gov/cs/Satellite/DOLA-Main/CBON/1251593346834, accessed August 2014.

The State Demography Office (SDO) projected the State Region 13 will experience strong population growth through 2040. Future population is expected to reach over 100,000 by the year 2030 at a growth rate of two percent annually. The growth projected for Chaffee County will contribute to that regional population increase.

Basic and total jobs in the State Region 13 are also forecasted to develop. Job growth is estimated to increase at more than two percent annually from 2015 through 2025, exceeding the rate of population growth during the same time period. Labor forecasts for State Region 13 indicate that the rate of job growth will slow around 2035, however, SDO provides that overall job growth in State Region 13 is projected to be increase steadily through 2040.

The positive outlook for population and job growth in the region is indicative of growing demand for aviation services within the Upper Arkansas, State Region 13, and in particular at AEJ.

3.4 FAA Aerospace Forecasts[1] FY 2014-2034

The FAA prepares national aerospace forecasts annually with a 20-year planning period. Aerospace forecasts are prepared by FAA to identify anticipated workload and funding needs for FAA arms, such as the Air Traffic Organization (ATO). The FAA analyzes broad industry trends by various sectors, which include the following:

- future economic conditions and the underlying assumptions concerning economic growth;
- commercial aviation (i.e. passenger and cargo airlines);
- GA activity; and
- Air Traffic Control (ATC) workload.

The aerospace forecasts identified industry trends that impact GA activity, not just on the national level, but also at individual airports. Excerpts from the FAA's aerospace forecast dealing specifically with GA follow; certain sections are emphasized by means of *italics* to indicate pertinent trends.

Regarding the overall future of general aviation activity, the FAA concluded the following.

> "*The long term outlook for general aviation is favorable*, even though the slow growth of the U.S. economy, contributed by uncertainties caused by debt ceiling crises, sequestration, government shutdown, and the European recession, have affected the near term growth, particularly for the turbo jet sector. While it is slightly lower than predicted last year, *the growth in business aviation demand over the long term continues, driven by a growing U.S. and world economy especially in the turbo jet, turboprop, and turbine rotorcraft markets*. As the fleet grows, the *number of general aviation hours flown is projected to increase an average of 1.4 percent a year through 2034*."

The overall GA fleet will experience relatively low growth, but corporate aircraft and helicopters will experience the highest growth rates through 2034.

> "The active general aviation fleet is projected to increase at an average annual rate of 0.5 percent over the 21-year forecast period, growing from an estimated 202,865 in 2013 to 225,700 aircraft by 2034. The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow to a total of 49,565 aircraft at an average rate of 2.6 percent a year over the forecast period, with the turbine jet portion increasing at 3.0 percent a year, reaching a total of 22,050 airplanes by 2034."

The FAA projected that the number of piston-engine aircraft nationally will decline throughout the period.

> "The number of active piston-powered aircraft (including rotorcraft) is projected to decrease at an average annual rate of 0.3 percent from the 2013 total of 141,325 to 131,615 airplanes by 2034, with declines in both single and multi-engine fixed wing

[1] FAA Aerospace Forecast, Fiscal Years 2013-2033
http://www.faa.gov/about/office_org/headquarters_offices/apl/aviation_forecasts/aerospace_forecasts/2013-2033/

> aircraft, but with the smaller category of piston powered rotorcraft growing at 1.7 percent a year. Single-engine fixed-wing piston aircraft, which are much more numerous within this group, are projected to decline at a rate of 0.4 percent, while multi-engine fixed wing piston aircraft are projected to decline by 0.5 percent a year."

The overall hours flown by GA aircraft and helicopters is projected to increase, but almost all of the growth will come from turbine-powered aircraft.

> "The total number of general aviation hours flown is projected to increase by 1.4 percent yearly over the forecast 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 aircraft as the aging of this fleet starts to slow down. *In the medium term, much of the increase in hours flown reflects strong growth in the rotorcraft and turbine jet fleets*."

3.5 Factors That May Impact Future GA Activity at AKO

Aviation is a dynamic industry, which is constantly adjusting to both internal and external pressures. General aviation in particular has experienced a number of challenges over the last decade and more, and industry analysts anticipate that a number of challenges will continue, some of which are discussed below. Individual airports have relatively little control over most of these factors; they represent national trends, some of which affect local GA activity. However, as previously noted, local positive trends can counterbalance some of the national challenges.

As noted previously, the outlook for employment and population in Chaffee County is positive. The county has a higher projected rate of growth than the state overall. The socioeconomic trends in the county can offset some of the potential national trends that may adversely affect GA activity, discussed below. The Chaffee County CEDS study prepared by the Southern Colorado Economic District in 2010 lists a series of goals and objectives including improvements to AEJ, see **Section 3.3**, which could stimulate additional growth in traffic. The study also noted that any curtailment to federal funding "will have a drastic impact on one or both (Buena Vista and Salida) airports."

3.5.1 Leakage: Regional Airport Competition

Airports and their tenants operate in a competitive environment. Many GA aircraft operators are price sensitive and will often utilize airports with lower priced fuel, maintenance, tiedowns, etc. There are a number of other public-use airports relatively near AEJ (**Table 3-9**), so there is some competition and potential traffic leakage from AEJ to other regional airports. However, both Aspen-Pitkin County (ASE) and Gunnison-Crested Butte (GUC) Airports have scheduled airline service, and some GA aircraft pilots prefer to operate at airports that do not have airlines. Additionally, AEJ has very competitive fuel prices regionally (**Table 3-10**); therefore, it is improbable that AEJ is losing traffic to other airports due to lower fuel prices.

TABLE 3-9 – PUBLIC USE AIRPORTS NEAR AEJ

Airport ID	Airport Name	Driving Distance[a]	Drive Time[a]
ANK	Harriet Alexander Field	23	26
GUC	Gunnison-Crested Butte	83	93
LXV	Lake County	34	40
1V6	Fremont County	92	107
ASE	Aspen-Pitkin County	68	103

Note: [a] Distances (miles) and Drive Time (minutes) from Central Colorado Regional Airport (AEJ).
Source: Google Maps, accessed 2014.

TABLE 3-10 – FUEL PRICES

Airport ID	Airport Name	Avgas – 100LL[a]	Jet A[a]
AEJ	Central Colorado Regional	$5.35	$5.20
ANK	Harriet Alexander Field	$5.66	$5.07
GUC	Gunnison-Crested Butte	$6.70	$6.60
LXV	Lake County	$5.25	$5.35
1V6	Fremont County	$5.85	$4.64
ASE	Aspen-Pitkin County	$7.89	$7.98

Note: [a] Price of fuel per gallon
Source: Airnav.com, accessed July 2014

One area where competition impacts airports is Jet A fuel sales. For many FBOs, and a number of airports, Jet A fuel represents their strongest revenue source. A number of corporate aircraft designed and built within the last 10 to 15 years have large fuel capacities, very efficient engines, and long range capabilities, and as a result they can often tanker fuel. This allows corporate aircraft pilots/operators to negotiate with FBOs for lower priced Jet A fuel (below the posted price), and if the local FBO cannot match the desired price per gallon, operators will not buy fuel. Corporate aircraft frequently have sufficient reserves to fly to another airport and buy fuel at a lower price. Local FBOs, therefore, are often competing for Jet A fuel sales against FBOs that are hundreds or a thousand miles away. A number of FBOs have reported that even as the number of corporate aircraft has increased since 2010, increases in fuel sales have not kept pace with operations, in part because of the ability to tanker fuel and buy wherever the fuel price is lowest. Analysts expect that will be a long-term trend in corporate aviation.

3.5.2 Avgas (100LL)

The large majority of aircraft piston engines use 100LL avgas. The amount of 100LL avgas sold in the U.S. represents less than one-quarter of one percent (0.14 percent) of the total fuel sold in the U.S., which makes 100LL avgas a 'boutique fuel' (i.e. highly specialized blend for a small market). The amount of 100LL avgas fuel sold in the U.S. has also been declining steadily for more than 30 years (from approximately 11.1 million barrels in 1981 to 4.4 million barrels in 2013, a 60 percent decline). The availability of 100LL is also decreasing (and disappearing) in many countries outside of

the U.S., which further decreases overall demand for the fuel. [1] In addition, several major GA aircraft manufacturers (Cessna, Piper, Mooney, etc.) have recently introduced new models of popular airplanes equipped with diesel engines that use Jet A fuel. As those airplanes replace piston engine models, the volume of avgas sold will continue to decline.

100LL avgas is also the only fuel in the U.S. that contains tetraethyl lead (TEL), a toxic substance used to prevent engine knocking (detonation). Environmental groups have petitioned the US Environmental Protection Agency (EPA) to eliminate the grandfather clause allowing 100LL, and the EPA has been studying the proposals and monitoring air quality at general aviation airports. In addition, there is only one source of TEL that is added to avgas, and the producer is based in England. All of those factors have driven up the price of avgas, which as of early summer 2014 averaged approximately $6.35 per gallon in the Western U.S., compared to $5.72 per gallon for Jet A, and $3.46 per gallon for regular auto gas[2]. As noted previously, the price of 100LL avgas at AEJ is lower than the regional average.

If 100LL avgas supplies were to diminish significantly, or if fuel prices were to rise significantly (i.e. more than $10-$12/gallon), or if 100LL avgas were no longer available, piston-engine GA activity would decline substantially. Some aircraft with smaller piston engines (i.e. less than 360 cubic inch) have been approved by the FAA to use auto gas (mogas) without ethanol, although the amount of auto gas available without ethanol has been steadily declining. However, aircraft with larger piston engines (such as the Cessna 402, Cirrus SR-22, Beech Baron and Bonanza, Piper Seneca, Matrix and Malibu, for example), which consume the largest amount of 100LL avgas, cannot use any auto fuel or fuel rated less than 100 octane.

At present there is no 'drop-in' replacement for 100LL avgas that will work in all piston engines (i.e. both small and large displacements) although some industry analysts are optimistic such a replacement can be found. The FAA currently has a 100LL avgas replacement program and is studying more than six different proposed replacement fuels for 100LL. If a replacement fuel is found and certified by FAA, the key question will be - what will the retail price at the pump be for the drop-in replacement fuel? If the replacement fuel is priced significantly higher than the current retail price for avgas (approximately $6.40 per gallon), then overall GA activity will likely decline even if a replacement fuel is available.

The price per gallon of 100LL avgas and Jet A fuel at AEJ is competitive regionally (**Table 3-10**). Different airports and FBOs within the same region have different wholesale fuel suppliers and pay different wholesale prices for fuel. In addition, the wholesale price for fuel changes with every delivery, so it is challenging for airports and FBOs to price fuel competitively. Airports and FBOs need to cover their wholesale fuel costs, operating expenses, and desired profit margins. Some airports/FBOs absorb rising wholesale fuel costs to remain competitive regionally on retail prices, and do not pass along all of their cost increases. However, that policy significantly decreases any profit margins derived from fuel sales, which is the primary source of revenue for FBOs and airports.

[1] U.S. Energy Information Agency. http://www.eia.gov/, accessed August 2014.
[2] AirNav. https://www.airnav.com/fuel/local.html, accessed August 2014.

3.5.3 Security Regulations

After the attacks on September 11, 2001, the U.S. Congress created the Transportation Security Administration (TSA) as part of the Department of Homeland Security, and also imposed new airport and airspace regulations. The majority of new airport security regulations applied to airports with commercial airline service (those with FAR Part 139 operating certificates issued by FAA). As a result, GA airports such as AEJ have not been encumbered by the same security regulations, although many GA airports have implemented such things as security fencing, video monitoring, electronic gate access, etc.

Airspace regulations, specifically temporary flight restrictions (TFR), have impacted GA activity across the country. TFRs are imposed for a variety of reasons, many with relatively short notice. TFRs can extend for a 10 or 20 mile radius, and can be in effect for a matter of hours or days or even weeks. A recent example is a TFR imposed over Denver in July 2014 for a visit by the President (a copy of the TFR is in Appendix 2). TFRs have a combination of no-fly areas as well as areas allowed for flight but with strict conditions imposed. The imposition of TFRs has impacted GA activity at airports across the U.S. since 2001. TFRs have adversely impacted many FBOs and GA businesses. Airport managers and state aeronautic agencies have no discretion or input about when TFRs are imposed or how long they remain in effect. If Congress were to impose additional airport or airspace security procedures targeted specifically at general aviation, as has been proposed by some organizations, they could result in higher costs and reduced GA activity.

3.5.4 Increased Cost

The cost of new GA aircraft and parts has been rising faster than the overall rate of inflation for many years. A new Cessna 172, a four seat single-engine piston aircraft frequently used for training, currently retails for approximately $400,000. A number of high performance four-seat single-engine piston airplanes retail for $700,000 to $1 million (e.g. Cirrus SR-22 GTS, Cessna TT, Piper Malibu and Matrix, and the Beech G36). As a result, many airplane owners continue to fly used aircraft, with the average age of a GA airplane in the U.S. being more than 40 years old. This trend of aging aircraft is why aircraft maintenance costs and replacement parts are high and rising. Because a high percentage of GA flying is conducted for personal/recreational purposes, rising aircraft ownership costs have decreased overall activity.

3.5.5 Pilot Population

The number of licensed pilots has been declining for years. According to FAA records, between 2004 and 2013 the number of total licensed pilots declined by 3.2 percent. Licensed private pilots have declined by 23.6 percent, and the number of commercial pilots dropped by 11.7 percent.[1] A declining pilot population is an indicator of overall declining demand for GA services. A number of factors have been attributed to the long-term decline, including rising costs as well as relatively few young people starting flight training. Industry organizations such as the Experimental Aircraft

[1] Source: FAA US Civil Airmen Statistics, http://www.faa.gov/data_research/aviation_data_statistics/civil_airmen_statistics/2013/

Association (EAA) and Aircraft Owners and Pilots Association (AOPA) have identified the downward trend as a potential long term challenge to GA activity.

Congress recently mandated that FAA change the requirements for new hires at airlines. All new pilots must hold an Airline Transport Pilot (ATP) license which requires a minimum of 1,500 hours logged flight time plus additional provisions[1]. Some regional carriers have stated that requirement has already impacted their ability to hire qualified pilots and have reduced their schedule because of a shortage of pilots. Analysts have said that the rule change would decrease the number of student pilots who had originally intended to become airline pilots but now cannot afford the time or cost to meet the new standards. At the same time, the military has also been reducing their pilot training pipeline, offering more incentives to retain rated pilots, while rapidly shifting their training focus to operators of remotely piloted vehicles (RPVs). Many military pilots also fly general aviation aircraft, and also serve as a pipeline for the airlines. A number of GA student and private pilots start flight training in the hopes of being accepted to fly for the military, and with that option being closed there is less incentive to start flight training. Boeing has publicly stated that future pilot shortages will limit airline growth worldwide and in the U.S.

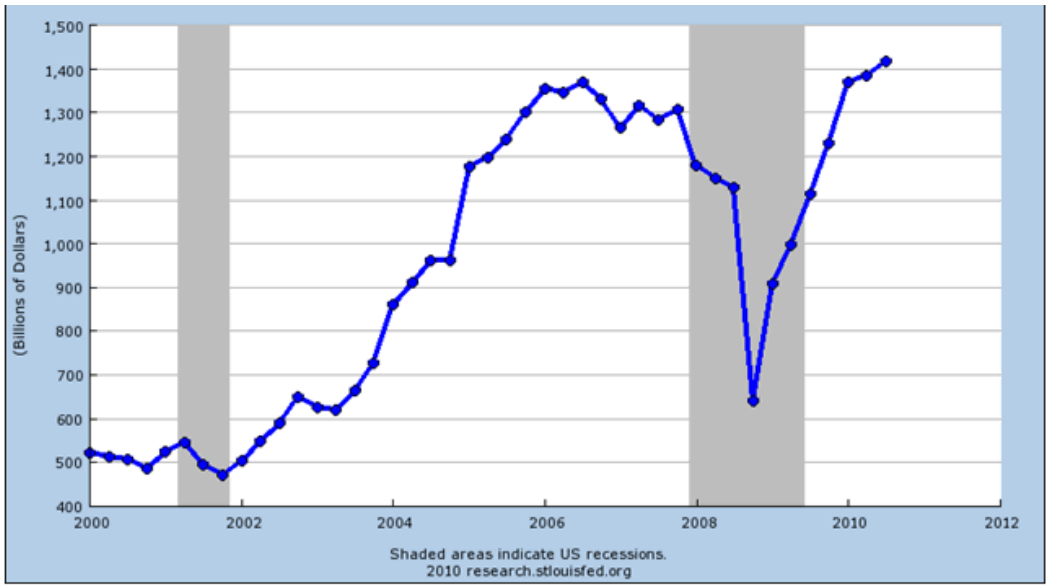
The pilot population is also aging faster than the population as a whole. Between 1990 and 2010 the average age of U.S. pilots increased from 40.5 to 44.2 years old. The 2014 average age of private pilots has since increased an additional 4.3 years for an average age of 48.5 years old. By comparison, the median age of the U.S. population is 37.2 years old according to the U.S. Census Bureau. While private pilots do not have a mandatory retirement age similar to the airlines, the amount of flying decreases as pilots age. Barriers to attracting younger pilots include the high cost of flight training, the uncertainty of the aviation industry as a career path (particularly for regional and major airline pilots), the military's shrinking pilot training pipeline, combined with rapidly growing interest in remotely piloted vehicles (RPVs) that require less training and cost less than airplanes.

3.5.6 Economics

National economic trends affect GA activity on the local level. The economic recession that occurred between late 2007 and 2010 significantly depressed corporate aviation activity throughout the U.S. and internationally, it also impacted piston-engine activity. The decline in corporate aviation over that period clearly illustrated the close correlation between corporate aircraft activity and the performance of the stock market and corporate profits. Since late 2010 both the stock market and corporate profits have been rising steadily (**Figure 3-9**), and corporate aviation activity has been growing as well, although not at the rate experienced between 2003 and 2007.

[1] Some universities and colleges with FAA-approved flight training programs have an agreement with FAA that their students can be hired by airlines with less than 1,500 hours after graduating successfully from their program.

FIGURE 3-9 – U.S. RECESSIONS, AFTER TAX CORPORATE PROFITS

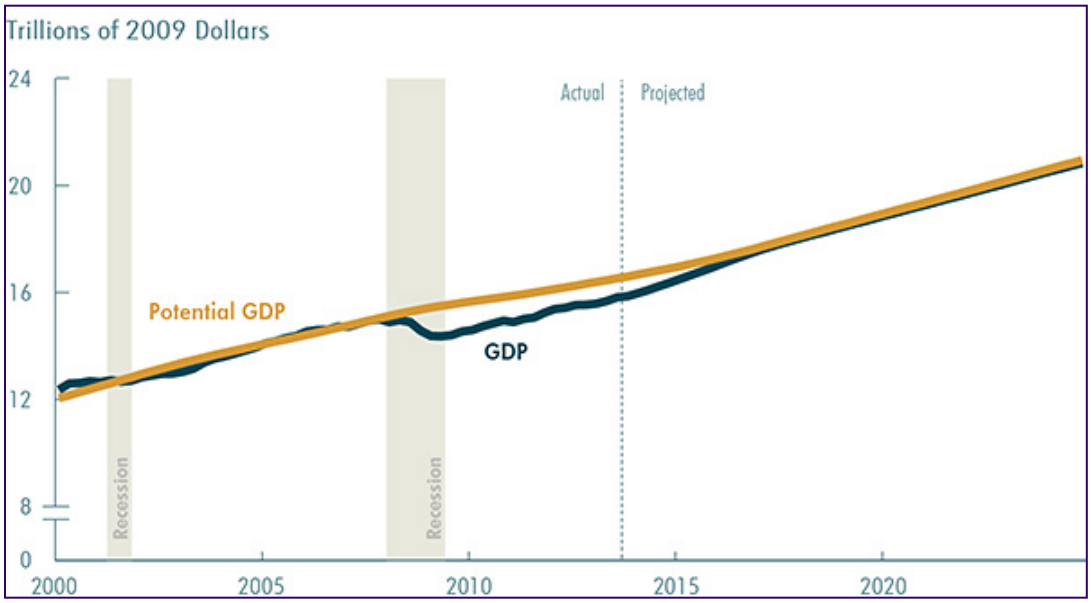


Source: U.S. Department of Commerce, BEA

The Congressional Budget Office's (CBO) assessment of the U.S. economy in 2014 noted: "After a frustratingly slow recovery from the severe recession of 2007 to 2009, the economy will grow at a solid pace in 2014 and for the next few years. Real Gross Domestic Product (GDP - output adjusted to remove the effects of inflation) is expected to increase by roughly three percent between the fourth quarter of 2013 and the fourth quarter of 2014—the largest rise in nearly a decade. Similar annual growth rates are projected through 2017." (**Figure 3-10**)

Longer term, however, the CBO is less optimistic: "Beyond 2017, CBO expects that economic growth will diminish to a pace that is well below the average seen over the past several decades. That projected slowdown mainly reflects long-term trends—particularly slower growth in the labor force because of the aging of the population. Inflation, as measured by the change in the price index for personal consumption expenditures (PCE), will remain at or below two percent throughout the next decade,"

FIGURE 3-10 – REAL AND POTENTIAL GDP



Source: Congressional Budget Office (CBO)

The FAA, as well as a number of private companies, is optimistic about the long-term growth potential for corporate aviation. For example, Honeywell (a manufacturer of many components used in corporate and air carrier aircraft) recently noted the following:

> "Honeywell Global Business Aviation Forecast Sees 4 To 5 Percent Average Annual Industry Growth over Next Decade:

- Up to 9,250 deliveries of new business jets valued at over $250 billion expected through 2023
- Operators plan to replace 28 percent of their fleets with new jets in the next five years
- "BRIC" (Brazil-Russia-India-China) purchase plan percentage leads all world regions
- Large cabin jets account for more than 55 percent of new purchase plans"

> "Shifting from jet purchases to flight activity, over the course of the past year the pace of recovery has been mixed. Much of the ground lost by operations during the 2009 recession still remains to be recaptured, but modest improvements in international flight activity and in U.S. operations in general have been seen in recent months."

> "North America, the industry's mainstay market, has seen new jet purchase plan levels improve — about three points — to the world average of 28 percent after averaging near 25 percent for the past six years. Though buying plan levels might be moderate when compared with emerging markets, North America represents more than half of projected global demand for the next five years based on the region's historically dominant installed business jet base, affirming the region's indisputable importance to the industry's future. Timing of North American acquisitions has been deferred compared with other regions, suggesting that despite improved aggregate

five-year interest levels reported by potential purchasers, short-term conversion plans could be moderate until 2015–2016."

Although corporate activity has rebounded, corporate flight departments are closely managing costs by generally utilizing larger more fuel-efficient aircraft. Flight departments are very sensitive to the price of Jet A fuel, and as noted previously, because newer aircraft have large fuel capacities they can 'tanker' fuel and buy it at any number of airports that offer the lowest price fuel. At many airports, corporate aircraft activity has not returned to the levels experienced between 2004 and 2007. The continued steady growth of the stock market and corporate profits will be key factors to long-term growth of corporate aviation activity.

3.6 AEJ Aviation Forecast Scenarios

Given the challenges facing the GA industry, as well as certain positive indicators on the local level discussed above, it is apparent that a number of aviation activity scenarios could evolve between 2014 and 2034. Based on the variety of factors presented above, three forecast scenarios were developed and analyzed. These scenarios encompass the range of potential factors that could impact GA activity at AEJ. As noted previously, a number of these factors are beyond the control or even influence of AEJ, the Town of Buena Vista, or the State of Colorado. In addition, AEJ hosts special activities such as high altitude aircraft testing. Those special activities are tied to specific industries, and are not affected by local or regional factors such as demographic trends, etc. As a result, it is not possible to project future levels of special activities at AEJ. In all likelihood, some combination of these scenarios will occur at AEJ over the 20-year planning period, but it is difficult if not impossible to predict exactly what factor(s) will occur, when, and in what combination with other positive or negative trends. As a result, the forecasts should be reviewed regularly, and updated based on historical data.

3.6.1 Forecast Scenario 1 – Status Quo/Slow Growth

This forecast scenario assumed that the future cost of GA aircraft ownership and operation, including the price of new aircraft, parts, and fuel, will rise at or near the overall rate of inflation. A drop-in replacement fuel for 100LL avgas will be developed before 2020, at a retail price equal to existing 100LL prices. This scenario assumes that no new security regulations will be imposed that would further restrict access to GA airports or to airspace. Programs such as the EAA's Young Eagles and Aircraft Owners and Pilots Association (AOPA)'s various programs including promoting flying clubs, among others, will attract enough young pilots to gradually replace aging pilots. Airline hiring will increase which will provide incentives for people to learn how to fly. In addition, socioeconomic trends in Chaffee County will continue to outpace the state through 2034 as currently projected by the Colorado Department of Local Affairs. In this scenario, GA activity at AEJ, including based aircraft, will increase at three percent per year through 2034 and corporate aircraft activity will grow at four to five percent per year.

3.6.2 Forecast Scenario 2 – High Growth

In Scenario 2 the overall cost of GA aircraft ownership and operation will decrease in relation to the average rate of inflation, and aviation fuel prices will remain stable or possibly decline throughout

the forecast period. This scenario also assumes that the regional and state economy will grow steadily at three to four percent per year; the inflation rate will remain below two percent; the stock market and corporate profits will increase steadily at five percent or more per year (as they have done between 2010 – 2Q 2014); airlines will enter a long term hiring mode; and overall GA activity will grow at three percent or more per year. In addition, socioeconomic trends in Chaffee County will continue to outpace the state average through 2034. Within this scenario, no major shocks to the economy or to the GA industry through 2034 are assumed to occur. In addition, 100LL avgas (or a viable drop-in replacement) will become available at a competitive price; the FAA will not impose any new security regulations; and there is not another severe economic recession. Based on these assumptions, overall activity at AEJ could increase at an average rate of three to four percent per year through 2034 and corporate aircraft activity will grow at five to six percent per year.

3.6.3 Forecast Scenario 3 – Decline

Scenario 3 is based on the assumption that one or more significant setbacks to the GA industry and/or economy will occur, such as the discontinuation of 100LL avgas or a sudden price rise due to decreased availability; new access restrictions imposed on GA airports and airspace due to security concerns; the airlines and the military significantly reduce pilot hiring and training; and/or the onset of another deep economic recession with a prolonged decline in corporate profits and the stock market, perhaps due to foreign events that disrupt the flow of international oil and gas.

This scenario also assumes that socioeconomic growth in Chaffee County will slow by the end of this decade which will reduce the county's performance in relation to the state's overall rate of growth in terms of employment and per capita income. Any combination of these factors could significantly impact one or more sectors of GA activity at AEJ, particularly personal aviation activity, flight training, corporate flying, etc. In this scenario, overall GA activity could decline at AEJ by as much as five percent per year through 2033. While a number of these potential events (shocks) have been discussed in both the aviation and general press and reviewed by industry analysts, it is not anticipated that they will occur within the forecast period, by 2034. It is not anticipated that any two or more of the events described above will happen simultaneously.

3.6.4 Forecast Scenario Conclusions

Based on historical events over the last 20 years, it is acknowledged that possible major shocks could occur in the future similar to the September 11th attacks and the deep economic recession of 2007 - 2010. But it is more likely that a combination of some downward pressures on GA activity will be offset by positive developments. That is the primary reason why aircraft operations recorded at towered airports over a 20 to 30 year period fluctuates up and down, usually within a limited range, in response to positive and negative pressures. As a result, both Scenario 2 – High Growth and Scenario 3 – Decline, are considered to be less likely to occur than Scenario 1 – Status Quo.

Scenario 1 – Status Quo best represents the future level of aviation activity at AEJ through 2034, i.e. a balance between the optimistic and downward trend scenarios. It is also very likely that actual activity levels at AEJ will fluctuate over time, trending upwards over the long term, but activity levels will most likely not grow in a straight line, even though forecasts typically show straight lines.

As noted previously, because of all the variables that may occur it is strongly recommended that the forecasts be reviewed on a regular basis (i.e. annually) against known recent trends in activity, and the forecast assumptions should be reviewed against actual developments. Consideration could also be given to acquiring some type of electronic counter (acoustical or video) with which to sample traffic at AEJ and the measurements can be compared against estimated activity levels and forecasts.

The ACRP published a report; "Counting Aircraft at Non-Towered Airports", Synthesis 4.1 That report reviewed various electronic traffic counters, their use by various airports and state aeronautics agencies, and the quality of data derived from each type of counter.

ACRP is currently working on another report; "Evaluating Methods for Counting Aircraft Operations at Non-Towered Airports", ACRP 03-27, that involves field testing various electronic counters. ACRP anticipates it will be available in fall 2014.

3.6.5 Summary of Preferred Forecasts

As noted above, the estimates of aircraft operations at non-towered airports such as AEJ vary – sometimes widely – between the various sources. The FAA's TAF, FAA's Form 5010, the estimate of activity based on the operations-per-based-aircraft (OPBA) formula tied to the number of based aircraft provided by the airport manager, and the airport manager's estimate of current aircraft operations, are all different. As a result, an average of the various activity estimates was used to develop the base year for the Master Plan forecasts.

The Airport Manager reported that she has been receiving continued interest to construct hangars to house additional based aircraft at AEJ. Consequently, the based aircraft forecasts include growth to accommodate this demand.

Appendix B of the FAA document, Forecasting Aviation Activity by Airport, recommends formatting the preferred forecast data into a particular tabular format for ease of readability. This format is shown in Table 3-11.

3.6.6 Airport Reference Code (ARC) and Critical Design Aircraft

FAA airport design standards are based on the identification of the critical design aircraft. FAA noted that the critical design aircraft may be a composite of different aircraft in terms of wingspan and approach speed; however, each aircraft must meet FAA's definition of "substantial use threshold" – which means that the critical aircraft must conduct a minimum of 500 itinerant operations (takeoffs and landings) per calendar year. That represents one takeoff and landing each day for 250 days per year. There are two based jets (Cessna Citation II) at AEJ, plus transient jets and turboprop operations. Combined they generate more than 500 transient operations per year. The Cessna Citation II and the turboprops fall within FAA's ARC B-II.

TABLE 3-11 – AIRPORT PLANNING AND TAF FORECASTS COMPARISON

Central Colorado Regional Airport				
	Year	AMP FORECAST	AEJ FAA TAF	% Difference

[1] ACRP report available on-line at http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_004.pdf

Central Colorado Regional Airport				
Local Operations				
Base yr.	2015	1,702	1,635	4.1%
Base yr. + 5yrs.	2020	1,879	1,635	12.6%
Base yr. + 10yrs.	2025	2,075	1,635	26.9%
Base yr. + 15yrs.	2030	2,292	1,635	37.3%
Base yr. + 20yrs.	2035	2,525	1,635	54.4%
Itinerant Operations				
Base yr.	2015	2,690	2,565	4.9%
Base yr. + 5yrs.	2020	3,025	2,565	12.6%
Base yr. + 10yrs.	2025	3,408	2,565	32.9%
Base yr. + 15yrs.	2030	3,847	2,565	12.6%
Base yr. + 20yrs.	2035	4,334	2,565	69.0%
Total Operations				
Base yr.	2015	4,392	4,200	4.6%
Base yr. + 5yrs.	2020	4,904	4,200	12.6%
Base yr. + 10yrs.	2025	5,483	4,200	30.5%
Base yr. + 15yrs.	2030	6,139	4,200	12.6%
Base yr. + 20yrs.	2035	6,859	4,200	63.3%
Based Aircraft				
Base yr.	2015	28	18	55.6%
Base yr. + 5yrs.	2020	32	21	12.6%
Base yr. + 10yrs.	2025	37	24	54.2%
Base yr. + 15yrs.	2030	43	29	12.6%
Base yr. + 20yrs.	2035	50	34	47.1%

Sources: Base Year 2014 – AEJ Airport Manager and FAA Terminal Area Forecast (TAF), issued February 2014
Notes: TAF data is on a U.S. Government fiscal year basis (October through September).
AF/TAF (% Difference) column has embedded formulas and reflects the absolute value.
An operation consists of a take-off or landing