

CHAPTER FOUR: FORECASTS OF AVIATION DEMAND

INTRODUCTION

Forecasting aviation activity in the state is an important exercise in the system planning process. It provides a historical reference of activity changes in the past, and projects changes to come over the 20-year planning horizon. Developing accurate and reliable forecasts can be challenging as changes in the economy, government regulations, and technological advances can impact aviation activity at any time. As such, a variety of forecasting methods are employed to identify the most realistic projections of demand, including enplanements, operations, and based aircraft. Results of the forecasting effort help identify system capacity constraints and are used to make recommendations for system enhancement that will meet the needs of existing and future system users.

The aviation demand elements are separated into commercial service and general aviation (GA). The Federal Aviation Administration (FAA) utilizes the terms “primary” and “non-primary” in defining its terms for the airports included in the National Plan of Integrated Airport Systems (NPIAS). Primary airports are defined by the FAA as those public airports with scheduled airline service that have more than 10,000 enplaned passengers a year. In Arizona, nine airports met this criterion and were defined as primary based on calendar year 2016 data. Two additional airports have scheduled airline service but had fewer than 10,000 enplanements in 2016. For purposes of the State Aviation System Plan (SASP), all airports with scheduled airline service, regardless of their number of enplanements are included as commercial service airports. All other airports are identified as GA airports.

The following sections include an overview of factors impacting aviation demand in the state, followed by a review of commercial service trends and forecasts for Arizona’s 11 commercial airports, as well as GA trends and forecasts for the remaining 56 GA system airports. The forecasts presented are optimistic based on the significant economic growth anticipated in the state over the 20-year planning horizon.

SOCIOECONOMIC AND OTHER FACTORS IMPACTING AVIATION DEMAND

There is a strong relationship between socioeconomic factors and an airport’s and system’s activity levels. In addition to providing a general understanding of the existing conditions in an airport area, socioeconomic data is instrumental in developing future projections of aviation activity. Tourism has a direct relationship to socioeconomic factors and is a critical factor in Arizona’s aviation demand levels. Six factors were examined in this analysis:

1. Population
2. Age
3. Employment
4. Gross Regional Product (GRP)
5. Income
6. Tourism

This section provides an overview of demand factors in Arizona to indicate the origin of the forecasts of aviation demand. A more detailed analysis of these factors is provided in **Appendix D**. Much of the data was obtained from Woods & Poole Economics, Inc., an independent firm specializing in long-term country, state, and county economic and demographic projections.

Population

Population in Arizona is projected to increase from 6.9 million to over 9.5 million (37 percent) between 2016 and 2036, nearly doubling the national average rate of growth. The growth in population is not limited to only one county; 12 of 14 counties are projected to experience higher growth rates than the national average.¹

Age

Due to an inflow of retirees in the state, Arizona's median age is projected to continue rising through the planning horizon. By 2036, Arizona's median age is projected to be 1.34 years older than the state's 2016 median age of 37.28.

Employment

There was a steady increase in workforce levels in Arizona between 1980 and 2007. In 2007, the state was severely impacted by the Great Recession and was unable to reach pre-Recession workforce levels until 2014. It is projected that by 2036 the workforce will reach 5 million, indicating a growing economy requiring more workers.

Gross Regional Product

GRP is Gross Domestic Product (GDP) on a state level. Between 1980 and 2007 the state experienced significant annual increases in GRP. The Great Recession caused a decline in GRP from 2007 until 2009. Since 2010 the GRP has been increasing at pre-Recession levels and is anticipated to reach nearly \$500 billion by 2036.

Income

Income was measured by examining the median household income of the state's residents. Over the last 20 years the state's median household income maintained around \$45,000, however, by 2036 it is projected that only 31 percent of households will earn less than \$45,000.

Tourism

With many national parks and a diverse environment, Arizona is a destination for tourists and as such, the resultant economic impact has become an indicator of economic health in the state. The Great Recession caused a decline in tourism between 2007 and 2009 but tourism levels have since recovered.

Summary of Anticipated Impact Trends

Overall, Arizona was rapidly increasing in population and economy until the Great Recession from 2007-2009. The state experienced economic declines across the board but has since recovered and healthy growth is

¹ Woods & Poole Economics, Inc. elected to combine La Paz and Yuma counties into one entity. There are 15 counties in Arizona.

projected through the planning period. Assuming the nation doesn't experience another significant recession, the projected population and economic levels should create a positive ripple effect in air travel in Arizona, both commercial service and GA activity.

COMMERCIAL SERVICE

Commercial air service activity accounts for a significant portion of all aviation operations in Arizona annually. As a large sector of activity in the state, it is critical to understand the trends affecting the commercial aviation industry in order to better forecast future operations. Some trends may impact the industry significantly while others may have minimal effect. This section focuses on the trends related to commercial aviation in the U.S. and Arizona.

To identify current and projected national and state commercial trends, data from the FAA's Terminal Area Forecast (TAF) issued January 2017 and the *FAA Aerospace Forecast Fiscal Years 2017-2037* were analyzed. Additionally, data obtained from the 2017 Airport Inventory and Data Survey Form were also reviewed. The trends are presented in two groups, followed by a look at Arizona's commercial service forecasts:

1. National Commercial Aviation Trends
2. Arizona Commercial Aviation Trends

National Commercial Aviation Trends

Several trends have impacted commercial aviation in recent history and new trends are (or will) impact projected aviation activity in the future. A look at the historical and current trends impacting the nation's aviation system is included below.

Historical Trends

Over the past four decades, the U.S. commercial air carrier industry has been volatile, experiencing notable swings in activity resulting from economic, political, and social impacts. Most notably:

1. Enplanements have experienced large fluctuations in the last 20 years which can be attributed to events such as September 11, 2001 and the Great Recession of 2007-2009
2. Enplanements rebounded to almost pre-September 11, 2001 levels before the Great Recession of 2007 and were back to pre-September 11, 2001 levels in 2011
3. The Great Recession in 2007 sparked fundamental changes in the way the airline industry operated with commercial airline industry becoming lean, minimizing losses by lowering operating costs and increasing fees, eliminating unprofitable routes, and upgrading the fleet to larger, more fuel-efficient aircraft
4. Enplanements grew at a 3.3 percent annual growth rate from 2010-2016, from 548 million to 665 million, respectively, with significant expansion of ultra-low-cost carriers such as Spirit and Allegiant and continued growth on the mainline carriers
5. Since 2015, domestic enplanements have outpaced the international market, however, this is projected to change by 2018 as international demand increases with strengthening worldwide economic growth
6. Commercial airlines experienced record profits in 2016 due to healthy demand and low energy costs

Current Trends

According to the *FAA Aerospace Forecast Fiscal Years 2017-2037*, there are three main trends that impacted aviation in 2016:

1. Industry consolidation and restructuring
2. Continued capacity discipline in response to external shocks
3. Proliferation of ancillary revenues

Additional trends in the national commercial service industry include economic cycles, oil price fluctuations, regulatory changes, a decline in the U.S. pilot population, and Air Traffic Control (ATC) changes.

Industry Consolidation and Restructuring

Data shows there is a strong relationship between growth in enplanements and the U.S. GDP (FAA 2017), meaning the airline industry and commercial passenger traffic are significantly impacted by national economic upturns and downturns. As an example, the Great Recession from 2007 to 2009 had a substantial effect on the level of air traffic in the U.S. during that same timeframe and for several years beyond.

Challenging economic times prompted several airline mergers and acquisitions over the past decade. U.S. airline consolidation and restructuring became commonplace after the Great Recession. Ten U.S. airline mergers/acquisitions have occurred since 2009, as presented in **Table 1**.

Table 1. Recent Airline Mergers and Acquisitions

Airlines	Date Announced	Date Closed	Resulting Entity
Republic Airways / Midwest Airlines	6/23/2009	7/31/2009	Republic Airways
Republic Airways / Frontier Airlines	8/14/2009	10/1/2009	Republic Airways
Delta Air Lines / Northwest Airlines	4/14/2008	12/31/2009	Delta Air Lines
Pinnacle Airlines / Mesaba Airlines	7/1/2010	7/1/2010	Pinnacle Airlines / Mesaba Airlines
United Airlines / Continental Airlines	5/3/2010	10/1/2010	United Airlines
SkyWest / Atlantic Southeast Airlines / ExpressJet	8/4/2010	11/15/2010	SkyWest / SureJet
Southwest Airlines / Air Tran Airways	9/27/2010	5/2/2011	Southwest Airlines
US Airways / AMR / American Airlines	2/14/2013	12/9/2013	American Airlines
Atlas Air / Southern Air	1/19/2016	4/7/2016	Atlas Air Worldwide
Alaska Airlines / Virgin America	4/4/2016	12/14/2016	Alaska Airlines

Source: *Airlines.org* 2017

In 2005, there were 12 major mainline airlines in the U.S.; today there are six.² The Alaska Airlines / Virgin America merger in 2016 made Alaska Airlines the fifth largest airline in the nation; and one of six legacy or mainline airlines — American, Delta, Southwest, United, Alaska/Virgin, and JetBlue — that control roughly 85 percent of the domestic market, as measured by revenue passenger miles (RPMs).³ Generally, airline consolidations decrease competition, which can lead to higher passenger fares and service reductions as airlines

² Mainline carriers are defined as those providing service primarily via aircraft with 90 or more seats. Regionals are defined as those providing service primarily via aircraft with 89 or less seats and whose routes serve mainly as feeders to the mainline carriers.

³ A RPM is a fare-paying passenger transported one mile; the most common measure of demand for air travel. Sometimes measured as revenue passenger kilometers (RPKs).

eliminate less-profitable routes. However, consolidations among smaller regional carriers can result in different impacts such as a reduction in fares as these airlines strive to compete with each other.

Mainline carriers are also facing challenges brought by low-cost and ultra-low-cost carriers (LCC/ULCC) such as Spirit, Frontier, and Allegiant airlines and many new international carriers that are impacting global demand. These providers promise low base fares, but typically charge high fees for amenities such as baggage and food—a trend now emulated by many of the U.S. mainline carriers. LCCs/ULCCs focus their business models on targeting specific routes underserved by the existing marketplace, reducing costs per available seat mile, and maintaining extremely high levels of aircraft utilization. LCCs/ULCCs will continue to push mainline carriers to reduce flight costs and implement improvements to increase their competitive positions. As a result, demand for commercial service is anticipated to rise, which will force airports to find new ways to increase passenger throughput (FAA 2017).

Continued Capacity Discipline

As a result of the semi-recent industry consolidation and restructuring, airlines continue to maintain capacity discipline – making sure capacity doesn’t outweigh demand. To sustain a lean business practice and rebound from recent economic downfalls, airlines are doing their due diligence to ensure that their aircraft are running as close to capacity as possible in an effort to earn maximum revenue per flight. Capacity discipline is measured by available seat mile (ASM), which according to the *FAA Aerospace Forecast Fiscal Years 2017-2037*, has increased at an average rate of two percent per year since 2009.⁴ The mainline carrier group provided five percent more capacity than it did in 2007 while carrying eight percent more passengers (FAA 2017).

Ancillary Revenues

A recent outcome of the domestic and global economic downturn is the development of airline ancillary revenues. Ancillary revenue is revenue from non-ticket sources such as food and drink services, wireless internet, baggage, and in-flight entertainment. Prior to September 11, 2001 and the Great Recession, many air travelers purchased tickets which included these amenities. The un-bundling of services has proven to be a successful tactic by the airlines to increase their bottom line. As ancillary revenues continue to generate increased revenue, they will remain standard practice within the air travel experience (FAA 2017).

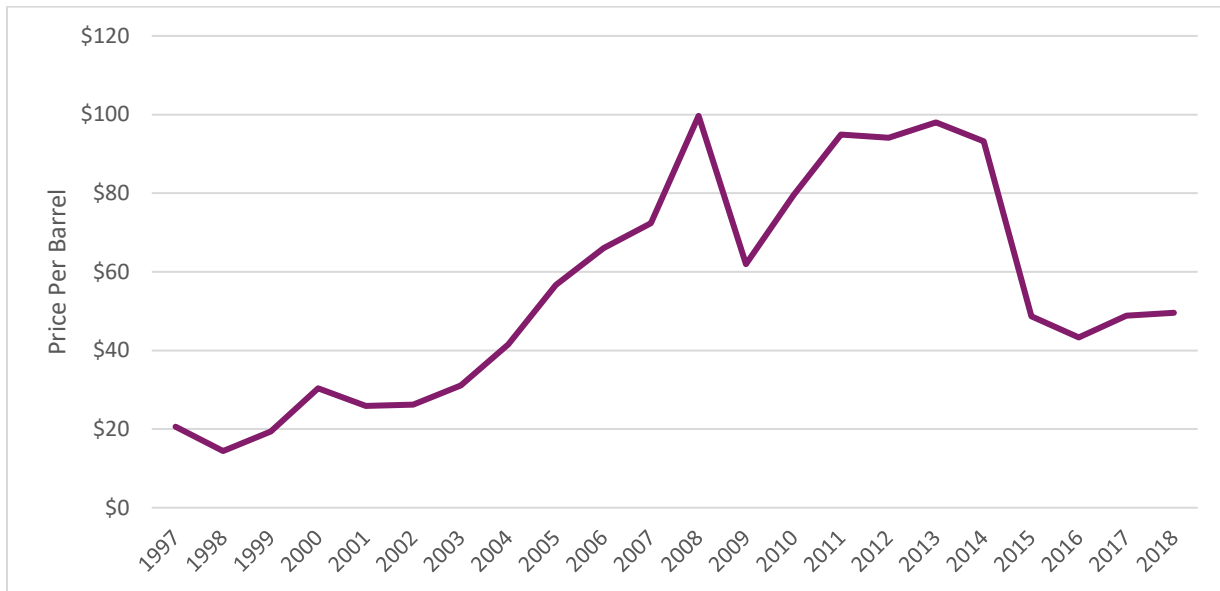
Oil Prices

Oil is the largest operating expense for aircraft operators, and fluctuations in the oil and gas industry impact all types of aviation operations, both commercial and GA. Jet fuel prices comprise nearly three-quarters of airline expenses and as such, can impact air carriers’ choices in fleet mix, routes served, and ticket prices for end users.

As shown in **Figure 1**, over the past 20 years, the price of oil has swung significantly from a low of \$20.59/barrel in 1997 to a high of \$99.67/barrel in 2008. Since 2008, oil prices have fluctuated but remained high until 2014 when prices dropped below \$50/barrel. The *FAA Aerospace Forecast Fiscal Years 2017-2037* reports that the price of oil is anticipated to rise from around \$39/barrel in 2016 to \$47 in 2017. Prices are then anticipated to continuously rise to exceed \$100 by 2026 and approach \$132 by the end of the 20-year forecast period.

⁴ An available seat mile ASM is defined as one seat transported one mile; the most common measure of airline seating capacity or supply. For example, an aircraft with 100 passenger seats, flown a distance of 100 miles, produces 10,000 ASMs. Sometimes measures as an available seat kilometer (ASK).

However, it must also be noted that considerable uncertainty exists in the future of fuel costs given the worldwide geopolitical forces that impact its cost.



Note: Years 2017 and 2018 are projections

Source: Short-Term Energy Outlook – U.S. Energy Information Administration 2017

Figure 1. Historical Oil Prices

Regulatory Changes

Regulatory changes designed to make the country's skies safer, more secure, and better able to meet current demands are impacting all facets of the aviation industry. Some, such as Open Skies agreements, are intended to reduce barriers to international air travel and commerce. Evolving customs and immigration rules are being designed to facilitate legitimate travel while maintaining the highest standards of security and border protection. In recent years, the ATC system has faced intense scrutiny, with some officials advocating for the privatization of the system. Whether privatized or remaining part of the FAA, ATC is also changing with NextGen implementation and the potential integration of remote or virtual towers (RVTs). RVTs will require additional regulatory changes and impact airport development needs.

U.S. Pilot Population

For years, analysts have been anticipating an airline pilot shortage based on the changing federal requirements and fewer numbers of trained pilots coming out of the military. Part of the shortage in experienced pilots can be credited to the recent increase in FAA pilot qualification requirements.⁵ In 2013, the FAA published a rule requiring first officers—also known as co-pilots—to hold an Airline Transport Pilot (ATP) certificate, requiring 1,500 hours of total time as a pilot. Previously, first officers were required to have only a commercial pilot certificate, which requires 250 hours of flight time. This new requirement has discouraged many students from

⁵ Pilot Certification and Qualification Requirements for Air Carrier Operations, 78 F.R. § 42323 (2013).

entering flight training programs due to the increased cost associated with the new training requirements or led U.S. pilots to look for jobs with foreign airlines where flight-hour requirements are not as stringent.

The pilot population is also still responding to a 2010 FAA regulatory change that increased duration of validity of student pilot certificates for those under the age of 40 years old from 36 months to 60 months (FAA 2017). The new regulation created an immediate increase in active student pilot licenses from 72,280 in 2009 to 119,119 by the end of 2010. During that same period, active private pilot licenses decreased from 211,619 to 202,020 and commercial licenses fell from 125,738 to 123,705 (U.S. Civil Airmen Statistics 2016). The student pilot population has continued to increase year-over-year since that time, while private and commercial pilot populations continue to decline.

Further, this inverse relationship between student and active pilots is not anticipated to reverse in the projected future. According to the *FAA Aerospace Forecasts Fiscal Years 2017-2037*, the number of student pilot certificates is anticipated to grow to 141,200 by 2037, while the populations of private and commercial pilots are anticipated to decline to 139,000 and 83,300, respectively. This indicates that new airmen are not matriculating into fully licensed pilots at a sufficient enough rate to maintain the existing pilot population in the U.S.

Additionally, the industry is confronting waning interests in students interested in a career as a pilot due to high educational costs, low salary expectations post-graduation, demanding travel schedules, and general industry upheaval since September 11, 2001. This issue is compounded by the declining availability of military-trained pilots to meet the aviation industry's growing needs. A 2014 Government Accountability Office (GAO) Report, *Aviation Workforce – Current and Future Availability of Airline Pilots*, notes that 70 percent of airline pilots hired had come from the military prior to 2001; and fewer than 30 percent are hired from the military today. This is likely a result of financial incentives for military pilots to stay in service longer, civil job market opportunities, and changing post-war military missions.

Yet while many of these trends have challenged the aviation community, the FAA recently revised its stringent medical clearance requirements for pilots. Prior to this change, pilots over 40 years old were required to pass a comprehensive medical exam once every two years, which deterred or prohibited aging pilots from obtaining and renewing their licenses. Recognizing the negative impact this strict regulation had on pilots and the aviation community, Congress mandated the FAA to revise its existing medical clearance regulations in Section 2307 of the FAA Extension, Safety, and Security Act of 2016 (Public Law [PL] 114-190), *Medical Certification of Certain Small Aircraft Pilots*. In response, the FAA implemented the alternative pilot physical examination and education requirements known as BasicMed to effectively re-open the sky to thousands of GA pilots across the U.S.

Air Traffic Control

The FAA operates the U.S. ATC system through a three-pronged system of local airport tower controllers, terminal radar approach control (TRACON), and regional air route traffic control centers, also known as enroute centers. Originating in the 1960s, the FAA has received intense scrutiny for inefficiency and failing to keep pace with modern technologies and airspace demands. While the FAA continues to implement the NextGen and other modernization initiatives, critics argue that the agency has taken far too long. Agency supporters argue that the FAA has been crippled by inconsistent funding and automatic budget cuts enacted when Congress fails to pass the Federal budget known as sequestration. In March 2013, sequestration cuts forced the FAA to cut \$42.9 million from its operations budget and furlough air traffic controllers, leading to a week of severe traffic delays.

The argument over the nation's ATC most recently came to the forefront in June 2017 when President Trump announced his plan to privatize the nation's ATC system. The President argues that he is "proposing reduced wait times, increased route efficiency, and far fewer delays," while rectifying years of wasteful spending and modernization delays that threaten the safety and security of the air system. Under the Trump proposal, a private, nonprofit corporation governed by a board of representatives primarily comprised of the major airlines would take control of the management and operations of ATC in the U.S. The organization would be financed through user fees instead of tax dollars.

Opponents of the Trump proposal argue that privatization will shift costs to passengers and place particular hardship on small, rural airports and the communities they serve. In 2016, Delta Air Lines published a study entitled "The Costs of Privatizing Air Traffic Control and How It Will Impact Airline Travelers" that found that privatization could increase tickets costs by 20 to 29 percent after ten years and result in the closure of small airports located outside of major urban centers (Delta 2016). The proposal has also received criticism for giving too much control of a key asset to special interests and major airlines. Mark Baker, President of the Aircraft Owners Pilots Association (AOPA), said his organization would not support a plan that imposes fees on small aircraft owners (Shepardson 2017). Opponents also argue that the proposal could limit business jet access to airports, create a national security risk, and fail to deliver the rapid modernization promised by the plan, particularly during the three-year transition period between FAA and private control.

While the June 2017 Trump proposal is the latest iteration of the privatization approach, the idea is not new. ABC News reports a similar measure was defeated in 2016, even with the support of Airlines for America (A4A), the major lobbying group of the U.S. airline industry (Cook 2017). Perhaps more notably, the FAA already contracts ATC services to some private sector at visual flight rule (VFR) airports through the Contract Tower Program. According to the U.S. Contract Tower Association, a sub-committee of the American Association of Airport Executive (AAAE), the program allows the FAA to provide ATC at a substantially reduced cost to taxpayers. As of 2017, 253 airports participate in the program (U.S. Contract Tower Association 2017).

However, the President's fiscal year (FY) 2017 budget proposal (released in February 2017) eliminated the guaranteed and dedicated funding language for the Contract Tower Program that had been included in the Department of Transportation (DOT)/FAA appropriations bills for FYs 2015 and 2016. Despite this initial threat, both the Senate and House approved \$159 million in statutory bill language for the final DOT/FAA 2017 Appropriations Bill. This amount will fund all existing contract towers, including the 16 towers in cost-share programs and offer the flexibility to add several new towers in FY 2017. The addition of contract towers provides a lower cost ATC option for VFR airports to guide VFR traffic.

While contract towers lower costs and increase safety at certain airports, the impacts of privatizing all ATC services in the U.S. are more complex and represent a major ideological difference about the role of government. President Trump's proposal is one aspect of a broader plan to improve transportation infrastructure in the U.S. and will require Congressional support and approval before any changes are witnessed at the FAA.

Arizona Commercial Aviation Trends

Impacts from the national trends discussed in the previous section trickle down to the state level, impacting Arizona's aviation system both positively and negatively. A look at the historical and current trends impacting Arizona's aviation system is included below.

Historical Trends

The volatility in commercial service activity levels experienced nationally as a result of September 11, 2001 and the Great Recession of 2007-2009 was also experienced at the state level in Arizona. Significant reductions in activity levels were seen after both events, resulting in changes to airline service and structure to counteract reduced demand. Travelers to and from Arizona were faced with reduced flight routes and frequencies and higher airfare in some cases.

Current Trends

Arizona's commercial service airports are not immune to the trends impacting commercial aviation nationally. Airline consolidation has reduced competition among carriers, resulting in higher passenger fares and reduced route options to Arizona's airports, in some cases. On the plus side, smaller regional carriers are competing for passengers and as such are reducing fares to remain competitive.

Arizona's commercial service airports are served by a variety of LCCs and ULCCs that provide air transportation to and from the state at reduced fares including Allegiant, Frontier, JetBlue, Southwest, Spirit, and Sun Country. A mix of mainline and LCCs/ULCCs allows a larger traveling population to reach the state, effectively increasing the economic impact of tourism in Arizona.

Some regional airlines that serve Arizona's commercial service airports are particularly impacted by the shortage in pilots as many are being recruited by mainline carriers to replace their retiring pilots, leaving regional airlines at a loss for pilots who can operate their standard scheduled service. Ultimately this has led to a reduction or complete loss of regional airline service if the regional airlines can't backfill their pilot positions. Communities across Arizona that are served exclusively by smaller regional airlines (such as Great Lakes) have been and may continue to be most impacted.

The implementation of NextGen has many benefits. For commercial aviation specifically, certain elements allow pilots to fly closer together on more direct routes, decreasing wait times and fuel consumption. Quicker travel and reduced fares to the state may result over time from the implementation of NextGen. However, other regulatory changes such as the proposed privatization of ATC may counteract these cost savings by increasing airfares to cover the operation of ATC facilities in Arizona.

Arizona Commercial Service Forecasts

Eleven of the 67 SASP airports offer commercial service which includes all scheduled passenger flights and air tours. Data concerning activity levels of commercial service airports in Arizona is presented in the following sections, including historical and projected enplanements, air carrier and air taxi/commuter aircraft operations, and based aircraft data. These data are reported annually to the FAA and the FAA publishes these data and provides projections of activity for each airport in the TAF. It should be noted that forecasts of enplanements, operations, and based aircraft used in this Chapter are derived from the FAA TAF, however, for many of the commercial service airports, 2016 FAA TAF data does not match the 2016 data identified during the inventory process. For the purposes of the SASP Update, all commercial service forecasts are based on data reported by the 2016 FAA TAF, with the 2016 survey data presented for reference.

Enplanements

An enplanement is defined as a passenger boarding a commercial service flight. The number of enplanements at commercial service airports is heavily dependent on the overall health of the regional market area as well as the air carrier's decisions to operate at an airport. **Table 2** presents enplanements at the 11 commercial service airports in the state. According to FAA TAF growth rates, Page Municipal, Flagstaff Pulliam, and Phoenix-Mesa Gateway are forecasted to have the largest percentage increases in passenger enplanements through 2036, followed by Phoenix Sky Harbor International and Tucson International. Alternatively, Grand Canyon National Park is projected to slightly decrease while Ernest A. Love Field, Laughlin/Bullhead City International, and Tucson International are projected to experience the smallest percentage increases in passenger enplanements over the planning horizon. Three airports, Yuma International, Show Low Regional, and Grand Canyon West, are projected to maintain their current level of passenger enplanements over the 20-year timeframe.

Table 2. Enplanement Projections for Arizona's Commercial Service Airports

Associated City	Airport Name	2016 Survey Data	2016 (TAF Data)	Forecasts			CAGR 2016-2036
				2021	2026	2036	
Bullhead City	Laughlin/Bullhead City International	105,007	111,779	122,148	133,559	159,920	1.81%
Flagstaff	Flagstaff Pulliam	66,526	65,931	73,888	82,816	104,056	2.31%
Grand Canyon	Grand Canyon National Park	324,682	86,321	82,450	82,450	82,450	-0.23%
Page	Page Municipal	85,666	14,790	16,688	18,836	23,999	2.45%
Peach Springs	Grand Canyon West	34,973	34,973	34,973	34,973	34,973	0.00%
Phoenix	Phoenix-Mesa Gateway	676,745	704,616	797,336	882,352	1,078,624	2.15%
Phoenix	Phoenix Sky Harbor International	21,673,418	21,020,978	23,418,186	25,779,866	31,148,339	1.99%
Prescott	Ernest A. Love Field	3,435	3,044	3,156	3,276	3,519	0.73%
Show Low	Show Low Regional	3,652	3,652	3,652	3,652	3,652	0.00%
Tucson	Tucson International	1,647,644	1,569,720	1,774,670	1,937,796	2,311,489	1.95%
Yuma	Yuma International	73,876	72,795	72,795	72,795	72,795	0.00%
Total		24,695,624	23,688,599	26,399,942	29,032,371	35,023,816	1.97%

Sources: 2017 Airport Inventory and Data Survey, FAA TAF issued January 2017

Air Carrier and Air Taxi/Commuter Operations

In recent years, operations at commercial service airports declined slightly, primarily due to up-gauging in the airlines' fleet. Up-gauging is a term for airlines increasing aircraft seat capacity which in turn, reduces annual operations. As shown in **Table 3**, many of Arizona's commercial service airports report different operational counts than what the FAA TAF reports. As such, annual growth rates were derived from the FAA TAF since it's the official FAA report of aviation activity for U.S. airports. Over the 20-year planning horizon, Tucson International, Flagstaff Pulliam, and Phoenix Sky Harbor International are projected to have the largest percentage increases in air carrier and air taxi/commuter operations. Ernest A. Love Field, Laughlin/Bullhead City International, and Grand Canyon National Park airports are forecasted to experience the smallest percentage of growth in air carrier and air taxi/commuter operations. Grand Canyon West, Page Municipal, Show Low Regional, and Yuma International are projected to maintain the same level of commercial operations from 2016-2036.

Table 3. Air Carrier and Air Taxi/Commuter Projections for Arizona's Commercial Service Airports

Associated City	Airport Name	2016 Survey Data	2016 TAF Data	Forecasts			CAGR 2016-2036
				2021	2026	2036	
Bullhead City	Laughlin/Bullhead City International	1,444	3,497	3,567	3,649	3,838	0.47%
Flagstaff	Flagstaff Pulliam	1,769	14,314	15,648	17,109	20,429	1.79%
Grand Canyon	Grand Canyon National Park	45	100,728	105,835	111,217	122,818	1.00%
Page	Page Municipal	0	40,421	40,421	40,421	40,421	0.00%
Peach Springs	Grand Canyon West	0	130,000	130,000	130,000	130,000	0.00%
Phoenix	Phoenix-Mesa Gateway	11,239	44,165	47,624	50,980	58,348	1.40%
Phoenix	Phoenix Sky Harbor International	361,395	417,870	451,974	495,116	594,613	1.78%
Prescott	Ernest A. Love Field	9	3,620	3,694	3,770	3,920	0.40%
Show Low	Show Low Regional	0	3,190	3,190	3,190	3,190	0.00%
Tucson	Tucson International	33,784	50,429	56,315	61,302	72,125	1.81%
Yuma	Yuma International	18,298	21,777	21,777	21,777	21,777	0.00%
Total		427,983	830,011	880,045	938,531	1,071,479	1.28%

Sources: Airport Inventory and Data Survey 2017, FAA TAF issued January 2017

GA Activity at Commercial Service Airports

While not a commercial-related metric, there are also based GA aircraft at commercial service airports. Some commercial service airports accommodate a higher level of GA activity than others, especially those with service by only one carrier. As shown in **Table 4**, the TAF projects that Ernest A. Love Field will have the largest increase in the number and percentage of based aircraft over the planning horizon. Other airports projected by the FAA to have more based aircraft over the 20-year period include Flagstaff Pulliam, Phoenix-Mesa Gateway, Tucson International, and Grand Canyon National Park. According to the TAF, the other six of Arizona's commercial service airports are forecasted to maintain the same level of based aircraft from 2016-2036.

Table 4. Based Aircraft Projections for Arizona's Commercial Service Airports

Associated City	Airport Name	2016 Survey Data	2016 TAF Data	Forecasts			CAGR 2016-2036
				2021	2026	2036	
Bullhead City	Laughlin/Bullhead City International	21	20	20	20	20	0.00%
Flagstaff	Flagstaff Pulliam	139	139	148	159	179	1.27%
Grand Canyon	Grand Canyon National Park	46	38	40	41	41	0.38%
Page	Page Municipal	58	54	54	54	54	0.00%
Peach Springs	Grand Canyon West	0	0	0	0	0	0.00%
Phoenix	Phoenix-Mesa Gateway	117	120	122	128	138	0.70%
Phoenix	Phoenix Sky Harbor International	74	61	61	61	61	0.00%
Prescott	Ernest A. Love Field	320	212	243	281	378	2.93%
Show Low	Show Low Regional	40	40	40	40	40	0.00%
Tucson	Tucson International	286	211	226	242	274	1.31%
Yuma	Yuma International	175	85	85	85	85	0.00%
Total		1,276	980	1,039	1,111	1,270	1.30%

Sources: Airport Inventory and Data Survey 2017, FAA TAF issued January 2017

Table 5 presents GA, military, and commercial service operations forecasts at the 11 commercial service airports in the system. Because military operations are difficult to predict, the FAA TAF assumes military operations will remain the same over the planning horizon. The TAF projects that Phoenix-Mesa Gateway and Ernest A. Love Field will have the largest growth in the number of GA operations over the 20-year period. Airports projected to have a decrease in the number of GA operations include Laughlin/Bullhead International, Tucson International, and Flagstaff Pulliam. Phoenix Sky Harbor International, Grand Canyon National Park, and Tucson International are forecast to have the greatest increase in total operations over the 20-year planning period with 1.70, 0.95, and 0.70 compound annual growth rates, respectively. The 11 commercial service airports are projected to experience and increase in total operations from 1,642,999 in 2016 to 1,915,836 in 2036.

Table 5. TAF Total Operations Projections for Arizona’s Commercial Service Airports

Associated City	Airport Name	2016				2021				2026				2036				CAGR 2016-2036
		GA*	Military	CS*	Total	GA	Military	CS	Total	GA	Military	CS	Total	GA	Military	CS	Total	
Bullhead City	Laughlin/Bullhead City International	6,813	16,438	3,497	26,748	6,813	16,438	3,567	26,818	6,288	16,438	3,497	26,223	6,238	16,438	3,497	26,173	-0.11%
Flagstaff	Flagstaff Pulliam	29,827	1,113	14,314	45,254	29,409	1,113	15,648	46,170	29,479	1,113	17,109	47,701	29,619	1,113	20,429	51,161	0.62%
Grand Canyon	Grand Canyon National Park	4,207	918	100,728	105,853	3,306	918	105,835	110,059	4,135	918	111,217	116,270	4,265	918	122,818	128,001	0.95%
Page	Page Municipal	8,300	60	40,421	48,781	8,300	60	40,421	48,781	7,360	60	40,421	47,841	7,360	60	40,421	47,841	-0.10%
Peach Springs	Grand Canyon West	300	0	130,000	130,300	300	0	130,000	130,300	300	0	130,000	130,300	300	0	130,000	130,300	0.00%
Phoenix	Phoenix-Mesa Gateway	186,088	5,537	44,165	235,790	198,502	5,537	47,624	251,663	200,427	5,537	50,980	256,944	204,407	5,537	58,348	268,292	0.65%
Phoenix	Phoenix Sky Harbor International	21,685	2,767	417,870	442,322	21,766	2,767	451,974	476,507	21,766	2,767	495,116	519,649	21,766	2,767	594,613	619,146	1.70%
Prescott	Ernest A. Love Field	251,872	560	3,620	256,052	251,478	560	3,694	255,732	256,771	560	3,770	261,101	267,718	560	3,920	272,198	0.31%
Show Low	Show Low Regional	8,218	57	3,190	11,465	8,218	57	3,190	11,465	8,218	57	3,190	11,465	8,218	57	3,190	11,465	0.00%
Tucson	Tucson International	62,152	26,974	50,429	139,555	57,848	26,974	56,315	141,137	58,951	26,974	61,302	147,227	61,281	26,974	72,125	160,380	0.70%
Yuma	Yuma International	74,629	104,473	21,777	200,879	74,629	104,473	21,777	200,879	74,629	104,473	21,777	200,879	74,629	104,473	21,777	200,879	0.00%
Arizona Total		654,091	158,897	830,011	1,642,999	660,569	158,897	880,045	1,699,511	668,324	158,897	938,379	1,765,600	685,801	158,897	1,071,138	1,915,836	0.77%

**Note: GA = general aviation; CS = commercial service*

Source: FAA TAF Issued January 2017

GENERAL AVIATION

GA is defined as all aviation activity except military, scheduled passenger, and air cargo operations. As previously noted, GA activity takes place at all of Arizona's airports, including the commercial service airports. GA composes the largest sector of aviation activity in the state. As such, understanding the historical and current trends impacting activity levels helps to better forecast future GA activity in the state, which ultimately impacts recommendations of the system plan to meet GA user needs.

Similar to what was provided for commercial service activity, a review of national and state GA trends is provided in this section, followed by an evaluation of socioeconomic indicators and forecasts of GA activity (operations and based aircraft) in the state:

1. National GA Trends
2. Arizona GA Trends
3. Arizona Historical and Projected Demographics
4. Arizona GA Forecasts

Please note that the GA forecasts presented here are optimistic. With ideal flying conditions and healthy economic and population growth anticipated over the next two decades, GA activity is projected to outpace the growth experienced in other places in the U.S. through the planning horizon. The state hosts one of the largest concentrations of flight instruction and other aviation-related schools in the nation; numerous maintenance, repair and overhaul (MRO) facilities; active recreational, sport, and experimental flying communities; and a robust air tourism sector—amongst many other types of activities. Each of these factors is projected to play an important role in Arizona's GA future.

National GA Trends

GA has been impacted by some of the same trends impacting commercial service such as fluctuations in oil prices and implementation of NextGen. Both historical and current trends are discussed in the following sections.

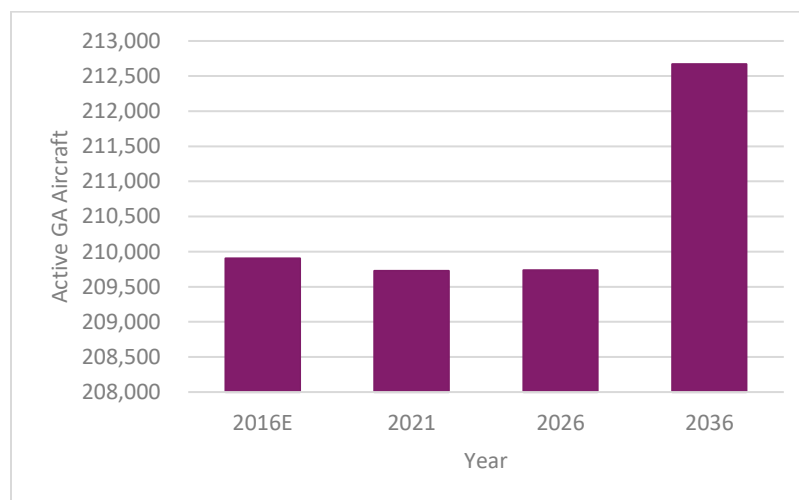
Historical and Current Trends

Each year, the FAA and the General Aviation Manufacturers Association (GAMA) publish a GA industry outlook for the country. The FAA's publication, *FAA Aerospace Forecast Fiscal Years 2017-2037*, is the same publication referenced in the commercial service section of this Chapter. Its GA outlook focuses on the nation's "active" GA fleet, defined as aircraft that fly at least one hour during the year. GAMA's *2016 General Aviation Statistical Databook & 2017 Industry Outlook* focuses on aircraft billings and shipments.

The following summarizes recent GA activity trends in the U.S. based on the information provided in the FAA and GAMA publications and other industry happenings in order to provide context for based aircraft and GA activity forecasts in Arizona:

1. There were an estimated 209,905 active GA aircraft based in the U.S. in 2016.
2. GA aircraft flew over 24.5 million hours in the U.S. in 2016, of which two-thirds are for business purposes.
3. Fractional aircraft use is growing. In 2016, 882 aircraft were used in fractional operations. Total fractional owners were 4,415.
4. While their production rates have decreased, single-engine aircraft continue to be the most popular aircraft and they exist in the greatest number in the U.S. as compared to other aircraft. In 2016, 890 single-engine aircraft were manufactured and shipped worldwide.
5. Turbo-prop aircraft popularity has grown slightly. In 2016, 582 units manufactured and shipped worldwide.
6. While jet aircraft use has continued to grow since 2013, shipments have declined since 2014. In 2016, 611 units were manufactured and shipped worldwide.
7. Domestic shipments of new GA aircraft have declined for the second year in a row.
8. The FAA has revised 14 CFR Part 23 related to air worthiness standards, which should make it easier to certify products and technologies for small airplanes (U.S. Government Publishing Office 2017).
9. The FAA revised medical requirements for private pilots, known as BasicMed under 14 CFR Part 68 (U.S. Government Publishing Office 2017), which is supposed to help counter a decline in GA activity.
10. Flight training activity has increased (FAA 2016), including programs like “Cirrus Embark” where Cirrus provides free Cirrus flight training for buyers of used Cirrus SR20 and SR22 aircraft.

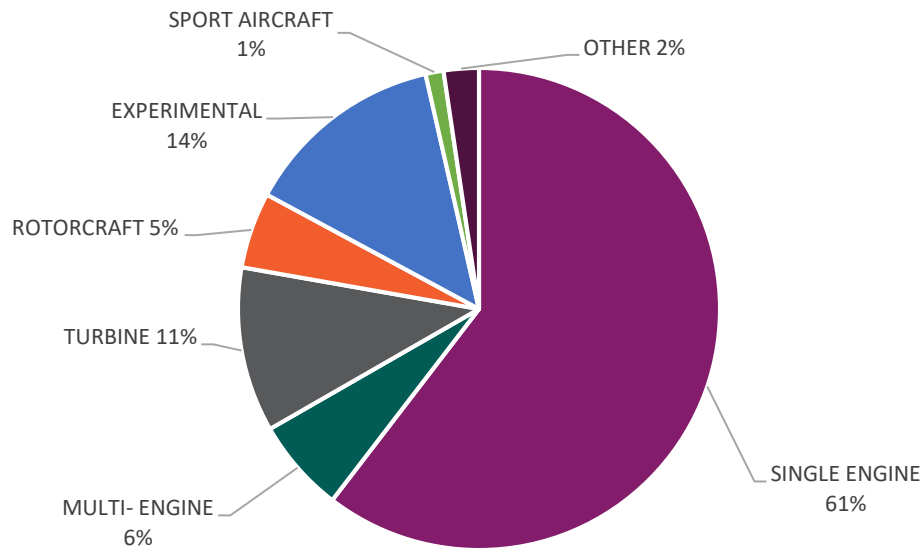
The FAA’s total active GA aircraft forecast as provided in the *FAA Aerospace Forecast Fiscal Years 2017-2037* is presented in **Figure 2**, while the national GA fleet mix forecast is presented in **Figure 3** and **Table 6**.



E = estimated

Source: *FAA Aerospace Forecast Fiscal Years 2017-2037*

Figure 2. Estimated Current and Forecasted Total Active GA Aircraft in the U.S.



Source: FAA Aerospace Forecast Fiscal Years 2017-2037

Figure 3. U.S. GA Aircraft Fleet Mix

Overall, total GA aircraft are projected to remain relatively stable through 2026, and then experience growth through 2036. Within each category of the fleet mix presented in **Table 6**, fixed wing piston aircraft are expected to decline (-15.44 percent) over the forecast period while all other categories are expected to grow. Sport aircraft are expected to grow by the greatest percentage, 126.48 percent, followed by turbine fixed wing aircraft at 45.16 percent. Rotorcraft are projected to grow by 38.32 percent and experimental aircraft by 22.97 percent.

Table 7 shows the forecasted hours expected to be flown by GA aircraft as predicted by the FAA. Over the forecast period, total GA hours flown are projected to increase by 20 percent. Hours flown in every category in the fleet mix are expected to increase except for fixed wing piston, which coincides with the anticipated decrease in fixed wing piston aircraft.

Table 6. Estimated Current and Forecasted Total Active GA Aircraft Fleet Mix in the U.S.

Year	Fixed Wing						Rotorcraft			Experi- mental	Sport	Other	Total
	Piston			Turbine									
	Single Engine	Multi- Engine	Total	Turbo Prop	Turbo Jet	Total	Piston	Turbine	Total				
2016E	126,820	13,200	140,020	9,460	13,770	23,230	3,335	7,365	10,700	28,475	2,530	4,950	209,905
Forecast													
2021	121,645	13,005	134,650	9,075	15,480	24,555	3,560	8,055	11,615	30,640	3,315	4,950	209,725
2026	116,335	12,765	129,100	9,570	17,345	26,915	3,785	8,775	12,560	32,065	4,125	4,970	209,735
2036	106,350	12,045	118,395	12,150	21,570	33,720	4,325	10,475	14,800	35,015	5,730	5,010	212,670
% Change 2016- 2036	-16.14%	-8.75%	-15.44%	28.44%	56.64%	45.16%	29.69%	42.23%	38.32%	22.97%	126.48%	1.21%	1.32%

Source: FAA Aerospace Forecast Fiscal Years 2017-2037

Table 7. FAA Aerospace Forecast for GA Hours Flown (in Thousands)

Year	Fixed Wing						Rotorcraft			Experi- mental	Sport	Other	Total
	Piston			Turbine									
	Single Engine	Multi- Engine	Total	Turbo Prop	Turbo Jet	Total	Piston	Turbine	Total				
2016E	11,191	1,603	12,794	2,539	4,173	6,712	784	2,565	3,350	1,335	204	162	24,558
Forecast													
2021	10,295	1,570	11,865	2,554	5,250	7,804	848	2,905	3,754	1,515	275	163	25,375
2026	9,807	1,547	11,354	2,706	6,039	8,745	934	3,235	4,169	1,669	351	164	26,451
2036	9,205	1,563	10,768	3,439	7,583	11,022	1,101	3,923	5,024	1,980	512	167	29,473
% Change 2016- 2036	-17.75%	-2.50%	-15.84%	35.45%	81.72%	64.21%	40.43%	52.94%	49.97%	48.31%	150.98%	3.09%	20.01%

Source: FAA Aerospace Forecast Fiscal Years 2017-2037

Arizona GA Trends

In Arizona, GA aircraft are flown for a wide variety of reasons including business travel, agricultural spraying, flight instruction, emergency airlift, firefighting, recreation, and more. In 2016, 8,244 FAA registered aircraft were based in Arizona along with 18,278 FAA certificated pilots (FAA n.d.) (FAA 2016). Of the 8,244 FAA registered aircraft, 6,066 were based at system airports (73.6%). These aircraft included home built/experimental, glider, agricultural, military, antique and classic/warbirds, ultra-light airplanes, helicopters, single and multi-engine aircraft, and corporate and private jets.

Before reviewing trends currently impacting GA in Arizona specifically, an analysis of historical GA activity in the state was conducted. Current GA trends in Arizona are included following the historical analysis.

Historical Trends

The two activity indicators used in this analysis are the number of based aircraft at an airport and annual GA operations. The next two sections review the historical changes in both of these indicators between 2007 and 2016.

Arizona Based Aircraft

The FAA maintains a database of all registered aircraft in the U.S., which includes the state and county of the aircraft owner; however, it does not indicate where aircraft are based. **Table 8** shows the total number of aircraft in Arizona by county as registered with the FAA. For comparison, it also shows the number of based aircraft in 2016 reported by airports on the 2017 Airport Inventory and Data Survey, along with the number of based aircraft the *2008 Arizona State Airports System Plan Update* for historical context. It is important to note that the registered and based aircraft counts provided in the table include aircraft at commercial service airports. Even with the inclusion of commercial service airports, this data provides a state-level snapshot of based aircraft trends in Arizona.

Table 8. Historic and Current Arizona Aircraft by County

County	FAA Registered Aircraft in Arizona					Based Aircraft in Arizona				
	2007	2016	% Total	Difference	% Change	2007	2016	% Total	Difference	% Change
Apache	57	31	0.38%	-26	-45.61%	42	38	0.63%	-4	-9.52%
Cochise	307	272	3.30%	-35	-11.40%	247	183	3.02%	-64	-25.91%
Coconino	271	274	3.32%	3	1.11%	280	246	4.06%	-34	-12.14%
Gila	130	84	1.02%	-46	-35.38%	133	67	1.10%	-66	-49.62%
Graham	61	66	0.80%	5	8.20%	41	57	0.94%	16	39.02%
Greenlee	7	5	0.06%	-2	-28.57%	2	1	0.02%	-1	-50.00%
La Paz	139	132	1.60%	-7	-5.04%	42	17	0.28%	-25	-59.52%
Maricopa	5,314	4,330	52.52%	-984	-18.52%	4,499	3,338	55.03%	-1,161	-25.81%
Mohave	569	474	5.75%	-95	-16.70%	578	321	5.29%	-257	-44.46%
Navajo	187	192	2.33%	5	2.67%	109	82	1.35%	-27	-24.77%
Pima	1,391	1,231	14.93%	-160	-11.50%	1,024	798	13.16%	-226	-22.07%
Pinal	377	368	4.46%	-9	-2.39%	267	286	4.71%	19	7.12%

County	FAA Registered Aircraft in Arizona					Based Aircraft in Arizona				
	2007	2016	% Total	Difference	% Change	2007	2016	% Total	Difference	% Change
Santa Cruz	45	47	0.57%	2	4.44%	35	26	0.43%	-9	-25.71%
Yavapai	738	532	6.45%	-206	-27.91%	530	431	7.11%	-99	-18.68%
Yuma	276	206	2.50%	-70	-25.36%	178	175	2.88%	-3	-1.69%
Total	9,869	8,244	100.00%	-1,625	-16.47%	8,007	6,066	100.00%	-1,941	-24.24%

Note: Includes commercial service airports

Sources: FAA Registry – Aircraft Inquiry (August 2017); Arizona State Aviation System Plan Update 2008; 2017 Airport Inventory and Data Survey

As shown in **Table 8**, the number of based aircraft at Arizona’s system airports have fluctuated over the years. These fluctuations are based on several factors including pilot preferences, airport services, and the availability of storage units and their prices. Total based aircraft at system airports were recorded at 8,007 in the 2008 SASP (using 2007 data). From 2007 to 2016, this number dropped by a total of 1,941 aircraft, or 24 percent. Although this may seem significant, it is important to note that the total number of FAA registered aircraft in Arizona also decreased by 16 percent during the same time period, while active GA aircraft dropped by nine percent nationally—from 231,606 (FAA 2010) in 2007 to 209,905 in 2016 (FAA 2016). This is a contributing factor in the reduction of aircraft at SASP airports. Another factor is the overall reduction in SASP airports; there are 16 fewer airports in the current system as compared to 2007 (83 versus 67 today). The decrease in registered and based aircraft in Arizona from 2007 to 2016 mirrors a similar decrease on the national level during the same timeframe.

FAA’s National Based Aircraft Inventory Program (basedaircraft.com)

The FAA maintains an electric online inventory system of based aircraft counts for all non-primary airports included in the NPIAS. The FAA uses the information as a direct feed into the FAA Airport Data and Information Program’s Airport Master Record Form 5010-1 report, as part of its evaluation regarding approach procedures such as localizer performance with vertical guidance (LPV), in its biennial update of the NPIAS, and in reviewing an airport’s project requests. The inventory, which is required to be updated and confirmed annually, requires verification of the aircraft’s tail or “N” number and entry of the information into the online system. The FAA reviews the submitted lists of reported based aircraft in order to determine which aircraft are included in the ultimate “count” maintained in the system. The FAA provides specific direction that aircraft should be counted as “base” if the aircraft is operational and airworthy and based the “majority” of the year, considered to be six months or more, and that aircraft associated with through-the-fence operations should not be included.

As of April 25, 2018, the FAA’s inventory showed a total of 4,102 “validated” based aircraft in Arizona compared to the 4,382 identified through the FAA Form 5010 process. This compares to 6,029 aircraft reported through the on-site inventory process of the SASP Update. A few reasons for the discrepancies include the following:

1. Only non-primary airports are required to participate in the effort. This is 58 of 67 system airports included in the SASP Update. During the on-site visits, 1,118 based aircraft were reported at the nine primary airports.

2. Many airports have not updated the website recently (nine airports had never updated nor verified the numbers). Of the 50 airports included on the website, the dates of the original and updated information ranged from 2009 to 2018 (eight airports), with the highest number of updates (22) between 2014 and 2017.
3. With Arizona's numerous second homeowners and high level of winter visitors, there are many aircraft than an airport reports as based due to the rental of hangars or a tie-down, even though those aircraft do not meet the FAA's definition of being based at the airport the "majority" of the year. Even if these aircraft do reside in Arizona at an airport for more than six months, if the aircraft's tail number has been reported by another airport, that aircraft will show as a duplicate and the two airports would have to work through the disagreement with the FAA before an aircraft could be "claimed" as based at the airport. This also affect the differences reported by an airport vs. what is identified on the website.
4. Some airports include aircraft based off-site but "through-the-fence" which the FAA does not include, but which does impact the operational activity at an airport. During the on-site visits, there was no distinction made in the number of based aircraft that were considered "through-the-fence," although information on which airports have these activities was obtained.
5. The FAA's counts only include single-engine, multi-engine, jet, and helicopters. Ultralights and military aircraft are not required since they aren't validated through the process, but it does help an airport understand it's overall activity. Of the 6,029 based aircraft identified during the on-site inventory effort, 166 are military and 76 are ultralight.

Due to the many and varied reasons for the discrepancies between aircraft validated through the FAA's inventory system and those reported by airports during the on-site inventory, the on-site inventory numbers are used for the purpose of estimating future demand in the SASP Update. A listing of April 2018 FAA inventory data (including the date of the last edit) and the numbers reports through the on-site inventory are presented in **Table 9.**

Table 9. Based Aircraft Reporting Comparison

Associated City	Airport Name	FAA ID	5010 Based Aircraft Count	Validated Based Aircraft	Last Edit Date	On-Site Inventory Count
Maricopa	Ak-Chin Regional	A39	11	7	4/26/2013	30
Parker	Avi Suquilla	P20	19	12	4/9/2013	17
Bagdad	Bagdad	E51	4	4	—	5
Benson	Benson Municipal	E95	36	24	7/18/2012	44
Bisbee	Bisbee Municipal	P04	27	26	1/9/2017	28
Douglas	Bisbee-Douglas International	DUG	3	3	3/10/2014	5
Buckeye	Buckeye Municipal	BXK	61	61	4/10/2013	70
Casa Grande	Casa Grande Municipal	CGZ	82	58	4/26/2015	105
Chandler	Chandler Municipal	CHD	268	151	5/16/2014	440
Chinle	Chinle Municipal	E91	0	0	1/26/2018	3
Cibecue	Cibecue	Z95	—	—	—	0
Douglas	Cochise College	P03	—	—	—	15
Willcox	Cochise County	P33	20	20	3/10/2014	24

Associated City	Airport Name	FAA ID	5010 Based Aircraft Count	Validated Based Aircraft	Last Edit Date	On-Site Inventory Count
Colorado City	Colorado City Municipal	AZC	16	16	8/14/2015	13
Coolidge	Coolidge Municipal	P08	42	44	4/9/2018	45
Cottonwood	Cottonwood Municipal	P52	13	13	2/25/2014	44
Douglas	Douglas Municipal	DGL	—	—	—	12
Eloy	Eloy Municipal	E60	20	19	4/10/2017	21
Ajo	Eric Marcus Municipal	P01	4	4	10/23/2012	7
Bullhead City	Laughlin/Bullhead City Int'l	IFP	—	—	—	319
Mesa	Falcon Field	FFZ	637	635	3/14/2018	697
Flagstaff	Flagstaff Pulliam	FLG	—	—	—	139
Gila Bend	Gila Bend Municipal	E63	4	4	2/24/2014	4
Glendale	Glendale Municipal	GEU	202	113	5/10/2011	286
Grand Canyon	Grand Canyon National Park	GCN	—	—	—	46
Peach Springs	Grand Canyon West	1G4	—	—	—	0
Clifton	Greenlee County	CFT	1	1	—	1
Williams	H.A. Clark Memorial Field	CMR	3	3	2/24/2014	3
Holbrook	Holbrook Municipal	P14	9	9	2/25/2014	14
Kayenta	Kayenta	OV7	—	—	—	1
Kearny	Kearny	E67	—	—	—	6
Kingman	Kingman	IGM	100	99	5/2/2014	155
Lake Havasu City	Lake Havasu City	HII	123	123	6/23/2016	132
Page	Page Municipal	PGA	—	—	—	21
Marana	Marana Regional	AVQ	239	253	4/20/2018	248
Nogales	Nogales	OLS	19	19	6/11/2010	26
Phoenix	Phoenix Sky Harbor	PHX	—	—	—	58
Payson	Payson	PAN	49	44	2/13/2018	54
Phoenix	Phoenix Deer Valley	DVT	944	923	4/24/2018	940
Goodyear	Phoenix Goodyear	GYR	199	198	4/20/2018	222
Phoenix	Phoenix-Mesa Gateway	IWA	—	—	—	74
Prescott	Ernest A. Love Field	PRC	318	316	4/20/2017	117
Marana	Pinal Airpark	MZJ	14	14	12/18/2017	5
Polacca	Polacca	P10	—	—	—	0
San Luis	Rolle Airfield	44A	—	—	—	0
Tucson	Ryan Field	RYN	237	233	4/19/2018	257
Safford	Safford Regional	SAD	49	50	4/23/2018	57
Globe	San Carlos Apache	P13	3	3	1/0/1900	13
San Manuel	San Manuel	E77	16	15	12/18/2017	37
Scottsdale	Scottsdale	SDL	374	371	5/31/2017	442
Sedona	Sedona	SEZ	52	52	7/20/2017	61
Seligman	Seligman	P23	—	—	—	2
Sells	Sells	E78	—	—	—	0
Show Low	Show Low Regional	SOW	39	39	8/7/2014	40
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	FHU	54	54	4/12/2017	51
Springerville	Springerville Municipal	JTC	13	13	3/9/2018	13

Associated City	Airport Name	FAA ID	5010 Based Aircraft Count	Validated Based Aircraft	Last Edit Date	On-Site Inventory Count
St. Johns	St. Johns Industrial Air Park	SJN	5	5	1/0/1900	15
Superior	Superior	E81	—	—	—	0
Taylor	Taylor	TYL	10	10	5/7/2009	15
Tombstone	Tombstone Municipal	P29	—	—	—	4
Tuba City	Tuba City	T03	—	—	—	0
Tucson	Tucson International	TUS	—	—	—	286
Whiteriver	Whiteriver	E24	—	—	—	0
Wickenburg	Wickenburg Municipal	E25	33	33	2/19/2010	46
Window Rock	Window Rock	RQE	—	—	—	7
Winslow	Winslow-Lindbergh Regional	INW	8	8	8/13/2008	12
Yuma	Yuma International	NYL	—	—	—	175
Total			4,380	4,102	—	6,029

Sources: Airport Inventory and Data Survey 2017, FAA National Based Aircraft Inventory Program

Arizona GA Operations

Tracking operations at GA airports can be difficult because the vast majority do not have Air Traffic Control Towers (ATCTs) where controllers are tracking and recording each aircraft that arrives at or departs from the airport. The difficulty in understanding historic GA operations for this SASP Update is further compounded by the change in the airports included in the system as previously mentioned. At the national level, GA operations at airports with ATCTs have declined by 18 percent from 2007 to 2016 (FAA 2010). At the state level, operations at GA airports have declined at a lesser rate, ten percent over the same period, even with fewer airports in the system plan (see **Table 10**).

Table 10. Historic and Current AZ GA Operations and U.S. GA Operations

GA Operations	Operations	% Change
2007 SASP Airports (83 airports)	2,879,219	-10%
2016 SASP Airports (67 airports)	2,603,063	
2007 FAA Tower & Contract Controlled Airports	31,132,000	-18%
2016 FAA Tower & Contract Controlled Airports	25,536,000	

Source: FAA Aerospace Forecast Fiscal Years 2017-2037

Current Trends

In addition to the national GA activity trends considered in the previous section, local factors also influence the type and amount of GA activity experienced across Arizona. The following are examples of some of these unique factors:

1. Agricultural spraying accounts for a large number of aircraft operations and hours flown in Arizona.
2. Arizona ranks third in the nation for attractiveness for aerospace manufacturing (PWC 2017).
3. Air tourism is a prominent part of the Arizona economy because of its numerous state and national parks (Elliot D. Pollack & Company 2012).

4. Arizona is home to several MRO facilities, including 188 FAA-certified operations (Arizona Commerce Authority n.d.).
5. Five airports in Arizona are ranked by the FAA in the top 25 in the country for GA operations (Arizona Commerce Authority n.d.).
6. Arizona is home to several exceptional universities and community colleges that offer 78 programs related to aerospace and defense careers (Arizona Commerce Authority n.d.).
7. Arizona has the second highest number of flight instructors per capita in the U.S., in large part directly attributable to the State's excellent flying conditions (Elliot D. Pollack & Company 2012).
8. The Greater Phoenix area offers exceptional flying weather with 330 VFR days a year for easy flying and flight training (Gilbert Arizona Economic Development n.d.).

Arizona GA Forecasts

As previously mentioned, GA activity includes all operations except military, scheduled passenger, and air cargo. All 67 SASP airports support GA operations; however only 56 are included in the GA operations and based aircraft forecasts presented in this section as GA operations projections for commercial service airports are presented at the beginning of this chapter in **Table 5**.

GA activity forecasts help airport sponsors, the Arizona Department of Transportation (ADOT), and the FAA plan ahead to meet future capacity needs at GA system airports. The GA activity and socioeconomic trends discussed in the previous section impact the projections provided in this section. To identify the most accurate activity projections, several forecasting methodologies were sampled— each of which are also discussed in this section.

Forecasting Methodologies

According to FAA Advisory Circular (AC) 150/5070-7, *The Airport System Planning Process*, the level of detail in the forecasts contained in a system plan should be based upon the airports' activity, the planning issues to be addressed, and the future use of the forecasts. Several methods for forecasting GA activity at Arizona's airports were evaluated. Traditional aviation forecasting methods for GA airport activity include:

1. Regression analysis using trends developed from several years of historic aviation activity
2. Regression analysis using several years of historic socioeconomic indicators (i.e., populations, employment, and income) and aviation activity
3. Market share using an airport's share of the national GA fleet.

Because historical aviation activity information for GA airports in Arizona is either not known or its accuracy is uncertain, regression analysis using historical aviation activity or socioeconomic data or trends is not able to be performed. Based on the limited available historical aviation data from a common, reliable source for the airports, the following methodologies were identified as logical approaches to forecasting GA airport activity:

1. **Based Aircraft**
 - Top-down Market Share
 - Bottom-up Forecasted Population Growth

2. GA Operations

- Operations Per Based Aircraft (OPBA)
- Airport Reference Code (ARC) Category Growth Rate

It is important to note that future facilities and design standards for Arizona airports will be determined primarily on the basis of their future system role, as opposed to the actual demand projections that are developed as part of this study. Therefore, these methods are appropriate considering the forecasts will not be used to determine the exact future facilities needed for each airport – rather the general capacity needs across the system. Each of these methods is further detailed in the sections that follow.

Based Aircraft Forecasts

The first forecasting method used for based aircraft projections is the top-down Market Share method. This method assumes that an airport's existing share of the national GA aircraft fleet will continue into the future and it will share in the national rate of growth or decline at its same share. This approach can be used when there is a reliable forecast for the total GA activity in the nation, which exists for active aircraft in the *FAA Aerospace Forecast Fiscal Years 2017-2037*. For this approach, the number and type of based aircraft at each system airport was analyzed to calculate their existing share of the national GA fleet, and those percentages were applied to the FAA's forecast to determine future based aircraft counts (and fleet mix) at each system airport, using current based aircraft counts provided on the 2017 Airport Inventory and Data Survey as a base. Because the aircraft categories in the 2017 Airport Inventory and Data Survey did not exactly match the FAA's categories in their forecast, some aircraft had to be grouped. Specifically, the FAA's experimental aircraft and single-engine aircraft categories are added together and the resulting rate is applied to the Arizona airport's single-engine aircraft category to determine the existing market share and future aircraft. Additionally, the FAA's sport aircraft and "other" aircraft categories are added together and the resulting rate is applied to the Arizona airport's ultralight and glider categories to determine their market shares.

Table 11 includes the grouping of the fleet mix in *FAA Aerospace Forecast Fiscal Years 2017-2037* as it is applied to Arizona's system airports.

Table 11. FAA Aerospace Forecast Grouped and Applied to SASP Update Forecasts

Year	Fixed Wing				Rotorcraft	Sport & Other**	Total Arizona Projected GA Aviation Fleet
	Single Engine & Experimental*	Multi-Engine	Total Piston	Turbine			
2016E	155,295	13,200	168,495	23,230	10,700	7,480	209,905
Forecast							
2021	152,285	13,005	165,290	24,555	11,615	8,265	209,725
2026	148,400	12,765	161,165	26,915	12,560	9,095	209,735
2036	141,365	12,045	153,410	33,720	14,800	10,740	212,670

Notes: *Applied to single engine aircraft at Arizona airports.

**Applied to gliders at Arizona airports.

**Applied to ultralights at Arizona Airports.

Sources: *FAA Aerospace Forecast Fiscal Years 2017-2037*, Woolpert 2017

If an airport did not report having any based aircraft in 2016 on the 2017 Airport Inventory and Data Survey Form, no aircraft forecasts for that airport were conducted. Additionally, the existing number of military aircraft at system airports in 2016 was held for the entire forecast period (i.e., no military aircraft growth is shown).

Table 12 shows the 2016 market share (of the U.S. total GA fleet) for each airport's fleet mix. **Table 13** shows the resulting total based aircraft forecasted for each airport and the resulting annual growth rates based on the market shares shown in **Table 12**. Using the market share method, some airports experience considerable growth while other airports do not. This is largely due to whether or not the airport had a large number of fixed wing, single-engine aircraft. Even when grouping as previously mentioned, there is still a negative growth rate applied to fixed wing, single-engine aircraft due to the negative national growth rate projected by the FAA.

Table 12. 2016 Market Shares of U.S. GA Fleet

Associated City	Airport Name	SEP*	MEP*	Jet*	R*	G*	U*
Ajo	Eric Marcus Municipal	0.005%	0.000%	0.000%	0.000%	0.000%	0.000%
Bagdad	Bagdad	0.003%	0.000%	0.000%	0.000%	0.000%	0.013%
Benson	Benson Municipal	0.024%	0.023%	0.000%	0.009%	0.000%	0.027%
Bisbee	Bisbee Municipal	0.015%	0.000%	0.000%	0.019%	0.000%	0.027%
Buckeye	Buckeye Municipal	0.033%	0.076%	0.004%	0.028%	0.000%	0.067%
Casa Grande	Casa Grande Municipal	0.063%	0.015%	0.000%	0.028%	0.027%	0.000%
Chandler	Chandler Municipal	0.262%	0.129%	0.017%	0.112%	0.000%	0.000%
Chinle	Chinle Municipal	0.000%	0.023%	0.000%	0.000%	0.000%	0.000%
Cibecue	Cibecue	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Clifton	Greenlee County	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%
Colorado City	Colorado City Municipal	0.008%	0.000%	0.000%	0.000%	0.000%	0.000%
Coolidge	Coolidge Municipal	0.018%	0.068%	0.009%	0.047%	0.000%	0.013%
Cottonwood	Cottonwood Municipal	0.025%	0.023%	0.000%	0.019%	0.000%	0.000%
Douglas	Bisbee-Douglas International	0.003%	0.008%	0.000%	0.000%	0.000%	0.000%
Douglas	Cochise College	0.009%	0.008%	0.000%	0.000%	0.000%	0.000%
Douglas	Douglas Municipal	0.006%	0.008%	0.000%	0.009%	0.000%	0.000%
Eloy	Eloy Municipal	0.008%	0.053%	0.000%	0.000%	0.000%	0.027%
Gila Bend	Gila Bend Municipal	0.003%	0.000%	0.000%	0.000%	0.000%	0.000%
Glendale	Glendale Municipal	0.144%	0.220%	0.013%	0.056%	0.000%	0.321%
Globe	San Carlos Apache	0.006%	0.008%	0.009%	0.000%	0.000%	0.000%
Goodyear	Phoenix Goodyear	0.131%	0.114%	0.004%	0.019%	0.000%	0.000%
Holbrook	Holbrook Municipal	0.006%	0.000%	0.000%	0.000%	0.000%	0.067%
Kayenta	Kayenta	0.000%	0.008%	0.000%	0.000%	0.000%	0.000%
Kearny	Kearny	0.003%	0.000%	0.000%	0.000%	0.000%	0.027%
Kingman	Kingman	0.048%	0.242%	0.164%	0.065%	0.013%	0.027%
Lake Havasu City	Lake Havasu City	0.071%	0.053%	0.030%	0.028%	0.000%	0.067%
Marana	Marana Regional	0.140%	0.114%	0.026%	0.009%	0.013%	0.094%
Marana	Pinal Airpark	0.001%	0.023%	0.004%	0.000%	0.000%	0.000%
Maricopa	Ak-Chin Regional	0.011%	0.008%	0.000%	0.000%	0.000%	0.160%
Mesa	Falcon Field	0.375%	0.652%	0.017%	0.224%	0.000%	0.000%

Associated City	Airport Name	SEP*	MEP*	Jet*	R*	G*	U*
Nogales	Nogales	0.015%	0.023%	0.000%	0.000%	0.000%	0.000%
Parker	Avi Suquilla	0.008%	0.023%	0.000%	0.019%	0.000%	0.000%
Payson	Payson	0.032%	0.015%	0.000%	0.000%	0.027%	0.000%
Phoenix	Phoenix Deer Valley	0.512%	0.750%	0.099%	0.159%	0.053%	0.000%
Polacca	Polacca	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Safford	Safford Regional	0.019%	0.197%	0.000%	0.009%	0.000%	0.000%
San Luis	Rolle Airfield	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
San Manuel	San Manuel	0.020%	0.030%	0.004%	0.009%	0.000%	0.000%
Scottsdale	Scottsdale	0.144%	0.326%	0.624%	0.290%	0.000%	0.000%
Sedona	Sedona	0.035%	0.015%	0.004%	0.028%	0.013%	0.000%
Seligman	Seligman	0.001%	0.000%	0.000%	0.000%	0.000%	0.000%
Sells	Sells	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	0.028%	0.030%	0.000%	0.028%	0.000%	0.000%
Springerville	Springerville Municipal	0.007%	0.008%	0.000%	0.009%	0.000%	0.000%
St. Johns	St. Johns Industrial Air Park	0.009%	0.000%	0.000%	0.000%	0.000%	0.013%
Superior	Superior	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Taylor	Taylor	0.009%	0.000%	0.000%	0.000%	0.000%	0.013%
Tombstone	Tombstone Municipal	0.001%	0.000%	0.000%	0.000%	0.000%	0.027%
Tuba City	Tuba City	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Tucson	Ryan Field	0.158%	0.068%	0.009%	0.000%	0.000%	0.000%
Whiteriver	Whiteriver	0.000%	0.000%	0.000%	0.000%	0.000%	0.000%
Wickenburg	Wickenburg Municipal	0.024%	0.038%	0.004%	0.009%	0.013%	0.013%
Willcox	Cochise County	0.015%	0.000%	0.000%	0.009%	0.000%	0.000%
Williams	H.A. Clark Memorial Field	0.002%	0.000%	0.000%	0.000%	0.000%	0.000%
Window Rock	Window Rock	0.001%	0.030%	0.000%	0.009%	0.000%	0.000%
Winslow	Winslow-Lindbergh Regional	0.006%	0.008%	0.000%	0.009%	0.000%	0.000%

*Notes: SEP=single engine aircraft; MEP=multi-engine aircraft; R=rotorcraft/helicopter; G=glider; U=ultralight

Sources: FAA Aerospace Forecast Fiscal Years 2017-2037, Woolpert 2017, Airport Inventory and Data Survey 2017

Table 13. Forecasted Total Based Aircraft Using 2016 Market Share

Associated City	Airport Name	2016	2021	2026	2036	Annual Growth Rate
Ajo	Eric Marcus Municipal	7	7	7	6	-0.77%
Bagdad	Bagdad	5	5	5	5	0.00%
Benson	Benson Municipal	44	43	42	42	-0.23%
Bisbee	Bisbee Municipal	28	28	27	28	0.00%
Buckeye	Buckeye Municipal	70	70	70	67	-0.22%
Casa Grande	Casa Grande Municipal	105	103	102	98	-0.34%
Chandler	Chandler Municipal	440	433	424	409	-0.36%
Chinle	Chinle Municipal	3	3	3	3	0.00%
Cibecue	Cibecue	0	0	0	0	0.00%
Clifton	Greenlee County	1	1	1	1	0.00%
Colorado City	Colorado City Municipal	13	13	12	12	-0.40%
Coolidge	Coolidge Municipal	45	44	45	44	-0.11%
Cottonwood	Cottonwood Municipal	44	43	42	42	-0.23%
Douglas	Bisbee-Douglas International	5	5	5	5	0.00%
Douglas	Cochise College	15	15	14	14	-0.34%
Douglas	Douglas Municipal	12	12	12	11	-0.43%
Eloy	Eloy Municipal	21	21	20	20	-0.24%
Gila Bend	Gila Bend Municipal	4	4	4	4	0.00%
Glendale	Glendale Municipal	286	286	279	276	-0.18%
Globe	San Carlos Apache	13	13	13	13	0.00%
Goodyear	Phoenix Goodyear	222	218	213	204	-0.42%
Holbrook	Holbrook Municipal	14	15	15	15	0.35%
Kayenta	Kayenta	1	1	1	1	0.00%
Kearny	Kearny	6	6	6	7	0.77%
Kingman	Kingman	155	157	158	166	0.34%
Lake Havasu City	Lake Havasu City	132	131	130	127	-0.19%
Marana	Marana Regional	248	245	240	233	-0.31%
Marana	Pinal Airpark	5	5	5	5	0.00%
Maricopa	Ak-Chin Regional	30	31	30	33	0.48%
Mesa	Falcon Field	697	687	673	648	-0.36%
Nogales	Nogales	26	26	25	24	-0.40%
Parker	Avi Suquilla	17	17	16	17	0.00%
Payson	Payson	54	53	52	51	-0.29%
Phoenix	Phoenix Deer Valley	940	926	910	879	-0.33%
Polacca	Polacca	0	0	0	0	0.00%
Safford	Safford Regional	57	56	55	52	-0.46%
San Luis	Rolle Airfield	0	0	0	0	0.00%
San Manuel	San Manuel	37	36	36	34	-0.42%
Scottsdale	Scottsdale	442	448	459	495	0.57%

Associated City	Airport Name	2016	2021	2026	2036	Annual Growth Rate
Sedona	Sedona	61	60	60	57	-0.34%
Seligman	Seligman	2	2	2	2	0.00%
Sells	Sells	0	0	0	0	0.00%
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	51	50	50	48	-0.30%
Springerville	Springerville Municipal	13	13	13	12	-0.40%
St. Johns	St. Johns Industrial Air Park	15	15	14	14	-0.34%
Superior	Superior	0	0	0	0	0.00%
Taylor	Taylor	15	15	14	14	-0.34%
Tombstone	Tombstone Municipal	4	4	4	5	1.12%
Tuba City	Tuba City	0	0	0	0	0.00%
Tucson	Ryan Field	257	252	246	235	-0.45%
Whiteriver	Whiteriver	0	0	0	0	0.00%
Wickenburg	Wickenburg Municipal	46	45	44	43	-0.34%
Willcox	Cochise County	24	24	23	22	-0.43%
Williams	H.A. Clark Memorial Field	3	3	3	3	0.00%
Window Rock	Window Rock	7	7	7	7	0.00%
Winslow	Winslow-Lindbergh Regional	12	12	12	11	-0.43%

Sources: FAA Aerospace Forecast Fiscal Years 2017-2037, Woolpert 2017, Airport Inventory and Data Survey 2017

The second method used to project based aircraft is the Population Growth method. This method applies the projected population growth rates of each county to the based aircraft counts at the airports residing within that county. Because of the close inter-relation between population growth and airport activity, the population growth rate is assumed to also be applicable to the number of based aircraft. Annual population growth rates for the forecast period from Woods & Poole Economics, Inc. were used for this method. The annual growth rate was calculated for the population over the time period the based aircraft was forecasted. **Table 14** shows the projected annual population growth rates for system airports based on the county in which they are located, along with the forecasted based aircraft using these rates.

Table 14. Forecasted Total Based Aircraft Using Population Growth Rates

Associated City	Associated County	Airport Name	2016 Based Aircraft	5-Year Growth Rate	2021 Based Aircraft	10-Year Growth Rate	2026 Based Aircraft	20-Year Growth Rate	2036 Based Aircraft
Ajo	Pima	Eric Marcus Municipal	7	1.25%	8	1.24%	8	1.16%	9
Bagdad	Yavapai	Bagdad	5	1.61%	5	1.59%	6	1.51%	7
Benson	Cochise	Benson Municipal	44	1.13%	47	1.11%	49	1.03%	55
Bisbee	Cochise	Bisbee Municipal	28	1.13%	30	1.11%	31	1.03%	35
Buckeye	Maricopa	Buckeye Municipal	70	1.78%	77	1.76%	84	1.68%	99
Casa Grande	Pinal	Casa Grande Municipal	105	2.17%	117	2.15%	130	2.07%	159
Chandler	Maricopa	Chandler Municipal	440	1.78%	481	1.76%	524	1.68%	619
Chinle	Apache	Chinle Municipal	3	0.96%	3	0.95%	3	0.86%	4
Cibecue	Navajo	Cibecue	0	1.00%	0	0.98%	0	0.90%	0
Clifton	Greenlee	Greenlee County	1	0.78%	1	0.77%	1	0.68%	1
Colorado City	Mohave	Colorado City Municipal	13	1.29%	14	1.27%	15	1.19%	17
Coolidge	Pinal	Coolidge Municipal	45	2.17%	50	2.15%	56	2.07%	68
Cottonwood	Yavapai	Cottonwood Municipal	44	1.61%	48	1.59%	52	1.51%	60
Douglas	Cochise	Bisbee-Douglas International	5	1.13%	5	1.11%	6	1.03%	6
Douglas	Cochise	Cochise College	15	1.13%	16	1.11%	17	1.03%	19
Douglas	Cochise	Douglas Municipal	12	1.13%	13	1.11%	14	1.03%	15
Eloy	Pinal	Eloy Municipal	21	2.17%	23	2.15%	26	2.07%	32
Gila Bend	Maricopa	Gila Bend Municipal	4	1.78%	4	1.76%	5	1.68%	6
Glendale	Maricopa	Glendale Municipal	286	1.78%	312	1.76%	341	1.68%	403
Globe	Gila	San Carlos Apache	13	0.91%	14	0.89%	14	0.81%	15
Goodyear	Maricopa	Phoenix Goodyear	222	1.78%	243	1.76%	265	1.68%	312
Holbrook	Navajo	Holbrook Municipal	14	1.00%	15	0.98%	16	0.90%	17
Kayenta	Navajo	Kayenta	1	1.00%	1	0.98%	1	0.90%	1
Kearny	Pinal	Kearny	6	2.17%	7	2.15%	7	2.07%	9
Kingman	Mohave	Kingman	155	1.29%	165	1.27%	176	1.19%	198
Lake Havasu City	Mohave	Lake Havasu City	132	1.29%	141	1.27%	150	1.19%	169
Marana	Pima	Marana Regional	248	1.25%	264	1.24%	281	1.16%	315
Marana	Pinal	Pinal Airpark	5	2.17%	6	2.15%	6	2.07%	8

Associated City	Associated County	Airport Name	2016 Based Aircraft	5-Year Growth Rate	2021 Based Aircraft	10-Year Growth Rate	2026 Based Aircraft	20-Year Growth Rate	2036 Based Aircraft
Maricopa	Pinal	Ak-Chin Regional	30	2.17%	33	2.15%	37	2.07%	46
Mesa	Maricopa	Falcon Field	697	1.78%	761	1.76%	831	1.68%	981
Nogales	Santa Cruz	Nogales	26	1.57%	28	1.55%	30	1.47%	35
Parker	La Paz	Avi Suquilla	17	1.39%	18	1.37%	19	1.27%	22
Payson	Gila	Payson	54	0.91%	57	0.89%	59	0.81%	64
Phoenix	Maricopa	Phoenix Deer Valley	940	1.78%	1027	1.76%	1120	1.68%	1323
Polacca	Navajo	Polacca	0	1.00%	0	0.98%	0	0.90%	0
Safford	Graham	Safford Regional	57	0.82%	59	0.81%	62	0.72%	66
San Luis	Yuma	Rolle Airfield	0	1.39%	0	1.37%	0	1.27%	0
San Manuel	Pinal	San Manuel	37	2.17%	41	2.15%	46	2.07%	56
Scottsdale	Maricopa	Scottsdale	442	1.78%	483	1.76%	527	1.68%	622
Sedona	Yavapai	Sedona	61	1.61%	66	1.59%	72	1.51%	83
Seligman	Yavapai	Seligman	2	1.61%	2	1.59%	2	1.51%	3
Sells	Pima	Sells	0	1.25%	0	1.24%	0	1.16%	0
Sierra Vista	Cochise	Sierra Vista Municipal-Libby Army Airfield	51	1.13%	54	1.11%	57	1.03%	63
Springerville	Apache	Springerville Municipal	13	0.96%	14	0.95%	14	0.86%	15
St. Johns	Apache	St. Johns Industrial Air Park	15	0.96%	16	0.95%	16	0.86%	18
Superior	Pinal	Superior	0	2.17%	0	2.15%	0	2.07%	0
Taylor	Navajo	Taylor	15	1.00%	16	0.98%	17	0.90%	18
Tombstone	Cochise	Tombstone Municipal	4	1.13%	4	1.11%	4	1.03%	5
Tuba City	Coconino	Tuba City	0	1.49%	0	1.47%	0	1.39%	0
Tucson	Pima	Ryan Field	257	1.25%	274	1.24%	291	1.16%	326
Whiteriver	Navajo	Whiteriver	0	1.00%	0	0.98%	0	0.90%	0
Wickenburg	Maricopa	Wickenburg Municipal	46	1.78%	50	1.76%	55	1.68%	65
Willcox	Cochise	Cochise County	24	1.13%	25	1.11%	27	1.03%	30
Williams	Coconino	H.A. Clark Memorial Field	3	1.49%	3	1.47%	3	1.39%	4
Window Rock	Apache	Window Rock	7	0.96%	7	0.95%	8	0.86%	8
Winslow	Navajo	Winslow-Lindbergh Regional	12	1.00%	13	0.98%	13	0.90%	15

Sources: Woods & Poole Economics, Inc. 2017, Woolpert 2017, Airport Inventory and Data Survey 2017

Preferred Based Aircraft Forecast

To determine the preferred forecast, the results of the two methodologies were compared. The overall growth in based aircraft for all system plan airports using the Population Growth method is 1.59 percent over the 20-year forecast period. To compare, the market share forecast produces a total decline in aircraft of -0.2 percent. While there has been a decline in based aircraft in the state since the last system plan update, this occurred during the Great Recession when there was also a decline in all active GA aircraft across the country. According to FAA forecasts, this decline is not expected to continue. Additionally, recent changes in FAA regulations on small aircraft (14 CFR 23) and on BasicMed (14 CFR 68) should serve to increase GA activity through the planning period. These factors, along with the positive socioeconomic projections for Arizona, all point to a growth in based aircraft. **Table 15** includes the preferred forecast and the resulting projected fleet mix. A comparison of the preferred based aircraft forecasts to the FAA TAF forecasts is provided at the end of this chapter.

Table 15. Preferred Based Aircraft Forecast

Associated City	Airport Name	2016								2021								2026								2036							
		SEP	MEP	Jet	R	G	U	M	Total	SEP	MEP	Jet	R	G	U	M	Total	SEP	MEP	Jet	R	G	U	M	Total	SEP	MEP	Jet	R	G	U	M	Total
Ajo	Eric Marcus Municipal	7	0	0	0	0	0	0	7	8	0	0	0	0	0	0	8	8	0	0	0	0	0	0	8	9	0	0	0	0	0	0	9
Bagdad	Bagdad	4	0	0	0	0	1	0	5	4	0	0	0	0	1	0	5	5	0	0	0	0	1	0	6	6	0	0	0	0	1	0	7
Benson	Benson Municipal	38	3	0	1	0	2	0	44	41	3	0	1	0	2	0	47	43	3	0	1	0	2	0	49	47	4	0	1	0	3	0	55
Bisbee	Bisbee Municipal	24	0	0	2	0	2	0	28	26	0	0	2	0	2	0	30	27	0	0	2	0	2	0	31	30	0	0	2	0	3	0	35
Buckeye	Buckeye Municipal	51	10	1	3	0	5	0	70	56	11	1	3	0	56	0	77	61	12	1	4	0	6	0	84	73	14	1	4	0	7	0	99
Casa Grande	Casa Grande Municipal	98	2	0	3	2	0	0	105	109	3	0	3	2	0	0	117	121	3	0	4	2	0	0	130	148	3	0	5	3	0	0	159
Chandler	Chandler Municipal	407	17	4	12	0	0	0	440	445	19	4	13	0	0	0	481	485	20	5	14	0	0	0	524	572	24	6	17	0	0	0	619
Chinle	Chinle Municipal	0	3	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	3	0	0	0	0	0	3	0	4	0	0	0	0	0	4
Cibecue	Cibecue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Clifton	Greenlee County	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1
Colorado City	Colorado City Municipal	13	0	0	0	0	0	0	13	14	0	0	0	0	0	0	14	15	0	0	0	0	0	0	15	17	0	0	0	0	0	0	17
Coolidge	Coolidge Municipal	28	9	2	5	0	1	0	45	31	10	2	6	0	1	0	50	35	11	3	6	0	1	0	56	42	14	3	7	0	2	0	68
Cottonwood	Cottonwood Municipal	39	3	0	2	0	0	0	44	43	3	0	2	0	0	0	48	46	4	0	2	0	0	0	52	53	4	0	3	0	0	0	60
Douglas	Bisbee-Douglas International	4	1	0	0	0	0	0	5	4	1	0	0	0	0	0	5	5	1	0	0	0	0	0	6	5	1	0	0	0	0	0	6
Douglas	Cochise College	14	1	0	0	0	0	0	15	15	1	0	0	0	0	0	16	16	1	0	0	0	0	0	17	17	2	0	0	0	0	0	19
Douglas	Douglas Municipal	10	1	0	1	0	0	0	12	11	1	0	1	0	0	0	13	12	1	0	1	0	0	0	14	13	1	0	1	0	0	0	15
Eloy	Eloy Municipal	12	7	0	0	0	2	0	21	13	8	0	0	0	2	0	23	15	9	0	0	0	2	0	26	18	11	0	0	0	3	0	32
Gila Bend	Gila Bend Municipal	4	0	0	0	0	0	0	4	4	0	0	0	0	0	0	4	5	0	0	0	0	0	0	5	6	0	0	0	0	0	0	6
Glendale	Glendale Municipal	224	29	3	6	0	24	0	286	244	32	3	7	0	26	0	312	266	35	4	7	0	29	0	341	315	41	4	9	0	34	0	403
Globe	San Carlos Apache	10	1	2	0	0	0	0	13	11	1	2	0	0	0	0	14	11	1	2	0	0	0	0	14	12	1	2	0	0	0	0	15
Goodyear	Phoenix Goodyear	204	15	1	2	0	0	0	222	224	16	1	2	0	0	0	243	243	19	1	2	0	0	0	265	287	21	1	3	0	0	0	312
Holbrook	Holbrook Municipal	9	0	0	0	0	5	0	14	10	0	0	0	0	5	0	15	10	0	0	0	0	6	0	16	11	0	0	0	0	6	0	17
Kayenta	Kayenta	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	0	0	0	0	0	1
Kearny	Kearny	4	0	0	0	0	2	0	6	5	0	0	0	0	2	0	7	5	0	0	0	0	2	0	7	6	0	0	0	0	3	0	9
Kingman	Kingman	75	32	38	7	1	2	0	155	81	34	41	8	1	2	0	165	86	36	43	8	1	2	0	176	95	41	49	9	1	3	0	198
Lake Havasu City	Lake Havasu City	110	7	7	3	0	5	0	132	117	8	8	3	0	5	0	141	125	8	8	3	0	6	0	150	141	9	9	4	0	6	0	169
Marana	Marana Regional	218	15	6	1	1	7	0	248	232	16	6	1	1	8	0	264	247	17	7	1	1	8	0	281	277	19	8	1	1	9	0	315
Marana	Pinal Airpark	1	3	1	0	0	0	0	5	1	4	1	0	0	0	0	6	1	4	1	0	0	0	0	6	2	4	2	0	0	0	0	8
Maricopa	Ak-Chin Regional	17	1	0	0	0	12	0	30	19	1	0	0	0	13	0	33	21	1	0	0	0	15	0	37	26	2	0	0	0	18	0	46
Mesa	Falcon Field	583	86	4	24	0	0	0	697	637	94	4	26	0	0	0	761	696	103	5	29	0	0	0	831	820	121	6	34	0	0	0	981
Nogales	Nogales	23	3	0	0	0	0	0	26	25	3	0	0	0	0	0	28	27	3	0	0	0	0	0	30	31	4	0	0	0	0	0	35
Parker	Avi Suquilla	12	3	0	2	0	0	0	17	13	3	0	2	0	0	0	18	14	3	0	2	0	0	0	19	15	4	0	3	0	0	0	22
Payson	Payson	50	2	0	0	2	0	0	54	53	2	0	0	2	0	0	57	55	2	0	0	2	0	0	59	60	2	0	0	2	0	0	64
Phoenix	Phoenix Deer Valley	795	99	23	17	4	0	2	940	867	108	25	19	4	0	2	1027	948	118	27	20	5	0	2	1120	1119	139	32	24	6	0	3	1323
Polacca	Polacca	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Safford	Safford Regional	30	26	0	1	0	0	0	57	31	27	0	1	0	0	0	59	33	28	0	1	0	0	0	62	35	30	0	1	0	0	0	66
San Luis	Rolle Airfield	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
San Manuel	San Manuel	31	4	1	1	0	0	0	37	34	5	1	1	0	0	0	41	39	5	1	1	0	0	0	46	46	6	2	2	0	0	0	56
Scottsdale	Scottsdale	223	43	145	31	0	0	0	442	244	47	158	34	0	0	0	483	266	51	173	37	0	0	0	527	313	61	204	44	0	0	0	622



Associated City	Airport Name	2016								2021								2026								2036							
		SEP	MEP	Jet	R	G	U	M	Total	SEP	MEP	Jet	R	G	U	M	Total	SEP	MEP	Jet	R	G	U	M	Total	SEP	MEP	Jet	R	G	U	M	Total
Sedona	Sedona	54	2	1	3	1	0	0	61	59	2	1	3	1	0	0	66	64	2	1	4	1	0	0	72	74	3	1	4	1	0	0	83
Seligman	Seligman	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	2	0	0	0	0	0	0	2	3	0	0	0	0	0	3	
Sells	Sells	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	44	4	0	3	0	0	0	51	47	4	0	3	0	0	0	54	50	4	0	3	0	0	0	57	54	5	0	4	0	0	0	63
Springerville	Springerville Municipal	11	1	0	1	0	0	0	13	12	1	0	1	0	0	0	14	12	1	0	1	0	0	0	14	13	1	0	1	0	0	0	15
St. Johns	St. Johns Industrial Air Park	14	0	0	0	0	1	0	15	15	0	0	0	0	1	0	16	15	0	0	0	0	1	0	16	17	0	0	0	0	1	0	18
Superior	Superior	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Taylor	Taylor	14	0	0	0	0	1	0	15	15	0	0	0	0	1	0	16	16	0	0	0	0	1	0	17	17	0	0	0	0	1	0	18
Tombstone	Tombstone Municipal	2	0	0	0	0	2	0	4	2	0	0	0	0	2	0	4	2	0	0	0	0	2	0	4	2	0	0	0	0	3	0	5
Tuba City	Tuba City	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Tucson	Ryan Field	246	9	2	0	0	0	0	257	262	10	2	0	0	0	0	274	279	10	2	0	0	0	0	291	312	11	3	0	0	0	0	326
Whiteriver	Whiteriver	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Wickenburg	Wickenburg Municipal	37	5	1	1	1	1	0	46	40	6	1	1	1	1	0	50	43	6	1	1	1	1	0	55	53	7	2	1	1	1	0	65
Willcox	Cochise County	23	0	0	1	0	0	0	24	24	0	0	1	0	0	0	25	26	0	0	1	0	0	0	27	29	0	0	1	0	0	0	30
Williams	H.A. Clark Memorial Field	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	3	0	0	0	0	0	0	3	4	0	0	0	0	0	4	
Window Rock	Window Rock	2	4	0	1	0	0	0	7	2	4	0	1	0	0	0	7	2	5	0	1	0	0	0	8	2	5	0	1	0	0	0	8
Winslow	Winslow-Lindbergh Regional	10	1	0	1	0	0	0	12	11	1	0	1	0	0	0	13	11	1	0	1	0	0	0	13	13	1	0	1	0	0	0	15

*Notes: SEP=single engine aircraft; MEP=multi-engine aircraft; R=rotorcraft/helicopter; G=glider; U=ultralight, M=military

Sources: Woolpert 2017, Airport Inventory and Data Survey 2017

GA Operations Forecasts

The first forecasting method used to project GA operations over the planning period was the OPBA method. This is an industry standard method for estimating aircraft operations at GA airports where the base year operations are divided by the total number of based aircraft at each airport, for a resulting OPBA. The OPBA is then multiplied by the total forecasted based aircraft at each airport for each year to yield annual operations forecasts. Since a reliable historical data stream of operations and based aircraft were unavailable, the OPBA was held constant throughout the forecast period. In this case, the total based aircraft forecasted using the preferred Population Growth method (**Table 15**) were used. **Table 16** shows the 2016 total operations, total based aircraft, and resulting OPBA for each airport as well as the forecasted operations for each airport using the 2016 OPBA for each airport. This methodology results in the same growth rate in operations as based aircraft since the projection of based aircraft is the basis for the growth rate.

Table 16. Forecasted Operations Using OPBA Method (rounded to the nearest 10)

Associated City	Airport Name	2016-2036 OPBA	2016 Based Aircraft	2016 Total Operations	2021 Based Aircraft	2021 Operations	2026 Based Aircraft	2026 Operations	2036 Based Aircraft	2036 Operations	Annual Growth Rate
Ajo	Eric Marcus Municipal	40	7	280	8	320	8	320	9	360	1.26%
Bagdad	Bagdad	200	5	1,000	5	1,000	6	1,200	7	1,400	1.70%
Benson	Benson Municipal	380	44	16,720	47	17,860	49	18,620	55	20,900	1.12%
Bisbee	Bisbee Municipal	100	28	2,800	30	3,000	31	3,100	35	3,500	1.12%
Buckeye	Buckeye Municipal	760	70	53,200	77	58,520	84	63,840	99	75,240	1.75%
Casa Grande	Casa Grande Municipal	950	105	99,750	117	111,150	130	123,500	159	151,050	2.10%
Chandler	Chandler Municipal	500	440	220,000	481	240,500	524	262,000	619	309,500	1.72%
Chinle	Chinle Municipal	2,600	3	7,800	3	7,800	3	7,800	4	10,400	1.45%
Cibecue	Cibecue	0	0	0	0	0	0	0	0	0	0.00%
Clifton	Greenlee County	1,110	1	1,110	1	1,110	1	1,110	1	1,110	0.00%
Colorado City	Colorado City Municipal	370	13	4,810	14	5,180	15	5,550	17	6,290	1.35%
Coolidge	Coolidge Municipal	380	45	17,100	50	19,000	56	21,280	68	25,840	2.09%
Cottonwood	Cottonwood Municipal	430	44	18,920	48	20,640	52	22,360	60	25,800	1.56%
Douglas	Bisbee-Douglas International	5,160	5	25,800	5	25,800	6	30,960	6	30,960	0.92%
Douglas	Cochise College	3,140	15	47,100	16	50,240	17	53,380	19	59,660	1.19%
Douglas	Douglas Municipal	220	12	2,640	13	2,860	14	3,080	15	3,300	1.12%
Eloy	Eloy Municipal	1,560	21	32,760	23	35,880	26	40,560	32	49,920	2.13%
Gila Bend	Gila Bend Municipal	9,070	4	36,280	4	36,280	5	45,350	6	54,420	2.05%
Glendale	Glendale Municipal	250	286	71,500	312	78,000	341	85,250	403	100,750	1.73%
Globe	San Carlos Apache	150	13	1,950	14	2,100	14	2,100	15	2,250	0.72%
Goodyear	Phoenix Goodyear	560	222	124,320	243	136,080	265	148,400	312	174,720	1.72%
Holbrook	Holbrook Municipal	260	14	3,640	15	3,900	16	4,160	17	4,420	0.98%
Kayenta	Kayenta	1,500	1	1,500	1	1,500	1	1,500	1	1,500	0.00%
Kearny	Kearny	200	6	1,200	7	1,400	7	1,400	9	1,800	2.05%
Kingman	Kingman	180	155	27,900	165	29,700	176	31,680	198	35,640	1.23%
Lake Havasu City	Lake Havasu City	340	132	44,880	141	47,940	150	51,000	169	57,460	1.24%

Associated City	Airport Name	2016-2036 OPBA	2016 Based Aircraft	2016 Total Operations	2021 Based Aircraft	2021 Operations	2026 Based Aircraft	2026 Operations	2036 Based Aircraft	2036 Operations	Annual Growth Rate
Marana	Marana Regional	360	248	89,280	264	95,040	281	101,160	315	113,400	1.20%
Marana	Pinal Airpark	6,830	5	34,150	6	40,980	6	40,980	8	54,640	2.38%
Maricopa	Ak-Chin Regional	610	30	18,300	33	20,130	37	22,570	46	28,060	2.16%
Mesa	Falcon Field	380	697	264,860	761	289,180	831	315,780	981	372,780	1.72%
Nogales	Nogales	1,840	26	47,840	28	51,520	30	55,200	35	64,400	1.50%
Parker	Avi Suquilla	890	17	15,130	18	16,020	19	16,910	22	19,580	1.30%
Payson	Payson	630	54	34,020	57	35,910	59	37,170	64	40,320	0.85%
Phoenix	Phoenix Deer Valley	400	940	376,000	1027	410,800	1120	448,000	1323	529,200	1.72%
Polacca	Polacca	0	0	0	0	0	0	0	0	0	0.00%
Safford	Safford Regional	240	57	13,680	59	14,160	62	14,880	66	15,840	0.74%
San Luis	Rolle Airfield	0	0	0	0	0	0	0	0	0	0.00%
San Manuel	San Manuel	380	37	14,060	41	15,580	46	17,480	56	21,280	2.09%
Scottsdale	Scottsdale	360	442	159,120	483	173,880	527	189,720	622	223,920	1.72%
Sedona	Sedona	580	61	35,380	66	38,280	72	41,760	83	48,140	1.55%
Seligman	Seligman	550	2	1,100	2	1,100	2	1,100	3	1,650	2.05%
Sells	Sells	0	0	0	0	0	0	0	0	0	0.00%
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	2,660	51	135,660	54	143,640	57	151,620	63	167,580	1.06%
Springerville	Springerville Municipal	180	13	2,340	14	2,520	14	2,520	15	2,700	0.72%
St. Johns	St. Johns Industrial Air Park	1,120	15	16,800	16	17,920	16	17,920	18	20,160	0.92%
Superior	Superior	0	0	0	0	0	0	0	0	0	0.00%
Taylor	Taylor	190	15	2,850	16	3,040	17	3,230	18	3,420	0.92%
Tombstone	Tombstone Municipal	90	4	360	4	360	4	360	5	450	1.12%
Tuba City	Tuba City	0	0	0	0	0	0	0	0	0	0.00%
Tucson	Ryan Field	430	257	110,510	274	117,820	291	125,130	326	140,180	1.20%
Whiteriver	Whiteriver	0	0	0	0	0	0	0	0	0	0.00%
Wickenburg	Wickenburg Municipal	790	46	36,340	50	39,500	55	43,450	65	51,350	1.74%
Willcox	Cochise County	420	24	10,080	25	10,500	27	11,340	30	12,600	1.12%
Williams	H.A. Clark Memorial Field	2,170	3	6,510	3	6,510	3	6,510	4	8,680	1.45%
Window Rock	Window Rock	710	7	4,970	7	4,970	8	5,680	8	5,680	0.67%
Winslow	Winslow-Lindbergh Regional	1,770	12	21,240	13	23,010	13	23,010	15	26,550	1.12%

Source: Woolpert 2017, Airport Inventory and Data Survey Form 2017

The second method of forecasting GA operations is the ARC Category Growth Rate. This method classifies airports into two groups based on their existing ARC as identified in the Airport Inventory and Data Survey Form⁶:

1. Under B-II (approach speeds less than 91 knots and tail heights less than 20 feet or wingspans less than 49 feet)
2. B-II and greater (approach speeds 91 knots or more and tail heights 20 feet or greater or wingspans 49 feet or greater)

Using this method, Group 1 ARC (under B-II) airport operations increase at an average annual growth rate of 0.08 percent based on the cumulative growth rates from the *FAA Aerospace Forecast* for GA and air taxi hours flown for all piston fixed wing, turboprop fixed wing, piston rotorcraft, experimental, sport, and other aircraft (all generally have an ARC of B-I or lower). Group 2 airport operations increase at an average annual growth rate of 2.68 percent based on the cumulative growth rates from the FAA forecast for turbojet fixed wing and turbine rotorcraft aircraft (all generally have an ARC of B-II or greater) hours flown.

The annual growth rate was determined using the equation for compound annual growth rate (see below), with the “end value” being the projected number of hours flown in 2037, the “beginning value” being the number of hours flown in 2016, and the number of years between 2016 and 2037 (21 years).

$$\text{Compound Annual Growth Rate} = \left(\frac{\text{End Value}}{\text{Beginning Value}} \right)^{(1/\text{Number of Years})} - 1$$

Table 17 shows the ARC and the resulting associated growth rates, while **Table 18** shows the resulting forecasted operations for each airport using this method.

Table 17. ARC, Group, and Growth Rate

ARC	End Value	Beginning Value	Number of Years	Growth Rate
A-I, A-II, B-I, B-II*	18,136	17,819	21	0.08%
B-II* C-I, C-II, C-III, C-IV, D-IV, D-V E-VI	11,741	6,739	21	2.68%

**Note: B-II airports classified as GA-Rural and GA-Basic were given the 0.08 percent growth rate. B-II airports classified as GA-Community through Commercial Service were given the high growth rate.*

Sources: FAA Aerospace Forecast Fiscal Years 2017-2037, Woolpert 2017

⁶ ARC is an airport designation that signifies the airport’s highest Runway Design Code (RDC), minus the third (visibility) component of the RDC. The ARC is based on the aircraft approach category (A through E) and the airplane design group (I through VI). See FAA AC 150/5300-13A, Airport Design, for further information on the ARC codes.

Table 18. Forecasted Aircraft Operations Using ARC Method (rounded to the nearest 10)

Associated City	Airport Name	ARC	Growth Rate	2016	2021	2026	2036
Ajo	Eric Marcus Municipal	B-I	0.08%	300	300	300	300
Bagdad	Bagdad	B-I	0.08%	1,000	1,000	1,010	1,020
Benson	Benson Municipal	B-II	2.68%	16,700	19,060	21,760	28,340
Bisbee	Bisbee Municipal	B-II	0.08%	2,900	2,910	2,920	2,950
Buckeye	Buckeye Municipal	B-II	2.68%	53,000	60,490	69,050	89,950
Casa Grande	Casa Grande Municipal	B-II	2.68%	100,000	114,140	130,270	169,710
Chandler	Chandler Municipal	B-II	2.68%	220,930	252,170	287,820	374,960
Chinle	Chinle Municipal	B-I	0.08%	7,800	7,830	7,860	7,930
Cibecue	Cibecue	A-I	0.08%	10	10	10	10
Clifton	Greenlee County	B-II	0.08%	1,110	1,110	1,120	1,130
Colorado City	Colorado City Municipal	B-II	2.68%	4,800	5,480	6,250	8,150
Coolidge	Coolidge Municipal	C-IV	0.08%	17,000	17,070	17,140	17,270
Cottonwood	Cottonwood Municipal	B-I	0.08%	18,900	18,980	19,050	19,200
Douglas	Bisbee-Douglas International	C-I	0.08%	25,820	25,920	26,030	26,240
Douglas	Cochise College	B-I	0.08%	47,050	47,240	47,430	47,810
Douglas	Douglas Municipal	B-II	0.08%	2,600	2,610	2,620	2,640
Eloy	Eloy Municipal	A-II	0.08%	32,650	32,780	32,910	33,180
Gila Bend	Gila Bend Municipal	B-II	0.08%	36,290	36,440	36,580	36,880
Glendale	Glendale Municipal	B-II	2.68%	70,520	80,490	91,870	119,690
Globe	San Carlos Apache	C-II	2.68%	1,910	2,180	2,480	3,230
Goodyear	Phoenix Goodyear	D-IV	2.68%	123,330	140,770	160,670	209,310
Holbrook	Holbrook Municipal	B-I	0.08%	3,700	3,710	3,730	3,760
Kayenta	Kayenta	B-II	0.08%	1,500	1,510	1,510	1,520
Kearny	Kearny	A-I	0.08%	1,200	1,200	1,210	1,220
Kingman	Kingman	C-III	2.68%	27,120	30,950	35,330	46,030
Lake Havasu City	Lake Havasu City	C-III	2.68%	45,000	51,360	58,620	76,370
Marana	Marana Regional	C-II	2.68%	90,250	103,010	117,580	153,170
Marana	Pinal Airpark	D-V	2.68%	34,160	38,990	44,500	57,970
Maricopa	Ak-Chin Regional	B-I	0.08%	18,320	18,400	18,470	18,620
Mesa	Falcon Field	B-II	2.68%	263,120	300,320	342,780	446,550
Nogales	Nogales	C-II	2.68%	47,750	54,500	62,210	81,040
Parker	Avi Suquilla	C-II	2.68%	15,150	17,290	19,740	25,710
Payson	Payson	B-I	0.08%	33,770	33,910	34,040	34,310
Phoenix	Phoenix Deer Valley	C-II	2.68%	378,030	431,480	492,480	641,580
Polacca	Polacca	A-I	0.08%	200	200	200	200
Safford	Safford Regional	B-II	2.68%	13,750	15,690	17,910	23,340
San Luis	Rolle Airfield	B-I	0.08%	3,100	3,110	3,120	3,150
San Manuel	San Manuel	B-I	0.08%	14,160	14,220	14,280	14,390

Associated City	Airport Name	ARC	Growth Rate	2016	2021	2026	2036
Scottsdale	Scottsdale	B-II	2.68%	158,300	180,670	206,220	268,650
Sedona	Sedona	B-II	2.68%	35,300	40,290	45,990	59,910
Seligman	Seligman	B-I	0.08%	1,100	1,100	1,110	1,120
Sells	Sells	Unknown	2.68%	200	230	260	340
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	E-V	0.08%	135,870	136,410	136,960	138,060
Springerville	Springerville Municipal	B-II	2.68%	2,360	2,700	3,080	4,010
St. Johns	St. Johns Industrial Air Park	B-II	2.68%	16,800	19,180	21,890	28,510
Superior	Superior	B-II	0.08%	200	200	200	200
Taylor	Taylor	B-II	2.68%	2,840	3,240	3,700	4,820
Tombstone	Tombstone Municipal	A-I	0.08%	350	350	350	360
Tuba City	Tuba City	B-II	0.08%	250	250	250	250
Tucson	Ryan Field	B-II	2.68%	109,640	125,140	142,830	186,070
Whiteriver	Whiteriver	B-II	0.08%	3,910	3,930	3,940	3,970
Wickenburg	Wickenburg Municipal	B-II	2.68%	36,150	41,260	47,090	61,350
Willcox	Cochise County	B-II	2.68%	10,000	11,410	13,030	16,970
Williams	H.A. Clark Memorial Field	B-II	2.68%	6,500	7,420	8,470	11,030
Window Rock	Window Rock	B-II	0.08%	5,000	5,020	5,040	5,080
Winslow	Winslow-Lindbergh Regional	C-II	2.68%	21,250	24,250	27,680	36,060

Note: Some airports may show no growth due to rounding even though there is a minimal increase in their operations.

Sources: Airport Inventory and Data Survey 2017, Woolpert 2017

Preferred GA Operations Forecast

The results of the two GA operations forecast results were compared to determine the preferred forecast for GA operations. The ARC method is the preferred forecast for many of the same reasons the Population Growth Method for based aircraft is preferred (recent revisions to FAA regulations impacting GA, positive socioeconomic projections, and overall growth in GA within the U.S.). With Arizona's population projected to grow at almost twice the expected U.S. population rate, a higher rate of airport traffic will also likely follow. Additionally, Arizona was ranked number three in the country for states that were attractive for aerospace manufacturing in the *2017 Aerospace Manufacturing Attractiveness Rankings* (PWC 2017). According to this report, Arizona has an ideal climate for aircraft testing and space observation, one of the best transportation infrastructures, and a tax policy congenial to business. Also, according to the Arizona Commerce Authority, Arizona is home to more than 1,200 aerospace and defense companies and this sector is a priority in the state's growth strategy (Arizona Commerce Authority n.d.). This kind of business activity usually results in higher business aircraft usage. Additionally, air tourism in Arizona has been on the increase as the country recovers from the recession. All of these factors, point to a greater number of aircraft operations in the state. It should be noted that based on coordination with the FAA, the growth rate using the ARC methodology for 12 airports in the system were adjusted. Nine of the 12 airports are defined as B-II—which would normally result in the high growth rate—and have classifications as GA-Rural or GA-Basic. Due to these airports being classified as such, the growth rates were changed from the high growth rate (2.68 percent) to the low growth rate (0.08 percent). Additionally,

Bisbee-Douglas International (DUG), Coolidge Municipal (P08), and Sierra Vista Municipal (FHU) were adjusted to the low growth rate as their ARCs are artificially inflated due to high annual operations by the military and/or special activity that warrants a high ARC but does not reflect the majority of the activity at the airport.

Table 19 presents the preferred operations forecast and the resulting projected local and itinerant split. The local and itinerant split is based upon 2016 data and the ratio remains constant throughout the forecast period.

Table 19. Preferred Operations Forecast with Local and Itinerant Split

Associated City	Airport Name	Growth Rate	2016			2021			2026			2036		
			Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Ajo	Eric Marcus Municipal	0.08%	60	240	300	60	240	300	60	240	300	60	240	300
Bagdad	Bagdad	0.08%	400	600	1,000	400	600	1,000	400	610	1,010	410	610	1,020
Benson	Benson Municipal	2.68%	4,510	12,191	16,700	5,150	13,910	19,060	5,870	15,890	21,760	7,650	20,690	28,340
Bisbee	Bisbee Municipal	0.08%	1,100	1,800	2,900	1,100	1,810	2,910	1,110	1,810	2,920	1,120	1,830	2,950
Buckeye	Buckeye Municipal	2.68%	15,900	37,100	53,000	18,150	42,340	60,490	20,710	48,340	69,050	26,990	62,960	89,950
Casa Grande	Casa Grande Municipal	2.68%	30,000	70,000	100,000	34,240	79,900	114,140	39,080	91,190	130,270	50,910	118,800	169,710
Chandler	Chandler Municipal	2.68%	142,180	78,750	220,930	162,290	89,880	252,170	185,230	102,590	287,820	241,310	133,650	374,960
Chinle	Chinle Municipal	0.08%	400	7,400	7,800	400	7,430	7,830	400	7,460	7,860	410	7,520	7,930
Cibecue	Cibecue	0.08%	0	10	10	0	10	10	0	10	10	0	10	10
Clifton	Greenlee County	0.08%	200	910	1,110	200	910	1,110	200	920	1,120	200	930	1,130
Colorado City	Colorado City Municipal	2.68%	2,400	2,400	4,800	2,740	2,740	5,480	3,120	3,130	6,250	4,070	4,080	8,150
Coolidge	Coolidge Municipal	0.08%	12,750	4,250	17,000	12,800	4,270	17,070	12,860	4,280	17,140	12,950	4,320	17,270
Cottonwood	Cottonwood Municipal	0.08%	8,000	10,900	18,900	8,030	10,950	18,980	8,060	10,990	19,050	8,130	11,070	19,200
Douglas	Bisbee-Douglas International	0.08%	7,750	18,070	25,820	7,780	18,140	25,920	7,810	18,220	26,030	7,870	18,370	26,240
Douglas	Cochise College	0.08%	44,700	2,353	47,050	44,880	2,360	47,240	45,060	2,370	47,430	45,420	2,390	47,810
Douglas	Douglas Municipal	0.08%	650	1,950	2,600	650	1,960	2,610	650	1,960	2,620	660	1,980	2,640
Eloy	Eloy Municipal	0.08%	21,220	11,430	32,650	21,310	11,470	32,780	21,390	11,520	32,910	21,570	11,610	33,180
Gila Bend	Gila Bend Municipal	0.08%	30,850	5,440	36,290	30,970	5,470	36,440	31,090	5,490	36,580	31,350	5,530	36,880
Glendale	Glendale Municipal	2.68%	45,840	24,680	70,520	52,320	28,170	80,490	59,720	32,150	91,870	77,800	41,890	119,690
Globe	San Carlos Apache	2.68%	400	1,510	1,910	460	1,720	2,180	520	1,960	2,480	680	2,550	3,230
Goodyear	Phoenix Goodyear	2.68%	74,000	49,330	123,330	84,460	56,310	140,770	96,400	64,270	160,670	125,590	83,720	209,310
Holbrook	Holbrook Municipal	0.08%	700	3,000	3,700	700	3,010	3,710	710	3,020	3,730	710	3,050	3,760
Kayenta	Kayenta	0.08%	0	1,500	1,500	0	1,510	1,510	0	1,510	1,510	0	1,520	1,520
Kearny	Kearny	0.08%	100	1,100	1,200	100	1,100	1,200	100	1,110	1,210	100	1,120	1,220
Kingman	Kingman	2.68%	14,100	13,020	27,120	16,100	14,850	30,950	18,370	16,960	35,330	23,940	22,090	46,030
Lake Havasu City	Lake Havasu City	2.68%	21,150	23,850	45,000	24,140	27,220	51,360	27,550	31,070	58,620	35,890	40,480	76,370
Marana	Marana Regional	2.68%	45,130	45,120	90,250	51,510	51,500	103,010	58,790	58,790	117,580	76,580	76,590	153,170
Marana	Pinal Airpark	2.68%	25,620	8,540	34,160	29,240	9,750	38,990	33,370	11,130	44,500	43,480	14,490	57,970
Maricopa	Ak-Chin Regional	0.08%	2,890	15,430	18,320	2,900	15,500	18,400	2,910	15,560	18,470	2,930	15,690	18,620
Mesa	Falcon Field	2.68%	157,870	105,250	263,120	180,190	120,130	300,320	205,670	137,110	342,780	267,930	178,620	446,550
Nogales	Nogales	2.68%	33,430	14,320	47,750	38,150	16,350	54,500	43,550	18,660	62,210	56,730	24,310	81,040
Parker	Avi Suquilla	2.68%	2,270	12,880	15,150	2,590	14,700	17,290	2,960	16,780	19,740	3,860	21,850	25,710
Payson	Payson	0.08%	11,140	22,630	33,770	11,190	22,720	33,910	11,230	22,810	34,040	11,320	22,990	34,310
Phoenix	Phoenix Deer Valley	2.68%	241,940	136,090	378,030	276,150	155,330	431,480	315,190	177,290	492,480	410,610	230,970	641,580
Polacca	Polacca	0.08%	0	200	200	0	200	200	0	200	200	0	200	200
Safford	Safford Regional	2.68%	6,880	6,870	13,750	7,850	7,840	15,690	8,950	8,960	17,910	11,670	11,670	23,340
San Luis	Rolle Airfield	0.08%	3,010	90	3,100	3,020	90	3,110	3,030	90	3,120	3,060	90	3,150
San Manuel	San Manuel	0.08%	8,330	5,830	14,160	8,360	5,860	14,220	8,400	5,880	14,280	8,460	5,930	14,390
Scottsdale	Scottsdale	2.68%	58,570	99,730	158,300	66,850	113,820	180,670	76,300	129,920	206,220	99,400	169,250	268,650

Sedona	Sedona	2.68%	5,300	30,000	35,300	6,040	34,250	40,290	6,900	39,090	45,990	8,990	50,920	59,910
Associated City	Airport Name	Growth Rate	2016			2021			2026			2036		
			Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total	Local	Itinerant	Total
Seligman	Seligman	0.08%	500	600	1,100	500	600	1,100	510	600	1,110	510	610	1,120
Sells	Sells	2.68%	0	200	200	0	230	230	0	260	260	0	340	340
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	0.08%	67,940	67,930	135,870	68,210	68,200	136,410	68,480	68,480	136,960	69,030	69,030	138,060
Springerville	Springerville Municipal	2.68%	330	2,030	2,360	380	2,320	2,700	430	2,650	3,080	560	3,450	4,010
St. Johns	St. Johns Industrial Air Park	2.68%	3,530	13,270	16,800	4,030	15,150	19,180	4,600	17,290	21,890	5,990	22,520	28,510
Superior	Superior	0.08%	0	200	200	0	200	200	0	200	200	0	200	200
Taylor	Taylor	2.68%	2,000	840	2,840	2,280	960	3,240	2,610	1,090	3,700	3,390	1,430	4,820
Tombstone	Tombstone Municipal	0.08%	50	300	350	50	300	350	50	300	350	50	310	360
Tuba City	Tuba City	0.08%	0	250	250	0	250	250	0	250	250	0	250	250
Tucson	Ryan Field	2.68%	60,300	49,340	109,640	68,830	56,310	125,140	78,560	64,270	142,830	102,340	83,730	186,070
Whiteriver	Whiteriver	0.08%	860	3,050	3,910	870	3,060	3,930	870	3,070	3,940	870	3,100	3,970
Wickenburg	Wickenburg Municipal	2.68%	11,570	24,580	36,150	13,200	28,060	41,260	15,070	32,020	47,090	19,630	41,720	61,350
Willcox	Cochise County	2.68%	2,500	7,500	10,000	2,850	8,560	11,410	3,260	9,770	13,030	4,240	12,730	16,970
Williams	H.A. Clark Memorial Field	2.68%	1,500	5,000	6,500	1,710	5,710	7,420	1,950	6,520	8,470	2,550	8,480	11,030
Window Rock	Window Rock	0.08%	3,500	1,500	5,000	3,510	1,510	5,020	3,530	1,510	5,040	3,560	1,520	5,080
Winslow	Winslow-Lindbergh Regional	2.68%	4,040	17,210	21,250	4,610	19,640	24,250	5,260	22,420	27,680	6,850	29,210	36,060

Sources: Airport Inventory and Data Survey 2017, Woolpert 2017

Comparison to the TAF

When an airport forecast is undertaken by an airport sponsor, usually as a part of an airport master plan, it is reviewed for consistency with the TAF projections for that airport. Although the forecasts included in this SASP Update cannot be used in the same manner that master plan forecasts can be used (project justification, etc.), they are still reviewed for consistency with the TAF.

For a forecast of aircraft or operations to be considered consistent with the TAF it must differ by less than ten percent in the five-year forecast period, and 15 percent in the 10-year forecast period. If the forecast is not consistent with the TAF, the inconsistencies must be resolved if the forecast is to be used for environmental purposes (e.g. purpose and need, air quality, noise, land use), noise compatibility planning (14 CFR Part 150), approval of development on an airport layout plan, and initial financial decisions including issuance of a “letter-of-intent” for funding or completing a benefit-cost analysis.⁷

Table 20 shows a comparison of the TAF and the forecasts for based aircraft using the preferred methodology, and **Table 21** shows a comparison of the TAF and the GA operation forecasts using the preferred methodology. Values that are above the 10 or 15 percent thresholds are **bolded**. Using a threshold of 10 percent for 2016, the TAF shows a 10 percent or higher difference for current based aircraft at 34 percent of the airports. If the TAF is incorrect by ten percent in the base year (2016), the difference will be magnified at the five-year and ten-year marks. These airports’ forecasts have practically no possibility of being within the thresholds if the TAF does not reflect actual conditions in the first year (2016). The magnitude of this discrepancy carries through in the five-year and ten-year forecasting periods. This issue is further magnified by a general lack of growth projected by the TAF for non-towered GA airports. By the five-year mark, 57 percent of the forecasts for based aircraft exceed the TAF threshold for consistency, and by the ten-year mark, 64 percent exceed it. For operations, 74 percent of the forecasts exceed the TAF threshold for consistency at the five-year mark, and 75 percent exceed it at the 10-year mark.

⁷ “Review and Approval of Aviation Forecasts,” Federal Aviation Administration, June 2008.

Table 20. TAF Comparison of Based Aircraft Forecasts

Associated City	Airport Name	2016			2021			2026			2036		
		Actual Based Aircraft	TAF Based Aircraft	Difference (%)	Forecast 5-Yr	TAF 5-Yr	Difference (%)	Forecast 10-Yr	TAF 10-Yr	Difference (%)	Forecast 20-Yr	TAF 20-Yr	Difference (%)
Ajo	Eric Marcus Municipal	7	4	-43%	8	4	-50%	8	4	-50%	9	4	-77%
Bagdad	Bagdad	5	4	-20%	5	4	-20%	6	4	-33%	7	4	-55%
Benson	Benson Municipal	44	43	-2%	47	43	-9%	49	43	-12%	55	43	-24%
Bisbee	Bisbee Municipal	28	8	-71%	30	8	-73%	31	8	-74%	35	8	-126%
Buckeye	Buckeye Municipal	70	65	-7%	77	65	-16%	84	65	-23%	99	65	-41%
Casa Grande	Casa Grande Municipal	105	0	-100%	117	0	-100%	130	0	-100%	159	91	-54%
Chandler	Chandler Municipal	440	308	-30%	481	354	-26%	524	403	-23%	619	528	-16%
Chinle	Chinle Municipal	3	3	0%	3	3	0%	3	3	0%	4	3	-29%
Cibecue	Cibecue	0	0	0%	0	0	0%	0	0	0%	0	0	0.0%
Clifton	Greenlee County	1	1	0%	1	1	0%	1	1	0%	1	1	0%
Colorado City	Colorado City Municipal	13	16	23%	14	16	14%	15	16	7%	17	16	-6%
Coolidge	Coolidge Municipal	45	32	-29%	50	32	-36%	56	32	-43%	68	48	-34%
Cottonwood	Cottonwood Municipal	44	14	-68%	48	14	-71%	52	14	-73%	60	14	-124%
Douglas	Bisbee-Douglas International	5	5	0%	5	5	0%	6	5	-17%	6	5	-18%
Douglas	Cochise College	15	N/A	N/A	16	N/A	N/A	17	N/A	N/A	19	N/A	N/A
Douglas	Douglas Municipal	12	N/A	N/A	13	N/A	N/A	14	N/A	N/A	15	N/A	N/A
Eloy	Eloy Municipal	21	21	0%	23	21	-9%	26	21	-19%	32	21	-42%
Gila Bend	Gila Bend Municipal	4	4	0%	4	4	0%	5	4	-20%	6	4	-40%
Glendale	Glendale Municipal	286	271	-5%	312	290	-7%	341	307	-10%	403	337	-18%
Globe	San Carlos Apache	13	3	-77%	14	3	-79%	14	3	-79%	15	3	-133%
Goodyear	Phoenix Goodyear	222	204	-8%	243	219	-10%	265	238	-10%	312	278	-12%
Holbrook	Holbrook Municipal	14	9	-36%	15	9	-40%	16	9	-44%	17	9	-62%
Kayenta	Kayenta	1	0	-100%	1	0	-100%	1	0	-100%	1	0	-200%
Kearny	Kearny	6	N/A	N/A	7	N/A	N/A	7	N/A	N/A	9	N/A	N/A
Kingman	Kingman	155	160	3%	165	182	10%	176	204	16%	198	248	22%
Lake Havasu City	Lake Havasu City	132	88	-33%	141	88	-38%	150	88	-41%	169	88	-63%
Marana	Marana Regional	248	206	-17%	264	231	-13%	281	256	-9%	315	309	-2%
Marana	Pinal Airpark	5	0	-100%	6	0	-100%	6	0	-100%	8	0	-200%
Maricopa	Ak-Chin Regional	30	24	-20%	33	24	-27%	37	24	-35%	46	40	-14%
Mesa	Falcon Field	697	675	-3%	761	745	-2%	831	819	-1%	981	973	-1%
Nogales	Nogales	26	22	-15%	28	22	-21%	30	22	-27%	35	22	-46%
Parker	Avi Suquilla	17	19	12%	18	19	6%	19	19	0%	22	19	-15%
Payson	Payson	54	59	9%	57	59	4%	59	59	0%	64	59	-8%
Phoenix	Phoenix Deer Valley	940	972	3%	1027	1080	5%	1120	1205	8%	1,323	1,495	12%
Polacca	Polacca	0	0	0%	0	0	0%	0	0	0%	0	0	0.0%
Safford	Safford Regional	57	49	-14%	59	49	-17%	62	49	-21%	66	49	-30%
San Luis	Rolle Airfield	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
San Manuel	San Manuel	37	19	-49%	41	19	-54%	46	19	-59%	56	19	-99%
Scottsdale	Scottsdale	442	337	-24%	483	357	-26%	527	379	-28%	622	420	-39%



Associated City	Airport Name	Actual Based Aircraft	TAF Based Aircraft	Difference (%)	Forecast 5-Yr	TAF 5-Yr	Difference (%)	Forecast 10-Yr	TAF 10-Yr	Difference (%)	Forecast 20-Yr	TAF 20-Yr	Difference (%)
Sedona	Sedona	61	62	2%	66	62	-6%	72	62	-14%	83	62	-29%
Seligman	Seligman	2	N/A	N/A	2	N/A	N/A	2	N/A	N/A	3	N/A	N/A
Sells	Sells	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	51	45	-12%	54	45	-17%	57	45	-21%	63	45	-33%
Springerville	Springerville Municipal	13	15	15%	14	15	7%	14	15	7%	15	15	0%
St. Johns	St. Johns Industrial Air Park	15	5	-67%	16	5	-69%	16	5	-69%	18	5	-113%
Superior	Superior	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A	0	N/A	N/A
Taylor	Taylor	15	11	-27%	16	11	-31%	17	11	-35%	18	16	-12%
Tombstone	Tombstone Municipal	4	N/A	N/A	4	N/A	N/A	4	N/A	N/A	5	N/A	N/A
Tuba City	Tuba City	0	0	0%	0	0	0%	0	0	0%	0	0	0.0%
Tucson	Ryan Field	257	187	-27%	274	211	-23%	291	239	-18%	326	302	-8%
Whiteriver	Whiteriver	0	0	0%	0	0	0%	0	0	0%	0	0	0.0%
Wickenburg	Wickenburg Municipal	46	36	-22%	50	36	-28%	55	36	-35%	65	36	-57%
Willcox	Cochise County	24	21	-13%	25	21	-16%	27	21	-22%	30	21	-35%
Williams	H.A. Clark Memorial Field	3	3	0%	3	3	0%	3	3	0%	4	3	-29%
Window Rock	Window Rock	7	0	-100%	7	0	-100%	8	0	-100%	8	0	-200%
Winslow	Winslow-Lindbergh Regional	12	12	0%	13	12	-8%	13	12	-8%	15	12	-22%

Note: Values that are above the 10 or 15 percent of the respected TAF thresholds are bolded.

Sources: Airport Inventory and Data Survey 2017, FAA TAF 2017, Woolpert 2017

Table 21. TAF Comparison of GA Operations Forecast

Associated City	Airport Name	2016			2021			2026			2036		
		Actual GA Operations	TAF GA Operations	Difference (%)	Forecast 5-Yr	TAF 5-Yr	Difference (%)	Forecast 10-Yr	TAF 10-Yr	Difference (%)	Forecast 20-Yr	TAF 20-Yr	Difference (%)
Ajo	Eric Marcus Municipal	300	300	0%	300	300	0%	300	300	0%	300	300	0%
Bagdad	Bagdad	1,000	1,000	0%	1,000	1,000	0%	1,010	1,000	-1%	1,020	1,000	-2%
Benson	Benson Municipal	16,700	16,700	0%	19,060	16,700	-12%	21,760	16,700	-23%	28,340	16,500	-53%
Bisbee	Bisbee Municipal	2,900	2,900	0%	3,310	2,900	-12%	3,780	2,900	-23%	4,920	2,900	-52%
Buckeye	Buckeye Municipal	53,000	53,000	0%	60,490	53,000	-12%	69,050	53,000	-23%	89,950	52,900	-52%
Casa Grande	Casa Grande Municipal	100,000	0	-100%	114,140	0	-100%	130,270	0	-100%	169,710	119,280	-35%
Chandler	Chandler Municipal	220,930	215,373	-3%	252,170	220,013	-13%	287,820	222,540	-23%	374,960	227,4767	-49%
Chinle	Chinle Municipal	7,800	7,800	0%	7,830	7,800	0%	7,860	7,800	-1%	7,930	7,800	-2%
Cibecue	Cibecue	10	10	0%	10	10	0%	10	10	0%	10	10	0%
Clifton	Greenlee County	1,110	1,110	0%	1,270	1,110	-13%	1,450	1,110	-23%	1,880	1,110	-52%
Colorado City	Colorado City Municipal	4,800	4,000	-17%	5,480	4,000	-27%	6,250	4,000	-36%	8,150	3,970	-69%
Coolidge	Coolidge Municipal	17,000	4,250	-75%	19,400	4,250	-78%	22,150	4,250	-81%	28,850	8,170	-112%
Cottonwood	Cottonwood Municipal	18,900	18,900	0%	18,980	18,900	0%	19,050	18,900	-1%	19,200	18,800	-2%
Douglas	Bisbee-Douglas International	25,820	19,700	-24%	29,470	19,700	-33%	33,640	19,700	-41%	43,820	14,000	-103%
Douglas	Cochise College	47,050	N/A	N/A	47,240	N/A	N/A	47,430	N/A	N/A	47,810	N/A	N/A
Douglas	Douglas Municipal	2,600	N/A	N/A	2,970	N/A	N/A	3,390	N/A	N/A	4,410	N/A	N/A
Eloy	Eloy Municipal	32,650	23,450	-28%	32,780	23,450	-28%	32,910	23,450	-29%	33,180	23,400	-35%
Gila Bend	Gila Bend Municipal	36,290	36,290	0%	41,420	36,290	-12%	47,280	36,290	-23%	61,590	36,240	-52%
Glendale	Glendale Municipal	70,520	72,051	2%	80,490	69,985	-13%	91,870	70,330	-23%	119,690	70,916	-51%
Globe	San Carlos Apache	1,910	1,900	0%	2,180	1,900	-13%	2,480	1,900	-23%	3,230	1,900	-52%
Goodyear	Phoenix Goodyear	123,330	114,360	-7%	140,770	120,424	-14%	160,670	122,251	-24%	209,310	121,818	-53%
Holbrook	Holbrook Municipal	3,700	3,700	0%	3,710	3,700	0%	3,730	3,700	-1%	3,760	3,700	-2%
Kayenta	Kayenta	1,500	2,000	33%	1,710	2,000	17%	1,950	2,000	3%	2,550	2,000	-24%
Kearny	Kearny	1,200	N/A	N/A	1,200	N/A	N/A	1,210	N/A	N/A	1,220	N/A	N/A
Kingman	Kingman	27,120	28,478	5%	30,950	28,478	-8%	35,330	28,478	-19%	46,030	28,458	-47%
Lake Havasu City	Lake Havasu City	45,000	50,000	11%	51,360	50,000	-3%	58,620	50,000	-15%	76,370	49,650	-42%
Marana	Marana Regional	90,250	91,469	1%	103,010	99,295	-4%	117,580	107,980	-8%	153,170	118,296	-26%
Marana	Pinal Airpark	34,160	56,857	66%	38,990	56,857	46%	44,500	56,857	28%	57,970	8,057	-151%
Maricopa	Ak-Chin Regional	18,320	18,310	0%	18,400	18,310	0%	18,470	18,310	-1%	18,620	38,340	69%
Mesa	Falcon Field	263,120	270,072	3%	300,320	278,949	-7%	342,780	281,562	-18%	446,550	284,242	-44%
Nogales	Nogales	47,750	27,000	-43%	54,500	27,000	-50%	62,210	27,000	-57%	81,040	24,150	-108%
Parker	Avi Suquilla	15,150	15,000	-1%	17,290	15,000	-13%	19,740	15,000	-24%	25,710	15,000	-53%
Payson	Payson	33,770	34,250	1%	33,910	34,250	1%	34,040	34,250	1%	34,310	33,750	-2%
Phoenix	Phoenix Deer Valley	378,030	365,920	-3%	431,480	371,864	-14%	492,480	375,560	-24%	641,580	383,000	-50%
Polacca	Polacca	200	200	0%	200	200	0%	200	200	0%	200	200	0%
Safford	Safford Regional	13,750	13,750	0%	15,690	13,750	-12%	17,910	13,750	-23%	23,340	12,750	-59%
San Luis	Rolle Airfield	3,100	N/A	N/A	3,110	N/A	N/A	3,120	N/A	N/A	3,150	N/A	N/A
San Manuel	San Manuel	14,160	14,010	-1%	14,220	14,010	-1%	14,280	14,010	-2%	14,390	14,000	-3%
Scottsdale	Scottsdale	158,300	155,493	-2%	180,670	161,644	-11%	206,220	163,800	-21%	268,650	167,785	-46%



Associated City	Airport Name	2016			2021			2026			2036		
		Actual GA Operations	TAF GA Operations	Difference (%)	Forecast 5-Yr	TAF 5-Yr	Difference (%)	Forecast 10-Yr	TAF 10-Yr	Difference (%)	Forecast 20-Yr	TAF 20-Yr	Difference (%)
Sedona	Sedona	35,300	35,000	-1%	40,290	35,000	-13%	45,990	35,000	-24%	59,910	33,600	-56%
Seligman	Seligman	1,100	N/A	N/A	1,100	N/A	N/A	1,110	N/A	N/A	1,120	N/A	N/A
Sells	Sells	200	N/A	N/A	230	N/A	N/A	260	N/A	N/A	340	N/A	N/A
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	135,870	119,274	-12%	155,080	119,274	-23%	177,000	119,274	-33%	230,590	22,805	-164%
Springerville	Springerville Municipal	2,360	3,176	34%	2,700	3,176	18%	3,080	3,176	3%	4,010	3,063	-27%
St. Johns	St. Johns Industrial Air Park	16,800	16,800	0%	19,180	16,800	-12%	21,890	16,800	-23%	28,510	16,500	-53%
Superior	Superior	200	N/A	N/A	230	N/A	N/A	260	N/A	N/A	340	N/A	N/A
Taylor	Taylor	2,840	3,530	24%	3,240	3,530	9%	3,700	3,530	-5%	4,820	20,030	122%
Tombstone	Tombstone Municipal	350	N/A	N/A	350	N/A	N/A	350	N/A	N/A	360	N/A	N/A
Tuba City	Tuba City	250	250	0%	290	250	-14%	330	250	-24%	420	250	-51%
Tucson	Ryan Field	109,640	110,834	1%	125,140	109,521	-12%	142,830	109,706	-23%	186,070	93,580	-66%
Whiteriver	Whiteriver	3,910	3,910	0%	4,460	3,910	-12%	5,090	3,910	-23%	6,640	3,850	-53%
Wickenburg	Wickenburg Municipal	36,150	36,150	0%	41,260	36,150	-12%	47,090	36,150	-23%	61,350	36,100	-52%
Willcox	Cochise County	10,000	8,500	-15%	11,410	8,500	-26%	13,030	8,500	-35%	16,970	8,000	-72%
Williams	H.A. Clark Memorial Field	6,500	6,100	-6%	7,420	6,100	-18%	8,470	6,100	-28%	11,030	6,100	-58%
Window Rock	Window Rock	5,000	5,000	0%	5,710	5,000	-12%	6,510	5,000	-23%	8,490	5,000	-52%
Winslow	Winslow-Lindbergh Regional	21,250	21,250	0%	24,250	21,250	-12%	27,680	21,250	-23%	36,060	26,000	-32%

Notes: Values that are above the 10 or 15 percent of the respected TAF thresholds are bolded. The FAA TAF does not forecast non-NPIAS airports and as such, non-NPIAS airports are listed as N/A.

Sources: Airport Inventory and Data Survey 2017, FAA TAF 2017, Woolpert 2017

SUMMARY

The FAA projects very modest growth for GA across the country over the next 20 years. While piston aircraft are expected to decline, this is offset by increases in the turbine aircraft market. In Arizona, socioeconomic projections are positive, with the state's population growth rate expected to nearly double the nation's expected growth rate. Arizona's economy is growing and this trend is projected to continue with employment exceeding five million by 2036. While the forecasts presented in the 2018 Update are optimistic, Arizona boasts healthy economic growth and GA in the state is expected to grow at a rate greater than the national average. Many other factors unique to Arizona support this prediction, including the state's attractive climate for aviation manufacturing, great flying weather, and healthy air tourism industry. The selected forecasts for based aircraft and GA operations at Arizona's GA system airports project increases of 1.59 percent in based aircraft and 2.53 percent in GA operations over the forecast period (2016-2036).