CHAPTER THREE: IDENTIFICATION OF AIRPORT ASSETS

INTRODUCTION

A critical function of the State Aviation System Plan (SASP) is establishing baseline data for each planning variable (for example, airport runway length) that will be analyzed and used to evaluate the overall airport system. The Identification of Airport Assets Chapter presents the results of an extensive data collection process utilizing existing Federal Aviation Administration (FAA) and Arizona Department of Transportation (ADOT) resources as well as new data that was developed through individual airport surveys and follow-up airport staff interviews.

This chapter details the inventory data collection process and results, and is presented as follows:

1. Inventory Process
2. SASP Airports
3. Existing Airside Facilities
4. Existing Landside Facilities
5. Existing Services
6. Airport Activity
7. Airspace
8. Navigational Aids (NAVAIDs) and Approach Types
9. Airport Planning Documentation
10. Airport Development Constraints

INVENTORY PROCESS

The inventory process started with identification of the airports considered for participation in the plan's analysis. Eighty-six airports were initially contacted for participation, including 16 privately-owned, public-use airports. The 86 airports considered in the 2018 SASP Update are made up of publicly owned and privately owned airports, including many Tribal airports**.**

To initiate the data collection efforts, an Airport Inventory and Data Survey Form was prepared identifying all the essential data points required to evaluate the system. These data points included those necessary to measure the system's performance as documented in a previous chapter. The inventory forms were pre-populated with data available in ADOT Aeronautics' Airport System Manager (ASM) to aid in the completion of the forms. The ASM is a database maintained by ADOT Aeronautics that details airport facilities within the state. Letters were distributed to airport representatives to both identify the purpose of the study and provide a hard copy of the pre-populated form. Follow-up phone calls and emails were conducted to further explain the purpose of the study and to schedule site visits with each airport's representative (in most cases, the airport manager served as its representative). During April and May 2017, airport site visits were conducted throughout Arizona. During the on-site visit, the inventory forms were thoroughly reviewed with the airport representatives for accuracy and additional input.

As supplements to the inventory form and on-site visits, the following sources were gathered directly from the airport or FAA and examined for a more in-depth analysis of the airports and the system:

1. FAA Terminal Area Forecasts (TAFs)
2. FAA 5010 forms for individual airports
3. Airport master plans (MPs)
4. Airport layout plans (ALPs)
5. FAA's Air Traffic Activity Data System (ATADS)

The following data were collected (as applicable) from the airport via the Inventory and Data Survey Form, on-site visits, additional correspondence with airport representatives, and other available sources:

1. General airport information (e.g., sponsor name, contact information, airport website, three-letter identifier code)
2. Airside facilities (e.g., runways, taxiways)
3. Aviation services (e.g., fuel, transient hangars, maintenance)
4. Landing aids (e.g., instrument approach procedures [IAP], approach light systems [ALS])
5. Weather/communication facilities
6. Approach minima and protection standards
7. Scheduled airline activity
8. Landside facilities (e.g., terminal building, aircraft storage, utilities, parking)
9. Airport activity (e.g., airport operations, operational mix, passenger enplanements, based aircraft, fleet mix, critical aircraft)
10. Type of operations (e.g., recreational, corporate/business, air cargo, law enforcement/U.S. Border Patrol [USBP], military, flight training, forest firefighting, air shows, air ambulance)
11. Unique users dependent on the airport
12. Existing airport plans and studies (e.g., airport MPs, ALPs, noise contours, emergency plans, economic impacts)
13. Future needs and development plans, including proposed capital improvements
14. Development constraints
15. Security measures (e.g., fencing, lighting, self-inspections)
16. Land use/zoning surrounding or affecting the airport
17. Airport-specific ordinances
18. Community/municipality relations

All collected data is used in the subsequent evaluation of the Arizona airport system. Key data elements are summarized in this chapter.

SASP AIRPORTS

As previously identified, 86 airports were considered for participation in the SASP Update and comprising the system of airports or SASP airports. While contact was made at 86 airports, airport site visits were only conducted at 80 facilities including publicly owned, public-use and privately owned, public-use. These include all 12 public-use Tribal airports. These included all airports included in the FAA's latest National Plan of Integrated Airport Systems (NPIAS) and others that have historically been considered part of ADOT's system of airports.[1] The 80 airports which received site visits are categorized in **Table 1**.

Table 1. Airports Surveyed

Airport Classifications	Number of Airports Surveyed
Commercial Service	11
NPIAS – General Aviation (GA)	48
Non-NPIAS – GA	21
Total	80

Sources: 2017-2021 NPIAS

While FAA terminology is used for the most part throughout the SASP Update, the use of "commercial service" in the context of the SASP Update refers to those airports that had scheduled commercial airline service as of 2017. The FAA's latest NPIAS identifies 10 commercial service airports. Of these 10, nine are primary commercial service and Ernest A. Love Field (Prescott) is identified as a non-primary commercial service airport. Show Low Regional is identified by the NPIAS as a non-primary GA airport, but has scheduled commercial airline service and is therefore identified as commercial service in the SASP Update. For all subsequent tables, 11 airports are included in the commercial service category, with the remaining airports categorized as GA with no delineation between those that are included in the NPIAS and those that are not.

Private airports are currently ineligible to receive state funding and many of these airports expressed that they were not interested in being part of the state airport system. Through discussion with ADOT and the Project Advisory Committee (PAC), it was determined that only airports eligible for state funding should be included in the state airport system and referred to as SASP airports. Eligible airports were defined as all public-use airports owned by a political subdivision of the state or Tribal government. It should be noted that there are two airports owned by the National Park Service (NPS) which is not a political subdivision. Using this definition, the system would comprise 68 airports. Double Circle Ranch Airport (Z66) was the only publicly owned airport that declined participation due to low usage.[2] Therefore, the final number of airports included in the 2018 SASP Update was determined to be 67.

The 12 privately owned airports and two NPS airports removed from further analysis are presented in **Table 2**. While these airports were removed from the study, they will continue to serve a role in the system by accommodating various aviation users. A reference table containing the airport codes, airport name, and associated city name can be found in **Appendix B**.

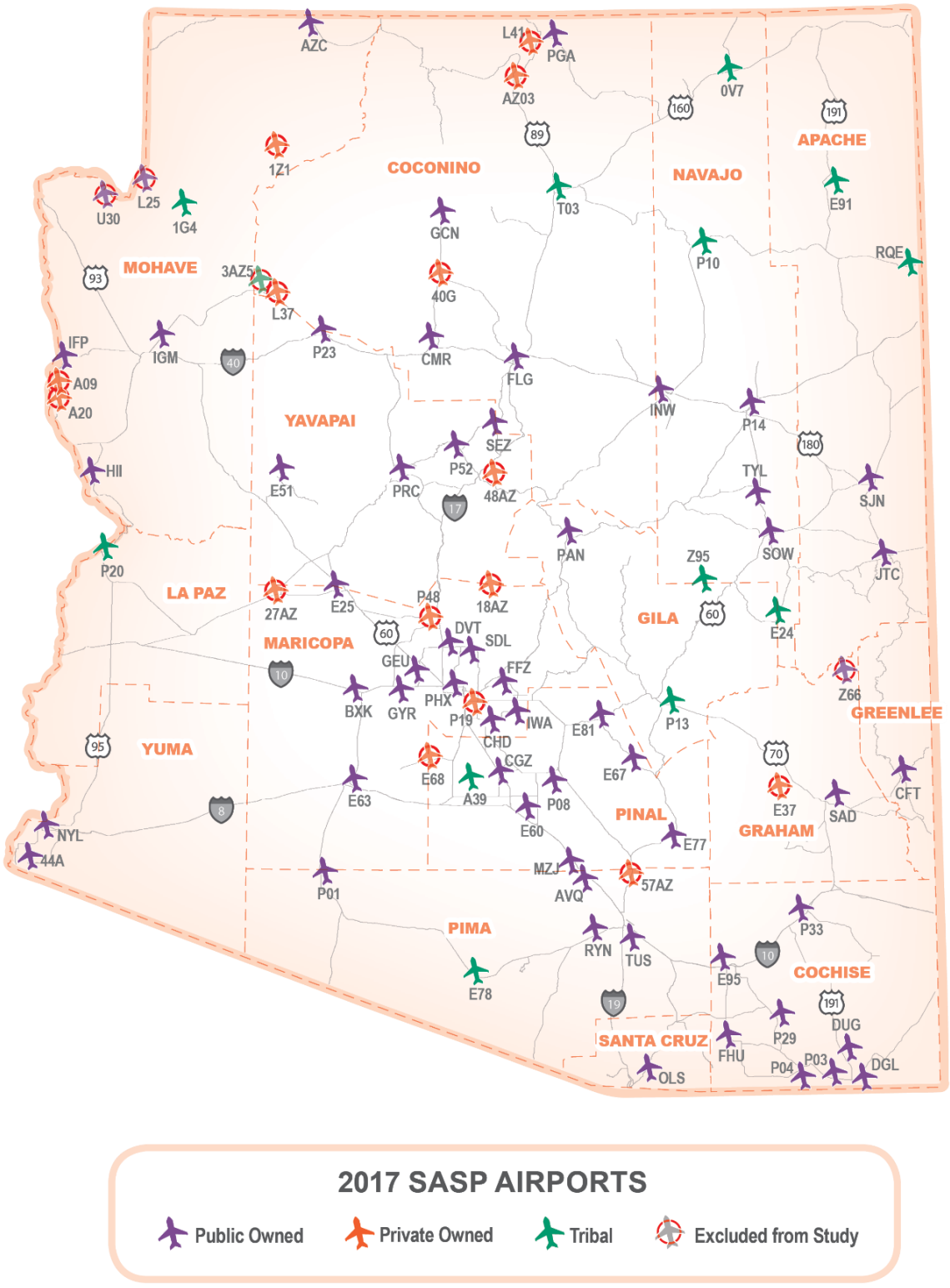
[1] FAA, Report to Congress, *National Plan of Integrated Airport Systems 2017-2021*.
[2] Owned by the U.S. Forest Service, Double Circle Ranch is a dirt airstrip used approximately twice per year by the agency.

Table 2. Airports Removed from Further SASP Analysis

Associated City	Airport	FAA ID	Ownership
Aguila	Eagle Roost	27AZ	Private
Bullhead City	Eagle Airpark	A09	Private
Bullhead City	Sun Valley	A20	Private
Clifton	Double Circle Ranch	Z66	NPS
Marble Canyon	Cliff Dwellers Lodge	AZ03	Private
Marble Canyon	Marble Canyon	L41	Private
Maricopa	Estrella Sailport	E68	Private
Meadview	Pearce Ferry	L25	NPS
Peach Springs	Grand Canyon Caverns	L37	Private
Peach Springs	Hualapai	3AZ5	Private
Peoria	Pleasant Valley	P48	Private
Temple Bar	Temple Bar	U30	NPS
Tucson	La Cholla Airpark	57AZ	Private
Whitmore	Grand Canyon Bar 10	1Z1	Private

Source: Kimley-Horn 2017

Figure 1 identifies the 67 airports included in the 2018 SASP Update and depicts the 19 airports that were excluded.



Source: Kimley-Horn 2017

Figure 1. 2018 SASP Airports

EXISTING AIRPORT FACILITIES

The SASP Update inventory effort included the identification of airport facilities at system airports. Airport facilities are categorized by airside facilities primarily comprising runways and taxiways (standards based on the airport reference code [ARC]) and landside facilities including aircraft parking and storage, fuel, and terminal buildings.

Existing Airside Facilities

The following sections detail the most significant airside facilities available at airports in the Arizona system.

Runway Summary

Of the 109 runways in the Arizona airport system, there are six runways over 10,000 feet. These are located at Yuma International (longest runway measuring 13,000 feet), Sierra Vista Municipal, Tucson International, Phoenix Mesa-Gateway, and two at Phoenix Sky Harbor International. The shortest runways in the system are located at Bisbee Municipal, Rolle Airfield, and Page Municipal (shortest measuring 2,201 feet as a secondary runway). Sixty-three runways measure over 5,000 feet in length, which is significant because most 5,000-foot-long runways are considered to be of sufficient length to accommodate many corporate aircraft. Twenty-six airports in the system have multiple runways.

The FAA recognizes three types of runway lighting: High, Medium, and Low Intensity Runway Lights, respectively referred to as HIRL, MIRL, and LIRL. Runway lighting is necessary for night-time operations and is present at 91 percent (64) of Arizona's system airports. Of the 109 runways in the Arizona airport system, 12 runways have HIRLs, 71 runways have MIRLs, 4 runways have LIRLs, and 24 runways do not have lights. Polacca Airport has non-standard lighting (NSTD) which has been identified as solar powered runway edge lighting.

Airport Reference Code Summary

The FAA classifies airports by an ARC which subsequently drives the overall planning and design criteria for airports. Establishing an ARC starts with selecting a "critical aircraft" or "design aircraft" that uses, or is expected to use, the runway. That design aircraft determines the Runway Design Code (RDC) that reflects the design standard for the runway. The ARC signifies the airport's highest RDC, minus the third (visibility) component of the RDC.[3] An airport's critical aircraft can reflect either a specific aircraft model or a grouping of aircraft with similar characteristics considered collectively.

The ARC classification system is based on groupings of aircraft types relative to their operating performance and geometric characteristics. It is comprised of an alpha-numeric identifier representing the Aircraft Approach Category (AAC) and Airplane Design Group (ADG). The AAC reflects the approach speed of the aircraft, and the ADG reflects the aircraft's wingspan and tail height. The classifications are summarized in **Table 3**. It should be noted that both airports and aircraft can be referred to by these characteristics.

[3] FAA AC 150/5300-13A, Change 1, *Airport Design*

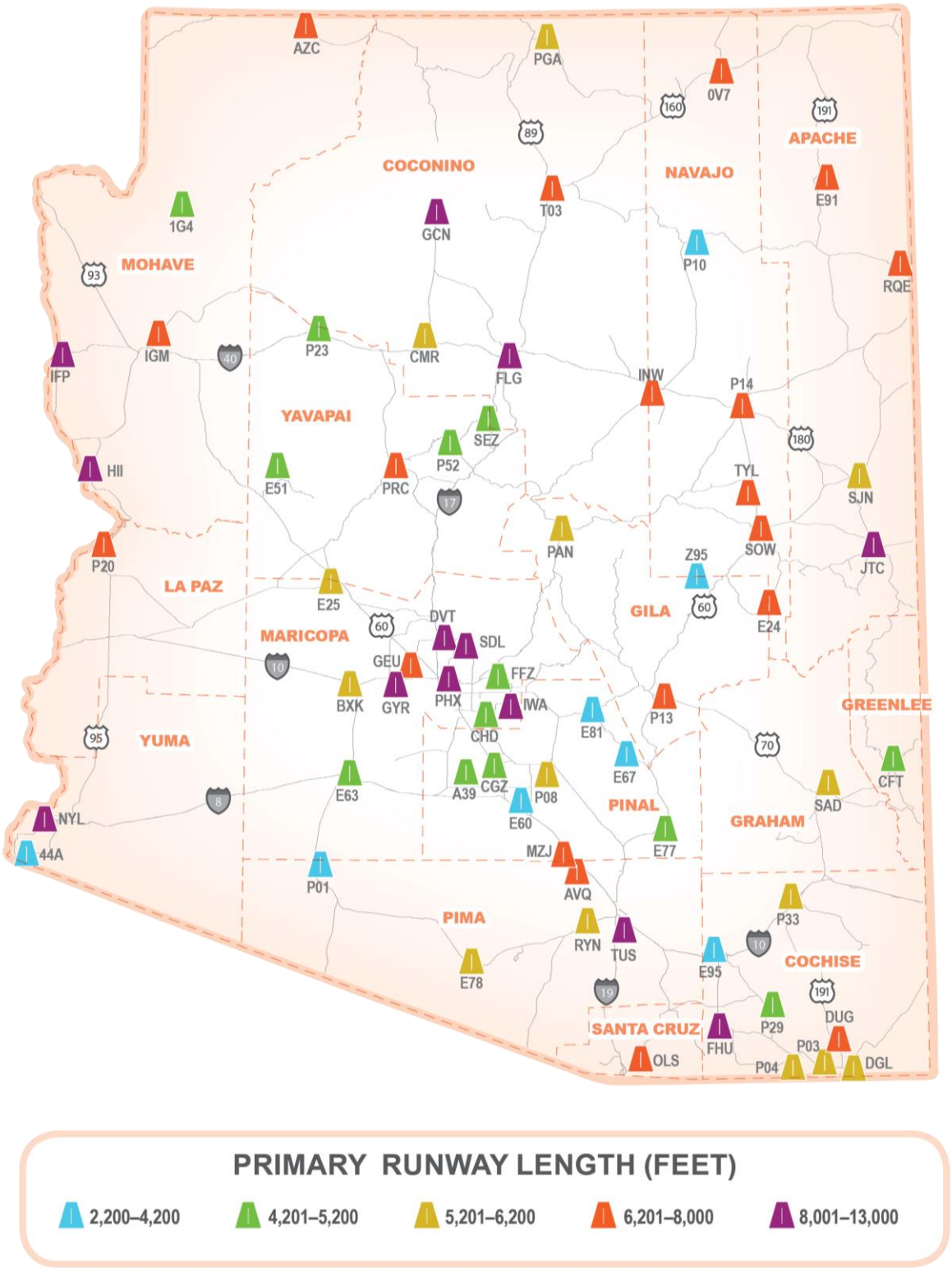
Table 3. Airport Reference Code Summary

Aircraft Approach Category		Airplane Design Group		
Category	Approach Speed	Group	Wing Span (ft.)	Tail Height (ft.)
A	Less than 91	**I**	Less than 49	Less than 20
B	91 to 120	**II**	49 to 78	21 to 29
C	121 to 140	**III**	79 to 117	30 to 44
D	141 to 165	**IV**	118 to 170	45 to 59
E	166 or Greater	**V**	171 to 213	60 to 65
		VI	214 up to but less than 262	66 up to but less than 80

Source: FAA AC 150/5300-13A, Change 1

Aircraft with approach speeds included in categories A and B are typically smaller piston-engine aircraft, whereas C, D, and E are normally larger turboprop or turbine powered aircraft. Similarly, the wingspan and tail height of small, piston-engine aircraft normally correspond to design group I. Typical aircraft in design group II include a Beechcraft King Air, Cessna Citation, or smaller Gulfstream business jet. Design group III includes larger corporate jets such as Gulfstream G500/550 and air carrier aircraft such as the DeHavilland Dash-8 and Boeing B-737. Design groups IV and V represent larger narrow-body and wide-body air carrier aircraft such as Boeing B-757 and B-747, respectively. Group VI includes the largest of aircraft, such as an Airbus A-380 or a C-5 military transport aircraft.

It should be noted that ARC does not prohibit larger aircraft from landing at an airport, nor does it mean that safety is being compromised if aircraft of greater ARCs are operating at an airport. **Figure 2** depicts airports within the system by primary runway length according to data obtained from the airports during the SASP Update inventory process. **Table 4** identifies the airports by runway length and ARC. It should be noted that Yuma International Airport (NYL) and Sierra Vista Municipal Airport (FHU) have the most demanding ARCs in the system, at E-VI and E-V, respectively. Both airports are joint use facilities with a high volume of military operations. Military fixed-wing aircraft typically have greater approach speeds, longer wingspans, and higher tail heights than most GA aircraft, requiring longer runways and greater runway and taxiway separation.



Source: Airport Inventory and Data Survey 2017

Figure 2. Primary Runway Length

Table 4. Runway Lengths and ARCs

Associated City	Airport Name	FAA ID	Primary Runway Length (ft.)	ARC
Commercial Service				
Bullhead City	Laughlin/Bullhead City International	IFP	8,500	C-III
Flagstaff	Flagstaff Pulliam	FLG	8,800	C-III
Grand Canyon	Grand Canyon National Park	GCN	8,999	C-III
Page	Page Municipal	PGA	5,950	B-II
Peach Springs	Grand Canyon West	1G4	5,000	B-II
Phoenix	Phoenix Sky Harbor International	PHX	11,489	D-V
Phoenix	Phoenix-Mesa Gateway	IWA	10,201	D-V
Prescott	Ernest A. Love Field	PRC	7,619	C-III
Show Low	Show Low Regional	SOW	7,200	C-II
Tucson	Tucson International	TUS	10,966	D-IV
Yuma	Yuma International	NYL	13,000	E-VI
General Aviation				
Ajo	Eric Marcus Municipal	P01	3,800	B-I
Bagdad	Bagdad	E51	4,552	B-I
Benson	Benson Municipal	E95	4,002	B-II
Bisbee	Bisbee Municipal	P04	5,929	B-II
Buckeye	Buckeye Municipal	BXK	5,500	B-II
Casa Grande	Casa Grande Municipal	CGZ	5,200	B-II
Chandler	Chandler Municipal	CHD	4,870	B-II
Chinle	Chinle Municipal	E91	6,902	B-I
Cibecue	Cibecue	Z95	4,200	A-I
Clifton	Greenlee County	CFT	4,978	B-II
Colorado City	Colorado City Municipal	AZC	6,300	B-II
Coolidge	Coolidge Municipal	P08	5,564	C-IV
Cottonwood	Cottonwood Municipal	P52	4,252	B-I
Douglas	Bisbee-Douglas International	DUG	6,430	C-I
Douglas	Cochise College	P03	5,551	B-I
Douglas	Douglas Municipal	DGL	5,760	B-II
Eloy	Eloy Municipal	E60	3,901	A-II
Gila Bend	Gila Bend Municipal	E63	5,200	B-II
Glendale	Glendale Municipal	GEU	7,150	B-II
Globe	San Carlos Apache	P13	6,500	C-II
Goodyear	Phoenix Goodyear	GYR	8,501	D-IV
Holbrook	Holbrook Municipal	P14	6,698	B-I
Kayenta	Kayenta	0V7	7,101	B-II
Kearny	Kearny	E67	3,400	A-I
Kingman	Kingman	IGM	6,825	C-III
Lake Havasu City	Lake Havasu City	HII	8,001	C-III
Marana	Marana Regional	AVQ	6,901	C-II
Marana	Pinal Airpark	MZJ	6,849	D-V
Maricopa	Ak-Chin Regional	A39	4,751	B-I

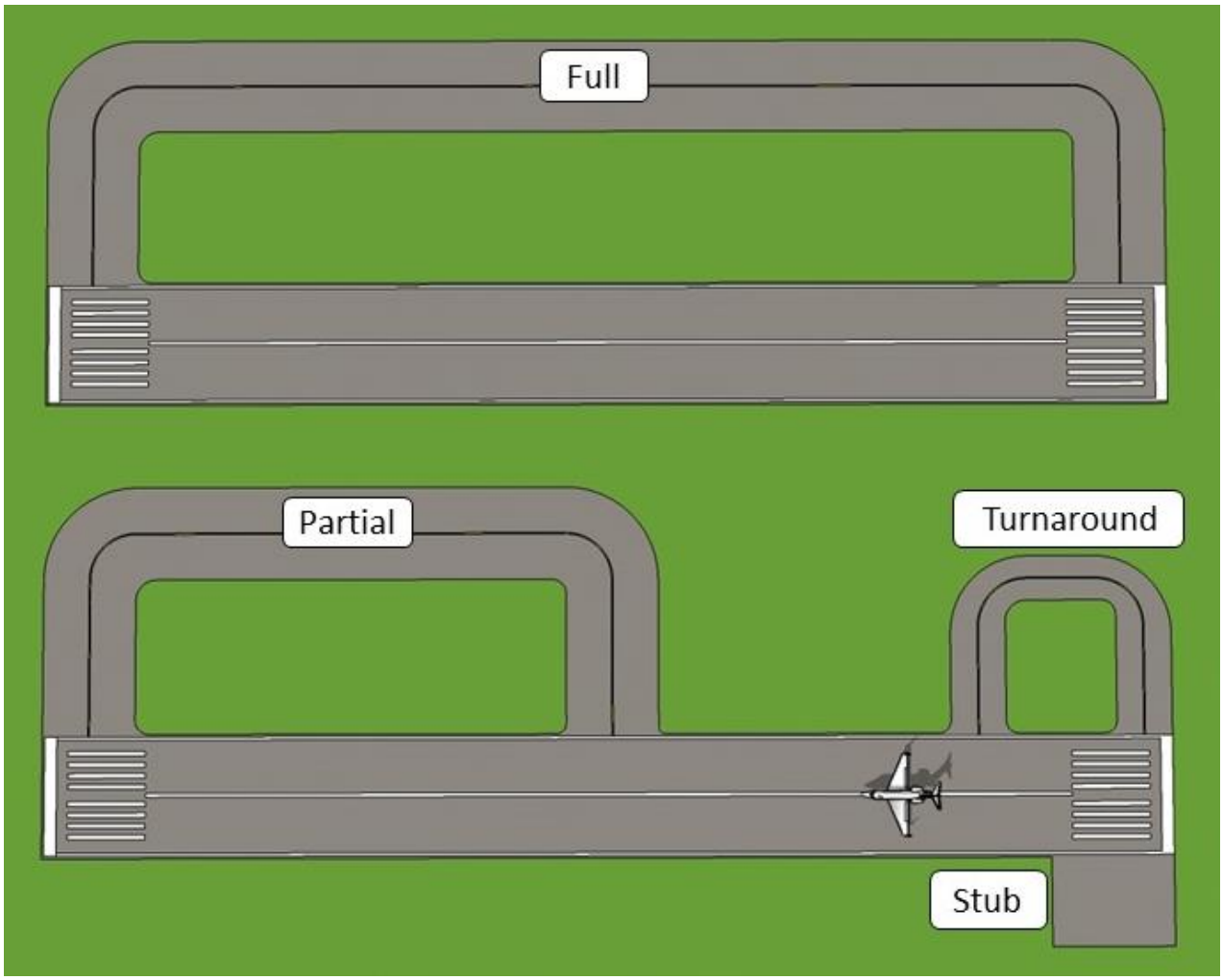
Associated City	Airport Name	FAA ID	Primary Runway Length (ft.)	ARC
Mesa	Falcon Field	FFZ	5,101	B-II
Nogales	Nogales	OLS	7,199	C-II
Parker	Avi Suquilla	P20	6,250	C-II
Payson	Payson	PAN	5,504	B-I
Phoenix	Phoenix Deer Valley	DVT	8,196	C-II
Polacca	Polacca	P10	4,200	A-I
Safford	Safford Regional	SAD	6,006	B-II
San Luis	Rolle Airfield	44A	2,800	B-I
San Manuel	San Manuel	E77	4,207	B-I
Scottsdale	Scottsdale	SDL	8,249	B-II
Sedona	Sedona	SEZ	5,132	B-II
Seligman	Seligman	P23	4,800	B-I
Sells	Sells	E78	5,830	A-I
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	FHU	12,001	E-V
Springerville	Springerville Municipal	JTC	8,422	B-II
St. Johns	St. Johns Industrial Air Park	SJN	5,322	B-II
Superior	Superior	E81	3,250	B-II
Taylor	Taylor	TYL	7,001	B-II
Tombstone	Tombstone Municipal	P29	4,430	A-I
Tuba City	Tuba City	T03	6,230	B-II
Tucson	Ryan Field	RYN	5,500	B-II
Whiteriver	Whiteriver	E24	6,350	B-II
Wickenburg	Wickenburg Municipal	E25	6,101	B-II
Willcox	Cochise County	P33	6,095	B-II
Williams	H.A. Clark Memorial Field	CMR	6,000	B-II
Window Rock	Window Rock	RQE	7,000	B-II
Winslow	Winslow-Lindbergh Regional	INW	7,100	C-II

Source: Airport Inventory and Data Survey 2017

Taxiway Summary

As depicted in **Figure 3,** there are four types of taxiways recognized by the FAA:

1. Full-length parallel
2. Partial-parallel
3. Stub
4. Turnaround



Source: Kimley-Horn 2017

Figure 3. FAA Recognized Taxiway Types

The Arizona airport system comprises 65 full-length parallel, 20 partial-parallel, seven stub, and 17 turnaround taxiways which accounts for airports with multiple taxiways. The taxiway breakdown by airport is depicted in **Table 5**.

Visual Aids Summary

A Visual Glide Slope Indicator (VGSI) is a system of lights on the runway end that provides vertical guidance to the pilot on final approach to help determine if the aircraft is approaching too high, too low, or on course. VGSIs, such as Precision Approach Path Indicators (PAPIs), Visual Approach Slope Indicators (VASIs), and Runway End Identifier Lights (REILs), provide the basic means to transition from instrument flight to visual flight for landing. Operational requirements dictate the sophistication and configuration of the approach light system for a particular runway.

1. **PAPI.** Provide vertical-approach slope guidance to aircraft during approach to landing. PAPIs consist of a single row of either two or four lights normally installed on the left side of the runway. PAPIs have an effective visual range of approximately five miles during the day and up to 20 miles at night. PAPIs radiate a directional pattern of high-intensity red and white focused light beams that indicate whether the pilot is "on-path" if the pilot sees an equal number of white lights and red lights, "above path" if the pilot sees more white than red lights, or "below path" if the pilot sees more red than white lights. The four types of PAPIs include:

- **P2L.** Two-light PAPI on left side of runway
- **P2R.** Two-light PAPI on right side of runway
- **P4L.** Four-light PAPI on left side of runway
- **P4R.** Four-light PAPI on right side of runway

2. **VASI.** Provide visual vertical approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high-intensity red and white focused light beams. These beams indicate if the pilot is "on path" (pilot sees red/white), "above path" (pilot sees white/white), and "below path" (pilot sees red/red). Some airports serving large aircraft have three-bar VASIs that provide two visual glide paths to the same runway. The two types of VASIs include:

- **V2L.** Two-box VASI on left side of runway
- **V4L.** Four-box VASI on left side of runway

3. **REIL.** Provide rapid and positive identification of the end of the runway. The system consists of two synchronized, unidirectional flashing lights. The lights are positioned on each corner of the runway landing threshold facing the approach area and aimed at a 10 to 15-degree angle. The REIL provides three intensity settings with an approximate range of three miles in the daylight and twenty miles at night.

Table 5 summarizes the runway orientation, runway dimensions, ARC, type of runway lighting, availability of VGSIs and REILs, and taxiway type in the Arizona airport system by FAA NPIAS category.

Table 5. Existing Airside Facilities

Associated City	Airport	Runway Orientation	Length (ft.)	Width (ft.)	ARC	Runway Lighting	VGSI	REIL (Y/N*)	Taxiway Type
Commercial Service									
Bullhead City	Laughlin/Bullhead City International	16/34	8,500	150	C-III	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Flagstaff	Flagstaff Pulliam	03/21	8,800	150	C-III	HIRL	PAPI/PAPI	N/N	Full Parallel
Grand Canyon	Grand Canyon National Park	03/21	8,999	150	C-III	MIRL	None/VASI	N/Y	Full Parallel
Page	Page Municipal	07/25 15/33	2,201 5,950	75 150	B-II	None MIRL	None VASI/VASI	N/N Y/Y	None Full Parallel
Peach Springs	Grand Canyon West	17/35	5,000	75	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Phoenix	Phoenix Sky Harbor International	08/26 7L/25R 7R/25L	11,489 10,300 7,800	150 150 150	D-V	HIRL HIRL HIRL	PAPI/PAPI PAPI/PAPI PAPI/PAPI	N/Y N/N N/N	Full Parallel Full Parallel Full Parallel
Phoenix	Phoenix-Mesa Gateway	12C/30C 12L/30R 12R/30L	10,201 9,300 10,401	150 150 150	D-V	HIRL HIRL MIRL	PAPI/PAPI PAPI/PAPI PAPI/PAPI	N/N Y/Y N/N	None Partial Parallel Full Parallel
Prescott	Ernest A. Love Field	03R/21L 12/30 03L/21R	7,619 4,408 4,846	150 75 60	C-III	MIRL MIRL MIRL	PAPI/PAPI PAPI/PAPI PAPI/PAPI	Y/N Y/Y N/N	Full Parallel Partial Parallel Full Parallel
Show Low	Show Low Regional	03/21 06/24	3,938 7,200	60 100	C-II	None MIRL	None/None PAPI/PAPI	N/N Y/Y	Partial Parallel Full Parallel
Tucson	Tucson International	11L/29R 11R/29L 03/21	10,966 8,408 7,000	150 75 150	D-IV	HIRL MIRL MIRL	PAPI/PAPI PAPI/None None/PAPI	N/Y N/Y N/Y	Full Parallel None None
Yuma	Yuma International	03L/21R 03R/21L 08/26 17/35	13,000 9,240 6,146 5,710	200 150 150 150	E-VI	HIRL HIRL HIRL HIRL	PAPI/PAPI PAPI/PAPI None/None VASI/None	N/N N/N N/N N/Y	Full Parallel Full Parallel Full Parallel Full Parallel
General Aviation									
Ajo	Eric Marcus Municipal	12/30	3,800	60	B-I	MIRL	PAPI/PAPI	N/N	None
Bagdad	Bagdad	05/23	4,552	60	B-I	None	None/None	N/N	None
Benson	Benson Municipal	10/28	4,002	75	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Bisbee	Bisbee Municipal	17/35 02/20	5,929 2,650	60 100	B-II	MIRL None	PAPI/PAPI None	N/N N/N	Full Parallel None

Associated City	Airport	Runway Orientation	Length (ft.)	Width (ft.)	ARC	Runway Lighting	VGSI	REIL (Y/N*)	Taxiway Type
Buckeye	Buckeye Municipal	17/35	5,500	75	B-II	MIRL	PAPI/PAPI	N/N	Full Parallel
Casa Grande	Casa Grande Municipal	05/23	5,200	100	B-II	MIRL	PAPI/PAPI	N/N	Full Parallel
Chandler	Chandler Municipal	04L/22R 04R/22L	4,401 4,870	75 75	B-II	MIRL MIRL	PAPI/PAPI PAPI/PAPI	N/N Y/Y	Full Parallel Full Parallel
Chinle	Chinle Municipal	18/36	6,902	60	B-I	MIRL	PAPI/PAPI	N/N	Turnaround
Cibecue	Cibecue	07/25	4,200	100	A-I	None	None/None	N/N	None
Clifton	Greenlee County	07/25	4,978	75	B-II	MIRL	PAPI/PAPI	N/N	Full Parallel
Colorado City	Colorado City Municipal	11/29 02/20	6,300 5,100	75 60	B-II	MIRL MIRL	PAPI/PAPI PAPI/None	Y/Y N/N	Stub Partial Parallel
Coolidge	Coolidge Municipal	05/23 17/35	5,564 3,873	150 75	C-IV	MIRL MIRL	PAPI/PAPI None/None	N/N N/N	Partial Parallel Partial Parallel
Cottonwood	Cottonwood Municipal	14/32	4,252	75	B-I	MIRL	PAPI/PAPI	Y/Y	Partial Parallel
Douglas	Bisbee-Douglas International	08/26 17/35	4,966 6,430	60 100	C-I	MIRL None	None/None VASI/None	N/N N/N	None None
Douglas	Douglas Municipal	03/21	5,760	75	B-II	MIRL	PAPI/PAPI	N/N	Partial Parallel
Douglas	Cochise College	05/23	5,551	60	B-I	MIRL	PAPI/PAPI	N/N	Full Parallel
Eloy	Eloy Municipal	02/20	3,901	75	A-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Gila Bend	Gila Bend Municipal	04/22	5,200	75	B-II	MIRL	PAPI/PAPI	N/N	Full Parallel
Glendale	Glendale Municipal	01/19	7,150	100	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Globe	San Carlos Apache	09/27	6,500	100	C-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Goodyear	Phoenix Goodyear	03/21	8,501	150	D-IV	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Holbrook	Holbrook Municipal	03/21 11/29	6,698 3,202	75 120	B-I	MIRL MIRL	PAPI/PAPI None/None	Y/Y N/N	Partial Parallel None
Kayenta	Kayenta	05/23	7,101	75	B-II	MIRL	PAPI/PAPI	N/N	Turnaround
Kearny	Kearny	08/26	3,400	60	A-I	None	None/None	N/N	Turnaround
Kingman	Kingman	03/21 17/35	6,825 6,725	150 75	C-III	MIRL MIRL	PAPI/PAPI PAPI/PAPI	Y/Y N/N	Full Parallel Partial Parallel
Lake Havasu City	Lake Havasu City	14/32	8,001	100	C-III	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Marana	Marana Regional	03/21 12/30	3,892 6,901	75 100	C-II	MIRL MIRL	PAPI/PAPI PAPI/PAPI	N/N Y/Y	Full Parallel Full Parallel
Marana	Pinal Airpark	12/30	6,849	150	D-V	MIRL	None/None	N/N	Full Parallel
Maricopa	Ak-Chin Regional	04/22	4,751	50	B-I	MIRL	None/None	N/N	Full Parallel

Associated City	Airport	Runway Orientation	Length (ft.)	Width (ft.)	ARC	Runway Lighting	VGSI	REIL (Y/N*)	Taxiway Type
Mesa	Falcon Field	4R/22L 4L/22R	5,101 3,799	100 75	B-II	MIRL MIRL	PAPI/PAPI PAPI/PAPI	Y/Y Y/Y	Full Parallel Full Parallel
Nogales	Nogales	3/21	7,199	100	C-II	MIRL	PAPI/PAPI	N/N	Full Parallel
Parker	Avi Suquilla	01/19	6,250	100	C-II	MIRL	PAPI/PAPI	N/N	Full Parallel
Payson	Payson	06/24	5,504	75	B-I	MIRL	None/PAPI	N/N	Full Parallel
Phoenix	Phoenix Deer Valley	7L/25R 7R/25L	4,500 8,196	75 100	C-II	MIRL MIRL	PAPI/PAPI PAPI/PAPI	Y/Y Y/Y	Full Parallel Full Parallel
Polacca	Polacca	04/22	4,200	50	C-III	NSTD	None/None	N/N	Stub
Safford	Safford Regional	12/30 08/26	6,006 4,799	100 75	B-II	MIRL MIRL	PAPI/PAPI PAPI/PAPI	N/N N/N	Full Parallel Full Parallel
San Luis	Rolle Airfield	17/35	2,800	60	B-I	None	None/None	N/N	Stub
San Manuel	San Manuel	11/29	4,207	75	B-II	MIRL	PAPI/PAPI	N/N	Partial Parallel
Scottsdale	Scottsdale	03/21	8,249	100	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Sedona	Sedona	03/21	5,132	100	B-II	MIRL	PAPI/PAPI	Y/Y	Partial Parallel
Seligman	Seligman	04/22	4,800	75	B-I	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Sells	Sells	04/22	5,830	60	A-I	None	None/None	N/N	Stub
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	08/26 12/30 03/21	12,001 5,366 3,032	150 100 75	E-V	HIRL MIRL MIRL	PAPI/PAPI PAPI/PAPI None/None	N/N N/N N/N	Full Parallel Partial Parallel Partial Parallel
Springerville	Springerville Municipal	03/21 11/29	8,422 4,603	75 60	B-II	MIRL MIRL	PAPI/PAPI PAPI/None	N/N N/N	Full Parallel Partial Parallel
St. Johns	St. Johns Industrial Air Park	03/21 14/32	3,400 5,322	60 75	B-II	MIRL MIRL	None/None PAPI/PAPI	N/N Y/Y	Full Parallel Full Parallel
Superior	Superior	04/22	3,250	75	B-II	None	None/None	N/N	Full Parallel
Taylor	Taylor	03/21	7,001	75	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Tombstone	Tombstone Municipal	06/24	4,430	60	A-I	None	None/None	N/N	None
Tuba City	Tuba City	15/33	6,230	75	B-II	MIRL	VASI/VASI	N/N	Turnaround
Tucson	Ryan Field	6R/24L 6L/24R 15/33	5,500 4,900 4,000	75 75 75	B-II	MIRL None None	None/VASI None/None None/None	Y/N N/N N/N	Full Parallel Full Parallel Partial Parallel
Whiteriver	Whiteriver	01/19	6,350	75	B-II	MIRL	PAPI/None	Y/Y	Full Parallel
Wickenburg	Wickenburg Municipal	05/23	6,101	75	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Willcox	Cochise County	03/21	6,095	75	B-II	MIRL	None/None	N/N	Partial Parallel

Associated City	Airport	Runway Orientation	Length (ft.)	Width (ft.)	ARC	Runway Lighting	VGSI	REIL (Y/N*)	Taxiway Type
Williams	H.A. Clark Memorial Field	18/36	6,000	100	B-II	MIRL	PAPI/PAPI	Y/Y	Full Parallel
Window Rock	Window Rock	02/20	7,000	75	B-II	MIRL	PAPI/None	Y/N	Turnaround
Winslow	Winslow-Lindbergh Regional	11/29 04/22	7,100 7,499	150 100	C-II	MIRL MIRL	None/None VASI/VASI	N/Y Y/N	Full Parallel Full Parallel

Note: Y=Yes, N=No

Source: Airport Inventory and Data Survey 2017

Existing Landside Facilities

Existing landside facilities examined in the 2018 SASP Update include aircraft storage facilities such as the number of hangars and available tie-down spaces, type(s) of fuel sold, and the presence of a terminal building.

Aircraft Parking/Storage Summary

Aircraft parking and storage facilities were analyzed to provide a measure of landside capacity within the Arizona system of airports. A total of 4,166 hangars were identified as part of the inventory effort. Of these, 2,792 were T-hangar units, 940 were conventional hangars, and 434 were identified as portable/other.

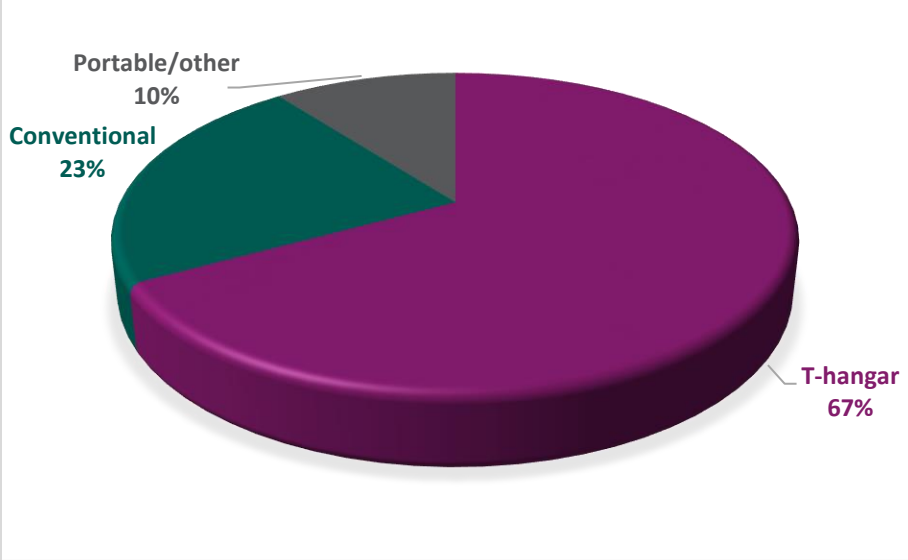


Figure 4. Aircraft Parking/Storage

Additionally, the capacity of apron tie-down spaces was measured at airports in the system. Due to the high heat and sun exposure in Arizona, tie-down spaces were distinguished between covered and uncovered. A total of 4,198 tie-downs were identified at airports in the system, of which 702 tie-downs were covered and 3,496 were uncovered.

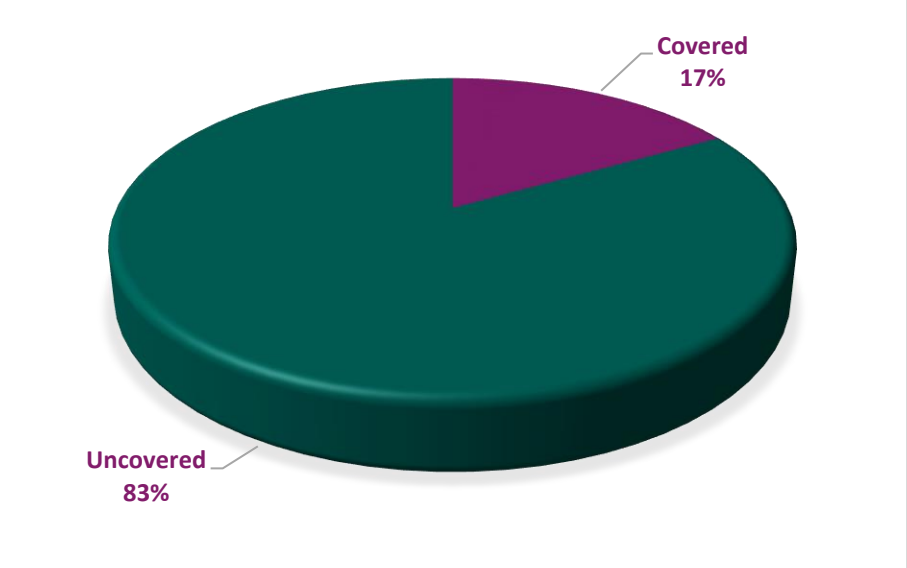


Figure 5. Aircraft Tie-Downs

Similar to the 2008 SASP, airports serving as relievers in the major metropolitan areas were determined to provide the most hangars when compared to other airports in the system. There are eight reliever airports in the system that provide 2,705 hangars, while the system's 34 GA airports provide 775 hangars. Consistent with the 2008 SASP, Phoenix Deer Valley Airport has the most hangars in the system with 783—more than all other non-reliever GA airports combined.

Fuel Summary

The availability of fuel at airports, and most specifically GA airports, can be one of the most influential factors driving activity at airports. Fuel sales at GA airports are a substantial component of airport revenues. A total of 54 Arizona airports offer some type of fuel, AvGas, Jet A, or both fuels. Forty-nine airports offer AvGas, 44 airports offer Jet A, and 39 airports offered both AvGas and Jet A. Of the 54 total airports with fuel, 44 are GA airports. Additionally, Phoenix-Mesa Gateway is the only airport that offers automobile gas (Mogas), which can be used in some piston aircraft.

Terminal Summary

For this study, a terminal was accounted for if the airport offered any sort of terminal building for GA users or commercial passengers. Some terminal buildings included minimal services while larger GA, reliever, and commercial service airports offered pilot's lounges, phone services, and other amenities. Approximately 62 airports in the system have terminal buildings.

Table 6 details existing landside facilities including total hangars, tie-down apron capacity, fuel availability, and the presence of a terminal building at airports in the Arizona system.

Table 6. Existing Landside Facilities

Associated City	Airport	Hangars (Number)	Tie-downs (Number)	Fuel (Type)	Terminal Building (Y/N)
		Commercial Service			
Bullhead City	Laughlin/Bullhead City International	32	55	AvGas; Jet A	Y
Flagstaff	Flagstaff Pulliam	61	60	AvGas; Jet A	Y
Grand Canyon	Grand Canyon National Park	1	96	AvGas; Jet A	Y
Page	Page Municipal	68	104	AvGas; Jet A	Y
Peach Springs	Grand Canyon West	0	42	Jet A	Y
Phoenix	Phoenix Sky Harbor International	52	42	AvGas; Jet A	Y
Phoenix	Phoenix-Mesa Gateway	57	115	AvGas; Jet A; Mogas	Y
Prescott	Ernest A. Love Field	254	222	AvGas; Jet A	Y
Show Low	Show Low Regional	39	100	AvGas; Jet A	Y
Tucson	Tucson International*	Unknown	85	AvGas; Jet A	Y
Yuma	Yuma International	60	144	AvGas; Jet A	Y
		General Aviation			
Ajo	Eric Marcus Municipal	3	9	None	Y
Bagdad	Bagdad	1	12	None	N
Benson	Benson Municipal	26	65	AvGas; Jet A	Y
Bisbee	Bisbee Municipal	3	35	AvGas	Y
Buckeye	Buckeye Municipal	46	59	AvGas	Y
Casa Grande	Casa Grande Municipal	52	18	AvGas; Jet A	Y
Chandler	Chandler Municipal	247	286	AvGas; Jet A	Y
Chinle	Chinle Municipal	0	3	Jet A	N
Cibecue	Cibecue	0	0	None	N
Clifton	Greenlee County	3	20	None	Y
Colorado City	Colorado City Municipal	10	17	AvGas; Jet A	Y
Coolidge	Coolidge Municipal	25	30	AvGas; Jet A	Y
Cottonwood	Cottonwood Municipal	16	82	AvGas	Y
Douglas	Bisbee-Douglas International	6	4	AvGas; Jet A	Y
Douglas	Cochise College	1	35	AvGas	Y
Douglas	Douglas Municipal	18	45	AvGas; Jet A	Y
Eloy	Eloy Municipal	17	27	AvGas; Jet A	Y
Gila Bend	Gila Bend Municipal	38	56	AvGas	Y
Glendale	Glendale Municipal	400	0	AvGas; Jet A	Y
Globe	San Carlos Apache	8	40	AvGas	N
Goodyear	Phoenix Goodyear	127	93	AvGas; Jet A	Y
Holbrook	Holbrook Municipal	4	5	AvGas	Y

Associated City	Airport	Hangars (Number)	Tie-downs (Number)	Fuel (Type)	Terminal Building (Y/N)
Kayenta	Kayenta	0	17	Jet A	Y
Kearny	Kearny	5	7	None	Y
Kingman	Kingman	62	160	AvGas; Jet A	Y
Lake Havasu City	Lake Havasu City	107	185	AvGas; Jet A	Y
Marana	Marana Regional	238	131	AvGas; Jet A	Y
Marana	Pinal Airpark	3	0	AvGas; Jet A	Y
Maricopa	Ak-Chin Regional	1	12	AvGas	Y
Mesa	Falcon Field	507	436	AvGas; Jet A	Y
Nogales	Nogales	21	31	AvGas; Jet A	Y
Parker	Avi Suquilla	21	78	AvGas; Jet A	Y
Payson	Payson	19	53	AvGas; Jet A	Y
Phoenix	Phoenix Deer Valley	783	366	AvGas; Jet A	Y
Polacca	Polacca	0	2	None	N
Safford	Safford Regional	26	32	AvGas; Jet A	Y
San Luis	Rolle Airfield	1	4	None	N
San Manuel	San Manuel	28	20	AvGas	Y
Scottsdale	Scottsdale	152	227	AvGas; Jet A	Y
Sedona	Sedona	85	95	AvGas; Jet A	Y
Seligman	Seligman	0	14	None	Y
Sells	Sells	0	0	Jet A	N
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	62	28	AvGas; Jet A	Y
Springerville	Springerville Municipal	12	41	AvGas; Jet A	Y
St. Johns	St. Johns Industrial Air Park	9	20	AvGas; Jet A	Y
Superior	Superior	0	0	None	N
Taylor	Taylor	13	24	None	Y
Tombstone	Tombstone Municipal	2	4	None	N
Tuba City	Tuba City	0	8	None	N
Tucson	Ryan Field	251	93	AvGas; Jet A	Y
Whiteriver	Whiteriver	0	17	None	N
Wickenburg	Wickenburg Municipal	53	38	AvGas; Jet A	Y
Willcox	Cochise County	15	22	AvGas; Jet A	Y
Williams	H.A. Clark Memorial Field	12	0	AvGas	Y
Window Rock	Window Rock	2	12	Jet A	Y
Winslow	Winslow-Lindbergh Regional	1	15	AvGas; Jet A	Y

Note: Tucson International Airport reports total hangars in square footage

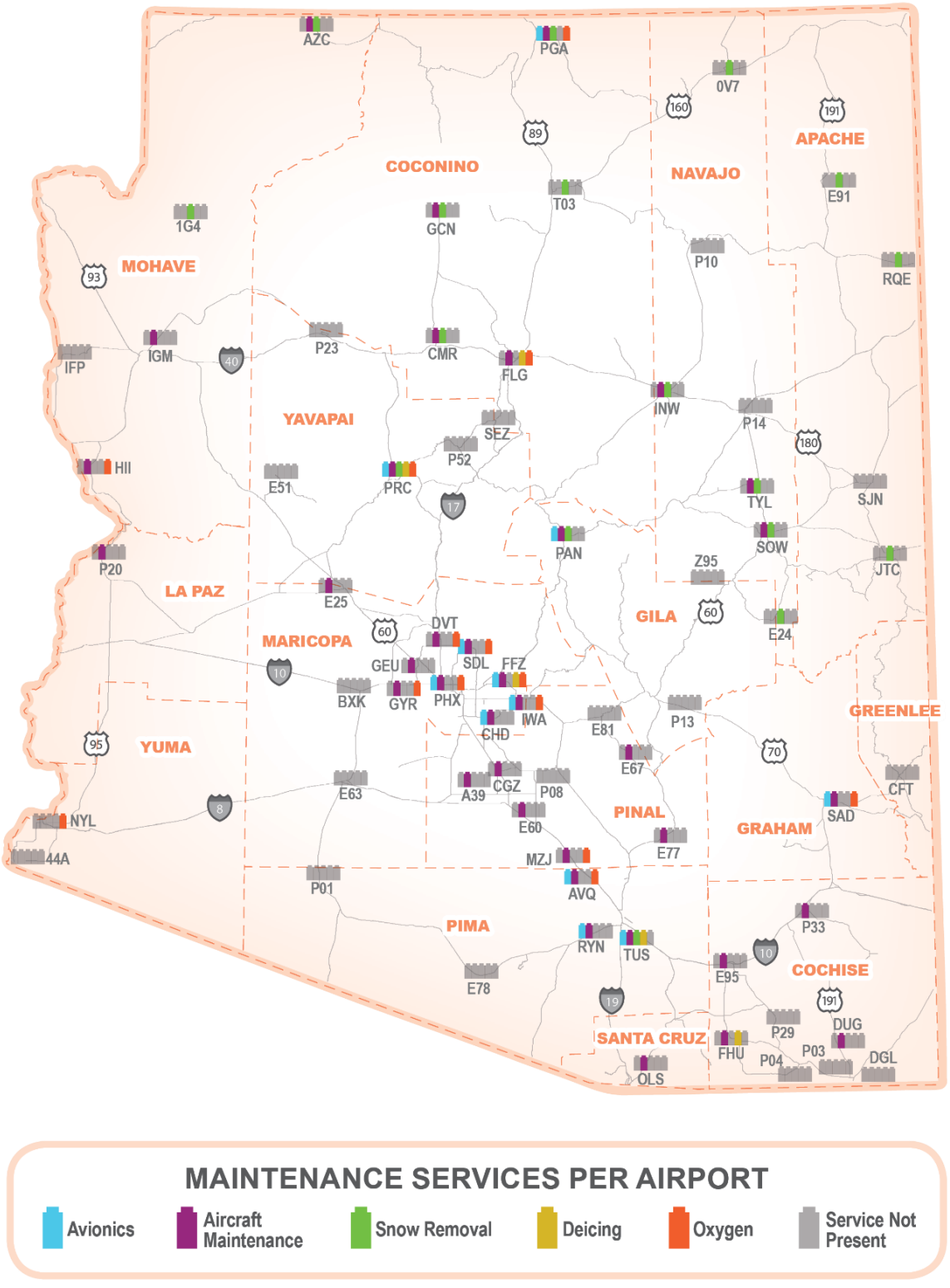
Source: Airport Inventory and Data Survey 2017

EXISTING SERVICES

Similar to the types of facilities, services provided at airports typically vary depending on the role within the system. The following services were identified through the airport inventory process:

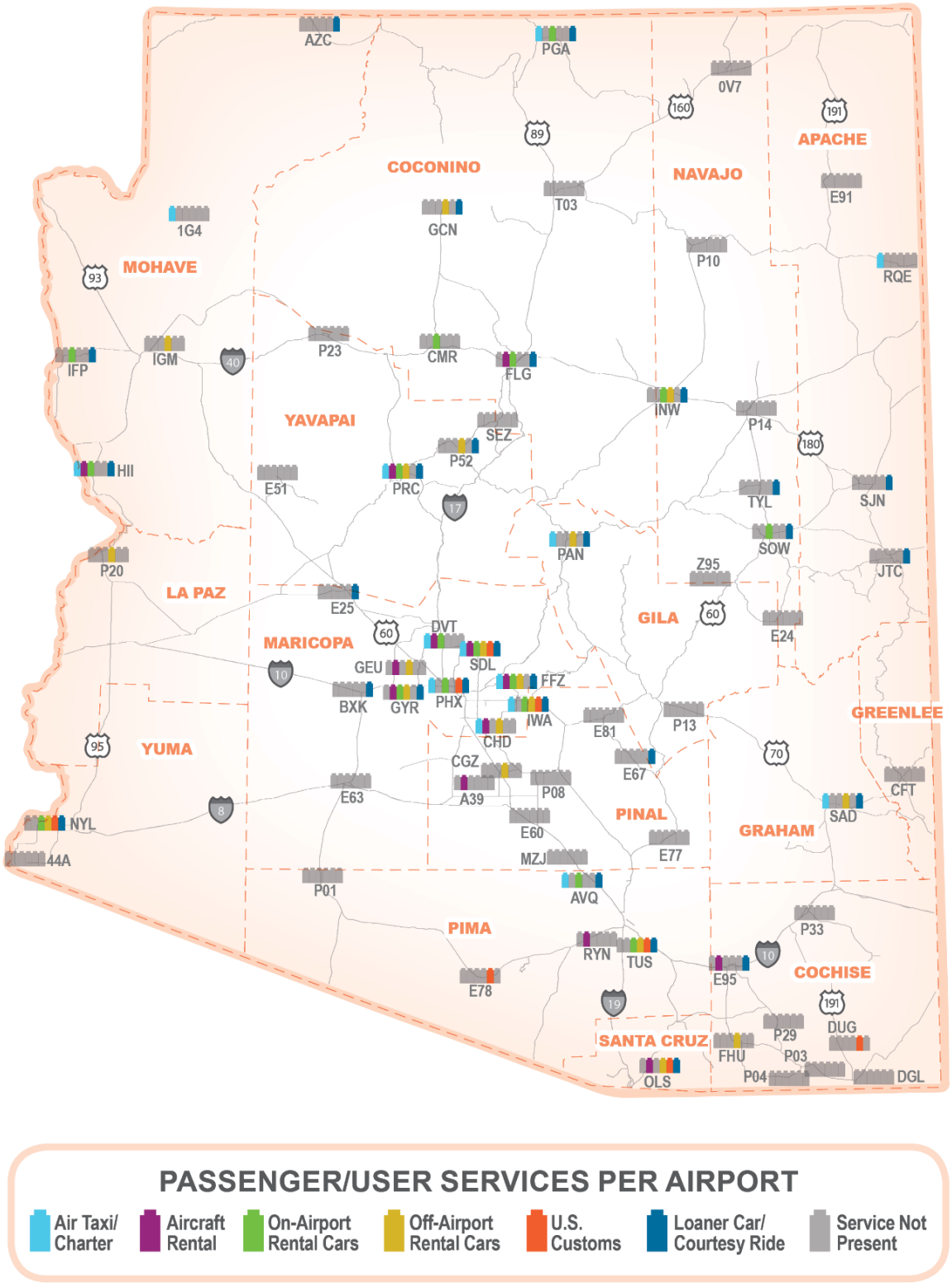
1. Air Taxi/Charter Service
2. Aircraft Rental
3. Avionics Sales & Service
4. Aircraft Maintenance
5. On-Airport Rental Cars
6. Off-Airport Rental Cars
7. U.S. Customs
8. Snow Removal
9. Deicing
10. Oxygen
11. Loaner Car
12. Courtesy Ride

Commercial service and reliever airports frequently provide a wide array of services such as fuel service, overnight aircraft storage rental, rental cars, pilot's lounge, and internet and phone service. The type of services provided at GA airports can be an indicator of the level of activity at the airport, as many of these services attract transient operators. **Figure 6** identifies services available at system airports in relation to the operation and maintenance of GA aircraft. **Figure 7** identifies services available for GA and commercial aircraft passengers at system airports.



Source: Airport Inventory and Data Survey 2017

Figure 6. Maintenance Services Per Airport



Source: Airport Inventory and Data Survey 2017

Figure 7. Passenger/User Services Per Airport

AIRPORT ACTIVITY

One of the best ways to determine the level of activity at an airport is evaluate the number of based aircraft and annual operations at the facility. A based aircraft is generally defined as an aircraft that is stored at an airport for the majority of the year. An aircraft operation represents either a take-off or landing conducted by an aircraft. For example, a touch-and-go, which includes a take-off and landing, counts as two operations.

An accurate based aircraft recording can provide insight to the adequacy of aircraft storage and facility capacity at the airport. Similar to based aircraft, accurate annual aircraft operations data provide a detailed view of the airport's capacity and assists airport planners in determining future facility needs. It is important to note that accurate annual aircraft operations data are only available from airports that have an air traffic control tower. Untowered airports typically estimate the number of operations using different methods that do not always reflect the actual total number of annual operations.

A standard practice for airport management is to conduct quarterly to annual based aircraft inventory counts. ADOT requires airports to provide quarterly based aircraft reports for purposes of aircraft registration and taxation; revenues from registration are used to fund the State Aviation Fund.

Updated based aircraft data were obtained from airport management during the inventory process. If updated based aircraft data were unavailable, data were obtained from the most recent ADOT ASM update. At towered airports, annual operations were derived from FAA Air Traffic Activity Data System (ATADS). At non-towered airports, annual aircraft operations data was derived from updated airport data reported as estimates by the airport manager. If the airport manager did not have the means to accurately report annual operations, recently updated ASM data were used. Generally, ASM data corresponded with FAA 5010 Master Record data.

Based Aircraft

For each system airport, the total number of based aircraft reported in 2016, by type, were identified. **Table 7** summarizes the based aircraft in the Arizona system by type. Since the 2008 SASP, the percentage of single-engine aircraft has decreased, while the percentages of jet and helicopter aircraft have increased. This trend is consistent with national averages per the *FAA Aerospace Forecast 2017-2037*.

Table 7. Statewide Based Aircraft by Type, 2016

Aircraft Type	Number of Aircraft	Percent of Total (%)
Single-engine	4,622	76.7%
Multi-engine	573	9.5%
Jet	332	5.5%
Helicopter	245	4.1%
Glider	15	0.2%
Ultralights/Other	76	1.3%
Military	166	2.8%
Total	**6,029**	**100.0%**

Source: Airport Inventory and Data Survey 2017

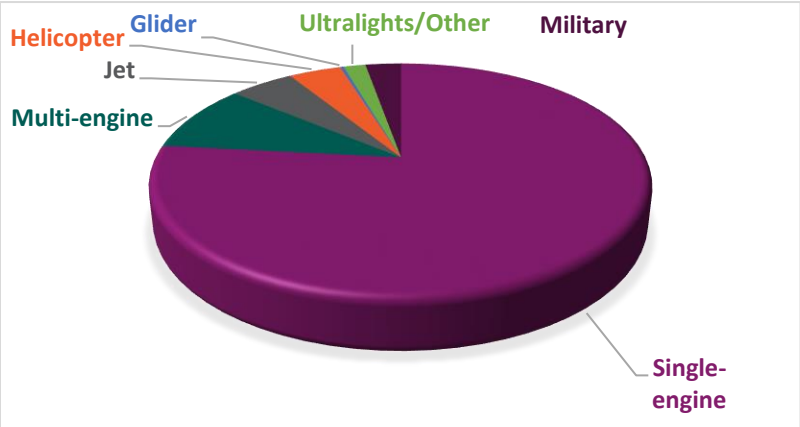


Figure 8. 2016 Based Aircraft

Table 8. Based Aircraft by Type, 2016

Associated City	Airport	Type of Based Aircraft (Number)							
		Single-engine	Multi-engine	Jet	Helicopter	Glider	Ultralight /Other	Military	Total
Commercial Service									
Bullhead City	Laughlin/Bullhead City Int'l	13	2	0	6	0	0	0	21
Flagstaff	Flagstaff Pulliam	113	15	3	4	3	0	1	139
Grand Canyon	Grand Canyon National Park	4	5	0	37	0	0	0	46
Page	Page Municipal	43	6	5	4	0	0	0	58
Peach Springs	Grand Canyon West	0	0	0	0	0	0	0	0
Phoenix	Phoenix Sky Harbor International	18	10	25	13	0	0	8	74
Phoenix	Phoenix-Mesa Gateway	75	16	25	1	0	0	0	117
Prescott	Ernest A. Love Field	256	23	3	37	0	0	0	319
Show Low	Show Low Regional	36	4	0	0	0	0	0	40
Tucson	Tucson International	163	18	26	7	0	0	72	286
Yuma	Yuma International	66	21	3	1	0	1	83	175
General Aviation									
Ajo	Eric Marcus Municipal	7	0	0	0	0	0	0	7
Bagdad	Bagdad	4	0	0	0	0	1	0	5
Benson	Benson Municipal	38	3	0	1	0	2	0	44
Bisbee	Bisbee Municipal	24	0	0	2	0	2	0	28
Buckeye	Buckeye Municipal	51	10	1	3	0	5	0	70
Casa Grande	Casa Grande Municipal	98	2	0	3	2	0	0	105
Chandler	Chandler Municipal	407	17	4	12	0	0	0	440
Chinle	Chinle Municipal	0	3	0	0	0	0	0	3
Cibecue	Cibecue	0	0	0	0	0	0	0	0
Clifton	Greenlee County	1	0	0	0	0	0	0	1
Colorado City	Colorado City Municipal	13	0	0	0	0	0	0	13
Coolidge	Coolidge Municipal	28	9	2	5	0	1	0	45
Cottonwood	Cottonwood Municipal	39	3	0	2	0	0	0	44
Douglas	Bisbee-Douglas International	4	1	0	0	0	0	0	5
Douglas	Cochise College	14	1	0	0	0	0	0	15

Associated City	Airport	Type of Based Aircraft (Number)							
		Single-engine	Multi-engine	Jet	Helicopter	Glider	Ultralight /Other	Military	Total
Douglas	Douglas Municipal	10	1	0	1	0	0	0	12
Eloy	Eloy Municipal	12	7	0	0	0	2	0	21
Gila Bend	Gila Bend Municipal	4	0	0	0	0	0	0	4
Glendale	Glendale Municipal	224	29	3	6	0	24	0	286
Globe	San Carlos Apache	10	1	2	0	0	0	0	13
Goodyear	Phoenix Goodyear	204	15	1	2	0	0	0	222
Holbrook	Holbrook Municipal	9	0	0	0	0	5	0	14
Kayenta	Kayenta	0	1	0	0	0	0	0	1
Kearny	Kearny	4	0	0	0	0	2	0	6
Kingman	Kingman	75	32	38	7	1	2	0	155
Lake Havasu City	Lake Havasu City	110	7	7	3	0	5	0	132
Marana	Marana Regional	218	15	6	1	1	7	0	248
Marana	Pinal Airpark	1	3	1	0	0	0	0	5
Maricopa	Ak-Chin Regional	17	1	0	0	0	12	0	30
Mesa	Falcon Field	583	86	4	24	0	0	0	697
Nogales	Nogales	23	3	0	0	0	0	0	26
Parker	Avi Suquilla	12	3	0	2	0	0	0	17
Payson	Payson	50	2	0	0	2	0	0	54
Phoenix	Phoenix Deer Valley	795	99	23	17	4	0	2	940
Polacca	Polacca	0	0	0	0	0	0	0	0
Safford	Safford Regional	30	26	0	1	0	0	0	57
San Luis	Rolle Airfield	0	0	0	0	0	0	0	0
San Manuel	San Manuel	31	4	1	1	0	0	0	37
Scottsdale	Scottsdale	223	43	145	31	0	0	0	442
Sedona	Sedona	54	2	1	3	1	0	0	61
Seligman	Seligman	2	0	0	0	0	0	0	2
Sells	Sells	0	0	0	0	0	0	0	0
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	44	4	0	3	0	0	0	51
Springerville	Springerville Municipal	11	1	0	1	0	0	0	13
St. Johns	St. Johns Industrial Air Park	14	0	0	0	0	1	0	15

Associated City	Airport	Type of Based Aircraft (Number)							
		Single-engine	Multi-engine	Jet	Helicopter	Glider	Ultralight /Other	Military	Total
Superior	Superior	0	0	0	0	0	0	0	0
Taylor	Taylor	14	0	0	0	0	1	0	15
Tombstone	Tombstone Municipal	2	0	0	0	0	2	0	4
Tuba City	Tuba City	0	0	0	0	0	0	0	0
Tucson	Ryan Field	246	9	2	0	0	0	0	257
Whiteriver	Whiteriver	0	0	0	0	0	0	0	0
Wickenburg	Wickenburg Municipal	37	5	1	1	1	1	0	46
Willcox	Cochise County	23	0	0	1	0	0	0	24
Williams	H.A. Clark Memorial Field	3	0	0	0	0	0	0	3
Window Rock	Window Rock	2	4	0	1	0	0	0	7
Winslow	Winslow-Lindbergh Regional	10	1	0	1	0	0	0	12

Source: Airport Inventory and Data Survey 2017

Aircraft Operations

Operations measure the activity of an airport and are a factor in determining the health of the system. **Table 9** summarizes estimates of Arizona system airports' operations by type for 2016.

Table 9. Statewide Operations by Type, 2016

Operation Type	Number of Operations	Percent of Total
Commercial Service	433,250	10.7%
GA-Local	1,532,202	37.9%
GA-Itinerant	1,682,040	41.6%
Military	393,759	9.7%
Total	**4,041,251**	**100.0%**

Sources: Airport Inventory and Data Survey 2017, FAA ATADS 2017

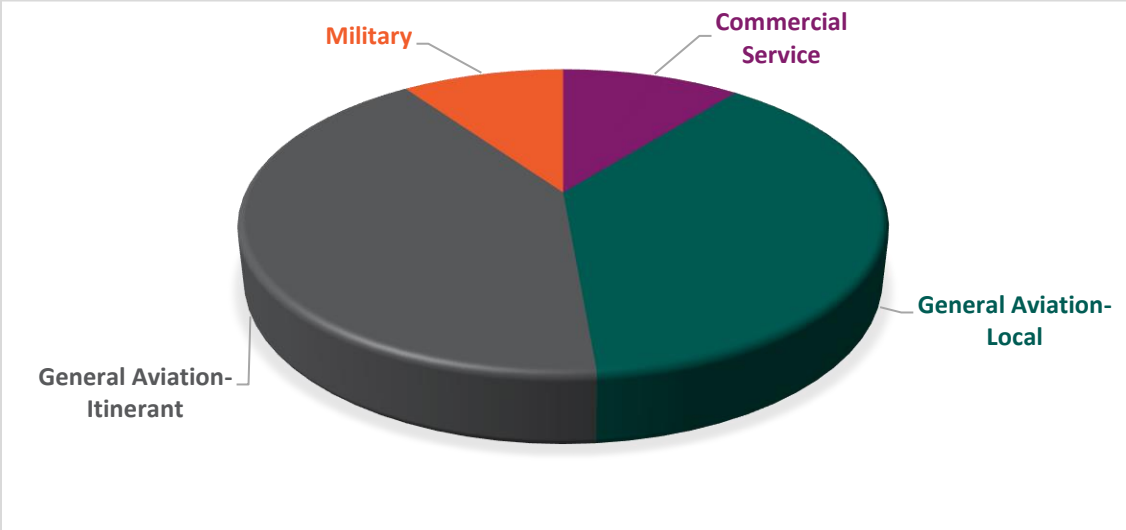


Figure 9. Operations by Type, 2016

Table 10 identifies total annual operations at each airport in the state's system as well as operations by aircraft type. Similar to based aircraft, Arizona's eight reliever airports play a major role in the system, accounting for 1,369,969 operations, or one-third of the 4,041,251 total operations estimated to have been conducted in 2016.

Table 10. Aircraft Operations by Type, 2016

Associated City	Airport	Type of Operations (Number)				
		Commercial Service	GA-Local	GA-Itinerant	Military	Total
Commercial Service						
Bullhead City	Laughlin/Bullhead City International	1,444	850	8,252	22,657	33,203
Flagstaff	Flagstaff Pulliam	1,769	8,772	36,823	1,113	48,477
Grand Canyon	Grand Canyon National Park	45	1,083	106,111	804	108,043
Page	Page Municipal	0	1,000	16,061	100	17,161
Peach Springs	Grand Canyon West	0	0	130,300	0	130,300
Phoenix	Phoenix Sky Harbor International	361,395	42	76,653	2,553	440,643
Phoenix	Phoenix-Mesa Gateway	11,239	142,617	91,492	5,658	251,006
Prescott	Ernest A. Love Field	9	178,922	74,859	552	254,342
Show Low	Show Low Regional	0	2,242	10,068	72	12,382
Tucson	Tucson International	33,874	20,776	55,221	27,690	137,561
Yuma	Yuma International	18,298	45,981	61,824	113,541	239,644
General Aviation						
Ajo	Eric Marcus Municipal	0	60	240	0	300
Bagdad	Bagdad	0	400	600	0	1,000
Benson	Benson Municipal	0	4,500	12,000	200	16,700
Bisbee	Bisbee Municipal	0	1,100	1,800	0	2,900
Buckeye	Buckeye Municipal	0	15,840	37,060	100	53,000
Casa Grande	Casa Grande Municipal	0	12,720	106,560	400	119,680
Chandler	Chandler Municipal	0	142,184	78,750	278	221,212
Chinle	Chinle Municipal	0	400	7,400	0	7,800
Cibecue	Cibecue	0	0	10	0	10
Clifton	Greenlee County	0	200	910	0	1,110
Colorado City	Colorado City Municipal	0	2,370	2,400	30	4,800
Coolidge	Coolidge Municipal	0	12,000	4,000	1,000	17,000
Cottonwood	Cottonwood Municipal	0	8,000	10,900	100	19,000
Douglas	Bisbee-Douglas International	0	5,575	13,107	7,100	25,782
Douglas	Cochise College	0	45,000	2,000	50	47,050
Douglas	Douglas Municipal	0	650	1,950	730	3,330
Eloy	Eloy Municipal	0	21,300	11,250	100	32,650

Associated City	Airport	Type of Operations (Number)				
		Commercial Service	GA-Local	GA-Itinerant	Military	Total
Gila Bend	Gila Bend Municipal	0	30,340	5,900	50	36,290
Glendale	Glendale Municipal	0	45,788	24,617	118	70,523
Globe	San Carlos Apache	0	400	1,500	6	1,906
Goodyear	Phoenix Goodyear	120	73,079	45,890	1,185	120,274
Holbrook	Holbrook Municipal	0	700	3,000	0	3,700
Kayenta	Kayenta	0	0	1,500	0	1,500
Kearny	Kearny	0	50	1,100	50	1,200
Kingman	Kingman	0	14,000	13,100	20	27,120
Lake Havasu City	Lake Havasu City	0	20,270	23,650	350	44,270
Marana	Marana Regional	0	30,000	40,000	20,252	90,252
Marana	Pinal Airpark	0	7,500	557	48,800	56,857
Maricopa	Ak-Chin Regional	0	2,886	15,434	2	18,322
Mesa	Falcon Field	27	152,579	106,968	3,544	263,118
Nogales	Nogales	0	32,400	12,750	2,600	47,750
Parker	Avi Suquilla	0	1,500	11,000	150	12,650
Payson	Payson	0	11,000	21,750	500	33,250
Phoenix	Phoenix Deer Valley	17	241,742	128,201	74	370,034
Polacca	Polacca	0	0	200	0	200
Safford	Safford Regional	0	6,000	6,750	1,000	13,750
San Luis	Rolle Airfield	0	3,000	0	100	3,100
San Manuel	San Manuel	0	12,000	2,000	10	14,010
Scottsdale	Scottsdale	0	58,270	99,354	671	158,295
Sedona	Sedona	0	4,600	28,900	1,800	35,300
Seligman	Seligman	0	500	600	0	1,100
Sells	Sells	0	0	250	10	260
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	5,013	25,803	10,905	110,066	151,787
Springerville	Springerville Municipal	0	286	2,237	48	2,571
St. Johns	St. Johns Industrial Air Park	0	3,500	13,000	300	16,800
Superior	Superior	0	0	200	0	200
Taylor	Taylor	0	2,000	830	0	2,830
Tombstone	Tombstone Municipal	0	40	300	0	340

Associated City	Airport	Type of Operations (Number)				
		Commercial Service	GA-Local	GA-Itinerant	Military	Total
Tuba City	Tuba City	0	0	250	0	250
Tucson	Ryan Field	0	54,535	39,226	15,895	109,656
Whiteriver	Whiteriver	0	850	3,000	30	3,880
Wickenburg	Wickenburg Municipal	0	11,500	24,600	50	36,150
Willcox	Cochise County	0	1,500	7,500	1,000	10,000
Williams	H.A. Clark Memorial Field	0	1,500	5,000	0	6,500
Window Rock	Window Rock	0	3,500	1,500	0	5,000
Winslow	Winslow-Lindbergh Regional	0	4,000	17,000	250	21,250

Sources: Airport Inventory and Data Survey 2017, FAA ATADS

Passenger Enplanements

A passenger enplanement is defined as a revenue-paying passenger who boards an aircraft and departs to travel to a different city destination. There are different levels of commercial service provided throughout the state from the largest airport, Phoenix Sky Harbor International to small airports such as Ernest A. Love Field (Prescott) and Show Low Regional. The FAA's latest NPIAS identifies Ernest A. Love Field (Prescott) as a non-primary commercial service airport and Show Low as a non-primary GA airport, but both have scheduled commercial airline service by small regional carriers. For calendar year 2016, these 11 Arizona airports served over 24.6 million passenger enplanements. It should be noted that other than Grand Canyon West and Show Low Regional Airports whose enplanement data were obtained from the FAA TAF, all other airport's enplanements were obtained from the Airport Inventory and Data Survey. **Table 11** summarizes the passenger enplanements for these airports in 2016.

Table 11. Arizona Passenger Enplanements, 2016

Associated City	Airport	Enplanements (Number)
Bullhead City	Laughlin/Bullhead City International	105,007
Flagstaff	Flagstaff Pulliam	66,526
Grand Canyon	Grand Canyon National Park	324,682
Page	Page Municipal	85,666
Peach Springs	Grand Canyon West	34,973
Phoenix	Phoenix Sky Harbor International	21,673,418
Phoenix	Phoenix-Mesa Gateway	676,745
Prescott	Ernest A. Love Field	3,435
Show Low	Show Low Regional	3,652
Tucson	Tucson International	1,647,644
Yuma	Yuma International	73,876

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

AIRSPACE

The airspace in a state and in various regions affects the airport users and is an important component in examining the state's airport system. The FAA recognizes controlled and uncontrolled airspace known as regulatory and non-regulatory, respectively. The type of airspace is determined by the users and traffic density within the region.

Controlled Airspace

Air Traffic Control (ATC) services are provided in controlled airspace which consists of Class A, B, C, D, and E airspace. The following provides an overview of each airspace classification.

1. **Class A.** Airspace from 18,000 feet mean sea level (MSL) up to and including flight level (FL) 600 or, 60,000 feet MSL. The airspace also includes overlying waters within 12 nautical miles (NM) of the coast of the 48 contiguous states and Alaska. Unless otherwise authorized, all operations in Class A airspace are conducted under instrument flight rules (IFR).

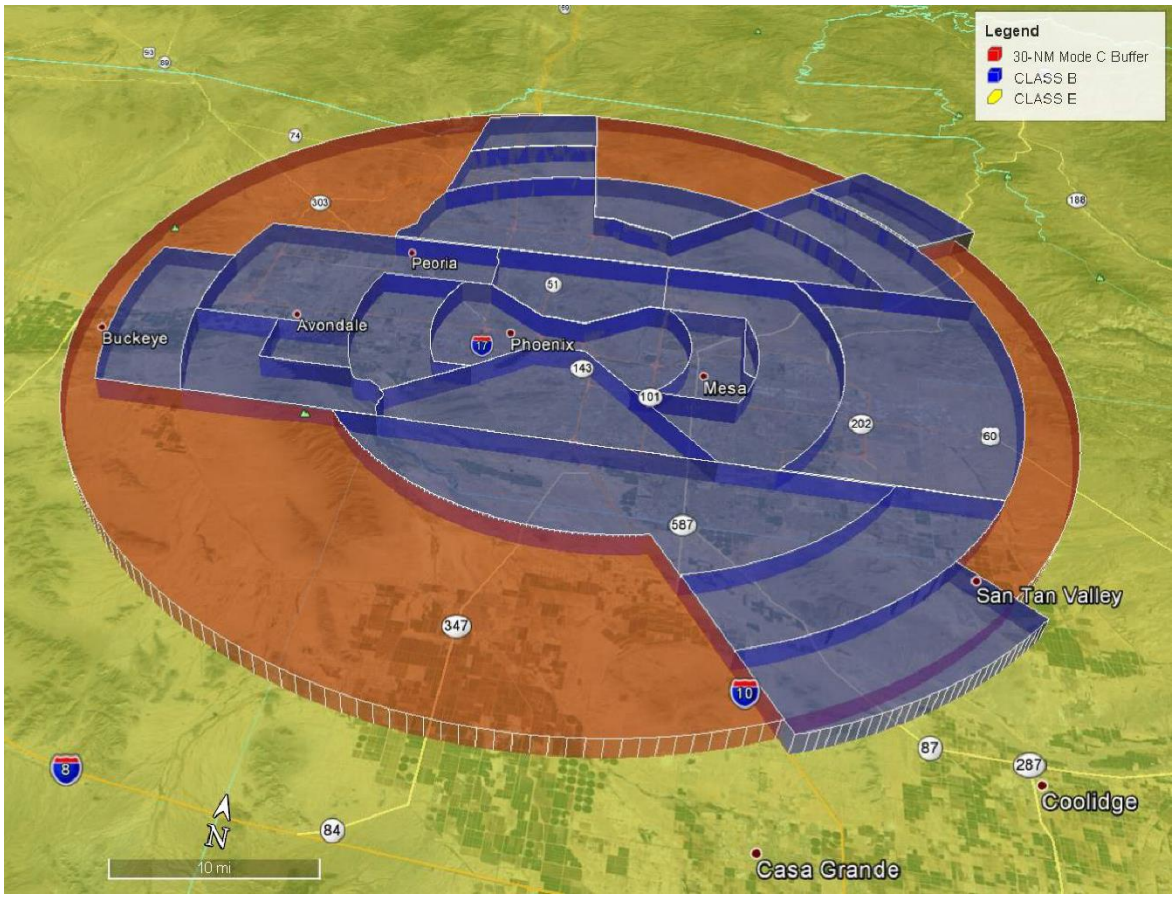
2. **Class B.** Airspace from the surface to 10,000 feet MSL surrounding the nation's busiest airports in terms of airport operations or passenger enplanements. The configuration of each Class B airspace area is individually tailored, consisting of a surface area and two or more layers resembling an upside-down wedding cake. Class B is designed to contain all published instrument procedures once an aircraft enters the airspace. ATC clearance is required for all aircraft to operate in the area, and all aircraft that are cleared receive separation services within the airspace.

3. **Class C.** Airspace from the surface to 4,000 feet above the airport elevation (charted in MSL) surrounding those airports that have a control tower, are serviced by a radar approach control, and have a certain number of IFR operations or passenger enplanements. Although the configuration of each Class C area is individually tailored, the airspace usually consists of a surface area with a five- NM radius, and an outer circle with a ten-NM radius that extends from 1,200 feet to 4,000 feet above the airport elevation. Each aircraft must establish two-way radio communication with the ATC facility providing air traffic services prior to entering the airspace and thereafter must maintain those communications while within the Class C airspace.

Figure 10 displays Class B and Class C airspace surrounding Phoenix, Arizona.

4. **Class D.** Airspace from the surface to 2,500 feet above the airport elevation (charted in MSL) surrounding those airports that have a control tower. The configuration of each Class D airspace area is individually tailored and, when instrument procedures are published, the airspace is normally designed to contain the procedures. Arrival extensions for IAPs may be Class D or Class E Airspace. Unless otherwise authorized, each aircraft must establish two-way radio communication with the ATC facility providing air traffic services prior to entering the airspace and thereafter maintain those communications while in the airspace. Class D airspace is present at Arizona airports including Flagstaff Pulliam Airport and Ernest A. Love Field Airport.

5. **Class E.** Controlled airspace not classified as Class A, B, C, or D airspace. A large amount of airspace over the United States is designated as Class E airspace. This provides sufficient airspace for the safe control and separation of aircraft during IFR operations. Sectional and other charts depict all locations of Class E airspace with bases below 14,500 feet MSL. In areas where charts do not depict a Class E base, Class E begins at 14,500 feet MSL. In Arizona, Class E airspace is all remaining airspace (not A, B, C, or D) up to 14,500 MSL.



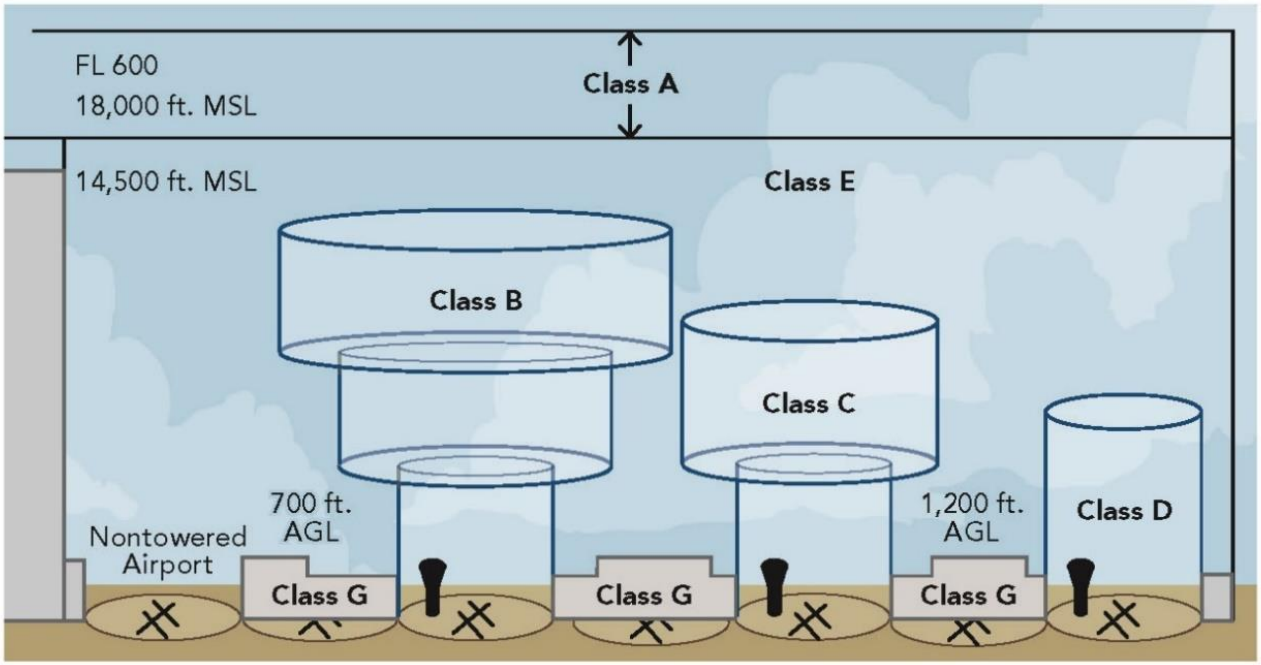
Sources: FAA ADS-B Airspace — Google Earth

Figure 10. Airspace – Phoenix, AZ

Uncontrolled Airspace

6. **Class G/Uncontrolled Airspace.** Airspace that has not been designated as Class A, B, C, D, or E is referred to as uncontrolled or Class G airspace. Class G airspace extends from the surface to the base of the overlying Class E airspace. Although ATC has no authority or responsibility to control air traffic, there are visual flight rule (VFR) minimums that apply to Class G airspace.

Figure 11 provides a general overview of the different types of airspace in the national airspace system as described above.



Source: FAA 2017

Figure 11. FAA Airspace Classifications

Special-Use Airspace

In accordance with the FAA's policies and regulations handbook, airspace in which certain activities must be contained or where limitations are imposed on aircraft operations that are not part of those activities is known as special use airspace or special area of operations (SAO). Certain special use airspace areas can limit or constrain the mixed-use of airspace. Types of special use airspace comprises:

7. **Prohibited Areas.** Prohibited areas contain airspace-defined dimensions within which the flight of aircraft is prohibited. Such areas are established for security or other reasons associated with national welfare. These areas are published in the Federal Register and are depicted on aeronautical charts. The area is charted "P" followed by a number (e.g., P-40). Examples of prohibited areas include Camp David and the National Mall in Washington D.C., where the White House and the Congressional buildings are located. There are no permanently prohibited areas in Arizona.
8. **Restricted Areas.** Areas where operations are hazardous to nonparticipating aircraft and contain airspace within which the flight of aircraft, while not wholly prohibited, is subject to restrictions. Certain types of activities may be confined within these areas, limitations may be imposed upon aircraft operations that are not part of such activities, or both. Restricted areas denote the existence of unusual, often invisible, hazards to aircraft (e.g., artillery firing, aerial gunnery, or guided missiles). IFR flights may be authorized to transit the airspace and are routed accordingly. Penetration of restricted areas without

authorization from the using or controlling agency may be extremely hazardous to the aircraft and its occupants. There are several restricted (R) areas in Arizona, some of which are located southwest of Phoenix and include R-2301, R-2304, R-2307.

9. **Military Operational Areas (MOAs).** Airspace with defined vertical and lateral limits established for the purpose of separating certain military training activities from IFR traffic. Whenever an MOA is used, nonparticipating IFR traffic may be cleared through an MOA if IFR separation can be provided by ATC. Otherwise, ATC reroutes or restricts nonparticipating IFR traffic. There are many MOAs in Arizona with a high concentration located around Tucson such as Sells 1 MOA, Jackal MOA, Ruby 1 MOA, and Fuzzy MOA.
10. **Alert Areas.** Airspace that contains a high volume of pilot training or unusual type of aerial activity that may present a hazard to an aircraft. These areas are depicted on an aeronautical chart with an "A" followed by a number (e.g., A-211) to direct nonparticipating pilots to exercise caution in alert areas. All activity within an alert area shall be conducted in accordance with all applicable regulations, without waiver. Pilots of participating aircraft, as well as pilots transitioning through area, shall be equally responsible for collision avoidance. There is an alert area located to the west and northwest of Phoenix, Alert Area A-231 for concentrated student jet transition training.

Other Arizona Airspace

In addition to special use airspace, there are other specialized airspace areas within Arizona. The following describe "other" airspace within the state:

11. **Military Training Routes (MTRs).** The MTR Program is a joint venture by the FAA and the Department of Defense (DOD) developed for use by military aircraft to gain and maintain proficiency in tactical low-level flying. MTRs are generally established below 10,000 feet MSL for speeds in excess of 250 knots to accommodate both VFR and IFR. Pilots utilizing MTRs are held to strict standards while utilizing these routes. Non-participating aircraft are not prohibited from flying within an MTR; however, extreme vigilance should be exercised when conducting flight through or near such airspace. There are numerous MTRs in Arizona that support the flying missions of the military.
12. **National Parks, National Forests, and Wildlife Areas**. Arizona has numerous National Parks, National Forests, and Wildlife Areas. Many of these areas are noise sensitive and are marked on FAA aeronautical charts. Airspace over the Grand Canyon National Park is subject to special air traffic rules. VFR flight through the Grand Canyon Special Flight Rules Area (GCN SFRA) is not authorized except through designated corridors. There are many aerial tours originating from Las Vegas or the Grand Canyon which are protected with these special flight rules.

NextGen

The Next Generation Air Transportation System (NextGen) is an FAA initiative to transform the National Airspace System (NAS). The primary transformation phases out the existing radar-based ATC system to a satellite-based ATC system using Automatic Dependent Surveillance – Broadcast (ADS-B) technology. This technology reduces in-flight aircraft separation, shortens routes, increases airspace capacity, reduces fuel consumption, and increases safety. The FAA's goal is to have NextGen fully implemented by 2025, however, full implementation is unlikely by that timeframe according to current progress.

NAVAIDS

Navigational aids (NAVAIDs) were initially developed to provide directional information suitable for navigation from place-to-place. With the proliferation of NAVAIDs and improvements in technology over time, it became possible to use NAVAIDs to obtain information about a fixed physical location known as a fix. A fix is a radio-generated landmark. As a result, pilots can use a series of fixes to follow a specific course to align aircraft with the runway without the need to first circle and obtain visual confirmation of its physical location. A series of fixes can also be used to regulate an aircraft's rate of descent, with pilots descending to a lower altitude when reaching a certain point. The following are different types of NAVAIDs that can be used in Arizona:

1. **Very High Frequency (VHF) Omni-directional Range (VOR).** This system radiates a VHF radio signals to compatible airborne receivers. This type of approach provides pilots with a direct indication of bearing relative to the facility. The VOR is one of the most widely used non-precision approach types in the NAS. VOR approaches use facilities both on and off the and incorporate the use of a wide variety of equipment such as Distance Measuring Equipment (DME) and Tactical Area Navigation (TACAN). As a result of technology advances, including NextGen, the FAA has begun to decommission lesser-used VORs. The plan is to create a minimum operational network (MON) that will serve as a backup to ensure aircraft can land safely in the event of a widespread satellite navigation outage.[4]
2. **VOR + DME (VOR/DME).** A VOR radial with a DME distance allows a one-station position fix. The use of DME in confluence with VOR provides an accurate determination of position without timing to greatly increase situational awareness throughout the approach.
3. **Non-Directional Beacon (NDB).** An NDB is a radio beacon that aids the pilot of an aircraft with direction-finding equipment. It can be part of an instrument landing system (ILS). NDBs are most commonly used as compass locators for the outer marker of an ILS. NDBs may designate the starting area for an ILS approach or a path to follow for a standard terminal arrival procedure (STAR). Similar to the VOR approach, an NDB approach can be designed using facilities both on and off the airport, with or without a Final Approach Fix (FAF), and with or without DME availability. While it was once common for an instrument student to learn to fly an NDB approach, NDB approaches are becoming obsolete with the increasing use of Global Positioning Systems (GPS). The FAA plans to gradually phase-out NDB facilities.
4. **TACAN.** TACAN is the military equivalent of the VOR/DME system and provides both distance and direction guidance. The system includes a DME distance feature and a separate TACAN azimuth feature that provides data similar to a VOR. A co-located VOR and TACAN beacon is called a VORTAC

APPROACH TYPES

The series of procedures dictating route, direction, and rate of descent is known as an approach. The precision of the course guidance provided by NAVAIDS has improved to such a degree that it is possible to execute an approach within a few hundred feet of the ground. There are four types of approaches including visual, non-precisions, near-precision, and precision.

[4] Aircraft Owners and Pilots Association

Visual Approach Procedures

A visual approach procedure is conducted under Visual Meteorological Conditions (VMC), which are defined as a cloud ceiling greater than 1,000 feet above ground level (AGL) and visibility conditions equal to or greater than three statute miles. Under VMC conditions, pilots approach an airport using only visual standards or cues. There are 29 airports in the Arizona system that have only visual approach procedures to land.

Instrument Approach Procedures

IAPs are a series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to landing or to a point from which a landing may be made visually. It is prescribed and approved for a specific airport by competent authority. The three types of IAPs are described in the following sections.

Non-Precision Instrument Approaches

Non-precision Instrument (NPI) approaches provide only lateral guidance from either ground based or satellite based GPS NAVAIDs. There are 28 airports in the Arizona system that use NPI approaches as their primary approach procedure.

Near-Precision Approaches

Near-precision approaches, also known as Approach Procedures with Vertical Guidance (APV) are a relatively recent outcome of the FAA's NextGen program. These approach procedures use GPS technology to provide ILS-like approach capability without the need for traditional ground-based ILS NAVAID equipment.

1. **Lateral Navigation (LNAV).** LNAV is a function of area navigation (RNAV) equipment that calculates, displays, and provides lateral guidance to a profile or path.
2. **Vertical Navigation (VNAV).** VNAV is a function of RNAV equipment that calculates, displays, and provides vertical guidance to a profile or path.
3. **Localizer Performance with Vertical Guidance (LPV).** LPV is a type of approach with APV based on Wide Area Augmentation System (WAAS) published on RNAV (GPS) approach charts. This procedure takes advantage of the precise lateral guidance available from WAAS.[5] The minima are published as a decision altitude (DA).
4. **Required Navigation Performance (RNP).** RNP is similar to RNAV, however, RNP requires on-board navigation performance monitoring and alerting capability to ensure that the aircraft stays within a specific containment area.

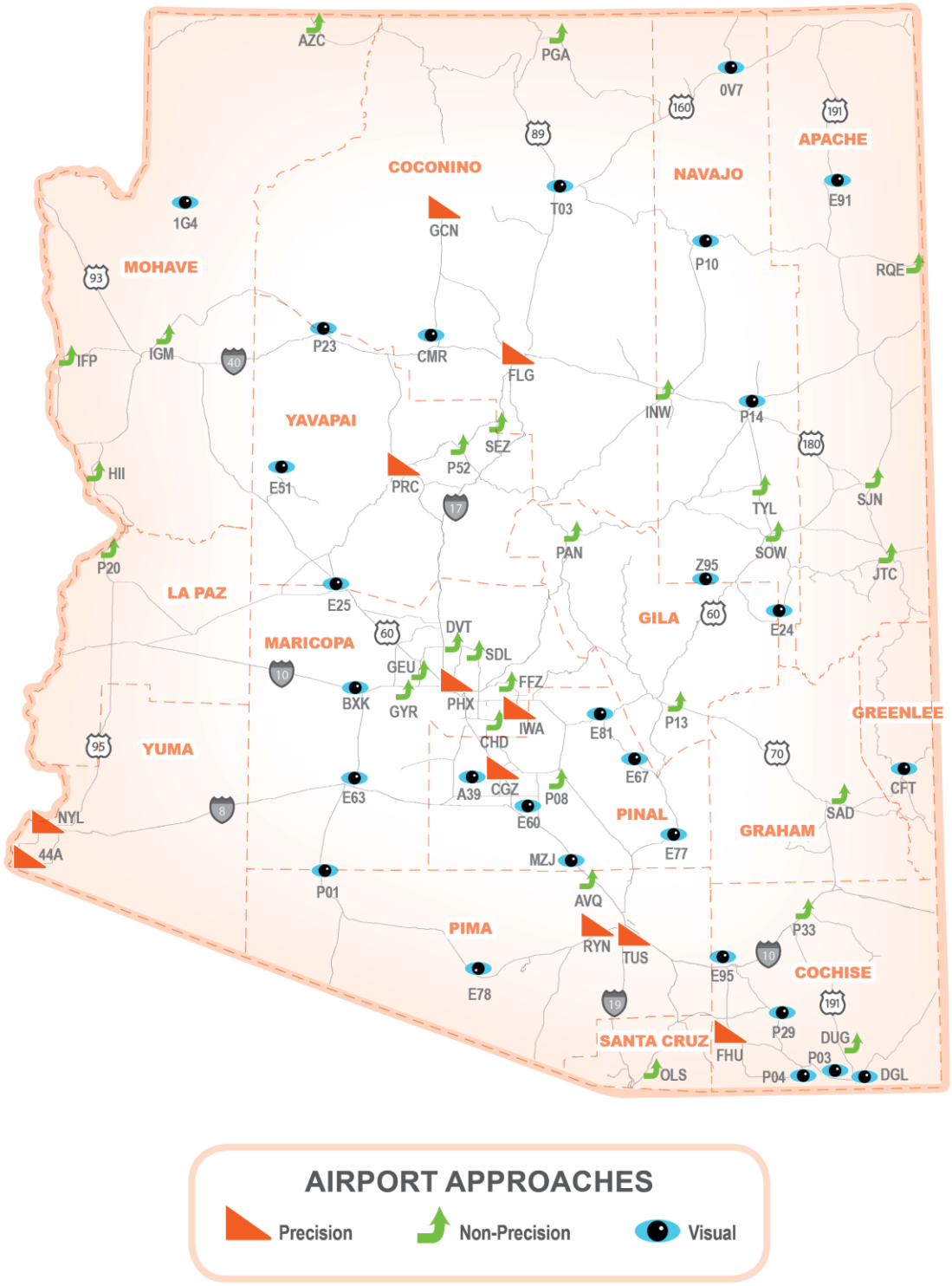
While some Arizona system airports have APV capabilities, there are no airports that use APV approaches as their primary approach procedure.

[5] The WAAS is a satellite navigation system consisting of the equipment and software which augments the GPS Standard Positioning Service (SPS). The WAAS provides enhanced integrity, accuracy, availability, and continuity over and above GPS SPS. The differential correction function provides improved accuracy required for precision approach.

Precision Approaches

Precision instrument approaches provide both lateral and vertical guidance and have traditionally been supported by multiple ground based NAVAIDs collectively called an ILS. An ILS includes a Localizer (providing lateral guidance), a Glideslope (providing vertical guidance), and an ALS (providing close-in visual guidance). There are 10 Arizona system airports that use precision approaches as their primary approach procedure.

Figure 12 depicts the primary airport approach at the 67 SASP airports.



Source: Airport Inventory and Survey Form 2017

Figure 12. Airport Approaches

Approach Visibility Minimums

Before a pilot is allowed to make an approach and attempt to land, he or she must have visual confirmation of the runway. The approach visibility minima define how close a pilot can get to the runway before visual contact with the runway environment must be achieved.

Approach visibility minimums vary among airports and by approach types. Approach minimums are determined by individual airport and runway facilities, as well as topography and terrain characteristics of the approach and characteristics of the area surrounding the airport. The following are general visibility minimums and their related markings and lighting:

1. Visibility minimums of one mile can be supported with visual runway markings and LIRLs for nighttime operations.
2. MIRL and precision or non-precision runway markings are required to reduce visibility minima to ¾ mile.
3. To establish below ½ mile visibility minimums, additional equipment requirements comprise precision runway markings, MIRLs for nighttime operations, and an approved approach lighting system.

Approach Lighting Systems

An ALS provides a means to transition from IFR to VFR for landing. An ALS is a series of marker lights off the runway end to signal the aircraft toward the touchdown zone. Some systems include high-intensity sequenced flashing lights that appear to the pilot as a ball of light traveling toward the runway. Medium Approach Light Systems with Runway Alignment Indicator Lights (MALSRs) are the only ALSs in Arizona's system of airports.

Surface Weather Observation Stations

Surface weather observation stations are increasingly common at airports. These systems consist of various sensors, a processor, computer-generated voice subsystem, and transmitter to broadcast local, minute-by-minute weather data directly to the pilot. Prior to the initiation of an instrument approach, specific weather data including the altimeter setting must be obtained. Pilots obtain weather data from the Air Traffic Control Tower (ATCT) at towered airports; information is primarily disseminated via automated weather reporting systems at airports without ATCTs. The following describes surface weather observation systems at airports in Arizona:

1. **Automated Weather Observing System (AWOS).** An AWOS is a weather-data sensing, processing, and disseminating system designed to support weather forecast activities and aviation operations. The AWOS observes, archives, and transmits observations through an automatic terminal information service (ATIS) on a VHF (132.125 MHz) to pilots operating at or near the airport. An AWOS can include multiple types of systems based on the types of weather data needed.
2. **Automated Surface Observing System (ASOS).** Similar to an AWOS, the ASOS is a weather data sensing, processing, and disseminating system; however, unlike the AWOS, the ASOS converts surface winds to magnetic direction.

Table 12 presents the instrument approach type and approach minimums for each runway and the presence of an approach lighting system and automated weather reporting system at each airport in the Arizona airport system.

Table 12. Navigational Aids and Approach Types

Associated City	Airport	Runway End	Instrument Approach	Approach Minimums (Decision Height [ft.]/Visibility)	Approach Lighting System	Surface Weather Observation Station
			Commercial Service			
Bullhead City	Laughlin/Bullhead City International	16 34	GPS GPS, VOR	1300 / 1-1/4 700 / 2-1/2	None None	AWOS IIIP/T
Flagstaff	Flagstaff Pulliam	3 21	GPS ILS OR LOC/DME, GPS, VOR/DME	300 / 1 300 / 3/4	None MALSR	ASOS
Grand Canyon	Grand Canyon National Park	3 21	ILS OR LOC/DME, GPS, VOR N/A	200 / 3/4 N/A	None None	ASOS
Page	Page Municipal	15 33 7 25	GPS GPS N/A N/A	300 / 1-1/4 300 / 1 N/A N/A	None None None None	ASOS
Peach Springs	Grand Canyon West	17 35	N/A N/A	N/A N/A	None None	ASOS
Phoenix	Phoenix Sky Harbor International	8 26 7L 25R 7R 25L	ILS OR LOC, RNP, GPS ILS OR LOC, RNP, GPS ILS OR LOC/DME, RNP, GPS RNP, GPS ILS OR LOC, RNP, GPS ILS OR LOC, RNP, GPS	300 / 1 300 / 3/4 200 / 1/2 500 / 1-1/2 300 / 3/4 200 / 1/2	MALSF None MALSR None MALSR MALSR	ASOS
Phoenix	Phoenix-Mesa Gateway	12R 30L 12C 30C 12L 30R	GPS GPS GPS ILS OR LOC, RNP, GPS, VOR OR TACAN N/A N/A	400 / 1 500 / 1 300 / 1 200 / 3/4 N/A N/A	None None None None None None	AWOS IIIP/T
Prescott	Ernest A. Love Field	3R 21L 3L 21R 12 30	RNP, GPS ILS OR LOC/DME, GPS N/A N/A GPS, VOR N/A	300 / 1 200 / 1/2 N/A N/A 300 / 1 N/A	None MALSR None None None None	ASOS
Show Low	Show Low Regional	6 24	N/A GPS	N/A 300 / 3/4	None None	AWOS III

Associated City	Airport	Runway End	Instrument Approach	Approach Minimums (Decision Height [ft.]/Visibility)	Approach Lighting System	Surface Weather Observation Station
		3 21	N/A N/A	N/A N/A	None None	
Tucson	Tucson International	11L 29R 11R 29L 3 21	ILS OR LOC, RNP, GPS, VOR OR TACAN RNP, GPS, LOC/DME BC, VOR/DME OR TACAN GPS GPS GPS GPS	200 / 1/2 300 / 1 400 / 1-1/4 400 / 1-3/8 700 / 2-1/2 600 / 2	MALSR None None None None None	ASOS
Yuma	Yuma International	3R 21L 3L 21R 8 26 17 35	N/A N/A GPS, HI-TACAN, TACAN ILS OR LOC/DME, GPS, HI-TACAN, TACAN N/A N/A GPS, VOR/DME OR TACAN, VOR N/A	N/A N/A 400 / 1 200 / 1/2 N/A N/A 400 / 1 N/A	None None None MALSR None None None None	ASOS
General Aviation						
Ajo	Eric Marcus Municipal	12 30	N/A N/A	N/A N/A	None None	None
Bagdad	Bagdad	5 23	N/A N/A	N/A N/A	None None	None
Benson	Benson Municipal	10 28	N/A N/A	N/A N/A	None None	AWOS III
Bisbee	Bisbee Municipal	17 35 2 20	N/A N/A N/A N/A	N/A N/A N/A N/A	None None None None	None
Buckeye	Buckeye Municipal	17 35	N/A N/A	N/A N/A	None None	AWOS III
Casa Grande	Casa Grande Municipal	5 23	ILS OR LOC/DME, GPS, VOR N/A	300 / 3/4 N/A	None MALSR	AWOS IIIP/T
Chandler	Chandler Municipal	4R 22L 4L 22R	GPS, VOR, NDB N/A N/A N/A	500 / 1 N/A N/A N/A	None None None None	AWOS III

Associated City	Airport	Runway End	Instrument Approach	Approach Minimums (Decision Height [ft.]/Visibility)	Approach Lighting System	Surface Weather Observation Station
Chinle	Chinle Municipal	18 36	N/A N/A	N/A N/A	None None	None
Cibecue	Cibecue	7 25	N/A N/A	N/A N/A	None None	None
Clifton	Greenlee County	7 25	N/A N/A	N/A N/A	None None	AWOS III
Colorado City	Colorado City Municipal	11 29 2 20	N/A N/A N/A N/A	N/A N/A N/A N/A	None None None None	AWOS IIIP/T
Coolidge	Coolidge Municipal	5 23 17 35	VOR/DME GPS N/A N/A	500 / 1 500 / 1 N/A N/A	None None None None	AWOS IIIP/T
Cottonwood	Cottonwood Municipal	14 32	N/A GPS	N/A 700 / 1	None None	AWOS-AV
Douglas	Bisbee-Douglas International	17 35 8 26	GPS, VOR/DME, VOR N/A N/A N/A	500 / 1 N/A N/A N/A	None None None None	ASOS
Douglas	Cochise College	5 23	N/A N/A	N/A N/A	None None	None
Douglas	Douglas Municipal	3 21	N/A N/A	N/A N/A	None None	None
Eloy	Eloy Municipal	2 20	N/A N/A	N/A N/A	None None	None
Gila Bend	Gila Bend Municipal	4 22	N/A N/A	N/A N/A	None None	None
Glendale	Glendale Municipal	1 19	GPS GPS	400 / 1-1/4 300 / 1	None None	AWOS III
Globe	San Carlos Apache	9 27	GPS N/A	600 / 1 N/A	None None	AWOS III
Goodyear	Phoenix Goodyear	3 21	GPS N/A	400 / 1 N/A	None None	None

Associated City	Airport	Runway End	Instrument Approach	Approach Minimums (Decision Height [ft.]/Visibility)	Approach Lighting System	Surface Weather Observation Station
Holbrook	Holbrook Municipal	3 21 11 29	N/A N/A N/A N/A	N/A N/A N/A N/A	None None None None	AWOS III
Kayenta	Kayenta	5 23	N/A N/A	N/A N/A	None None	AWOS IIIP/T
Kearny	Kearny	8 26	N/A N/A	N/A N/A	None None	None
Kingman	Kingman	3 21 17 35	GPS GPS, VOR/DME N/A N/A	400 / 1 300 / 1 N/A N/A	None None None None	AWOS III
Lake Havasu City	Lake Havasu City	14 32	GPS GPS	1400 / 1-1/4 500 / 1-3/4	None None	AWOS III
Marana	Marana Regional	12 30 3 21	GPS, NDB N/A GPS GPS	400 / 1 N/A 500 / 1 400 / 1	None None None None	AWOS III
Marana	Pinal Airpark	12 30	N/A N/A	N/A N/A	None None	AWOS III
Maricopa	Ak-Chin Regional	4 22	N/A N/A	N/A N/A	None None	None
Mesa	Falcon Field	4R 22L 4L 22R	GPS N/A GPS N/A	300 / 1 N/A 400 / 1 N/A	None None None None	None
Nogales	Nogales	3 21	GPS N/A	5,200 / 1-1/4 N/A	None None	ASOS
Parker	Avi Suquilla	1 19	GPS, VOR/DME N/A	300 / 1 N/A	None None	AWOS IIIP/T
Payson	Payson	6 24	N/A N/A	N/A N/A	None None	AWOS III
Phoenix	Phoenix Deer Valley	7R 25L	GPS GPS	400 / 1-1/4 400 / 1-1/4	None None	ASOS

Associated City	Airport	Runway End	Instrument Approach	Approach Minimums (Decision Height [ft.]/Visibility)	Approach Lighting System	Surface Weather Observation Station
		7L 25R	N/A N/A	N/A N/A	None None	
Polacca	Polacca	4 22	N/A N/A	N/A N/A	None None	
Safford	Safford Regional	12 30 8 26	GPS GPS N/A N/A	300 / 1 300 / 1 N/A N/A	None None None None	None
San Luis	Rolle Airfield	17 35	N/A N/A	N/A N/A	None None	
San Manuel	San Manuel	11 29	N/A N/A	N/A N/A	None None	AWOS IIIP/T
Scottsdale	Scottsdale	3 21	RNP RNP	400 / 1/4 500 / 1-1/4	None None	ASOS
Sedona	Sedona	3 21	GPS N/A	1400 / 1-1/2 N/A	None None	AWOS IIIP/T
Seligman	Seligman	4 22	N/A N/A	N/A N/A	None None	None
Sells	Sells	4 22	N/A N/A	N/A N/A	None None	None
Sierra Vista	Sierra Vista Municipal- Libby Army Airfield	8 26 12 30 3 21	GPS, TACAN ILS OR LOC, GPS, VOR, TACAN, NDB N/A N/A N/A N/A	200 / 3/4 200 / 3/4 N/A N/A N/A N/A	None None None None None None	ASOS
Springerville	Springerville Municipal	3 21 11 29	N/A GPS N/A N/A	N/A 500 / 1 N/A N/A	None None None None	AWOS IIIP/T
St. Johns	St. Johns Industrial Air Park	14 32 3 21	GPS GPS N/A N/A	500 / 1 500 / 1-1/2 N/A N/A	None None None None	ASOS

Associated City	Airport	Runway End	Instrument Approach	Approach Minimums (Decision Height [ft.]/Visibility)	Approach Lighting System	Surface Weather Observation Station
Superior	Superior	4 22	N/A N/A	N/A N/A	None None	None
Taylor	Taylor	3 21	N/A GPS	N/A 300 / 1	None None	AWOS III
Tombstone	Tombstone Municipal	6 24	N/A N/A	N/A N/A	None None	None
Tuba City	Tuba City	15 33	N/A N/A	N/A N/A	None None	None
Tucson	Ryan Field	6R 24L 6L 24R 15 33	ILS OR LOC, NDB/DME OR GPS N/A N/A N/A N/A N/A	300 / 1 N/A N/A N/A N/A N/A	None None None None None None	AWOS III
Whiteriver	Whiteriver	1 19	N/A N/A	N/A N/A	None None	None
Wickenburg	Wickenburg Municipal	5 23	N/A N/A	N/A N/A	None None	AWOS III
Willcox	Cochise County	3 21	GPS GPS	400 / 1 300 / 7/8	None None	None
Williams	H.A. Clark Memorial Field	18 36	N/A N/A	N/A N/A	None None	AWOS III
Window Rock	Window Rock	2 20	GPS N/A	700 / 1 N/A	None None	ASOS
Winslow	Winslow-Lindbergh Regional	11 29 4 22	VOR OR GPS N/A N/A N/A	500 / 1 N/A N/A N/A	None None None None	ASOS

Source: Airport Inventory and Data Survey 2017

AIRPORT PLANNING DOCUMENTATION

During the inventory process, the 67 airports in the study provided dates of their most recent MP and ALP. An airport master plan represents the airport's blueprint for long-term development and typically includes an update of the ALP during the study process. The following describe the goals of an MP:

1. Provide a graphic representation of the existing airport features, future airport development, and anticipated land use
2. Establish a realistic schedule for implementation of the proposed development
3. Identify a realistic financial plan to support the proposed development
4. Validate the plan technically and procedurally through an investigation of concepts and alternatives on technical, economic, and environmental grounds
5. Prepare and present a plan to the public that adequately addresses all relevant issues and satisfies local, state, and federal regulations
6. Establish a framework for a continuous planning process

The FAA approves specific components of an MP as opposed to the entire document. These components consist of the forecasts of aviation demand, selection of critical aircraft, and the ALP. It is from these elements that the FAA makes a determination regarding eligibility of Airport Improvement Program (AIP) funding for proposed development.[6]

In addition to the airport MP, the ALP serves as a critical planning tool that depicts both existing facilities and planned development for an airport. A current ALP is a prerequisite for issuance of a grant for airport development. Any sponsor who has received an FAA grant for airport development is obligated by grant assurance to "keep the ALP up-to-date at all times." The following describes the specific goals of an ALP:

1. Identifies the boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes
2. Depicts the location and nature of existing and proposed airport facilities and structures
3. Establishes the location on the airport of existing and proposed non-aviation areas and improvements[7]

Table 13 details the reported completion dates on the most recent MPs and ALPs at airports in the Arizona system.

Table 13. Completion Dates of Airport Master Plans and Airport Layout Plans

Associated City	Airport	FAA ID	Year Completed	
			MP	ALP
Commercial Service				
Bullhead City	Laughlin/Bullhead City International	IFP	2009	2009
Flagstaff	Flagstaff Pulliam	FLG	2008	2008
Grand Canyon	Grand Canyon National Park	GCN	2005 (2017 in progress)	2014
Page	Page Municipal	PGA	2009	2009

[6] There are many non-eligible projects that can be included in a MP and depicted on the ALP, however, FAA approval/acceptance of anything in the master plan or ALP does not constitute a guarantee of future FAA funding.
[7] AIP Sponsor Guide 500 — Airport Planning

Associated City	Airport	FAA ID	Year Completed	
			MP	ALP
Peach Springs	Grand Canyon West	1G4	1997	2015
Phoenix	Phoenix Sky Harbor International	PHX	Estimated 2018	2011
Phoenix	Phoenix-Mesa Gateway	IWA	2008	2015
Prescott	Ernest A. Love Field	PRC	2010	2014
Show Low	Show Low Regional	SOW	Unknown	2012
Tucson	Tucson International	TUS	2014	2012
Yuma	Yuma International	NYL	2009	2012
General Aviation				
Ajo	Eric Marcus Municipal	P01	2010	2010
Bagdad	Bagdad	E51	2014	2014
Benson	Benson Municipal	E95	2007	2007
Bisbee	Bisbee Municipal	P04	2011	2011
Buckeye	Buckeye Municipal	BXK	2007	2012
Casa Grande	Casa Grande Municipal	CGZ	2009	2015
Chandler	Chandler Municipal	CHD	2010	2017
Chinle	Chinle Municipal	E91	2016	2016
Cibecue	Cibecue	Z95	Unknown	Unknown
Clifton	Greenlee County	CFT	Unknown	2002
Colorado City	Colorado City Municipal	AZC	2008	2008
Coolidge	Coolidge Municipal	P08	Unknown	2010
Cottonwood	Cottonwood Municipal	P52	2006	2006
Douglas	Bisbee-Douglas International	DUG	2015	2015
Douglas	Cochise College	P03	2014	Unknown
Douglas	Douglas Municipal	DGL	2017	2017
Eloy	Eloy Municipal	E60	2012	2013
Gila Bend	Gila Bend Municipal	E63	2014	2014
Glendale	Glendale Municipal	GEU	2009	2017
Globe	San Carlos Apache	P13	2007	2007
Goodyear	Phoenix Goodyear	GYR	2018	2018
Holbrook	Holbrook Municipal	P14	2015	2015
Kayenta	Kayenta	0V7	Unknown	2006
Kearny	Kearny	E67	2008	Unknown
Kingman	Kingman	IGM	Unknown	2009
Lake Havasu City	Lake Havasu City	HII	2009	2009
Marana	Marana Regional	AVQ	2017	2017
Marana	Pinal Airpark	MZJ	2015	2015
Maricopa	Ak-Chin Regional	A39	2016	2016
Mesa	Falcon Field	FFZ	2009	2016
Nogales	Nogales	OLS	2012	2012
Parker	Avi Suquilla	P20	2014	2016
Payson	Payson	PAN	2009	2014
Phoenix	Phoenix Deer Valley	DVT	2015	2015
Polacca	Polacca	P10	Unknown	Unknown
Safford	Safford Regional	SAD	2000	2012

Associated City	Airport	FAA ID	Year Completed	
			MP	ALP
San Luis	Rolle Airfield	44A	2016	2016
San Manuel	San Manuel	E77	2015	2015
Scottsdale	Scottsdale	SDL	2015	2013
Sedona	Sedona	SEZ	2015	2017
Seligman	Seligman	P23	2005	2005
Sells	Sells	E78	Unknown	Unknown
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield	FHU	2012	2014
Springerville	Springerville Municipal	JTC	2007	2009
St. Johns	St. Johns Industrial Air Park	SJN	2013	2013
Superior	Superior	E81	2018	2018
Taylor	Taylor	TYL	2005	2010
Tombstone	Tombstone Municipal	P29	Unknown	2018
Tuba City	Tuba City	T03	2016	2016
Tucson	Ryan Field	RYN	2010	2011
Whiteriver	Whiteriver	E24	Unknown	2006
Wickenburg	Wickenburg Municipal	E25	2012	2012
Willcox	Cochise County	P33	2015	2015
Williams	H.A. Clark Memorial Field	CMR	2007	2008
Window Rock	Window Rock	RQE	2016	2016
Winslow	Winslow-Lindbergh Regional	INW	1998	2015

Source: Airport Inventory and Data Survey 2017

AIRPORT DEVELOPMENT CONSTRAINTS

A final measure to assess the needs of airports within the system was to examine development constraints at each facility. The 2008 SASP identified four airport development constraint factors: man-made, environmental, community, and financial. For the 2018 SASP Update, a different approach was undertaken to examine the development constraints (in 2016). During the inventory process, airport sponsors were asked to provide a short answer to detail development constraints facing their airport. Responses were organized generally within four main topics as defined below:

1. **Human-caused.** Constraints due to roads, utilities, housing, or other structures
2. **Environmental.** Constraints due to noise impacts, endangered species, superfund sites, and others
3. **Community.** Constraints due to organized community opposition
4. **Financial.** Constraints due to lack of funding within local town, county, or state

These responses are valuable to ADOT Aeronautics in examining future decisions related to the airport development needs and potential policy decisions.

While community constraints were the most common response from airport representatives, funding continues to remain the backbone of development issues at airports throughout the state of Arizona.

Table 14 summarizes development constraints at the 67 SASP airports.

Table 14. Airport Development Constraints

Associated City	Airport	Human-Caused	Environmental	Community	Financial
Commercial Service					
Bullhead City	Laughlin/Bullhead City International		✓	✓	
Flagstaff	Flagstaff Pulliam	✓		✓	
Grand Canyon	Grand Canyon National Park		✓	✓	
Page	Page Municipal		✓		
Peach Springs	Grand Canyon West			✓	
Phoenix	Phoenix Sky Harbor International		✓		
Phoenix	Phoenix-Mesa Gateway	✓	✓		
Prescott	Ernest A. Love Field		✓	✓	
Show Low	Show Low Regional		✓		
Tucson	Tucson International		✓		
Yuma	Yuma International				
General Aviation					
Ajo	Eric Marcus Municipal			✓	
Bagdad	Bagdad	✓		✓	✓
Benson	Benson Municipal				✓
Bisbee	Bisbee Municipal				
Buckeye	Buckeye Municipal	✓			✓
Casa Grande	Casa Grande Municipal				
Chandler	Chandler Municipal			✓	
Chinle	Chinle Municipal				

Associated City	Airport	Human-Caused	Environmental	Community	Financial
Cibecue	Cibecue			✓	
Clifton	Greenlee County				
Colorado City	Colorado City Municipal			✓	
Coolidge	Coolidge Municipal		✓	✓	✓
Cottonwood	Cottonwood Municipal		✓	✓	
Douglas	Bisbee-Douglas International				✓
Douglas	Cochise College			✓	
Douglas	Douglas Municipal	✓			✓
Eloy	Eloy Municipal			✓	
Gila Bend	Gila Bend Municipal	✓			
Glendale	Glendale Municipal			✓	
Globe	San Carlos Apache				
Goodyear	Phoenix Goodyear				
Holbrook	Holbrook Municipal				
Kayenta	Kayenta			✓	
Kearny	Kearny	✓			
Kingman	Kingman			✓	
Lake Havasu City	Lake Havasu City	✓			✓
Marana	Marana Regional			✓	
Marana	Pinal Airpark	✓	✓		
Maricopa	Ak-Chin Regional				
Mesa	Falcon Field				
Nogales	Nogales			✓	
Parker	Avi Suquilla		✓		
Payson	Payson	✓	✓		✓
Phoenix	Phoenix Deer Valley				
Polacca	Polacca			✓	
Safford	Safford Regional				
San Luis	Rolle Airfield			✓	
San Manuel	San Manuel	✓	✓	✓	
Scottsdale	Scottsdale				
Sedona	Sedona	✓	✓		
Seligman	Seligman	✓	✓	✓	
Sells	Sells				
Sierra Vista	Sierra Vista Municipal-Libby Army Airfield				
Springerville	Springerville Municipal			✓	
St. Johns	St. Johns Industrial Air Park	✓	✓		
Superior	Superior				
Taylor	Taylor			✓	✓
Tombstone	Tombstone Municipal			✓	
Tuba City	Tuba City			✓	
Tucson	Ryan Field			✓	
Whiteriver	Whiteriver	✓		✓	✓
Wickenburg	Wickenburg Municipal				✓

Associated City	Airport	Human-Caused	Environmental	Community	Financial
Willcox	Cochise County				✓
Williams	H.A. Clark Memorial Field	✓			✓
Window Rock	Window Rock			✓	
Winslow	Winslow-Lindbergh Regional			✓	

Source: Airport Inventory and Data Survey 2017

SUMMARY

This chapter presented an in-depth view of Arizona's system airport assets, including number of airports in the system, airside and landside facilities, airport activity, airspace, NAVAIDs, approach types, planning documentation, and airport development constraints. This data is essential to the subsequent evaluation of the system's needs. In terms of identifying the number of airports in the system, it was determined that the State Statute definition would be used, a notable change from the previous plan. Eligible airports were defined as all public-use airports owned by a political subdivision of the state or Tribal government. As such, the Arizona system was reduced to 67 airports from the previous 83 airports identified in the 2008 SASP. Results from this chapter are used as the baseline for analysis in future chapters.