GYR

PHOENIX GOODYEAR AIRPORT

# Master Plan
## 2018 Update
## Executive Summary

# Background

Phoenix Goodyear Airport (GYR) is owned and operated by the City of Phoenix. Located in the northern portion of the City of Goodyear, in the west valley of the Phoenix metropolitan area and south of Interstate 10, GYR is one of three airports owned by the City of Phoenix. The City of Phoenix purchased GYR in 1968 for use as a general aviation reliever facility to Phoenix Sky Harbor International Airport, with the subsequent purchase of Phoenix Deer Valley Airport to serve a similar support role in accommodating general aviation activity.

GYR was originally established in 1941 as Naval Air Facility Litchfield Park. After World War II, it remained an operational facility, however, it served primarily as an aircraft storage and decommissioning facility from 1945 to 1965. Since the airport's purchase, the City of Phoenix has invested many resources into the continued maintenance and development of the facility, from a new terminal building to T-hangars and tie-downs, aircraft parking apron expansion, and a new maintenance facility. The Master Plan represents another step in the City of Phoenix's commitment to support the regional general aviation demand and business opportunities for the west valley.

The Airport's boundaries encompass 789 acres and its facilities serve a wide variety of users including general aviation operators such as flight schools, corporate and private pilots, and industrial aviation consisting of aircraft maintenance and repair. The Airport's single runway, Runway 03-21, is 8,500 feet long and is designed to accommodate aircraft as large as a Boeing 767. An air traffic control tower provides services to pilots utilizing GYR.

The Airport provides storage for both based and visiting aircraft in the form of hangars and aircraft parking apron. There is nearly 460,000 square feet of large, conventional hangar storage space and an additional 180,000 square feet of T-hangar space. There are also shade hangars for based aircraft and almost 300,000 square yards of apron. In addition, there are over 60 acres of compressed soil on the western side of the airfield designated for aircraft storage, primarily large aircraft, used by the Airport's maintenance, repair, and overhaul businesses.

In addition to flight training and the industrial activities, GYR is used by many visitors traveling to the region for events. These include NASCAR races at the Phoenix International Raceway, football games at the University of Phoenix stadium, including the Super Bowl and Fiesta Bowl, Major League Baseball Spring Training, and many other events.

# The Master Planning Process

A Master Plan is a comprehensive process that provides a strategic vision for growth and operation at Phoenix Goodyear Airport. The Master Plan documents the process used and results of the tasks that were performed to conform with Federal Aviation Administration (FAA) guidance, including FAA's Advisory Circular 150/5070-6A, *Airport Master Plans*.

The Master Plan is a multi-step process of tasks from establishing a vision and goals to production and adoption of final documents. The study has two major components that are approved by the FAA: a forecast of activity and an Airport Layout Plan (ALP). The ALP is a series of drawings in a set that depict the existing and proposed future Airport facilities and environs based on the recommendations of the Master Plan.


Stakeholder and community outreach was an integral part of the Master Plan. This included the use of two committees: the Technical Advisory Committee (TAC) and a Planning Advisory Committee (PAC) which both provided guidance. At key milestones, public workshops were held. In addition, near the outset of the study, the City of Phoenix had a booth at the Tale of Two Cities event to encourage public participation.

The purpose of this executive summary is to provide an overview of the Airport's Master Plan. Specific goals and objectives of the Master Plan include:

- Identify aviation trends that have impacted the Airport since the 2007 FAA-approved Master Plan
- Develop forecasts of aviation demand through the next 20 years that are approved by the FAA
- Assess community land use goals and what adjacent land uses may be impacted by future growth
- Work with the public and other Airport stakeholders to gain feedback on Airport development needs
- Determine the Airport's facility requirements to meet projected aviation activity
- Evaluate facilities for conformance with FAA airport design standards and applicable regulations
- Develop ALP drawings that graphically depict proposed capital improvements and provide guidance for future development
- Update the Capital Improvement Program to reflect recommended projects, including the business case for improvements
- Recommend sustainability initiatives that may result in reduced energy consumption, resource use, and/or environmental impacts
- Develop Safety Critical Data with conformance to FAA regulations through aerial surveying

# Aviation Activity Forecast

Forecasts were prepared for two primary activity indicators at the Airport – based aircraft and annual aircraft operations. Several methodologies were evaluated and a preferred forecast was selected for each based on historical levels of activity, discussions with Airport tenants (including the flight schools and maintenance, repair and overhaul (MRO) businesses), an examination of local socioeconomic trends, and regional and national aviation industry projections. The preferred forecasts were compared to the FAA's Terminal Area Forecast (TAF) as required.

Based aircraft are expected to increase over the next 20 years. This number has fluctuated over the last 10-years, between 220 to 230 with 222 in 2016, the study base year. In 2036, based aircraft are projected to reach 315, a high rate of growth compared to other general aviation airports nationwide. Currently more than 90% of the based aircraft are single-engine piston, reflecting the number of aircraft used for flight training and recreational pilots. This number of single-engine piston aircraft is forecast to continue growing, although as an overall percentage of the Airport's total based aircraft fleet, it is anticipated to decline as other aircraft types begin basing at GYR.


As of January 2018, the airport had 13 based jet aircraft compared to 1 at the outset of the study in 2016. Assuming stable economic conditions and growth of the regional business community, supported by adequate facility development at GYR, the number of jet aircraft could continue increasing at a faster pace than projected. These based jet aircraft are likely to out pace both single- and multi-engine aircraft at the Airport as the total number of based aircraft forecast for 2036 appears to be reasonable based on current trends.

*Based Aircraft Fleet Mix Summary*

| Year | Single-Engine Piston | | Multi-Engine Piston | | Jet | | Helicopter | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | # of Planes | % of Total | # of Planes | % of Total | # of Planes | % of Total | # of Planes | % of Total | # of Planes |
| **2016** | 204 | 91.9% | 15 | 6.8% | 1 | 0.5% | 2 | 0.9% | 222 |
| **Forecast** | | | | | | | | | |
| **2021** | 219 | 90.7% | 17 | 7.1% | 2 | 0.8% | 3 | 1.4% | 241 |
| **2026** | 237 | 89.4% | 20 | 7.4% | 3 | 1.2% | 5 | 2.0% | 265 |
| **2031** | 256 | 88.2% | 22 | 7.7% | 5 | 1.6% | 7 | 2.5% | 290 |
| **2036** | 275 | 87.0% | 25 | 8.0% | 6 | 2.0% | 9 | 3.0% | 315 |
| **CAGR 2016-2036** | 1.48% | N/A | 2.62% | N/A | 9.63% | N/A | 8.07% | N/A | 1.76% |

CAGR = compound annual growth rate

Sources: City of Phoenix Aviation Department, Kimley-Horn

Over the last 10 years, annual aircraft operations at GYR have ranged from a high of more than 188,000 to a low of less than 87,000 in 2014. Growth has continued since 2014 and is expected to continue given the regional and national industry trends. The FAA-approved forecasts anticipate linear growth over the next 10 years in operations, with elevated levels in the 11 to 20-year horizon.


The master plan projected aircraft operations to grow from 123,394 in 2016 to 200,360 in 2036. The majority of this growth is anticipated in local general aviation operations as a result of training, while non-local or itinerant activity is projected to grow steadily over time similar to proposed economic growth.

Of the projected total operations, the most significant growth is anticipated in local general aviation (GA) activity which encompasses the flight training activity. While growth is also projected in other categories such as air carrier and itinerant GA, with the current shortage of pilots and a growing number of students and a history of aviation flight schools, it is expected that local GA will see the biggest increase. The air carrier activity reflects the large aircraft being serviced by the maintenance and repair businesses which is also assumed to continue growing at GYR. Growth in regional business activity, as well as special events including NASCAR and other major sporting events, is also expected to continue to generate operational growth which is reflected in the itinerant GA operations.

*Operational Aviation Activity Forecast Summary*

| Year | Air Carrier | Itinerant GA | Local GA | Military | Total Operations |
|---|---|---|---|---|---|
| **2016** | 108 | 45,941 | 73,090 | 4,255 | 123,394 |
| **Forecast** | | | | | |
| **2021** | 336 | 48,049 | 79,767 | 4,194 | 132,346 |
| **2026** | 350 | 50,363 | 85,122 | 4,194 | 140,030 |
| **2031** | 364 | 52,356 | 113,548 | 4,194 | 170,462 |
| **2036** | 379 | 53,759 | 142,028 | 4,194 | 200,360 |
| **CAGR 2016-2036** | 6.47% | 0.79% | 3.38% | -0.07% | 2.45% |

CAGR = compound annual growth rate

Sources: FAA TAF issued January 2017; Woods and Poole, Inc.; Phoenix Goodyear ATCT, 2016; Kimley-Horn

Another important evaluation in the forecast process is identification of the future critical or design aircraft or aircraft family. The Airport's approved Airport Layout Plan (ALP) from 2008 shows the critical aircraft family has an airport reference code (ARC) of D-IV. Based on existing and projected levels of large aircraft operations at the Airport, fueled by continuing growth in corporate and MRO tenant activity, the Airport's ultimate design aircraft is expected to remain a D-IV with the critical aircraft identified as the Boeing 767-300.

# Facility Requirements

Facility requirements were developed for airside, landside, general aviation, and support facilities after conducting a demand/capacity analysis.

The Master Plan undertook a capacity analysis to evaluate the existing airfield. The capacity calculations were based on the specific airfield configuration, as well as operational and meteorological characteristics of the Airport on a typical day. The analysis revealed that the Airport is not likely to reach the point in the planning horizon where the FAA would recommend development of additional capacity. However, the results of the analysis indicate the Airport may reach approximately 72 percent of its annual service volume (ASV) ratio by the year 2036, (determined by dividing the 2036 operations forecast of 200,360 by the estimated ASV of 275,590), indicating a need to plan for additional capacity by the time the ratio reaches 80 percent. It was determined that the 2007 Master Plan's recommendation of constructing a second parallel runway would be maintained for future planning, although initially constructed during the next 20 years as a parallel taxiway. A parallel taxiway would open up additional development opportunities on the far side of the Airport, likely leading to the need for the eventual transition of the taxiway to a runway.

The existing runway's length was determined to be adequate to serve the projected fleet mix and use. The Master Plan did recommend that taxiway geometry be improved whenever feasible with emphasis on "hot spots" to mitigate the possibility of runway incursions. To the extent practical, this would include the removal and/or marking of pavements to correct confusing taxiway geometry.

Additional aircraft parking apron area is needed, including the amount of space available for lease by the Airport as well as individual Airport tenants operating businesses within the planning period. The Airport should monitor the utilization of the apron and make adjustments in apron size as needed.

Aircraft storage hangar requirements were also evaluated in this Master Plan. The current aircraft hangar and shade structure storage appears to be adequate for existing demand. It should be noted that space requirements are fluid and may require the shifting of the space between conventional hangars and T-hangars as user's specific requirements are identified and operations fluctuate, especially given the higher demand by based jet aircraft.

The existing 8,000-square-foot combined terminal building and Fixed Base Operator (FBO) common area will meet the space requirements for the majority of the planning period. The terminal building and FBO are centrally located at the Airport and provide sufficient access to the aircraft parking apron. It is recommended that the City continue using the terminal building for Airport administration personnel and seek potential tenants to lease the remaining portions of the

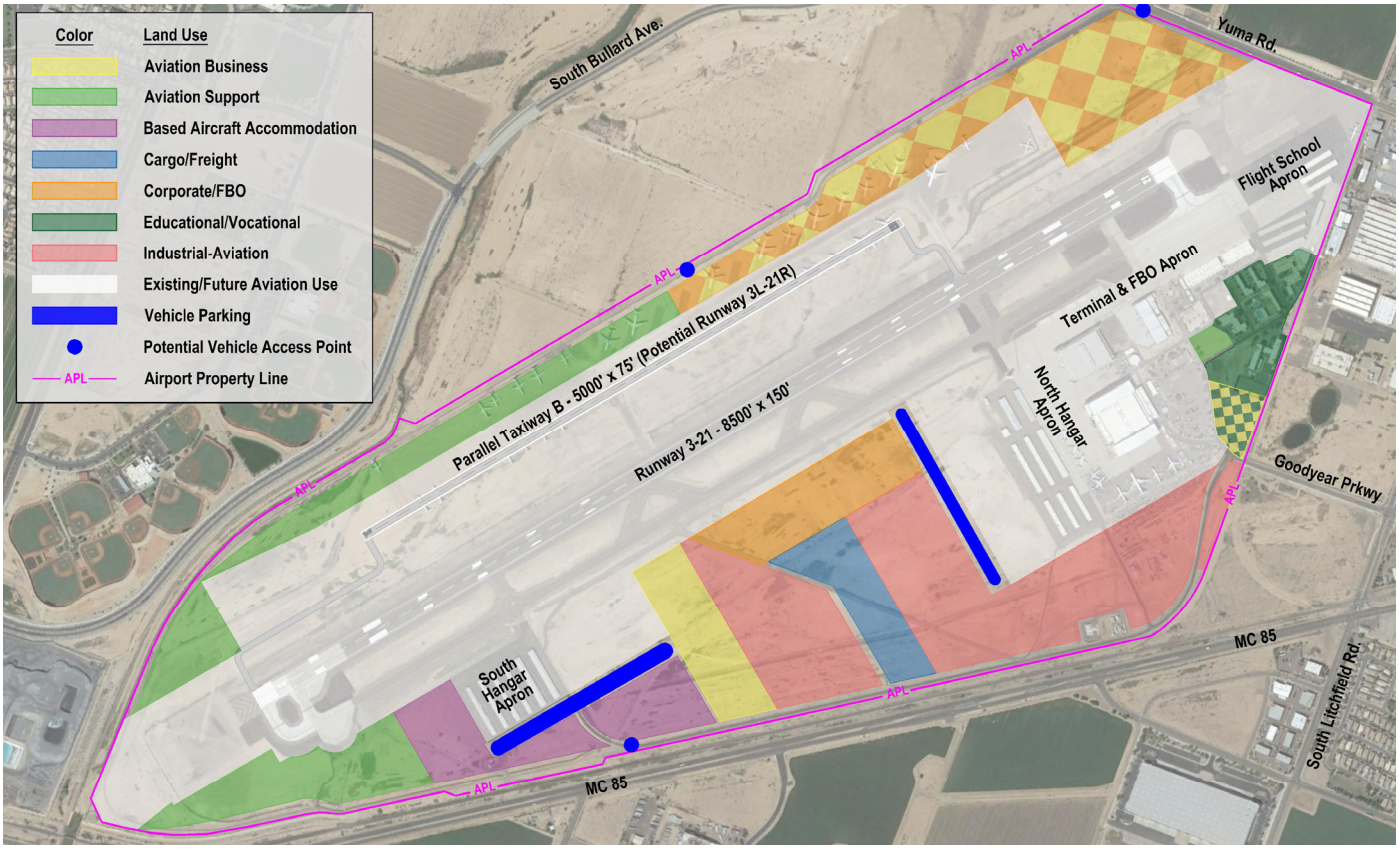
*Photo: Aaron Eriksson*

building. The building will likely need some level of modernization and upgrading such as roof replacement, mechanical, plumbing, and HVAC systems replacement near the end of the planning horizon. Vehicle parking for visitors can be constrained at times. Beginning in 2036, as the peak hour pilot and passenger demand increases, the existing size of the combined terminal building and FBO common area may require expansion. Therefore, it is recommended that the City continue to monitor the utilization of both spaces throughout the planning horizon and consider changes as needed.

In order to accommodate additional flight school apron expansion, the maintenance building may require relocation within the 20-year planning period. The Airport has adequate vacant land available should relocation be needed. The current capacity for all utilities is adequate for present day demands. However, some infrastructure is aging and should be evaluated for ability to supply additional capacity as necessary in future years.

As part of evaluating GYR's future facility needs, it is also important to incorporate sustainability into planning for future facilities at the Airport. The City of Phoenix Aviation Department maintains a Sustainability Management Plan that is focused on ensuring their entire airport system, effectively serves the needs of all airport users, maximizes community economic benefits, and demonstrates the City's commitment to a sustainable future.

Based on the identified facility needs and input from the advisory committees and public, the Master Plan also examined the remainder of the Airport's property and potential general land uses to promote logical, yet flexible future development options. Seven land use categories were identified, including likely activities and general requirements for each category. The categories ranged from educational/vocational to industrial aviation, corporate/FBO, based aircraft accommodation, aviation support, aviation business, and cargo/freight. In some areas, there are multiple land uses that could be considered or supported. All Airport property will continue to used for aviation-related development.



# Master Plan Recommendations

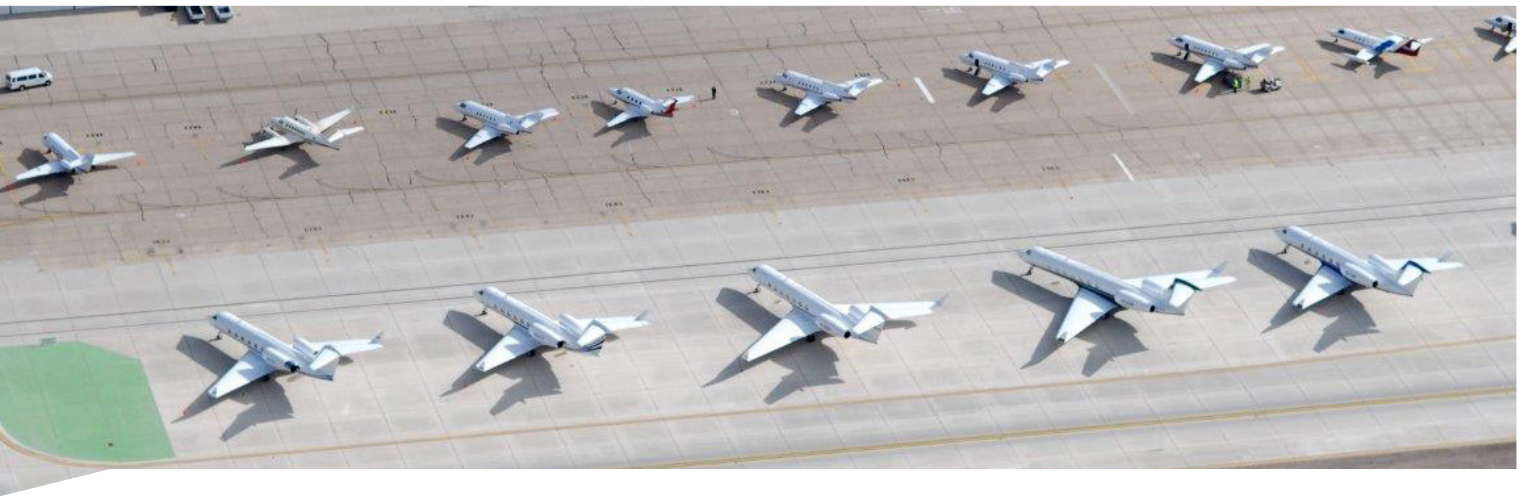
The Master Plan explored several alternative solutions to meet future airfield, landside and other aviation demand and related facility needs, including an in-depth examination of existing and potential land uses within the Airport's boundaries. These alternatives are captured in Chapter 6 of the Master Plan and culminate with a Preferred Alternative that was selected based on feedback provided at advisory committee meetings and public workshops. The Preferred Alternative identified all improvements recommended to be implemented within the 20-year planning horizon. Implementation of the recommended development plan will occur in three phases:

**Phase I** includes near-term projects to be implemented in the 0- to 5-year timeframe (FY 2019–2023). These include the rehabilitation and strengthening of Taxiway A and mitigation of non-standard taxiway connectors. Drainage improvements, FBO/MRO apron construction and vehicle access and parking are also recommended for enhancement to the facilities to meet projected demand to be enhanced.

**Phase II** includes mid-term projects to be implemented in the 6- to 10-year timeframe (FY 2024–2028). These projects include FBO/MRO apron construction (second phase), existing apron rehabilitation, terminal parking improvements, south aircraft parking apron construction and wash rack relocation, north T-hangar relocation and vehicle parking construction, taxiway connector rehabilitation (first phase), rehabilitation of taxiway connector and shoulders A4, A5, A6, and A7, taxiway B design/environmental planning and approvals, and construction, runway protection zone (RPZ) land use control and an updated Airport Master Plan.

**Phase III** includes long-term projects to be implemented in the 11- to 20-year timeframe (FY 2029–2038). These projects include existing apron rehabilitation (public and private), taxiway connector rehabilitation (second phase), rehabilitate taxiway connectors and shoulders A1, A2, A3, A8, A9, and A10 from Runway 3-21 edge to Taxiway A edge, construct flight school aircraft parking apron, rehabilitation and strengthening of north T-hangar, construction of conventional hangars, runway rehabilitation, user maintenance bay construction, west airfield access road construction and NEPA/design for taxiway-runway conversion.

It is important to note that the proposed facilities and infrastructure represent a layout that has been generally vetted by the existing Airport stakeholders, however, this layout may require modification as implementation occurs. The actual configuration may vary based on how tenants want to develop individual projects and the timing of other related projects, as well as available funding. The Master Plan has identified the dependencies of certain projects on others requiring completion before their implementation.



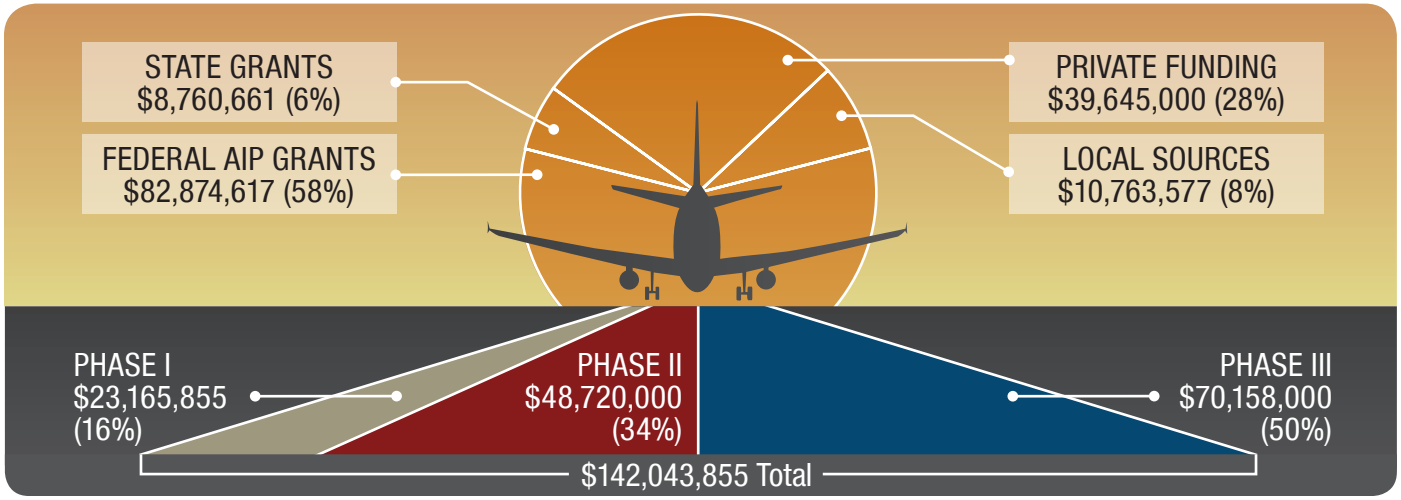
# Implementation & Financial Plan

The Master Plan depicts the projects in a phased approach over the 20-year planning period. Each phase assumes funding is available to meet the projected needs, however, if funding or facility needs arise sooner or later than identified, projects may be shifted.

The projects were also evaluated for likely funding sources including the FAA, Arizona Department of Transportation (ADOT) (also referred to as the State), private entities, and City of Phoenix as the local sponsor of the Airport. The funding plan was developed according to information and assumptions that provide a reasonable basis for analysis at a level appropriate for an airport master plan. Some of the assumptions used to project funding sources may not be realized, and unanticipated events and circumstances may occur. The funding plan is preliminary in nature. More detailed cost estimates and financial analyses are required to implement individual projects.

The Airport Improvement Program (AIP) is the FAA's grant program for funding capital development at eligible airports including general aviation airports that are designated reliever facilities such as Phoenix Goodyear Airport. The AIP provides annual non-primary entitlement grants to airports such as GYR up to an annual maximum of $150,000. In addition to these grants, GYR is eligible to compete with other airports for discretionary grants from the FAA which do not have an annual maximum or guaranteed amount. Airports compete nationally for these funds. The State provides grants to assist with federal grant matching for projects that are eligible for AIP grants (referred to as Federal/State/Local grants), aid with airport pavement preservation, and other projects that benefit the state airport system (referred to as State/Local grants). Projects identified in the Master Plan that provide direct benefit to a tenant or that are anticipated to occur on private leaseholds may not be eligible for AIP or state grants and would require private funding. The City of Phoenix would be responsible for all locally identified project funding, whether as a match to a federal or state grant or for projects that are entirely dependent on local funds for completion.

The Master Plan estimated more than $142 million in total project needs in the three phases, with nearly half of the costs in the latter 10 years of the period. Nearly 60 percent of the total project costs are eligible for FAA funding, while state funding would be sought for approximately 6 percent. Over a quarter of the costs would require funding from private sources compared to less than 10 percent of local funds assuming other sources were available to meet the financial needs of the projects. Approximately 2 percent of total project costs could be funded by FAA entitlement grants, 56 percent by FAA discretionary grants, 6 percent by State grants, 28 percent by private sources, and 8 percent by local funds.



## Independent Improvements

Independent improvements are not reliant on other projects and can be implemented anytime

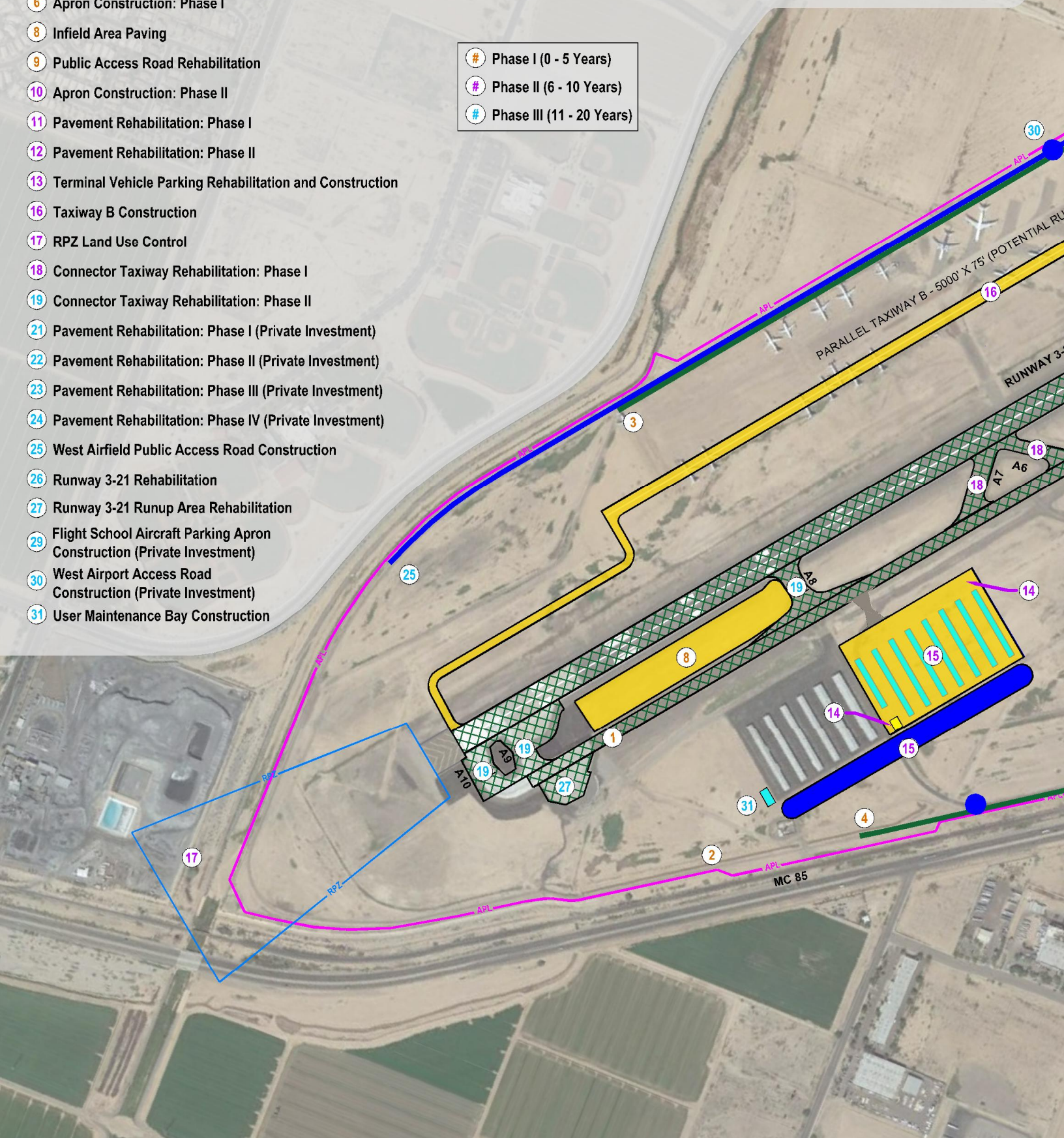
1. Taxiway A Rehabilitation, Strengthening, and Non-Standard Connector Mitigation
2. Drainage Improvements
3. Airport Perimeter Road Improvements: Phase I
4. Airport Perimeter Road Improvements: Phase II
5. Helicopter Landing Area Designation
6. Apron Construction: Phase I
8. Infield Area Paving
9. Public Access Road Rehabilitation
10. Apron Construction: Phase II
11. Pavement Rehabilitation: Phase I
12. Pavement Rehabilitation: Phase II
13. Terminal Vehicle Parking Rehabilitation and Construction
16. Taxiway B Construction
17. RPZ Land Use Control
18. Connector Taxiway Rehabilitation: Phase I
19. Connector Taxiway Rehabilitation: Phase II
21. Pavement Rehabilitation: Phase I (Private Investment)
22. Pavement Rehabilitation: Phase II (Private Investment)
23. Pavement Rehabilitation: Phase III (Private Investment)
24. Pavement Rehabilitation: Phase IV (Private Investment)
25. West Airfield Public Access Road Construction
26. Runway 3-21 Rehabilitation
27. Runway 3-21 Runup Area Rehabilitation
29. Flight School Aircraft Parking Apron Construction (Private Investment)
30. West Airport Access Road Construction (Private Investment)
31. User Maintenance Bay Construction

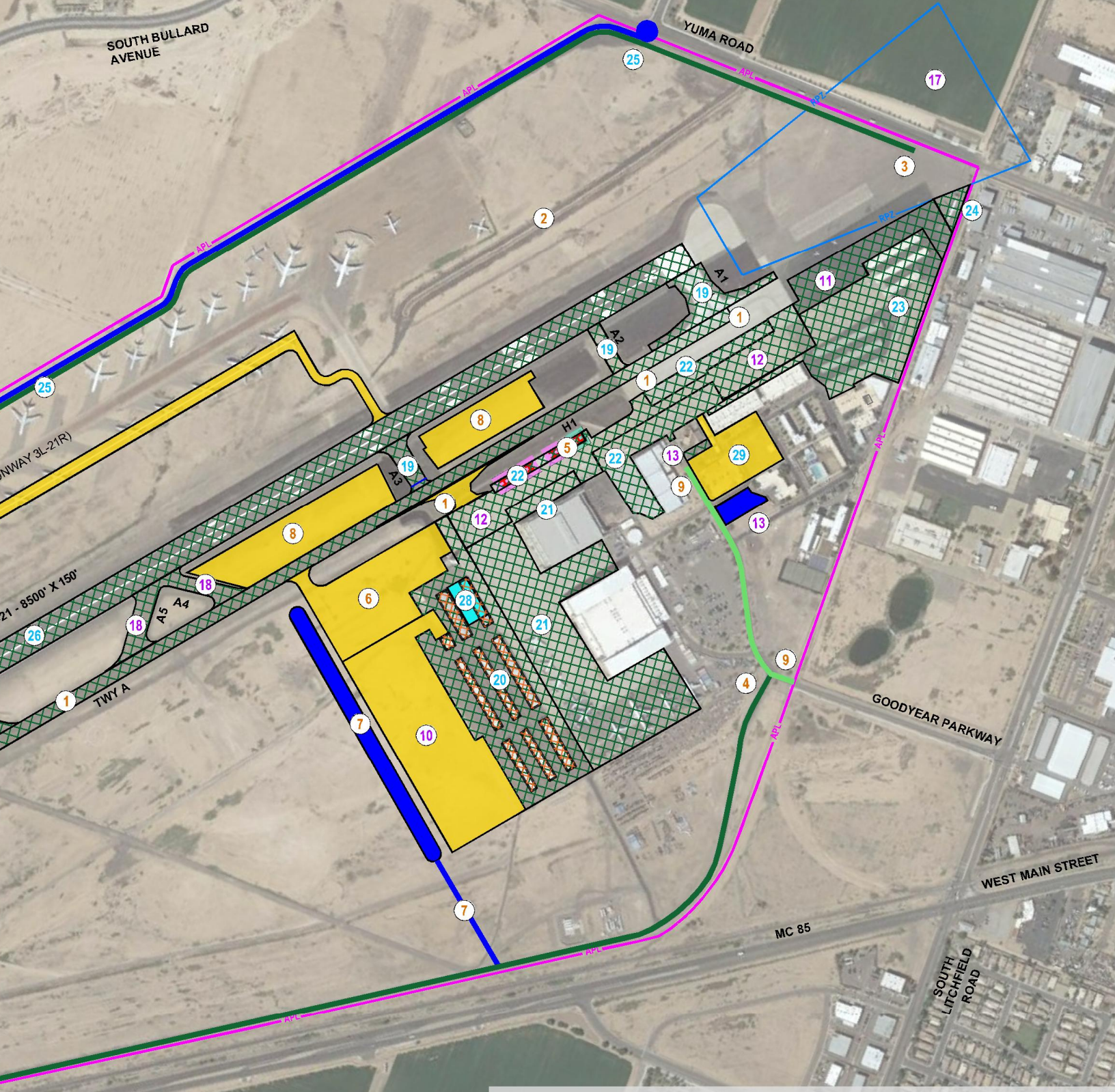
## Dependent Improvements

Dependent improvements are reliant on completion of another project before implementation

7. East Airfield Access Road and Vehicle Parking Construction
14. South Aircraft Parking Apron Construction and Wash Rack Relocation
15. North T-Hangar Relocation and Vehicle Parking Construction
20. North T-Hangar Pavement Rehabilitation
28. Conventional Aircraft Storage Hangar Construction (Private Investment)

- # Phase I (0 - 5 Years)
- # Phase II (6 - 10 Years)
- # Phase III (11 - 20 Years)






## Legend

- RPZ — Runway Protection Zone (RPZ)
- APL — Airport Property
- Vehicle Parking
- Airfield Pavement
- H — Existing Helipad
- H — Proposed Helicopter Landing Area
- Road Construction
- Road Rehabilitation
- Hangar
- Removed Structure
- Pavement Rehabilitation
- Potential Vehicle Access

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SCALE IN FEET

GYR

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ARMSTRONG CONSULTANTS

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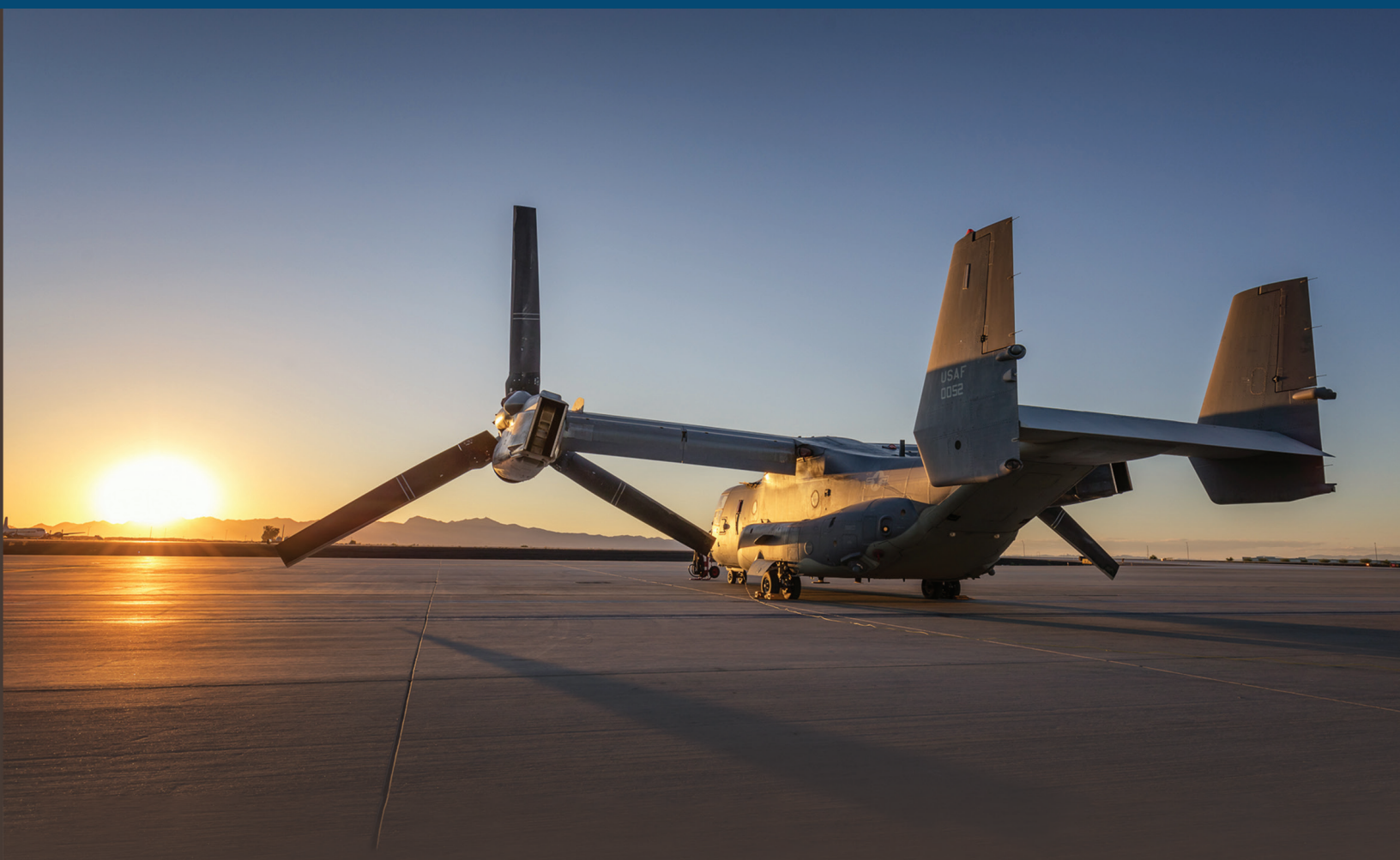


For additional information about the Phoenix Goodyear Airport Master Plan,
please visit goodyearairport.com or call (623) 932-4550.