Phoenix Area FAA Modernization Project
Draft Environmental Assessment

May 2026

Prepared by:

United States Department of Transportation

Federal Aviation Administration

Fort Worth, Texas

Change Sheet

After publication of the Draft Environmental Assessment for public review and comment on April 29, 2026, the FAA made targeted revisions to specific tables and exhibits to improve the way the No Action Alternative and Proposed Action are depicted. These revisions do not alter the underlying analysis or the conclusions described in the Draft Environmental Assessment.

Draft EA Section	Page Number	Description of Change
Cover page and footers	All	Updated date of Draft EA from April to May
Section 3.2.1, Table 3-1	28, 29, 30	Added language identifying which types of aircraft (turbojets, turboprops, or all aircraft) are included in flight tracks for each airport
Section 3.2.1, following Table 3-1	30	Added text explaining why deviations in published flight procedures may occur and how those deviations were incorporated into the flight tracks that were modeled in the Draft EA
Section 3.3	33	Updated Proposed Action procedure and SID count to include RZORT procedure
Section 3.3, Table 3-2	34, 35	Added language identifying which types of aircraft (turbojets, turboprops, or all aircraft) are included in flight tracks for each airport; added RZORT procedure
Section 3.3, following Table 3-2	35	Added text explaining why deviations in published flight procedures may occur and how those deviations were incorporated into the flight tracks that were modeled in the Draft EA
Section 3.4.1	39	Updated number of en route transitions, runway transitions, and procedures
Section 3.4.1, Table 3-4	39	Updated number of total en route transitions and total runway transitions
Section 3.4.2	39	Updated number of RNAV procedure/airport combinations
Section 3.4.2, Table 3-5	40	Updated number of independent RNAV procedures at PHX
Appendix H	H-3	Added language explaining why deviations in published flight procedures may occur and how those deviations were incorporated into the flight tracks that were modeled in the Draft EA; added definition of “above field elevation (AFE)”
Appendix H, all exhibits	H-1 through H-250	Added note identifying which types of aircraft (jets, turboprops, or both) are included in flight tracks for each airport
Appendix H, Exhibits H-1.1 through H-1.10	H-9 through H-18	Added “Flight Track by Altitude” title explaining that the lines on the exhibits/in the legends represent flight tracks, not procedures
Appendix I, all exhibits	I-1 through I-212	Added note identifying which types of aircraft (jets, turboprops, or both) are included in flight tracks for each airport; added note directing readers to Appendix H exhibits for comparing Proposed Action flight corridors to No Action flight corridors
Appendix K, Exhibit 5	K-51	Added note explaining why deviations in published flight procedures may occur and how those deviations were incorporated into the flight tracks that are shown in Exhibit 5
Appendix K, Exhibit 6	K-52	Added note explaining why deviations in published flight procedures may occur and how those deviations were incorporated into the flight tracks that are shown in Exhibit 6

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This Draft Environmental Assessment proposes to modernize flight procedures and is called the "Phoenix Area FAA Modernization Project." Prior efforts to modernize the Phoenix airspace have occurred and were the subject of lawsuits in *City of Phoenix v. Huerta and the City of Scottsdale v. Federal Aviation Administration*. The procedures described in this Draft EA are not connected to the prior court cases. The current airspace modernization effort marks an entirely new environmental analysis.

1. INTRODUCTION

The National Environmental Policy Act of 1969 (NEPA), [42 United States Code (U.S.C.) § 4321 *et seq.*], requires federal agencies to disclose to decision makers and the interested public a clear, accurate description of the potential environmental impacts that could arise from proposed federal actions. Through NEPA, the United States (U.S.) Congress has directed federal agencies to consider environmental factors in their planning and decision-making processes and to encourage public involvement in decisions that affect the quality of the human environment. As part of the NEPA process, federal agencies are required to consider the environmental effects of a proposed action, reasonable alternatives to the proposed action, and a no action alternative (i.e., analyzing the potential environmental effects of not undertaking the proposed action). The Federal Aviation Administration (FAA) has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA 2015).[1]

This Draft EA, prepared in accordance with FAA Order 1050.1F, documents the potential effects to the environment that may result from the proposed modifications to Air Traffic Control (ATC) procedures at 10 airports in the Phoenix area (Study Airports).[2] These airports were selected based on whether they would be directly served by a proposed procedure and, if so, whether they meet minimum operations activity requiring a noise analysis (FAA 2015, App. B-1).[3]

[1] After initiation of this EA, the FAA revised its NEPA guidance, based on regulatory changes, executive orders (E.O.s) and new NEPA case law. These revisions include the elimination of discussion and analysis of climate, environmental justice, and cumulative impacts analyses. In addition, the Council on Environmental Quality (CEQ) revoked its regulations (40 CFR parts 1500-1508) implementing NEPA, in response to E.O. 14154, *Unleashing American Energy.* Exceptions in the Draft EA include the removal of the environmental justice analysis pursuant to the January 21, 2025, E.O. 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity.* Based on the new E.O. and the revocation of CEQ regulations, it is no longer a legal requirement or the policy of the federal government to conduct environmental justice analyses. In addition, the CEQ regulations historically had required the consideration of cumulative impacts. In addition, the Supreme Court issued the Seven County Infrastructure Coalition v. Eagle County, 605 U.S. 975 (2025) (Seven County) ruling on May 29, 2025. As a result of these actions, it is no longer a legal requirement or the policy of the federal government to conduct cumulative impact analyses. In addition, the Seven County ruling reinforced the limited scope of NEPA reviews, holding that NEPA does not require an agency to consider environmental effects of other activities and projects "separate in time or place" from the proposed action. Therefore, this Draft EA does not analyze cumulative impacts.

[2] FAA Order 1050.1G, FAA National Environmental Policy Act Implementing Procedures, was published on July 3, 2025. Projects that commence after July 3, 2025, are required to comply with FAA Order 1050.1G, while those projects already underway by that date may follow FAA Order 1050.1F. This EA relies upon FAAA Order 1050.1F, the Fiscal Responsibility Act of 2023, Executive Order 14173, *Ending Illegal Discrimination and Restoring Merit-Based Opportunity*, E.O. 14154, *Unleashing American Energy*, and the Supreme Court's decision in *Seven County Infrastructure Coalition v. Eagle County*, 605 U.S. 168 (2025).

[3] As noted in **Section 1.3**, certain airports were retained for analysis even though they did not meet the minimum operation requirements for a noise analysis.

The 10 Study Airports are listed below with their FAA location identifiers and are detailed further in **Section 1.2.**

- Phoenix Sky Harbor International Airport – PHX
- Buckeye Municipal Airport – BXK
- Chandler Municipal Airport – CHD
- Phoenix Deer Valley Airport – DVT
- Falcon Field Airport – FFZ
- Glendale Regional Airport – GEU
- Phoenix Goodyear Airport – GYR
- Mesa Gateway Airport – IWA
- Stellar Airpark – P19
- Scottsdale Airport – SDL

The EA includes five chapters: 1) Introduction, 2) Purpose and Need, 3) Alternatives, 4) Affected Environment, and 5) Environmental Consequences. In addition, the EA includes 14 appendices: **Appendix A** identifies acronyms and terms used in the EA; **Appendix B** identifies documents and resources cited in the EA; **Appendix C** identifies the people involved in preparing the EA; and **Appendix D** through **Appendix N** are first discussed and described in the EA when it is appropriate to reference the reader to each appendix.

1.1 Project Background

The FAA regularly evaluates air traffic control procedures nationwide to enhance the safety and efficiency of the world's safest air transportation system. As part of this ongoing effort, the FAA determined that potential changes to routes serving airports in the Phoenix area were necessary to ensure consistency with the FAA's Next Generation of Air Transportation System (NextGen) program. NextGen, which is intended to modernize the U.S. National Airspace System (NAS) to enhance safety, efficiency, and capacity in air travel, includes procedures known as Performance-Based Navigation (PBN). PBN uses satellite-based navigation to enable more direct routes and efficient climbs and descents. Specifically, PBN comprises area navigation (RNAV) and required navigation performance (RNP) components.[4] The FAA has implemented PBN procedures at major airports nationwide to enhance operational efficiency, reduce delays, and provide a flexible system capable of meeting the demands and complexities of the future. As described in the PBN NAS Navigation Strategy 2016, as traffic increases at the major hubs, such as PHX, airspace in their vicinity must be highly structured to support predictable and reliable trajectories. Such structuring reduces workload for pilots and controllers during peak demand and allows for efficient flows in and out of metropolitan areas (FAA 2016). PHX is currently one of the busiest airports in the United States, and serves one of the busiest metropolitan areas, based on

[4] RNAV enables aircraft to fly on any desired flight path within the coverage of ground- or space-based navigation aids, within the capability of the aircraft equipage or a combination of capabilities. RNP is RNAV with the addition of onboard performance monitoring and alerting capability (FAA 2016).

population, indicating that the demand for PHX is unlikely to change in the near future.[5] Additional information related to PBN, as it relates to the Proposed Action, is provided in **Appendix D**.

The Proposed Action is intended to address operational inefficiencies in the Phoenix terminal airspace through the use of PBN procedures consistent with FAA's national navigation strategy (FAA 2016). More specifically, the Project has been designed to optimize procedures in the region, while enhancing safety, in accordance with FAA's airspace statutory authority under federal law (49 U.S.C. §§ 40103 and 44718). This would be accomplished by developing procedures that take advantage of technological advances in navigation, such as RNAV, while ensuring that aircraft not equipped to use RNAV continue to have access to the NAS. This approach addresses congestion and other factors that reduce efficiency in busy airport and airspace areas.

Pursuant to its statutory airspace authority (49 U.S.C. §§ 40103 and 44718), between 2022 and 2025 the FAA developed and conducted extensive coordination focusing on the Phoenix area airspace with a PBN Design Team composed of FAA specialists, National Air Traffic Controllers Association (NATCA) representatives, local airports, and airline stakeholders. In the process, the FAA defined operational issues and recommended conceptual designs for procedures addressing identified inefficiencies. In addition, the PBN Design Team met with interested tribes, elected officials, and local airport leadership to discuss the preliminary design elements and to receive input. PBN Design Team coordination is discussed further in **Section 3.1** and **Appendix E**.

1.2 Study Airports

The Study Airports consist of one major Study Airport (PHX) and nine satellite Study Airports. The Study Airports are described below and shown in **Exhibit 1-2** and **Exhibit 1-3**.

The Study Airports were selected based on specific FAA criteria requiring each airport to have a minimum of 700 annual jet operations filed under Instrument Flight Rules (IFR) or 90,000 or more annual propeller aircraft operations through the forecast period (FAA 2015, App B-1).[6] Airports that did not meet these thresholds were excluded, unless noted otherwise in this chapter, because the Proposed Action would result in little to no operational changes. In addition, airports where most traffic operates under Visual Flight Rules (VFR) were also excluded because VFR aircraft operating outside controlled airspace are not required to communicate with ATC. These pilots operate under a "see and be seen" basis and are not required to file flight plans, resulting in minimal FAA operational data.

The Study Airports are summarized below, with additional information for each presented in **Table 1-1** and **Table 1-2**.

Phoenix Sky Harbor International Airport (PHX). PHX, the largest of the Study Airports, based on total annual operations, is considered the major Study Airport of this Draft EA regarding

[5] According to U.S. Census Bureau data, Phoenix was the fifth busiest city in the United States in 2024, based on population. FAA enplanements data reported PHX as the 11th busiest commercial service airport in the United States in 2024, based on enplanements.

[6] No noise analysis is needed for projects involving Design Group I and II airplanes (wingspan less than 79 feet) in Approach Categories A through D (landing speed less than 166 knots) operating at airports whose forecast operations in the period covered by NEPA document do not exceed 90,000 annual propeller operations (247 average daily operations) or 700 annual jet operations (two average daily operations).

procedure and airspace optimization. PHX is a large-hub primary commercial service airport under the FAA's National Plan of Integrated Airport Systems (NPIAS) (FAA 2024a).[7] Based on 2024 operations, PHX is the 11th busiest airport in the United States. As shown in **Table 1-1**, PHX has three parallel east-west runways (Runway 7R/25L, Runway 7L/25R, and Runway 8/26) ranging from 7,800 feet to 11,489 feet in length. Runway thresholds include displaced thresholds and instrument approach procedure (IAP)-based threshold crossing heights for both arrival directions. Aircraft arriving at PHX may be assigned to one of the five RNAV Standard Terminal Arrival Routes (STARs) or one of six conventional STARs. Departing aircraft may be assigned one of nine RNAV Standard Instrument Departures (SIDs) or six conventional SIDs.

Buckeye Municipal Airport (BXK). BXK is a satellite Study Airport located approximately 45 miles west of PHX. BXK is classified as a general aviation airport in the NPIAS. As identified in **Table 1-1**, the airport has one runway (Runway 17/35). There are currently no instrument arrival or departure procedures at BXK.

Chandler Municipal Airport (CHD). CHD is a satellite Study Airport located approximately 18 miles southeast of PHX. It accommodates a mix of general aviation activities, including training, gliding, parachuting, and air ambulance services, and serves as a reliever airport for PHX. With more than 200,000 operations in 2025, CHD is among the nation's largest general aviation airports. CHD is classified as a regional, reliever airport in the NPIAS. As presented in **Table 1-1**, the airport has two parallel runways (Runway 4R/22L and Runway 4L/22R) and a helipad. Aircraft arriving at CHD may be assigned to one of the two RNAV STARs or one of the three conventional STARs. Departing aircraft may be assigned one of nine RNAV SIDs.

Phoenix Deer Valley Airport (DVT). DVT is a satellite Study Airport located approximately 19 miles north-northwest of PHX. It accommodates general aviation activity and serves as a reliever airport for PHX. DVT is classified as a national, reliever airport in the NPIAS. As identified in **Table 1-1**, the airport has two parallel runways (Runway 7R/25L and Runway 7L/25R). Aircraft arriving at DVT may be assigned either the RNAV STAR or one of three conventional STARs. Departing aircraft may be assigned to one of the nine RNAV SIDs or one Obstacle Departure.

Falcon Field Airport (FFZ). FFZ is a satellite Study Airport located approximately 14 miles east of PHX. It accommodates general aviation activity and serves as a reliever airport for PHX and IWA. With more than 300,000 operations annually, FFZ consistently ranks among the top five most active general aviation airports in the United States. FFZ is classified as a regional, reliever airport in the NPIAS. As shown in **Table 1-1**, the airport has two parallel runways (Runway 4R/22L and Runway 4L/22R). Aircraft arriving at FFZ may be assigned to one of the two RNAV STARs or one of the three conventional STARs. Departing aircraft may be assigned to the RNAV SID or Obstacle Departure.

Glendale Regional Airport (GEU). GEU is a satellite Study Airport located approximately 18 miles northwest of PHX. It accommodates general aviation activity and serves as a reliever airport for PHX. GEU is classified as a regional, reliever airport in the NPIAS. As identified in **Table 1-1**, the airport has one runway (Runway 1/19). Aircraft arriving at GEU may be assigned to either the

[7] Large hubs are the airports that each account for at least 1 percent of total U.S. passenger enplanements.

RNAV STAR or conventional STAR. Departing aircraft may be assigned to one of the nine RNAV SIDs, one RNAV Obstacle Departure or one conventional SID.

Phoenix Goodyear Airport (GYR). GYR is a satellite Study Airport located approximately 21 miles west of PHX. It accommodates general aviation activity and serves as a reliever airport for PHX. GYR is classified as a national, reliever airport in the NPIAS. As identified in **Table 1-1**, the airport has one parallel runway (Runway 3/21) and a helipad. Aircraft arriving at GYR may be assigned to either the RNAV STAR or conventional STAR. Departing aircraft may be assigned to one of the nine RNAV SIDs, one conventional SID, or one RNAV Obstacle Departure.

Mesa Gateway Airport (IWA). Formerly Williams Air Force Base, IWA is a satellite Study Airport located approximately 22 miles southeast of PHX. IWA is a non-hub commercial service airport under the NPIAS. As shown in **Table 1-1**, the airport has three parallel runways (Runway 12R/30L, Runway 12C/30C, and Runway 12L/30R). Aircraft arriving at IWA may be assigned to one of the two RNAV STARs or one of the three conventional STARs. Departing aircraft may be assigned to one of the nine RNAV SIDs or one Obstacle Departure.

Stellar Airpark (P19). P19 is a satellite Study Airport located approximately 9 miles south-southeast of PHX. Although P19 is not included in the NPIAS, it accommodates general aviation activity. As shown in **Table 1-1**, the airport has one runway (Runway 17/35). Aircraft arriving at P19 may be assigned to one of three conventional STARs. Departing aircraft are assigned to the one RNAV SID in place at the airport.

Scottsdale Airport (SDL). SDL is a satellite Study Airport located approximately 6 miles northeast of PHX. It accommodates general aviation activity and serves as a reliever airport for PHX. SDL is classified as a national reliever airport in the NPIAS. As shown in **Table 1-1**, the airport has one runway (Runway 3/21). Aircraft arriving at SDL may be assigned to either the RNAV STAR or one of three conventional STARs. Departing aircraft may be assigned to one of the nine RNAV SIDs, one of two conventional SIDs, or one Obstacle Departure.

Table 1-1. Study Airports

Airport	City	Runways
PHX	Phoenix	7R/25L, 7L/25R, 8/26
BXK	Buckeye	17/35
CHD	Chandler	4R/22L, 4L/22R
DVT	Phoenix	7R/25L, 7L/25R
FFZ	Mesa	4R/22L, 4L/22R
GEU	Glendale	1/19
GYR	Goodyear	3/21
IWA	Mesa	12R/30L, 12C/30C, 12L/30R
P19	Chandler	17/35
SDL	Scottsdale	3/21

Notes: R = right; L = left; C = center
Source: AirNav: Airport Information. Accessed online at www.airnav.com/airports, September 2025.

Table 1-2 provides the total IFR, VFR, and local operations reported for 8 of the 10 airports as reported in the FAA's Operations Network (OPSNET) system. Total IFR counts for BXK and P19 were obtained from the FAA's Traffic Flow Management System Counts (TFMSC). Total operational

counts for BXK and P19 were determined from the Performance Data Analysis and Reporting System (PDARS) radar data for calendar year (CY) 2024 (FAA 2024b).[8]

Table 1-2. Distribution of IFR Traffic Among Study Airports

Airport	IFR	VFR	Local	Total
PHX	474,683	11,062	0	485,745
BXK*	234	n/a	n/a	12,889
CHD	4,752	79,110	154,141	238,003
DVT	14,178	126,629	292,067	432,874
FFZ	6,550	158,396	259,166	424,112
GEU	2,615	41,107	81,768	125,490
GYR	6,847	88,789	116,445	212,081
IWA	30,021	98,726	180,356	309,103
P19*	610	n/a	n/a	4,014
SDL	64,521	66,585	35,482	166,588

Notes: IFR = Instrument Flight Rules; VFR = Visual Flight Rules; *BXK and P19 do not have reported totals in OPSNET. IFR totals are from TFMSC (https://aspm.faa.gov/tfms/sys/Airport.asp). BXK and P19 total operations from PDARS data.
Source: FAA OPSNET, FAA TFMSC, PDARS, 2025

Review of the PDARS radar data received for CY 2024 results in both BXK and P19 having less than 90,000 annual propeller aircraft operations. BXK has 12,889 total operations, and P19 has 4,014 total operations (FAA 2024b).

OPSNET documents the official tower counts for each airport, whereas the TFMSC totals are based on flight plan information and en route radar data in the NAS. Therefore, the total counts for each airport may differ. **Table 1-3** provides the total jet IFR operations reported for each of the 10 Study Airports.

Table 1-3. Calendar Year 2024 Total and Jet IFR Operations from TFMSC

Airport	Total Operations	Jet IFR	Percent (%) Jet IFR
PHX	473,550	451,561	95.4
BXK	234	35	15.0
CHD	4,161	1,291	31.0
DVT	11,826	4,308	36.4
FFZ	8,016	1,401	17.5
GEU	3,080	1,207	39.2
GYR	9,294	1,789	19.2
IWA	27,566	20,609	74.8
P19	610	367	60.2
SDL	66,189	56,550	85.4

Notes: IFR = Instrument Flight Rules
Source: FAA TFMSC. Accessed online at https://aspm.faa.gov/tfms/sys/Airport.asp, June 2025.

The FAA Terminal Area Forecast (TAF)[9] was used as the basis for the forecast analysis years (2027 and 2032). Based on the operations totals in **Table 1-2 and Table 1-3**, and expected growth presented in the TAF, 8 of the 10 Study Airports have more than 700 jet IFR operations potentially affected by the Proposed Action and should be evaluated as Study Airports in the PHX EA.

[8] PDARS automatically collects radar track and flight plan data from TRACONS and ARTCCs to produce daily reports used, for example, to monitor, analyze and report on National Airspace System performance.
[9] Data used in this memorandum is from the 2024 TAF issued in January 2025, https://taf.faa.gov/.

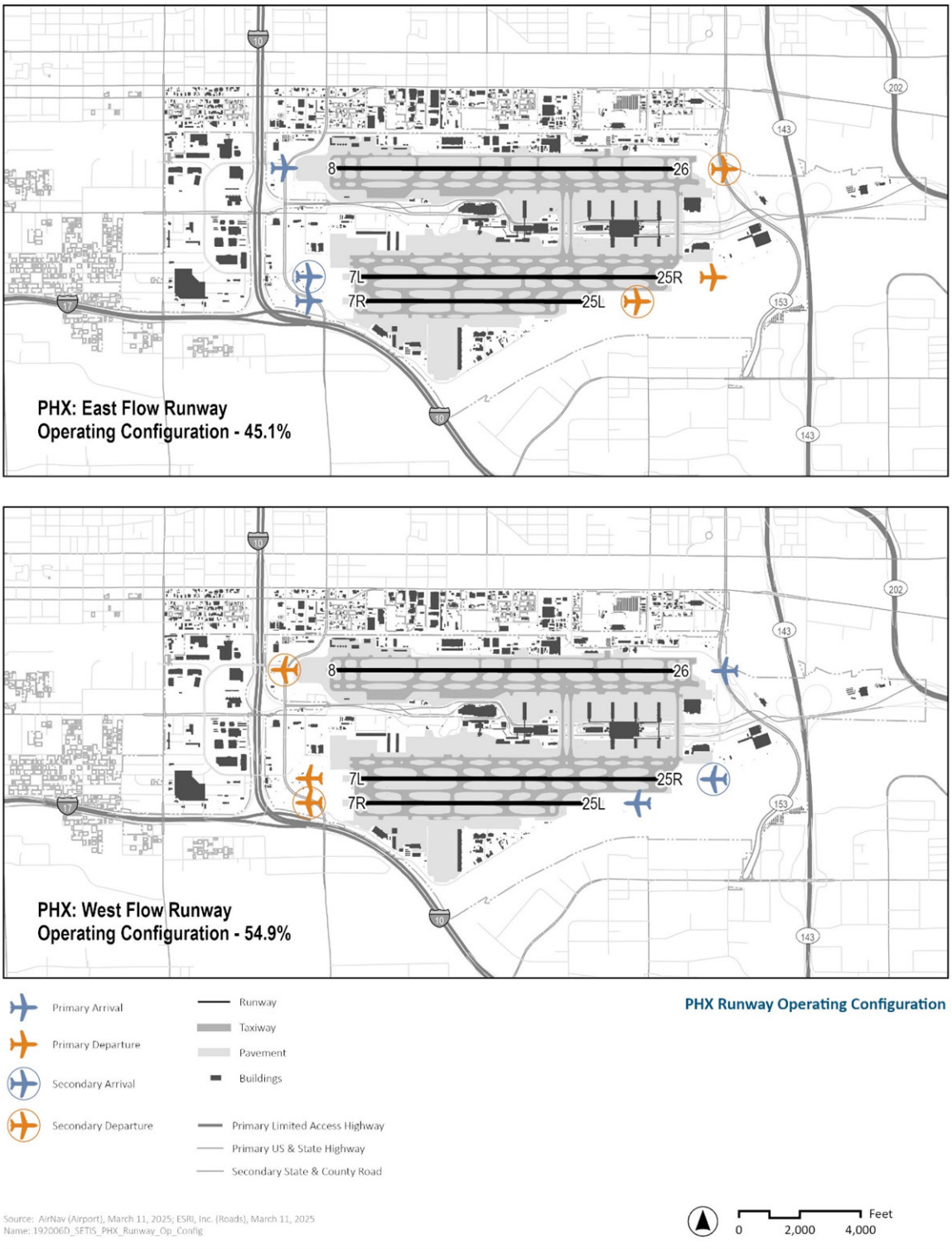
While BXK and P19 have less than 700 jet IFR operations in the baseline they have been retained for inclusion in this analysis. The TAF indicates that the operations at BXK are not expected to change through 2032, and P19 is not reflected in the TAF. Therefore, the assumed growth rate for P19 is from the nearest general aviation airport, which is CHD.

1.2.1 Major Study Airport (PHX) Runway Operating Configurations

PHX operates under several different runway operating configurations depending on factors such as weather, prevailing wind, and air traffic conditions. As a result, it is possible for the runway ends used for arrivals and departures to change several times throughout the day. Controllers use different runway operating configurations depending on prevailing conditions.

While PHX operates under both IFR and VFR conditions, runway operating configuration was calculated using IFR conditions as that encompasses the majority of operations at PHX. Technical analyses included in this Draft EA also assume IFR runway operating configurations. Depending on the factors listed above, the parallel runways at PHX operate in either east flow (45.1 percent of annual IFR operations) or west flow (54.9 percent of annual IFR operations). **Exhibit 1-1** illustrates the primary runway operating configurations at PHX, under IFR conditions. These configurations are based on the FAA's PDARS runway configuration data for 2024 (FAA 2024b).

Exhibit 1-1. PHX Runway Operating Configuration



1.3 Study Areas

As detailed in the following sections, in consideration of the location of the Study Airports, the nature of the Project, and existing historic and cultural resources, as well as other Section 4(f) resources, both a General Study Area and Supplemental Study Area have been defined for the Proposed Action. The General Study Area represents the geographic extent of airspace where modifications to aircraft procedures may occur. The Supplemental Study Area identifies locations where environmental effects--particularly aircraft noise--could potentially occur based on preliminary procedure design and screening analyses. These Study Areas establish the geographic scope for the environmental analyses presented in **Chapter 5**.

1.3.1 General Study Area

To describe the background elements and existing conditions in the Project, the FAA developed a General Study Area. This area is used to evaluate the potential for environmental impacts under the Proposed Action. Three primary objectives guided its development:

1. Capture representative IFR flight tracks.

The General Study Area includes all IFR flight tracks using radar data from CY 2024,[10] which was the most recent year of data available at the start of the study. Thresholds described below are set below 100 percent. The reason the thresholds are set below 100 percent is to account for outlier operations that may not reach the prescribed altitudes within a reasonable distance of the Study Airports or at all. By excluding the flight tracks for these kinds of operations, potential distortion of the lateral boundary can be avoided, and the General Study Area is kept to the most reasonable size. The General Study Area also captures IFR flight tracks designed for the Proposed Action, where 95 percent of departing aircraft leaving PHX are below 10,000 feet Above Ground Level (AGL) and 95 percent of arriving aircraft to PHX are below 7,000 feet AGL. The threshold for capturing flight tracks at the satellite airports is set at 85 percent of all operations to account for the lower altitudes at which many aircraft operating from these airports tend to fly.

The FAA requires consideration of impacts of airspace actions from the ground surface to 10,000 feet AGL if the study area is larger than the immediate area around an airport or involves more than one airport or up to 18,000 feet AGL if the proposed action or alternative(s) are over a national park or wildlife refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute (FAA 2015, Chap. 11 and App B; United States, 49 U.S.C. § 303, para. B-1.3).

2. Establish an appropriate AGL reference.

For the purposes of defining the General Study Area, the FAA applied AGL-based screening thresholds (7,000 feet AGL for arrivals and 10,000 feet AGL for departures) and converted them to equivalent Mean Sea Level (MSL) altitudes using a representative ground elevation.

[10] Radar data obtained from the FAA's PDARS was used to identify military and civilian IFR flights to and from the Study Airports for CY 2024 for the General Study Area existing conditions (FAA 2024b).

Ground elevation varies with local terrain and is not evaluated as a single surface; therefore, a constant terrain value was selected to operationalize these thresholds for boundary definition.

The initial screening used a representative elevation of 2,000 feet MSL (the highest airport elevation is SDL at approximately 1,510 feet MSL rounded up to the nearest 1,000 feet). Subsequent review identified higher terrain northeast of PHX that is relevant to the proposed procedures under review. As a result, the representative elevation was adjusted to 2,400 feet MSL. This value was used to convert the AGL screening thresholds to MSL cutoffs for mapping (i.e., 9,400 feet MSL for arrivals and 12,400 feet MSL for departures), which determined the preliminary areas in **Exhibit 1-2**.

Although terrain elevations within the broader region reach approximately 7,900 feet MSL, those areas are outside the main flight paths of the proposed procedures and are not representative of locations where aircraft operate within the applicable AGL screening bands. Using the maximum elevation would expand the study area into locations not meaningfully affected by the Proposed Action. Therefore, the selected representative elevation of 2,400 feet MSL appropriately defines the study area by capturing the airspace where aircraft are most likely to operate within the relevant AGL ranges while avoiding inclusion of extraneous areas.

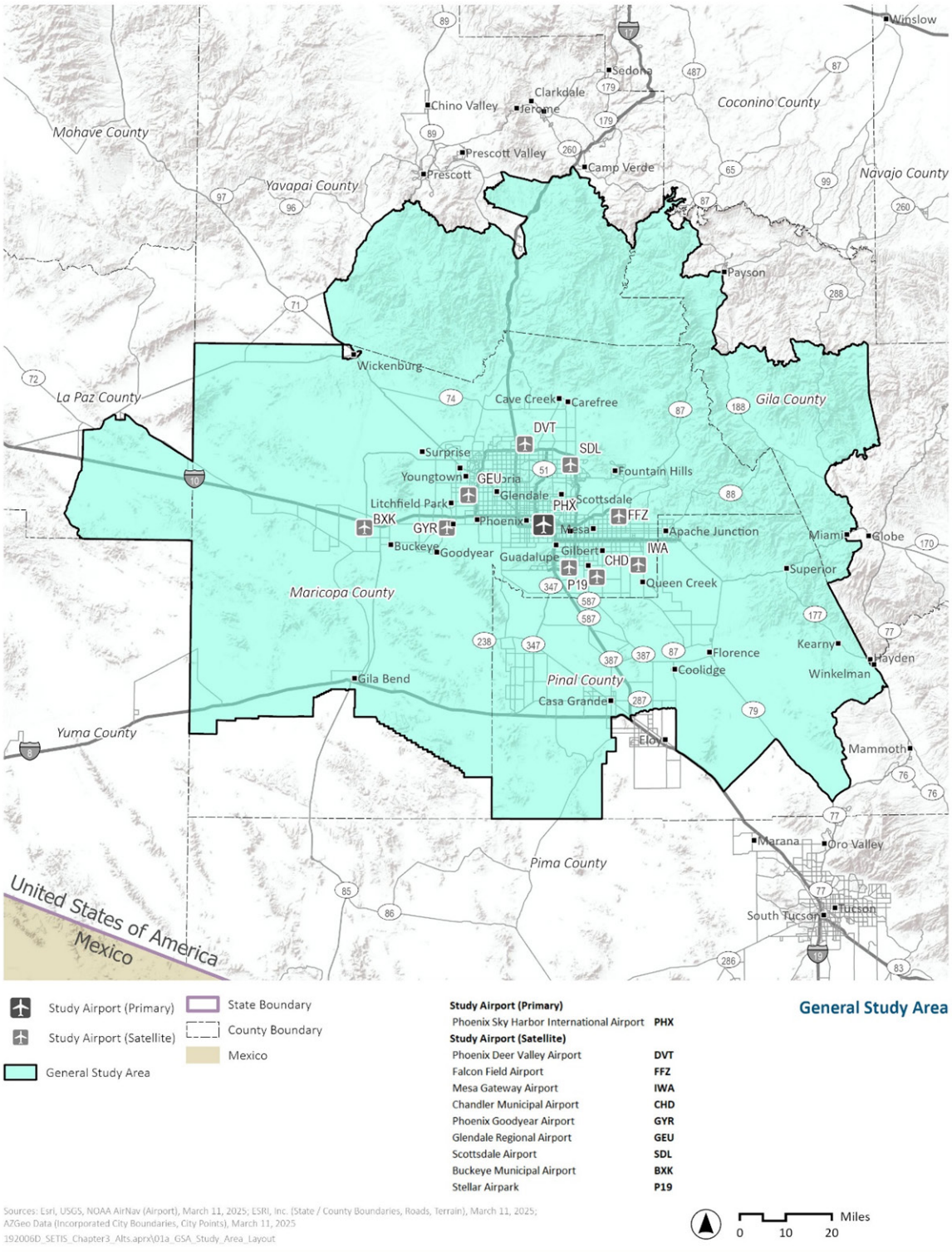
3. Establish a lateral boundary that reflects air traffic flow.

The lateral boundary of the General Study Area is defined by U.S. Census block group boundaries where aircraft cross at or below the 10,000 feet/7,000 feet AGL thresholds (U.S. Census Bureau 2020). This extent is concisely defined to focus on areas of air traffic flow.

These three objectives were applied, collectively, to establish the General Study Area. First, preliminary boundaries were set to correspond with where aircraft from the Study Airports reached 10,000 feet and 7,000 feet AGL. Next, the boundary was expanded to account for the highest ground elevation near PHX (2,400 feet) within that preliminary boundary. The result was that the location where tracks passed through 12,400 feet and 9,400 feet MSL were used to establish the General Study Area boundary.

Exhibit 1-2 depicts the resulting General Study Area.

Exhibit 1-2. General Study Area



There are five counties partially included in the General Study Area (U.S. Census Bureau 2020):

- Gila County
- La Paz County
- Maricopa County
- Pinal County
- Yavapai County

There are 30 cities and towns present, at least partially, in the General Study Area (U.S. Census Bureau 2020). These include:

- Apache Junction
- Avondale
- Buckeye
- Carefree
- Casa Grande
- Cave Creek
- Chandler
- Coolidge
- El Mirage
- Florence
- Fountain Hills
- Gila Bend
- Gilbert
- Glendale
- Goodyear
- Guadalupe
- Kearny
- Litchfield Park
- Maricopa
- Mesa
- Paradise Valley
- Peoria
- Phoenix
- Queen Creek
- Scottsdale
- Superior
- Surprise
- Tempe
- Tolleson
- Youngtown

The General Study Area also includes portions of one national park (Casa Grande Ruins National Monument), one wildlife refuge (Kofa National Wildlife Refuge), and four cultural properties (the Gila River Indian Reservation, Salt River Pima-Maricopa Indian Community, the AK-Chin Indian Community of the Maricopa, and the Tohono O'odham Indian Community).

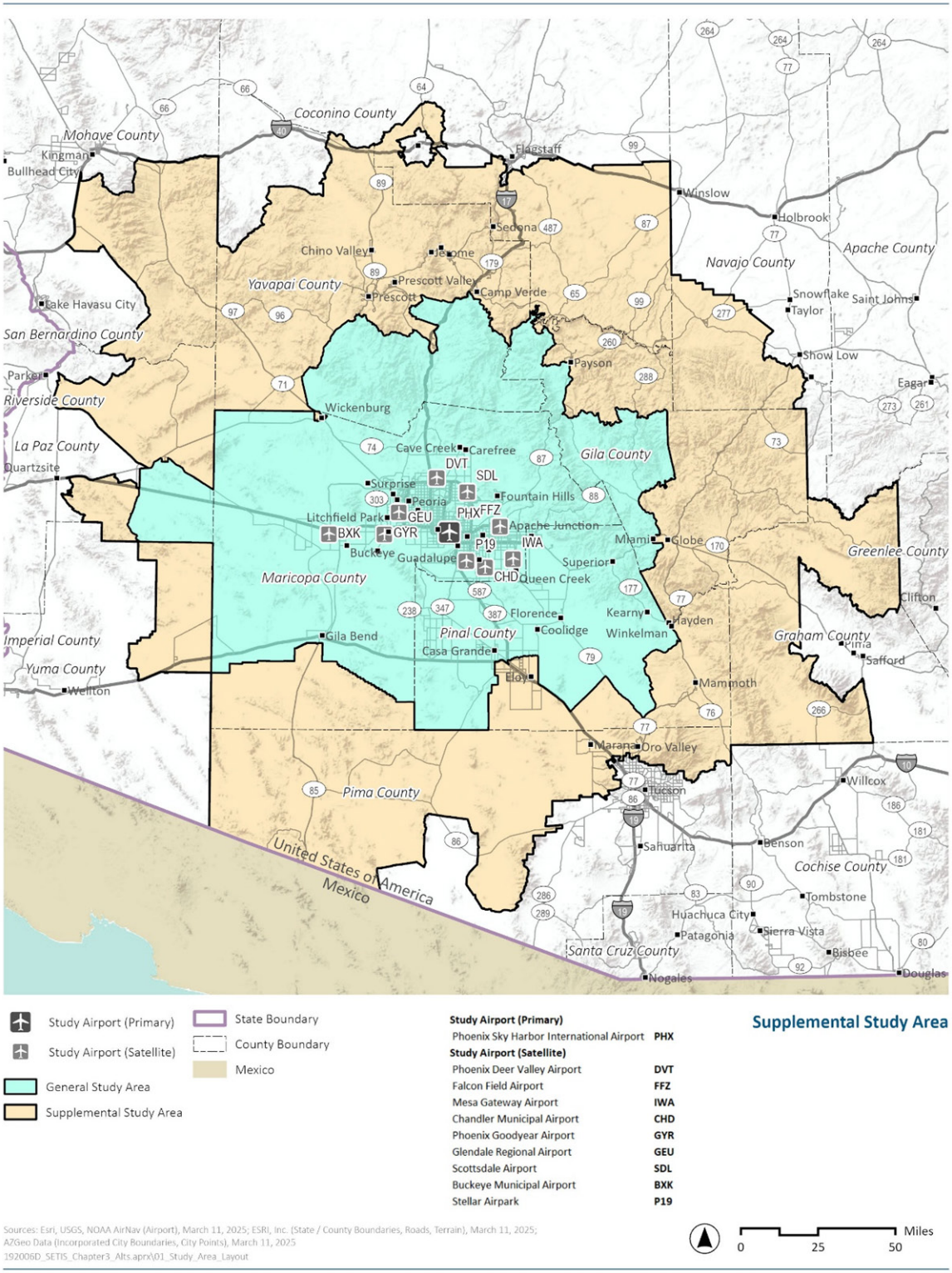
1.3.2 Supplemental Study Area

The General Study Area includes portions of a national park, a wildlife refuge, and four cultural properties. Consistent with FAA noise analysis guidance for airspace actions occurring over such resources, a Supplemental Study Area has been identified as required under FAA Order 7400.2R to conduct noise screening of these noise-sensitive resources where a quiet setting is an attribute (FAA 2025a).

Using the same evaluation process applied to the General Study Area, radar flight tracks were assessed beyond the General Study Area boundary to identify where IFR aircraft operate at or below 18,000 feet AGL (approximately 20,400 feet MSL). Based on this analysis, an 18,000-foot Supplemental Study Area was developed.

The Supplemental Study Area is shown in **Exhibit 1-3**.

Exhibit 1-3. Supplemental Study Area



There are three counties entirely (E) included in the Supplemental Study Area and eight counties partially (P) included in the Supplemental Study Area (U.S. Census Bureau 2020). The counties include:

- Gila (E)
- Maricopa (E)
- Pinal (E)
- Coconino (P)
- Graham (P)
- La Paz (P)
- Mohave (P)
- Navajo (P)
- Pima (P)
- Yavapai (P)
- Yuma (P)

In addition, the Supplemental Study Area includes 21 cities and towns, at least in part, which are not included in the General Study Area (U.S. Census Bureau 2020). These include:

- Camp Verde
- Chino Valley
- Clarkdale
- Cottonwood
- Dewey-Humboldt
- Elroy
- Globe
- Hayden
- Humboldt
- Jerome
- Mammoth
- Marana
- Miami
- Oro Valley
- Payson
- Prescott
- Prescott Valley
- Sedona
- Star Valley
- Wickenburg
- Winkelman

1.4 Air Traffic Control Facilities

The NAS is organized into three-dimensional areas of navigable airspace that are defined by a floor, a ceiling, and a lateral boundary. Each is controlled by different types of ATC facilities including:

- **Air Traffic Control Tower:** Controllers at an Air Traffic Control Tower (ATCT) located at an airport provide air traffic services for phases of flight associated with aircraft takeoff and landing. The ATCT typically controls airspace extending from the airport to a distance of several miles. Eight of the Study Airports shown on **Exhibit 1-2** and **Exhibit 1-3** have ATCT facilities. Neither BXK nor P19 are equipped with ATCTs but rather operate through the Common Traffic Advisory Frequency.
- **Terminal Radar Approach Control:** Controllers at a Terminal Radar Approach Control (TRACON) facility provide air traffic service to aircraft as they transition between an airport and the en route phase of flight, and from the en route phase of flight to an airport. This includes the departure, climb, descent, and approach phases of flights. The TRACON airspace is broken down into sectors. As an aircraft moves between sectors, responsibility for it transfers from controller to controller. Controllers maintain separation between aircraft that operate within their sectors. The terminal airspace in the General Study Area and Supplemental Study Area is controlled by the Phoenix TRACON (P50). Controllers at P50 manage traffic flows to and from multiple airports in close proximity. As a result, aircraft operating to and from these airports often require sequencing, vectoring (step-by-

step directions), or altitude assignments to maintain safe separation and efficient traffic movement. In addition to P50, terminal airspace in the Study Area is also controlled by the Luke Air Force Base (LUF) Radar Approach Control (RAPCON). LUF RAPCON provides terminal air traffic control services for aircraft operating in their airspace. LUF RAPCON coordinates closely with P50 and Albuquerque Air Route Traffic Control Center (ZAB) to ensure the safe and efficient integration of military and civilian traffic flows.

- **Air Route Traffic Control Centers:** Controllers at Air Route Traffic Control Centers (ARTCCs or "Centers") provide air traffic services during the en route phase of flight. Similar to TRACON airspace, the Center airspace is broken down into sectors. The Study Areas comprise airspace delegated to ZAB.

1.5 Controlled Airspace in the Study Area

The following sections describe the airspace structure and operational constraints within the General Study Area and Supplemental Study Area that influence the development of the Proposed Action.

The configuration of Class B airspace, surrounding Special Use Airspace (SUA), and the division of responsibilities among regional air traffic control facilities collectively constrain how aircraft procedures can be designed within the Phoenix terminal area. These operational considerations were taken into account during development of the alternatives evaluated in this Draft EA.

1.5.1 Airspace Responsibility

Most of the General Study Area and Supplemental Study Area are within airspace delegated to ZAB. ZAB provides ATC services covering 236,496 square miles of lateral airspace across the western U.S. ZAB airspace covers the entirety of the General Study Area (15,681 square miles) and the vast majority of the Supplemental Study Area. Approximately 97 percent of the Study Area lies within the ZAB-controlled airspace, with the remaining portion located within the Los Angeles Air Route Traffic Control Center (ZLA) airspace.

Both the ZAB and ZLA extend from various base altitudes up to Flight Level (FL) 600. The ZAB airspace overlies parts of Arizona, New Mexico, Texas, Oklahoma, and Colorado. ZAB provides air traffic control services to military, commercial, and general aviation aircraft operating within its assigned airspace. ZAB provides air traffic control service to U.S. and foreign military aircraft operating under both IFR and VFR in ZAB airspace. ZAB controllers provide air traffic services in the airspace above and adjacent to the P50 airspace.

Although they are collocated, PHX ATCT and P50 are stand-alone facilities. PHX ATCT handles local and ground air traffic at the airport, whereas P50 manages the surrounding terminal space, providing regional approach and departure services for multiple airports in the region. The lateral boundary of the P50 airspace generally coincides with the PHX Class B airspace and is shaped irregularly to accommodate surrounding terrain and airspace needs. Excluding airspace delegated to the ATCTs within the lateral boundaries, P50 controllers manage the airspace within these boundaries from the surface to 9,000 feet MSL.

P50 is generally the first or final radar facility responsible for separating and sequencing airborne aircraft landing at and departing from airports in its airspace. For example, aircraft arriving at IWA are handled by P50, then handed over to Mesa Gateway ATCT until landing. The P50 activity includes the initial sequencing of PHX departures, as well as providing safe and expeditious flows of traffic into and out of the other area civilian and military airports with control towers. P50 coordinates with LUF RAPCON and provides air traffic services to IFR-filed aircraft and, when requested or required, VFR aircraft. As with ZAB, P50 also provides these services to military aircraft operating in its airspace, including operations from Luke Air Force Base.

1.5.2 Airspace Constraints

The following sections describe airspace constraints within the Study Area that influence aircraft routing and procedure design for the Proposed Action.

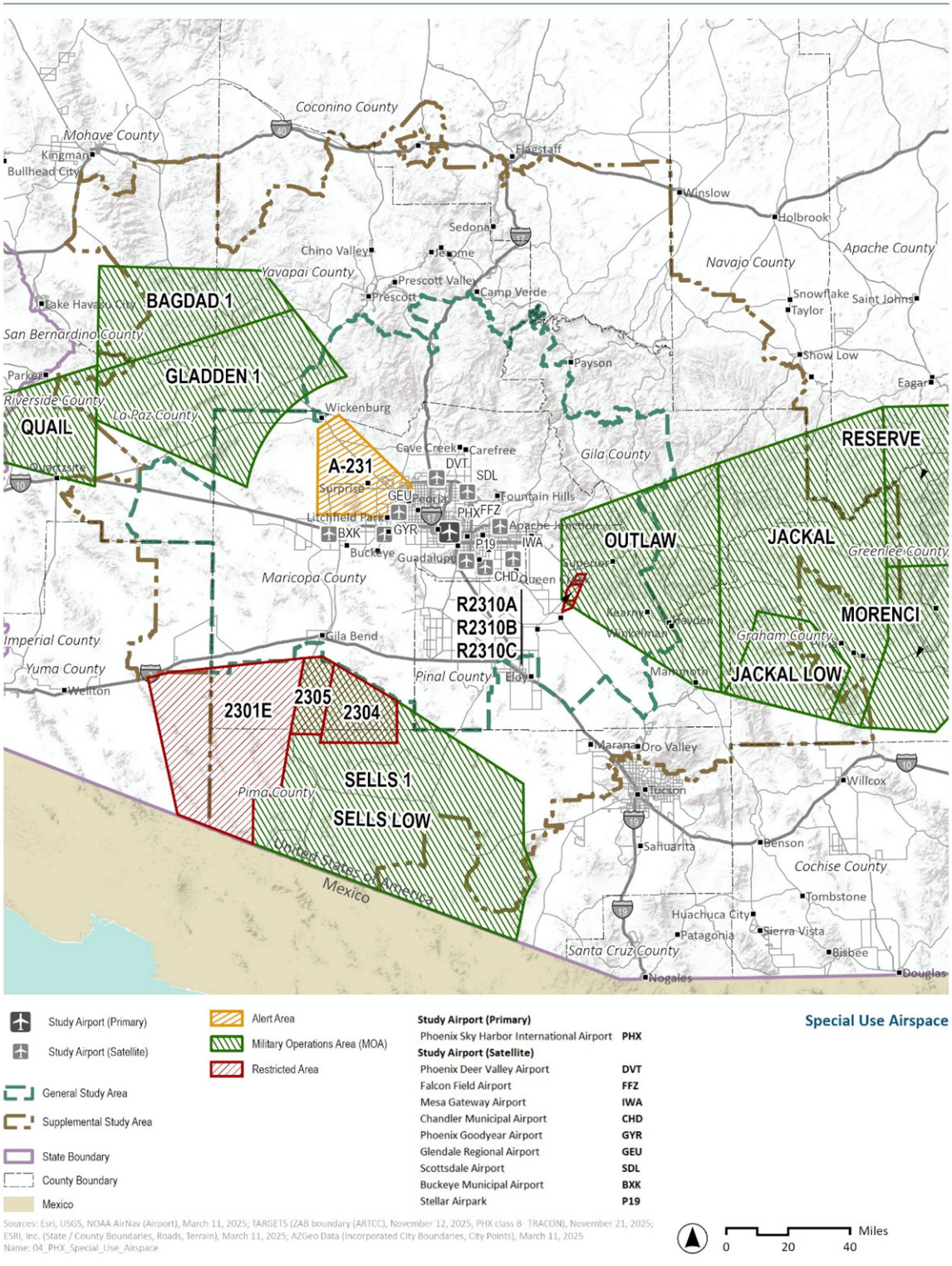
1.5.2.1 Class B Airspace

Class B airspace is regulatory airspace that generally extends from the surface to 10,000 feet MSL surrounding the nation's busiest airports (FAA 2026). The Class B ceiling for PHX is 9,000 feet MSL. The configuration of each Class B airspace area is individually tailored and consists of a surface area and two or more layers designed to contain all published instrument procedures once an aircraft enters the airspace. An ATC clearance is required for all aircraft to operate in the area, and all cleared aircraft receive separation services within the airspace. The configuration of Class B airspace influences how aircraft arrivals and departures are routed within the Study Areas.

1.5.2.2 Special Use Airspace

Exhibit 1-4 depicts the boundaries of SUA in the General Study Area and Supplemental Study Area, illustrating the limited available options for entering and exiting the PHX area airspace. SUA is “airspace wherein activities must be confined because of their nature, or wherein limitations are imposed upon aircraft operations that are not a part of those activities, or both” (FAA 2026). This includes airspace with defined vertical and lateral boundaries containing certain hazardous activities such as military flight training and air-to-ground military exercises that must be confined (FAA 2026). SUA is an important component of the NAS that allows for the safe use of the airspace by military and non-military air traffic. In addition to aviation activity, SUA can accommodate ground and combined arms training and testing. These areas either limit aircraft activity allowed within the airspace or restrict other aircraft from entering during specific days and/or times.

Exhibit 1-4. Special Use Airspace



The following three types of SUAs are found within the General Study Area:

- **Military Operations Area:** Military Operations Areas (MOAs) occur throughout portions of the Study Area and are used for military training activities such as air combat maneuvers and intercepts. These areas include vertical and lateral boundaries that may influence the routing of civilian aircraft procedures (FAA 2025b).
- **Alert Area:** An Alert Area is depicted on an aeronautical chart to inform pilots of an area or areas that may contain a high volume of pilot training or an unusual type of aerial activity, neither of which is hazardous to aircraft. An Alert Area also provides information to non-participating pilots. (FAA 2025b).
- **Restricted Area:** Restricted areas contain airspace within which aircraft, while not wholly prohibited, are subject to restrictions when the area is being used. The area denotes the existence of unusual, often invisible hazards to aircraft, such as artillery firing, aerial gunnery, or guided missiles. When the area is not being used, control of the airspace is released to the FAA, and ATC may use the area for normal operations. (FAA 2025b).

The presence of SUA within and near the Study Areas influences the routing and altitude options available for aircraft procedures serving the Phoenix terminal area and was considered during development of the Proposed Action.

1.6 Stakeholder Coordination and Community Involvement

During development of the proposed procedures, the FAA and its regional administrators engaged with the City of Phoenix, surrounding municipalities, tribal governments, and airport users to address not only operational efficiency but also related to concerns such as noise. In addition, the FAA engaged the community and stakeholders throughout the development of the EA. As part of these efforts, the FAA continues to maintain a Community Engagement website that provides updates and information regarding project activity (FAA 2025c). Community outreach conducted at key milestones, including after release of the Notice of Intent (NOI) and Draft EA, is summarized below and detailed in **Appendix F**.

On November 20, 2025, the FAA issued a NOI to inform the public of its intent to prepare the EA for the Phoenix Area FAA Modernization Project. The NOI was posted on the FAA's project website and advertised in local newspapers, including the Arizona Capitol Times, La Voz, Casa Grande Dispatch, East Valley Tribune, and West Valley View. Concurrently, an early stakeholder notification letter was sent, via email or FedEx, to 258 federal, state, regional, and local officials and organizations as well as 33 tribal representatives from 17 tribes to solicit their input on the Project. The FAA sent the early notification letter to:

- Inform stakeholders (e.g., historic and other agencies, tribes, public officials and others, and neighborhood associations) of the initiation of the Proposed Action.
- Request background information about the Study Areas established for the EA.
- Provide an opportunity to advise the FAA of any issues, concerns, policies, or regulations that may affect the environmental analysis that the FAA will undertake in the EA.

As part of the notification letter, the FAA requested stakeholders submit any comments within 30 days, which ended on December 21, 2025. The FAA received 21 response letters or emails comprising a total of 58 individual comments. Comment submissions were received from public officials, a tribal stakeholder, historic preservation offices, neighborhood associations, and the general public.

Comments received were grouped into general categories, including alternatives, historic resources and tribal interests, NEPA analysis and process, noise, and public engagement. Comment letters were reviewed by FAA, responses were developed by category, and each comment was considered in the development of the Draft EA. **Appendix F** includes a copy of the early notification letters (and attachments) sent to stakeholders, the NOI, the affidavits of newspaper publication, a distribution list of the receiving parties, all comments received, a comment summary table, and the responses to comments.

In February 2026, FAA initiated formal Section 106 consultation with the Arizona State Parks, State Historic Preservation Office (SHPO), and Tribal Historic Preservation Officers (THPOs) or other Tribal representatives from the Ak-Chin Indian Community, Colorado River Indian Tribes, Fort McDowell Yavapai Nation, Fort Sill Apache Tribe of Oklahoma, Gila River Indian Community, Hopi Tribe of Arizona, Hualapai Indian Tribe, Mescalero Apache Tribe, Navajo Nation, Pascua Yaqui Tribe, Salt River Pima-Maricopa Indian Community, San Carlos Apache Tribe, Tohono O'odham Nation, Tonto Apache Tribe, White Mountain Apache Tribe, Yavapai Prescott Indian Tribe, and Yavapai-Apache Nation, who may have interests within the General Study Area and Supplemental Study Area in accordance with Section 106 of the NHPA (16 U.S.C. § 470 et seq.) and the implementing regulations at 36 CFR Part 800 (U.S. Congress 1966; Advisory Council on Historic Preservation 2004). Additional information regarding historic properties and cultural resources as well as the Section 106 consultation is provided in **Section 4.2.2** and **Section 5.2**.

Also in February 2026, FAA sent letters to the U.S. Department of Interior, National Park Service (NPS) Intermountain Region, NPS Pacific West Region, and U.S. Forest Service Southwestern Region to inform them of the Project and that FAA will be assessing potential impacts to resources subject to Section 4(f) of the DOT Act as well as resources identified as having been funded with Land and Water Conservation Funds (LWCF), referred to as Section 6(f) resources. Section 4(f) properties include resources managed by all four agencies. Additional information regarding Section 4(f) and Section 6(f) is provided in **Section 4.2.3** and **Section 5.2**.

On February 20, 2026, the FAA also updated the Project Community Engagement website (https://www.faa.gov/air_traffic/community_engagement/phx) notifying the public that in May 2026, they will be hosting a series of four virtual public workshops to present the Project, including existing regional airspace operations, proposed procedure updates, and findings from the Draft EA. A Zoom link will be available on the Project website in advance of the workshops. During these workshops, the public will also be provided with the opportunity to ask questions about the Project and receive answers.

On April 27, 2026, FAA initiated formal consultation with the U.S. Fish and Wildlife Service (USFWS), Arizona Ecological Services Field Office, and the Arizona Game and Fish Department

(AZGFD) in accordance with Section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. § 1531 et seq.). Additional information regarding Biological Resources and the ESA Section 7 process is provided in **Section 4.2.4 and Section 5.4**.

On April 29, 2026, the FAA published a Notice of Availability (NOA) and Request for Comment on the Draft EA on the FAA's Project Community Engagement website (https://www.faa.gov/air_traffic/community_engagement/phx) and in the following local newspapers: Arizona Capitol Times, La Voz, Casa Grande Dispatch, East Valley Tribune, and West Valley View. Copies of the NOA and proofs of publication of the newspaper notice announcing the availability of the Draft EA and opportunity for public comment will be provided in **Appendix F** of the Final EA.

Public workshops will be held on the following dates and times:

PHX
May 13, 2026
Hours: 10:00 a.m. – 12:00 p.m.

West Valley Airports (GEU, GYR, BXK)
May 14, 2026
Hours: 5:00 p.m. – 7:00 p.m.

North Valley Airports (DVT, SDL)
May 19, 2026
Hours: 5:00 p.m. – 7:00 p.m.

East Valley Airports (FFZ, IWA, CHD, P19)
May 20, 2026
Hours: 5:00 p.m. – 7:00 p.m.

Community engagement is still ongoing and details related to the public workshops, including public comments received during the comment period and responses to those comments, will be provided in the Final EA. **Appendix G** is reserved for documenting the comments received on the Draft EA.

2. PURPOSE AND NEED

This Draft EA evaluates the potential environmental impacts associated with the proposed modernization of arrival and departure procedures in the Phoenix terminal airspace, including the development of optimized RNAV procedures. As required by U.S. Department of Transportation (DOT) Order 5610.1C, *Procedures for Considering Environmental Impacts*, and FAA Order 1050.1F, an EA must include a discussion of the underlying purpose and need for the Proposed Action, based on FAA's statutory authority (DOT 2015; FAA 2015). This includes a discussion of the need(s) being addressed and what the FAA plans to achieve by implementing the Proposed Action. The following sections describe the need for the Proposed Action. Explanations of the technical terms and concepts used in this chapter are found in **Appendix D**.

2.1 Need for the Proposed Action

In the context of an EA, "need" describes the problem that the Proposed Action is intended to resolve. In this case, the need is to enhance traffic flow, reduce delays, and improve safety and efficiency that result from existing aircraft flight procedures in the Phoenix area. As discussed in **Chapter 1**, the Project aligns with the PBN NAS Navigation Strategy 2016. In particular, as traffic increases at major hub airports, such as PHX, airspace in their vicinity must be highly structured to support predictable and reliable trajectories. Such structuring reduces workload for pilots and controllers during peak demand and allows for efficient flows in and out of metropolitan areas (FAA 2016). Currently, both RNAV and conventional procedures are utilized within the PHX terminal airspace. Conventional procedures rely on ground-based navigational aids such as Instrument Landing System (ILS), Localizer (LOC), and Very High Frequency Omnidirectional Range (VOR), which limit procedure flexibility by tying the procedure's design to the physical placement and performance of the ground-based aid. Further, conventional procedures rely on older technology that cannot deliver the specific and precise navigational benefits offered by modern systems. As discussed in **Appendix D**, conventional procedures are subject to inherent lateral and vertical flight path limitations,[11] which are effectively eliminated through the use of RNAV technology. RNAV enables aircraft to follow more direct, flexible paths using satellite-based or onboard navigation systems, leading to safer and more efficient operations overall.

RNAV procedures operate within the broader framework of PBN, which allows aircraft to fly precisely defined flight paths using satellite and onboard navigation capabilities rather than ground facilities (**Appendix D**). RNAV SIDs and STARs have been in use at PHX since 2001 and 2002, respectively. However, the associated design criteria have evolved substantially as operational experience and technology have expanded. As a result, some of the older RNAV procedures at PHX no longer reflect current PBN capabilities and may not fully support today's operational needs. Specifically, the arrival and departure procedures serving the Phoenix area can

[11] Conventional procedures rely on technology that cannot provided specific and precise navigational benefits for aircraft, including predetermined speeds or altitudes.

be improved to optimize use of the airspace and maintain safety while improving operational efficiency, predictability, and flexibility for the benefit of pilots, controllers, and the public.

RNAV procedures can also reduce the need for controllers to employ vectoring and speed adjustments, thus reducing controller and pilot workload. In turn, the use of RNAV procedures adds efficiency to an air traffic system by enhancing predictability, flexibility, and route segregation. By taking advantage of the increased benefits associated with PBN and RNAV technology, the FAA is better able to meet one of its primary missions, to provide for the efficient use of airspace, to develop plans and policy for the use of the navigable airspace, and to assign by regulation or order the use of the airspace necessary to ensure the safety of aircraft and the efficient use of airspace. The following sections describe the need in greater detail.

2.1.1 Description of the Need

The Phoenix area airspace is complex, involving multiple airspace classes, multiple airports, and significant air traffic. The FAA currently provides for the safe and efficient use of this airspace; however, existing procedures rely heavily on vectoring, provide limited runway transitions, and intersect within congested airspace sectors, resulting in reduced predictability, increased controller workload, and less efficient routing.[12] As detailed in **Section 3.1,** existing airspace constraints limit the range of available routing and altitude options for arrival, departure, and en route procedures, thereby influencing the range of reasonable alternatives considered. Collectively, these factors can result in less efficient lateral and vertical flight paths, procedures with limited runway transition options, operational interactions between arriving and departing traffic, and constraints associated with the close proximity of PHX to surrounding satellite airports, as well as controller workload considerations within ZAB and P50. These conditions support the need for continued modernization of the Phoenix terminal area to further optimize airspace use and align with evolving operational capabilities. These operational conditions are particularly evident in areas where high volumes of IFR and VFR traffic interact, illustrating the broader limitations of existing procedures. These conditions support the need for continued modernization.

The concentration of flight schools and the number of closely spaced airports throughout the region also add to the complexity of the airspace. VFR traffic is both continuous and widely distributed throughout the area. Because many VFR aircraft are not in communication with ATC, and because turbojet flight paths can be variable or difficult to anticipate, the airspace has historically experienced Traffic Alert and Collision Avoidance System Resolution Advisories (TCAS RAs). TCAS RAs occur when pilots must take evasive action due to unsafe proximity to other aircraft. These events most commonly involve turbojet aircraft operating on IFR flight plans and the significant volume of nearby VFR traffic. Several areas within the metro airspace continue to experience complex interactions between IFR traffic and VFR training activity, such as in the vicinity of DVT and SDL. This area sees a high volume of VFR training activity combined with IFR arrivals and departures. In these areas, current procedures rely on vectoring and can result in variable flight paths (factors such as aircraft performance or environmental conditions can

[12] Runway transitions allow aircraft to follow published procedures from the en route environment directly to specific runways without requiring extensive controller vectoring. Runway transitions reduce controller and pilot workload by creating published, predictable paths.

influence the flight path), making it more difficult for pilots to anticipate traffic patterns. This variability contributes to operational complexity and can be reflected in reported TCAS RAs.

Several of the primary STARs into PHX, such as EAGUL and BRUSR, lack adequate runway transitions. Without published transitions, controllers must vector aircraft from the en route and terminal environments to final approach, increasing radio communications and reducing predictability. Similarly, the ZEPER SID and MRBIL SID rely heavily on vectoring for eastbound departures, which increases task complexity and creates inefficiencies during peak flows. In addition, some satellite airports, including DVT, IWA, and SDL, are not served by comprehensive RNAV procedures. Current operations at these airports often require vectoring of arrivals and departures, increasing controller and pilot workload, and creating potential conflicts with PHX traffic.

Conflicts are particularly evident where arrival routes intersect with departure flows, requiring aircraft to level off or accept reroutes to maintain separation. For example, departures from PHX often intersect with overflight and arrival flows managed by ZAB in Sector 67, which is the busiest sector in the facility. During peak traffic or adverse weather events, this sector becomes saturated, leading to capped departures, reroutes, and additional delays.

Collectively, these constraints limit the FAA's ability to manage air traffic in the Phoenix area in a manner that is both operationally efficient and predictable under current and future demand. The reliance on vectoring, limited availability of published runway transitions, and the interaction of PHX and satellite airport traffic within congested airspace contribute to increased controller workload, reduced flexibility during peak operations and adverse weather, and recurring operational inefficiencies. Accordingly, there is a need to improve operational efficiency, predictability, and flexibility within the Phoenix terminal airspace.

2.1.2 Causal Factors

The inefficiencies and resulting complexities associated with existing arrival and departure procedures are the primary foundation for the Project need. A need is best addressed by examining the circumstances or factors that cause it. Addressing the causal factors behind the need will help develop a reasonable alternative designed to resolve the need (i.e., meet the "purpose").

As summarized above, several issues have been identified as causes of inefficiencies in the Phoenix area airspace. For the purposes of this Draft EA, these issues were grouped into two key causal factors:

- Reliance on vectoring due to outdated procedures
- Converging traffic flows and air traffic control sector overload

2.1.2.1 Reliance on Vectoring Due to Outdated Procedures

Many of the current SIDs and STARs serving the Study Airports require extensive controller vectoring and altitude assignments. That is because many of the existing SIDs and STARs are outdated and based on older design criteria, while also lacking runway transitions and efficient

altitude profiles. Examples of SIDs and STARs requiring a high level of vectoring effort are arrivals such as the EAGUL STAR and BRUSR STAR and departures such as the ZEPER SID and MRBIL SID. Similarly, satellite airports such as DVT, IWA, and SDL lack comprehensive RNAV procedures. The reliance on controller-led situational clearances reduces predictability, increases ATC and pilot workload, and limits the ability to support fuel efficiency and lower noise operations.

2.1.2.2 Converging Traffic Flows and Air Traffic Control Sector Overload

Existing arrivals and departures at the Study Airports frequently intersect or converge, creating choke points in both en route and terminal airspace. For example, arrivals into PHX often conflict with eastbound departures, forcing aircraft to level off and requiring controller intervention. These interactions are particularly impactful in ZAB's Sector 67, their busiest sector, and in P50's Biltmore Sector, which handles a heavy mix of arrivals, departures, and satellite flows. During peak operations or large events, these sectors become saturated, resulting in departure caps, reroutes, and delays. Without redesigned procedures that segregate flow and reduce dependency, capacity constraints will continue.

2.2 Purpose of the Proposed Action

The purpose of the Proposed Action is to address the need discussed in the previous sections to improve efficiency, enhance safety, and reduce operational delays in the Phoenix area airspace. To meet this goal, the Proposed Action would optimize procedures serving the Study Airports, while enhancing safety. This goal would be achieved by meeting the objectives of the Proposed Action, as follows:

- Reduce or eliminate reliance on vectoring.
- Improve traffic flows and air traffic control sector overload.

With these objectives met, the procedures would become less complex, and the frequency of controller and pilot communication would be reduced. In addition, improvements from RNAV procedures would reduce the need for vectoring and level flight segments, resulting in more predictable traffic flows.

2.2.1 Objective – Reduce or Eliminate Reliance on Vectoring

As discussed in **Section 2.1**, the lack of newer RNAV procedures utilizing current design criteria in the Phoenix area requires controllers to use inefficient air traffic management techniques such as vectoring to ensure safe vertical and lateral separation between aircraft during the arrival and departure phases of flight. As a result, controllers and pilots experience a more complex workload than when modern RNAV procedures are used. In addition, there is an insufficient number of runway transitions to and from the runways at each of the Study Airports. Finally, there is a lack of RNAV arrival and departure procedures to and from the satellite airports, preventing pilots from filing a flight plan to ATC of their preferential arrival or departure with predictable flight expectations.[13]

[13] When a pilot files a flight plan with a SID or STAR, ATC can "clear" the aircraft on the procedures and a set course that the aircraft will fly is known to both the pilot and the controller. This eliminates the need for ATC to tell the aircraft where/when to turn and climb or descend.

This objective can be measured with the following criteria:

- Ensure most STARs and SIDs to and from the Study Airports are based on RNAV technology utilizing the most current RNAV criteria (measured by count of RNAV STARs and SIDs for an individual Study Airport)
- Increase the number of runway transitions (measured by count of runway transitions for all STAR procedures)

2.2.2 Objective – Improve Traffic Flows and Air Traffic Control Sector Overload

As discussed in **Section 2.1**, aircraft are frequently required to level off to ensure adequate separation between different traffic flows. RNAV procedures can be designed with capabilities such as speed control and altitude restrictions that segregate aircraft on the route while reducing controller and pilot workload by reducing the complexity of the procedures. One objective of the Proposed Action is to implement procedures that would better segregate arrivals and departures within the airspace. This objective can be measured by:

- Number of RNAV STARs and/or SIDs that can be used independently to/from Study Airports.
- Number of RNAV STARs and/or SIDs that have altitude and/or speed controls to optimize descent or climb patterns.

2.3 Criteria Application

Chapter 3 of this Draft EA evaluates the Proposed Action, in comparison to the No Action Alternative, to determine how well it meets the purpose and need based on the measurable criteria and objectives described above. Under the No Action Alternative, the existing 2024 air traffic procedures serving the Study Airports would remain unchanged except for any planned procedure modifications independent of the Phoenix Area FAA Modernization Project.

The development of revised arrival and departure procedures is intended to improve predictability, route segregation, and controller workload. Maintaining safe conditions within the PHX area airspace remains a key design constraint; all changes must meet or exceed FAA standards while striving to enhance efficiency and reduce community impacts. Any proposed change to a procedure to resolve a need must not compromise safety, and, if possible, must enhance safety.[14] Although the current procedures are less efficient, they meet current FAA safety criteria.

[14] Safety is an important consideration as Class B airspace "must contribute to the safety and efficiency of operations." (FAA 2025a)

2.4 Description of Proposed Action

The Proposed Action would implement optimized RNAV SID and STAR procedures in the Phoenix area. Optimized RNAV SID and STAR procedures would improve the predictability and segregation of air traffic routes, as well as increase flexibility and efficiency in providing air traffic services. The Proposed Action is described in detail in **Chapter 3**.

Implementation of the Proposed Action would not increase the number of aircraft operations at the Study Airports. Furthermore, the Proposed Action would not involve physical construction of any facilities such as additional runways or taxiways and would not require permitting or other approvals or actions at either the state or local level. Therefore, the implementation of the proposed changes to procedures in the Phoenix area would not require any physical alterations.

2.5 Required Federal Actions to Implement Proposed Action

Implementing the Proposed Action requires the FAA to publish new or revised STARs, SIDs, Standard Instrument Approach Procedures (SIAPs), and transitions, and undertake controller training.

3. ALTERNATIVES

The alternatives analysis is prepared pursuant to FAA guidance provided in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA 2015). This chapter discusses the following topics:

- Alternative Development Process
- Alternatives Overview
- Comparison of Alternatives
- List of Federal Laws and Regulations

The technical terms and concepts discussed in this chapter are explained in **Appendix D**.

The following sections describe the alternatives development process the FAA used to create and evaluate a series of procedures that, when employed together, would enhance the efficiency and predictability of the Phoenix region's air traffic system.

3.1 Phoenix Area FAA Modernization Project Alternative Development

The development of alternatives for the Project was informed by several fixed airspace constraints within the Study Area. These constraints include existing Class B airspace associated with PHX, SUA related to military training activities at LUF, and the configuration of terminal and en route airspace controlled by P50, LUF RAPCON, and ZAB.

The Study Areas include multiple MOAs, Restricted Areas, and other SUA that impose lateral and vertical limitations on civilian aircraft routing during periods of activation. In addition, military training operations associated with LUF occur within and adjacent to the Study Areas and require coordination between civilian and military air traffic control facilities.

These airspace constraints limit the number of available routing and altitude options for arrival, departure, and en route procedures and therefore influence the range of reasonable alternatives considered. All alternatives evaluated in this chapter were developed to remain within existing airspace boundaries, comply with FAA safety criteria, and accommodate both civilian and military operational requirements.

Developing alternatives for the Project was a multi-step process that began with the PBN Kickoff Meeting in May 2022, initiated by requests from both ZAB and P50 to improve efficiency, reduce sector overload, and modernize instrument flight procedures (IFPs) serving PHX and surrounding satellite airports (**Appendix E**).

The preliminary PBN Design Team, composed of FAA specialists, NATCA representatives, local airports, and airline stakeholders, defined operational issues and recommended conceptual designs for procedures addressing identified inefficiencies. The conceptual designs require RNAV arrivals and departures, improved runway transitions, and procedures that could reduce

vectoring and conflicts between PHX and satellite airport traffic. As described in **Section 2.1.1**, existing procedures in the Phoenix area rely heavily on vectoring, include intersecting arrival and departure flows, and lack adequate runway transitions, resulting in conflicts and level-offs. **Section 2.1.1** provides examples of procedures and airports experiencing these conditions. The alternatives evaluated in this chapter assess how proposed RNAV procedure updates address existing aviation conditions in the Phoenix area. Over the course of several design meetings (2022-2024), the PBN Design Team developed and refined individual procedures, such as replacing the EAGUL STAR with the MRRVL STAR, and replacing the ZEPER SID with the SLOTZ SID. Each procedure was evaluated against FAA design criteria and the Project's purpose and need. Procedures that did not adequately resolve underlying inefficiencies or created new conflicts were not carried forward. An example of an alternative that was not carried forward for further consideration is the RATLR STAR. This alternative was designed to support dual arrival operations from the east to improve operational efficiency. Although the RATLR STAR would have increased efficiency for east arrival flows, it introduced operational conflicts with eastbound departure procedures. Consequently, the alternative did not meet the project's purpose and need and was not carried forward for further analysis. More detail on the specifics of each procedure discussed during the PBN Design Team briefing meeting from March 2025 can be found in **Appendix E**.

3.2 No Action Alternative

Under the No Action Alternative, the FAA would maintain existing arrival and departure procedures in the Phoenix area. The related routes and traffic flows in use during the 2024 baseline period would remain substantially the same (**Appendix H** and **Section 3.2.1**). Some procedure modifications and/or cancellations unrelated to the Project would still be anticipated during future planning, as part of ongoing national FAA initiatives. Routine updates are posted and may be reviewed on the FAA's IFP Gateway website.[15] For example, through a separate NEPA process, FAA converted BXK from a VFR to an IFR airport. New IAPs were published in March 2026 and are included in all future alternatives.[16] Other procedural changes currently proposed at the Study Airports are not yet at the point of NEPA analysis.

The FAA also reviewed current airport runway and facility modifications either under construction or expected to be implemented during the EA planning. No modifications within the Project timeframe are expected, therefore the airport facilities remain the same for all alternatives.

3.2.1 No Action Alternative Procedures

As detailed in **Appendix H**, the No Action Alternative includes 48 procedures: 20 conventional procedures (procedures that use conventional navigational aids [NAVAIDs]), and 28 RNAV procedures. **Table 3-1** lists the names of the No Action Alternative procedures, the procedure type (i.e., STAR, SID, or Obstacle Departure Procedure [ODP]), the basis of design, the number of en route and runway transitions for each procedure, and the aircraft type authorized with airports served reflecting the interconnected nature of the Phoenix terminal airspace system. **Exhibit 3-1** shows all the procedures associated with the No Action Alternative.

[15] The FAA's IFP Gateway website is available at: https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/.

[16] The NEPA Categorical Exclusion for the new IAPs was issued on June 5, 2025.

Table 3-1. No Action Alternative – STARs, SIDs, and ODPs

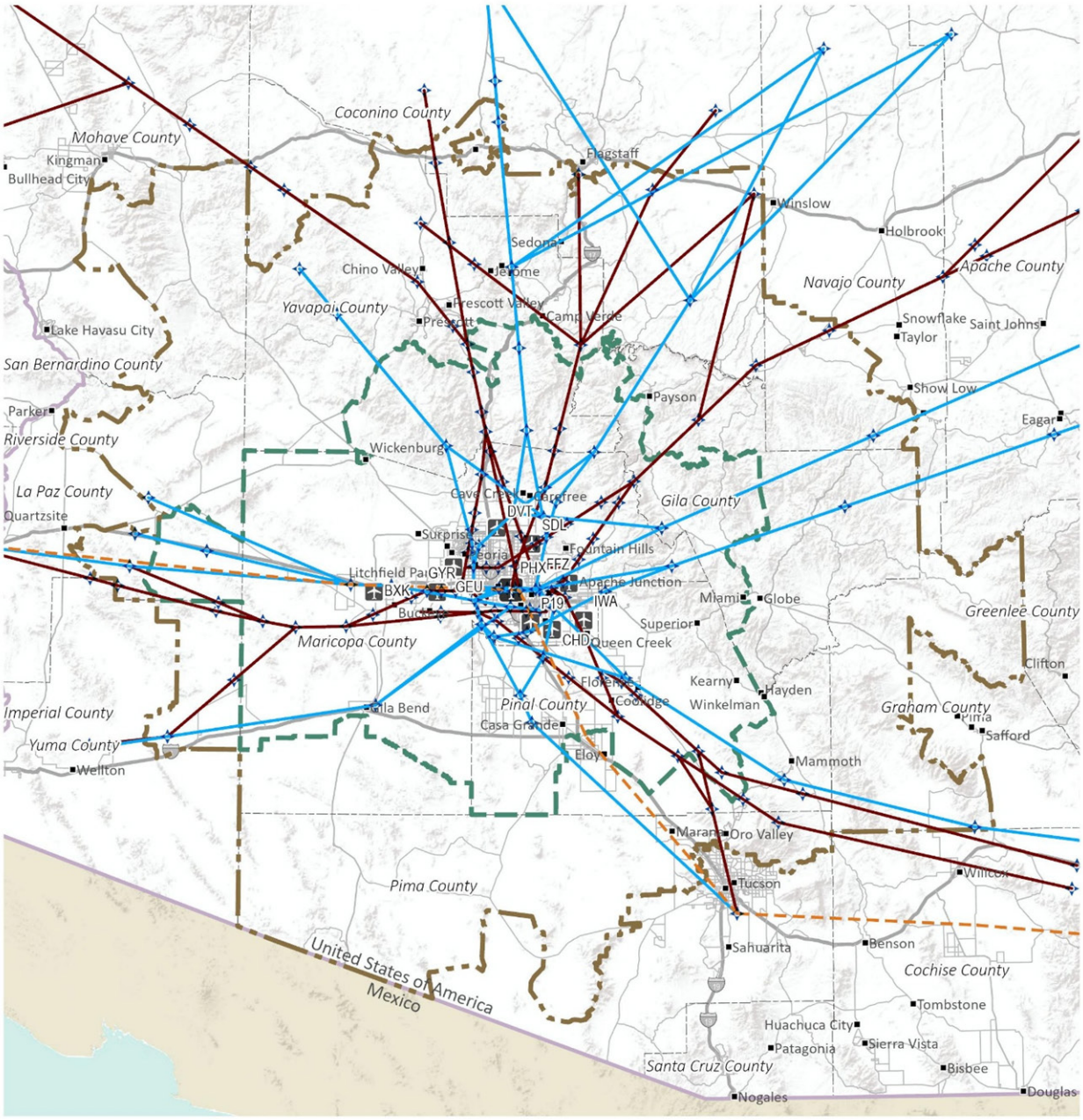
No Action Procedure	Procedure Type	Basis of Design	Transitions (en route/runway)	Airports Served: Aircraft Type
ARLIN	STAR	Conventional	2/4	PHX, CHD, DVT, FFZ, IWA, P19, SDL: Turbojet and Turboprop
BLYTHE	STAR	Conventional	1/4	PHX, CHD, DVT, FFZ, IWA, P19, SDL: Turbojet and Turboprop
BRUSR	STAR	RNAV	2/5	PHX: Turbojet
BUNTR	STAR	Conventional	3/0	PHX: Turbojet
COYOT	STAR	Conventional	3/0	PHX: Turbojet and Turboprop
DSERT	STAR	RNAV	4/0	PHX, DVT, FFZ, GEU, GYR, SDL, CHD, IWA: Turbojet and Turboprop
EAGUL	STAR	RNAV	3/5	PHX: Turbojet
HUUTY	STAR	RNAV	2/0	IWA, FFZ, CHD: Turbojet
HYDRR	STAR	RNAV	3/5	PHX: Turbojet
JESSE	STAR	Conventional	3/0	PHX: Turbojet and Turboprop
PIING	STAR	RNAV	2/5	PHX: Turbojet
SUNSS	STAR	Conventional	2/0	PHX: Turboprop CHD, DVT, FFZ, GEU, GYR, IWA, P19, SDL: Turbojet and Turboprop
BALDY	SID	Conventional	2/6	PHX: Turbojet and Turboprop
BNYRD	SID	RNAV	1/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
BROAK	SID	RNAV	3/6	PHX: Turbojet and Turboprop
BUCKEYE	SID	Conventional	4/6	PHX: Turbojet and Turboprop
CHILY	SID	Conventional	4/6	PHX: Turbojet and Turboprop
DEER VALLEY	ODP	Conventional	0/4	DVT: All Aircraft
DRAKE	ODP	RNAV	0/2	GEU: All Aircraft
ECLPS	SID	RNAV	1/6	PHX: Turbojet and Turboprop
FORPE	SID	RNAV	3/6	PHX: Turbojet and Turboprop
FTHLS	SID	RNAV	3/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
FYRBD	SID	RNAV	1/6	PHX: Turbojet and Turboprop
GLENDALE	SID	Conventional	8/2	GEU: All Aircraft
GOODYEAR	SID	Conventional	0/2	GYR: All Aircraft
IZZZO	SID	RNAV	3/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
JEWLZ	SID	RNAV	2/2	P19: All Aircraft
JONHH	SID	Conventional	4/2	SDL: Turbojet and Turboprop
JUDTH	SID	RNAV	1/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
KATMN	SID	RNAV	1/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
KEENS	SID	RNAV	3/6	PHX: Turbojet and Turboprop
LALUZ	SID	RNAV	3/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
MARICOPA	ODP	Conventional	0/2	SDL: All Aircraft
MAYSA	SID	RNAV	1/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
MESA	ODP	Conventional	0/4	FFZ: All Aircraft
MOBIE	SID	Conventional	1/6	PHX: Turbojet and Turboprop
MRBIL	SID	RNAV	3/6	PHX: Turbojet and Turboprop
PHOENIX	ODP	Conventional	0/6	IWA: All Aircraft
POTER	ODP	RNAV	0/2	GYR: All Aircraft
QUAKY	SID	RNAV	5/6	PHX: Turbojet and Turboprop
SACAT	SID	RNAV	0/4	FFZ: All Aircraft

No Action Procedure	Procedure Type	Basis of Design	Transitions (en route/runway)	Airports Served: Aircraft Type
SCOTTSDALE	SID	Conventional	7/2	SDL: Turbojet and Turboprop
SNOBL	SID	RNAV	5/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
ST JOHNS	SID	Conventional	1/6	PHX: Turbojet and Turboprop
STANFIELD	SID	Conventional	2/6	PHX: Turbojet and Turboprop
STRRM	SID	RNAV	1/6	PHX: Turbojet and Turboprop
YOTES	SID	RNAV	3/0	CHD, DVT, GEU, GYR, IWA, SDL: Turbojet and Turboprop
ZEPER	SID	RNAV	1/6	PHX: Turbojet and Turboprop

Notes: STAR = Standard Terminal Arrival Route; SID = Standard Instrument Departure; ODP = Obstacle Departure Procedure; RNAV = area navigation; All Aircraft = Turbojets, Turboprops, and Pistons
Source: Federal Aviation Administration (FAA), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) software, Version 7.5.1. Data exported October 2025.

Key Consideration: Aircraft operations may not always follow published flight procedures. At some study airports, published procedures were limited or not available, resulting in a greater reliance on air traffic control instructions (vectoring). Deviations from procedures may also occur due to weather, operational necessity, or safety considerations. These operations were still incorporated into the modeling and analysis and are identified by the term “Vector” in the title of the exhibits found in **Appendix H**. Such variability is inherent to aircraft operations and is expected to continue under either the No Action or Proposed Action alternatives.

Exhibit 3-1. No Action Alternative Procedures



3.2.2 Airspace Control Structure under the No Action Alternative

When aircraft depart from or arrive in the Phoenix area on an assigned SID or STAR, transfer of control occurs between multiple air traffic facilities, most notably ZAB and P50 (**Section 1.4** provides a description of the ZAB and P50 airspace). Under the No Action Alternative, the existing transfer locations and sector boundaries would remain unchanged. For purposes of this Draft EA, transfer points correspond to established entry and exit gates, which are designed to segregate arrivals and departures to the extent practicable, given airspace constraints.[17]

At PHX, independent runway configurations are used depending on wind and weather conditions. These configurations significantly influence how arrival and departure flows interact, both with one another and with traffic from surrounding satellite airports such as DVT, IWA, and SDL. Currently, interactions between PHX and the other Study Airports often require strategic vectoring by controllers to maintain safe separation and sequencing, particularly in congested sectors such as P50's Biltmore Sector and ZAB's Sector 67.

Appendix H illustrates all arrival and departure flows associated with the No Action Alternative. These flows are grouped by procedure type (conventional or RNAV), operation (arrival or departure), and airport. Under the No Action Alternative, the interaction between flows would remain variable depending on runway configuration and traffic volume, continuing to rely on radar vectoring and controller workload, rather than predictable RNAV procedures.

3.3 Proposed Action

The Proposed Action evaluated in this Draft EA consists of a coordinated set of arrival, departure, and approach procedures developed through the Phoenix PBN Design Team Process. Individual procedures were initially designed and screened on their own merits to ensure compliance with FAA design criteria and to address specific operational issues identified in **Chapter 2**. Procedures that did not meet safety, feasibility, or operational objectives were not carried forward.

While individual procedures may provide localized operational benefits, the Phoenix terminal airspace functions as an interconnected system. For this reason, procedures were also evaluated collectively to assess how they interact with one another across multiple airports, traffic flows, and airspace sectors. Evaluating the procedures as a coordinated package allows the FAA to assess overall system performance, identify potential interactions between arrival and departure flows, and avoid introducing unintended operational effects elsewhere in the airspace. Accordingly, the Proposed Action is analyzed as a combined set of procedures that together address the Project's purpose and need.

The Proposed Action comprises many individual, interrelated RNAV procedures combined into a single alternative. Although each was considered individually with respect to its contribution to the system, the procedures were ultimately advanced as a coordinated package to ensure that the redesign improved efficiency system wide.

[17] Entry and exit gates are predefined points, typically fixes, waypoints, or route intersections that are located at or near the boundary between en route airspace and terminal airspace. These gates serve as standardized transition points where aircraft are transferred between ATC Facilities.

As discussed in **Section 3.1,** the Proposed Action includes many of the procedures developed by the Phoenix PBN Design Team that were determined to meet the Project's purpose and need, as well as existing procedures that would continue to be used. Details regarding PBN Design Team briefings and related discussions are provided in **Appendix E**. The Proposed Action improves safety and efficiency in the Project airspace by enhancing flexibility in transitioning aircraft, segregating arrivals and departures, reducing controller workload, and improving the predictability of traffic flows across both PHX and the surrounding satellite airports.

The Proposed Action includes 32 procedures and 2 routes:

- 19 new/amended RNAV SIDs
- 9 new/amended RNAV STARs
- 4 new RNAV RNP Approaches
- 2 new/amended T-Routes

Appendix I illustrates all arrival and departure flows associated with the Proposed Action. These flows are grouped by procedure, operation (arrival or departure), and airport. Depending on specific airport traffic flows, the interaction between specific flows changes.

The procedures that comprise the Proposed Action are summarized in **Table 3-2** and **Table 3-3**. Together, these procedures represent the coordinated redesign of arrival, departure, and approach routing in the Phoenix terminal airspace. Increasing the number of RNAV procedures and runway transitions provides additional structured routing options, allowing an aircraft to follow defined paths rather than relying on controller vectoring.

The proposed RNAV procedures address the underlying causes of operational variability by increasing predictability, improving traffic awareness, and introducing greater operational separation between IFR and VFR traffic. By standardizing flight paths, particularly for turbojet departures and arrivals, these procedures reduce the variability that currently makes conflict areas difficult for VFR pilots to anticipate. At the same time, more consistent routing enables pilots and controllers alike to develop a clearer picture of where high-speed traffic will be concentrated, thereby reducing the occurrence of TCAS RAs.

Table 3-2 lists the Proposed Action procedures, the existing procedure that the Proposed Action would replace (if applicable), the procedure type, and the basis of design. **Table 3-2** also shows the number of en route and runway transitions for each procedure, the airports that the Proposed Action procedures serve, and the objectives each procedure design achieves. **Exhibit 3-2** shows all the procedures associated with the Proposed Action.

Table 3-2. Proposed Action – STARs and SIDs

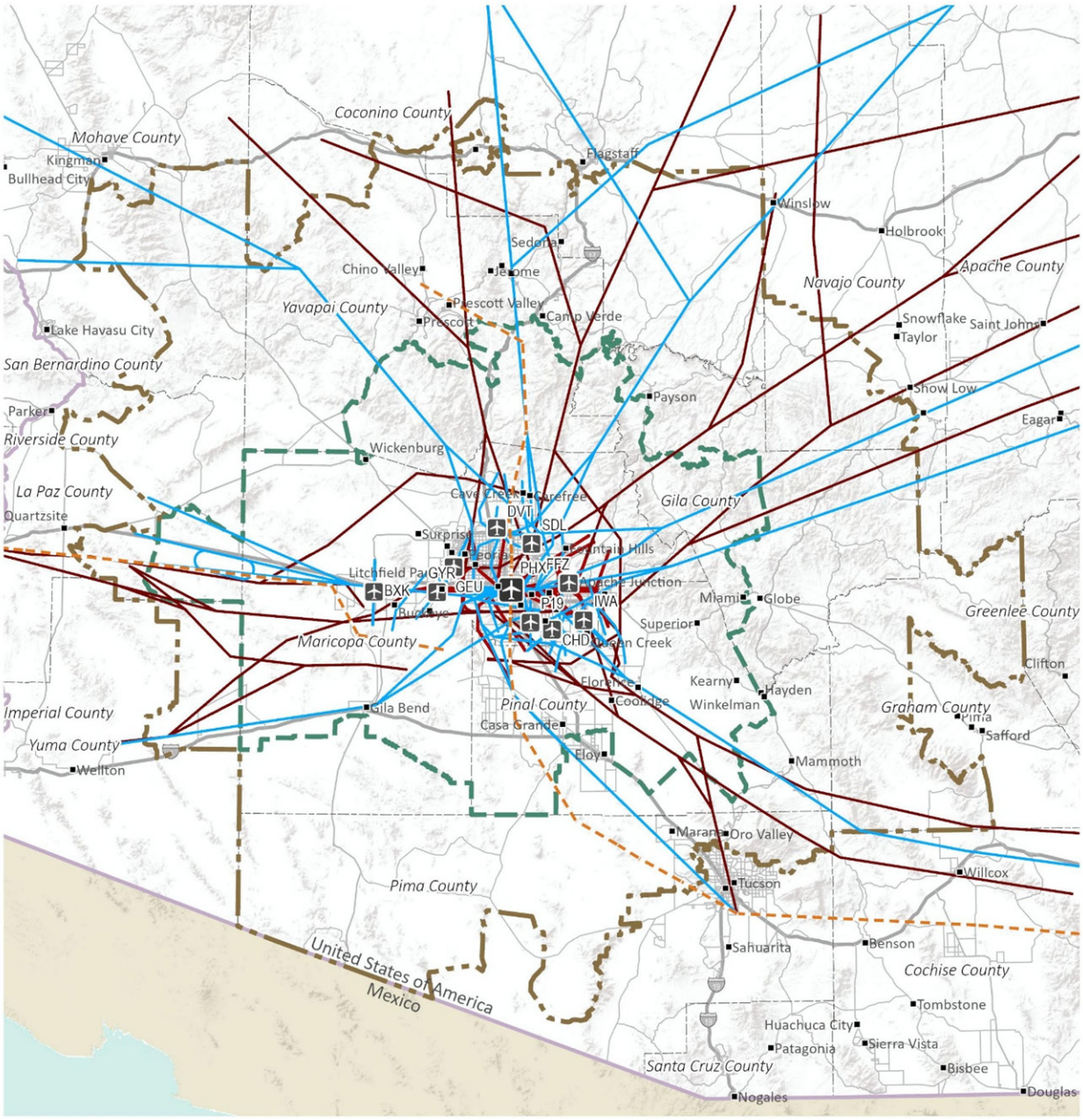
Proposed Action Procedure	Procedure Replaced	Procedure Type	Basis of Design	Transitions (en route/ runway)	Airports Served: Aircraft Type	Objectives
BRDEY	PIING	STAR	RNAV	3/2	PHX: Turbojet	Predictability Reduced Vectoring Deconfliction
BTMNN	BRUSR	STAR	RNAV	2/2	PHX: Turbojet	Deconfliction Reduced Vectoring Increased Efficiency
FYTRS	SUNSS	STAR	RNAV	3/2	PHX, BXK, CHD, DVT, FFZ, GEU, GYR, IWA, P19, SDL: Turbojet and Turboprop	Deconfliction Predictability
JNKYD	HUUTY	STAR	RNAV	4/0	PHX, BXK, CHD, FFZ, GEU, GYR, IWA, P19: Turbojet and Turboprop	Predictability Increased Efficiency
LEAGG	DSERT	STAR	RNAV	4/0	PHX, CHD, DVT, FFZ, IWA, P19, SDL: Turbojet and Turboprop	Deconfliction Increased Flexibility
MCAIN	N/A	STAR	RNAV	3/0	PHX, CHD, DVT, FFZ, IWA, P19, SDL: Turbojet and Turboprop	Predictability Reduced Vectoring
MRRVL	EAGUL	STAR	RNAV	4/2	PHX: Turboprop	Predictability Reduced Vectoring
MZCAL	N/A	STAR	RNAV	1/0	BXK, DVT, FFZ, GEU, GYR, IWA, P19, SDL: Turbojet and Turboprop	Predictability Reduced Vectoring
SNDVL	HYDRR	STAR	RNAV	3/4	PHX: Turboprop	Deconfliction Reduced Congestion
BNDYT	STRRM	SID	RNAV	1/6	PHX: Turboprop	Predictability Repeatability Reduce TCAS RAs
JEKLE	FTHLS; BROAK	SID	RNAV	3/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Increased Efficiency Reduced Vectoring Reduce TCAS RAs
CSTLY	KEENS	SID	RNAV	3/6	PHX: Turboprop	Deconfliction Increased Efficiency Reduce TCAS RAs
WHRSE	BNYRD; STRRM	SID	RNAV	1/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Deconfliction Increased Efficiency Reduce TCAS RAs
DNHIL	SNOBL; QUAKY	SID	RNAV	2/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Increased Efficiency Reduce Complexity Reduce TCAS Ras
ANOBL	BROAK	SID	RNAV	3/6	PHX: Turboprop	Deconfliction Predictability Reduce TCAS Ras
JEWLZ	JEWLZ	SID	RNAV	2/2	P19: All Aircraft	Existing Procedure Reduce TCAS RAs
SNWBD	MRBIL; YOTES	SID	RNAV	2/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Deconfliction Increased Efficiency Reduced Vectoring Reduce TCAS RAs

Proposed Action Procedure	Procedure Replaced	Procedure Type	Basis of Design	Transitions (en route/ runway)	Airports Served: Aircraft Type	Objectives
BLOND	KEENS; IZZZO	SID	RNAV	3/22	PHX: Turbojet SDL, IWA, GYR, GEU, FFZ, DVT, CHD, BXK: Turbojet and Turboprop	Predictability Repeatability Reduce TCAS RAs
SLOTZ	ZEPER; MAYSA	SID	RNAV	2/22	PHX: Turbojet SDL, IWA, GYR, GEU, FFZ, DVT, CHD, BXK: Turbojet and Turboprop	Deconfliction Reduce Congestion Reduce TCAS RAs
SNRIZ	LALUZ; FORPE	SID	RNAV	3/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Deconfliction Increased Efficiency Reduce TCAS RAs
SOHOT	JUDTH; FYRBD	SID	RNAV	1/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Reduce Congestion Deconfliction Reduce Vectoring Reduce TCAS RAs
PHEBI	ECLPS	SID	RNAV	1/6	PHX: Turboprop	Predictability Repeatability Reduce TCAS RAs
BLJKX	ZEPER	SID	RNAV	2/6	PHX: Turboprop	Increased Efficiency Increased Flexibility Reduce TCAS RAs
LALUZ	FORPE	SID	RNAV	3/6	PHX: Turboprop	Predictability Increased Efficiency Reduce TCAS RAs
LOZST	MRBIL	SID	RNAV	2/6	PHX: Turboprop	Deconfliction Increased Efficiency Reduce TCAS RAs
RZORT	QUAKY	SID	RNAV	2/6	PHX: Turboprop	Predictability Increased Efficiency Reduce TCAS RAs
VURDE	FYRBD	SID	RNAV	1/6	PHX: Turboprop	Predictability Deconfliction Reduce TCAS RAs
AMLEA	KATMN; ECLPS	SID	RNAV	1/22	PHX: Turbojet BXK, CHD, DVT, FFZ, GEU, GYR, IWA, SDL: Turbojet and Turboprop	Increased Efficiency Reduce TCAS RAs

Notes: STAR = Standard Terminal Arrival Route; SID = Standard Instrument Departure; RNAV = area navigation; All Aircraft = Turbojets, Turboprops, and Pistons
Source: Federal Aviation Administration (FAA), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) software, Version 7.5.1. Data exported November 2025.

Key Consideration: Aircraft operations may not always follow published flight procedures. At some study airports, published procedures were limited or not available, resulting in a greater reliance on air traffic control instructions (vectoring). Deviations from procedures may also occur due to weather, operational necessity, or safety considerations. These operations were still incorporated into the modeling and analysis and are identified by the term "Vector" in the title of the exhibits found in **Appendix I**. Such variability is inherent to aircraft operations and is expected to continue under either the No Action or Proposed Action alternatives.

Exhibit 3-2. Proposed Action Procedures



Sources: Esri, USGS, NOAA; AirNav (Airport), March 11, 2025; ESRI, Inc. (State Boundaries, County Boundaries, Roads), March 11, 2025; AZGeo Data (Incorporated City Boundaries, City Points), March 11, 2025; ESRI, Inc. (Terrain)
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In addition to 28 SID and STARs, the Proposed Action incorporates four new RNP approaches. **Table 3-3** lists the new, amended, or existing instrument approaches, as well as the procedure type and the airports served.

Table 3-3. Proposed Action – Instrument Approach Procedures (RNAV, RNP, ILS, GPS)

Proposed Action Procedure	Procedure Type	Design	Airport Served
RNAV (RNP) RWY 7R*	RNP	RNAV	PHX
RNAV (RNP) RWY 8*	RNP	RNAV	PHX
RNAV (RNP) RWY 25L*	RNP	RNAV	PHX
RNAV (RNP) RWY 26*	RNP	RNAV	PHX
RNAV (GPS) Y RWY 7L	GPS	RNAV	PHX
RNAV (GPS) Y RWY 7R	GPS	RNAV	PHX
RNAV (GPS) Y RWY 8	GPS	RNAV	PHX
RNAV (GPS) Y RWY 25L	GPS	RNAV	PHX
RNAV (GPS) Y RWY 25R	GPS	RNAV	PHX
RNAV (GPS) Y RWY 26	GPS	RNAV	PHX
RNAV (RNP) RWY 21	RNP	RNAV	SDL
RNAV (RNP) Y RWY 3	RNP	RNAV	SDL
RNAV (RNP) Z RWY 3	RNP	RNAV	SDL
RNAV (GPS) D	GPS	RNAV	SDL
RNAV (GPS) E	GPS	RNAV	SDL
VOR/DME-A	VOR/DME	CONV	SDL
ILS or LOC RWY 30C	ILS	ILS	IWA
RNAV (RNP) Z RWY 30C	RNP	RNAV	IWA
RNAV (GPS) RWY 12C	GPS	RNAV	IWA
RNAV (GPS) RWY 12R	GPS	RNAV	IWA
RNAV (GPS) RWY 30L	GPS	RNAV	IWA
RNAV (GPS) RWY 30R	GPS	RNAV	IWA
RNAV (GPS) Y RWY 30C	GPS	RNAV	IWA
VOR or TACAN RWY 30C	VOR	CONV	IWA
RNAV (GPS) RWY 7R	GPS	RNAV	DVT
RNAV (GPS) RWY 25L	GPS	RNAV	DVT
RNAV (GPS) B	GPS	RNAV	DVT
RNAV (GPS) RWY 4R	GPS	RNAV	CHD
VOR RWY 4R	VOR	CONV	CHD
RNAV (GPS) RWY 1	GPS	RNAV	GEU
RNAV (GPS) RWY 19	GPS	RNAV	GEU
RNAV (GPS) RWY 3	GPS	RNAV	GYR
RNAV (GPS) RWY 4L	GPS	RNAV	FFZ
RNAV (GPS) RWY 4R	GPS	RNAV	FFZ
RNAV (GPS) B	GPS	RNAV	FFZ
RNAV (GPS) RWY 35	GPS	RNAV	P19
RNAV (GPS) RWY 17	GPS	RNAV	BXK
RNAV (GPS) RWY 35	GPS	RNAV	BXK
PHX ILS RWY 7L	ILS	ILS	PHX
PHX ILS RWY 7R	ILS	ILS	PHX
PHX ILS RWY 8	ILS	ILS	PHX
PHX ILS RWY 25L	ILS	ILS	PHX
PHX ILS RWY 26	ILS	ILS	PHX

Notes: * = Newly Developed Procedure; C = center; CONV = conventional; DME = distance measuring equipment; GPS = Global Positioning System; ILS = Instrument Landing System; L = left; LOC = localizer; R = right; RNAV = area navigation; RNP = Required Navigation Performance; RWY = runway; VOR = Very High Frequency Omni-directional Range

Source: Federal Aviation Administration (FAA), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) software, Version 7.5.1. Data exported October 2025.

As with the No Action Alternative, the satellite Study Airports would continue to maintain independent runway operating configurations based on weather and wind. Under the Proposed Action, however, flows are designed to be more predictable and efficient across these configurations. The use of parallel STARs to alleviate the need for vectoring due to congestion and additional holding patterns are two important elements of the added predictability and efficiency of the Proposed Action. The PBN Design Team accounted for all possible runway configurations and combinations when developing the new procedures, ensuring that both PHX and satellite operations could be accommodated. **Appendix I** illustrates the resulting flows, which reflect reduced reliance on vectoring, increased use of RNAV predictability, and more consistent integration of arrivals and departures.

The Proposed Action also includes an amendment to existing T-Route 306 and the creation of a new T-Route 327. T-Routes are low altitude, RNAV-based routes that provide global positioning system (GPS) defined navigation paths for aircraft operating primarily under IFR below 18,000 feet above MSL. They serve as modern replacements or supplements to Victor Airways that depend on ground-based navigational aids.

For the Proposed Action, these two T-Routes would enhance connectivity between the terminal and en route environments, particularly for aircraft operating to or from the satellite Study Airports. The amendment of T-Route T-306 and the establishment of T-Route T-327 support the purpose and need to improve traffic flows and reduce air traffic control sector overload by providing predictable, RNAV-based routing options that facilitate more efficient transfers between the en route and terminal environments. These T-Routes reduce reliance on vectoring, improve traffic organization at sector boundaries, and provide additional routing flexibility during periods of high demand or constrained operations.

3.4 Summary Comparison of the No Action Alternative and Proposed Action

This section summarizes how the No Action Alternative and the Proposed Action compare relative to the Project purpose and related objectives described in **Section 2.2**, including improving traffic flow efficiency and reducing reliance on vectoring to increase safety.

3.4.1 Reduce or Eliminate Reliance on Vectoring

Section 2.2.1 includes two criteria established to measure the objective to reduce or eliminate the reliance on vectoring:

- Where possible, increase the number of RNAV STARs and SIDs compared with the No Action Alternative (measured by total count of RNAV STARs and RNAV SIDs for each of the Study Airports)
- Where possible, increase the number of available transitions compared with the No Action Alternative (measured by number of exit/entry points)

Table 3-4 provides a summary comparison of the No Action Alternative and Proposed Action based on the criteria defined above. Under the No Action Alternative, there are four IFR entry

transfer control points into the Project airspace and four exit transfer control points. Under the Proposed Action, the number of IFR entry transfer control points remain at four, while the IFR exit transfer control points increase to five. The increase allows for more efficient use of the airspace.

Table 3-4. Alternatives Evaluation – Improve Flexibility in Transitioning Aircraft

Criteria	No Action Alternative	Proposed Action
Total Entry Points	4	4
Total Exit Points	4	5
Total En Route Transitions	107	65
Total Runway Transitions	146	266

Note: A runway transition is counted if there is at least one waypoint or fix beyond (or prior to) the common route to create a defined segment between the runway and common route (i.e., defined route between two fixes or waypoints). Runway transitions are associated with individual SIDs. Multiple runway transitions associated with the same runway may overlap and are counted individually for each SID served.
Source: Federal Aviation Administration (FAA), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) software, Version 7.5.1. Data exported November 2025.

Under the No Action Alternative, there are 107 en route transitions and 146 runway transitions with 48 separate procedures. Under the Proposed Action, although the number of en route transitions decreases to 65, the number of runway transitions increases to 266 with only 28 procedures. These changes result from new and amended procedures designed to connect directly into both existing and proposed entry/exit points, reducing the need for vectoring. The added runway transitions provide controllers with greater predictability when sequencing arrivals and departures, a significant improvement over current operations that often require ad hoc heading and speed adjustments.

3.4.2 Improve Traffic Flows and Air Traffic Control Sector Overload

Section 2.2.2 includes two criteria to measure the objective of improving air traffic flows and air traffic controller workload in heavily utilized sectors:

- Segregate arrival and departure traffic (measured by number of RNAV STARs and/or SIDs that can be used independently to/from Study Airports).
- RNAV procedures with altitude controls intended to optimize descent or climb patterns (measured by count of procedures with altitude controls).

Table 3-5 provides a summary comparison of the No Action Alternative and Proposed Action based on the criteria defined above. Under the No Action Alternative, there are 82 RNAV procedure/airport combinations. Under the Proposed Action, there are 137 RNAV procedure/airport combinations. The greater number of RNAV procedures allows controllers to segregate arrivals and departures more effectively, reducing conflicts in congested sectors such as ZAB's Sector 67 and P50's Biltmore Sector. This procedural segregation reduces workload and improves throughput capacity, especially during peak traffic periods or adverse weather.

Table 3-5. Alternatives Evaluation – Segregate Arrival and Departure Flows

Airport	Number of Independent RNAV Procedures No Action Alternative	Number of Independent RNAV Procedures Proposed Action
PHX	14	28
BXK	0	12
CHD	11	13
DVT	10	13
FFZ	3	14
GEU	11	12
GYR	11	12
IWA	11	14
P19	1	6
SDL	10	13

Note: RNAV = area navigation
Source: Federal Aviation Administration (FAA), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) software, Version 7.5.1. Data exported October 2025.

Table 3-6 provides a summary comparison of the No Action Alternative and Proposed Action related to improving the predictability of air traffic flow around the Study Airports. Under the No Action Alternative, there are 32 airport and procedure combinations that include altitude controls. In comparison, the Proposed Action includes 114 airport and procedure combinations with altitude controls. An altitude control is a prescribed altitude constraint associated with a fix, waypoint, leg, or segment of a SID or STAR that ensures aircraft maintain a specific vertical profile. The total number of RNAV procedures/airport combinations with altitude controls serving the Study Airports increases from 32 under the No Action Alternative to 114 under the Proposed Action.

Table 3-6. Alternatives Evaluation – Improve Predictability of Air Traffic Flow

Airport	Available SID/STAR with Altitude Controls No Action Alternative	Available SID/STAR with Altitude Controls Proposed Action
PHX	19	26
BXK	0	5
CHD	1	6
DVT	1	13
FFZ	3	14
GEU	1	5
GYR	1	12
IWA	2	14
P19	1	6
SDL	3	13

Notes: SID = Standard Instrument Departure; STAR = Standard Terminal Arrival Route
Source: Federal Aviation Administration (FAA), Terminal Area Route Generation, Evaluation, and Traffic Simulation (TARGETS) software, Version 7.5.1. Data exported October 2025.Preferred Alternative Determination

Of the two alternatives carried forward for analysis, only the Proposed Action would meet the purpose and need for the Project based on the criteria discussed above. Therefore, the Proposed Action is the Preferred Alternative. Although it would not meet the purpose and need, the No Action Alternative was carried forward for detailed analysis in this Draft EA, as required by DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*, to establish a norm against which decision makers can measure the environmental effects of undertaking the Proposed Action.

3.5 Listing of Federal Laws Regulations, and Executive Orders Relevant to the Proposed Action

Several federal laws and regulations, Executive Orders (E.O.), FAA Orders, and FAA Advisory Circulars are applicable to the No Action Alternative and Proposed Action. **Table 3-7** lists the relevant federal laws, regulations, and E.O.s, and **Table 3-8** lists the applicable DOT and FAA Orders and FAA Advisory Circulars.

Table 3-7. List of Federal Laws, Regulations, and Executive Orders Considered

Laws, Regulations, and Executive Orders	Citation
National Environmental Policy Act of 1969, as amended by the Fiscal Responsibility Act of 2023	42 U.S.C. § 4321 *et seq.*
American Indian Religious Freedom Act of 1978	42 U.S.C. § 1996
Archaeological and Historic Preservation Act of 1974, as amended	16 U.S.C. § 469 *et seq.*
Aviation Safety and Noise Abatement Act of 1979	49 U.S.C. § 47501 *et seq.*
Clean Air Act of 1970, as amended	42 U.S.C. § 7401 *et seq.*
Department of Transportation Act of 1966, Section 4(f)	49 U.S.C. § 303(c)
Endangered Species Act of 1973	16 U.S.C. § 1531 *et seq.*
Federal Aviation Act of 1958, as amended	49 U.S.C. § 40101 *et seq.*
Fish and Wildlife Coordination Act of 1958	16 U.S.C. § 661 *et seq.*
Lacey Act of 1900	16 U.S.C. § 3371 *et seq.*
Migratory Bird Treaty Act of 1918	16 U.S.C. § 703 *et seq.*
National Historic Preservation Act of 1966, as amended	16 U.S.C. § 470
The Bald and Golden Eagle Protection Act of 1940	16 U.S.C. § 668 *et seq.*
The Wilderness Act of 1964	16 U.S.C. § 1131-1136
Airport Noise Compatibility Planning Regulations	14 CF. Part 150
General Conformity Regulations	40 CFR Part 93 Subpart B
FAR Part 71: Designation of Class A, Class B, Class C, Class D, and Class E Airspace Areas; Airways; Routes; and Reporting Points, December 17, 1991	14 CFR Part 71
Protection of Historic Properties Regulations	36 CFR 800
E.O. 11593, Protection and Enhancement of the Cultural Environment	36 FR 8921
E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks	62 FR 19885
E.O. 13423, Strengthening Federal Environmental, Energy, and Transportation Management	72 FR 3919
E.O. 14154, Unleashing American Energy	90 FR 8353

Notes: FAR = 1iation Regulations; E.O. = Executive Order; U.S.C. = United States Code; CFR = Code of Federal Regulations; FR = Federal Register

Table 3-8. List of DOT and FAA Orders, Advisory Circulars, and Guidance Documents

Order and Advisory Circular
DOT Order 5610.1C, *Procedures for Considering Environmental Impacts,* September 18, 1979
FAA Order 8260.58D, *The United States Standard Performance Based Navigation (PBN) Instrument Procedure Design*, January 15, 2025
FAA Order 8260.43C, *Flight Procedures Management Program*, April 9, 2019
FAA Order JO 7110.65BB, *Air Traffic Control*, February 20, 2025
FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, July 16, 2015
FAA Order 1050.1 *Desk Reference*, Version 2, February 2020
FAA Order 7100.41A, *Performance Based Navigation Implementation Process*, April 29, 2016
FAA Order JO 7400.2R, *Procedures for Handling Airspace Matters*, February 2, 2025
FAA Order 8260.3G, *United States Standard for Terminal Instrument Procedures (TERPS)*, July 1, 2024
FAA Order 8040.4C, *Safety Risk Management Policy*, September 29, 2023
FAA Order JO 1000.37C, *Air Traffic Organization Safety Management System*, October 1, 2021
FAA Order 8260.19K, *Flight Procedures and Airspace*, January 15, 2025
FAA Order 8260.46K, *Departure Procedure Program*, July 1, 2024
FAA Advisory Circular 150/5020-1, *Noise Control and Compatibility Planning for Airports*, August 5, 1983
FAA Advisory Circular 150/5200-33C, *Hazardous Wildlife Attractants on or near Airports*, February 21, 2022
FAA *Aviation Emissions and Air Quality Handbook*, Version 4, July 2024

Notes: DOT = United States Department of Transportation; FAA = Federal Aviation Administration

4. AFFECTED ENVIRONMENT

This chapter describes the existing conditions of human, physical, and natural environmental resources that could be affected by implementation of the Proposed Action. Specifically, this EA considers effects on the environmental resource categories identified in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA 2015) and the 1050.1F *Desk Reference* (FAA 2020). The potential environmental impacts of the Proposed Action and No Action Alternatives are discussed in **Chapter 5**.

The technical terms and concepts discussed in this chapter are explained in **Appendix D** and **Appendix J.**

4.1 Resource Categories or Subcategories Not Affected

This section discusses the environmental impact categories (or subcategories thereof) that would not be affected by the Proposed Action. These resources would be unaffected because the resource either does not exist in the General Study Area and Supplemental Study Area (the Study Areas) or the types of activities associated with the Proposed Action would not affect them. The resource categories considered but dismissed from analysis are:

- **Biological Resources (Fish and Plants only):** The Proposed Action would not involve ground disturbing activities and, therefore, would not directly impact critical habitats. The Proposed Action also would not affect habitat for non−avian animals, fish, or plants. Therefore, these resource subcategories are dismissed from further evaluation.
- **Coastal Resources:** The Proposed Action would not involve any actions (physical changes or development of facilities) that would be inconsistent with management plans for designated Coastal Barrier Resource System areas, which are not found in the Study Areas. The Proposed Action is not expected to directly affect shorelines or change the use of shoreline zones or be inconsistent with a National Oceanic and Atmospheric Administration (NOAA) approved state Coastal Zone Management Plan. Therefore, this resource is dismissed from further evaluation.
- **Farmlands:** The Farmland Protection Policy Act regulates federal actions with the potential to convert farmland to non−agricultural uses. Implementation of the Proposed Action would not involve the development of land regardless of use. Therefore, the Proposed Action would have no impact on existing farmlands, and this resource category is dismissed from further evaluation.
- **Hazardous Materials, Solid Waste, and Pollution Prevention:** The Proposed Action would not involve construction or development, or any physical disturbances of the ground. Therefore, the potential for impact from hazardous materials, pollution, or solid waste is not anticipated, and this resource category is dismissed from further evaluation.
- **Historical, Architectural, Archeological, and Cultural Resources (Archeological Resources only):** The Proposed Action would not involve any construction, development, or physical

disturbance of the ground, including excavation, that could impact archeological resources. Therefore, there would be no potential for the Proposed Action to impact archeological resources, and this resource category is dismissed from further evaluation.

- **Land Use:** The Proposed Action would not involve any changes to existing, planned, or future land uses within the Study Areas. Therefore, the Proposed Action would have no impact on land use, and this resource is dismissed from further evaluation.
- **Natural Resources and Energy Supply (Except Aircraft Fuel):** The Proposed Action would not involve new construction or demolition activities and, therefore, would not affect natural resources, such as wood, steel, gravel, sand, aggregate, concrete, asphalt, and water. Further, there would be no impact on the energy supply, other than potential changes to aircraft fuel consumption related to the proposed flight path modifications. Therefore, this resources category is dismissed from further evaluation, except for the consideration of aircraft fuel consumption.
- **Socioeconomic Impacts and Children's Environmental Health and Safety Risks:** For the reasons summarized below, the Proposed Action would have no impact on socioeconomic resources or children's environmental health and safety. As such, this resource category is dismissed from further evaluation.
    - **Socioeconomic Impacts:** The Proposed Action would not involve acquisition of real estate, relocation of residents or community businesses, disruption of local traffic patterns, loss in community tax base, or changes to the fabric of the community.
    - **Children's Environmental Health and Safety Risks:** Children's Environmental Health and Safety Risks were considered consistent with Executive Order 13045. The Proposed Action involves changes to aircraft arrival and departure procedures and does not introduce environmental health or safety hazards that would uniquely affect children. Schools and childcare facilities are present within the Study Area; however, the Proposed Action would not result in noise or air quality changes that would disproportionately affect children. Potential noise and air quality effects associated with aircraft operations are evaluated separately in this Draft EA, and the Proposed Action would not result in conditions that would disproportionately expose children to health or safety risks.
- **Visual Effects (Light Emissions only):** There are no special purpose laws for light impacts and visual impacts. Aviation lighting is required for security, obstruction clearance, and navigation and is the chief contributor to light emissions from airports. The Proposed Action would not involve changes to aviation lighting. Further, no new construction would occur under the Proposed Action; therefore, there would be no potential for ground-level visual impacts related to lighting. As such, the subcategory of light emissions is dismissed from further analysis.
- **Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers):** For the reasons summarized below, the Proposed Action would have no impact on water resources. As such, this resource category is dismissed from further evaluation.

- **Wetlands:** The Proposed Action would not involve the construction of facilities or infrastructure and does not involve ground disturbing activities. Therefore, the Proposed Action would not impact wetlands or navigable waters.
- **Floodplains:** The Proposed Action would not involve the construction of facilities. Therefore, it would not impact nor be affected by locations designated as a 100−year flood event area as described by the Federal Emergency Management Agency (FEMA).
- **Surface Waters:** The Proposed Action would not involve the construction of facilities or other infrastructure and would not alter existing discharges to water bodies or create a new discharge that would result in impacts to water quality or water bodies themselves. Therefore, the Proposed Action would not result in any impacts to surface water, including water quality.
- **Groundwater:** The Proposed Action does not involve ground disturbing activities that would withdraw groundwater from underground aquifers or reduce infiltration or recharge to ground water resources through the introduction of new impervious surfaces. As such, the Proposed Action would have no impact on groundwater resources.
- **Wild and Scenic Rivers:** Both the Verde River and Fossil Creek, located in the northern portion of the General Study Area (just south of Camp Verde) are designated as Wild and Scenic Rivers. However, the Proposed Action would not involve construction or ground disturbing activities. Therefore, the Proposed Action would not impact any wild, scenic, or recreational rivers or river segments included in the Wild and Scenic River System.

4.2 Potentially Affected Resource Categories or Subcategories

This section provides detailed information on the current conditions within the Study Areas for environmental resource categories or components that the Proposed Action could potentially affect. These environmental resource categories or subcategories include:

- Noise and Compatible Land Use (**Section 4.2.1**)
- Historic, Architectural, Archeological, and Cultural Resources – Historic Properties and Cultural Resources subcategories only (**Section 4.2.2**)
- DOT Act, Section 4(f) (**Section 4.2.3**)
- Biological Resources – Wildlife subcategory only (**Section 4.2.4**)
- Natural Resources and Energy Supply – Energy Supply subcategory only (Aircraft Fuel only) (**Section 4.2.5**)
- Aviation Emissions and Air Quality (**Section 4.2.6**)
- Visual Effects (Visual Resources / Visual Character Only) (**Section 4.2.7**)

4.2.1 Noise and Compatible Land Use

This section presents the aircraft noise analysis conducted as part of this Draft EA, including summaries of the operational data used to calculate noise exposure, applicable FAA guidance, noise model input development, and existing aircraft noise conditions. **Appendix J** provides background information on the physics of sound, the effects of noise on people, and noise metrics. **Appendix K** includes detailed application of the noise model and results of the combined noise analyses.

4.2.1.1 Noise Modeling Methodology

It is the FAA's responsibility to analyze aviation noise impacts from federal actions. This EA follows FAA Order 1050.1F (FAA 2015) and other applicable federal statutes, regulations, and agency guidance governing environmental impact assessment. A list of laws and guidance for noise analysis is presented in **Appendix K**.

Consistent with FAA guidance, aircraft noise exposure is evaluated using the Day-Night Average Sound Level (DNL), the noise metric used in all FAA noise studies in airport communities (FAA 2015, App B-1). DNL represents the cumulative sound energy from aircraft operations over a 24-hour period, with a 10-decibel (dB) weighting added to all sounds occurring during nighttime hours (between 10:00:00 p.m. and 6:59:59 a.m.). The 10 dB increase for nighttime events represents the added intrusiveness of noise that occurs during typical sleeping hours. Accordingly, the metric essentially equates one nighttime flight to 10 daytime flights (FAA 2015).

For a NEPA noise analysis, the FAA requires that the 24-hour analysis period represents an average annual day (AAD), defined as the average daily aircraft operations over a 365-day period or 366 days for a leap year. Estimates of noise effects resulting from aircraft operations can be interpreted in terms of the probable effects on human activities typical to specific land uses. The FAA has adopted suggested guidelines for evaluating land use compatibility with noise exposure. In general, most land uses are considered compatible with DNL less than 65 dB, but only certain uses are compatible with DNL greater than or equal to 65 dB (FAA 2015). Additional details on noise metrics, including DNL, and land use compatibility can be found in **Appendix J** and **Appendix K**, respectively.

FAA Order 1050.1F also requires the FAA to evaluate aircraft noise using the current FAA-approved computer model at the beginning of the environmental analysis process (FAA 2015). Accordingly, the FAA is using the Aviation Environmental Design Tool Version (AEDT) 3g.[18] AEDT is a combined noise, fuel burn, and emissions model that uses a database of aircraft noise and performance characteristics. AEDT predicts ground-based DNL values from user input for aircraft types, AAD aircraft operations, airport operating conditions, aircraft performance, and flight patterns. AEDT 3g was used to analyze noise associated with Existing Conditions, the Proposed Action, and No Action Alternative.

Although the noise environment around major airports comes almost entirely from jet aircraft operations, the DNL calculations include noise from all types of aircraft operating under IFR that

[18] AEDT 4a was released on January 28, 2026; however, modeling for the PHX EA was well underway at the time of release. Therefore, consistent with FAA guidance, the PHX EA continues to use AEDT 3g.

could be affected by the Proposed Action. When operating outside certain categories of controlled airspace, aircraft operating under VFR are not required to be in contact with air traffic control. Aircraft operating under VFR are not required to use these procedures and would not experience changes in routing or altitude under either the Proposed Action or the No Action Alternative. Because these aircraft operate at the pilot's discretion and are often not required to file flight plans, the FAA has very limited information about these operations. Consequently, aircraft type and flight path information for VFR operations can be limited in the Study Areas. However, even if complete information were available for the VFR operations, the Proposed Action would not require any changes to routing or altitude to accommodate these operations. If modeled, they would use the same flight routes and altitudes under the Proposed Action and No Action Alternative. Their operations would not be affected by the forecast conditions in 2027 (the proposed first year of implementation) and 2032 (5 years after implementation) for either the Proposed Action or the No Action Alternative. Therefore, VFR aircraft were not included in the noise analysis.

AEDT 3g requires a variety of inputs, including local environmental data, temperature and humidity, runway layout, number and type of aircraft operations, runway use, and flight tracks. To develop these inputs, the FAA compiled detailed information on aircraft operations for the Study Airports, including specific aircraft fleet mix information such as aircraft type, arrival and departure times, and origin/destination airport.

Flight tracking data obtained from the FAA's PDARS identified 581,857 IFR-filed flights to and from the Study Airports for 2024 (FAA 2024b).[19] The 2024 usable data include all seasons and runway usage configurations for the Study Airports. The FAA used this data to develop the AAD fleet mix, time of day and night, and runway use input for AEDT 3g. More detailed information about the AEDT 3g input for Existing Conditions can be found in **Appendix J**.

The PDARS data provided tracks for each relevant flight that occurred during the 2024 sample (FAA 2024b). The data were used to define the AAD track locations, also referred to as "flight paths," as representing a typical day's traffic flow, as well as the typical climb and descent profiles that occur along each flow. All flight paths were "bundled" into a set of tracks representing a flow. The set of flows comprises all the typical flight routes within the Study Areas for an AAD (**Appendix K**). AEDT 3g tracks were then developed based on the group of radar tracks representing each flow. Overall, 491,494 PDARS flight tracks were used to evaluate and model typical flight routes and flows throughout the Study Areas. The AEDT model tracks and flows for the No Action Alternative are provided in **Appendix H** and the Proposed Action in **Appendix I**.

The AEDT 3g model was used to calculate noise levels for the following specific locations on the ground:

- **Census Block Centroids:** The AEDT 3g model was used to calculate DNL at the geographic centers (centroids) of non-zero population census blocks to estimate the population exposed to varying levels of aircraft noise. This EA analyzed population within the General Study Area using 2020 U.S. Census block geometry (U.S. Census Bureau 2020). A census

[19] January 1, 2024, through December 31, 2024.

block is the smallest geographical unit that the U.S. Census uses to collect data. The census block population centroid DNL represents the DNL for the total maximum potential population within that census block. Because noise levels are analyzed only at the centroid point and applied to the entire census block area population, and because the area represented by each centroid varies depending on the density of population, the actual noise exposure level for individuals will vary from the reported level based on their proximity to the geographic centroid.

- **Grid Points:** The AEDT 3g model calculated noise exposure at evenly spaced grid points. This EA covered the General Study Area with a grid of noise receptor points spaced evenly at 0.5-NM intervals and covered the Supplemental Study Area with a grid of noise receptor points spaced evenly at 2.0-NM intervals. These are referred to as uniform grids. Noise at regular intervals was calculated for these grid points as identified in **Appendix K**. In addition, these grid points were evaluated for noise at any Section 4(f) resource or historic property not captured using unique points as described below.
- **Unique Points – Section 4(f) and Historical and Cultural Resources:** The AEDT 3g model analyzed noise levels at specific sites of interest in addition to those captured in uniform grids for these categories. These specific sites include individual Section 4(f) resources that are less than 0.25 square NM in area (such as public parks or trails), and specific historic sites listed on the National Register of Historic Places (such as individual buildings).[20] See **Section 4.2.2** for a discussion of historic properties and cultural resources and **Section 4.2.3** for a discussion of what constitutes a Section 4(f) resource.
- **Unique Points – Noise-Sensitive Areas and Uses:** The AEDT 3g model was used to analyze noise at noise-sensitive areas and uses generally exposed to existing noise of DNL 65 dB and above. These locations are further discussed in **Section 4.2.1.3**.
- **Airport Area Grid:** Additional sets of grid points were developed around each of the runways for each airport. Each set extends approximately 5.8 miles from each runway end to supplement the other points in areas near the runways where sound levels could change over relatively small distances compared to the overall General Study Area. As these are focused on the runways, many of these points are located on airport property. The noise analysis will only report on grid points located off airport property.

In total, noise exposure levels were calculated at 57,461 census block centroids, 52,943 grid points (23,571 of these tagged to Section 4(f) and Historical and Cultural Resources areas), 2,608 unique points (Section 4(f) and Historical and Cultural Resources), 181 unique points (Noise-Sensitive Areas and Uses) and 50,952 airport area grid points.

4.2.1.2 Existing Aircraft Noise Exposure

Table 4-1 identifies the total population exposed to aircraft noise between DNL 45 dB and DNL 60 dB, DNL 60 dB and DNL 65 dB, and DNL 65 dB and higher. This data establishes a baseline for existing aircraft noise exposure. **Exhibit 4-1** presents existing noise exposure in 5-dB increments

[20] Multiple state and federal databases were used, resulting in duplicates of the same point. To best capture all named resources from various federal and state sources, some points are duplicated in name but represented by and reported for the same receptor point.

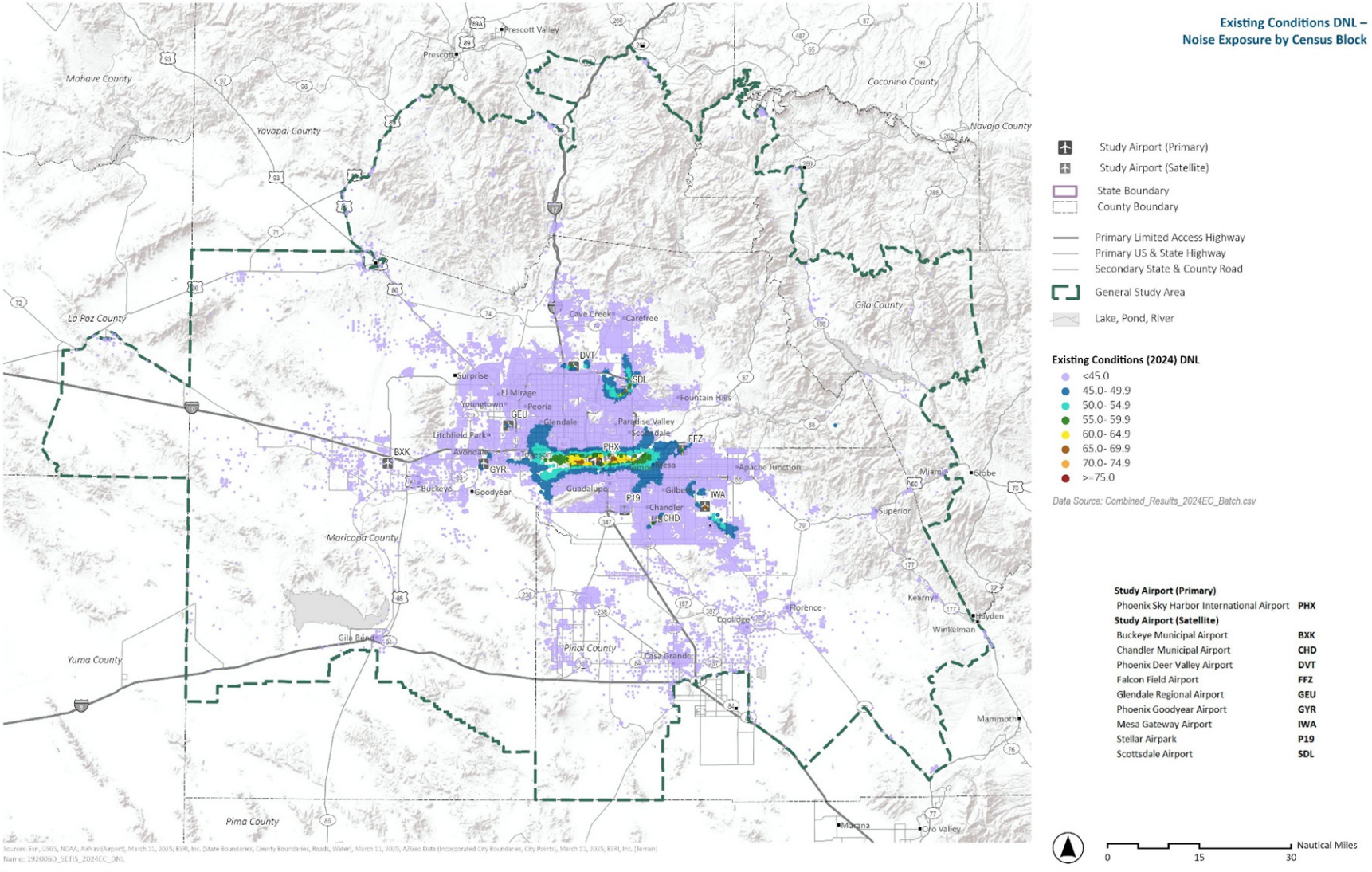
based on 2024 radar data within the General Study Area. Each point on the exhibit represents a census block population centroid. As shown in **Exhibit 4-1**, areas exposed to higher DNL are generally aligned with Study Airports runways and areas with existing aircraft traffic.

Table 4-1. Population Exposure from Aircraft Noise (DNL) within the General Study Area

DNL Range (dB)	Population
DNL 45 dB to less than DNL 60 dB	763,938
DNL 60 dB to less than DNL 65 dB	21,036
DNL 65 dB and Higher	4,691
Total Above DNL 45 dB	**789,665**

Note: DNL = Day-Night Average Sound Level, dB = Decibel
Source: U.S. Census Bureau 2021; AEDT 3g

Exhibit 4-1. Existing Conditions DNL – Noise Exposure by Census Block



4.2.1.3 Noise-Sensitive Areas and Uses

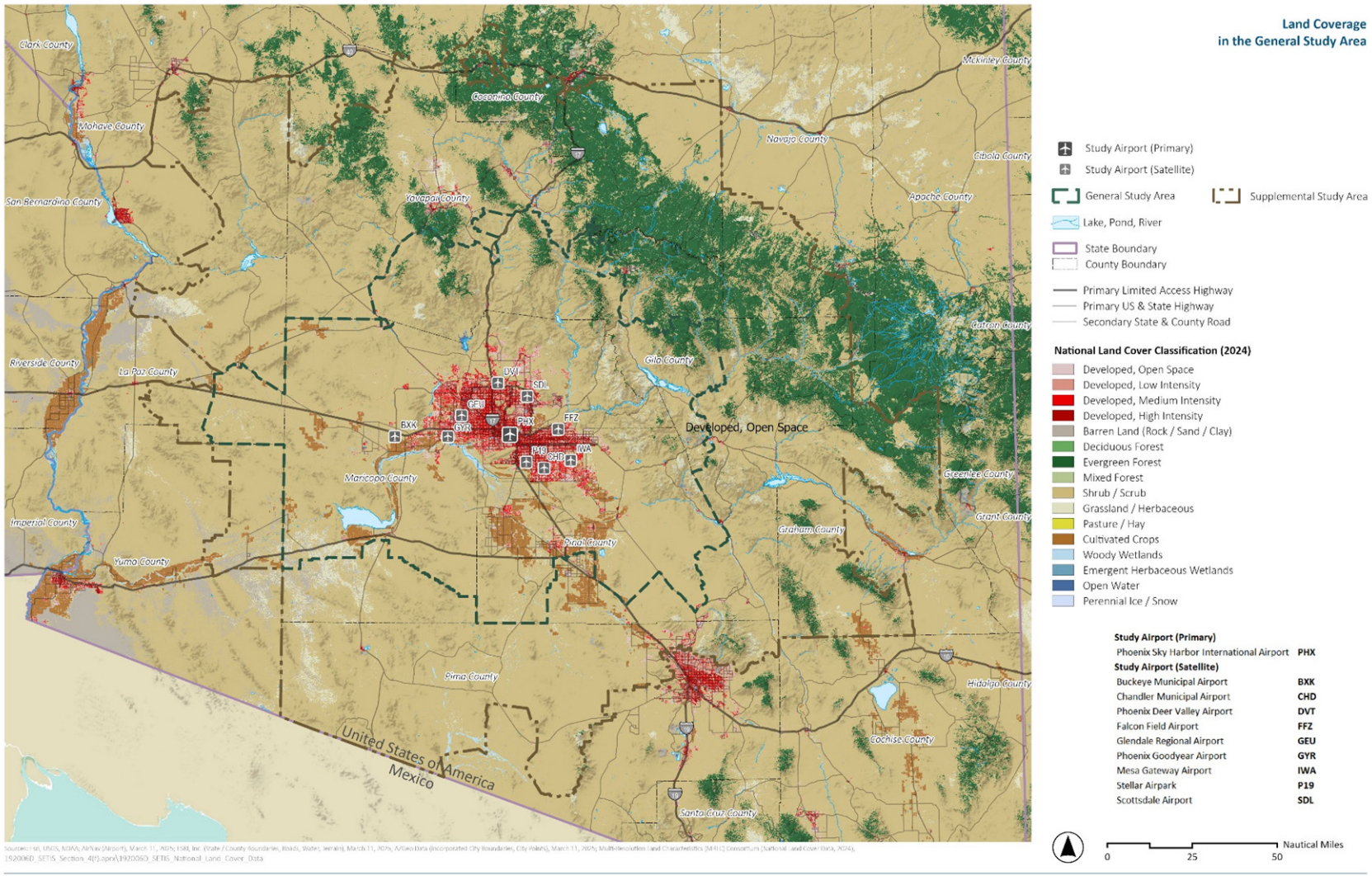
FAA Order 1050.1F requires the FAA to identify the location and number of noise-sensitive uses in addition to residences (e.g., schools, hospitals, parks, recreation areas) that could be significantly impacted by noise. As defined in Paragraph 11-5.b(10) of FAA Order 1050.1F, a noise-sensitive- area is "[a]n area where noise interferes with normal activities associated with its use. Normally, noise-sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites" (FAA 2015). Potential impacts to residential population are considered using U.S. Census block population centroids as described in **Section 4.2.1.1** (U.S. Census Bureau 2020). Noise-sensitive grid points were evaluated within 3 miles of PHX and within 1 mile of each satellite airport to capture potential noise-sensitive sites in areas where aircraft typically operate at lower altitudes during arrival and departure. Parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites are further discussed in **Section 4.2.2** and **Section 4.2.3**.

Under the Existing Conditions, 25 unique grid point locations have DNL levels of 65 dB or higher. These include 4 schools, 3 places of worship, 12 parks, and 6 historic sites. **Appendix K** lists those locations identified as noise-sensitive near each of the Study Airports and reports the noise values associated with each location with a DNL equal to or greater than 65 dB.

4.2.1.4 Compatible Land Use

The noise compatibility of land use is determined by comparing the aircraft DNL values at a site to the values of the FAA's land use compatibility guidelines in Title 14, Code of Federal Regulations (CFR), Part 150, Appendix A, Table 1. Existing land types that suggest potential land uses in the Study Areas are depicted in **Exhibit 4-2**. Land coverage within the Study Areas are characterized by using generalized data from the U.S. Geological Survey (USGS) National Land Cover Database 2024 (USGS 2024). As depicted in the exhibit, the majority of the Study Areas are dominated by shrub/scrub, with evergreen forest concentrated in the northeastern portion and cultivated crops present in portions of the southern areas. A large lake in the southeastern portion represents open water and is not associated with coastal land uses. Most of the urban development lies in the central part of the Study Areas, predominantly characterized by areas of low-density, medium-density, and high-density urban development around Phoenix and extending southeast and west along the Interstate 10 (I-10) corridor and north along the Interstate 17 (I-17) corridor. The Study Areas also include numerous large parks, recreational areas, wilderness areas, and other types of resources managed by local, state, and federal agencies. The resources potentially affected are further discussed in **Section 4.2.3**.

Exhibit 4-2. Land Coverage in the General Study Area



4.2.2 Historical, Architectural, Archaeological, and Cultural Resources – Historic Properties and Cultural Resources Subcategories

Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. §306108 et seq., as amended) requires federal agencies to consider the effects of their undertakings on properties listed or eligible for listing in the National Register of Historic Places (NRHP) (U.S. Congress 1966). In the context of Section 106, an "undertaking" is defined as any project, activity, or program that is funded, permitted, licensed, or approved by a federal agency. Compliance with Section 106 requires agencies to consider the effects of such undertakings on properties listed, or eligible for listing, in the NRHP. Regulations implementing Section 106 of the NHPA are provided in Title 36 CFR Part 800, *Protection of Historic Properties* (Advisory Council on Historic Preservation 2004).

Consistent with Section 106, this Draft EA defines "historic property" as "...any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria" (Advisory Council on Historic Preservation 2004).

In accordance with Executive Order 13175, *Consultation and Coordination with Indian and Tribal Governments,* and FAA Order 1210.20, *American Indian and Alaska Native Tribal Consultation Policy and Procedures*, the FAA initiated Section 106 consultation, including government-to-government consultations with 17 federally recognized Tribes, beginning on February 6, 2026, to identify concerns that may uniquely or significantly affect Tribal interests related to the Proposed Action (Executive Office of the President 2000; FAA 2004).

Changes in aircraft flight routes associated with the Proposed Action could introduce or increase aircraft routing over historic properties and result in potential adverse noise impacts on those resources. As discussed in **Section 1.3.2**, it is assumed that aircraft noise over sensitive resources would be limited to 18,000 feet AGL, or within the boundaries of the Supplemental Study Area.

Federal regulations require the FAA to define an area of potential effect (APE) as the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking (Advisory Council on Historic Preservation 2004). The FAA initially defined the APE to coincide with the Supplemental Study Area boundary to account for overflights up to 18,000 feet AGL and capture the broadest range of resources.

However, based on the analysis of existing and proposed flight procedures, including routing, altitude, and operational variability, the FAA determined that the Proposed Action would not materially expand the overall geographic extent of aircraft operations but may change the distribution and concentration of aircraft within that existing operational environment. Because aircraft operations already occur across a broad geographic area within the Supplemental Study Area, the potential for the Proposed Action to affect historic properties is driven by changes in

the distribution, concentration, and noise exposure associated with those operations, rather than the mere presence of overflight. Accordingly, the APE was refined to include those areas where such changes could alter the characteristics of historic properties through changes in aircraft noise exposure and, where applicable, visual setting. The APE refinement reflects the areas where the Proposed Action may affect historic properties and is not based on a determination of impact significance. Aircraft operations in the Study Area are subject to routine variability due to factors such as weather and air traffic control, and existing operations already occur across a broad area. The analysis, therefore, focuses on whether the Proposed Action would change the distribution or concentration of those operations in a manner that could affect historic properties.

The FAA initiated Section 106 consultation with federal, state, and local entities with knowledge of historic and cultural resources that could be impacted by the Proposed Action by a letter dated February 6, 2026. These entities included the Arizona SHPO, Certified Local Governments[21] and local preservation agencies and organizations including the City of Phoenix Historic Preservation Office, Preserve Phoenix, and the Arizona Preservation Association. The FAA also initiated government-to-government consultation with tribes with demonstrated interest in the Study Areas by letter dated February 6, 2026. The initial consultation letters requested concurrence on the proposed initial APE and methodology to identify effects. At the time this Draft EA was published, nine responses were received. Copies of consultation letters and responses are included in **Appendix L**. Additional consultation regarding anticipated changes in noise at Section 106 resources is ongoing and will be completed prior to issuance of the final NEPA decision document.

Exhibit 4-3 through **Exhibit 4-6** show the locations of historic properties and cultural resources identified in the Study Areas. A total of 916 NRHP-listed properties were identified. In addition, 16 tribal lands/reservations, 17 state historic sites, and 192 cemeteries were identified within the Study Areas.

[21] While the individual neighborhood associations were not specifically consulted as part of the Section 106 process, the neighborhoods involved were included in the umbrella of Certified Local Governments.

Exhibit 4-3. Historic and Cultural Resources in the Study Areas (1 of 4)

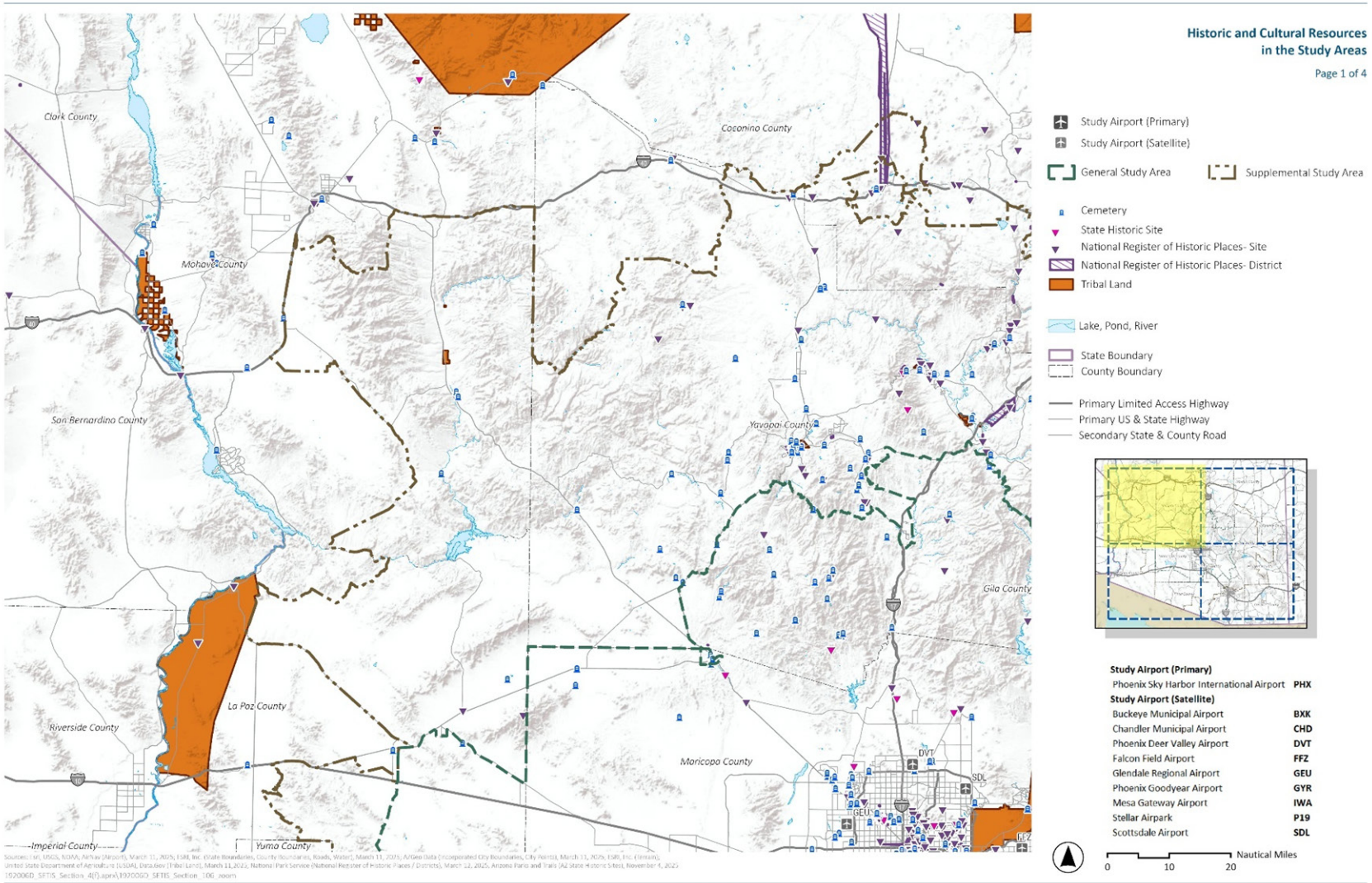


Exhibit 4-4. Historic and Cultural Resources in the Study Areas (2 of 4)

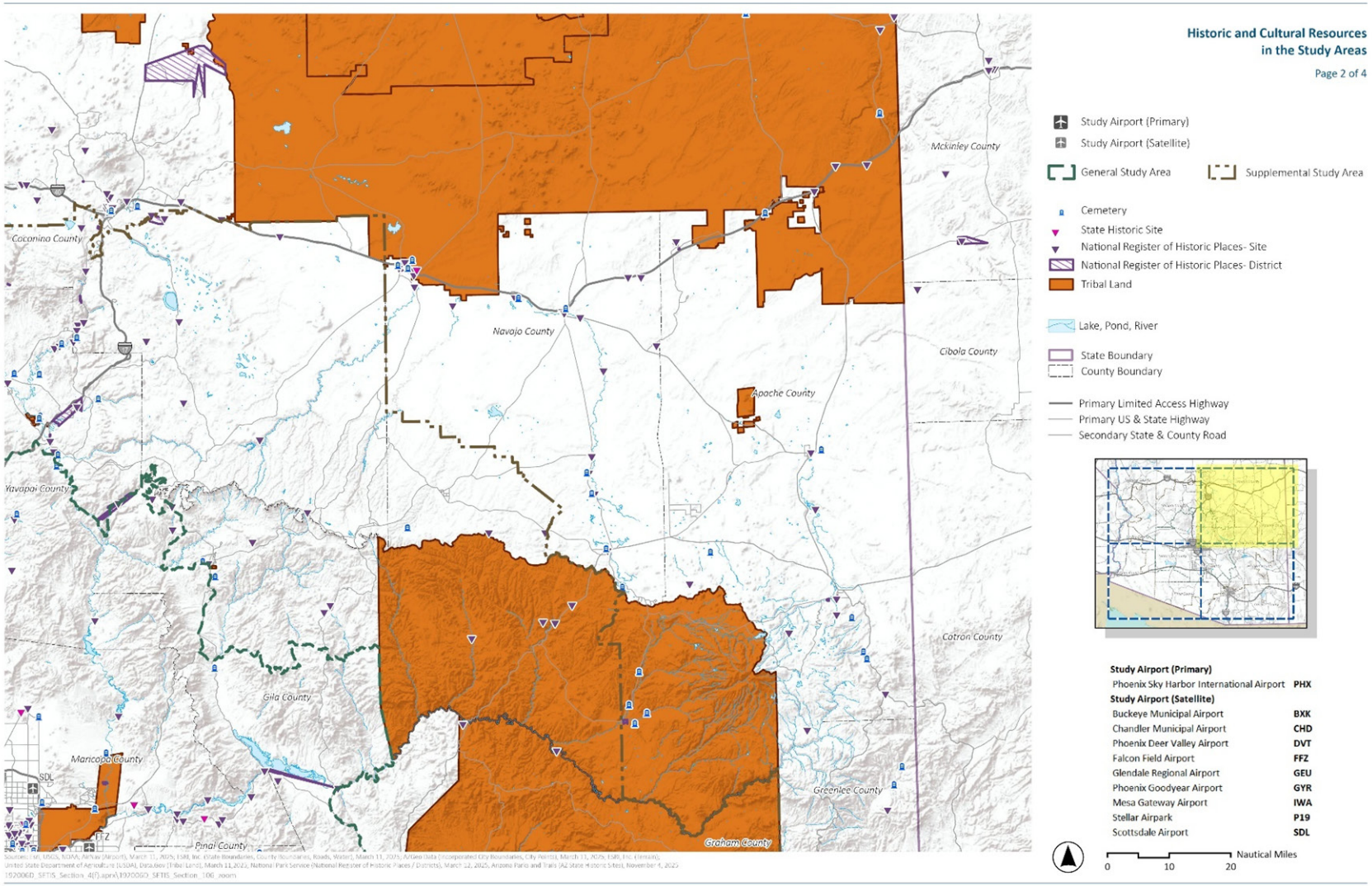


Exhibit 4-5. Historic and Cultural Resources in the Study Areas (3 of 4)

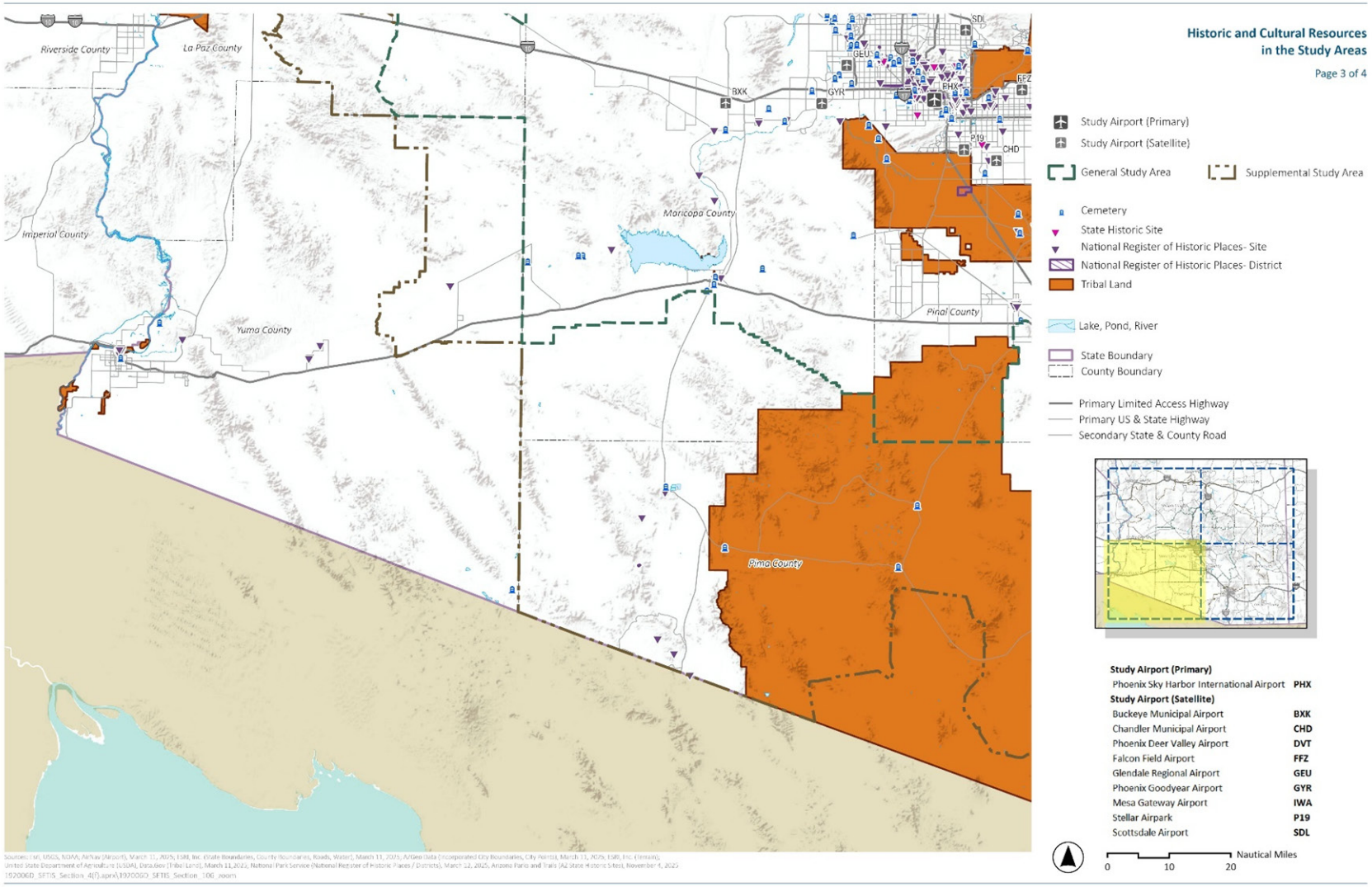
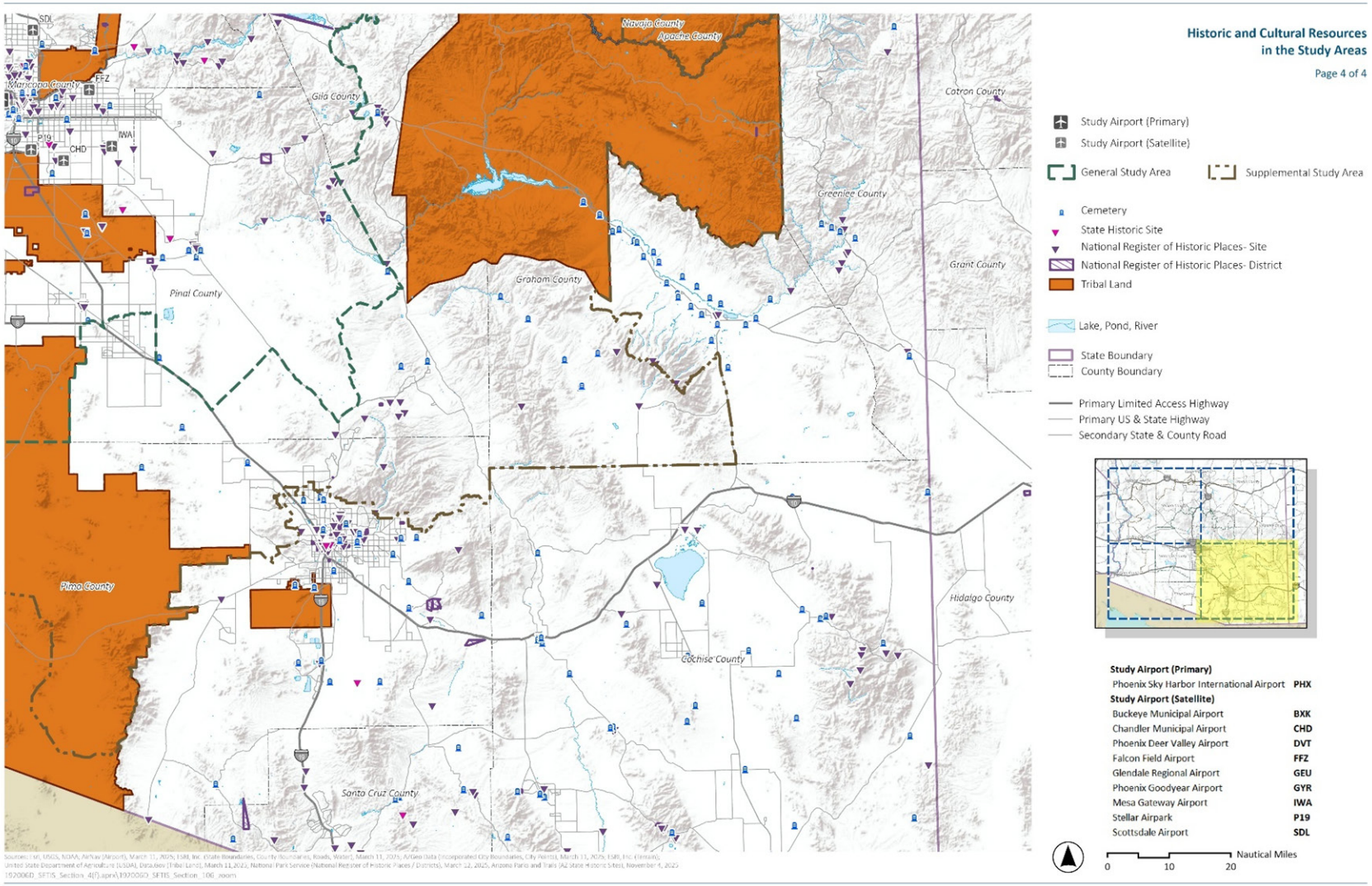


Exhibit 4-6. Historic and Cultural Resources in the Study Areas (4 of 4)



4.2.3 Department of Transportation Act, Section 4(f)

Section 4(f) of the DOT Act (codified at 49 U.S.C. § 303(c)), states that, subject to exceptions for *de minimis*[22] impacts,

> "the Secretary may approve a transportation program or project (other than any project for a park road or parkway under section 204 of title 23) requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance, or land of an historic site of national, State, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if—(1) there is no prudent and feasible alternative to using that land; and (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use" (U.S. Congress 2018).

The term "use" includes both physical and indirect or "constructive" impacts to Section 4(f) resources. Direct use is the physical occupation or alteration of a Section 4(f) property or any portion of a Section 4(f) property. A "constructive use" does not require direct physical impacts or occupation of a Section 4(f) resource. A constructive use would occur when a proposed action would result in substantial impairment of a resource to the degree that the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. The determination of use must consider the entire property and not simply the portion of the property used for a proposed project.

Parks and natural areas, where a quiet setting is a generally recognized purpose and attribute, receive special consideration. In these areas, the FAA

> "...must consult all appropriate Federal, state, and local officials having jurisdiction over the affected Section 4(f) resources when determining whether project-related noise impacts would substantially impair the resource" (FAA 2015).

Privately-owned parks, recreation areas, and wildlife refuges are not subject to the Section 4(f) provisions.

Pursuant to FAA Order 1050.1F,

> "a project that would use Section 4(f) parks or recreation areas must also comply with Section 6(f) of the Land and Water Conservation Fund, 16 U.S.C. §§ 4601-8(f), if the property was acquired or developed with financial assistance under the Land and Water Conservation Fund State Assistance Program" (FAA 2015).

As such, this section also considers properties in the Study Area established under Section 6 of the federal Land and Water Conservation Fund (LWCF) Act of 1965. The LWCF was created as a

[22] A *de minimis* impact is one that, after taking into account any measures to minimize harm (such as avoidance, minimization, mitigation or enhancement measures), results in either (a) a determination that the project would not adversely affect the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f) or (b) a Section 106 finding of no adverse effect or no historic properties affected on a historic property. (FAA 2015, Appendix B-2.2.3)

funding source to implement the outdoor recreation goals in the law. Section 6(f) of the Act requires all funded lands to be retained and used solely for outdoor recreation in perpetuity.

4.2.3.1 Section 4(f) Resources

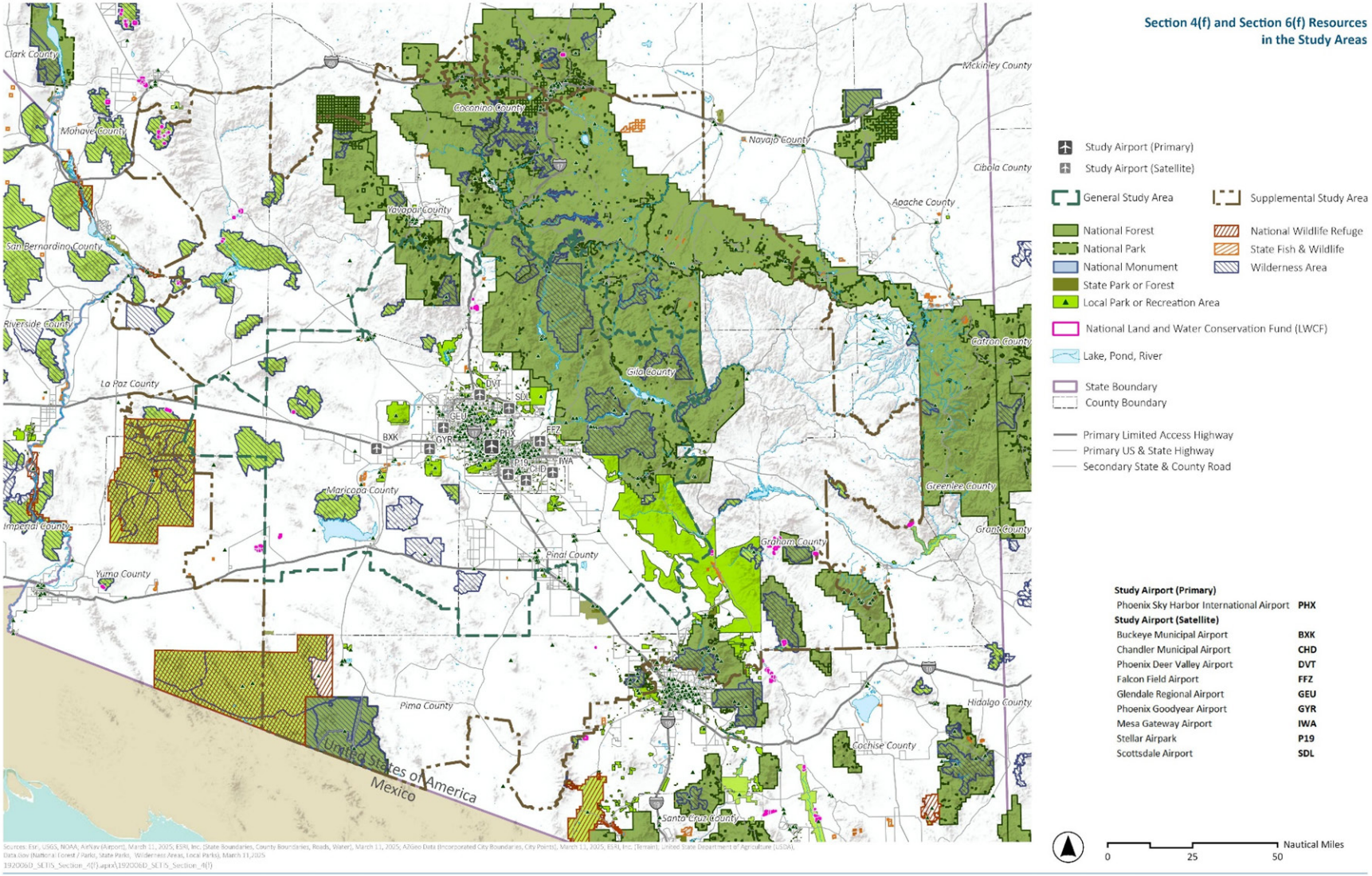
Data from federal, state, and other Geographic Information System (GIS) databases maintained by public and private entities identified 3,105 Section 4(f) resources within the Study Areas. **Exhibit 4-7** depicts the locations of Section 4(f) resources other than those listed in, or eligible for listing in, the NRHP, which are discussed in **Section 4.2.2** and shown in **Exhibit 4-3** through **Exhibit 4-6**.

Section 4(f) resources identified within the Study Areas include national forests, state parks and forests, local parks and recreation areas, national wildlife refuges, state fish and wildlife areas, and public wilderness areas. The FAA initiated consultation with the National Park Service, U.S. Forest Service, and the Department of the Interior Office of Environmental Policy and Compliance by letter dated February 6, 2026. To date, no responses have been received. Copies of the consultation letters are included in **Appendix L**.

4.2.3.2 Section 6(f) Resources

A total of 43 Section 6(f) properties were identified within the Study Areas. These resources, denoted on **Exhibit 4-7**, include wilderness areas, forests, and other outdoor recreation properties.

Exhibit 4-7. Section 4(f) and Section 6(f) Resources in the Study Areas



4.2.4 Biological Resources

This section discusses the existing wildlife resources within the Study Areas. The Proposed Action involves redesigning standard instrument arrival and departure procedures and the associated airspace management structure serving the Study Airports. The Proposed Action does not include construction or other ground-disturbing activities. Accordingly, and as discussed in **Section 4.1,** the evaluation in this section is limited to identifying avian and bat species that may be present within the Study Areas (up to 18,000-foot AGL or 20,400-foot MSL).

FAA Order 1050.1F provides guidance for addressing biological resources in NEPA documents (FAA 2015). Federal and state agencies with regulatory authority over biological resources in the Study Areas include the USFWS, NOAA's National Marine Fisheries Service (NOAA Fisheries), and AZGFD (**Appendix M**).

4.2.4.1 Threatened and Endangered Species and Migratory Birds

The ESA of 1973, (16 U.S.C. § 1531 et seq.), requires all federal agencies to evaluate whether a proposed federal action may jeopardize the continued existence of any proposed or listed threatened or endangered species, or result in the destruction or adverse modification of proposed or designated critical habitat (U.S. Congress 1973). The potential presence of federally and state-listed avian and bat species within the Study Areas was assessed using data from federal and state sources. Specifically, the USFWS Information for Planning and Consultation (IPaC) system was used to identify federally listed species, and consultation with the AZGFD was conducted to identify state-listed species. FAA sent letters to the USFWS and AZGFD initiating consultation on April 27, 2026. A record of consultation with these agencies as well as a complete list of federally threatened and endangered species and migratory birds and state-listed species that could occur in the Study Areas is provided in **Appendix M**. Consultation with NOAA Fisheries was not initiated since the Proposed Action would result in no ground disturbance.

4.2.4.2 Migratory Birds

The Migratory Bird Treaty Act of 1918 (MBTA) (16 U.S.C. §§ 703-712) prohibits the taking of any migratory bird and any part, nest, or egg of any such bird, without a permit issued by the USFWS (U.S. Congress 1918). Similarly, the Bald and golden Eagle Protection Act (16 U.S.C. §§ 668-668d). Under the MBTA, "take" is defined as an action or attempt to "pursue, hunt, shoot, capture, collect, or kill."[23] Several migratory bird species occur in, or migrate through, the Study Areas. According to the USFWS IPaC Report (**Appendix M**), 44 migratory species are known to occur in the Study Areas at some point during the year, 37 of which may breed within the Study Areas.

Birds migrate along four main routes or flyways in North America: the Atlantic, Central, Mississippi, and Pacific flyways. The Study Areas are located within the Central Flyway (USFWS 2025). Flyways are not specific lines the birds follow but rather broad geographic areas through which the birds migrate. Within these flyways, individual species use various migration "lanes"

[23] The Bald and Golden Eagle Protection Act defines a "take" as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." The Bald and Golden Eagle Protection Act regulations further define "disturb" as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (U.S. Congress 1940).

between breeding ground and wintering quarters. The actual routes followed by a given bird species differ by distance traveled, starting time, flight speed, and geographic position of the breeding and wintering grounds. Hundreds of bird species use the Central Flyway annually, migrating between their breeding grounds in the Arctic tundra and northern United States and wintering grounds in eastern Mexico (USFWS 2025).

To comply with the Bald and Golden Eagle Protection Act of 1940, the potential occurrence of bald eagles and golden eagles was also considered (U.S. Congress 1940). While both species may be present within the Study Areas, the IPaC report does not identify either species as Birds of Conservation Concern in the Study Areas.

Table 4-2 identifies federally listed bird species of concern that are known or believed to occur within the Study Areas. No bat species of concern are listed in the federal databases as potentially occurring within the Study Areas.

The nine federally listed bird species are also listed in the AZGFD Heritage Data Management System (HDMS) Species of Greater Conservation Need (SGCN) database, which contains a total of 140 listed bird species (**Appendix M**; AZGFD 2022). **Table 4-3** lists the three additional SGCN bird species with Tier 1 vulnerability that are identified as potentially occurring within Study Areas.[24]

Table 4-2. Federally Listed Bird Species

Federal Status	Species	Study Areas County of Occurrence
Threatened	Cactus Ferruginous Pygmy-owl (*Glaucidium brasilianum cactorum*)	Maricopa, Gila, Pinal, Pima, Graham, Yuma
Endangered Experimental Population, Non-Essential	California Condor (*Gymnogyps californianus*)	Mohave Yavapai, Navajo, Coconino, Mohave
Endangered	California Least Tern (*Sternula antillarum browni*)	Maricopa, Mohave, Pima
Endangered	Masked Bobwhite (quail) (*Colinus virginianus ridgwayi*)	Pima
Threatened	Mexican Spotted Owl (*Strix occidentalis lucida*)	Maricopa, Gila, Pinal, Yavapai, Pima, Graham, Navajo, Coconino, Mohave
Experimental Population, Non-Essential	Northern Aplomado Falcon (*Falco femoralis septentrionalis*)	None listed
Endangered	Southwestern Willow Flycatcher (*Empidonax traillii extimus*)	Maricopa, Gila, Pinal, Yavapai, La Paz, Pima, Graham, Navajo, Coconino, Mohave, Yuma
Threatened	Yellow-billed Cuckoo (*Coccyzus americanus*)	Maricopa, Gila, Pinal, Yavapai, La Paz, Pima, Graham, Navajo, Coconino, Mohave, Yuma
Endangered	Yuma Ridgeway's Rail (*Railus obsoletus yumanensis*)	Maricopa, Gila, Pinal, La Paz, Mohave, Yuma

Sources: US Fish and Wildlife Service, IPaC Report (**Appendix M**).

[24] Each species in the SGCN list was scored for each of the following vulnerability criteria. If a species ranked as "vulnerable" (scored as Tier 1, 2, or 3) under one or more of the vulnerability criteria it was included in the SGCN. Tier 1 species, the most protective tier, must be vulnerable under one of the specified criteria and be either federally listed; have recently been removed from federal listing but still require monitoring; or is specifically covered under a signed conservation agreement or a signed conservation agreement with assurances or a Conservation Strategy and Assessment or Strategic Conservation Plan. Tier 2 species meet vulnerability criteria, but not the other requirements of Tier 1. Tier 3 species have "unknown" status in one of vulnerability criteria but have not been deemed vulnerable in any (AZGFD 2022).

Table 4-3. State Listed Bird Species

State Status	Species	Study Areas County of Occurrence
Threatened	American Peregrine Falon (*Falco peregrinus anatum*)	Navajo
Endangered	Bald Eagle (*Haliaeetus leucocephalus*)	Maricopa, Gila, Pinal, Yavapai, Navajo, Coconino, Mohave
Endangered	Thick-billed Parrot (*Rhynchopsitta pachyrhyncha*)[1]	Not known, unlikely to be present

Note: [1] While still included in the database, the Thick-billed Parrot has not been observed in Arizona since 1938.
Source: AZGFD HDMS, Species of Greater Conservation Need (**Appendix M**; AZGFD 2022)

4.2.5 Energy Supply (Aircraft Fuel)

This section discusses the existing energy supply and jet fuel consumption for aircraft within the General Study Area.

Buildings and other structures at the Study Airports require electricity and natural gas for lighting, cooling, and heating. For example, energy needs at PHX include air conditioning, lighting, operating baggage systems, and electric vehicle (EV) charging stations (PHX 2025). Given the desert environment surrounding PHX and the other Study Airports, it is critical to incorporate energy efficiency measures to minimize energy use at the Study Airports. Such measures include daylighting, smart controls, and light-emitting diode (LED) lighting within the terminals and other buildings, installation of solar arrays, and use of electric and solar powered buses and other vehicles to support airport operations.

The primary fuel types used by non-aircraft vehicles at the Study Airports, including maintenance vehicles and passenger buses, are unleaded gasoline and diesel fuel. However, several Study Airports are planning or implementing more efficient measures to improve energy efficiency. For example, the City of Phoenix Aviation Department is actively planning substantial increases in EV use at PHX, DVT, and GYR, both through enhancing the existing fleet and installing more EV charging stations for passenger and employee use (City of Phoenix 2023).

Aircraft fuel consumption for the Study Airports was calculated using AEDT 3g, released August 28, 2024 (FAA 2024c). AEDT estimates fuel consumption associated with air traffic flows under existing conditions using the same inputs employed for aircraft noise modeling. Additional information regarding AEDT model inputs is provided in **Appendix K**. Based on the AEDT calculations using 2024 data, aircraft arriving at and departing from the Study Airports consume approximately 583,589 gallons (1,773.57 metric tons [MT]) of Jet A-1 fuel on an annual average day (FAA 2024c).[25, 26, 27]

Under normal operating circumstances, the Study Airports have access to utilities and fuel, including fuel to support vehicles and aircraft operations, and these energy sources are currently

[25] For the purposes of this Draft EA, fuel consumption was calculated using AEDT 3g estimates of the amount of fuel consumed by IFR aircraft arriving and departing from the Study Airports within the 18,000-foot AGL (20,400-foot MSL) limits of the Study Areas.
[26] Jet A and Jet A-1 are the most common jet fuels used in the United States.
[27] One gallon of Jet A-1 fuel is equivalent to approximately 0.003 metric tons. Conversion calculations available at: https://e6bx.com/unit-converter/fuel/.

not in short supply in the Study Area. Jet fuel is currently provided to the Study Airports by a variety of providers, including Just Aviation, Phillips 66, Cutter Aviation, and World Fuel Services.

4.2.6 Aviation Emissions and Air Quality

This section describes air quality conditions within the General Study Area. Aviation emissions are evaluated against the National Ambient Air Quality Standards (NAAQS), as promulgated by the U.S. Environmental Protection Agency (U.S. EPA) under the federal Clean Air Act (CAA) under (42 U.S.C. § 7401 et seq. (1970) (U.S. EPA 2025a). The U.S. EPA currently regulates six criteria pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM), and lead (Pb). PM is divided into two particle size categories: coarse particles with a diameter of less than 10 micrometers (PM_{10}) and fine particles with a diameter of less than 2.5 micrometers ($PM_{2.5}$). The NAAQS are expressed in terms of pollutant concentration measured (or averaged) over a defined period and are two-tiered. The first tier (the "primary standard") is intended to protect public health; the second tier (the "secondary standard") is intended to protect public welfare and prevent further degradation of the environment (U.S. EPA 2025b).

The NAAQS apply to the concentration of a pollutant in outdoor ambient air. The U.S. EPA uses air monitoring data it compiles, as well as data collected by local air quality agencies, to classify counties and some sub-county geographical areas by their compliance with the NAAQS. If the air quality in a geographic area is equal to or better than the national standard, the U.S. EPA will typically designate the region as an "attainment area." An area where air quality does not meet the national standard is typically designated by the U.S. EPA as a "nonattainment area." Once the air quality in a nonattainment area improves to the point where it meets the standards and the additional requirements outlined in the CAA, the U.S. EPA can re-designate the area to attainment upon approval of a Maintenance Plan, and these areas are then referred to as "maintenance areas." An area may be designated as unclassifiable when there is a temporary lack of data on which to base its attainment status.

4.2.6.1 Attainment Status

Air quality in the General Study Area (Maricopa County, which all the Study Airports are located) is currently designated by the U.S. EPA Greenbook (U.S. EPA 2026) as in attainment for all criteria pollutants except ozone and PM_{10} which are designated nonattainment and CO which is designated as maintenance for the NAAQS. **Table 4-4** presents a summary of the U.S. EPA nonattainment and maintenance status of the General Study Area.

Table 4-4. NAAQS Nonattainment and Maintenance Areas in the General Study Area

Pollutants	Attainment Status (Severity)	County Area
CO (1971)	Maintenance	Maricopa (Part-Phoenix [1])
O_3 (2008) 8-Hour	Moderate Nonattainment	Maricopa (Part-Phoenix-Mesa [2])
O_3 (2015) 8-Hour	Moderate Nonattainment	Maricopa (Part-Phoenix-Mesa [2])
PM_{10} (1987)	Serious Nonattainment	Maricopa (Part-Maricopa and Pinal Counties, Phoenix Planning Area [3])

Notes:
[1] Phoenix area is defined by U.S. EPA https://www3.epa.gov/airquality/greenbook/cbp.html#CO.1990.Phoenix.
[2] Phoenix-Mesa is defined as defined by U.S. EPA https://www3.epa.gov/airquality/greenbook/jbp.html#Ozone_8-hr.2015.Phoenix.
[3] Maricopa and Pinal Counties, Phoenix Planning area as defined by U.S. EPA https://www3.epa.gov/airquality/greenbook/pbp.html#PM-10.1990.Phoenix.
Source: U.S. EPA Greenbook (U.S. EPA 2026)

The U.S. EPA and the FAA have both determined that aircraft operations occurring at or above a mixing height of 3,000 feet AGL have a very small effect on pollutant concentrations at ground level (Wayson and Fleming 2000; U.S. EPA 1993; U.S. EPA 2007). The mixing height is defined as the height of the fully mixed layer of the atmosphere that begins at the earth's surface and extends upward a few thousand feet overhead where the atmosphere becomes fairly stable (FAA 1997). Mixing heights will vary based on a variety of factors including topography, time of day, temperature, wind, and season. A mixing height of 3,000 feet AGL represents the annual national average mixing height. While 3,000 feet AGL is the threshold established by the U.S. EPA and the FAA, FAA research indicates that changes in air traffic procedures occurring above 1,500 feet AGL and below the mixing height would have little, if any, effect on emissions or ground level pollutant concentrations [28]

Other gases result from anthropogenic sources and include carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). According to the U.S. EPA, commercial and other aircraft contributed approximately 9 percent of total national CO_2 emissions in 2022 (U.S. EPA 2025c).

A discussion of CO_2 impacts, consistent with FAA 1050.1F Desk Reference (FAA 2020), is provided for disclosure purposes only. Where the proposed action or alternative(s) would result in an increase in CO_2 emissions, the emissions should be assessed either qualitatively or quantitatively. The guidance includes when quantification of CO_2 emissions should occur (1) when there is reason to quantify emissions for air quality purposes, MT CO_2 equivalent (CO_2e) should also be quantified in a NEPA document; or (2) when fuel burn is computed and reported in the NEPA document, quantification of MT CO_2e from the fuel burn should also be included in the document.

Accordingly, this Draft EA calculated total MT of CO_2, reported as MT CO_2e, using AEDT 3g estimates of the amount of fuel consumed by the IFR aircraft arriving and departing the Study Airports within the extent of the Study Areas. Specifically, MT CO2e is a metric measure used to compare the emissions from various gases (e.g., carbon dioxide, methane, nitrous oxide) based on the Global Warming Potential (U.S. EPA 2018). The U.S. EPA assigns a Global Warming Potential factor of one to CO_2, which is used to calculate CO_2e (U.S. EPA 2025d). Fuel consumption calculations are discussed in **Section 4.2.5**.

[28] Report on ''Consideration of Air Quality Impacts by Airplane Operations At or Above 3,000 feet AGL,''FAA–AEE–00–01, September 2000, p. 5.

4.2.7 Visual Effects (Visual Resources/Visual Character Only)

An analysis of visual effects evaluates the extent to which the Proposed Action could (1) produce light emissions that create annoyance or interfere with normal activities or (2) affect the nature of the visual resources or visual character of the area. Assessing the latter includes consideration of the importance, uniqueness, and aesthetic value of the potentially affected visual resources, and whether the Proposed Action would contrast with, detract from, or block views of those resources. As noted in **Section 4.1,** visual resources solely related to light emissions are not discussed herein. Resources potentially affected by visual changes are protected under laws such as Section 106 of the NHPA and Section 4(f) of the DOT Act.

For the purposes of this Draft EA, the visual effects analysis focuses on visually sensitive resources in the General Study Area. As discussed in **Chapter 1**, the lateral boundary of the General Study Area is defined by U.S. Census block group boundaries where aircraft cross at or below the 10,000 feet MSL/7,000 feet AGL thresholds. Resources solely in the Supplemental Study Area are not considered because the Supplemental Study Area begins far enough away from the Study Airports such that the sight of aircraft would be mostly unchanged compared to current conditions. Aircraft traveling to/from the Study Airports would generally be at an altitude of between 7,000 feet AGL and 18,000 feet AGL (10,000 feet MSL and 20,400 feet MSL) in the Supplemental Study Area. Sensitive resources within the General Study Area include National Forest land; historic properties; national, state, and local parks; tribal lands; and recreation areas. These resources are discussed in **Section 4.2.2** and **Section 4.2.3**.

5. ENVIRONMENTAL CONSEQUENCES

This chapter describes the potential environmental impacts of the Proposed Action compared to the No Action Alternative under 2027 and 2023 forecast conditions as well as the methodologies used to assess those impacts. The environmental resource categories evaluated in this chapter are consistent with those discussed in Chapter 4, unless dismissed from further evaluation in **Section 4.1**. The resource categories, methodologies, and approach are consistent, as applicable to FAA Order 1050.1F (FAA 2015) and the 1050.1 Desk Reference (FAA 2020).

5.1 Noise and Compatible Land Use

This section discusses the analysis of aircraft noise exposure for the Proposed Action and the No Action Alternative. Details of the conditions and alternatives analyzed are discussed in **Chapter 3**. The analysis includes summaries of the operational data used to calculate noise exposure levels; how noise is characterized and described; how people respond to it; and differences in noise exposure between the two alternatives. Additional information on noise metrics and the basics of noise can be found in **Appendix J. Appendix K** provides detailed information on the noise analysis and the impact analysis.

5.1.1 Summary of Noise Changes

Aircraft noise exposure was modeled for both the Proposed Action and the No Action Alternative under 2027 and 2032 forecast conditions.[29]

For 2027:

- Significant noise increases (DNL +1.5 dB or greater within the Proposed Action DNL 65 dB or higher) and significant noise decreases (DNL -1.5 dB or less within the No Action DNL 65 dB or higher) were identified over compatible land use. However, no significant changes in noise were identified over noise-sensitive land uses.
- Three Census block centroid receptor points southwest of Runway 3 at SDL, representing 113 people, experienced a +3.0 dB or greater increase within the Proposed Action DNL 60–65 dB and three Census block centroid receptor points west of Runway 3 at SDL, representing 110 people, experienced a -3.0 dB or greater decrease within the No Action DNL 60–65 dB.
- Three airport area grid points northeast of Runway 21 at SDL and nine airport grid points southwest of Runway 3 at SDL experienced a +3.0 dB or greater increase within the Proposed Action DNL 60–65 dB and 21 airport area grid points northeast of Runway 21 at

[29] FAA Order 1050.1F (FAA 2015) states significant noise impact occurs when an action would increase noise by DNL 1.5 dB or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. The 3 dB (or more) changes between DNL 60 dB and 65 dB and 5 dB (or more) changes between DNL 45 dB and 60 dB are considered reportable changes and should be disclosed to the public. The noise changes used in this EA are further explained in Section 5.1.2.

SDL and 16 airport grid points southwest of Runway 3 at SDL experienced a -3.0 dB or greater decrease within the No Action DNL 60–65 dB.

- 542 Census block centroid receptor points, representing 65,674 persons, experienced a +5.0 dB or greater increase withing the Proposed Action DNL 45–60 dB and 348 Census block centroid receptor points, representing 28,065 persons, experienced a -5.0 dB or greater decrease within the No Action DNL 45–60 dB.
- 41 uniformly spaced grid receptor points experienced a +5.0 dB or greater increase within the Proposed Action DNL 45–60 dB and 23 uniformly spaced grid receptor points experienced a -5.0 dB or greater decrease within the No Action DNL 45–60 dB.
- Eight Section 4(f) receptor points representing state and local park resources experienced a +5.0 dB or greater increase within the Proposed Action DNL 45–60 dB and seven Section 4(f) receptor points representing state and local park resources experienced a -5.0 dB or greater decrease within the No Action DNL 45–60 dB.

For 2032:

- Significant noise increases (DNL +1.5 dB or greater within the Proposed Action DNL 65 dB or higher) and significant noise decreases (DNL -1.5 dB or less within the No Action DNL 65 dB or higher) were identified over compatible land use. However, no significant changes in noise were identified over noise-sensitive land uses.
- Two Census block centroid receptor points southwest of Runway 3 at SDL, representing 67 people, experienced a +3.0 dB or greater increase within the Proposed Action DNL 60–65 dB and three Census block centroid receptor points west of Runway 3 at SDL, representing 110 people, experienced a -3.0 dB or greater decrease within the No Action DNL 60–65 dB.
- Four airport area grid points northeast of Runway 21 at SDL and 10 airport grid points southwest of Runway 3 at SDL experienced a +3.0 dB or greater increase within the Proposed Action DNL 60–65 dB and 20 airport area grid points northeast of Runway 21 at SDL and 13 airport grid points southwest of Runway 3 at SDL experienced a -3.0 dB or greater decrease within the No Action DNL 60–65 dB.
- 537 Census block centroid receptor points, representing 65,475 persons, experienced a +5.0 dB or greater increase within the Proposed Action DNL 45–60 dB and 342 Census block centroid receptor points, representing 26,652 persons, experienced a -5.0 dB or greater decrease within the No Action DNL 45–60 dB.
- 38 uniformly spaced grid receptor points experienced a +5.0 dB or greater increase within the Proposed Action DNL 45–60 dB and 22 uniformly spaced grid receptor points experienced a -5.0 dB or greater decrease within the No Action DNL 45–60 dB.
- Seven Section 4(f) receptor points representing state and local park experienced a +5.0 dB or greater increase within the Proposed Action DNL 45–60 dB and eight Section 4(f) receptor points representing state and local park resources experienced a -5.0 dB or greater decrease within the No Action DNL 45–60 dB.

Under FAA Order 1050.1F, a significant noise impact occurs when an action would increase noise by DNL 1.5 dB or more for a noise-sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. The noise analysis indicates that the Proposed Action would not result in such increases; therefore, the Proposed Action would not result in a significant noise impact.

5.1.2 Methodology

The noise analysis evaluated noise exposure to communities from aircraft forecast to operate under IFR-filed flight plans at altitudes from the ground level up to and including 18,000 feet AGL for the General Study Area and the Supplemental Study Area due to the presence of national parks and/or wildlife refuges (FAA 2020). If the FAA approves the Proposed Action, the agency expects to begin implementation in 2027. Accordingly, aircraft noise modeling was conducted for 2027 and five years later (2032), as required by FAA Order 1050.1F (FAA 2015).

IFR-filed aircraft activity was forecasted for the years 2027 and 2032 and modeled under both the Proposed Action and the No Action Alternative using AEDT 3g, the FAA-required noise model for aviation projects involving air traffic changes over large areas and altitudes over 3,000 feet AGL (FAA 2020).

The 2027 and 2032 Proposed Action and No Action Alternative were then compared to determine whether there is potential for noise impacts. While the overall number and type of aircraft operations would increase between 2027 and 2032, the number and type of aircraft operations are the same under both the Proposed Action and the No Action Alternative in 2027 and 2032. Therefore, any changes in noise exposure reflect redistribution of aircraft routes rather than changes in overall aircraft activity levels. The Proposed Action would not include developing or constructing facilities, such as runways or terminal expansions, that would be necessary to accommodate an increase in aviation activity; therefore, no additional growth in operations associated with the Proposed Action is anticipated. The noise analysis reflects the change in noise exposure resulting from the proposed changes in aircraft routes (i.e., flight tracks) under the Proposed Action compared to the No Action Alternative.

Detailed information on IFR-filed aircraft operations within the Study Areas was assembled for input into AEDT 3g, including the following data:

Average Annual Day IFR-Filed Aircraft Flight Schedules: The IFR-filed aircraft flight schedules identify arrival and departure times, aircraft types, and origin/destination information for the AAD in 2027 and 2032. The AAD represents all the aircraft operations for every day in a study year divided by 365 for the 2027 alternatives; however, for the 2032 alternatives, the AAD was divided by 366 to account for the leap year. The AAD does not reflect a particular day but is meant to represent a typical day over a period of a year. The AEDT forecast was based on the FAA's 2024 TAF (FAA 2025d) modified for 2027 and 2032 with additional details using previously identified arrival/departure times, aircraft types, and origin/destination information. More details related to the development of the forecasts are provided in **Appendix N**.

Weather and Terrain: The AEDT 3g model includes data for multiple meteorological parameters, including temperature, pressure, and humidity. Ten-year average weather conditions for all Study Airports were defined and used in the noise study. Terrain data were obtained for the extent of the Study Areas and used to adjust the elevation of each grid point modeled. Further discussion on the weather data employed and how the terrain data is used in the AEDT 3g model can be found in **Appendix K**.

Flight Tracks: The flight tracks used in noise modeling were based on radar data collected for the existing conditions (2024) noise analysis and information provided by FAA ATC personnel. The majority of the No Action Alternative modeled flight tracks are based on the existing conditions noise analysis. The No Action Alternative flight tracks for procedures implemented at BXK in March 2026 were modeled based on the Terminal Area Route Generation, Evaluation, Traffic and Simulation (TARGETS) design files and input from the ATC experts who developed the procedures (**Section 3.2**). Aircraft routings and flight corridors under the No Action Alternative are depicted in **Appendix H.** For the Proposed Action, flight tracks were developed from the aircraft procedures created by the PHX Area Modernization Design Team (PHX Design Team) using the TARGETS program. When necessary, figures depicting No Action model tracks and Proposed Action procedure designs were developed and shared with representatives of the PHX Design Team as part of the consultation process. The consultations were conducted to seek out key model input assumptions such as frequency of Proposed Action procedure usage and air traffic control techniques such as vectoring. The assumptions were then used for refining model track locations, altitude profiles, and utilization. Proposed Action procedures and flight corridors are shown in **Appendix I**.

AEDT model tracks, or the lines indicating the actual 3D path of different categories of aircraft ideally flying the procedure for the Proposed Action procedures, served as the center of the 1-NM and 0.3-NM containment areas for RNAV and RNP procedures, respectively. The containment area is generally where dispersed tracks are contained, but during the PHX Design Team consultation process, air traffic control experts indicated areas where vectored tracks would still be utilized or where vectored tracks would join or leave the RNAV procedure. For those identified cases, AEDT 3g model tracks were developed to account for that type of dispersion.

Runway Use: Runway use percentages were identified for all runways at the Study Airports using a number of previously referenced resources for each model. Forecasted aircraft operations were assigned to particular runways representing operating conditions at the Study Airports under Proposed Action and No Action Alternative conditions. Runway use patterns did not change under the Proposed Action at the Study Airports compared to the No Action Alternative.

Appendix K provides more details related to the development of the AEDT 3g model input files.

As discussed in **Section 4.2.1.1,** the AEDT 3g model was used to compute DNL values for the 2027 and 2032 Proposed Action and No Action Alternative conditions at the following receptor locations:

- 57,461 2020 Census block centroids.

- 47,409 uniformly spaced grid points at 0.5-NM intervals covering the General Study Area and 5,534 uniformly spaced grid points at 2.0-NM intervals on a uniform grid covering the Supplemental Study Area. These grid points were also used to calculate DNL values at potential Section 4(f) resources and historic sites.
- 2,608 unique receptor points representing Section 4(f) or Section 106 resources, including 620 NRHP-listed historic sites. An additional 181 unique points represent other noise-sensitive uses located within 3 miles of PHX and within 1 mile of the Satellite Study Airports.
- 50,952 airport area grid points located in areas off each runway where noise levels may change the most.

Also discussed in **Section 4.2.1.1**, DNL is the FAA's primary noise metric. **Table 5-1** provides the criteria used to assess the changes in aircraft noise exposure attributable to the Proposed Action compared with the No Action Alternative. FAA Order 1050.1F defines a "significant impact" as an increase of DNL 1.5 dB at noise-sensitive land use locations (e.g., residences, schools, etc.) exposed to aircraft noise of DNL 65 dB or higher under the Proposed Action (FAA 2015). For example, an increase from 63.5 dB to 65 dB is considered a "significant impact".

A "significant impact" has a specific meaning in FAA reviews. It refers to noise levels that meet established thresholds requiring detailed environmental analysis. However, people may still notice or be affected by noise changes that fall below these thresholds. What is not considered "significant" by FAA standards can still feel important at the community level. For this reason, the FAA shares information about all meaningful noise changes, not just those that meet the FAA definition of significant impact, so communities stay informed about what they may experience.

FAA Order 1050.1F also recommends that when there are DNL increases of 1.5 dB or more at noise-sensitive locations in areas exposed to aircraft noise of DNL 65 dB and higher, DNL increases of 3 dB or more in areas exposed to aircraft noise between DNL 60 dB and 65 dB should also be evaluated and disclosed. It is important to note that DNL changes of 3 dB in areas exposed to aircraft noise below DNL 65 dB are not considered "significant impacts"[30] but are to be considered as "reportable changes" in the environmental evaluation of a proposed project (FAA 2015).FAA Order 1050.1F also stipulates that changes in exposure of DNL 5 dB or greater in areas exposed to aircraft noise between DNL 45 dB and 60 dB should be considered for airspace actions, such as changes to air traffic routes. This threshold was established in 1990, following issuance of an FAA noise screening procedure to evaluate whether certain airspace actions above 3,000 feet AGL might increase DNL levels by 5 dB or more. The FAA prepared this noise-screening procedure because experience indicated that DNL increases 5 dB or more at cumulative levels well below DNL 65 dB could be disturbing to people and become a source of public concern (FAA 2015; FAA 2020). **Table 5-1** presents the FAA significance and reportable thresholds used in the analysis. As shown in **Table 5-1,** a 3 dB change in areas exposed to DNL 60 to 65 dB and a 5 dB change in areas exposed to DNL 45 to 60 dB are considered reportable noise changes.

[30] The FAA threshold of "significant" does not mean the change in noise level in these areas may not be significant to people experiencing aircraft noise.

A "reportable" noise change means that sound levels are expected to increase enough that people may notice a difference. For example, increases of about 3 dB in already higher noise areas, or about 5 dB in quieter areas, are considered meaningful changes. When this happens, the FAA is committed to clearly sharing that information so communities stay informed about potential changes in their environment. However, a reportable change does not necessarily mean the noise will disrupt daily life or require action; rather, it ensures transparency.

Table 5-1. Aircraft DNL Thresholds and Impact Categories

Noise Exposure Levels	Incremental Change Threshold	Level of Change
DNL ≥ 65 dB	+/- 1.5 dB	Significant
DNL ≥ 60 dB and < 65 dB	+/- 3.0 dB	Reportable
DNL ≥ 45 dB and < 60 dB	+/- 5.0 dB	Reportable

Notes: DNL = Day-Night Average Sound Level, dB = Decibel
Source: FAA Order 1050.1F and 1050.1F 2023 Desk Reference (FAA 2015; FAA 2020)

5.1.3 2027 No Action Alternative and Proposed Action Noise Exposure

Table 5-2 identifies the total population exposed to aircraft noise between DNL 45 dB and DNL 60 dB, DNL 60 dB and DNL 65 dB, and DNL 65 dB and higher for the 2027 No Action Alternative and Proposed Action. The change in the number of people because of the Proposed Action is due to changes in flight procedures, as the number of aircraft flight operations and runway use remains the same between the No Action Alternative and the Proposed Action. Although population exposure increases within the DNL 45-60 dB band, these levels are below FAA's threshold for noncompatible land use.[31] Exhibits displaying the 2027 No Action Alternative and Proposed Action noise exposure in 5-dB increments within the General Study Area are provided in **Appendix K**.

Table 5-2. 2027 No Action Alternative and Proposed Action Population Exposure from Aircraft Noise (DNL) within the General Study Area

DNL Range (dB)	No Action Alternative Population	Proposed Action Population	Change in Population
DNL 45 dB to less than DNL 60 dB	835,915	922,029	86,114
DNL 60 dB to less than DNL 65 dB	22,143	22,367	224
DNL 65 dB and Higher	6,401	6,447	46
Total Above DNL 45 dB	**864,459**	**950,843**	**86,384**

Note: DNL = Day-Night Average Sound Level, dB = Decibel
Source: U.S. Census Bureau 2021; AEDT 3g

5.1.4 2032 No Action Alternative and Proposed Action Noise Exposure

Table 5-3 identifies the total population exposed to aircraft noise between DNL 45 dB and DNL 60 dB, DNL 60 dB and DNL 65 dB, and DNL 65 dB and higher for the 2032 No Action Alternative and Proposed Action. The change in the number of people because of the Proposed Action is due to changes in flight procedures, as the number of aircraft flight operations and runway use remains the same between the No Action Alternative and the Proposed Action. Although population exposure increases within the DNL 45-60 dB band, these levels are below FAA's threshold for

[31] FAA generally considers all land uses to be compatible with aircraft related DNL below 65 dB, including residential, hotels, retirement homes, intermediate care facilities, hospitals, nursing homes, schools, preschools, and libraries.

noncompatible land use. Exhibits displaying the 2032 No Action Alternative and Proposed Action noise exposure in 5-dB increments within the General Study Area are provided in **Appendix K**.

Table 5-3. 2032 No Action Alternative and Proposed Action Population Exposure from Aircraft Noise (DNL) within the General Study Area

DNL Range (dB)	No Action Alternative Population	Proposed Action Population	Change in Population
DNL 45 dB to less than DNL 60 dB	858,698	944,560	85,862
DNL 60 dB to less than DNL 65 dB	21,787	21,496	-291
DNL 65 dB and Higher	7,652	7,629	-23
Total Above DNL 45 dB	**888,137**	**973,685**	**85,548**

Note: DNL = Day-Night Average Sound Level, dB = Decibel
Source: U.S. Census Bureau 2021; AEDT 3g

5.1.5 Potential Impacts

The following sections describe the determination of potential noise impacts from changes in modeled DNL values at specific receptor locations compared to FAA significance thresholds. **Exhibit 5-1** through **Exhibit 5-4** display all grids points with significant or reportable noise changes. These areas of change are located in three general areas in both 2027 and 2032, near DVT, near SDL, and an area north of PHX and between SDL and DVT as shown in **Exhibit 5-1** and **Exhibit 5-3**. There is also a small area of change northeast of CHD as shown in **Exhibit 5-2** and **Exhibit 5-4**. Exhibits displaying noise changes for each type of grid receptor separately are provided in **Appendix K**.

The results for both years indicate that, when compared to the No Action Alternative, the Proposed Action would not result in a DNL 1.5 dB or higher increase in noise-sensitive areas exposed to DNL 65 dB or higher within the General Study Area. These results indicate the Proposed Action would not result in a significant noise exposure impact on noise-sensitive sites or population exposed to DNL 65 dB or higher levels under the Proposed Action. Exhibits displaying the change in noise exposure within the Study Areas, as well as all receptor points with reportable changes can be found in **Appendix K**.

5.1.5.1 Census Block Centroids

Section 5.1.3. and **Section 5.1.4** describe the population exposed to aircraft noise under the No Action Alternative and the Proposed Action for the 2027 and 2032 analysis years. While those sections present overall exposure levels, the determination of potential noise impacts is based on changes in modeled DNL values at the census block centroid locations compared to FAA significance thresholds. **Table 5-4** presents the potential population exposed to increased aircraft noise exceeding the thresholds under the Proposed Action for 2027 and 2032 conditions. As to the 2027 Proposed Action, the analysis indicates that the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher. However, the 2027 Proposed Action would result in a reportable noise increase of DNL 3.0 dB in a residential area southwest of SDL within the Proposed Action DNL 60 dB to 65 dB. According to census data, a total of 113 people, associated with three population centroids, would be exposed to a reportable DNL 3.0 dB or greater noise increase. The 2027 Proposed Action also resulted in a reportable noise increase of DNL 5.0 dB in areas exposed to DNL 45 dB to 60 dB. According to census data, a total

of 65,674 people, associated with 542 population centroids, would be exposed to a reportable DNL 5.0 dB or greater noise increase. **Table 5-4** also presents reportable decreases in noise. For 2027, 110 people would experience a decrease of DNL 3.0 dB or greater within the Proposed Action DNL 60 dB to 65 dB and 28,065 people, would be exposed to a reportable DNL 5.0 dB or greater noise decrease within the Proposed Action DNL 45 dB to 60 dB.

The 2032 Proposed Action, meanwhile, is also presented in **Table 5-4**. The analysis indicates that the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher. However, the 2032 Proposed Action would result in a reportable noise increase of DNL 3.0 dB in a residential area southwest of SDL within the Proposed Action DNL 60 dB to 65 dB. According to census data, a total of 67 people, associated with 2 population centroids, would be exposed to a reportable DNL 3.0 dB or greater noise increase. The 2032 Proposed Action also resulted in a reportable noise increase of DNL 5.0 dB in areas exposed to DNL 45 dB to 60 dB. According to census data, a total of 65,475 people, associated with 537 population centroids, would be exposed to a reportable DNL 5.0 dB or greater noise increase due to the Proposed Action. **Table 5-4** also presents reportable decreases in noise. For 2032, 110 people would experience a decrease of DNL 3.0 dB or greater within the Proposed Action DNL 60 dB to 65 dB and 26,652 people, would be exposed to a reportable DNL 5.0 dB or greater noise decrease within the Proposed Action DNL 45 dB to 60 dB.

As shown as circle shaped locations in **Exhibit 5-1** through **Exhibit 5-4**, population centroids with reportable changes are located in three general areas in both 2027 and 2032. The first area is located near DVT due to the implementation of RNAV-off-the-ground departures (all SIDs); the second area is located near SDL due to the implementation of RNAV-off-the-ground departures (all SIDs); and the third area is located north of PHX due to the common route of the DNHIL SID, SNRIZ SID, and SNWBD SID. In 2032, there is also one centroid northeast of CHD located at the Crossroads Towne shopping center that has a reportable increase in noise. Details for these population centroids are presented in **Attachment C** of **Appendix K** and shown for 2027 in **Exhibit 5-1** and for 2032 in **Exhibit 5-2**.

Table 5-4. Changes in Population Exceeding Noise (DNL) Thresholds within the General Study Area – 2027 and 2032

DNL Noise Exposure Level Under the Proposed Action	Change in DNL with the Proposed Action	2027 Population Exposed Exceeding the Threshold	2032 Population Exposed Exceeding the Threshold
DNL 65 dB and higher	DNL +1.5 dB or greater	0	0
DNL 60 dB to less than DNL 65 dB	DNL +3.0 dB or greater	113	67
DNL 45 dB to less than DNL 60 dB	DNL +5.0 dB or greater	65,674	65,475
DNL 65 dB and higher	DNL -1.5 dB or greater	0	0
DNL 60 dB to less than DNL 65 dB	DNL -3.0 dB or greater	110	110
DNL 45 dB to less than DNL 60 dB	DNL -5.0 dB or greater	28,065	26,652

Notes: DNL = Day-Night Average Sound Level, dB = Decibel
Sources: US Census Bureau 2020, AEDT 3g

5.1.5.2 Section 4(f), Historic, and Cultural Resources

For the Section 4(f), Historic, and Cultural Resources areas identified in **Section 4.2.3**and **Section 4.2.2**, respectively, in the 2027 scenarios, the analysis indicates that the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher, nor would it

result in a reportable noise increase of DNL 3.0 dB in areas exposed to DNL 60 dB to 65 dB compared with the 2027 No Action Alternative. However, the 2027 Proposed Action would result in a reportable noise increase of DNL 5.0 dB at eight Section 4(f) locations exposed to DNL 45 dB to 60 dB and a reportable noise decrease of DNL 5.0 dB at seven Section 4(f) locations exposed to DNL 45 dB to 60 dB. There are no noise changes exceeding any FAA thresholds for any historic or cultural resources due to the Proposed Action for 2027.

Similarly, for the Section 4(f), Historic, and Cultural Resources areas in the 2032 scenarios, the analysis indicates that the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher, nor would it result in a reportable noise increase DNL 3.0 dB in areas exposed to DNL 60 dB to 65 dB compared with the 2032 No Action Alternative. However, the 2032 Proposed Action would result in a reportable noise increase of DNL 5.0 dB at seven locations in areas exposed to DNL 45 dB to 60 dB and a reportable noise decrease of DNL 5.0 dB at eight Section 4(f) locations exposed to DNL 45 dB to 60 dB. There are no noise changes exceeding any FAA thresholds for any historic or cultural resources due to the Proposed Action for 2032.

The locations of these Section 4(f) resource reportable noise points are in similar areas as the noise impacted population centroids found in the 2027 and 2032 scenarios. The first area is located near DVT due to RNAV-off-the-ground departures (all SIDs). The second area is located near SDL due to RNAV-off-the-ground departures (all SIDs), and the third area is located north of PHX due to the DNHIL SID, SNRIZ SID, and SNWBD SID. The areas where these Section 4(f) resources are located are shown as square shaped locations in **Exhibit 5-1** for 2027 and in **Exhibit 5-3** for 2032. Separate exhibits displaying only the Section 4(f) noise change locations are provided in **Appendix K**.

Detailed information and tables displaying all sites with DNL levels greater than or equal to 65 dB and all sites with reportable noise increases for all Section 4(f) resource areas are provided in **Attachment D** of **Appendix K**.

5.1.5.3 Uniform Grid Points

For the uniform grid point data in both the 2027 and 2032 scenarios, the analysis indicates the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher. Moreover, the 2027 and 2032 Proposed Action scenarios did not result in a DNL 3.0 dB increase in areas exposed to DNL 60 dB to 65 dB compared to the No Action Alternative for the same year.

For the 2027 scenarios, 41 grid points would experience a greater than DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB in the Proposed Action. There are also 23 grid points that would experience a greater than DNL 5 dB decrease in areas exposed to DNL between 45 dB and 60 dB in the No Action. The locations of these grid points are in similar areas as the noise-impacted population centroids found in the 2027 scenarios.

For the 2032 scenarios, the 38 grid points would experience a greater than DNL 5 dB increase in areas exposed to DNL between 45 dB and 60 dB in the Proposed Action and 23 grid points would

experience a greater than DNL 5 dB decrease in areas exposed to DNL between 45 dB and 60 dB in the No Action. The locations of these grid points are in similar areas as the noise-impacted population centroids found in the 2032 scenarios.

The uniform grid reportable noise impact points are shown as pentagon shaped locations in **Exhibit 5-1** and **Exhibit 5-2** for 2027 and **Exhibit 5-3** and **Exhibit 5-4** for 2032. Separate exhibits displaying only the uniform grid noise change locations are provided in **Appendix K**. Detailed information and tables displaying all uniform grid points with reportable noise changes are provided in **Attachment E** of **Appendix K**.

Similar to the population centroid results, the likely cause of the reportable noise increase in the 2027 and 2032 Proposed Action is due to RNAV-off-the-ground departures (all SIDs) at DVT and SDL. The third area is located north of PHX due to the DNHIL SID, SNRIZ SID, and SNWBD SID.

5.1.5.4 Noise-Sensitive Locations

For the noise-sensitive sites in both the 2027 and 2032 scenarios, the analysis indicates the Proposed Action would not result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher. Moreover, the 2027 and 2032 Proposed Action did not result in a DNL 3.0 dB increase in areas exposed to DNL 60 dB to 65 dB compared to the No Action Alternative for the same year. The 2027 and 2032 Proposed Action scenarios also did not result in a DNL 5.0 dB increase in areas exposed to DNL 45 dB to 60 dB compared to the No Action Alternative for the same year for the noise-sensitive sites inventoried.

Detailed information for all noise-sensitive sites with noise exposure greater than or equal to DNL 65 dB is provided in **Attachment F** of **Appendix K**. Consistent with the FAA significance and reportable thresholds presented in **Table 5-1**, no noise-sensitive sites experience a noise change exceeding applicable thresholds.

5.1.5.5 Airport Area Grid Points

For the airport area grid in both the 2027 and 2032 scenarios, the analysis indicates the Proposed Action would result in a DNL 1.5 dB increase in areas exposed to DNL of 65 dB and higher just northeast of SDL. Although a +1.5 dB increase occurs at airport-area grids exposed to DNL 65 dB or greater, these locations occur over compatible land uses and do not represent noise-sensitive receptors; therefore, the increase does not constitute a significant noise impact. The 2027 and 2032 Proposed Action also results in a DNL 3.0 dB increase in areas exposed to DNL 60 dB to 65 dB compared to the No Action Alternative for the same year near SDL. There is also a small area of 1.5 dB decrease northeast of SDL over compatible land uses and areas of 3.0 dB decreases due to the Proposed Action northeast and west of SDL. The 2027 and 2032 Proposed Action scenarios would result in a DNL 5.0 dB increase in areas exposed to DNL 45 dB to 60 dB compared to the No Action Alternative for the same year in a commercial area northeast of Runway 22L/R at CHD, northwest of Runway 21 and south of Runway 3 at SDL and to the east and west of DVT. The 2027 and 2032 Proposed Action scenarios also result in a DNL 5.0 dB decrease in areas exposed to DNL 45 dB to 60 dB compared to the No Action Alternative for the same year at one location northwest of Runway 22L/R at CHD, north of Runway 21 and northwest of Runway 3 at SDL and to the east and west of DVT.

Any airport area reportable noise change points are shown as triangle shaped locations in **Exhibit 5-1** and **Exhibit 5-2** for 2027 and **Exhibit 5-3** and **Exhibit 5-4** for 2032. Separate exhibits displaying only the airport area grid noise change locations are provided in **Appendix K**. Detailed information and tables displaying all off-airport area grid points with reportable noise changes are provided in **Attachment G** of **Appendix K**.

Exhibit 5-1. Changes in Aircraft Noise near SDL and DVT in 2027 – All Grid Points

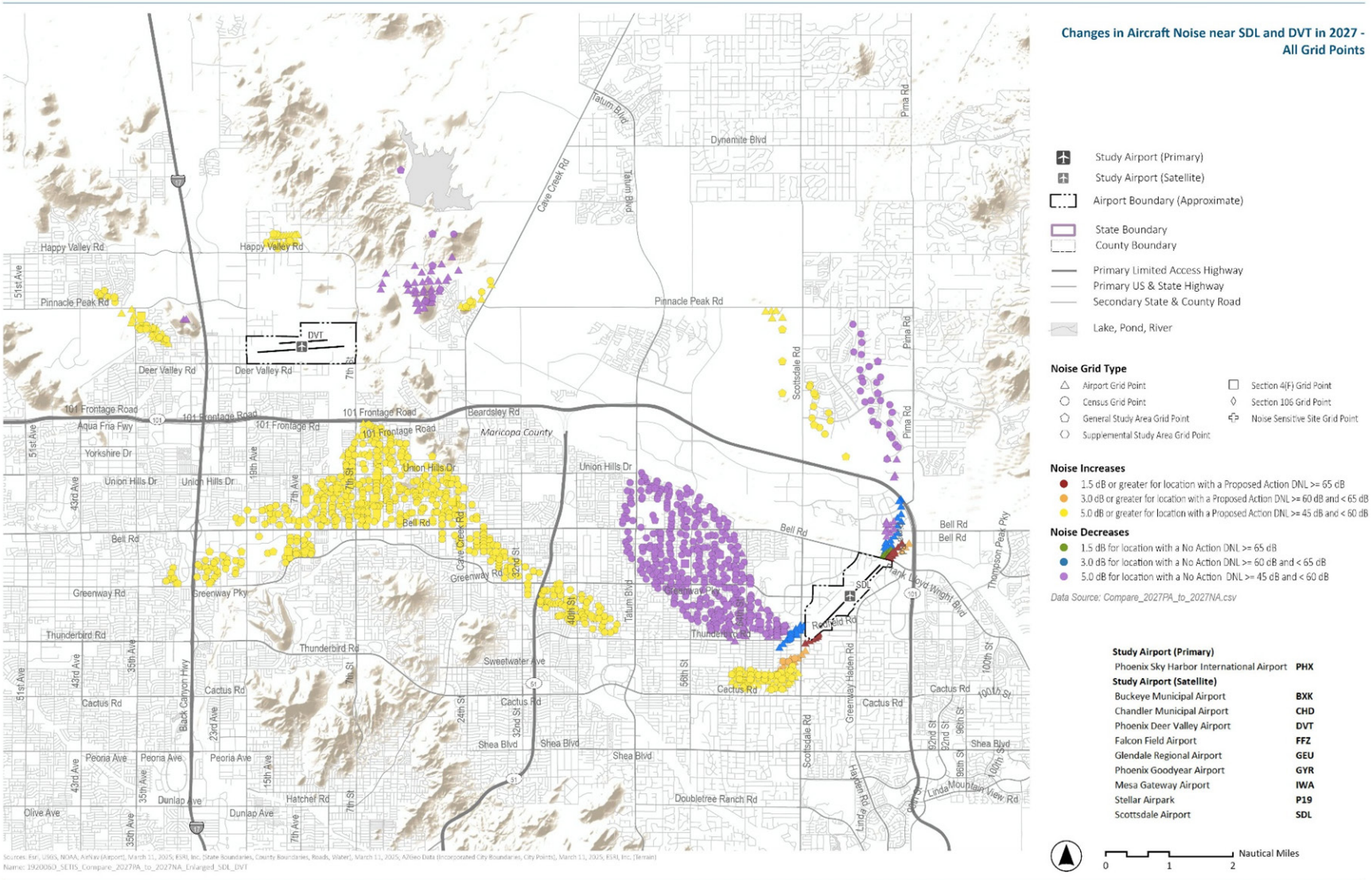


Exhibit 5-2. Changes in Aircraft Noise near PHX and CHD in 2027 – All Grid Points

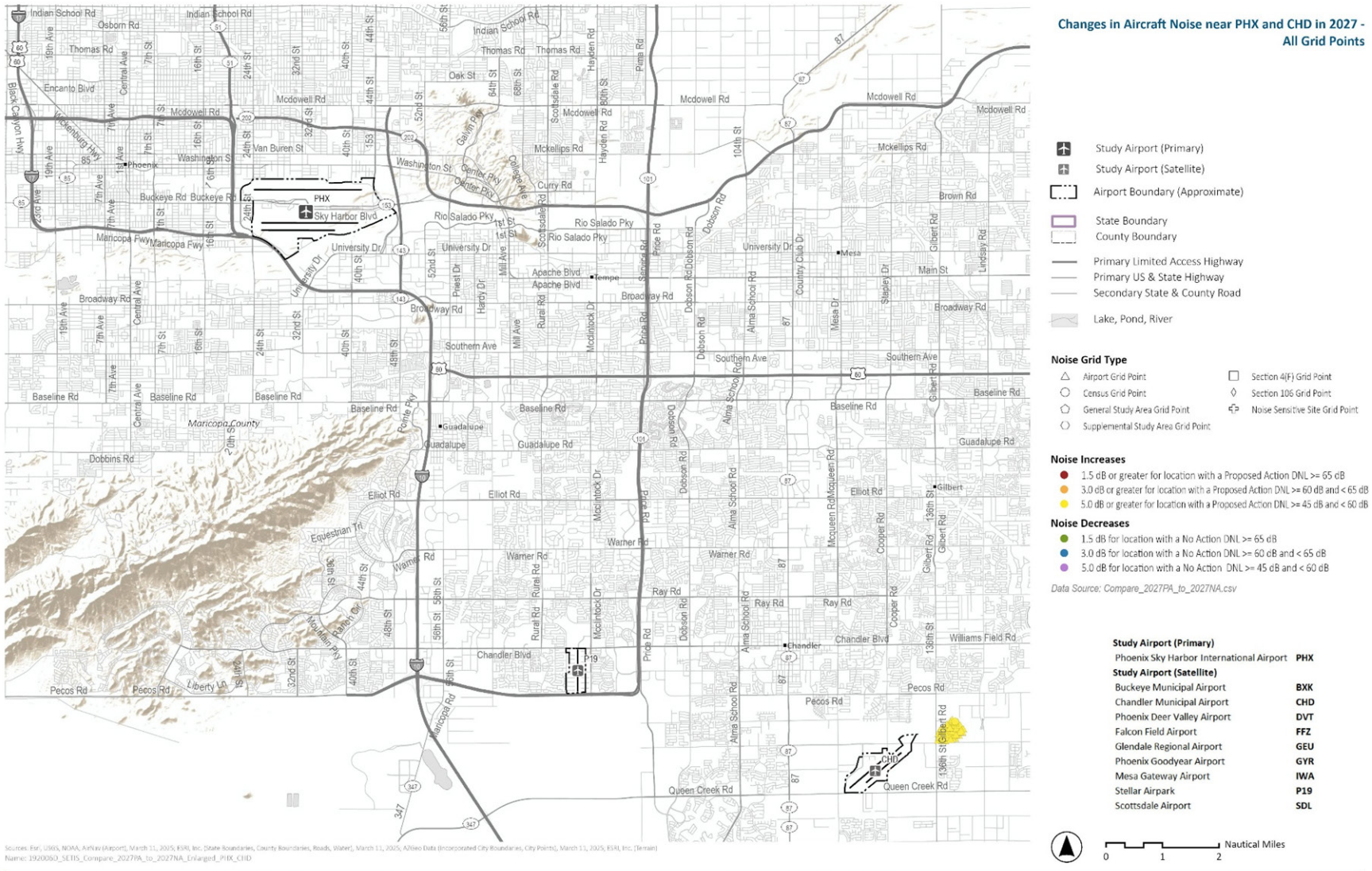


Exhibit 5-3. Changes in Aircraft Noise near SDL and DVT in 2032 – All Grid Points

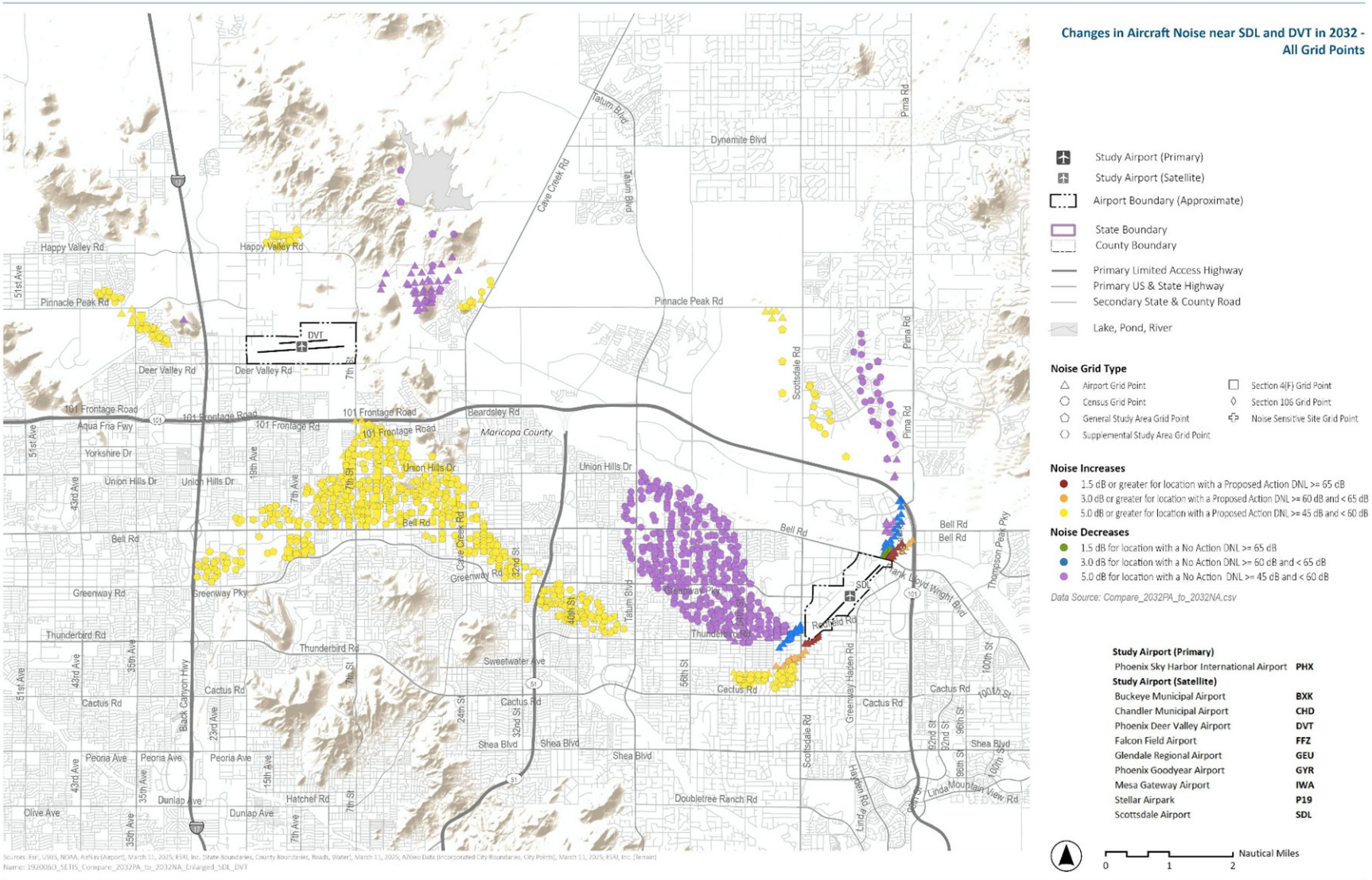
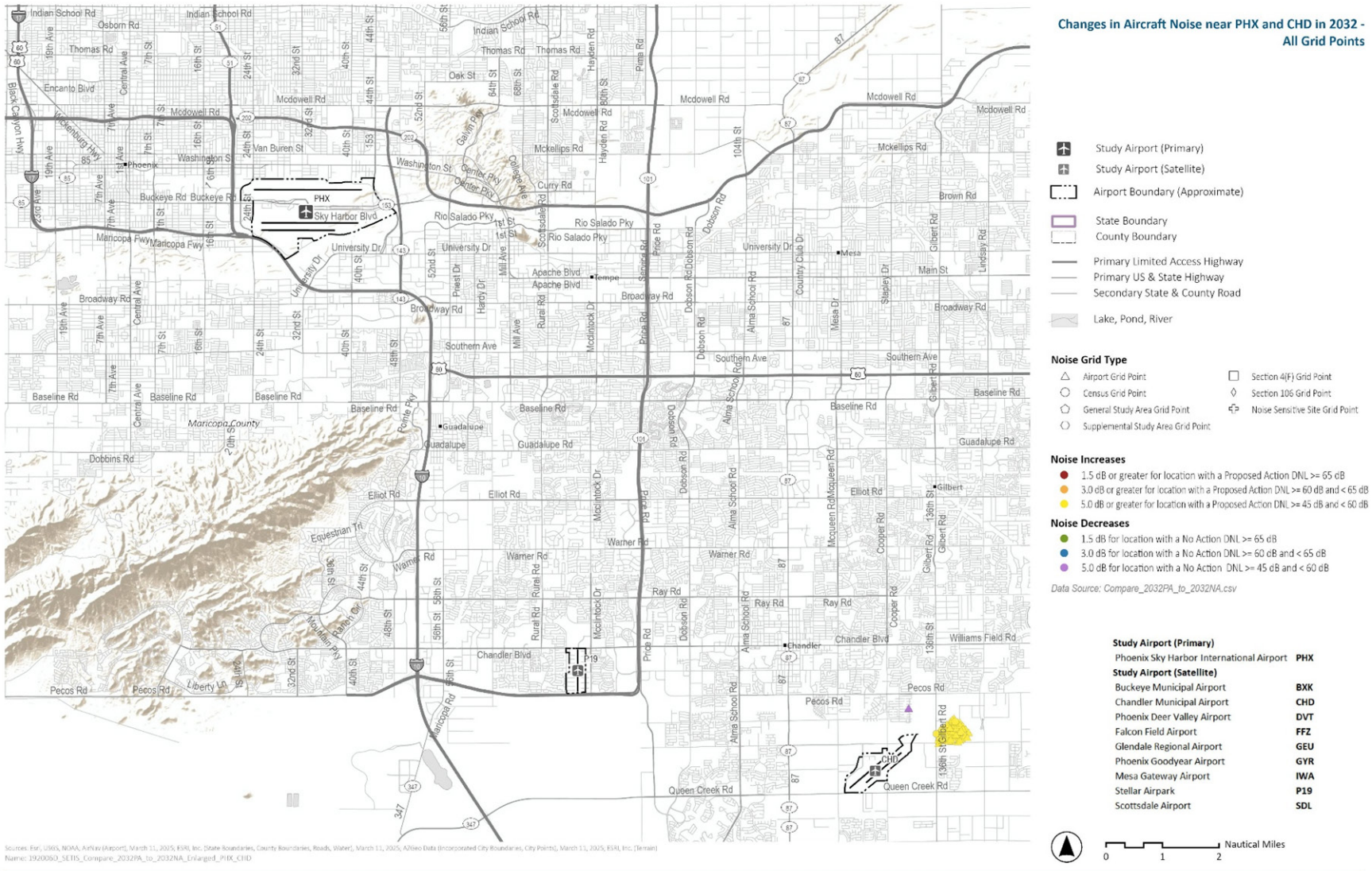


Exhibit 5-4. Changes in Aircraft Noise near PHX and CHD in 2032 – All Grid Points



5.1.6 Noise-Sensitive Uses and Areas

In addition to disclosing potential noise impacts to residential population, FAA Order 1050.1F requires the FAA to identify and describe noise-sensitive uses and areas in the Study Areas. FAA defines a noise-sensitive area as "an area where noise interferes with normal activities associated with its use. Normally, noise-sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife refuges, and cultural and historical sites" (FAA 2015).

Potential impacts to residential population are discussed in **Section 5.1.5**. Potential impacts to cultural and historical sites and recreational areas, areas with wilderness characteristics, wildlife refuges are discussed in **Section 5.2** and **Section 5.3.** Potential impacts to locations identified as noise sensitive are discussed in **Section 5.1.5.4.**

5.1.7 Noise Compatible Land Use

FAA Order 1050.1F requires that EAs discuss possible conflicts between the Proposed Action and the objectives of federal, regional, state, local, and tribal land use plans, policies, and controls for the area concerned (FAA 2015). Analysis of the potential impacts to noise compatible land use was focused on changes in aircraft noise exposure resulting from implementing the Proposed Action. FAA Order 1050.1F states, "The compatibility of existing and planned land uses in the vicinity of an airport is usually associated with the extent of the airport's noise impact. If the noise analysis concludes that there is no significant impact, a similar conclusion usually may be drawn with respect to compatible land use (FAA 2015)."

Air traffic actions like the PHX Area Modernization Project do not result in direct impacts to land such as ground disturbance. Accordingly, the compatible land use analysis relies on changes in aircraft noise exposure between the Proposed Action and the No Action Alternative (discussed in **Section 5.1**) as the basis for determining compatible land use impacts within the Study Areas.

5.1.7.1 Land Use Potential Impacts – 2027 and 2032

As stated in **Section 5.1**, the Proposed Action, when compared with the No Action Alternative, would not result in changes in aircraft noise exposure in 2027 and 2032 that would exceed the FAA's significance threshold. Likewise, there are no conflicts with federal, regional, state, or local land use plans, policies, and controls. Therefore, the Proposed Action would not result in significant impacts to non-compatible land use.

Under the No Action Alternative, there would be no changes to air traffic routing in the Study Areas and no changes in aircraft noise exposure expected to occur in either 2027 or 2032. Therefore, the No Action Alternative would not result in significant impacts to non-compatible land use.

5.1.8 Conclusion

Based on the modeled noise exposure changes for the 2027 and 2032 analysis years, the Proposed Action would not result in a significant aircraft noise impact under FAA Order 1050.1F. Reportable noise increases occur in areas exposed to DNL below 65 dB, though no noise-sensitive

receptors experience increases exceeding FAA significance thresholds. While performance-based navigation procedures can result in more predictable flight paths, the environmental significance of aircraft noise is determined using the FAA's established DNL-based thresholds. These thresholds account for both the number of aircraft operations and their noise levels. (**Appendix H**, **Appendix I**, and **Appendix K**.) Concentration of flight tracks does not itself constitute a significant noise impact unless it results in increases that exceed FAA significance thresholds.

5.2 Historical and Cultural Resources

This section summarizes the analysis of potential impacts to historic and cultural resources that could occur under the Proposed Action and the No Action Alternative. Historic and cultural resources within the APE are discussed in **Section 4.2.2** and **Appendix L**.[32] In accordance with Section 106 of the NHPA, the FAA initiated consultation with the SHPO, THPOs, and other certified local government officials that may have interest in historic and cultural resources in the APE on February 6, 2026. Consultation with federal, state, and local entities, and tribes, regarding the APE and potential effects is ongoing. Documentation from the Section 106 consultation is provided in **Appendix L**.

5.2.1 Summary of Impacts

The aircraft noise exposure analysis indicates that the Proposed Action would not result in significant impacts to the noise environment at any historic or cultural resource compared with the No Action Alternative. Under both the 2027 and 2032 Proposed Action scenarios evaluated in the noise analysis (**Section 5.1**), there would be reportable aircraft noise exposure increases in the vicinity of DVT, SDL, and north of PHX (**Exhibit 5-1** and **Exhibit 5-2**). The noise analysis also indicates that, under the Proposed Action, noise would be reduced in some areas such that three locations currently within the DNL 65 dB noise contour would no longer be in the DNL 65 dB noise contour by 2032. The first area is west of PHX, south of I-17, and two other areas are just to the southwest of PHX, south of I-17. No properties identified as Section 106 resources would experience a reportable noise change under the Proposed Action.

Implementation of the Proposed Action would result in changes to historic and current aircraft traffic patterns at altitudes and distances from viewers that would not substantially impair the view or setting of historic or cultural resources that are listed in or eligible for listing in the NRHP. The Proposed Action would not directly or indirectly change any known characteristics qualifying or potentially qualifying a historic resource for inclusion in or its eligibility for listing in the NRHP. Consultation is ongoing regarding historic resources in the APE. No adverse effects to historic or cultural resources under the Proposed Action would be anticipated for either 2027 or 2032.

Under the No Action Alternative, no changes to air traffic routes would occur in connection with the Project in either 2027 or 2032, and no changes to aircraft noise exposure or changes in aircraft overflight patterns over historic or cultural resources would be anticipated. Therefore, no historic

[32] References to Section 106 resources used throughout this section include all cultural and historic resources. The term "historic property" includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria" (Advisory Council on Historic Preservation 2004).

or cultural resources would be affected by aircraft noise, nor would there be any visual impacts at historic or cultural resources under the No Action Alternative.

5.2.2 Methodology

Section 106 of the NHPA requires the FAA to consider the effects of its undertakings on historic properties listed or eligible for listing in the NRHP. **Exhibit 4-3** in **Section 4.2.3** shows the historic and cultural resources listed in the NRHP and within the Study Areas.

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association.

The Proposed Action would occur entirely within navigable airspace and would not involve the construction, disturbance, or alteration of any physical structure on, in, or emanating from the ground. Therefore, the analysis focuses on potential indirect effects, including visual changes or changes in aircraft noise exposure that could diminish the integrity of historic properties.

Resources were obtained from multiple federal, state, and local georeferenced databases specific to Section 106 resources. A comprehensive inventory of historic properties identified within the APE is maintained in the Section 106 administrative record. **Appendix L** summarizes the identification effort and consultation process to date.

As discussed in **Section 4.2.2**, the FAA defined and refined the APE to focus on areas where the Proposed Action could result in direct or indirect effects on historic properties. Based on the preliminary noise analysis, and as explained more fully in **Section 4.2.2**, the APE was refined to focus on locations where potential noise-related effects could occur.

All identified historic properties within the APE were considered in the assessment of potential effects. Noise exposure levels at representative receptor locations within the refined APE were calculated to evaluate potential indirect effects from aircraft noise. These receptor locations serve as analytical points for estimating noise exposure at or near historic properties.

Appendix K presents the subset of resources associated with modeled receptor locations where measurable changes in noise exposure occur. **Exhibit 5-5, Exhibit 5-6, and Exhibit 5-7** depict the relationship between the refined APE historic resources and modeled noise changes.

Noise exposure levels at points in the refined APEs were calculated to determine potential adverse effects on Section 106 resources. Noise exposure results for the uniform grid points at 0.5-NM intervals throughout the APE were evaluated to identify potential adverse noise effects on historic properties that are eligible but may not be listed in the NRHP, or whose exact location may not be disclosed. The 0.5-NM grid provides noise results within 2,148 feet or less of any location within the Supplemental Study Area. State-listed properties within the APE include NRHP properties, and other similar state and local databases may result in multiple receptor points for the same resource, multiple resources for the same receptor point, or different names and different receptor points for the same resource.

Exhibit 5-5. Section 106 Resources with Refined APEs

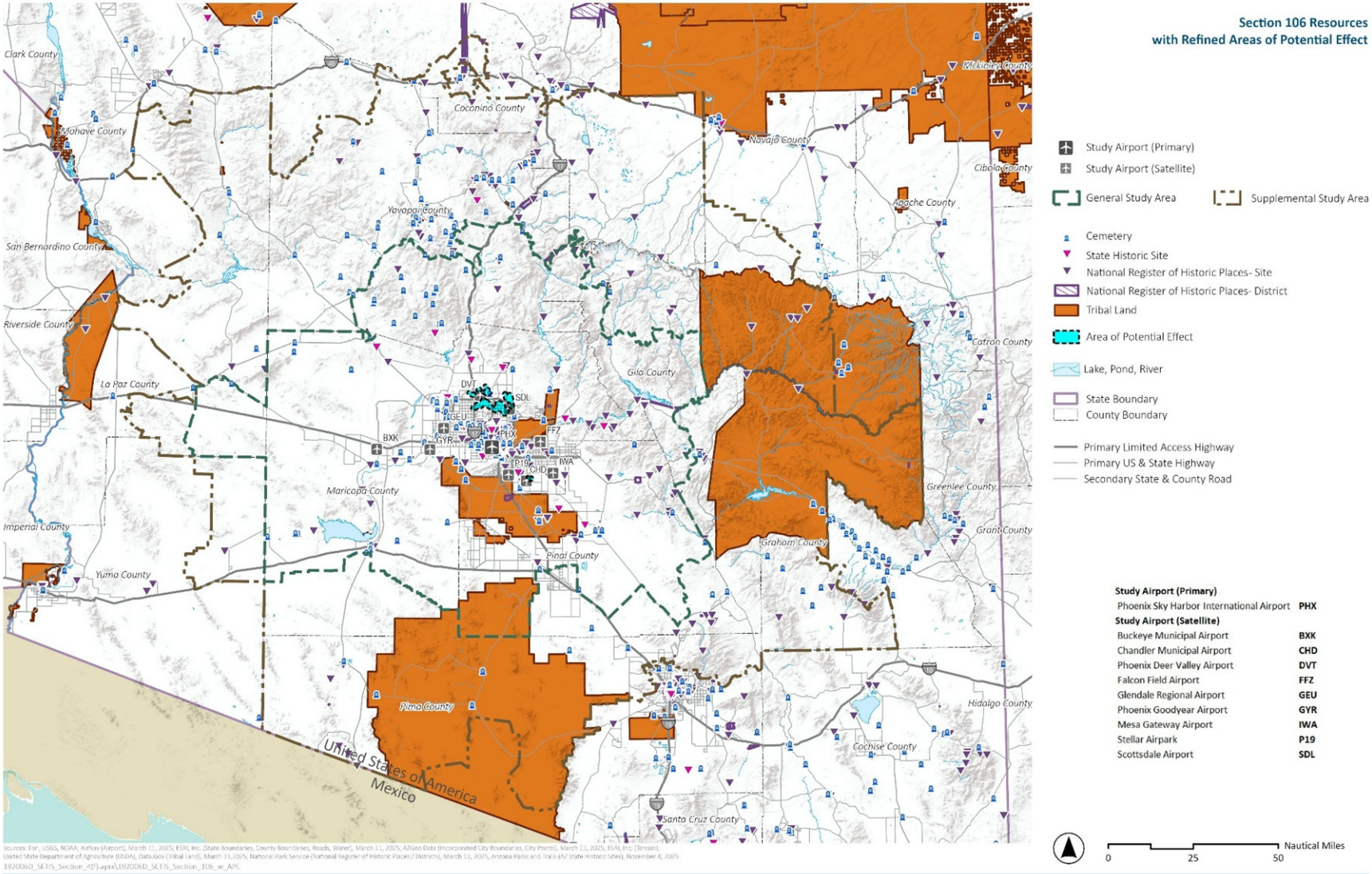


Exhibit 5-6. Section 106 Resources with Refined APEs and Reportable Noise Changes (1 of 2)

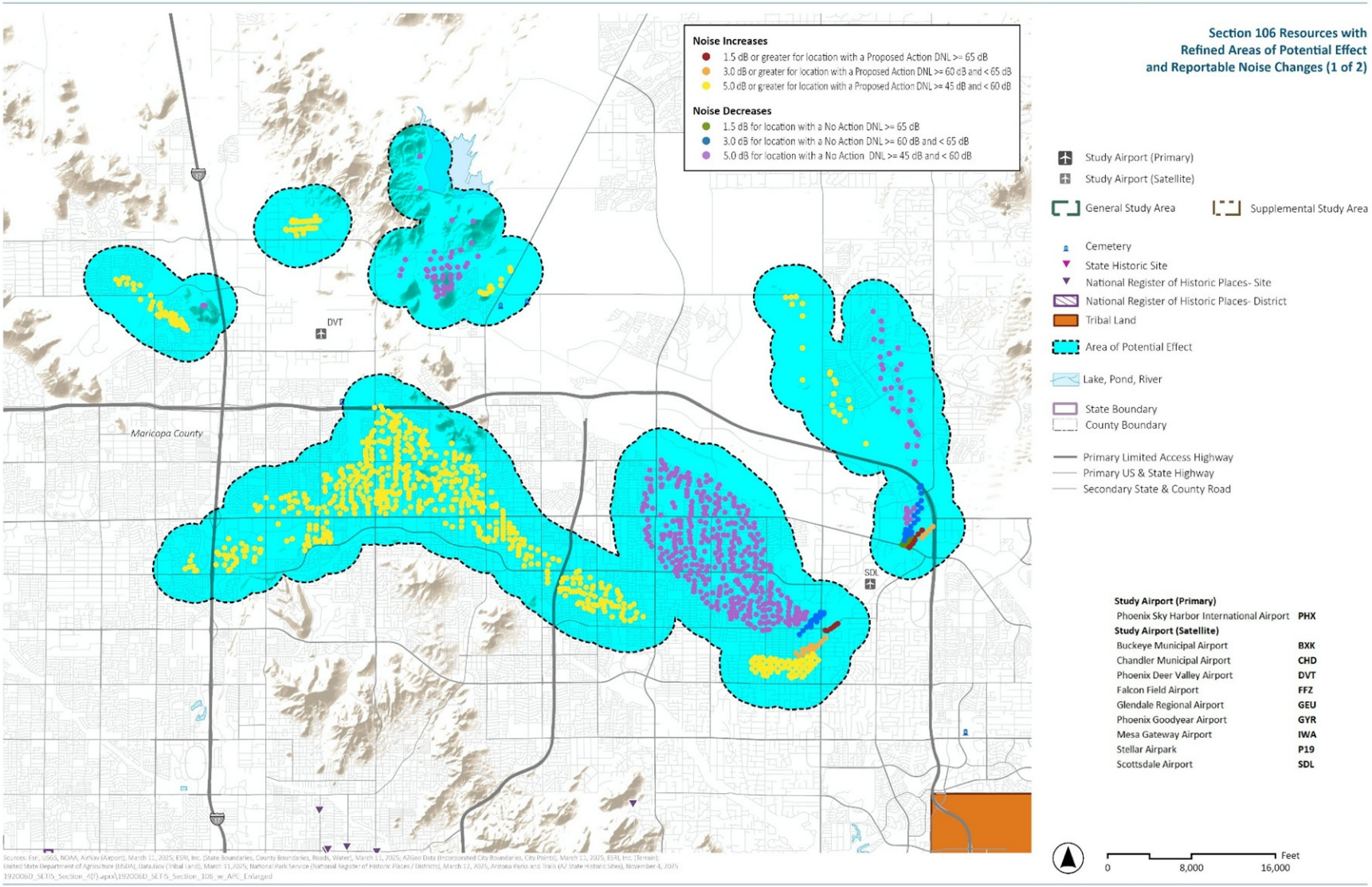
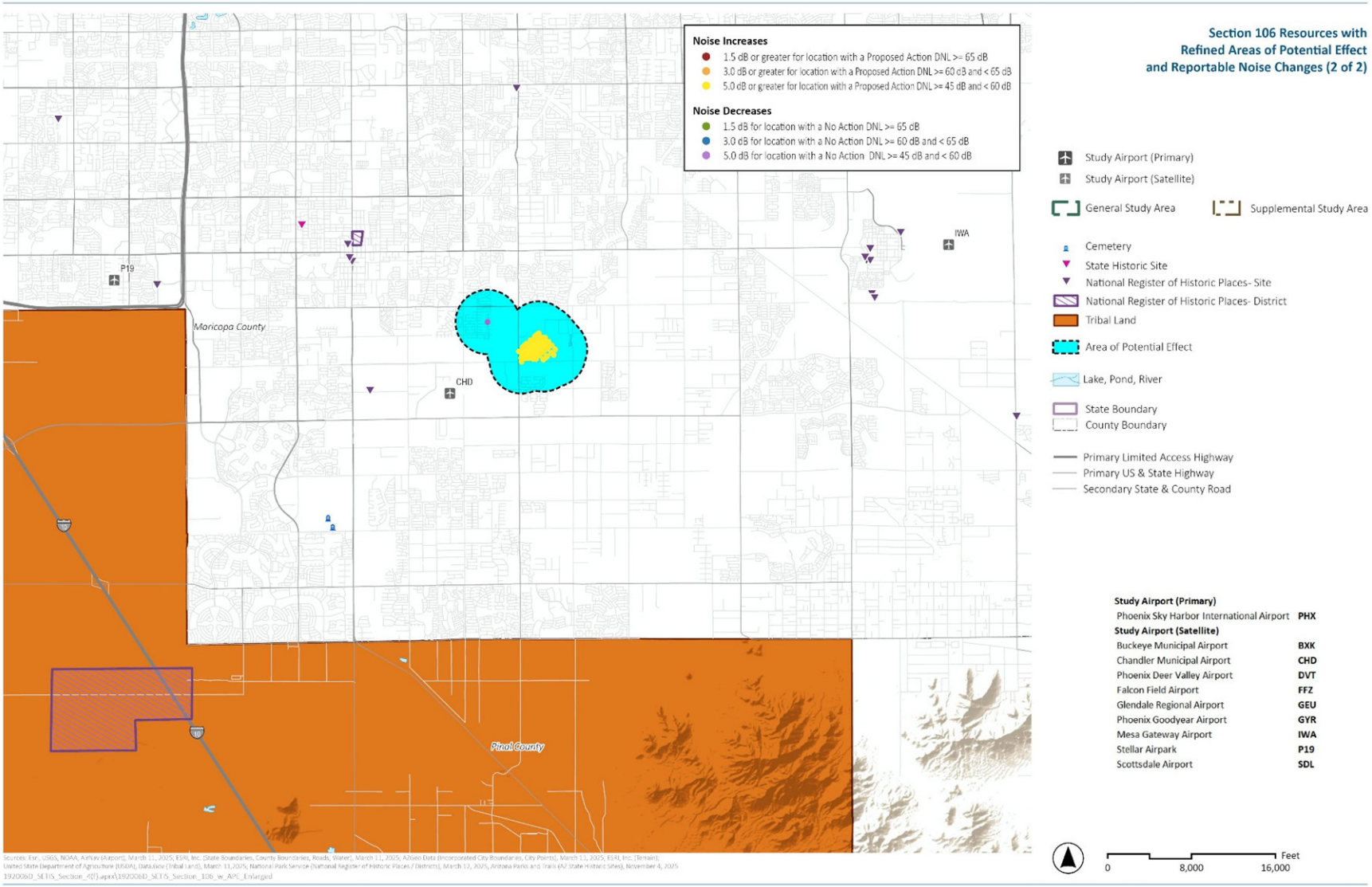


Exhibit 5-7. Section 106 Resources with Refined APEs and Reportable Noise Changes (2 of 2)



5.2.3 Potential Impacts

As stated in **Section 5.1**, the Proposed Action, when compared to the No Action Alternative, would not result in changes in aircraft noise exposure in 2027 or 2032 that would exceed the FAA's significance threshold for noise increases at Section 106 resources.

Under the Proposed Action for 2027 and 2032, no identified Section 106 resources would experience a DNL 1.5 dB increase or decrease in areas exposed to a DNL of 65 dB or higher, nor would they experience a reportable noise increase or decrease of DNL 3 dB in areas exposed to DNL 60 dB to 65 dB. The Proposed Action for 2027 and 2032 would not result in a reportable noise increase of DNL 5 dB in areas exposed to DNL 45 dB to 60 dB. **Exhibit 5-5**, **Exhibit 5-6**, and **Exhibit 5-7** show the refined APEs and reportable noise increases in relation to Section 106 resources.

The Proposed Action would not result in effects that would change the eligibility of historic and cultural resources in the APE. The Proposed Action would not introduce new atmospheric, audible, or visual features to the area that would diminish the integrity of a property's significant historic features. Therefore, the FAA's preliminary finding is that the Proposed Action is not expected to result in adverse effects on historic or cultural resources. Section 106 and government-to-government consultation regarding this preliminary finding is underway; a final finding will be included in the final NEPA decision document. Noise analysis results for Section 106 resources can be found in **Appendix K**, **Section 5.4.2** and **Attachment D**.

5.3 Department of Transportation Act, Section 4(f) Resources

This section discusses the potential impacts to DOT Act, Section 4(f) resources, and LWCF Section 6(f) resources. In **Chapter 4**, **Exhibit 4-7** depicts Section 4(f) and Section 6(f) resources, other than those listed in or eligible for listing in the NRHP within the Study Areas and evaluated in **Section 5.2**.

A comprehensive inventory of Section 4(f) and Section 6(f) resources identified within the APE is maintained in the project's administrative record. **Appendix L** summarizes the identification effort and consultation process to date. Any additional consultation that occurs after publication of the Draft EA will be included in the Final EA.

5.3.1 Summary of Impacts

The evaluation of potential impacts on Section 4(f) and Section 6(f) resources focuses on changes in aircraft noise exposure resulting from implementing the Proposed Action. The FAA's aircraft noise exposure analysis indicates that the Proposed Action, when compared to the No Action Alternative, would result in a reportable noise increase at eight Section 4(f) resources in 2027 and seven resources in 2032. No Section 6(f) resources would experience reportable changes. However, noise modeling indicates that the Proposed Action would not result in increases meeting FAA significance thresholds over any identified Section 4(f) resources, nor would it substantially impair the activities, features, or attributes that qualify those resources for protection.

The Section 4(f) resources identified within the areas of reportable noise increases include recreational parks and a public tennis center. None of the resources are managed for a quiet setting. They are in urban, suburban, recreational, or near high-traffic areas and are easily accessible by vehicles. In addition, the resources have experienced aircraft noise since the opening of PHX in the 1920s. None have been designated by federal, state, or local resource managers as having a potential value for further noise reduction. Further, changes in aircraft overflight would occur at altitudes and distances from viewers that would not substantially impair the view or setting of Section 4(f) resources. Therefore, no constructive use of a Section 4(f) resource would occur because of the Proposed Action, and no significant impact would be anticipated.

Under the No Action Alternative, there would be no changes in air traffic routes in the Study Areas. Therefore, no changes to aircraft noise exposure or aircraft overflight patterns would occur over Section 4(f) or Section 6(f) resources, and no impacts would be anticipated.

5.3.2 Methodology

As discussed in **Section 4.2.3**, the FAA evaluates potential impacts on Section 4(f) resources in terms of both physical impacts (i.e., physical or direct use) and non-physical impacts (i.e., constructive use) (FAA 2015). A physical or direct impact would occur as a result of land acquisition, construction, or other ground-disturbing activities that would result in the physical use of all or a portion of a Section 4(f) property. As land acquisition, construction, or other ground-disturbing activities would not occur under either the Proposed Action or the No Action Alternative, neither alternative would have the potential to cause a physical impact to a Section 4(f) or Section 6(f) resource. Therefore, analysis of potential impacts to Section 4(f) resources and Section 6(f) resources is limited to identifying non-physical impacts resulting from constructive use rather than direct use or temporary occupancy of a Section 4(f) resource.

A constructive use of a Section 4(f) resource could occur as a result of both visual and/or noise impacts. With respect to aircraft noise, a constructive use would occur if noise levels substantially impair the activities, features, or attributes of the resource that qualify it for protection under Section 4(f). **Section 5.7** discusses potential visual impacts within the Study Areas. In cases where Section 6(f) resources are "used" by a transportation project, FAA Order 1050.1F stipulates that a replacement satisfactory to the Secretary of the Interior is required for recreational lands aided by the Department of the Interior's LWCF (FAA 2015). Therefore, these resources are considered part of the Section 4(f) impact analysis process.

Noise exposure levels were calculated for noise receptor points placed at Section 4(f) and Section 6(f) resources.

If the analysis identified increases in noise exposure at Section 4(f) properties, further evaluation would be conducted to determine whether those changes could substantially impair the activities, features, or attributes of the resource. Further evaluation can include confirming that the property is, in fact, a Section 4(f) resource and identifying specific attributes for which the resource is managed (e.g., whether the resource is managed for traditional recreational uses or

where other noise is very low and a quiet setting is a generally recognized purpose and attribute) (FAA 2015; FAA 2020).

5.3.3 Potential Impacts – 2027 and 2032

As stated in **Section 5.1**, the Proposed Action when compared to the No Action Alternative, would not result in changes in aircraft noise exposure in 2027 or 2032 that would exceed the FAA's significance threshold for noise increases at Section 4(f) and Section 6(f) resources. No Section 4(f) or Section 6(f) resources would experience a DNL 1.5 dB increase or decrease in areas exposed to DNL of 65 or higher in either 2027 or 2032, nor would they experience a reportable noise increase or decrease of DNL 3 dB in areas exposed to DNL 60 dB to 65 dB.

Table 5-5 identifies the named Section 4(f) resources that would experience greater than DNL 5 dB increase in areas exposed to DNL 45 dB to 60 dB for 2027 and 2032. The table also identifies the named Section 4(f) resources that would experience a decrease of greater than DNL 5 dB in areas exposed to DNL 45 dB to 60 dB for 2027 and 2032. All of these resources have historically experienced aircraft noise due to their proximity to PHX and other surrounding airports, and none were identified as historic or cultural resources.

Table 5-5. Reportable Noise Changes Between the DNL 45 dB and DNL 60 dB Range at Section 4(f) Resources

Section 4(f)/106 Grid ID	Name	City	2027 No Action Alternative DNL (dB)	2027 Proposed Action DNL (dB)	2027 Change (dB)	2032 No Action Alternative DNL (dB)	2032 Proposed Action DNL (dB)	2032 Change (dB)
S4F_USAP_260	Grovers Park	Phoenix	40.6	46.5	5.9	40.7	46.7	6.0
S4F_USAP_274	Turtle Rock Basin	Phoenix	40.3	45.6	5.4	40.4	45.8	5.4
S4F_USAP_275	Palomino Park	Phoenix	40.7	46.2	5.5	40.9	46.4	5.6
S4F_USAP_277	Werner's Field Park	Phoenix	40.6	45.6	5.0	N/A	N/A	N/A
S4F_USAP_283	Mountain View Tennis Center	Phoenix	40.4	46.1	5.7	40.5	46.2	5.7
S4F_USAP_285	Quail Run Basin Park	Phoenix	40.7	46.7	6.0	40.8	46.8	6.0
S4F_USAP_286	Paseo Highlands Park	Phoenix	40.8	46.5	5.7	40.9	46.6	5.7
S4F_PRTDA_561	Moonlight Mini Park	Phoenix	40.0	45.3	5.3	40.1	45.4	5.3
GSA_UG_29450	Central Arizona Project Canal	Phoenix	47.5	42.2	-5.3	47.6	42.4	-5.2
GSA_UG_31741	Cave Buttes Recreation Area	Phoenix	45.3	37.0	-8.3	45.5	37.3	-8.2
GSA_UG_32301	Cave Buttes Recreation Area	Phoenix	46.4	36.0	-10.4	46.6	36.2	-10.4
GSA_UG_32303	Cave Buttes Recreation Area	Phoenix	N/A	N/A	N/A	45.1	36.4	-8.7
S4F_USAP_345	Desert Horizon Park	Phoenix	51.6	41.3	-10.3	51.6	41.5	-10.1
S4F_USAP_346	Sandpiper Park	Phoenix	55.4	48.3	-7.2	55.7	48.5	-7.2
S4F_USAP_348	Crossed Arrows Park	Scottsdale	52.0	44.3	-7.7	52.2	44.5	-7.7
S4F_USAP_353	Jackrabbit Basin Park	Phoenix	51.0	41.1	-9.9	51.0	41.3	-9.7

Source: HMMH, *Noise Technical Report*, February 2026

Special consideration was given to noise-sensitive areas within Section 4(f) properties (including, but not limited to, noise-sensitive areas within national parks, national wildlife and waterfowl refuges and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR Part 150 are not relevant to the value, significance, and enjoyment of the area in question.

Parks and recreation plans and descriptions for resources where reportable noise increases would occur were reviewed for quiet enjoyment and noise intrusions, with a focus on the identified resources where reportable noise increases would occur. **Exhibit 5-8** and **Exhibit 5-9** display the locations of the Section 4(f) and Section 6(f) resources in proximity to the refined APEs. In addition, parks and recreation plans were reviewed to confirm that each park or recreation area is publicly owned, which is a requirement to be eligible for protection under Section 4(f).

The following describes the resource attributes and features of Section 4(f) resources located within areas of reportable noise increase and therefore considered in the evaluation of potential constructive use. Section 4(f) resources outside areas of reportable noise increase were also considered but are not discussed in detail because no measurable change in noise exposure would occur at those locations.

- **Grovers Park** is a dog park located at 17447 North 20th Street in Phoenix. It is open to the public and contains a dog park area, a grill/picnic area, and a playground. The dog park also allows radio-controlled aircraft and is owned and operated by the City of Phoenix.
- **Turtle Rock Basin** is a playground located at 17414 North 12th Street in Phoenix. It is owned and operated by the City of Phoenix and is open to the public.
- **Palomino Park** is located at 15815 North 30th Street in Phoenix. It is open to the public and is owned and operated by the City of Phoenix. The park contains ball fields, basketball and volleyball courts, a grill/picnic area, playground, and shade structures.
- **Werner's Field** is located at 17831 North 7th Avenue in Phoenix adjacent to Cave Creek. The City of Phoenix owns and operates the park. It contains a basketball court, a grill/picnic area, playground, and shade structures, and also allows radio-controlled aircraft.
- **Mountain View Tennis Center** is located at 1104 East Grovers Avenue in the Moon Valley Gardens neighborhood of Phoenix. It is open to the public and contains eight lighted hard tennis courts. The City of Phoenix owns and operates the facility.
- **Quail Run Basin Park** is located at 18434 North 12th Street in Phoenix. It is open to the public and contains a grill/picnic area and a playground. The City of Phoenix owns and operates the facility.
- **Paseo Highlands Park** is located at 3435 West Pinnacle Peak Road in the Deer Valley area of Phoenix. The City of Phoenix owns and operates the park, which contains a ball field, basketball court, pickleball court, soccer field, tennis court, volleyball court, grill/picnic area, playground, recreation/community center, and shade structures. It is open to the public.

- **Moonlight Mini Park** is located at 16406 North 10th Avenue in Phoenix. The City of Phoenix owns and operates this park, which is open to the public from sunrise to sunset each day. It includes a basketball court, a grill/picnic area, and a playground.

For aircraft noise to constitute a constructive use of a Section 4(f) resource, the noise exposure must substantially impair the activities, features, or attributes that qualify the resource for protection. Constructive use would occur only where project-related noise exposure is of sufficient magnitude to substantially impair the activities, features, or attributes that qualify the source for protection. The predicted changes in aircraft noise exposure are small and occur in already urbanized settings where the identified Section 4(f) resources are not managed for quiet or noise-sensitive uses. Accordingly, these changes would not substantially impair the protected activities or attributes of these resources and would not result in a constructive use. The noise levels are reportable only (less than significant), and the resources are already in proximity to PHX and surrounding airports and therefore have a history of overflights. Thus, the Proposed Action, when compared to the No Action alternative, would not result in a constructive use of the aforementioned Section 4(f) resources.

Further, as stated in **Section 5.7**, the Proposed Action, when compared with the No Action Alternative, would not cause a significant visual impact in 2027 or 2032. Any changes in aircraft traffic patterns would occur at altitudes and distances from viewers that would not substantially impair the view or setting of the Section 4(f) resources.

As stated in **Section 5.2**, there would be no physical taking of a Section 106 property or adverse effects that would substantially impair a Section 106 resource's historical integrity, thus there would be no potential for "use" under Section 4(f) of those resources. Therefore, the Proposed Action would not result in impacts to Section 4(f) resources. No Section 6(f) properties were projected to experience a significant or reportable noise increase; therefore, no "use" of a Section 6(f) property would occur under the Proposed Action.

Under the No Action Alternative, no changes to air traffic routes would occur in either 2027 or 2032, and no effects related to changes in aircraft noise exposure or impairment to the view or setting of Section 4(f) resources would be anticipated. Therefore, the No Action Alternative would not result in potential impacts to Section 4(f) resources or Section 6(f) resources.

Exhibit 5-8. Section 4(f) and Section 6(f) Resources with Refined APEs and Reportable Noise Changes (1 of 2)

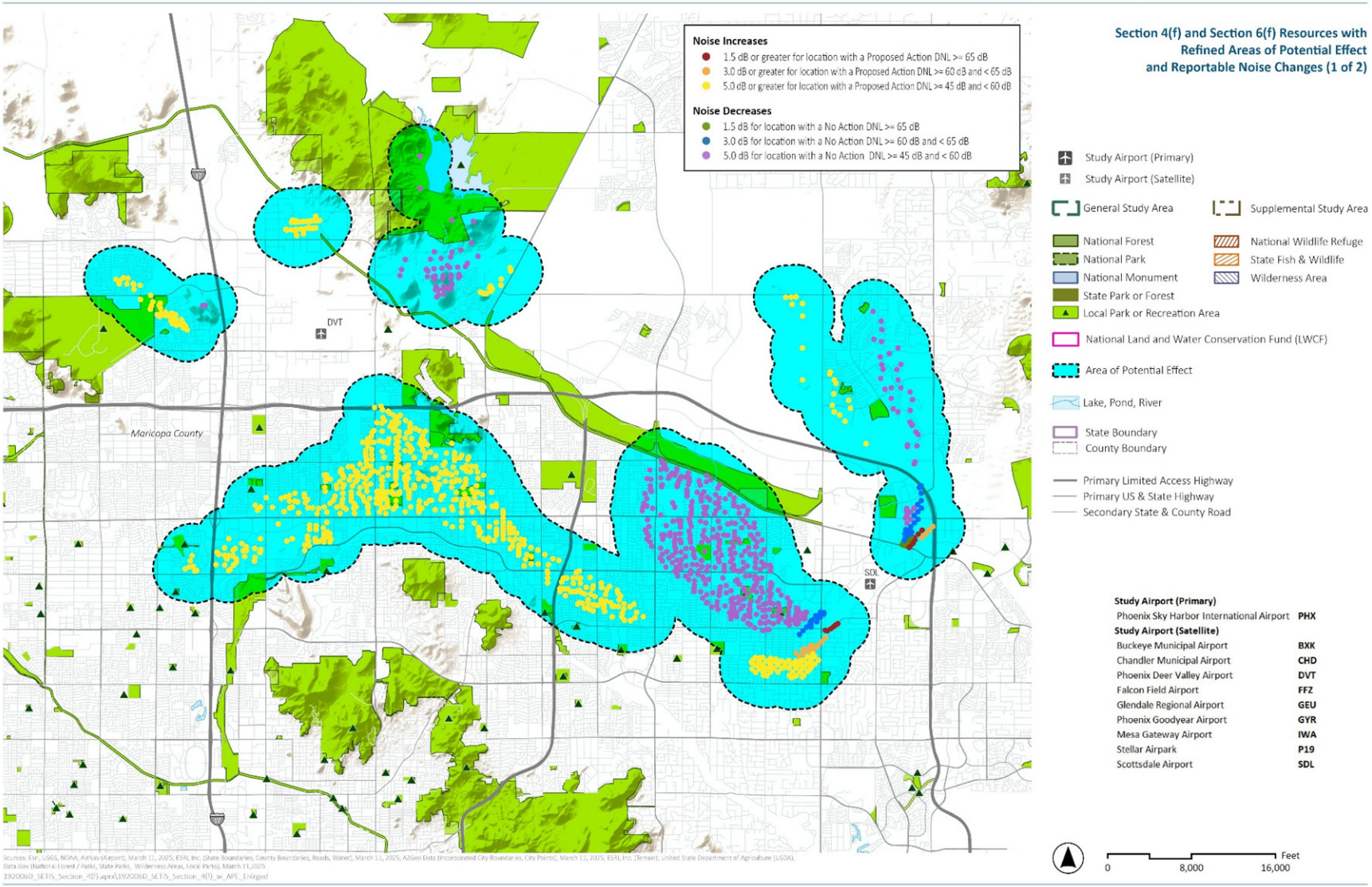
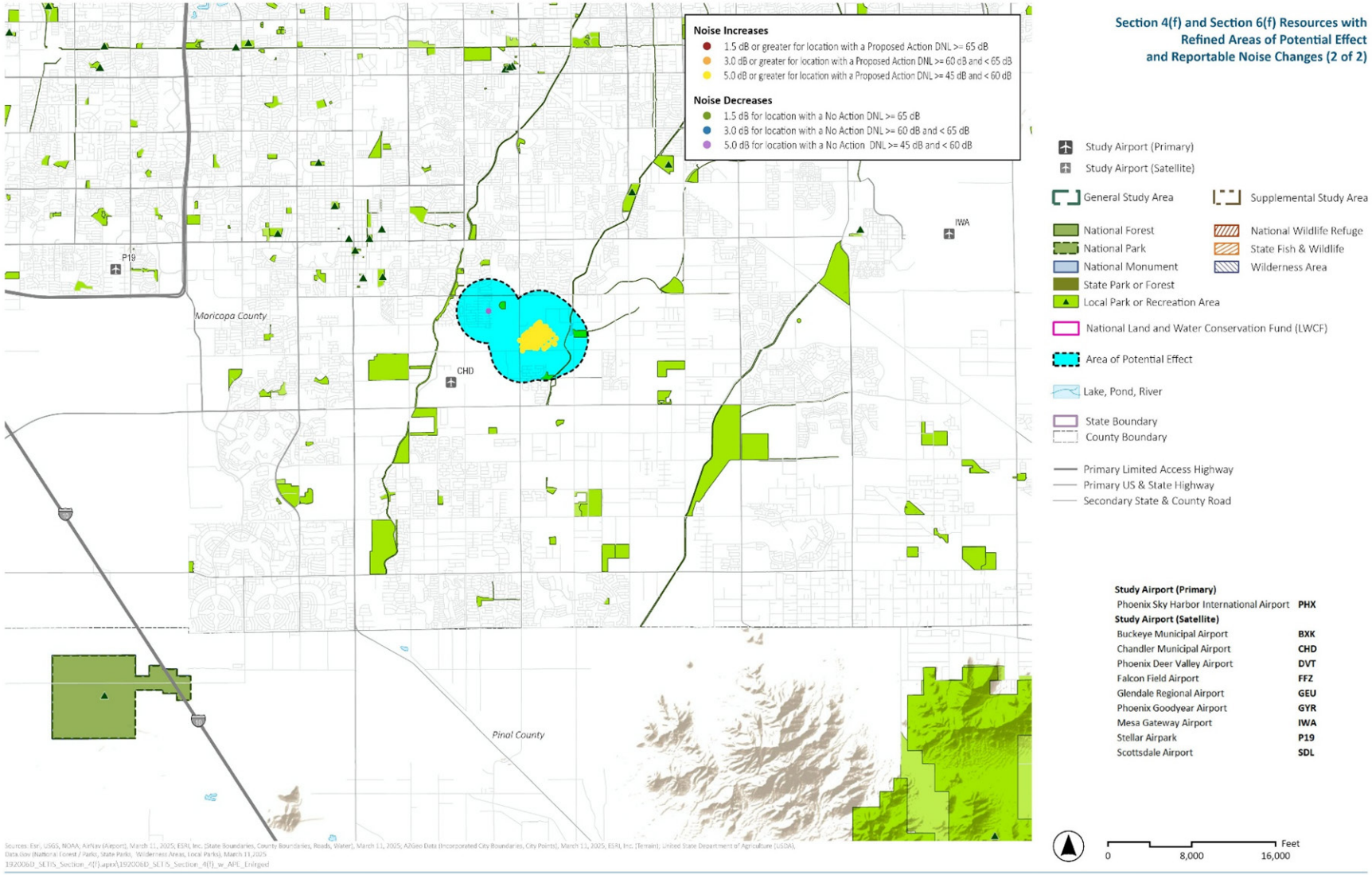


Exhibit 5-9. Section 4(f) and Section 6(f) Resources with Refined APEs and Reportable Noise Changes (2 of 2)



5.4 Biological Resources

The analysis of potential impacts to biological resources focused on the types of plants, animals, and habitats present in the Study Areas, with particular attention to birds and bats. As discussed in **Section 4.1**, because the Proposed Action would not change the number of aircraft operations and would not involve any ground disturbance, there would be no changes to vegetation, water resources, or aquatic habitats. As a result, no impacts to plants, fish, or most wildlife are expected. Aircraft would continue to operate at altitudes that do not affect most species. The only wildlife group with potential for interaction is birds and bats, which are more likely to encounter aircraft in flight. However, no direct impacts to habitats, including designated critical habitats, would occur under the Proposed Action.

5.4.1 Summary of Impacts

The greatest potential for impacts to wildlife species would result from wildlife strikes on avian and bat species at altitudes below 3,000 feet AGL. Under the Proposed Action, changes to flight paths would primarily occur at or above 3,000 feet AGL. The Proposed Action would not increase the frequency of aircraft operations. Further, while the Proposed Action could result in changes to noise exposure levels (both increases and decreases), these changes would occur in the immediate vicinity of the Study Airports and do not coincide with critical habitat areas or other sensitive areas where increases in noise could adversely impact wildlife species. Therefore, the Proposed Action would not result in significant impacts to avian and bat species.

The No Action Alternative would not involve changes to air traffic flows, land acquisition, construction, or other ground-disturbing activities. Therefore, the No Action Alternative would not result in significant impacts to fish, wildlife, plants, or critical habitats.

5.4.2 Methodology

The analysis of potential impacts to biological resources considered the presence and sensitivity of species that may be present within the Study Areas. Specifically, as discussed, in **Section 4.1** and **Section 4.2.4**, because the Proposed Action does not include construction or other ground-disturbing activities, the evaluation of biological resources is limited to avian and bat species that may be present within the Study Areas.

The analysis relied on desktop research using federal and state databases and mapping tools, and consultation with the USFWS and AZGFD to identify federally and state-listed species, migratory birds, critical habitat, and sensitive ecological areas potentially affected by the Proposed Action. The analysis considers both direct impacts related to routine aircraft operations and the potential for disturbance to existing species related to noise.

Significance thresholds for biological resources are based on the potential for the action to:

- Result in the loss of a population or habitat of a federally or state-listed threatened or endangered species,
- Cause a measurable decline in migratory bird populations,

- Lead to the destruction or adverse modification of designated critical habitat, or
- Violate applicable federal or state environmental regulations related to biological resources.

According to the FAA's Wildlife Strike Database, strike reports over the past 35 years are aggregated nationally, as well as for individual airports, and are available from the database to understand existing conditions (FAA 2025e). [33] Strike reports are comparable to known information on the presence of specific species of concern to corroborate the reports. In addition, to use of this database, the FAA has initiated consultation with the USFWS to, in part, identify any additional factors that may be useful in determining potential adverse effects. The FAA has also requested input from the USFWS and AZGFD regarding threatened and endangered species and migratory birds that may be present within the Study Areas **(Appendix M)**.

The analysis presented in this section included a review of wildlife strike reports for the Study Airports and an evaluation of the potential presence of federally and state-listed threatened and endangered species (i.e., special-status species) within the Study Areas. Modifications in flight procedures were compared to the occurrence of special-status species to qualitatively assess the likelihood of whether wildlife strikes might change under the Proposed Action.

5.4.3 Potential Impacts

As discussed previously, since the Proposed Action involves changes to aircraft flight procedures but would not result in ground disturbance, construction or alteration of vegetation, hydrology, or aquatic habitat. Therefore, there would be no impact to plants, fish, or wildlife, other than birds and bats. In addition, while the concentration of aircraft would change in some areas proximal to the Study Airports, overall operations and general flight corridors remain similar, and there would be no change in forecast aircraft operations. The following section therefore focuses only on bird strike risk analysis.

Between January 1990 and December 2025, the Wildlife Strike Database reported 328,684 wildlife strikes nationwide. During this same period, 4,423 wildlife strikes were reported in Arizona, of which 3,093 (approximately 70 percent) were reported in connection with the Study Airports (FAA 2025e).

Birds comprise most wildlife strikes by aircraft, representing approximately 95 percent of all strikes in Arizona since 1990. Strikes of varying species of bats totaled approximately 3 percent of the wildlife strikes in Arizona. When the height of the strike was recorded, only two strikes in Arizona were reported to have occurred at or above 18,000 feet AGL. Both strikes occurred at PHX, with one reported during descent (18,000 feet AGL) and one during departure (21,000 feet AGL) (FAA 2025e).

[33] Since 1990, the FAA has compiled reports of wildlife strikes with aircraft. The information is available to the public through the FAA's Wildlife Strike Database and the *Annual Report: Wildlife Strikes to Civil Aircraft in the United States*. Strike reporting is voluntary. Therefore, the database only represents the information FAA has received from airlines, airports, pilots, Mandatory Occurrence Reports (MOR), incident/accident information, and other sources.

Approximately 62 percent of all recorded wildlife strikes with reported heights in Arizona occurred at or below 500 feet AGL, increasing to approximately 83 percent by 3,000 feet AGL (FAA 2025e). Additional information regarding the reported height of wildlife strikes at the Study Airports is provided in **Table 5-6**.

A complete list of federally and state-listed bird and bat species potentially occurring in the Study Areas is provided in **Section 4.2.2** (**Table 4-2** and **Table 4-3**).[34] Of the bird and bat strikes reported in Arizona since 1990, approximately 0.3 percent were potential federally or state-listed species. Specifically, one strike of a potential willow flycatcher was reported in 2022 by an aircraft during its initial climb out of PHX. Given the location of the strike, the bird was likely a federally and state endangered southwestern willow flycatcher. In addition, 12 peregrine falcon strikes were reported in Arizona between 1998 and 2023. The Wildlife Strike Database does not indicate whether any were American peregrine falcon; however, all were reported to have been struck at heights of below 1,000 feet AGL, primarily at PHX and IWA, with one such strike reported at Tucson International Airport (FAA 2025e).

Table 5-6. FAA Wildlife Strike Records for Arizona by Altitude (1990 – 2025)

Airport	≤ 3,000 ft. AGL	> 3,000 ft. AGL to ≤ 10,000 ft. AGL	> 10,000 ft. AGL	Unspecified Altitude[1]	Total
PHX	687	243	24	975	1929
BXK	1	0	0	1	2
CHD	29	1	0	4	34
DVT	75	0	0	22	97
FFZ	34	0	0	32	66
GEU	23	0	0	24	47
GYR	31	0	0	30	61
IWA	274	16	4	511	805
P19	4	0	0	0	4
SDL	31	1	0	16	48
Total	**1,189**	**261**	**28**	**1615**	**3093**
Annual Average	**34.0**	**7.5**	**0.8**	**46.1**	**88.4**

Notes: ≤ = less than or equal to; > = greater than; ft. = feet; AGL = above ground level

[1] Approximately half of the wildlife strikes reported at the Study Airports were not reported with elevations. Details included in the database were also reviewed to ascertain approximate height of strike, where possible (i.e., "struck upon landing" or mention of a terrestrial species strike); however, this accounted for only a small portion of the unspecified strikes (less than 3 percent). Therefore, for data consistency and tracking purposes, only those strikes with reported elevations are included in the totals for each specified elevation.

Source: FAA Wildlife Strike Database, Data for January 1, 1990, through December 31, 2025, https://wildlife.faa.gov/home (FAA 2025e).

As shown in **Table 5-6**, 261 bird and bat strikes (an average of 7.5/year) were reported at the Study Airports at altitudes above 3,000 feet AGL. These strikes account for approximately 18 percent of all strikes with reported heights at the Study Airports and are substantially fewer than those reported below 3,000 feet AGL (80 percent of the total strikes at the Study Airports with reported elevations). Comparatively, in 2023, 2024, and 2025, wildlife strikes above 3,000 feet AGL accounted for 13 percent, 11 percent, and 7.5 percent of the total wildlife strikes with reported heights, respectively, representing a downward trend (FAA 2025e).

Under the Proposed Action, changes to existing flight paths would primarily occur at or above 3,000 feet AGL. While some changes would be implemented at the Study Airports below 3,000

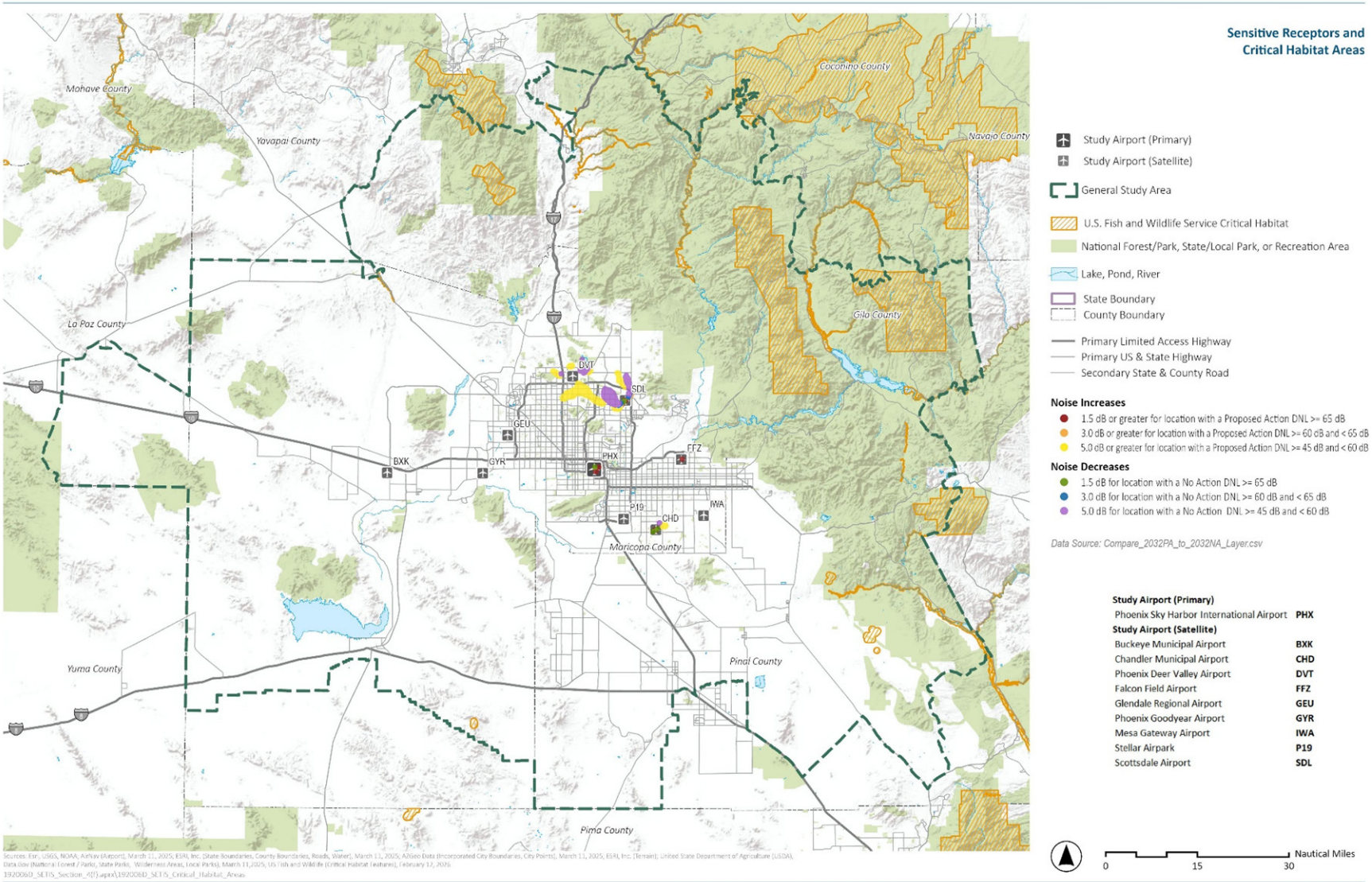
[34] Approximately half of the wildlife strikes reported between January 1990 and December 2025 at the Study Airports were not reported with elevations.

feet AGL, such modifications would occur in similar locations to existing routes. Flight path changes below 3,000 feet AGL could alter the density of aircraft on certain paths and/or modify approach and climb patterns in close proximity to existing locations. As discussed in **Section 4.2.4.2**, flyways are not narrow, specific lines the birds follow but rather broad geographic areas through which the birds migrate. As such, it is not anticipated that the proposed flight path modifications below 3,000 feet AGL would increase the potential for bird strikes. Further, there would be no change in the number of operations under the Proposed Action, compared to the No Action Alternative. Therefore, no significant impacts to avian or bat species would occur as a result of the Proposed Action.

In addition to the potential for direct impacts on bats and birds discussed above, the potential for indirect effects from changes in noise was evaluated. Specifically, noise exposure levels were modeled using FAA's AEDT (**Section 5.1)**. Projected changes in noise exposure were then compared to the location of existing critical habitat and other sensitive receptors in the Study Areas likely to attract wildlife, such as parks and wildlife refuges. Anticipated changes in noise resulting from implementation of the Project are discussed in **Section 5.1**. Anticipated noise exposure changes, including both increases and decreases, would occur in the immediate vicinity of the Study Airports, well within the boundaries of the General Study Area and away from existing critical habitat and other sensitive resources, such as National Parks and wildlife refuges. The nearest critical habitat to locations of expected noise changes is approximately 25 NM to the northeast and southeast. Sensitive receptors near the Study Areas are shown in **Exhibit 5-10** for reference.

The No Action Alternative would not involve changes to air traffic flows, land acquisition, construction, or other ground-disturbing activities. Therefore, there would be no change in strike potential for avian or bat species, resulting in no impacts to avian or bat species compared to current conditions.

Exhibit 5-10. Sensitive Receptors and Critical Habitat Areas



5.5 Natural Resources and Energy Supply

This section discusses whether changes in the movement of aircraft would result in measurable effects on aircraft fuel consumption under the Proposed Action and the No Action Alternative.

5.5.1 Summary of Impacts

The Proposed Action would not change the number of aircraft operations at the Study Airports and would therefore not substantially affect aircraft fuel demand. The Proposed Action would modify aircraft flight procedures within existing airspace and would not involve construction, land use changes, or the development of energy infrastructure. Therefore, the Proposed Action would not affect the availability or management of natural resources such as fossil fuels, mineral resources, or electrical generation capacity. As to aircraft fuel, in comparison to the No Action Alternative, the Proposed Action would result in a slight increase in aircraft fuel consumed in both the implementation year of 2027 (2.72 percent) and future year of 2032 (1.63 percent) compared to the No Action Alternative. These increases would not be expected to be disruptive to or meaningfully affect local aircraft fuel supplies. Further, since the Proposed Action does not involve construction or other ground disturbance, there would also be no impact to other energy supplies or natural resources. Therefore, no significant impacts to natural resources or energy supplies would occur.

The No Action Alternative would not involve changes to air traffic flows, construction, or other ground-disturbing activities. Therefore, the No Action Alternative would not result in the depletion of natural resources or local energy supply and would have no significant impact on natural resources or energy supplies.

5.5.2 Methodology

The FAA has not established a significance threshold for natural resources and energy supply in FAA Order 1050.1F; however, the FAA considers whether the Proposed Action has the potential to cause demand to exceed available or future supplies of these resources (FAA 2015).

As discussed in **Section 4.2.5**, aircraft fuel consumption for the Study Airports was calculated using AEDT 3g (FAA 2024c). AEDT estimates fuel consumption associated with air traffic flows under existing conditions using the same inputs employed for aircraft noise modeling. Additional information regarding AEDT model inputs is provided in **Appendix K**. With that information, it is possible to determine the difference in fuel consumption between alternatives.

5.5.3 Potential Impacts

Aircraft fuel consumed may be affected by changes in air traffic flows. The Proposed Action would involve changes to air traffic flows during the departure, descent, and approach phases of flight. These changes affect both the route an aircraft may follow as well as its climb-out and descent profiles. Aircraft fuel consumption is considered a proxy for determining whether the Proposed Action would have a measurable effect on local fuel supplies when compared with the No Action Alternative.

Table 5-7 presents the results of the fuel consumption analysis for the Proposed Action and No Action Alternative. In comparison to the No Action Alternative, the Proposed Action would result in a relatively small increase in aircraft fuel consumed in 2024. Specifically, increases of 2.72 percent and 1.63 percent are projected for the initial year of implementation (2027) and future year of 2032, respectively.

Table 5-7. Energy Consumption Comparison

Year	Alternative	Fuel Consumption[3]
2027	No Action Alternative	664,581 gallons (2,020 MT)[4]
2027	Proposed Action	682,678 gallons (2,074 MT)
2027	**Change[1]**	**18,097 gallons (55) MT**
2027	**Percentage Change[2]**	**2.72%**
2032	No Action Alternative	718,062 gallons (2,182 MT)
2032	Proposed Action	729,782 gallons (2,218 MT)
2032	**Change[1]**	**11,720 gallons (36 MT)**
2032	**Percentage Change[2]**	**1.63%**

Notes: MT = metric ton
[1] Change = Proposed Action – No Action Alternative
[2] Percentage Change (%) = 100 x (Proposed Action - No Action Alternative) / No Action Alternative
[3] Fuel Consumption is reported based on Average Annual Day
[4] 1 gallon Jet A-1 fuel is equivalent to approximately 0.003 MT
Source: AEDT 3g modeling results, January 2026 (**Appendix K**).

The Proposed Action would result in a small increase in jet fuel consumption relative to the No Action Alternative. However, this increase represents a very small fraction of the total fuel supply available to the Study Airports and would not measurably affect fuel availability or distribution. Therefore, the Proposed Action would not exceed FAA significance thresholds for natural resources and energy supply.

5.6 Aviation Emissions and Air Quality

This section discusses the analysis of aviation emissions and air quality impacts under the Proposed Action and the No Action Alternative.

5.6.1 Summary of Impacts

The Proposed Action would result in a small increase in emissions when compared to the No Action Alternative. However, most changes to flight paths under the Proposed Action would occur at or above 3,000 feet AGL, where aircraft emissions are considered unlikely to affect ground-level pollutant concentrations. Under FAA policy (FAA 2024d), air traffic procedure changes occurring above the mixing height are presumed to conform to the applicable state implementation plans (SIPs). Furthermore, changes to flight paths below the mixing height are also presumed to conform when modifications to procedures are designed to enhance operational efficiency. The small increase in emissions is expected to have little if any effect on emissions or ground concentrations because most changes to flight paths would occur at or above approximately 3,000 feet AGL, where aircraft emissions are dispersed before reaching ground level. Therefore, no significant impacts to air quality would be anticipated. The No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no impacts to air quality would be anticipated.

5.6.2 Regulatory Framework and Analysis Approach

Aviation emissions and air quality impacts are evaluated with respect to the NAAQS. As provided in FAA Order 1050.1F, an action would cause a significant air quality impact if pollutant concentrations exceed one or more of the NAAQS, as established by the U.S. EPA under the CAA, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations (FAA 2015).

Section 176(c) of the CAA requires federal agencies to ensure that federal actions conform to the applicable SIP in areas designated by the U.S. EPA as nonattainment or maintenance for a NAAQS. The U.S. EPA's General Conformity Regulations implement this requirement and establish emissions thresholds that determine when a conformity determination is required (U.S. EPA 1993).

U.S. EPA regulations also allow federal agencies to identify certain categories of actions that are presumed to conform to the SIP because those actions would not be expected to exceed applicable de minimis emissions thresholds (U.S. EPA 2010). The FAA has identified several air traffic control activities that qualify as presumed-to-conform actions, including the adoption or modification of approach, departure, and en route procedures for aircraft operations (FAA 2024d). In addition, changes to air traffic procedures occurring above approximately 1,500 feet AGL and below the mixing height generally have little, if any, effect on emissions or ground-level pollutant concentrations.[35]

Aircraft emissions released at higher altitudes disperse before affecting ground-level pollutant concentrations. FAA guidance explains that aircraft emissions released above the atmospheric mixing height do not have a measurable effect on pollutant concentrations at ground level (i.e., no increase in emissions, or an increase that is clearly de minimis) (FAA 2024d).

U.S. EPA regulations, meanwhile, identify certain air traffic control activities—including the adoption or modification of approach, departure, and en route procedures—as actions not triggering conformity determinations when aircraft operations occur above the mixing height specified in the applicable SIP, or above 3,000 feet AGL in areas where a mixing height is not specified. No mixing height is specified in the applicable SIP for the Study Area; therefore, a default mixing height of 3,000 feet AGL is applied consistent with the U.S. EPA guidance (U.S. EPA 1992). FAA environmental guidance applies this framework when evaluating airspace procedure changes (FAA 2024d).

5.6.3 Potential Impacts

Under the Proposed Action, there would be a small increase in fuel consumption (2.72 percent) in 2027 and a small increase in fuel consumption (1.63 percent) in 2032 when compared to the No Action Alternative. Because fuel burn is directly related to aircraft emissions, these changes correspond to small increases in emissions.

[35] Federal Presumed to Conform Actions Under General Conformity, 72 FR 41565 (July 30, 2007).

Most operational changes associated with the Proposed Action that could result in an increase in fuel consumption would occur at or above 3,000 feet. To the extent that procedural changes occur at or above the applicable mixing height (or approximately 3,000 feet AGL), they qualify as exempt actions under 40 CFR 93.153(c)(2), and General Conformity requirements do not apply (FAA 2024d). At these altitudes, aircraft emissions disperse before affecting ground-level pollutant concentrations.

For changes below the mixing height, such actions qualify as presumed to conform actions because they are designed to enhance operational efficiency and would not result in meaningful increases in emissions affecting ground level concentrations (FAA 2024d). Because emissions associated with the Proposed Action would disperse prior to affecting ground level pollutant concentrations and would not be expected to cause or contribute to a violation of any NAAQS, increase the frequency or severity of an existing violation, or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area, no significant air quality impacts would occur. Furthermore, the No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no significant impacts to air quality would be anticipated.

5.6.4 CO_2 Summary of Impacts

CO_2 emissions as they relate to the Proposed Action and the No Action Alternative are discussed below. CO_2 emissions are provided for disclosure purposes only.

Although fuel consumption would increase under the Proposed Action as compared to the No Action Alternative, no significant impacts to the climate would be anticipated increasing CO_2 emissions but in a small amount as noted in **Table 5-8**. The No Action Alternative would not result in a change in the number of aircraft operations or air traffic routes; therefore, no impacts to climate would be anticipated.

5.6.5 Methodology

In accordance with FAA guidance, estimated CO_2 emissions were calculated from the amount of fuel consumed under the No Action Alternative and the Proposed Action in 2027 and 2032 (**Section 5.5.2**). The resulting CO_2 emissions were then reported as CO_2e.

5.6.6 Potential Impacts

Table 5-8 shows project-related CO_2e emissions. In 2027, the Proposed Action would produce approximately 6,555 MT of CO_2e, and the No Action Alternative would produce approximately 6,382 MT of CO_2e. This represents a small increase of approximately 173 MT of CO_2e or 2.7 percent under the Proposed Action when compared to the No Action Alternative. This would comprise less than 0.00000344 percent of U.S.-based CO_2e gross emissions as reported for 2022 (U.S. EPA 2024).

Table 5-8. CO2e Emissions – 2027 and 2032

Year	Alternative / Change	CO_2e Emissions (MT)[3]	Fuel Change (MT)[3]
2027	No Action Alternative	6,382	2,023
2027	Proposed Action	6,555	2,078
2027	**Change (MT)[1]**	**173**	**55**
2027	**Change (%)[2]**	**2.7%**	**2.7%**
2032	No Action Alternative	6,895	2,185
2032	Proposed Action	7,008	2,221
2032	**Change (MT)[1]**	**113**	**36**
2032	**Change (%)[2]**	**1.6%**	**1.6%**

Notes: CO_2e = Carbon dioxide equivalent where the CO_2 Global Warming Potential conversion is 1; MT = metric ton(s)
[1] Change (MT) = Proposed Action – No Action Alternative
[2] Change (%) = 100 x (Proposed Action - No Action Alternative) / No Action Alternative
[3] CO2e Emissions and Fuel Consumption is reported based on Average Annual Day
Source: AEDT 3g modeling results, January 2026 (**Appendix K**).

Similarly, in 2032, the No Action Alternative would produce approximately 6,895 MT of CO_2e, and the Proposed Action would produce approximately 7,008 MT of CO_2e. This represents a small increase of approximately 113 MT of CO_2e or 1.63 percent under the Proposed Action when compared to the No Action Alternative. This would comprise less than 0.00000357 percent of U.S.-based CO_2e gross emissions as reported for 2022 (U.S. EPA 2024).

5.7 Visual Effects

This section evaluates whether changes in aircraft flight paths could result in visual impacts within the Study Area. As described in **Section 4.1**, the Proposed Action would not involve changes to aviation lighting. Further, no new construction would occur under the Proposed Action; therefore, there would be no potential for ground-level visual impacts and no new impacts related to lighting. Because the Proposed Action does not involve new construction or changes to aviation lighting, there would be no potential for ground-level visual impacts. As such, the subcategory of light emissions is not discussed further in the analysis of visual effects.

5.7.1 Summary of Impacts

Implementation of the Proposed Action would not increase the number of aircraft operations at the Study Airports compared with the No Action Alternative. Changes in aircraft flight paths under the Proposed Action would occur at altitudes and distances from viewers such that aircraft would not create visually intrusive conditions. As such, the Proposed Action would have no significant impact on visual resources.

Under the No Action Alternative, there would be no changes in air traffic routes and no changes in aircraft overflight. Therefore, the No Action Alternative would not result in significant visual impacts.

5.7.2 Methodology

Visual effects refer to the potential for the Proposed Action to affect viewsheds within the Study Areas such that they contrast with the existing environment and may be considered objectionable by viewers. The FAA has no specific thresholds for visual effects, but FAA Order 1050.1F (FAA 2015) recommends considering how visual impacts could:

- Affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources;
- Contrast with the visual resources and/or visual character in the study area; and
- Block or obstruct the views of visual resources, including whether these resources would still be viewable, from other locations.

To evaluate the potential for impacts resulting from visual intrusions associated with the Proposed Action or No Action Alternative, the general altitudes of aircraft route changes were considered in conjunction with the visual environment in which those changes would occur.

5.7.3 Potential Impacts

As discussed in **Section 4.2.7,** potential visual impacts would only arise from changes in the visibility of aircraft within the General Study Area as perceived from the ground. Visual resources located solely in the Supplemental Study Area were not considered because they are far enough away from the Study Airports such that the sight of aircraft would be mostly unchanged compared to current conditions.[36] FAA Order 1050.1F (FAA 2020) notes that the sight of aircraft, aircraft contrails, or aircraft lighting at night—particularly at distances where such features are not visually intrusive—should not be assumed to constitute an adverse visual impact. Changes to flight paths under the Proposed Action would primarily occur at or above 3,000 feet AGL, where aircraft are typically viewed at considerable distance from observers. At these altitudes, aircraft would not be expected to create visually intrusive conditions in the immediate vicinity of the Study Airports, the lateral and vertical movement of aircraft is fixed by the length, location, and direction of a particular runway or runways.

IFR aircraft below 3,000 feet AGL are generally either on approach to a runway, or within the designated landing pattern for a specific runway. Similarly, aircraft departing a runway do so by climbing on a departure runway heading and typically alter course after exiting the immediate tower-controlled airfield area. The Proposed Action does not involve closed-loop training operations involving repeated takeoffs and landings because such operations would not use the flight procedures evaluated in this analysis. Consequently, the Proposed Action would not result in significant visual impacts.

Under the No Action Alternative, there would be no changes in air traffic routes or aircraft overflight patterns. Therefore, the No Action Alternative would not result in significant visual impacts.

[36] Aircraft traveling to/from the Study Airports would generally be at an altitude between 7,000 feet AGL and 18,000 feet AGL in the Supplemental Study Area.