

**Draft Environmental Review
Proposed Categorical Exclusion**

For

**The Proposed West Flow Area Navigation Standard Instrument Departure Procedures
at Phoenix Sky Harbor International Airport as per the Memorandum Regarding
Implementation of Court Order per *City of Phoenix, Arizona v. Huerta*, 869 F.3d 963 (D.C.
Circuit 2017)**

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1.0 INTRODUCTION

The Federal Aviation Administration (FAA) proposes to amend nine west flow Area Navigation (RNAV) Standard Instrument Departure (SID) procedures at Phoenix Sky Harbor International Airport (Phoenix Sky Harbor), Phoenix, Arizona, consistent with the resolution of the parties as stipulated in the Memorandum Regarding Implementation of the Court Order (“Memorandum”), jointly negotiated following the court’s August 29, 2017, Order in *City of Phoenix, Arizona v. Huerta*, 869 F.3d 963 (D.C. Circuit 2017).

This draft Environmental Review serves to document the FAA’s compliance with Section 5.b and Section 7 of the Memorandum, and inform the FAA’s compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code (U.S.C.) Section 4321 et seq.); implementing regulations issued by the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations (CFR), parts 1500-1508); FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures* (FAA Order 1050.1F), and FAA Order 7400.2L, *Procedures for Handling Airspace Matters*. FAA Order 7400.2L provides guidance and establishes policy and procedures to assist air traffic personnel in applying the requirements of FAA Order 1050.1F. In addition, this draft Environmental Review and the associated public involvement has been guided by the principles in the FAA’s February 2016 Community Involvement Manual.

Once the FAA determines that NEPA applies to a proposed action, it needs to decide on the appropriate level of review. The three levels of NEPA review are Categorical Exclusion (CATEX), Environmental Assessment (EA), and Environmental Impact Statement (EIS). A CATEX refers to a category of actions that the FAA has determined, based on previous experience, do not individually or cumulatively have a significant effect on the human environment except in extraordinary circumstances. The presence of extraordinary circumstances would preclude the use of a CATEX and would merit additional review in an EA or EIS. A CATEX is not an exemption or a waiver from NEPA review; it is a level of NEPA review and compliance. FAA Order 1050.1F, Section 5-6.5, *Categorical Exclusions for Procedural Actions* includes the list of CATEXs involving establishment, modification, or application of airspace and air traffic procedures.

The FAA has preliminarily determined that the Proposed Action would fall under one of the listed categorically excluded actions in FAA Order 1050.1F, Section 5-6.5.i: “. . . modifications to currently approved procedures conducted below 3,000 feet above ground level (AGL) that do not significantly increase noise over noise sensitive areas.”

Specifically, the proposed action would only alter the beginning of the departure procedures, requiring planes to return to the RNAV procedures after the first legs of their departure. Based on noise screening analysis (described in more detail below), the FAA has preliminarily determined that the proposed action modifying currently approved procedures conducted below 3,000 feet AGL would not significantly increase noise over noise sensitive areas, and thus would

be covered by this CATEX. However, before finalizing a decision to categorically exclude the proposed action, the FAA must consider the potential for extraordinary circumstances, pursuant to FAA Order 1050.1F, Paragraph 5-2.

Extraordinary circumstances are factors or circumstances in which a normally categorically excluded action may have a significant environmental impact that then requires further analysis in an EA or an EIS. For FAA proposed actions, extraordinary circumstances exist when the proposed action involves any of the circumstances described in Order 1050.1F, Paragraph 5-2(b) and may have a significant impact. For the Proposed Action, the FAA is considering the following factors, which, if they result in a significant impact, would preclude use of a CATEX to satisfy NEPA requirements:

- An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended, 54 U.S.C. §300101 et seq.
- An impact on properties protected under Section 4(f) of the Department of Transportation Act.
- An impact on natural, ecological, or scenic resources of Federal, state, tribal, or local significance.
- An impact on noise levels of noise sensitive areas.¹
- An impact on air quality.
- Impacts on the quality of the human environment that are likely to be highly controversial on environmental grounds.²
- Likelihood to directly, indirectly, or cumulatively create a significant impact on the human environment.

This document describes how the CATEX applies to the Proposed Action, and presents preliminary analysis of extraordinary circumstances that could require more detailed NEPA review.³

¹ An area is noise sensitive if aircraft noise may interfere with the normal activities associated with the use of the land. 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.

² The term “highly controversial on environmental grounds” means there is a substantial dispute involving reasonable disagreement over the degree, extent, or nature of a proposed action’s environmental impacts or over the action’s risks of causing environmental harm. FAA Order 1050.1F. Section 5-2.b.(10).

³ There is not a prescribed format for an environmental review of a CATEX. However, the documentation should cite the CATEX(s) used, describe how the proposed action fits within the category of actions described in the CATEX, and explain that there are no extraordinary circumstances that would preclude the proposed action from being categorically excluded.” FAA Order 1050.1F. Section 5-3.d.

2.0 BACKGROUND

On September 18, 2014, the FAA published a number of Area Navigation (RNAV) procedures for use at Phoenix Sky Harbor. These procedures took advantage of modern technology to improve the safety and efficiency of aircraft operations in the airspace around Phoenix Sky Harbor. On June 1, 2015, the City of Phoenix and a number of neighborhood groups (together, the “Petitioners”) challenged the FAA’s approval of certain RNAV departure procedures in the U.S. Court of Appeals for the D.C. Circuit (“Court”). On August 29, 2017, the Court ruled in favor of the Petitioners.

3.0 PURPOSE AND NEED

In response to the Court’s decision, the FAA and the Petitioners worked together on the best way to implement the Court’s order (See Appendix A: Memorandum). The FAA, in consultation with the City of Phoenix, developed the Proposed Action to comply with the Court’s Order and to meet the requirements set forth in the Memorandum. The parties agreed to a two-step process for Phoenix Sky Harbor that ensures aircraft operations remain safe and efficient. The first step (Step One) of the process will provide interim noise relief to the Petitioners by approximating the western departure routes that were in place before the September 2014 RNAV procedures. Step Two of the agreement, which is not part of the current action, will involve the development of long-term replacement procedures for western departures at Phoenix Sky Harbor and will consider other proposed changes to the Phoenix airspace.

4.0 ALTERNATIVES

The FAA considered two alternatives: the Proposed Action and the No Action alternative. The alternatives analysis was conducted to comply with Section 5 of the Memorandum and is consistent with CEQ regulations and FAA guidance provided in FAA Order 1050.1F. This section discussed the following topics:

- The Proposed Action Development Process
- The No Action Alternative
- The Proposed Action

Proposed Action Development Process

The main objective of Step One is to provide Petitioners short-term relief from aircraft noise as expeditiously as possible. To do so, FAA agreed to develop a Letter of Agreement between the Phoenix Terminal Radar Approach Control and the Phoenix Airport Traffic Control Tower that replaces the initial departure instructions for the Western RNAV Routes with alternate departure

instructions for turbojet aircraft that approximate to the extent practicable, actual departure paths flown prior to September 18, 2014, while maintaining safe and efficient aircraft operations. Step Two of the process will be a proposed independent action to be analyzed at a future date consistent with Section 6 of the Memorandum.

FAA used this framework and objective in the procedure development process. Because the Proposed Action is a package of nine individual, interrelated procedures combined into one alternative, the FAA considered and evaluated variations of these procedures in combination with one another to determine whether the alternative would fulfill the obligations under the Memorandum. For example, FAA originally considered manual radar vectors⁴ for the western departures, where each departing aircraft would be assigned an initial directional heading and altitude, then subsequent course corrections en route to the aircraft's destination.

However, the requirements associated with manual vectoring of aircraft would have increased the workload for the pilots and air traffic controllers and, therefore, result in an inconsistency and unpredictability of when and where an aircraft would commence its turn to the northwest or southwest. The FAA developed the Proposed Action—the Step 1A and Step 1B RNAV SID procedures in lieu of manual radar vectors to maintain aircraft separation in the Phoenix airspace. The details of the Proposed Action are discussed below.

The Proposed Action flight paths were pushed further west of 43rd Avenue to accommodate the broad range of aircraft types and their Distance of Turn Anticipation (DTA).⁵ With such an aggressive turn to the north of approximately 90 degrees based on procedure design criteria, the procedure design ensures that no aircraft will begin its turn prior to 43rd Avenue.

In developing the Proposed Action, the FAA was responsible for following regulatory and technical guidance as well as meeting criteria and standards in three general categories:

1. RNAV Design Criteria and Air Traffic Control Regulatory Requirements - Flight procedure design is subject to requirements found in several FAA Orders and guidance documents, including FAA Order 8260.3C, *United States Standard for Terminal Instrument Procedures*, FAA Order 8260.58B, *United States Standard for Performance Based Navigation Instrument Procedure Design*, FAA Order 8260.43B, *Flight Procedures Management Program*, FAA Order JO 7110.65X, *Air Traffic Control*, FAA Order JO 7100.41A, *Performance Based*

⁴ Manual Vectors: Directional headings issued to aircraft to provide navigational guidance and to maintain separation between aircraft and/or obstacles.

⁵ Distance of Turn Anticipation (DTA): the distance from (prior to) a fly-by fix at which an aircraft is expected to start a turn to intercept the course/track of the next segment. An aircraft's Flight Management System computer flying an RNAV route will anticipate how soon the aircraft must begin its turn prior to the next waypoint in order to roll out on the next leg without bypassing the waypoint. The tighter the turn, the greater the distance the FMS will begin the turn prior to the next waypoint. Wind, aircraft weight, and air speed are some of the factors the FMS uses to calculate the DTA turn.

Navigation Implementation Process and *The Guidelines and Updates for Implementing Terminal RNAV Procedures*. In addition, FAA Order JO 7110.65X *Air Traffic Control* includes requirements governing air traffic control procedures, air traffic management, and appropriate technical terminology.

2. Operational Criteria – To the maximum extent possible, Performance Based Navigation (PBN), procedures are developed operationally to ensure aircraft departure and arrival lateral and vertical paths are procedurally separated. Air traffic controllers are responsible for aircraft separation, however they use PBN procedures to assist with their operational responsibilities at Phoenix Sky Harbor and surrounding airports. Operational criteria were consistent with the Purpose and Need for the project. FAA believes that vacating the challenged departure procedures without a valid replacement procedure may substantially delay operations at Phoenix Sky Harbor and could increase safety risks by complicating airport operations.

3. FAA evaluated air traffic procedures using the Air Traffic Organization’s (ATO) Safety Management System (SMS). The SMS is the system for assessing and managing the safety of air traffic control and navigation services in the National Airspace System. If a procedure introduced a new hazard or increased the severity and/or likelihood of an existing hazard, the design was adjusted or mitigated to reduce the hazard to acceptable levels. In compliance with SMS requirements, the procedures were evaluated by a Safety Risk Management Panel⁶ following a five step process: 1) describe the system; 2) identify the hazards in the system; 3) analyze the risks; 4) assess the risk; and, 5) treat the risk (if any).

Finally, FAA undertook validation exercises that further refined the procedures to ensure they were viable. Specifically, FAA took into account the limitations imposed by mountainous terrain, Class Bravo⁷ Controlled Airspace, and Special Use Airspace⁸. Controlled Airspace is a generic term that covers the different classifications of airspace and defined dimensions within which air traffic control service is provided to flights in accordance with the airspace classification. Class Bravo Airspace is airspace generally from the surface to 10,000 feet mean sea level (MSL) surrounding the nation's busiest airports in terms of instrument flight rules operations or passenger enplanements. An air traffic control clearance is required for all aircraft to operate in Class Bravo Airspace, and all aircraft so cleared receive separation services within the airspace.

⁶ Safety Risk Management Panel Members or subject matter experts are selected based on their technical expertise or operational responsibilities for the facility or system under consideration and their authority to make decisions for their respective organizations. (FAA Air Traffic Organization Safety Management System Manual, July 2017.)

⁷ Classes of Airspace: https://www.faasafety.gov/gslac/ALC/course_content.aspx?cID=42&sID=505&preview=true

⁸ Special use airspace is used to designate airspace in which certain activities must be confined, or where limitations may be imposed on aircraft operations that are not part of those activities. See https://www.faa.gov/uas/where_to_fly/airspace_restrictions/.

These three factors resulted in restrictions to the design options for the Phoenix Memorandum project.

Alternatives Analysis

For purposes of this draft environmental review the FAA compared the No Action alternative, based on the 2017 flight tracks, with the Proposed Action, consistent with CEQ regulations and FAA Order 1050.1F. The No Action Alternative comprises the current west configuration RNAV SID, by which aircraft follow the published procedures on a flight path with initial turns to the northwest and to the southwest at approximately 3 nautical miles from the west end of the runways. Although the consideration of other alternatives is not required when an action fits within a CATEX, pursuant to Section 5 of the Memorandum the FAA conducted a separate noise analysis comparing the Proposed Action to the Pre-RNAV Western Route tracks in place prior to September 2014. The current west configuration RNAV SID procedures at Phoenix Sky Harbor are as follows:

- The MAYSA RNAV SID heads northwest, and serves aircraft en route to Las Vegas, Nevada.
- The SNOBL RNAV SID heads north, until it intersects the CARTL fix, at which point it splits into three transitions. It serves aircraft en route to Salt Lake City, Utah. One transition heads towards the Grand Canyon National Park, another to the YOOPR fix and the third transition heads towards the JARPA fix.
- The YOTES RNAV SID heads north until it intersects the YOTES fix, at which point it splits into three transitions. It serves aircraft en route to Denver, Colorado. One transition heads towards the Grand Canyon National Park, another towards the YOOPR fix, and the third transition heads towards the JARPA fix.
- The LALUZ RNAV SID heads to the northeast until it intersects the FORPE fix then intersects the ST JOHNS VORTAC (SJN), at which point it splits into two transitions. It serves aircraft en route to the east coast. One transition heads towards Albuquerque, New Mexico, and the other transition towards the MAXXO fix.
- The FTHLS RNAV SID heads east to the BROAK fix then intersects the JSSUA fix, at which point it splits into two transitions. It serves aircraft en route to Florida. One of these transitions heads towards Albuquerque, New Mexico, and the other towards the MAXXO fix.
- The KATMN RNAV SID heads southeast towards the BOXXR fix and services aircraft en route to El Paso, Texas.

- The BNYRD RNAV SID heads south towards Stanfield, Arizona and serves aircraft en route to Tucson, Arizona and Mexico.
- The JUDTH RNAV SID heads southwest towards the MOHAK fix and serves aircraft en route to Yuma, Arizona and San Diego, California.
- The IZZZO RNAV SID serves aircraft heading west.

Proposed Action

The Proposed Action would revise the western flow of aircraft flying the RNAV SID procedures from runways 25 Left (L), 25 Right (R) and 26, at Phoenix Sky Harbor. The RNAV SIDs being revised are the MAYSA, LALUZ, SNOBL, YOTES, BNYRD, FTHLS, JUDTH, KATMN, and IZZZO as per the Memorandum.

The Proposed Action includes two phases for implementation of the proposed procedures: Step 1A, and Step 1B. The changes in Steps 1A and 1B design criteria allows aircraft to climb to an altitude of 500 feet AGL, or 1,635 feet MSL, to an “engagement point” when the aircraft navigation flight management computer begins providing the pilot with route, altitude and speed guidance.⁹ This “engagement point” does not occur at a specific location, but determined by when the aircraft leaves the runway surface and the aircraft’s rate of climb through 1,635 feet MSL.

Aircraft on the current northwest RNAV SIDs (MAYSA, LALUZ, SNOBL, and YOTES), climb following the extended runway centerline then join the RNAV SID to connect to the en route airway structure for flights to the north, northwest and the northeast. Aircraft on the southwest RNAV SIDs (BNYRD, FTHLS, JUDTH, and KATMN), follow a southwest course in order connect to the en route airway structure for flights to south, southwest and southeast. Aircraft on the west RNAV SID (IZZZO) follow a southwest course to the en route airway structure for flights to the west.

Step 1A:

Step 1A is designed to provide petitioners short-term relief from aircraft noise in compliance with the Memorandum by approximating the western departure routes that were in place before the September 2014 RNAV procedures. Additionally, the Step 1A interim RNAV SIDs will be re-named in accordance with FAA criteria. Step 1A interim RNAV SIDs are:

⁹The “engagement point” refers to lateral navigation where aircraft navigate over a ground track with guidance from an electronic device that gives the pilot (or autopilot) error indications in the lateral direction only and not in the vertical direction.

- The WETAL RNAV SID serves aircraft departing west and turning south. Aircraft will climb through an altitude of 500 feet AGL (1,635 feet MSL) and then make a slight left turn to the southwest towards the JUTAK fix. As the aircraft approach the JUTAK fix, the aircraft will begin to turn south to the WETAL fix. This RNAV SID closely follows the Pre-RNAV Western Route flight tracks and ends at the WETAL fix. As the aircraft approach or reach the WETAL fix, air traffic control will then vector aircraft to join a departure route that closely follows the current published RNAV procedures (FTHLS, KATMN, BNYRD, and JUDTH RNAV SIDs).
- The ZIDOG RNAV SID serves aircraft departing west and turning north. Aircraft departing runway 25L will climb through an altitude of 500 feet AGL (1,635 feet MSL) direct to the ZOLUP fix, then direct to the YOVKU fix. Aircraft departing runway 25R will climb through an altitude of 500 feet AGL (1,635 feet MSL) direct to the JINOL fix, then to the OSGUE fix. Aircraft departing runway 26 will climb through an altitude of 500 feet AGL (1,635 feet MSL) direct to the WIVLA fix, then to the HIRVU fix. All aircraft will then perform a right turn north direct to the ZIDOG fix. The RNAV SID ends at the ZIDOG fix. Air traffic control will then vector aircraft to join a departure route that closely follows the current published RNAV procedures (MAYSA, LALUZ, SNOBL and YOTES RNAV SIDs).
- The KEENS RNAV SID serves aircraft departing west and continuing on a westward flight path. Aircraft will climb through an altitude of 500 feet AGL (1,635 feet MSL) with a left turn to the WULKO fix. Aircraft will then proceed west to the KEENS fix. The routing following the KEENS fix closely follows the current published westbound IZZZO RNAV SID.

Step 1B:

The Step 1B nine RNAV SIDs replace the three Step 1A interim RNAV SIDs, and the nine current RNAV SIDs. The Step 1B RNAV SIDs incorporate the routes from Step 1A, however have additional routing that no longer requires air traffic control vectoring to join an RNAV route. These nine new procedures ensure a seamless predictable flight path from Phoenix Sky Harbor to the en route air traffic structure. The new RNAV SIDs will be renamed in accordance with FAA criteria (Refer to Appendix B for Figures B-1 through B-9).

The Step 1B RNAV SIDs are:

- The ZEPER RNAV SID will replace the current MAYSA RNAV SID. The ZEPER RNAV SID will depart to the northwest and service aircraft en route to Las Vegas, Nevada. It will retain the Step 1A interim ZIDOG RNAV SID runway transition, and then joins the common routes of the existing MAYSA RNAV SID.

- The QUAKY RNAV SID will replace the current SNOBL RNAV SID. The QUAKY RNAV SID will depart to the north and service aircraft en route to Salt Lake City, Utah. It will retain the Step 1A interim ZIDOG RNAV SID runway transition, and then joins the common routes of the existing SNOBL RNAV SID.
- The MRBIL RNAV SID will replace the current YOTES RNAV SID. It will serve aircraft en route to Denver, Colorado. The MRBIL RNAV SID will retain the Step 1A interim ZIDOG RNAV SID runway transition then head north until it intersects the YOTES fix, at which point it splits into three transitions to join the common routes of the existing YOTES RNAV SID. One transition heads towards the Grand Canyon National Park, another towards the YOOPR fix, and the third transition heads towards the JARPA fix.
- The FORPE RNAV SID will replace the current LALUZ RNAV SID. The FORPE RNAV SID will depart to the northeast and service aircraft en route to the east coast. It will retain the Step 1A interim ZIDOG RNAV SID runway transition, until the FORPE fix, at which point it splits into two transitions to join the common routes of the existing LALUZ RNAV SID. One transition heads towards Albuquerque, New Mexico, and the other transition towards the MAXXO fix
- The BROAK RNAV SID replaces the current FTHLS RNAV SID. The BROAK RNAV SID departs to the east and services aircraft en route to Florida. It will retain the Step 1A ZIDOG RNAV SID runway transition, until the JSSUA fix, at which point it splits into two transitions to join the common routes of the existing FTHLS RNAV SID. One of these transitions heads towards Albuquerque, New Mexico, and the other towards the MAXXO fix. Aircraft departing from satellite airports in the area around Phoenix Sky Harbor are radar vectored by air traffic control to the BROAK RNAV SID.
- The ECLPS RNAV SID replaces the current KATMN RNAV SID. The ECLPS RNAV SID departs to the southwest and services aircraft en route to El Paso, Texas. It will retain Step 1A WETAL RNAV SID runway transition, and then from the ECLPS fix joins the common routes of the existing KATMN RNAV SID.
- The STRRM RNAV SID replaces the current BNYRD RNAV SID. The STRRM RNAV SID departs to the south and services aircraft en route to Tucson, Arizona and Mexico. It will retain Step 1A WETAL RNAV SID runway transition, and then from the STRRM fix joins the common routes of the existing BNYRD RNAV SID.
- The FYRBD RNAV SID replaces the current JUDTH RNAV SID. The FYRBD RNAV SID departs to the southwest and services aircraft en route to Yuma, Arizona and San Diego, California. It will retain Step 1A WETAL RNAV SID runway transition, and then from the FYRBD fix joins the common routes of the existing JUDTH RNAV SID.

- The KEENS RNAV SID will be adjusted to include departures from runways 7L, 7R and 8. The name of this RNAV SID will be retained.

5.0 PRELIMINARY ENVIRONMENTAL IMPACT ANALYSIS

As explained above, the use of a CATEX to satisfy NEPA is precluded if the proposed action involves any of the circumstances described in Order 1050.1F, Paragraph 5-2(b) and may have a significant impact. The determination of whether a proposed action may have a significant environmental impact under NEPA is made by considering the relevant environmental impact categories and comparing impacts to the FAA's thresholds of significance, where applicable, as well as any other relevant federal laws and statutes, Executive Orders, and regulations as outlined in with FAA Order 1050.1F.

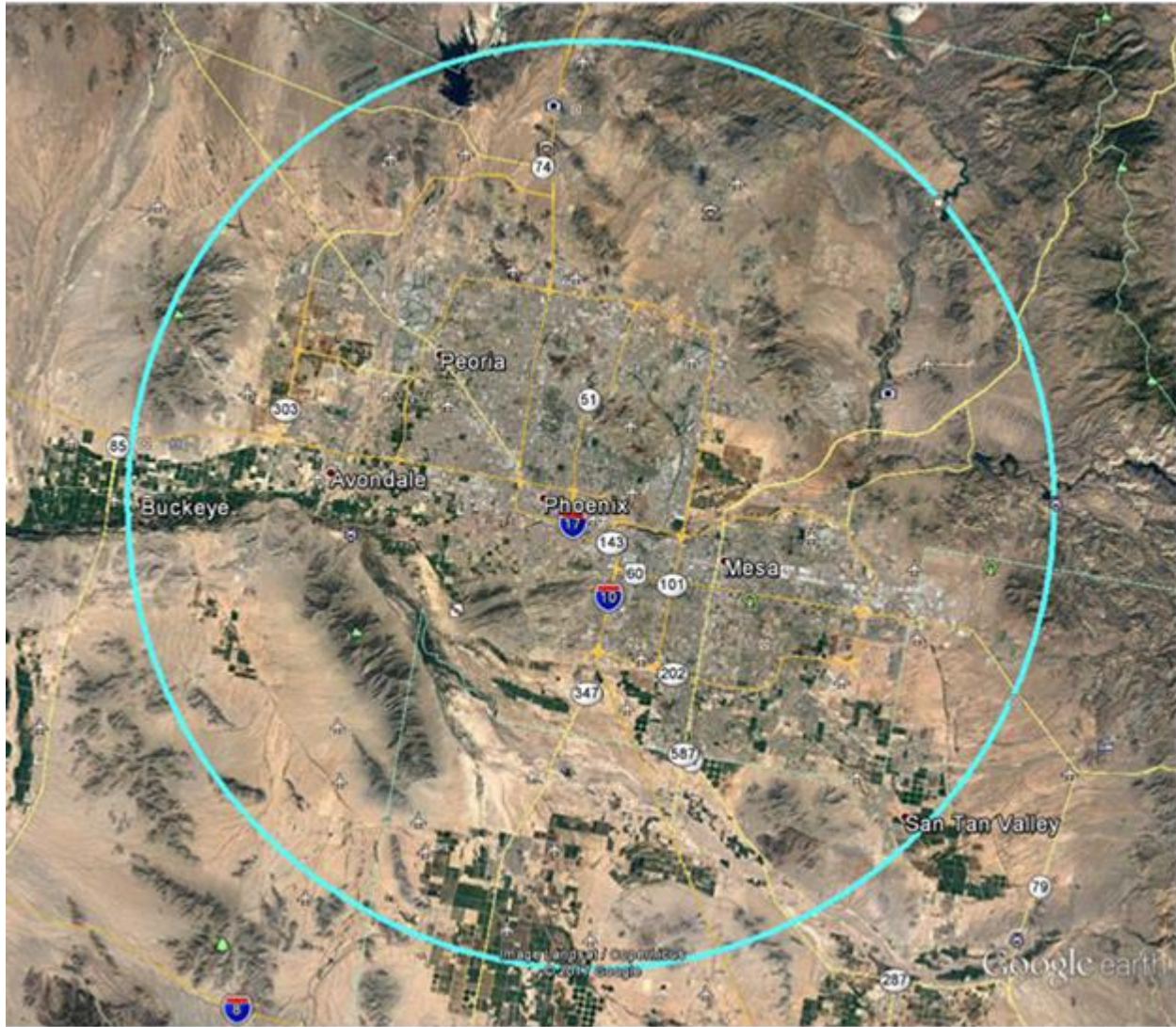
There are 14 environmental impact categories identified by FAA Order 1050.1F. Only those areas where there may be significant environmental impacts caused by the proposed action, or where there are uncertainties which require evaluation are discussed in this document.

The Proposed Action does not involve land acquisition, physical disturbance, or construction activities. Furthermore, there is no anticipated increase in the number of aircraft operations at Phoenix Sky Harbor associated with the Proposed Action. Given the limited scope of the Proposed Action, the following environmental impact categories were assessed and were considered either to not be present or to have negligible or non-existent effects from the Proposed Action, and in accordance with CEQ regulations, did not warrant further analysis:

- Biological resources (including fish, wildlife, and plants)
- Climate
- Coastal Resources
- Farmlands
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Land Use
- Natural Resources and Energy Supply
- Socioeconomic Impacts and Children's Environmental Health and Safety Risks.
- Water Resources (Including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

The preliminary analysis considered potential impacts within the Proposed Action General Study Area (GSA), which encompasses roughly a 30 nautical mile radius around Phoenix Sky Harbor, where departing aircraft cross the GSA boundary at 10,000 feet AGL. The GSA, approximately 3,750 square miles in area, is shown in Figure 5-1 below.

Figure 5-1: Illustration of the General Study Area



The following environmental impact categories have the most potential to be affected by the Proposed Action.

5.1 Noise and Noise-Compatible Land Use

FAA Order 1050.1F provides specific guidance and requirements for assessing potential aircraft noise impacts. This section presents a brief introduction to information regarding noise and land use compatibility criteria applicable to the evaluation of noise impacts.

Methodology for Assessing Noise Impacts

The compatibility of existing and planned land uses with aviation actions is usually determined in relation to the level of aircraft noise by comparing the Day-Night Average Sound Level (DNL)¹⁰ values to the land use compatibility guidelines in FAA's regulations at 14 CFR Part 150. Part 150 identifies a DNL level of 65 decibels (dB) and below as compatible with residential and most other uses (See Exhibit 11-3 of the FAA Order 1050.1F, Desk Reference).

To determine whether aircraft noise impacts are significant under NEPA, the FAA considers whether predicted increase in noise associated with the proposed action exceed defined thresholds of significance. For aircraft noise, that threshold is an increase of 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. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.

Order 1050.1F notes that special consideration needs to be given to the evaluation of the significance of noise impacts on certain noise sensitive areas (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.

Ordinarily, actions that are categorically excluded from NEPA do not require detailed environmental analysis. To identify the potential for extraordinary circumstances involving impact on noise levels of noise sensitive areas, the FAA conducts an initial noise analysis using a "screening tool." Screening tools use simplified but conservative modeling assumptions to quickly provide estimates of where noise increases may occur.¹¹ While a comprehensive modeling tool also needs detailed inputs, a noise screening tool is optimized to take advantage of simplified inputs to produce results for a more narrowly defined purpose, such as a preliminary assessment of potential noise impacts. This analysis enables the FAA to identify areas that may require additional consideration prior to determining that use of a CATEX is appropriate.

¹⁰DNL takes into account the noise level of each individual aircraft event, the number of times those events occur, and the time of day in which they occur. DNL includes a 10 dB noise penalty added to noise events occurring from 10:00 p.m. to 7:00 a.m., to reflect the increased sensitivity to noise and lower ambient sound levels at night. FAA Order 1050.1F requires use of the DNL metric in NEPA analyses, although DNL analysis may optionally be supplemented on a case-by-case basis to characterize specific noise impacts.

¹¹ In general modeling accuracy is dependent on a range of factors, including 1) how well the fundamental quantity to be modeled is understood and calculated, and 2) how accurately the inputs needed by the model are provided. All aircraft noise modeling tools must accurately account for the fundamentals of noise. However, while a comprehensive modeling tool also needs detailed inputs, a noise screening tool is optimized to take advantage of simplified inputs to produce results for a more narrowly defined purpose, such as a preliminary assessment of potential noise impacts. As a result, noise screening outputs are not suitable for reporting more detailed or precise noise results at specific locations.

FAA's noise screening tool for projects involving air traffic changes over large areas and altitudes over 3,000 feet AGL uses features available within the Terminal Area Route Generation Evaluation and Traffic Simulation (TARGETS), a flight procedure design tool, combined with the Aviation Environmental Design Tool (AEDT) Environmental Plug-In. This noise screening tool identifies areas that may be exposed to significant noise impacts (i.e., an increase of DNL 1.5 dB or more in an area that is exposed to noise at or above the DNL 65 dB noise exposure level. The noise screening tool also identifies certain areas with potential increases in areas exposed to lower levels of noise, specifically:

- For DNL 60 dB to less than 65 dB: ± 3 dB
- For DNL 45 dB to less than 60 dB: ± 5 dB

The FAA refers to changes in noise exposure levels meeting these criteria as "reportable." Although they do not exceed the threshold of significance for most land uses, for certain land uses where the Part 150 land use guidelines are not relevant to the value, significance, and enjoyment of the area in question, they are factors to consider in whether there are extraordinary circumstances rendering a categorical exclusion inapplicable.

To determine the potential impact(s) from noise, the screening analysis compares the baseline scenario to an alternative scenario or scenarios. The baseline scenario typically represents the existing procedures as they are flown at the time of the modelling. The alternative scenario(s) represents the radar tracks assigned to the proposed action and any other alternatives being considered.

Noise Screening Analysis

Potential noise impacts were screened using the AEDT Environmental Plug-In for TARGETS. Three scenarios were evaluated for this noise screen.

1. No Action Scenario: represents radar tracks as they are currently flown and is considered the baseline. Noise screening of the No Action Scenario modeled the noise impact(s) of Phoenix Sky Harbor arrivals and departures as they are currently flown. Assigned aircraft routes were unchanged.
2. Proposed Action Scenario: screened for potential noise impacts using the simplified assumption that all Phoenix Sky Harbor departure aircraft would be assigned to the proposed RNAV SID route that most closely matched their flight track regardless of aircraft equipage or type. This incorporates the simplified assumption that all aircraft are equipped and capable of flying RNAV procedures.
3. Pre-RNAV Western Routes Scenario: developed to comply with Section 5.b in the Memorandum which stipulates that FAA conduct a noise analysis to compare differences

both (1) the Pre-RNAV Western Routes and the Proposed Action; and (2) the Western RNAV routes and the Proposed Action.

To determine projected noise levels on the ground, it is necessary to determine the frequency of aircraft operations and the position of the aircraft in space laterally (i.e., ground tracks), and vertically (i.e., altitude). Arrival and departure direction to and from an airport are generally a function of the geometry of the airport's runways, procedures used to manage air traffic, and are primarily dictated by wind and weather conditions. Much of this information is obtainable through historical radar track data. Track data provides information regarding lateral path definitions, aircraft types, time of day operations, runway usage percentages for departure/arrival streams and day/night traffic ratios.

Historical radar track data was obtained from the FAA's National Offload Program¹². Track data was collected for 90 randomly selected days (using a random day generator) during calendar year 2017 ("2017 Track Data"). The selection of 90 random days is considered to best represent average traffic counts and traffic flows accounting for seasonal variations and peak travel times for Phoenix Sky Harbor. A separate noise screening analysis was run for each scenario to establish the noise exposure levels for that scenario.

Once all scenarios were screened individually, the TARGETS AEDT Environmental Plug-In Tool was used to compare the Proposed Action Scenario to the No Action Scenario to evaluate whether implementing the Proposed Action is expected to result in significant noise impacts when compared to the No Action Scenario. In addition, pursuant to Section 5 of the Memorandum, the FAA conducted a separate noise analysis comparing the Pre-RNAV Western Routes Scenario to the Proposed Action.

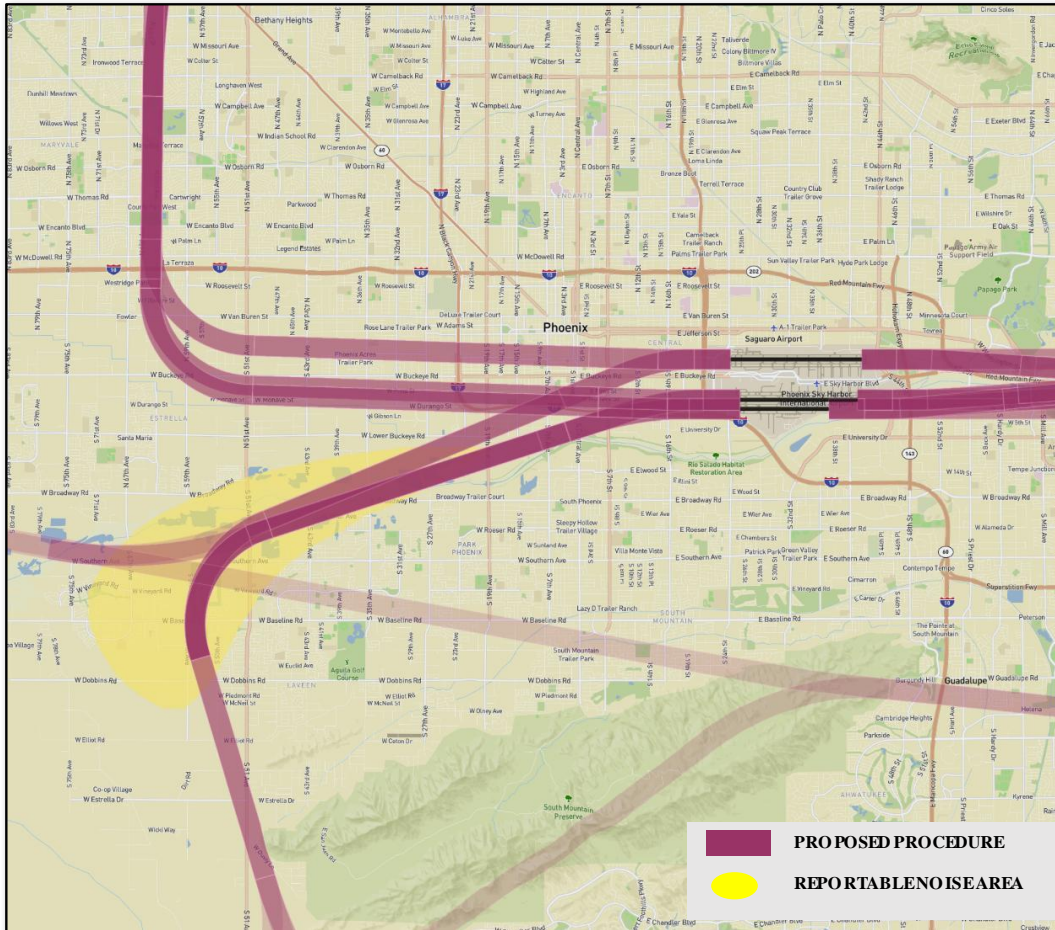
Results of Noise Screening

The noise screening indicates that the Proposed Action would not result in a significant noise impact on land uses covered by the Part 150 noise compatibility guidelines. However, the Proposed Action noise screening scenario when compared to the No Action noise screening scenario identified an area of reportable change in noise of at least DNL 5 dB between the DNL 45 dB to 60 dB noise exposure level approximately 3 nautical miles southwest of Phoenix Sky Harbor. This area of change encompasses approximately 22 square miles. The area is roughly defined by West Broadway Road and the Salt River riverbed along the northern edge, South 19th Avenue along the eastern edge, West Carver Road along the western edge, and an agricultural field access road making up the southernmost edge approximately 0.5 nautical miles north of West Elliot Road.

Figure 5-2 below depicts the area of the reportable change in noise as a yellow shaded polygon with the proposed procedures overlaying the area.

¹² All traffic data was obtained using the Phoenix Terminal Radar Approach Control as the radar source facility.

Figure 5-2. Area of Reportable Change in Noise with Overlay of Proposed Procedures



The FAA reviewed the City of Phoenix, Planning and Development Department, *City of Phoenix General Plan*, which identifies existing land use within the greater Phoenix area.¹³ Based on this review, land use within the area of the reportable change in noise consists of approximately 57% residential, 12% industrial, 4% commercial, 3% business parks, 8% public/quasi-public, and 16% parks and open space. The FAA is further reviewing individual resources within this area, including parks and historic properties, to determine whether the Part 150 land use guidelines are relevant to their value, significance, and enjoyment. As part of this further review, the FAA has initiated consultation with local interested parties having jurisdiction by law or special expertise in order to make a final determination regarding the reportable noise impacts. Their conclusions and recommendations will be included in the final environmental review.

¹³ www.phoenix.gov/pdd/pz/general-plan-2002. Accessed December 29, 2017.

5.2 *Air Quality*

This section considers the potential for the Proposed Action to have impacts on air quality that could preclude use of a CATEX. Any air quality impacts would be the result of increased emissions from aircraft using the amended procedures as compared to the No Action alternative; there are no other emissions sources associated with the Proposed Action. Under the Proposed Action, departing aircraft will reach the RNAV “engagement point” at the same distance and altitude as aircraft flying today. No additional operations will result from the Proposed Action.

In the United States (U.S.), air quality is generally monitored and managed at the county or regional level. The U.S. Environmental Protection Agency (EPA) pursuant to mandates of the federal Clean Air Act, (42 U.S.C. § 7401 et seq. (1970)), has established the National Ambient Air Quality Standards (NAAQS) to protect public health, the environment, and quality of life from the detrimental effects of air pollution. Standards have been established for the following criteria air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂). Particulate Matter standards have been established for inhalable coarse particles ranging in diameter from 2.5 to 10 micrometers (µm) (PM₁₀) and fine particles less than 2.5 µm (PM_{2.5}) in diameter.

According to FAA Order 10501F, Exhibit 4-1, an emissions impact is significant if “[t]he action would cause pollutant concentrations to exceed one or more of the NAAQS, as established by the EPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.”

EPA must designate areas as meeting (attainment) or not meeting (nonattainment) the NAAQS standards. The Clean Air Act requires states to develop a general plan to attain and maintain the standards in all areas of the country and a specific plan to attain the standards for each area designated nonattainment. These plans are known as State Implementation Plans (SIPs). A SIP is a collection of regulations and documents used by a state, territory, or local air district to reduce air pollution in areas that do not meet NAAQS.

According to the EPA’s website¹⁴ the SIP status report for the greater Phoenix area includes part of Maricopa, Pima and Pinal counties designated as nonattainment areas. Table 5-1 lists the counties in nonattainment for specific criteria air pollutants.

¹⁴ https://www3.epa.gov/airquality/urbanair/sipstatus/reports/az_areabypoll.html. Accessed on December 29, 2017.

Table 5-1. Current Nonattainment Counties That Contain the Greater Phoenix Area

County Name	NAAQS	Part County NA ¹⁵	Nonattainment Area Name	Classification (if applicable)
Maricopa	PM ₁₀ (1987)	X	Phoenix	Serious
Maricopa	8-Hr Ozone (2008)	X	Phoenix-Mesa	Moderate
Pima	PM ₁₀ (1987)	X	Ajo (Pima County)	Moderate
Pima	PM ₁₀ (1987)	X	Rillito	Moderate
Pinal	Lead (2008)	X	Hayden	
Pinal	PM ₁₀ (1987)	X	Hayden	Moderate
Pinal	PM ₁₀ (1987)	X	Phoenix	Serious
Pinal	PM ₁₀ (1987)	X	West Pinal	Moderate
Pinal	PM _{2.5} (2006)	X	West Central Pinal	Moderate
Pinal	Sulfur Dioxide (1971)	X	Hayden (Pinal County)	
Pinal	Sulfur Dioxide (2010)	X	Hayden	
Pinal	8-Hr Ozone (2008)	X	Phoenix-Mesa	Moderate

Under section 176(c)(4)) of the Clean Air Act (42 U.S.C. 7506(c)) and EPA regulations at 40 CFR Parts 51 and 93 (commonly referred to as the General Conformity Rule), the FAA must ensure that its activities do not cause or contribute to new violations of the NAAQS; worsen existing violations of the NAAQS or delay attainment of the NAAQS. When developing the General Conformity Rule, the EPA recognized that many actions conducted by Federal agencies do not result in substantial increases in air pollutant emissions in nonattainment and maintenance areas. Therefore, the EPA established threshold levels (also referred to as *de minimis* levels) for emissions of each of the criteria pollutants. When the sum of the increases in direct and indirect emissions could be a project would be less than the *de minimis* levels, a project would not require a general conformity determination. For nonattainment and maintenance areas, applicable *de minimis* thresholds for compliance are provided in CFR 40 part 93.153. Table 5-2 details the *de minimis* rates that apply to nonattainment areas (NAAs).¹⁶

¹⁵ "Part County NA" means only a portion of the county is designated nonattainment.

Table 5-2. 40 CFR 93.153(b)(1)-*De minimis* Thresholds for Nonattainment Areas

NAAQS Criteria Pollutant	Tons per Year
Ozone (VOC or NOx):	
• Serious Nonattainment Areas	50
• Severe Nonattainment Areas	25
• Extreme Nonattainment Areas	10
• Other ozone NNAs outside an ozone transport region	100
Other Ozone NNAs inside an ozone transport region:	
• VOC	50
• NOx	100
Carbon Monoxide: All Maintenance Areas	100
SO₂ or NO₂: All NAAs	100
PM₁₀:	
• Moderate NAAs	100
• Serious NAAs	70
PM_{2.5}: (Direct emissions, SO₂, NOx, VOC, and Ammonia):	
• Moderate NAAs	100
• Serious NAAs	70
Pb: All NAAs	25

The General Conformity Rule also allows Federal agencies to develop a list of actions that are presumed to conform to a SIP.¹⁷ This can be done by clearly demonstrating that the total of direct and indirect emissions from these types of activities would not cause or contribute to any new violation of any standard in any area; interfere with provisions in the applicable SIP for maintenance of any standard; increase the frequency or severity of any existing violation of any standard in any area; or delay timely attainment of any standard or any required interim emission reductions or other milestones in any area including emission levels specified in the applicable SIP. Alternatively, Federal agencies can establish actions that are presumed to conform by providing documentation that emissions from these types of actions are below the applicable de minimis levels. The FAA published a list of Presumed to Conform activities in the Federal Register on July 30, 2007.¹⁸

Air Quality Analysis

The FAA’s Presumed to Conform list includes “Air Traffic Control Activities and Adopting Approach, Departure and Enroute Procedures for Air Operations.” Air traffic control activities are defined for this purpose as “actions that promote the safe, orderly, and expeditious flow of aircraft traffic, including airport, approach, departure, and en route air traffic control. Airspace

¹⁷ 40 CFR 93.153(g)(h))

¹⁸ 72 Fed. Reg. 41565.

and air traffic actions (e.g., changes in routes, flight patterns, and arrival and departure procedures) are implemented to enhance safety and increase the efficient use of airspace by reducing congestion, balancing controller workload, and improving coordination between controllers handling existing air traffic, among other things.” FAA determined that project-related aircraft emissions released into the atmosphere below the inversion base for pollutant containment, commonly referred to as the “mixing height,” (generally 3,000 feet above ground level) can be presumed to conform when modifications to routes and procedures are designed to enhance operational efficiency (i.e., to reduce delay), increase fuel efficiency, or reduce community noise impacts by means of engine thrust reductions.¹⁹ This Presumed to Conform covers the Proposed Action.

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

An impact on properties protected under Section 4(f) of the Department of Transportation Act is one of the factors FAA considers in determining whether there are extraordinary circumstances that would preclude use of a CATEX to satisfy NEPA requirements for a proposed action. Section 4(f), as amended and re-codified at 49 U.S.C. § 303(c), states that, subject to exceptions for *de minimis* impacts²⁰:

... the Secretary [of Transportation] may approve a transportation program or project . . . 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,²¹ (as determined by the officials having jurisdiction over the park, area, refuge, or site) only if . . . there is no feasible and prudent alternative to the use of such land...and 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.

As noted above, the Proposed Action does not involve land acquisition, physical disturbance, or construction activities. However, the term “use” within the meaning of Section 4(f), includes not

¹⁹ 72 Fed. Reg. 41578.

²⁰ The term “highly controversial on environmental grounds” means there is a substantial dispute involving reasonable disagreement over the degree, extent, or nature of a proposed action’s environmental impacts or over the action’s risks of causing environmental harm. FAA Order 1050.1F. Section 5-2.b.(10).

²¹ There is no prescribed format; however, the documentation should cite the CATEX(s) used, describe how the proposed action fits within the category of actions described in the CATEX, and explain that there are no extraordinary circumstances that would preclude the proposed action from being categorically excluded.” FAA Order 1050.1F. Section 5-3.d.

only direct physical impacts or occupation of a Section 4(f) resource, but also “constructive” use resulting from impacts to Section 4(f) properties. A constructive use can occur when an action’s noise, air pollution, water pollution, or other impacts are so severe that the activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. In determining whether an FAA action would result in the constructive use of a Section 4(f) property, the FAA must consult the appropriate official(s) having jurisdiction over the property to identify the activities, features, or attributes that qualify the property for protection under Section 4(f) and assess whether project-related impacts would substantially impair them. In the case of public parks, recreation areas, and wildlife and waterfowl refuges, the official with jurisdiction is the official of the agency or agencies that own or administer the property in question, who has authority to represent the agency on matters related to the property. In the case of historic sites, the official with jurisdiction is the State Historic Preservation Officer (SHPO), or the Tribal Historic Preservation Officer (THPO)²² if the property is located on tribal land.

The FAA may rely on the land use compatibility guidelines in 14 CFR part 150 to determine whether there is a constructive use by noise where the land uses specified in the part 150 guidelines are relevant to the value, significance, and enjoyment of the Section 4(f) lands in question. For example, the FAA may rely on the part 150 guidelines for outdoor sports arenas and spectator sports, golf courses and water recreation in evaluating constructive use of lands devoted to those recreational activities. The FAA may also rely upon the part 150 guidelines for residential use to evaluate noise impacts on historic properties that are in use as residences. If a historic house or neighborhood is significant only for its architecture, then project-related noise would not substantially impair the characteristics that make it eligible for protection under Section 4(f) and would not constitute a constructive use. However, the Part 150 guidelines may be insufficient to determine the noise impact on certain types of Section 4(f) properties where a quiet setting is a generally recognized purpose and attribute (e.g., where it has been identified as a contributing factor to a historic site’s significance, such as a historic village preserved specifically to convey the atmosphere of rural life in an earlier era or a traditional cultural property). In determining whether to apply the Part 150 guidelines to Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks, national wildlife and waterfowl refuges, and historic sites), the FAA must weigh additional factors such as the impacts of noise on the expectations and purposes of people visiting areas where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

²² If the property is on tribal lands, but the tribe has not assumed the responsibilities of the SHPO, a representative designated by the tribe.

The preliminary noise analysis indicates that the Proposed Action would not result in noise levels at properties protected by Section 4(f) that would be incompatible with the land uses specified in the Part 150 guidelines. The FAA is consulting with officials with jurisdiction over Section 4(f) properties in the study area to identify any that may require further evaluation of the activities, features, or attributes that qualify the property for protection under Section 4(f) and application of different standards to assess whether project-related impacts would substantially impair them. This process will also consider the potential for significant impacts on natural, ecological, or scenic resources of Federal, state, tribal, or local significance.

5.4 Historical, Architectural, Archaeological and Cultural Resources

An adverse effect on cultural resources protected under Section 106 of the National Historic Preservation Act (NHPA) of 1966 (54 U.S.C. § 300101 et seq., as amended) that results in a significant impact is another extraordinary circumstance that would preclude use of a CATEX. Section 106 requires federal agencies to consider the effects of their undertakings on properties listed or eligible for listing in the National Register of Historic Places (“National Register”). For the purposes of Section 106 of the NHPA, the undertaking is the Proposed Action described above. Compliance with Section 106 requires consultation to identify historic properties that might be affected by the undertaking and develop approaches to avoid, minimize or mitigate any adverse effects on those properties. The specific requirements for consultation are set forth in regulations of the Advisory Council on Historic Preservation at 36 CFR part 800.

The FAA initiated consultation in December 2017 with the Arizona SHPO, the Gila River Indian Community THPO and the City of Phoenix Historic Preservation Officer (CHPO). The FAA also contacted other Federally-recognized Tribes that might attach religious or cultural significance to historic properties in the area, including the Salt River Pima-Maricopa Indian Community, the Ak-Chin Indian Community of the Maricopa, and the Fort McDowell Yavapai Nation. Appendix C, *Consultation*, summarizes and includes copies of correspondence with potential consulting parties to date. The consultation process is ongoing.

Area of Potential Effects

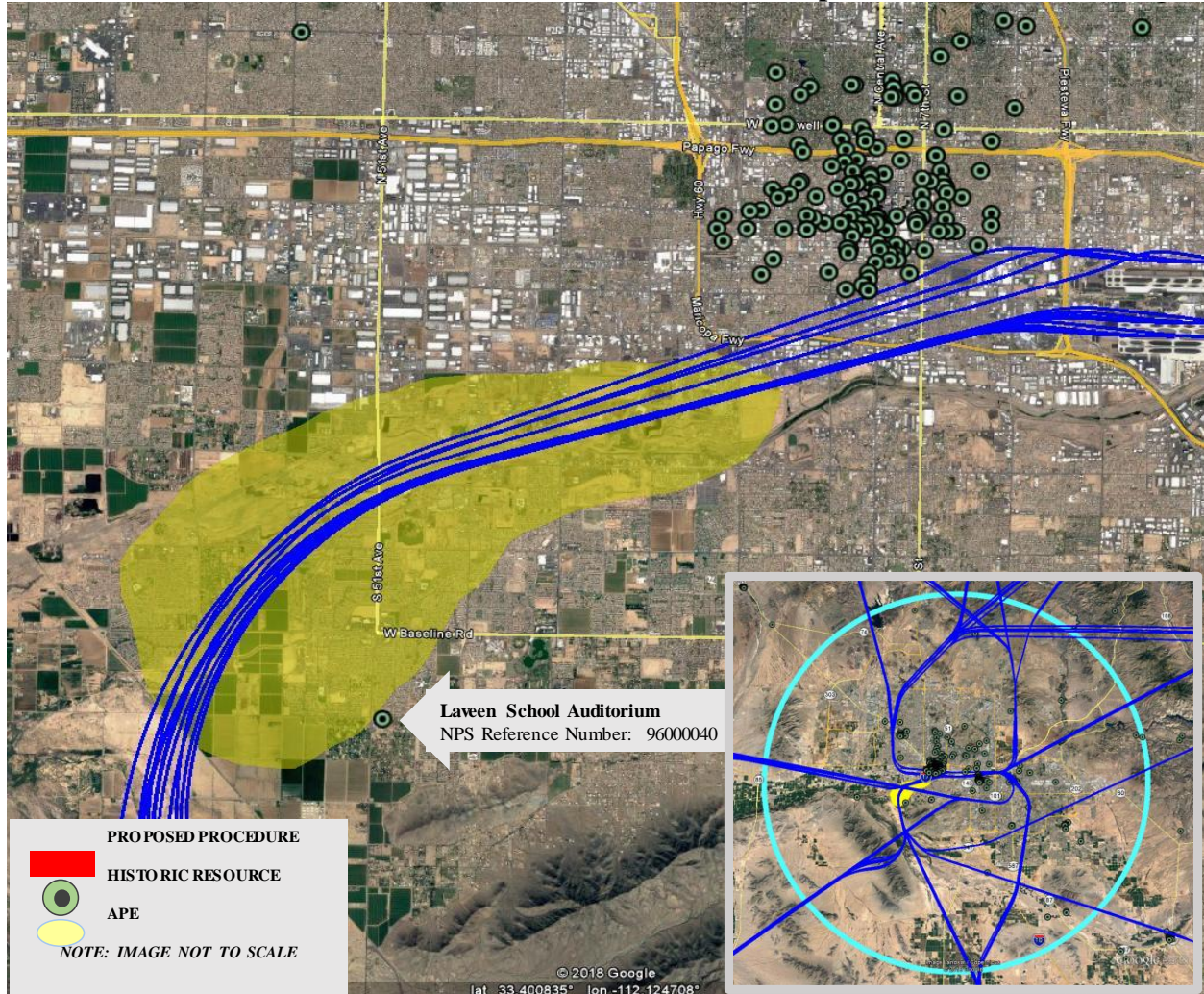
The Area of Potential Effects (APE) under Section 106 is defined as the geographic area or areas within which an undertaking may directly or indirectly cause alternation in the character or use of historic properties, if any such properties are present (36 CFR § 800.16(d)). The APE is influenced by the scale and nature of the undertaking and may vary for different kinds of effects caused by the undertaking. “Effects” are further defined by the regulations as alterations to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register.

Because this undertaking does not require land acquisition, construction, or other ground disturbance, there would be no direct physical effects to historic resources. Therefore, potential effects are limited to effects from aircraft overflights, primarily noise. The FAA delineated the proposed APE based on noise increases from aircraft overflights within the General Study Area that could alter historic properties where a quiet setting is a characteristic that qualify them for the National Register.

The noise analysis discussed in Section 5.1 identified an area that would be exposed to noise increases. The FAA's noise guidelines for compliance with the NEPA define a significant impact as an increase of a DNL 1.5 dB in areas exposed to aircraft noise of DNL 65 and higher. Using these criteria, this undertaking is not expected to result in significant noise impacts. However, the FAA recognizes that this standard may not be relevant to certain historic properties. Therefore, the FAA identified an area with lower levels of aircraft noise exposure which would experience a noticeable increase in noise, specifically, an increase of DNL 5 dB or more within areas exposed to the DNL 45 dB to 60 dB which the FAA refers to as "reportable" increases in noise.

The noise screening calculated the change in noise exposure levels (comparing the Proposed Action with the No Action Alternative) at points arranged at 0.25 nautical mile intervals on an evenly spaced grid. The FAA's proposed APE is based on this noise screening with a "buffer" of approximately one-half mile drawn around the grid points with reportable noise increases. The reportable changes in noise exposure grid points were plotted on Google Earth to delineate the boundary of the proposed APE shown in Figure 5-3.

Figure 5-3. Area of Potential Effect with Overlay of Proposed Procedures and the Location of Listed Historic Properties



Identification of Historical, Architectural, Archeological, and Cultural Resources

Section 106 regulations direct federal agencies to make reasonable and good faith efforts to identify historic properties with the APE (36 CFR § 800.4(b)(1)).

One historic property listed in the National Register, the Laveen School Auditorium was identified near the APE, as shown in Figure 5-3 above. The Laveen School Auditorium (National Register reference number National Park Service 96000040) is located at 5001 West Dobbins Road, Laveen, Arizona, near the southwestern boundary of the APE. The Laveen School Auditorium, first constructed in 1925 as the Laveen Women’s Club Hall and used for club meetings, dances, plays, and community gatherings was donated to the school in 1940 and, with financial assistance from the Work Projects Administration (WPA), was dismantled from its original location and moved about a quarter mile east to the school property where it was placed over a basement dug for that purpose and rebuilt with adobe walls. Once reconstructed on the

Laveen School campus, it was used as a cafeteria, as well as for home economics and shop classes. The property is significant to the local Laveen community as an example of the trend of rural school centralization in Arizona, and representative of Federal WPA construction. After 1988, the building was retired from active educational use. The function of the property was identified as “storage” per the National Register registration form dated January 16, 1996. It was subsequently used as meeting space for community organizations, according to the Laveen School District web site (<http://www.laveeneld.org/about-laveen/history/>).

Several other properties in the APE have previously been identified as eligible for the National Register:

- The Hudson Farm District
- The Hackin Farmstead and Dairy Barn
- The Tyson House and Barnes Dairy barn

Through consultation with the Arizona SHPO, CHPO, the Gila River Indian Community THPO and other tribes, the FAA is in the process of identifying other properties within the proposed APE that might be eligible for listing in the National Register, as well as historic properties outside of the proposed APE (including traditional cultural properties to which the tribes might attach religious or cultural significance).

Assessment of Effects

Implementation of the Proposed Action would involve changes to aircraft departure procedures, and would not include any project components that would touch or otherwise directly affect the ground surface. Archaeological resources such as surface or subsurface artifacts or other intact cultural deposits would not be disturbed since there would be no ground-disturbing activities (e.g., construction or demolition) associated with any project components included in the Proposed Action.

Consequently, the assessment of effects is limited to the introduction of atmospheric, audible or visual features resulting from aircraft overflights. The FAA will consult with the Arizona SHPO, CHPO, the Gila River Indian Community THPO, the Salt River Pima-Maricopa Indian Community and others who may be identified as consulting parties on the effects of the undertaking to determine if any noise, atmospheric or visual effects on historic properties would be adverse. Such effects are considered “adverse” if they would diminish the integrity of a property’s significant historic features, (including its setting, provided the setting has been identified as a contributing factor to the property’s historic significance). If adverse effects are identified, the FAA will continue consultation to seek ways to avoid, minimize or mitigate those effects prior to implementing these air traffic procedures.

5.5 *Environmental Justice*

This section addresses the potential for impacts on minority and low-income populations of the Proposed Action as compared with No Action. This analysis draws on the findings of the preliminary screening of noise.

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. *Fair treatment* means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. *Meaningful Involvement* means that:

- people have an opportunity to participate in decisions about activities that may affect their environment and/or health;
- the public's contribution can influence the regulatory agency's decision;
- their concerns will be considered in the decision making process; and
- the decision makers seek out and facilitate the involvement of those potentially affected.

The following executive orders and guidelines require federal agencies to consider the effects of their actions on minority and low income populations (Environmental Justice):

- Executive Order 12989, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 FR 7629)
- U.S. Department of Transportation (U.S.DOT) Order 5610.2, *Environmental Justice in Minority and Low Income Populations*
- *Environmental Justice: Guidance Under the National Environmental Policy Act (CEQ, 1997)*
- *Final Guidance for Consideration of Environmental Justice in Clean Air Act 309 Reviews, (EPA, 1999)*

Requirements for meaningful public involvement by minority and low-income populations are addressed in Paragraph 2-5.2.b of FAA Order 1050.1F. As stated in the Order, the FAA must provide for meaningful public involvement by minority and low-income populations. In accordance with DOT Order 5610.2(a), this public involvement must provide an opportunity for minority and low income populations to provide input on the analysis, including demographic analysis, that identifies and addresses potential impacts on these populations that may be disproportionately high and adverse. The public involvement process can also provide information on subsistence patterns of consumption of fish, vegetation, or wildlife. This information should be disclosed to potentially affected populations for proposed actions and

alternative(s) that are likely to have a substantial effect and for Comprehensive Environmental Response, Compensation, and Liability Act sites.

An environmental justice analysis considers the potential of the Proposed Action to cause disproportionately high and adverse effects²³ on low-income or minority populations due to significant impacts in other environmental impact categories; or impacts on the physical environment that affect an environmental justice population in a way that FAA determines are unique to the environmental justice population and significant to that population. If these factors exist, there is not necessarily a significant impact; rather, the FAA must evaluate these factors in light of context and intensity to determine if there are significant impacts.

The Proposed Action study area was determined by evaluating the potential noise changes on the west side of the airport for Phoenix Sky Harbor. The study area encompasses areas of Maricopa County, Arizona. The AEDT Environmental Justice module was used to identify these populations in the vicinity of Phoenix Sky Harbor. The AEDT Environmental Justice module relies on U.S. Census demographic data to identify communities that may be candidates for meaningful involvement in project communication and/or outreach activities. AEDT incorporates Census 5-year American Community Survey data that includes low-income and minority information to the Block Group level. The intent of this analysis is to quantitatively identify potential populations based on readily available Census data using standard techniques.

Within this study area, minority and low-income populations were identified. In order to identify minority and low-income populations, the average minority and low-income populations within the study area were determined, and any census block group within the study area that has a minority or low-income percentage that is higher than the average of the study area were identified. Note that the data is presented by Census Block Group, and actual concentrations of poverty and minority populations may not be uniformly distributed within the block group.

Low-Income

Within the study area, the average low-income population is 30.9%. By comparison, using the same methodology, the average county level low-income population is 17.1% for Maricopa County. The average state level low-income population is 18.2% for Arizona. The average national level low-income population is 15.6%. Table 5-3 presents a summary of the county, state, and national level low-income percentages.

²³ “Adverse effects” means the totality of significant individual or cumulative human health or environmental effects, including interrelated social and economic effects. DOT Order 5610.2(a) provides the definition for the types of adverse impacts that should be considered when assessing impacts to environmental justice populations.

Table 5-3. Low-income data for the counties included in the Phoenix study area

State	County	County % Low-Income	State % Low-Income	National % Low Income	Study Area % Low Income
Arizona	Maricopa	17.1	18.2	15.6	30.9

Minority

Within the study area, the average minority population is 68.1%. For comparison, using the same methodology, the average county level minority population is 17.1%. The average state level minority population is 43.1% for Arizona. The average national level low-income population is 37.2% Table 5-4. presents a summary of the county, state, and national level minority percentages.

Table 5-4. Minority population data for the counties included in the Phoenix study area

State	County	County % Minority	State % Minority	National % Minority	Study Area % Minority
Arizona	Maricopa	42.2	43.1	37.2	68.1

Results

The following figures display the results of the analysis. Figure 5-4 presents the boundary and demographics for the entire study area. Figure presents the demographic information at a higher zoom level to the west of the airport. Figure 5-6 presents the area of the reportable change in noise exposure. Figure 5-7 through Figure 5-15 display the individual procedures under consideration along with the historic tracks associated with the procedure being replaced by the proposed procedure.

Figure 5-4. Phoenix Sky Harbor Study Area and Demographics

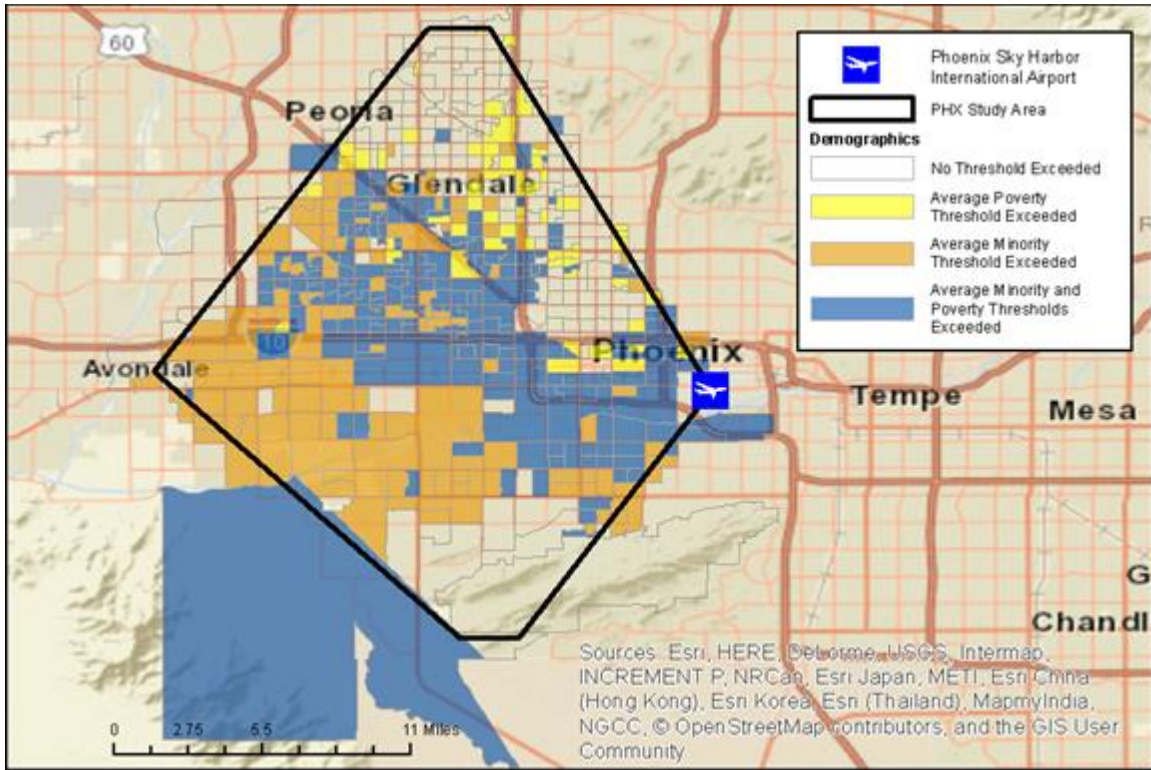


Figure 5-5. Close Up View of Phoenix Sky Harbor Study Area and Demographics.

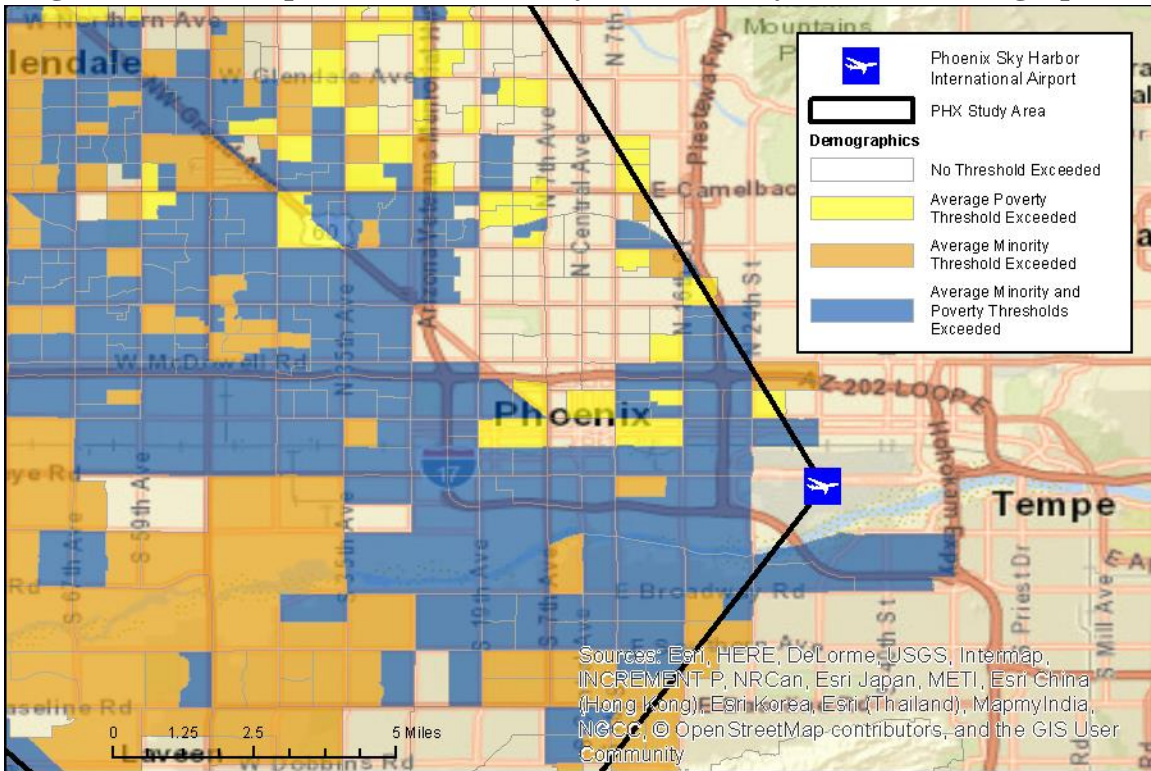


Figure 5-6. Reportable Change in Noise Exposure in the Phoenix Sky Harbor Study Area

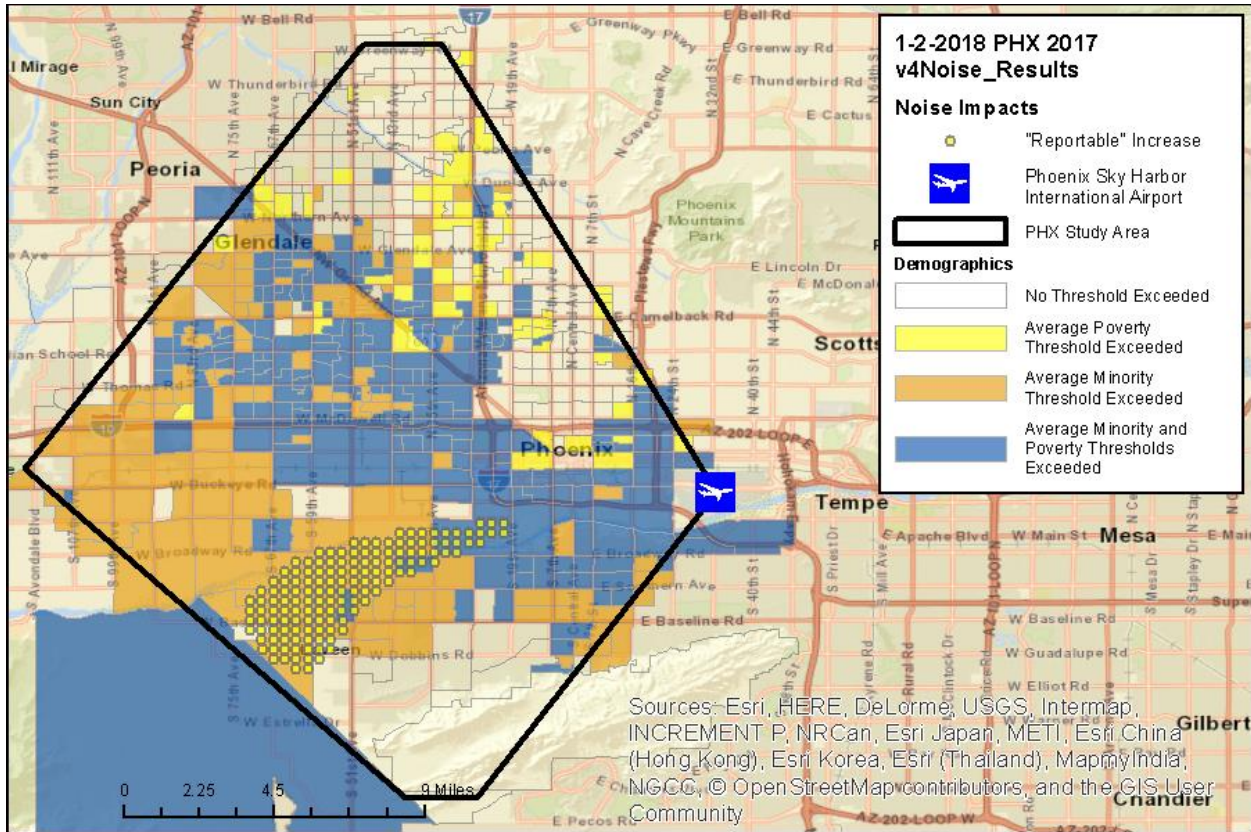


Figure 5-7. Proposed Departure Paths for BROAK Procedure and Historic Flight Tracks

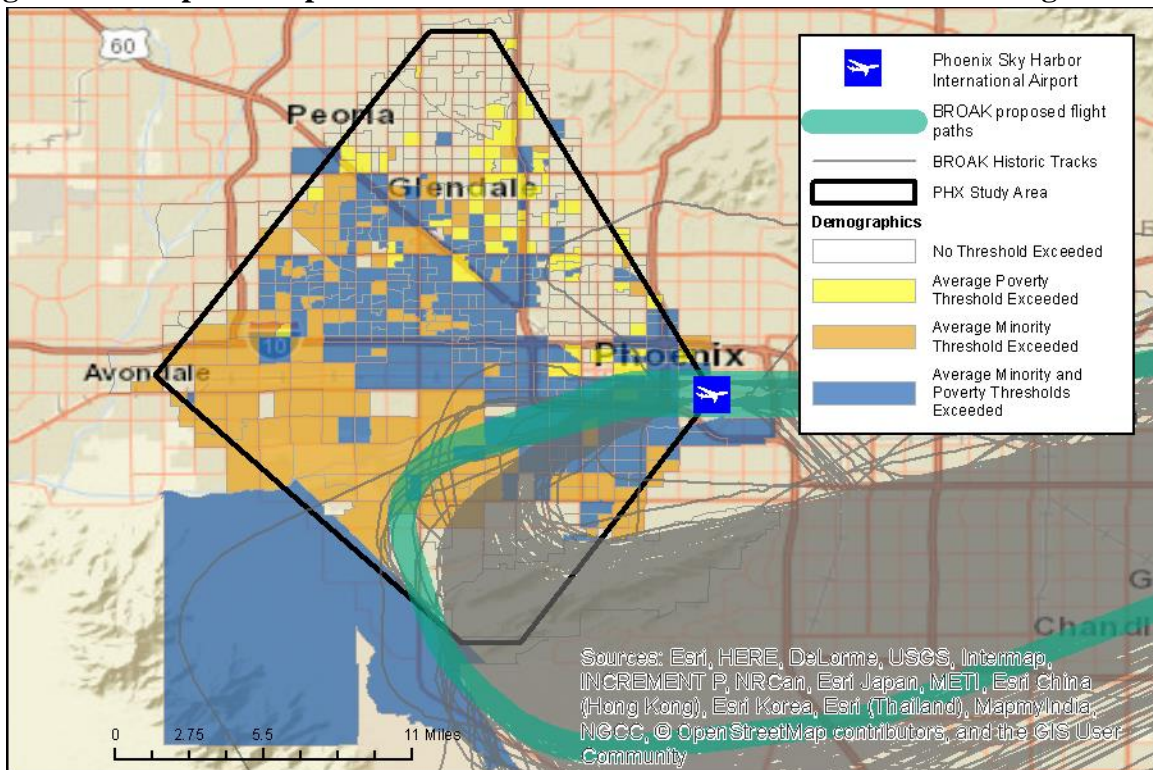


Figure 5-8. Proposed Departure Paths for ECLPS Procedure and Historic Flight Tracks

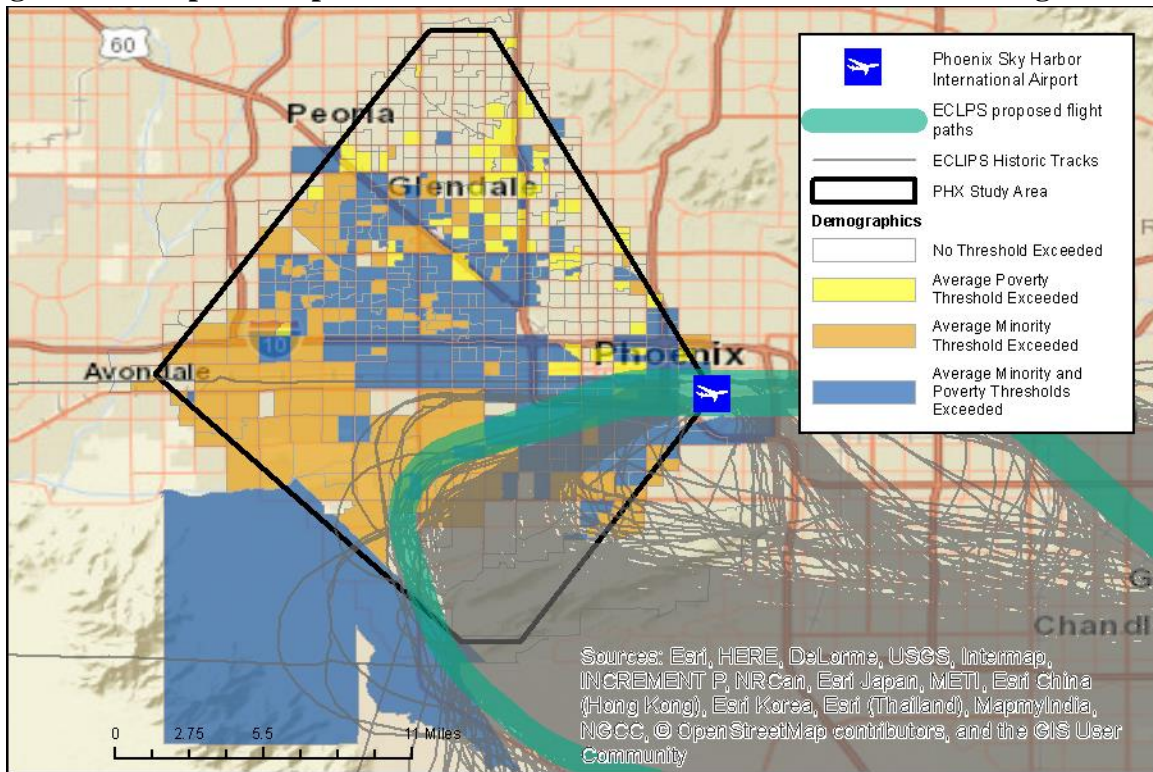


Figure 5-9. Proposed Departure Paths for FORPE Procedure and Historic Flight Tracks

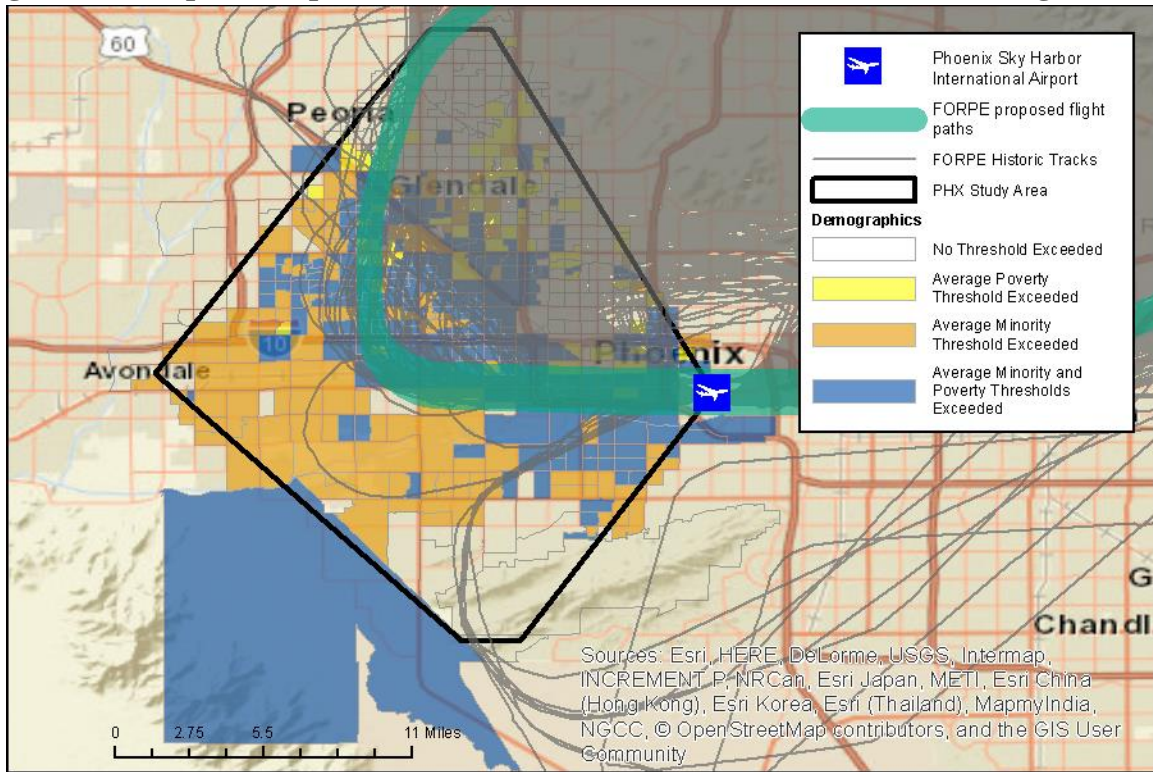


Figure 5-10 Proposed Departure Paths for FYRBD Procedure and Historic Flight Tracks

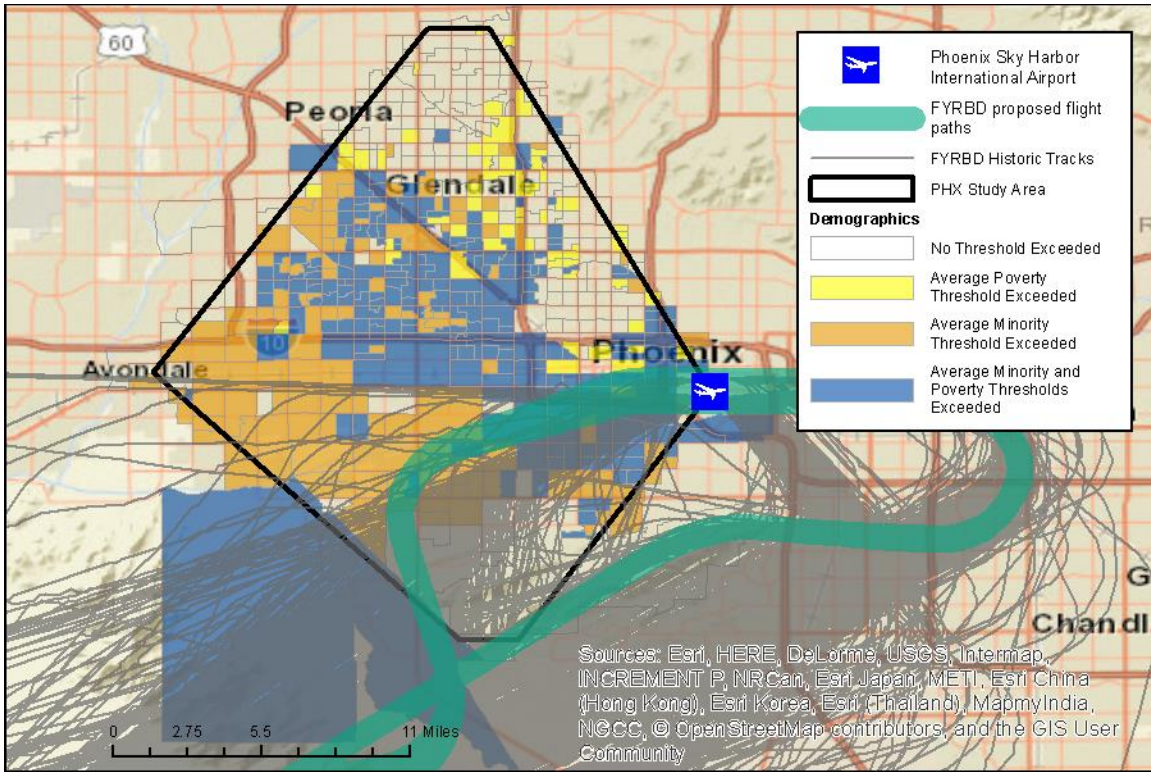


Figure 5-11. Proposed Departure Paths for KEENS Procedure and Historic Flight Tracks

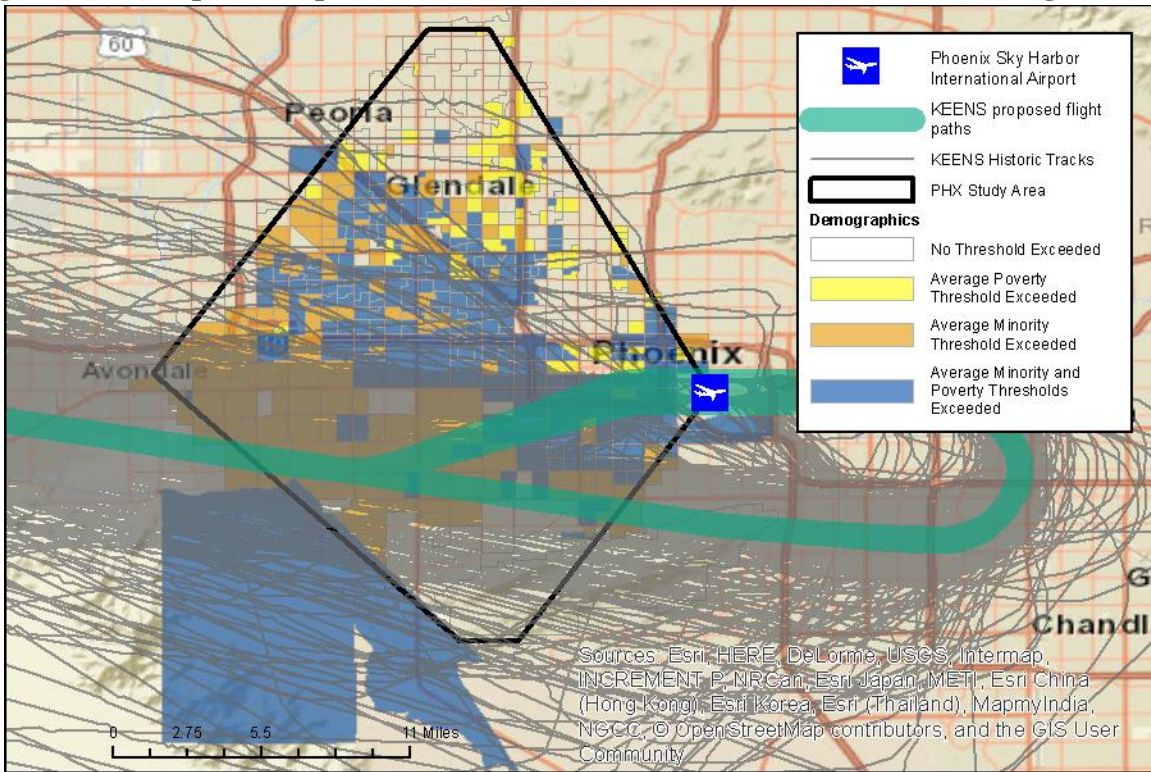


Figure 5-12. Proposed Departure Paths for MRBIL Procedure and Historic Flight Tracks

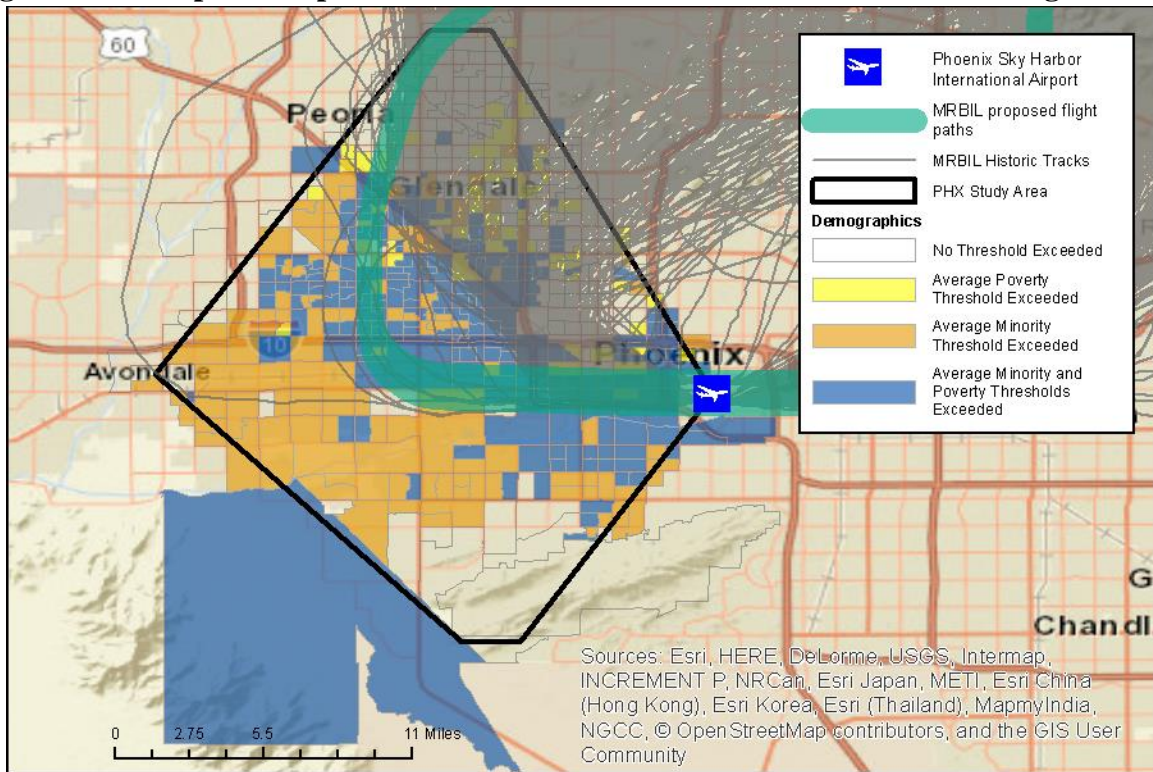


Figure 5-13. Proposed Departure Paths for QUAKY Procedure and Historic Flight Tracks

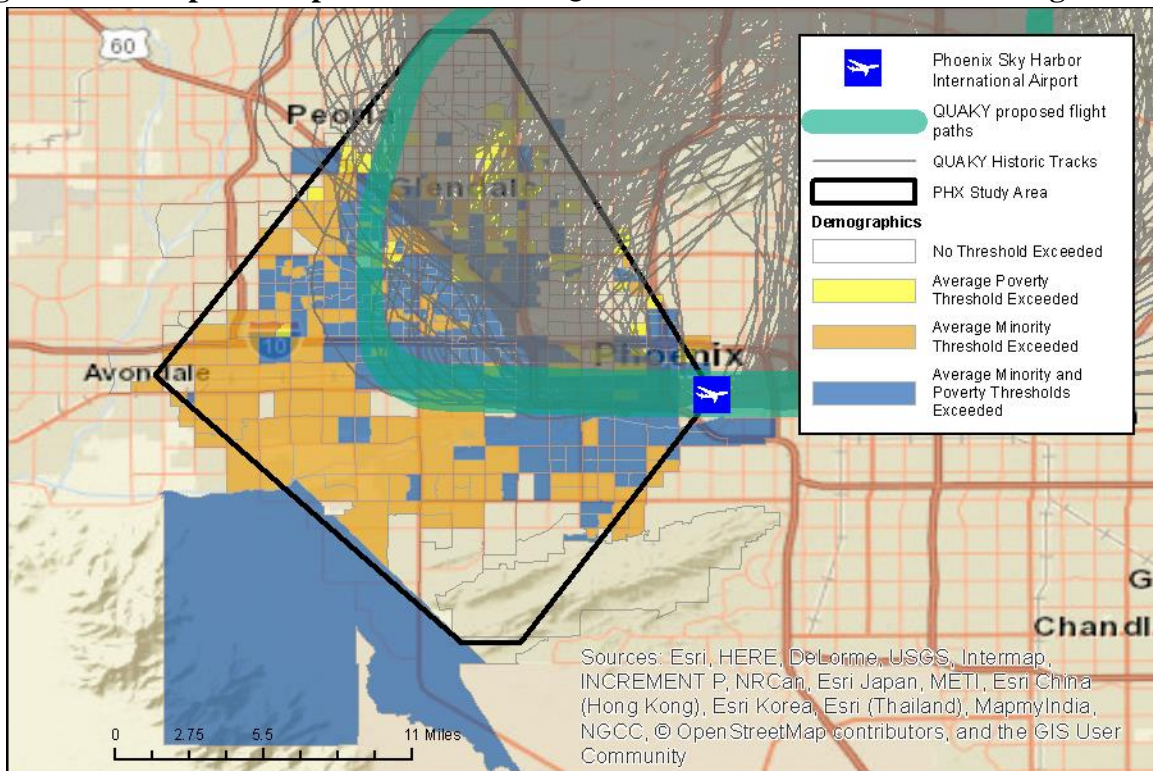


Figure 5-14. Proposed Departure Paths for STRRM Procedure and Historic Flight Tracks

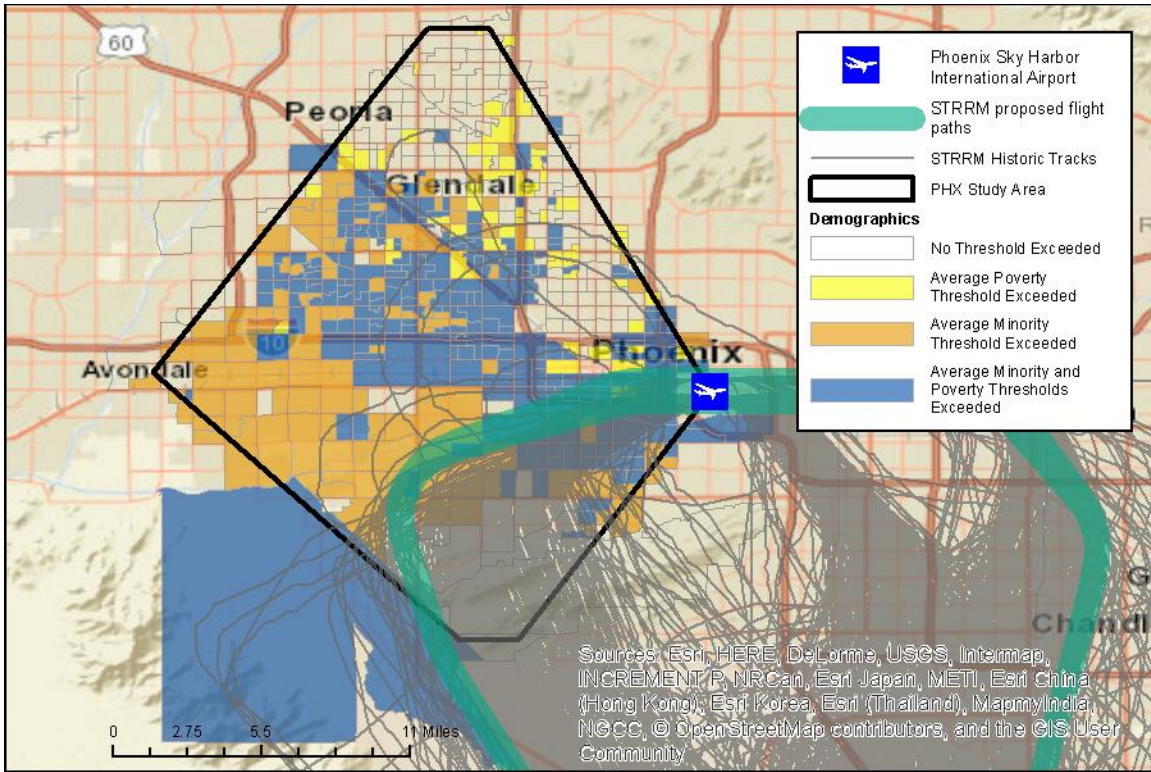
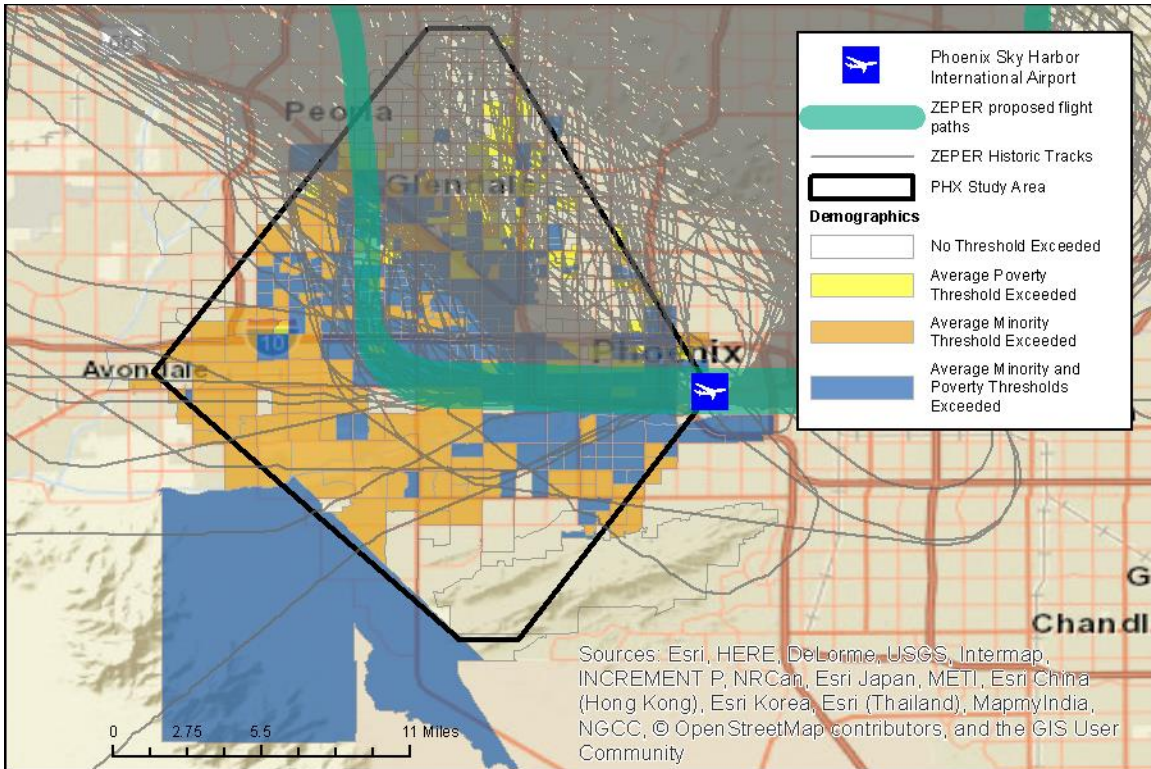


Figure 5-15. Proposed Departure Paths for ZEPER Procedure and Historic Flight Tracks



Based on the FAA's preliminary analysis, no significant noise impacts associated with the Proposed Action would occur as a result of its implementation; and no populations would be disproportionately adversely impacted.

5.6 Visual Effects

The FAA is considering the potential for visual impacts related to the shift in west flow departure flight paths on scenic resources of Federal, state, tribal, or local significance, which if significant could constitute an extraordinary circumstance precluding the use of a CATEX. Potential impacts resulting from the Proposed Action would be limited to short-term discrete effects resulting from aircraft overflights. Lands sensitive to visual impacts include National Parks, National Wilderness Areas, and Tribal lands. The aircraft overflights above scenic and otherwise sensitive land use settings may be perceived as annoying or intrusive. Consultation pursuant to Section 106 and Section 4(f), described above, will assist the FAA in making a determination with respect to visual effects on parks, wilderness areas, tribal lands and historic properties.

5.7 Cumulative Impacts

The likelihood that an action would cumulatively create a significant impact on the human environment is another extraordinary circumstance that the FAA must consider before categorically excluding an action from further NEPA review. A cumulative impact is "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions".²⁴ Past, present, and reasonably foreseeable future action initiated by other Federal agencies, state, tribal, or local governments, or private entities must be considered in determining whether there are potential cumulative impacts.

The FAA has discretion to determine whether, and to what extent, information about past actions are useful for the analysis of the impacts of the proposed action and alternative(s). Present impacts of past actions that are relevant and useful are those that may have a significant cause-and-effect relationship with the direct and indirect impacts of the proposed action and alternative(s). Present actions occurring in the same general time frame as the proposal may have noise or other environmental concerns that should be considered in conjunction with those that would be generated by the FAA proposed action and alternative(s) under consideration. Reasonably foreseeable future actions are actions that may affect projected impacts of a proposal and are not remote or speculative.

²⁴ ee 40 CFR § 1508.7 and CEQ's Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (June 2005) at: http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-PastActsCumulEffects.pdf.

The GSA for the Proposed Action was used to define the geographic extent for the cumulative impacts analysis. The cumulative impacts analysis focuses on those resource areas that may be impacted by the Proposed Action in conjunction with the past, present, and reasonable foreseeable future actions. At this point in the preliminary analysis, the FAA has not made a determination as to whether the impacts of any past, present or foreseeable future actions combined with impacts of the Proposed Action would have a cumulatively significant impact.

5.8 *Impacts likely to be highly controversial on environmental grounds.*

Impacts on the quality of the human environment that are likely to be highly controversial on environmental grounds may, if significant, constitute an extraordinary circumstance precluding use of a CATEX. The term “highly controversial on environmental grounds” means there is a substantial dispute involving reasonable disagreement over the degree, extent, or nature of a proposed action’s environmental impacts or over the action’s risks of causing environmental harm.²⁵ At this point in the preliminary analysis, the FAA has not made a determination as to whether the impacts of the Proposed Action are likely to be highly controversial on environmental grounds.

6.0 PUBLIC/COMMUNITY INVOLVEMENT

The FAA published a public notice in the Arizona Republic, the Arizona Informant, and La Voz newspapers notifying the public that the FAA and the City of Phoenix are jointly hosting three public workshops in the greater Phoenix Metropolitan area between February 6, 2018 and February 8, 2018 as part of the community engagement process. The purpose of these workshops is to give the public a better understanding of the proposed changes for departure procedures at Phoenix Sky Harbor to address neighborhood concerns. The FAA will accept comments at the workshops and online. Although the FAA will not provide responses to the individual comments, the design team will consider the comments during development of the final procedures, and comments will be taken into consideration in making a final NEPA determination. This draft environmental review document and the public workshop materials are posted on the FAA community involvement website located at:

https://www.faa.gov/nextgen/nextgen_near_you/community_involvement/phx/.

7.0 PREPARER(S)

The FAA Air Traffic Organization, Western Service Center, Operations Support Group is responsible for all or part of the information and representations contained herein.

²⁵ FAA Order 1050.1F, Section 5-2.b.(10)

