

PHOENIX



SKY HARBOR INTERNATIONAL AIRPORT



F.A.R. PART 150 NOISE COMPATIBILITY STUDY
Executive Summary

Aircraft noise can be an unwanted intrusion into the peace and quiet sought at home. The City of Phoenix has spent many years attempting to reduce the exposure of airport-area residents to aircraft noise. This brochure explains what the City has been doing and is proposing in the noise compatibility study completed in October 2000 for Phoenix Sky Harbor International Airport.



ABOUT THE AIRPORT

Phoenix Sky Harbor International Airport facilities are contained on approximately 3,130 acres of land in the southeastern portion of the incorporated City of Phoenix, Maricopa County. The airport is bounded by the Hokokam Expressway (State Route 143) on the east, the Salt River and Interstate 10 on the south, 16th Street to the west, and the Southern Pacific Railroad on the north. The airport is served by three parallel runways aligned in an east-west direction. All three runways are capable of handling commercial and general aviation traffic.

A HISTORY OF NOISE ABATEMENT

The original F.A.R. Part 150 Noise Compatibility Study for Phoenix Sky Harbor International Airport was completed in 1989. The FAA found the Noise Exposure Maps to be in compliance on November 4, 1987. The official Noise Exposure Maps were dated 1987 (for the "current year") and 1992 (for the five-year forecast). Part 2 of the study, the Noise Compatibility Program, was approved by the City and submitted to the FAA in 1989. The FAA approved that document on April 2, 1990.

PLAN PREPARATION

The updated Noise Compatibility Program for Phoenix Sky Harbor International Airport was developed through a consultative process which included considerable technical analysis. The City of Phoenix hired airport consulting firms, Coffman Associates and Brown-Buntin Associates, to provide technical assistance for the study. They were responsible for computer noise modeling and land use analysis.

The City of Phoenix also established a Planning Advisory Committee as an informal advisory group to review and comment on the consultants' findings and recommendations. That Committee included representatives of the FAA, local governments, airport users, and local citizens' groups. Local residents were invited to attend several public information workshops and public hearings during and after the preparation of the study.

The Part 150 provides for the preparation of two documents: the Noise Exposure Maps and the Noise Compatibility Program. The Noise Exposure Maps describe existing noise conditions in the Airport area and projected future conditions if no additional noise

abatement actions were taken. Noise Exposure Maps were prepared for actual 1999 and forecast 2004 and 2015 conditions. The NEM document was accepted by the FAA in October 2000. The Noise Compatibility Program is the City's program for promoting Airport noise compatibility. The City of Phoenix formally accepted the Noise Compatibility Program on September 20, 2000 and authorized its submittal to the FAA for review and approval.

THE UPDATED NOISE COMPATIBILITY PROGRAM

The updated Noise Compatibility Program for Phoenix Sky Harbor International Airport includes four plan elements: a noise abatement element involving aircraft operating procedures; a noise mitigation element involving sound insulation and voluntary acquisition options; a land use management element involving land use planning and General Plan actions; and a program management element to administer, monitor, and update the Program.

NOISE ABATEMENT

Many noise abatement alternatives were studied in the Noise Compatibility Program Update, including changes in flight tracks, runway use, and aircraft operating procedures. These were evaluated for their effect on airspace, safety, cost, and potential for noise reduction. The final plan includes 13 noise abatement measures. Six are continuations of existing policies and regulations.

1. Continue the runway use program calling for the equalization of departure operations to the east and west for both daytime and nighttime.

This is a continuation of an existing noise abatement policy that equalizes aircraft operations to both the east and west, in order to distribute noise impacts equitably. This helps ensure that certain individuals do not receive concentrated amounts of aircraft noise.

2. Continue promoting use of AC 91-53A Noise Abatement Departure Procedures by air carrier jets.

The City of Phoenix should continue promoting the use of noise abatement departure procedures as described in Advisory Circular (AC) 91-53A by airlines operating jet aircraft over 75,000 pounds, certificated gross takeoff weight.

3. Continue promoting use of NBAA noise abatement procedures, or equivalent manufacturer procedures, by general aviation jets.

The City of Phoenix should actively encourage jet operators to use the National Business Aviation Association (NBAA) Approach and Landing Procedure and Standard Noise Abatement Departure Procedures, or equivalent quiet flying procedures developed by aircraft manufacturers.

4. Continue Standard Instrument Departure procedure from Runway 26L requiring a turn to a 240-degree heading.

The City of Phoenix should encourage the use of the published departure procedure from Runway 26L that requires a turn to a 240-degree heading. This procedure reduces the number of overflights of noise-sensitive land uses west of the airport along the Runway 26L centerline. This procedure also enhances aircraft separation and flow when aircraft are departing from Runways 26L/R.

5. Continue the 4 DME departure route procedure, which overflies the Salt River, by all jets and large propeller aircraft departing Runways 8 and 7L.

The City of Phoenix should encourage the use of the 4 DME departure procedure that requires all jet aircraft and all large turbo-prop aircraft (over 12,500 pounds) departing to the east on Runways 8 and 7L to fly four nautical miles from the distance measuring equipment before turning on any assigned heading. This procedure does limit capacity at the airport which has significant cost implications for the airlines, airport customers, and local business sectors dependent on the airport.

6. Continue compliance with the Airport's Engine Test Run-up Policy.

The City of Phoenix should continue the prohibition on maintenance engine run-ups between 11:00 p.m. and 5:00 a.m. This policy reduces the impact of loud and long duration run-up noise on nearby residential areas during the nighttime hours.

7. Implement the 4 DME departure route procedure, which overflies the Salt River, by all jets and large propeller aircraft departing Runway 7R.

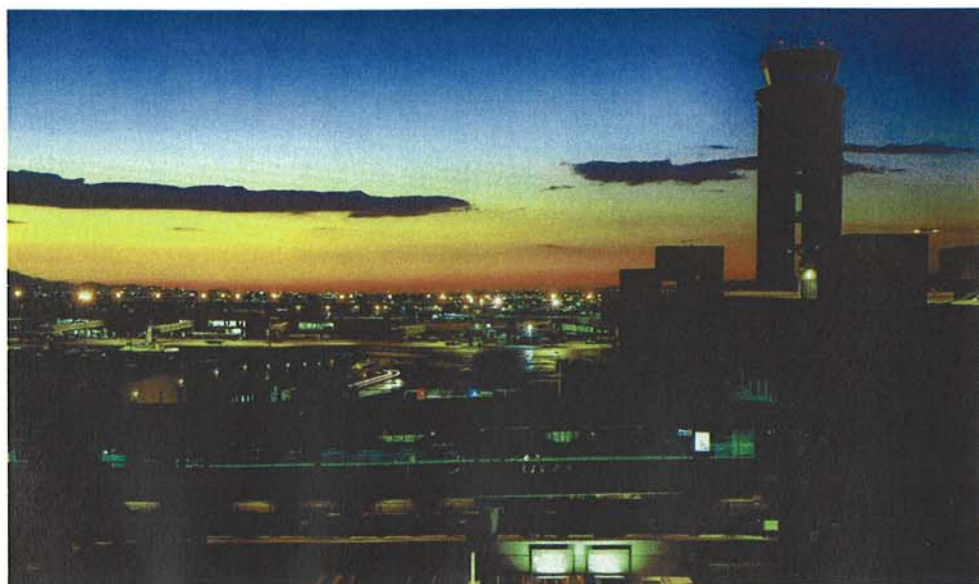
Implementation of the 4 DME departure procedure would require all jets and large propeller (over 12,500 pounds) aircraft departing to the east on Runway 7R to fly four nautical miles from the distance measuring equipment before turning on any assigned heading. This procedure also limits capacity at the airport which has significant cost implications for the airlines, airport customers, and local business sectors dependent on the airport.

8. Direct small piston aircraft departing Runway 7R to turn to a 120-degree heading upon reaching the end of the runway.

Propeller aircraft departing Phoenix Sky Harbor International Airport on Runway 7R would turn right at the runway end to approximately a 120-degree heading. This procedure would concentrate traffic over a commercial/industrial corridor and Interstate 10 southeast of the airport.

9. Direct aircraft departing Runway 25L to turn to a 240-degree heading upon reaching the end of the runway.

This procedure requires aircraft departing from Runway 25L to turn to a 240-degree heading. This procedure reduces the number of



overflights of noise-sensitive land uses west of the airport along the Runway 25L centerline. This procedure also enhances aircraft separation and flow when aircraft are departing from Runway 26.

10. Establish a “side-step” approach to Runway 25L.

This “side-step” procedure requires aircraft on approach to Runway 25L to maintain an alignment with Runway 25R until reaching a point approximately three miles east of the runway followed by a turn to align with Runway 25L. Upon approach, the decision to execute a “side-step” approach versus a straight-in approach would ultimately be at the pilot’s discretion.

11. Encourage the use of DGPS, RNAV, and FMS equipment to enhance noise abatement navigation.

As equipment, flight standards, and use of Differential Global Positioning System (DGPS), Area Navigation (RNAV), and Flight Management System (FMS) technology becomes commonplace, efforts to refine noise abatement departure and arrival routes should be undertaken.

12. Build engine maintenance run-up enclosure.

An engine maintenance run-up enclosure should be built to

attenuate noise from maintenance run-ups. The facility should be designed to accommodate the largest aircraft now conducting run-ups or which may conceivably be expected in the future. Upon completion of the runup enclosure, the engine runup policy will be reviewed.

13. Support 161st Air Refueling Wing of the Arizona Air National Guard’s efforts to re-engine KC-135 aircraft.

The 161st Air Refueling Wing currently lack the funds to re-engine the KC-135 aircraft in their fleet. The City of Phoenix should support the efforts of the 161st Air Refueling Wing to re-engine via contacting local, state, and federal representatives to lobby for military funds for engine replacement.

EFFECT OF NOISE ABATEMENT ACTIONS

The maps on the next page show the actual noise contours for the years 2004 and 2015 assuming implementation of the updated noise abatement recommendations. For the most part, the noise contours would be smaller to the east and bow out slightly more to the south than projected in the baseline noise contours.

Based on 1999 conditions, 13,117 people were exposed to noise

above 65 DNL. In the year 2004, the number of people exposed to noise above 65 DNL is expected to decrease to 7,777 with the updated plan. With the anticipated operations growth in the year 2015, 9,571 people would be exposed to noise above 65 DNL with implementation of the plan.



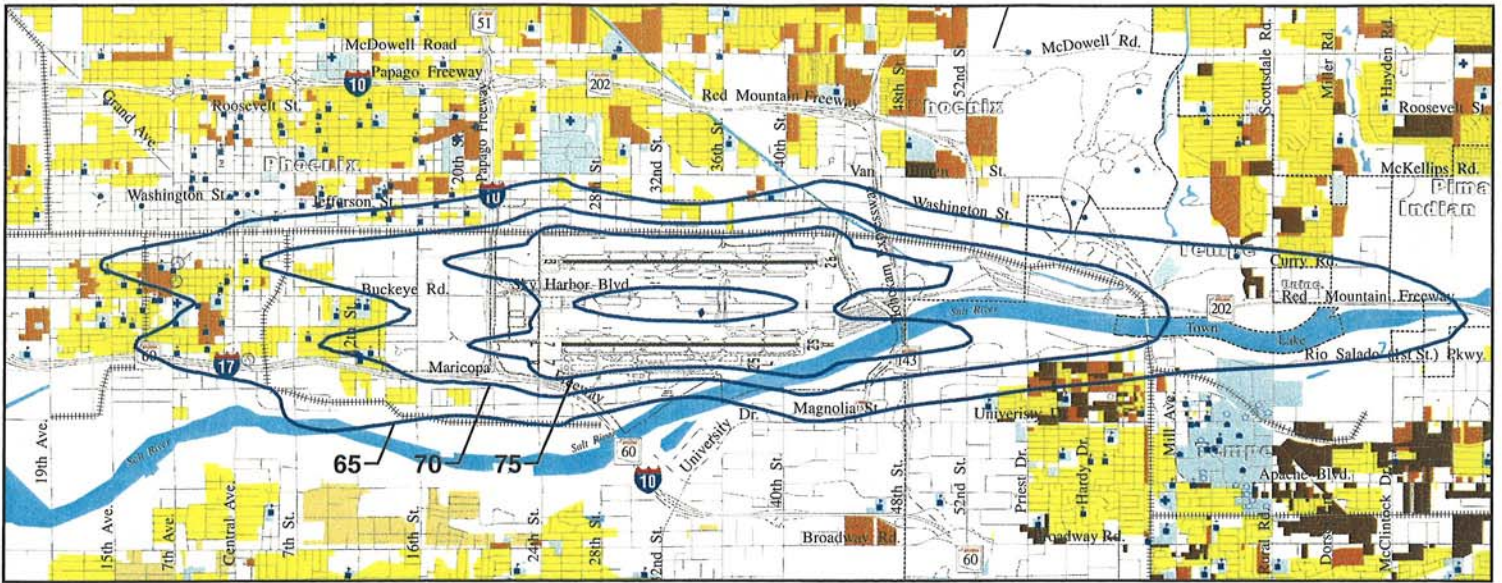
LEGEND

- Airport Property
- Municipal Boundaries
- Study Area
- DNL Noise Contour
- Rural Residential (0-1 du/ac)
- Large Lot Residential (1.1-2 du/ac)
- Small Lot Residential (2.1-5 du/ac)
- Medium Density Residential (5.1-15 du/ac)
- High Density Residential (15+ du/ac)
- Water
- Noise-Sensitive Institutions
- ✚ Place of Worship
- 🏫 School
- 🎓 Charter School
- 🏥 Hospital
- 🏛️ Museum
- 📖 Library
- 🏠 Residence Halls
- 🏘️ Community Center
- Potential Residential Development Areas
- Potential Noise-Sensitive Institutions

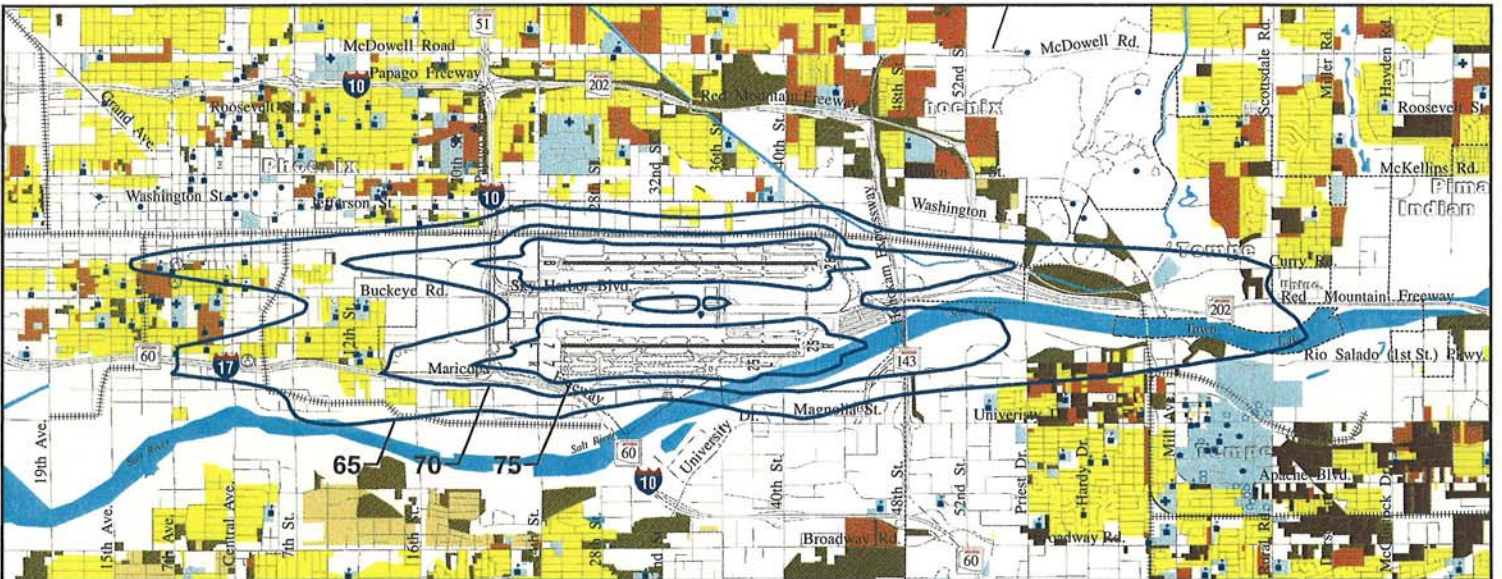
Source: Coffman Associates and Brown-Buntin Associates Analysis.

Aerial Photography Land Use Interpretation, September 1998.

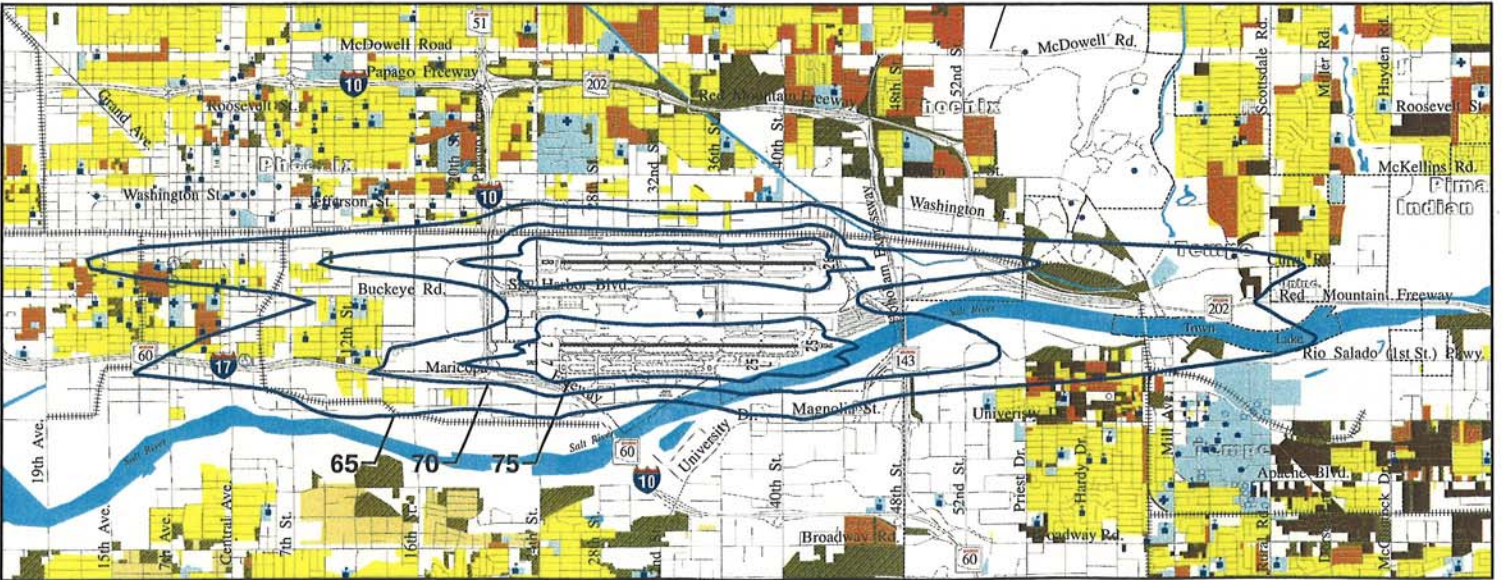
1999 AIRCRAFT NOISE EXPOSURE WITH EXISTING LAND USE



2004 AIRCRAFT NOISE EXPOSURE WITH NOISE COMPATIBILITY PROGRAM



2015 AIRCRAFT NOISE EXPOSURE WITH NOISE COMPATIBILITY PROGRAM



**NOISE MITIGATION
ELEMENT**

The noise mitigation element includes measures to mitigate or reduce the impact of aircraft noise on existing noise-sensitive land uses within the airport noise contours. The following noise mitigation measures are recommended in the updated Noise Compatibility Program.

1. Sound insulate single-family homes within the 1992 65 DNL contour and single-family homes outside the 1992 65 DNL contour but inside the 1999 65 DNL contour.

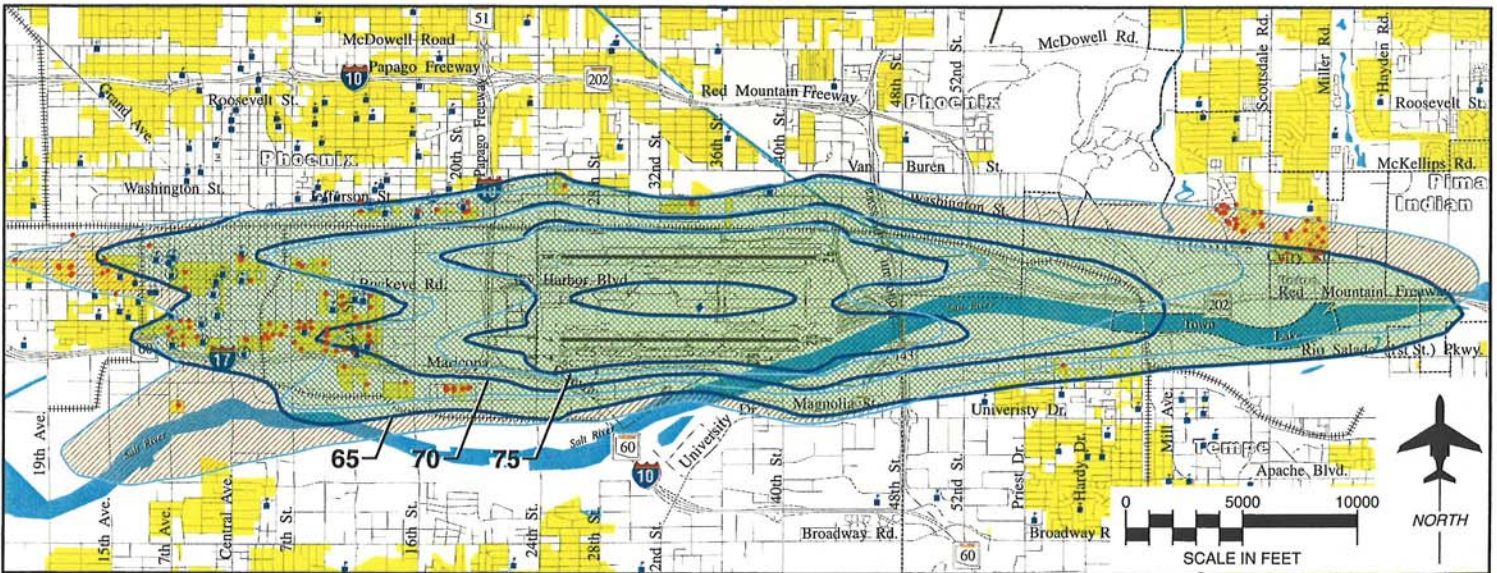
The City of Phoenix has developed sound insulation programs for 2,175 single-family homes based on recommendations of the 1989 Part 150 Noise Compatibility Program. Currently, 153 homes have been insulated to date. Another 634 homes are scheduled for sound insulation and are currently in the design or construction process as of November 2000. The City of Phoenix should consider expanding the boundaries of the residential acoustical treatment program to include 245 additional homes in the 1999 65 DNL noise contour. The sound insulation area is depicted on the exhibit below.

2. Sound insulate approximately 10 schools within the 1999 65 DNL contour.

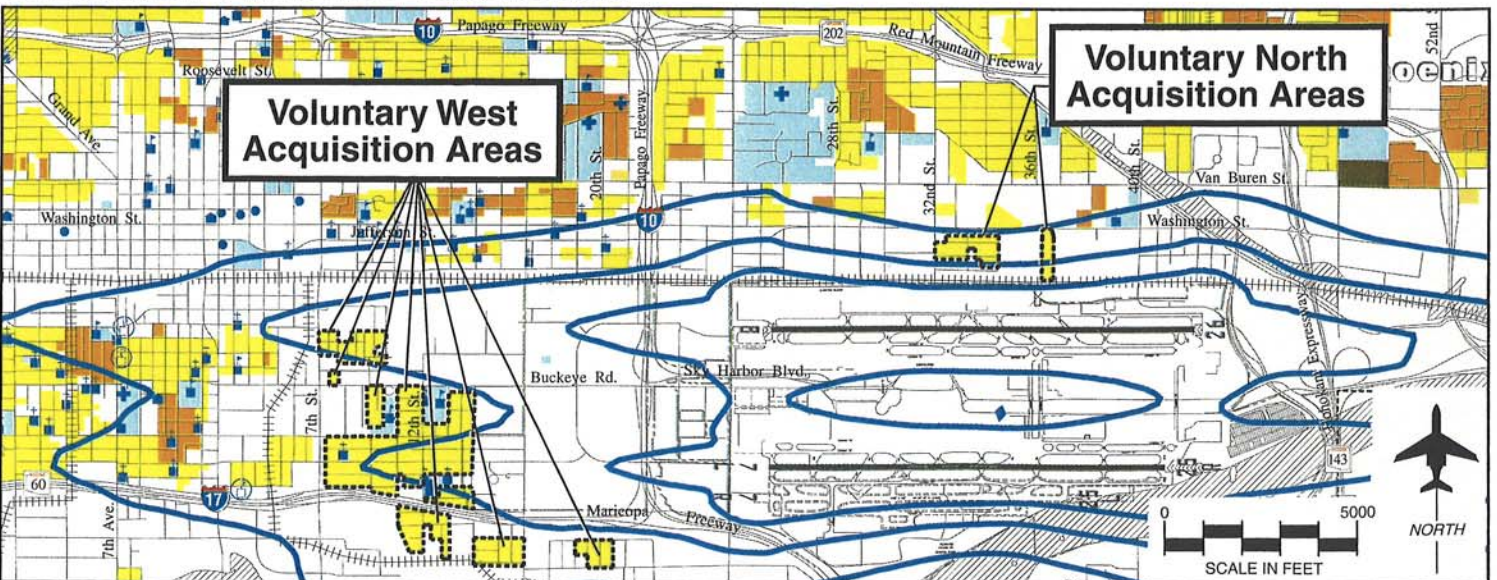
Pending a feasibility study, the City of Phoenix should develop a sound insulation program for Lowell Elementary, Herrera Elementary, Ann Ott Elementary, Dunbar, Maricopa Skills Center, Gateway Community College, Tertulia, Enterprise, Friendly House, and the Phoenix Day Preschool. These schools are depicted on the exhibit on the previous page.

3. Sound Insulation of community centers and church class/meeting rooms within the 1999 65 DNL contour.

RECOMMENDED SOUND INSULATION PROGRAM



VOLUNTARY PROPERTY ACQUISITION



Pending a feasibility study, the City of Phoenix should develop a sound insulation program for the class/meeting rooms within the community centers and places of worship within the 1999 65-70 DNL noise contours. The community centers and places of worship are listed below and depicted on the top exhibit on the previous page.

Community Center

- Barrios Unidos Park Building
- Chicanos Por La Causa Educational Complex & Terri Cruz Social Service Center
- Marcos de Niza Senior Center

Places of Worship

- First Church of God in Christ
- First Institutional Baptist
- Greater Friendship Baptist Church
- Iglesia Bautista
- Iglesia Cristiana El Brian Pastor
- Iglesia Episcopal De San Pablo
- Iglesia Evangelica
- Iglesia Universal de Jesucristo
- Jesus Faith Center
- Pilgrims Rest
- Primera Iglesia Metodista Unida
- Sacred Heart Parish
- Sendero de la Cruz Mexicana
- St. Anthony Catholic Church
- St. Paul Missionary Baptist
- St. Pius X Church
- Templo
- Trinity Church of God in Christ

4. Voluntary Acquisition of dwellings north and west (south of Washington Street, north of University, and west to 7th Street) of the airport within the 1999 70 DNL contour.

One thousand one hundred eleven (1,111) dwellings are recommended for inclusion in a voluntary acquisition program. These residential areas received noise between 65 and 75 DNL in 1999, and are somewhat isolated from other neighborhoods by surrounding industrial development. The voluntary acquisition areas are depicted on the lower exhibit on the previous page.

5. Exchange dwellings impacted within the 70 DNL noise contour with a dwelling outside the 65 DNL noise contour.

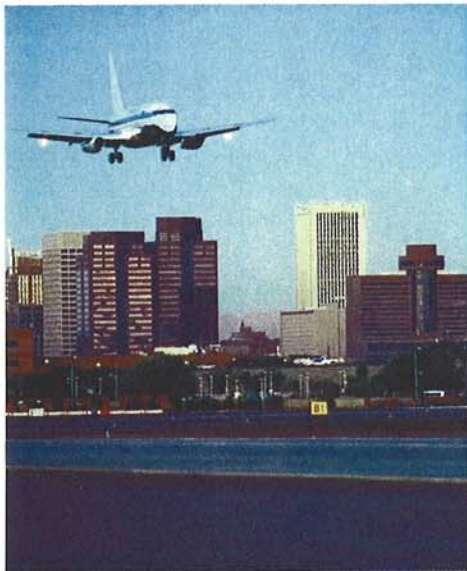
As an alternative to the voluntary acquisition, a dwelling exchange program would be established within the acquisition area. In this program, the owner of a home within the voluntary acquisition areas would give the title of their noise impacted home to the program sponsor in exchange for the title of the new home outside the 1999 65 DNL noise contour.



LAND USE MANAGEMENT

The land use management element encourages compatible development in noise-affected areas of Phoenix and Tempe. The following land use measures are recommended in the updated Noise Compatibility Program.

1. Update General Plans to reflect the 1999 65 DNL Noise Contour Planning Boundary (NCPB) from Part 150 Study as basis for noise compatibility planning.



Phoenix, Tempe, Scottsdale, Salt River Pima-Maricopa Indian Community, and Maricopa County should amend their General Plans to show the NCPB for Phoenix Sky Harbor International Airport. The top exhibit on the next page shows the NCPB for Phoenix Sky Harbor International Airport. It includes land within the squared-off 1999 65 DNL noise exposure contour.

2. Amend General Plan designations to reflect existing compatible and existing lower density land uses with the NCPB.

Several areas within the NCPB are developed with compatible land uses, but are planned for

noncompatible land uses or higher concentrations of noncompatible land uses. In addition, two areas west of the airport are developed with low density residential that are planned for higher concentrations of residential. It is recommended that within the NCPB general plan designations be amended to reflect the existing compatible land uses or lower density residential use. The top exhibit on the next page depicts the General Plan designations within the NCPB to be amended.

3. Amend General Plan Mixed - Use designations within the 1999 65 DNL contour to exclude residential.

Large areas of planned mixed-use (which allows high concentrations of residential development) east of the airport and within Tempe should be amended. Developing a new mixed-use category that does not allow residential inside the 1999 65 DNL noise exposure contour is recommended.

4. Enact guidelines specifying noise compatibility criteria for the review of development projects within the NCPB.

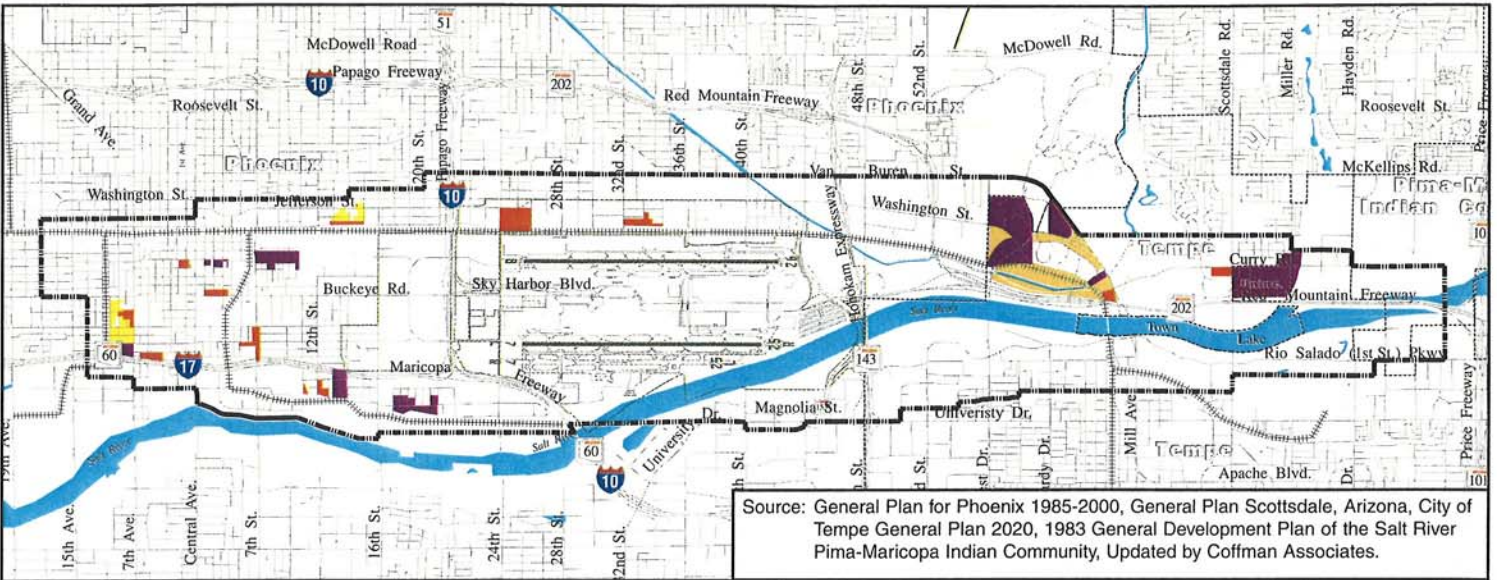
Phoenix, Tempe, and the Salt River Pima-Maricopa Indian Community should adopt airport land use compatibility guidelines for discretionary review of development projects within the 1999 65 NCPB. This provides the affected government entity with guidance when reviewing development proposals within airport noise-impacted areas.

5. Retain compatible land use zoning within the NCPB.

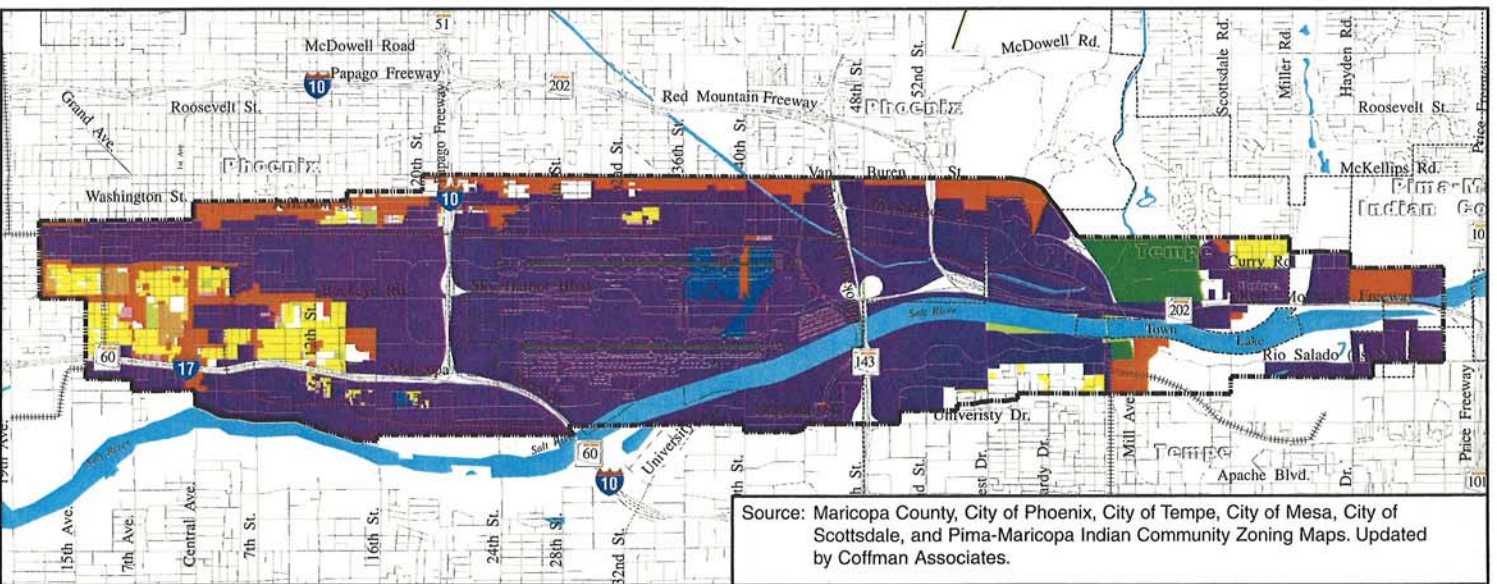
There are several areas within the NCPB that are currently zoned for compatible use. When possible, the



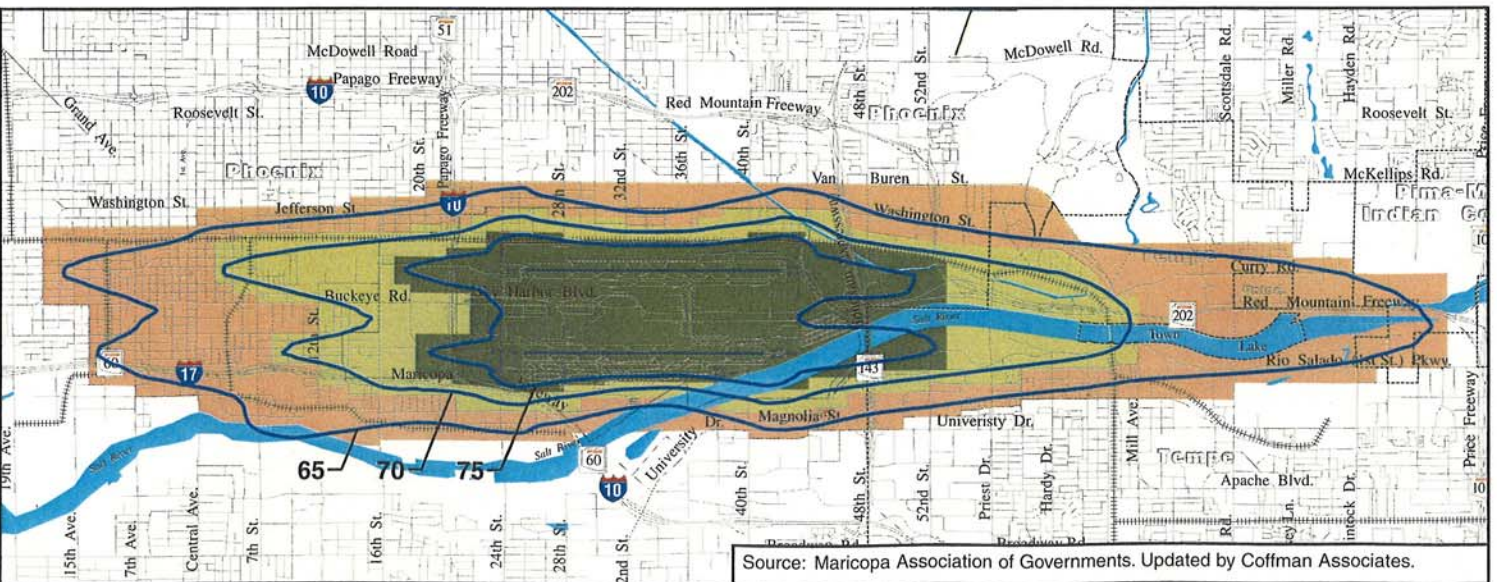
RECOMMENDED GENERALIZED LAND USE PLAN AMENDMENTS

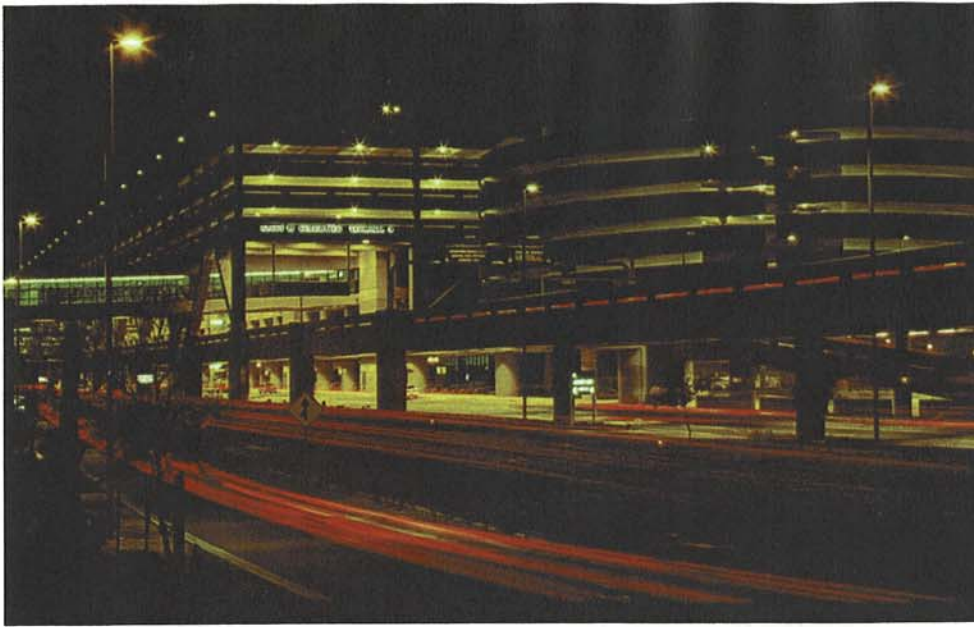


RECOMMENDED ZONING AMENDMENTS



RECOMMENDED NOISE OVERLAY ZONES





areas that are zoned for compatible use should be maintained. These areas are depicted on the middle exhibit on the previous page in dark red (Commercial/Office), dark purple (Industrial), and dark green (Park & Open Space).

6. Amend zoning map to reflect General Plan and existing compatible land uses within the NCPB.

Encourage the rezoning areas within the NCPB to compatible land uses (commercial or industrial) that are currently developed with compatible land uses, but are zoned for non-compatible land uses. The middle exhibit on the previous page depicts several areas (pink and dark blue colors) that are developed with compatible land uses but are zoned for non-compatible land uses.

7. Encourage rezoning of several large tracts of land currently developed with low density residential but zoned for higher density non-compatible land uses within the 1999 65 DNL noise exposure contour.

The City of Phoenix should encourage rezoning several large tracts of land currently developed

with low density residential but zoned for higher density non-compatible land uses within the 1999 65 DNL noise exposure contour west and northeast of the airport. The large tracts, depicted in orange and yellow colors on the middle exhibit on the previous page, of low and medium density residential land west of the airport are currently zoned for high density residential.

8. Enact airport overlay zoning to provide noise compatibility land use standards near the airport.

In order to fully promote airport compatibility and implement the land use element of the NCP throughout the Phoenix Sky Harbor International Airport area, it is recommended that Phoenix, Tempe, the Salt River Pima-Maricopa Indian Community, and Maricopa County amend their respective zoning ordinances to include overlay zoning. The suggested overlay zoning boundaries are depicted on the bottom exhibit on the previous page.

9. Amend the subdivision regulations to require recording of fair disclosure agreements and covenants and overflight easements within the NCPB.

Phoenix, Tempe, the Salt River Pima-Maricopa Indian Community, and Maricopa County should amend their respective subdivision regulations to support the relevant requirements of the Airport Overlay Zoning Ordinance. Specifically, it should be amended to require the recording of fair disclosure agreements and covenants within the NCPB and the dedication of aviation easements within Airport Overlay Zone 1. This would apply only to new subdivisions.

10. Amend the building code to enact construction standards within the NCPB.

The Airport Overlay Zoning Ordinance establishes a standard for the outdoor-to-indoor noise level reduction for selected land uses within various noise overlay zones. In order to assist with the implementation of these requirements, Phoenix, Tempe, the Salt River Pima-Maricopa Indian Community, and Maricopa County should amend their local building codes to establish specific construction standards for sound insulation. This would provide builders and inspectors with specific guidance on the materials and construction techniques to ensure adequate sound insulation.



PROGRAM MANAGEMENT

The success of the Noise Compatibility Program requires a continuing effort to monitor compliance and identify new or unanticipated problems and changing conditions. Four program management measures are recommended at Phoenix Sky Harbor International Airport.

1. Continue noise abatement information program.

Continue the noise abatement information program for receiving, analyzing, and responding to noise complaints. The airport has a well-organized system of recording and responding to noise complaints.

2. Monitor implementation of updated Noise Compatibility Program.

The City of Phoenix should check with the local FAA Air Traffic Manager to determine compliance with the noise abatement measures. They should also coordinate in preparing occasional briefings for air traffic controllers. The airport management should also develop informational and promotional materials for pilots to inform them of the various aspects of the Noise Compatibility Plan. The management may need to arrange for special noise monitoring, noise modeling, flight track analysis, or runway use studies to assess issues that may arise in the future. The City of Phoenix should also maintain communications with the Phoenix, Tempe, the Salt River Pima-Maricopa Indian Community, and Maricopa County planning officials to follow their progress in implementing the relevant measures of the Land Use Management Element.

3. Update Noise Exposure Maps and Noise Compatibility Program.

The City of Phoenix should review the Noise Exposure Maps and Noise Compatibility Program periodically. They should be revised and updated as necessary. This can be anticipated every five to eight years.

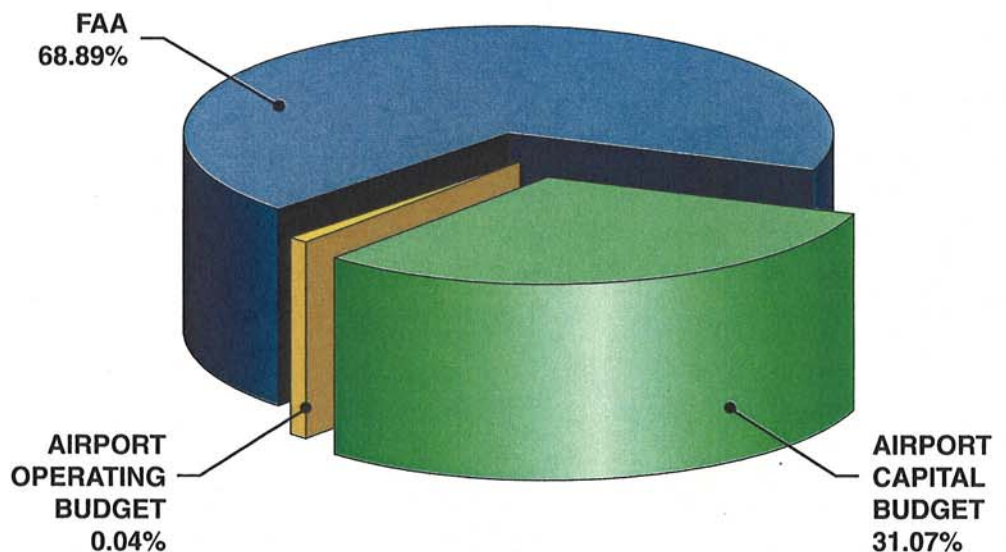
4. Expand flight track monitoring coverage.

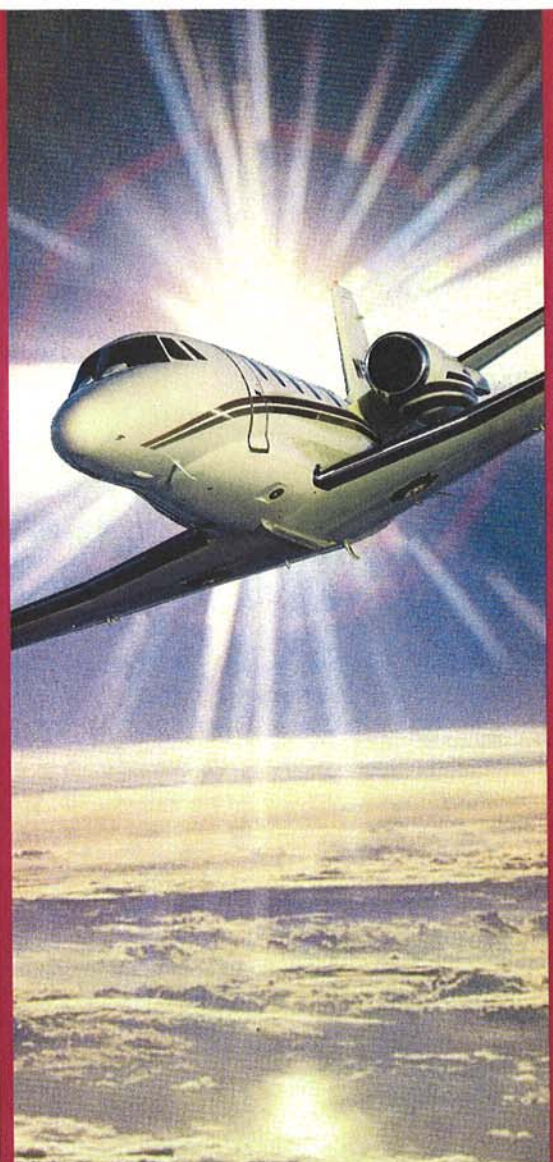
The City of Phoenix should expand the flight track monitoring coverage from 15 miles to 30 miles. This will provide additional coverage that will allow airport staff to better respond to aircraft noise complaints,

monitor potential route changes, and provide information for requests in outlying areas.

COSTS AND FUNDING

The cost of implementing the Noise Compatibility Program is \$231,045,500. Approximately 68.9 percent of the costs are expected to be covered through the Federal Aviation Administration's Airport Improvement Program. The remaining costs will be paid with airport revenues. The Aviation Department is an enterprise department within the City of Phoenix. No general City tax dollars are used for Aviation Department projects.





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