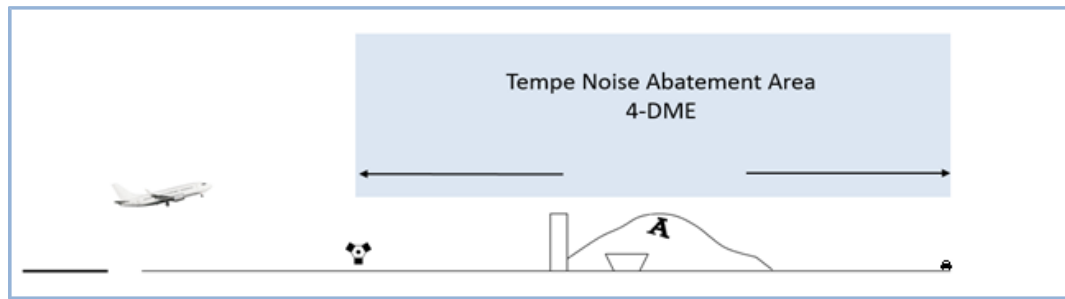


PHX East Compliance Report Q1, 2024

Introduction

The City of Tempe is located directly east of Phoenix Sky Harbor International Airport (PHX) which is owned and operated by the City of Phoenix.

This report gives an account of how well PHX operations comply with noise mitigation flight procedures over the City of Tempe. The flight procedures are memorialized in an intergovernmental agreement between the two cities, and the Tempe Aviation Commission (TAVCO) is tracking the implementation of the agreement in quarterly reports followed by an annual summary.



The Tempe and Phoenix Intergovernmental Agreement (IGA) from 1994, requires jet and large turboprop aircraft to stay on headings east within the Salt River (Rio Salado) riverbed and Tempe Town Lake to 4 nautical miles from a navigational aid (VORTAC) or 4-DME (Distance Measuring Equipment) before diverging to intercept PHX departure routes. 4-DME east is located at the SR-202 and SR-101 intersection. The FAA does not require large turboprop to fly the headings to 4-DME.

Because most of the airlines which depart PHX use area navigation (RNAV), the lateral accuracy required for airlines following departure procedures in the airport terminal area is 1 nautical mile, (RNP1), or three tenths of a nautical mile, (RNP0.3), if the airline has special FAA [approval](#). An RNP of 0.3 means the aircraft navigation system must be able to calculate its position within a circle around an RNAV waypoint which has a radius of three tenths of a nautical mile. The FAA is in the process of implementing new and updated RNP procedures for airports including PHX.

Because PHX Standard Instrument Departure (SID) Procedures to the east include procedures that that direct departures to a waypoint, (navigation fix), at 4DME, and a few RNAVs SID and classic SIDs that do not, airline compliance is separated into three categories in this report.

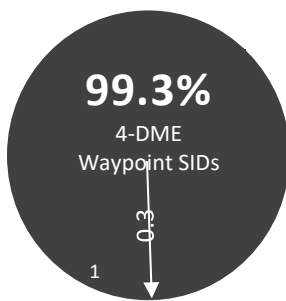


Figure 1: Departure compliance for jets using RNAV SIDs, (7), with a fly-over waypoint at 4-DME

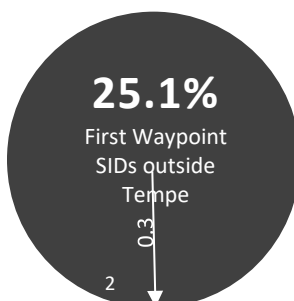


Figure 2: Departure compliance for jets using RNAV SIDs with a first fly-by waypoint after 4-DME

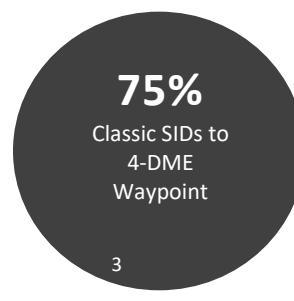


Figure 3: Departure compliance for jets using procedures with headings the runways

During the first quarter the airlines flying RNAV SIDs with a first waypoint after 4-DME followed two procedures with a sharp turn south after 4-DME, which caused a majority to stay outside the area of three tenths NM around the waypoint. 2.5% of the departures lacked departure route ID and could not be included in the compliance assessment.

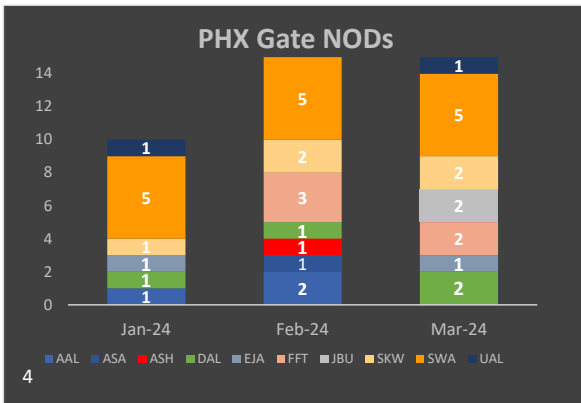


Figure 4: City of Phoenix violation notices to selected airlines.

Airlines with jet departures to the east that fail to pass through the PHX Gate receives e-mail Notices of Deviations (NODs) from the City of Phoenix.

The gate is set up in the PHX Airport Noise & Operations Monitoring System (ANOMS) at 4-DME just west of the SR-202 and SR-101 interchange. It is 5,500 feet wide and runs parallel to the SR-101. PHX Gate compliance is published Noise Reports, see [Updates & Reports | Phoenix Sky Harbor International](#).

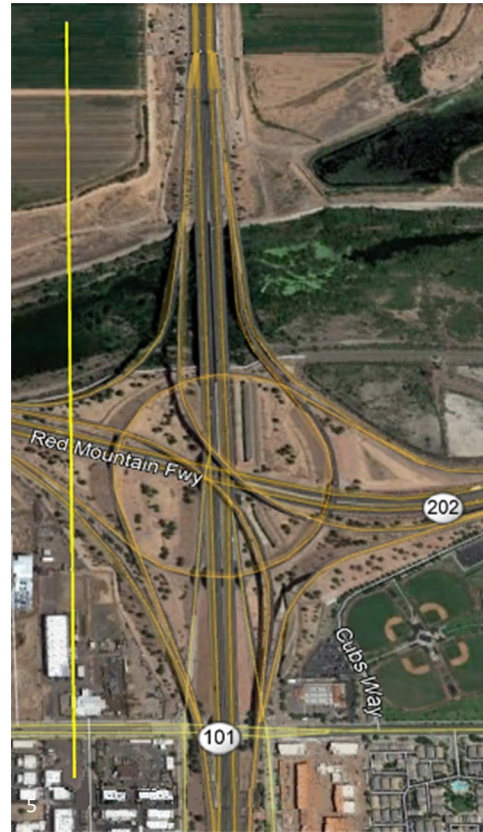


Figure 5: PHX 4-DME Departure Compliance Gate

Departure Equalization

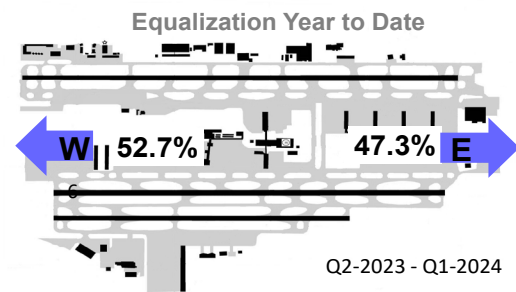


Figure 6: Annual equalization - Night and day

The IGA calls for an even split of the noise burden from departing jet and large turboprop aircraft east and west of PHX parallel runways during daytime and nighttime hours. The FAA is expected to compensate for periodic changes in flight patterns as weather and air traffic allows to accomplish equalization. The FAA expressed in a 1994 Record of Decision that the appropriate period for definition of PHX departure equalization is over a twelve-month period. Hourly or daily equalization were not considered to be reasonable goals due to factors like seasonal weather patterns, diurnal wind changes, air traffic conditions, and the density of aircraft operations at specific times of day with the majority of aircraft operations occurring during daylight hours of a 24-hour period. In this report only jet departure equalization over the last twelve months is included. Large turboprops no longer have a presence at the airport.

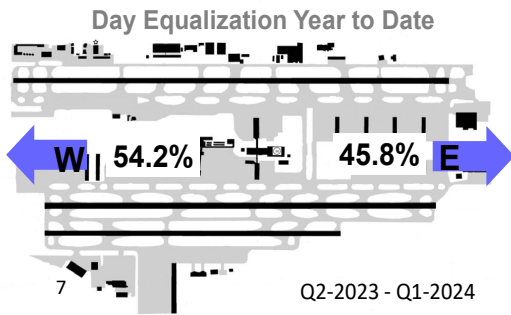


Figure 7: Annual Day equalization

Day equalization includes departures taking place between the hours of 7:00 a.m. and 10:00 p.m. Night equalization includes departures between 10:00 p.m. and 7:00 a.m.

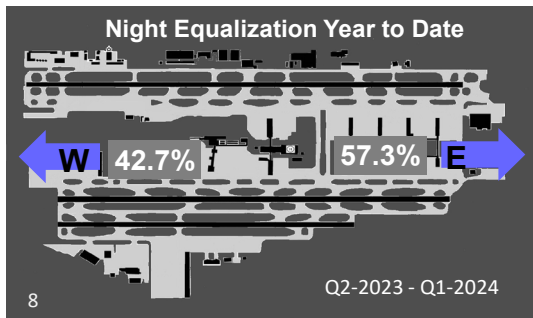


Figure 8 Annual Night equalization

Weather

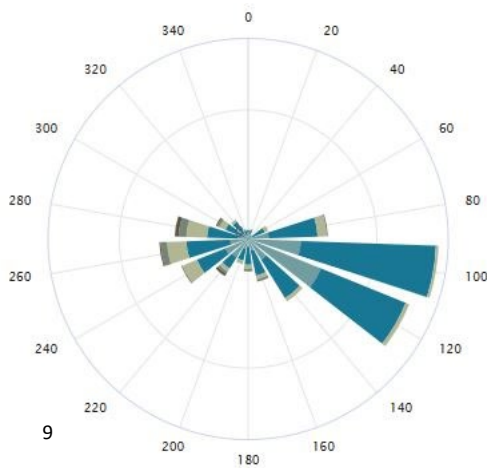


Figure 9: Wind directions.

- 0-5
- 5-10
- 10-15
- 15-20
- >= 20

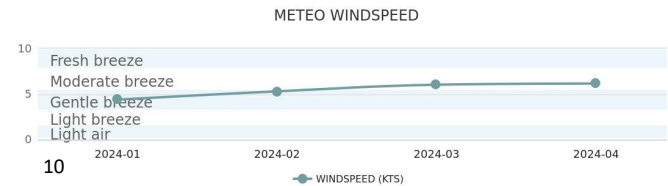


Figure 10: Wind speeds (knots).

The average wind speeds during the quarter was 3.5 knots. The majority of the higher wind speeds came from westerly directions.

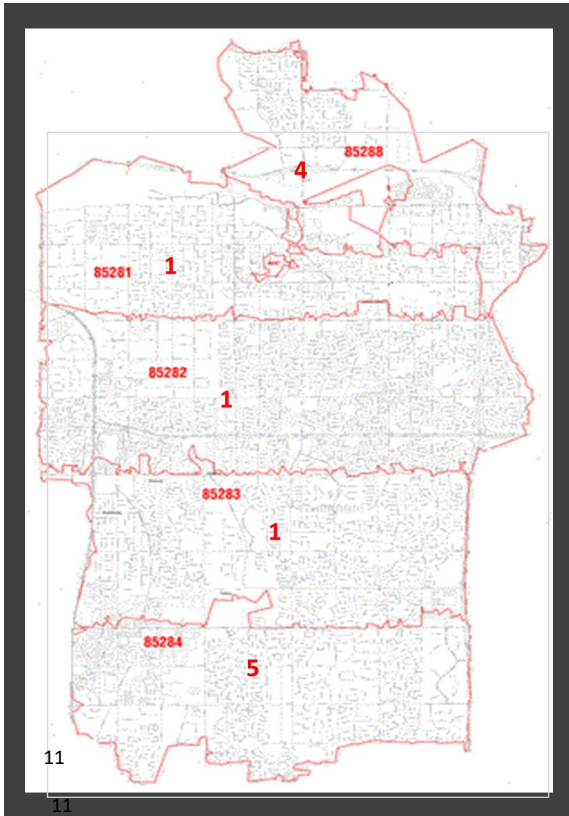


Figure 11: Complaints per postal code area

Complaints are recorded as the number of phone calls, voicemails, and electronic messages received from residents calling in or using the Tempe 311 web complaint option.

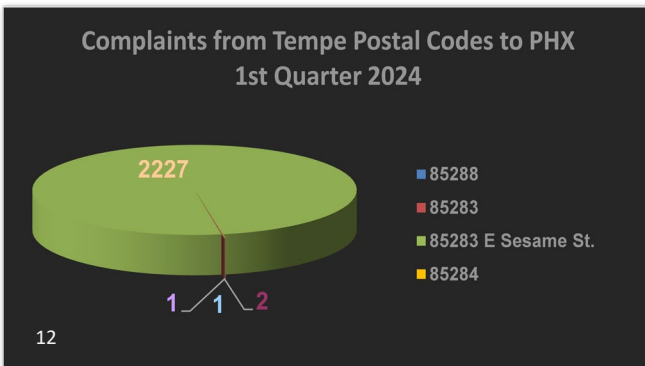


Figure 12: Aircraft noise complaints received by the City of Phoenix from Tempe addresses during the quarter.

It has not been possible in this report to establish a clear correlation between the large volumes of complaints submitted to Phoenix from one home addresses and the total volume of airlines being routed over the resident's home.



North Tempe Noise Exposure

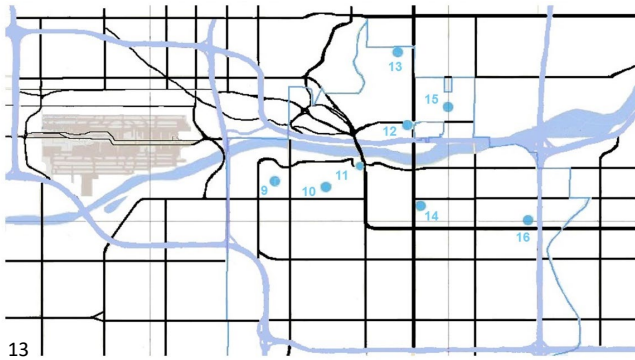


Figure 13: 8 PHX ANOMS fixed noise monitors located in Tempe

Aircraft sound exposure are registered by twenty fixed PHX ANOMS noise monitors of which eight are in North Tempe.

Average equivalent sound level (Ldn) or Day Night Level (DNL) is the metrics used to determine exposure over time and is calculated over a 24-hour period with a penalty of 10dB added for sound events occurring between 10:00 p.m. and 7:00 a.m. The PHX ANOMS provider Casper uses European metrics, Lden, which separate day, evening, and night, where evenings are given a separate 5dB penalty.

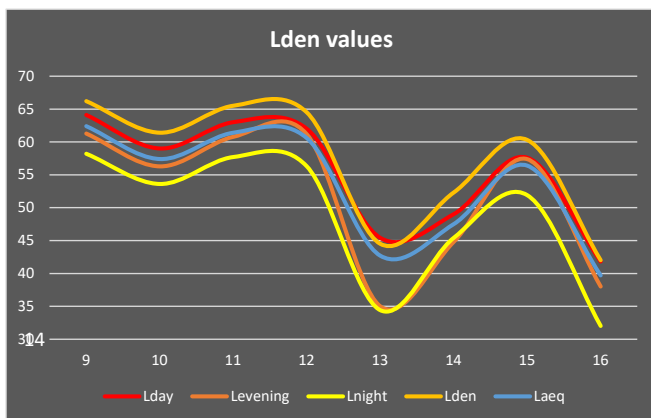


Figure 14: Lden values separated out for time of day and the equivalent average 24-hour dB A level

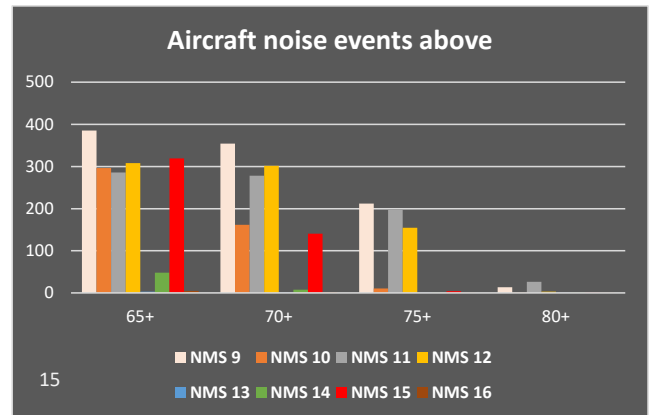


Figure 15: Number of events attributed to aircraft.