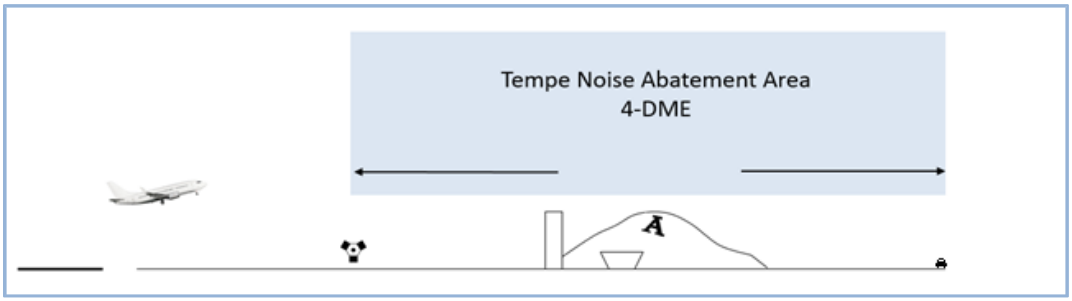
PHX East Compliance Report Q3, 2024

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.

Departure Compliance



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 the eastbound departure routes. 4-DME east of PHX is located at the SR-202 and SR-101 intersection. The FAA does not require large turboprop to fly the headings to 4-DME for flight safety and traffic efficiency reasons.

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, (navigation fix), which has a radius of three tenths of a nautical mile.

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

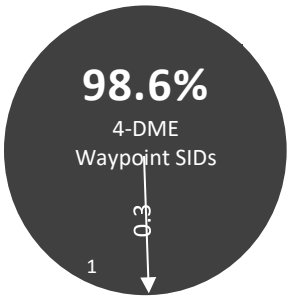


Figure 1: Departure compliance for jets using RNAV SIDs, (7), with a fly-over waypoint at 4-DME.

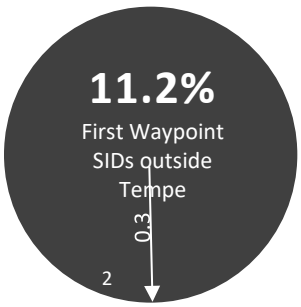


Figure 2: Departure compliance for jets using RNAV SIDs with a first fly-by waypoint after 4-DME.

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

During the second 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 an area of three tenths NM around the waypoint. Only two classic SID east departures flown during the quarter, both within the waypoint circumferences being monitored in this report. 1.6% of the departures lacked departure route ID and could not be included in the compliance assessment.

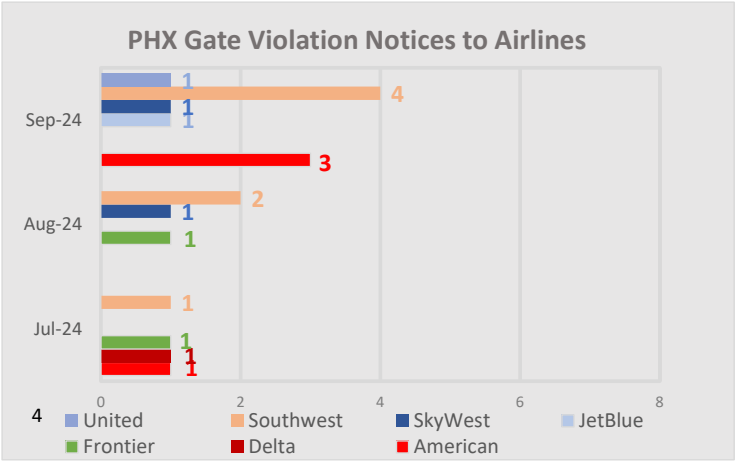


Figure 4: City of Phoenix violation notices to selected airlines.

Figure 5: PHX 4-DME Departure Compliance Gate.

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].

Departure Equalization

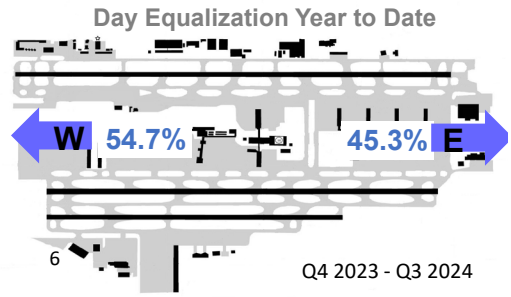


Figure 6: Annual equalization – Day and Night

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 most 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.

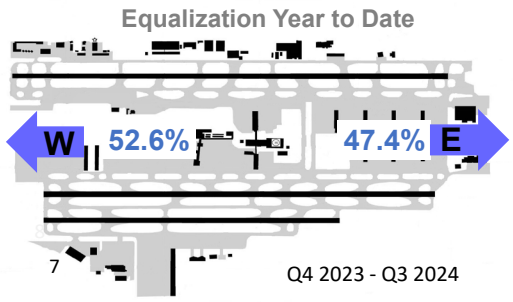


Figure 7: Annual Day equalization.

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.

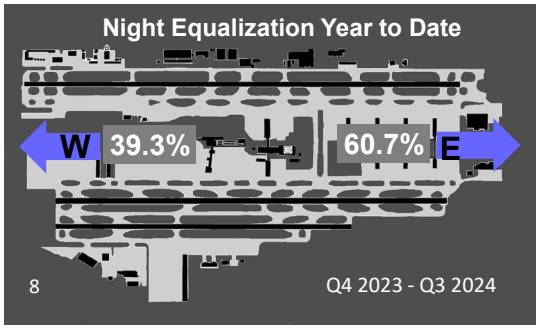


Figure 8: Annual Night equalization.

Weather

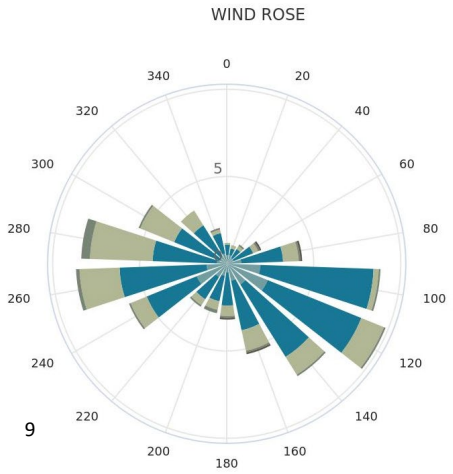


Figure 9: Wind directions & speeds (knots).

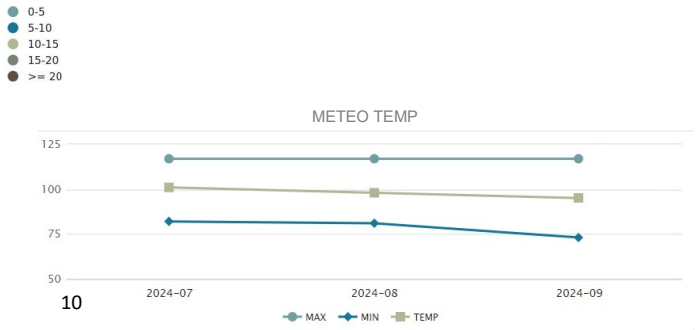


Figure 10: Average temperatures (F).

Moderate wind speeds 6 to 7 knots, but a high maximum average termperature throught the quarter of 117 degrees Fahrenheit.

Noise Complaints

Complaints from Tempe residents are subject to follow-up by the assigned department/staff person. The City of Tempe recommends that residents direct aircraft noise complaints to the PHX administration, File a Concern | Phoenix Sky Harbor International. No aircraft noise complaints were submitted by residents calling in or using the Tempe 311 service request option.

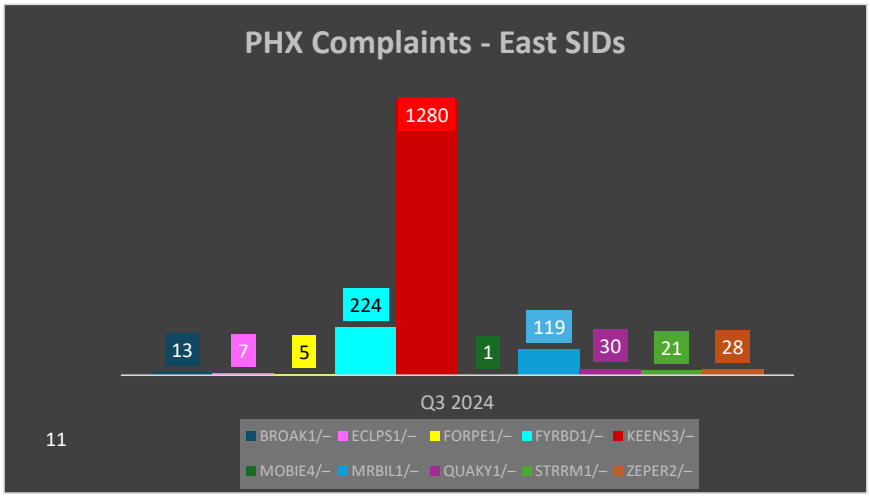


Figure 11: Complaints received by PHX correlated to departures following eastbound RNAV Standard Instrument Departure (SID) procedures.

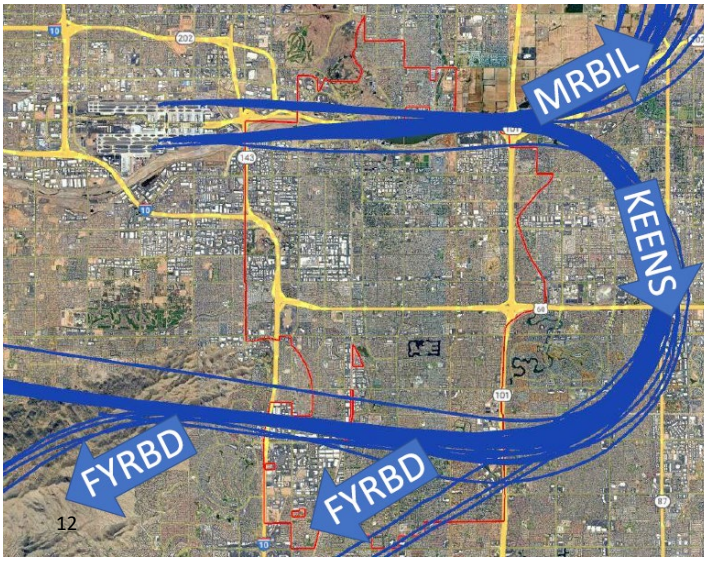


Figure 12: Departures on eastbound RNAV SIDs receiving the most complaints to PHX.

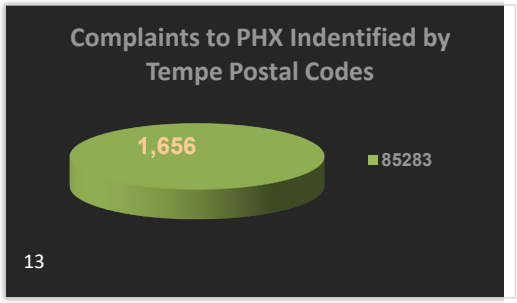


Figure 13: Aircraft noise complaints received by the City of Phoenix from one Tempe address during the quarter.

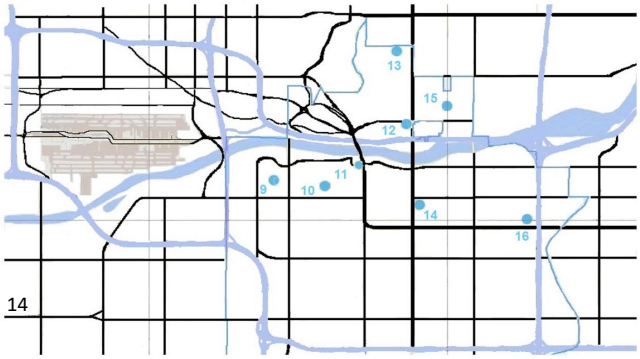


Figure 14: 8 PHX ANOMS fixed noise monitors located in Tempe.

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 a European metric, Lden, which separates day, evening, and night, where evenings between 7:00 p.m. and 10:00 p.m. are given a 5dB penalty, and nights between 10:00 p.m. and 7:00 a.m. are given the 10dB penalty.

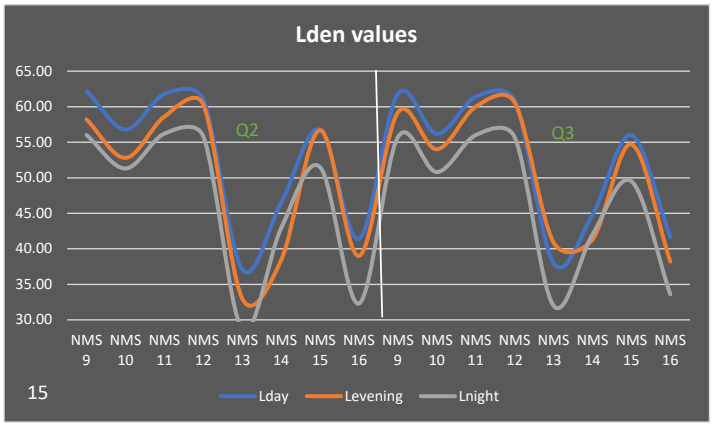


Figure 15: Lden values separated out for time of day '

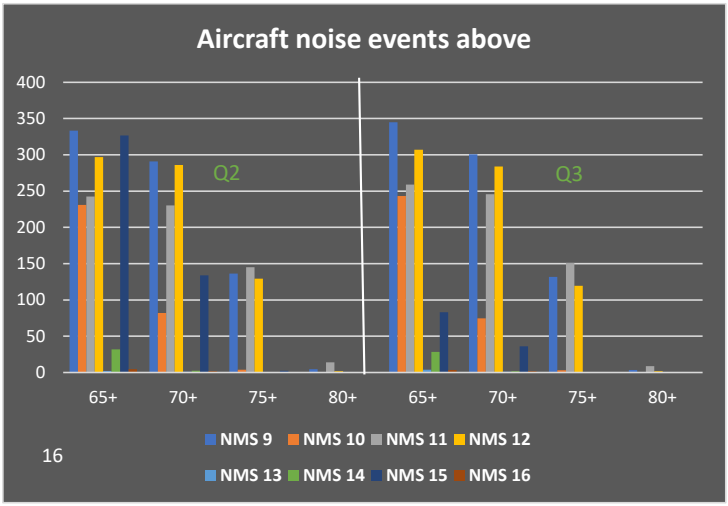


Figure 16: Number of high-level noise (Lmax) in aircraft dBA events.
Note: NMS 15 showed lower number of high-level noises in events compared to the second quarter.