

2019

PHX East Annual Summary

Inventory :

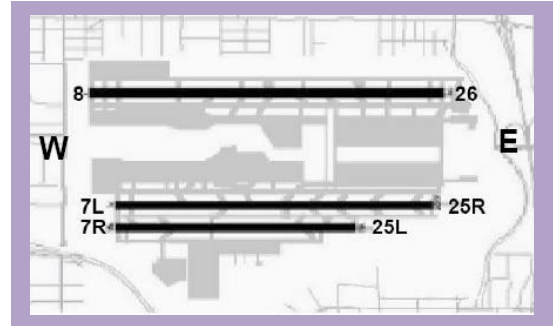
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Report prepared for the
Tempe Aviation Commission - TAVCO
by the City of Tempe
255 East Marigold Lane
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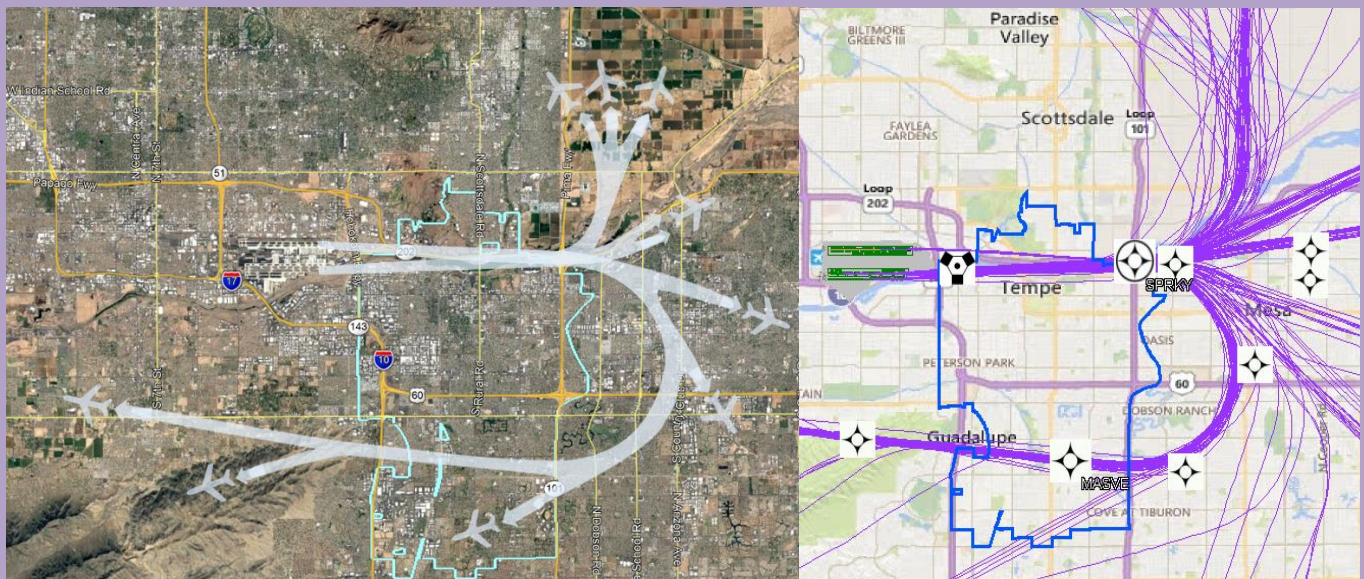
1. Introduction

This summary is an annual account for the Tempe Aviation Commission (TAVCO) of how aircraft operations at Phoenix Sky Harbor International Airport complied with noise mitigation flight procedures over the City of Tempe. TAVCO consists of nine Tempe residents appointed by the Tempe Mayor with approval of the Tempe City Council to assist and give advice on how to deal with airport operation impacts on Tempe residents and the implementation of a 1994 intergovernmental agreement with the City of Phoenix to mitigate noise impacts from jet and large turboprop aircraft over Tempe. The City of Tempe is located directly east of the Phoenix Sky Harbor International Airport.



The airport is owned and operated by the City of Phoenix and expanded in October 2000 with a third parallel runway (7R/25L). The following two noise mitigation flight procedures remain in place after the FAA in 2002 suspended the implementation of a side step visual approach procedure to the new runway which was a third flight procedure included in the 1994 agreement:

- The 4-DME Standard Instrument Departure procedure to keep east departing jet and large turboprop aircraft over the Salt River/Tempe Town Lake area before they make turns towards their route destinations.
- Annual equalization of all jet and large turboprop aircraft departures east and west of the airport during daytime and nighttime hours.

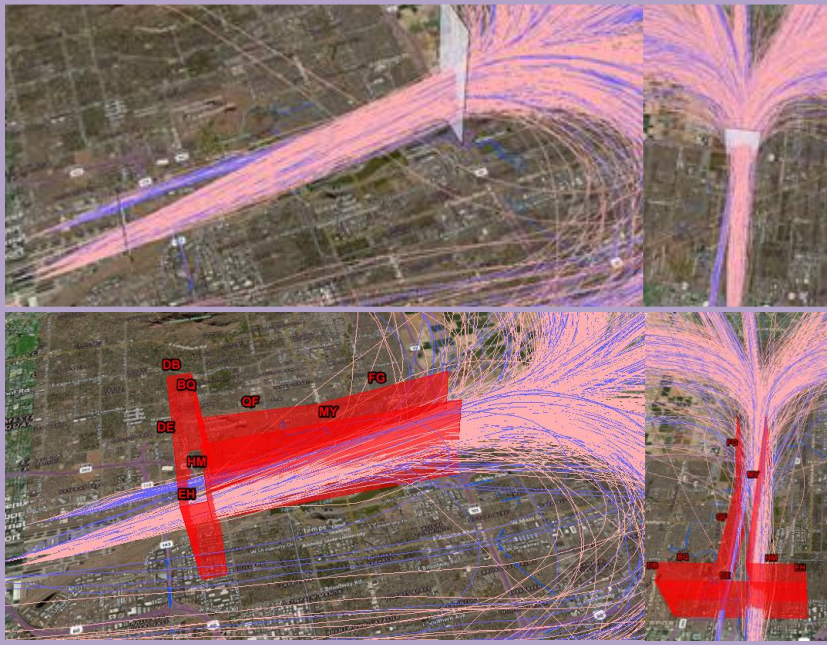


On September 18, 2014 the FAA introduced new satellite-based Area Navigation (RNAV) Standard Instrument Departure (SID) routing for PHX. The number of PHX RNAV SIDs was expanded from seven to nine. The east bound SIDs were designed with a GPS navigation waypoint, "SPRKY," located at 4-DME. Routes that turn departing jets back west south of the airport to California destinations a GPS navigation waypoint, "MASVE," was established over Kyrene Los Niños Elementary School in South Tempe.

The routing of east bound jet departures over the "SPRKY" waypoint has improved overall airline departure compliance with the 4-DME noise mitigation flight procedure over North Tempe. The "MASVE" waypoint has concentrated a larger volume of departures over neighborhoods under a narrower flight corridor in South Tempe. In addition to the east flow departures, tracks shown amount to one day of east departures, the same area on Tempe's southeast border is also under a busy flow of jets descending or turning north during west flow operations.

2. East Departure Compliance

Under the 1994 intergovernmental agreement a system of fixed noise monitors and monitoring of flight tracks, was installed to track noise and how aircraft manage to keep within the Salt River/Tempe Town Lake area on departure towards the east. The City of Phoenix included an imaginary vertical gate in the Airport Noise & Operations Monitoring System (ANOMS) at 4-DME that all east departing jet aircraft need to pass through to stay in compliance with the agreement. TAVCO proposed several imaginary gates creating a “Corridor”, which was based on Standard Instrument Departure (SID) procedures in use when the agreement was made in 1994.



The PHX 4-DME Gate is shown in white.

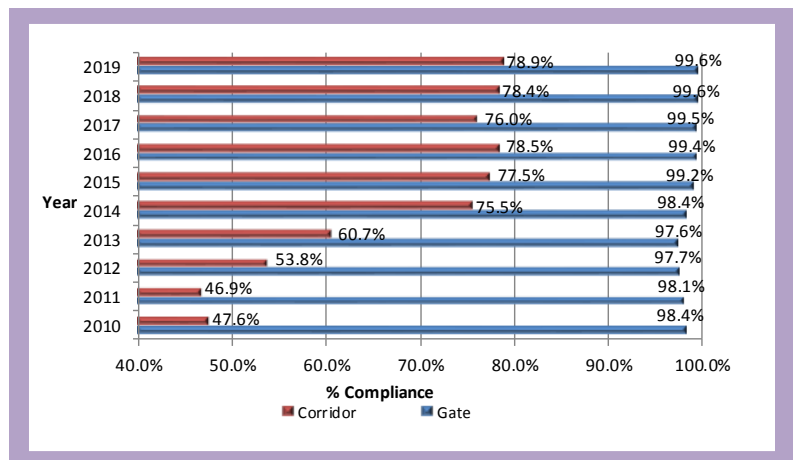
The red gate system is used in the TAVCO report to identify airlines that fail to stay over the riverbed when departing over north Tempe.

TAVCO’s proposal was endorsed by the Tempe City Council but rejected in favor of an exit gate by the City of Phoenix when the system was established back in 1996-97. Large turboprop aircraft departures are routinely routed outside the 4-DME gate on diagonal headings; 120° towards the southeast and 60° towards the northeast to keep them out of the paths used by the faster jet aircraft.

Compliance Rates

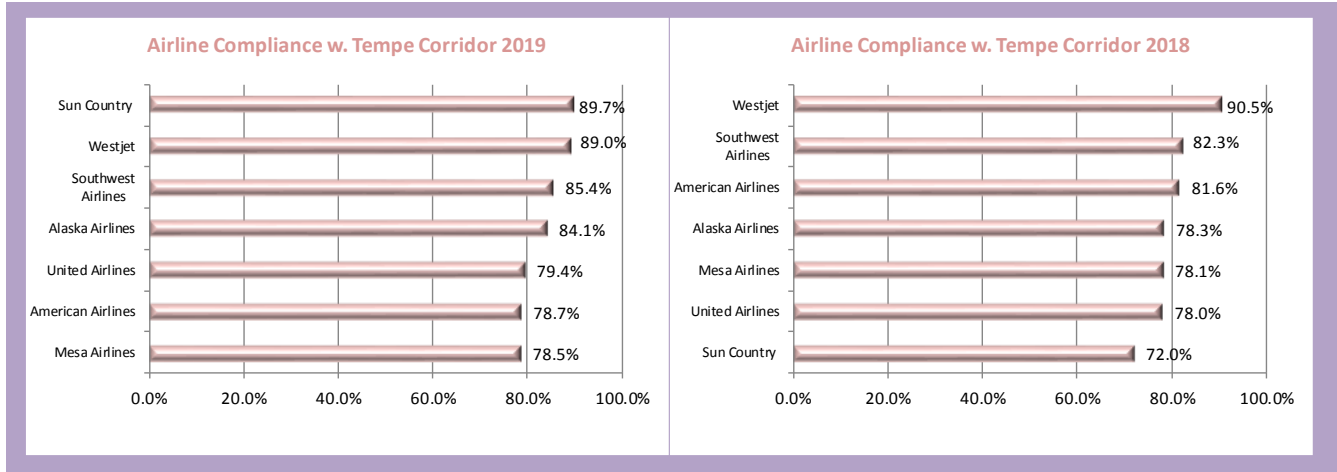
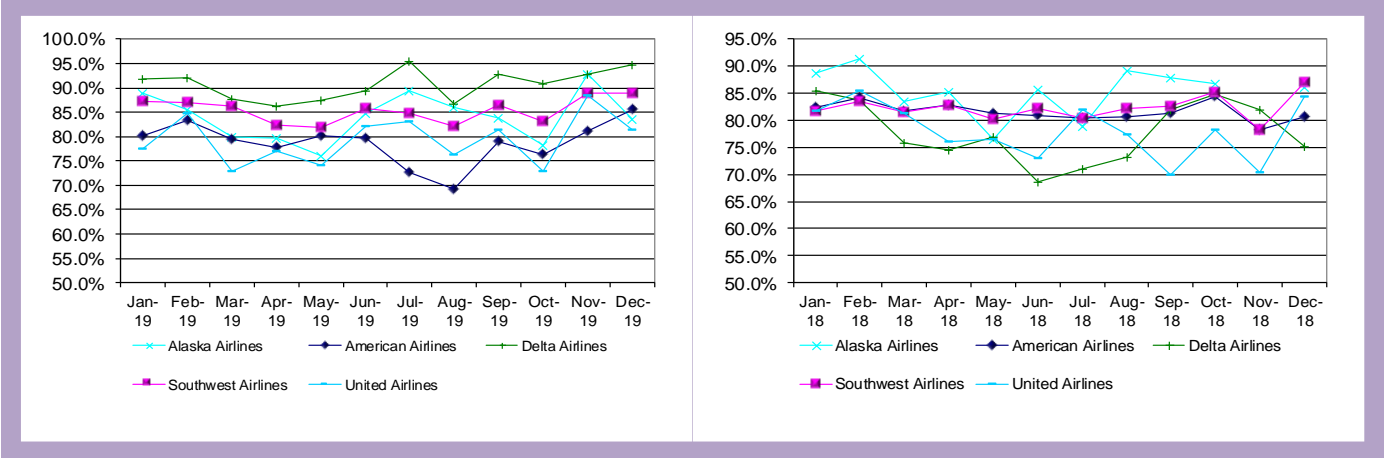
The annual average compliance rates are based on monthly numbers from the TAVCO Noise Mitigation Monitoring Reports. Typically, cross winds of 10 knots or more has been used to filter out deviations due to weather.

The volume of jet and large turboprop departures towards the east during daytime decreased 5.9% in 2019 reaching 71,385. Night-time departures increased 6.9% reaching 14,006. In total jet and large turboprop departures and arrival operations east of the airport decreased 1.2%.



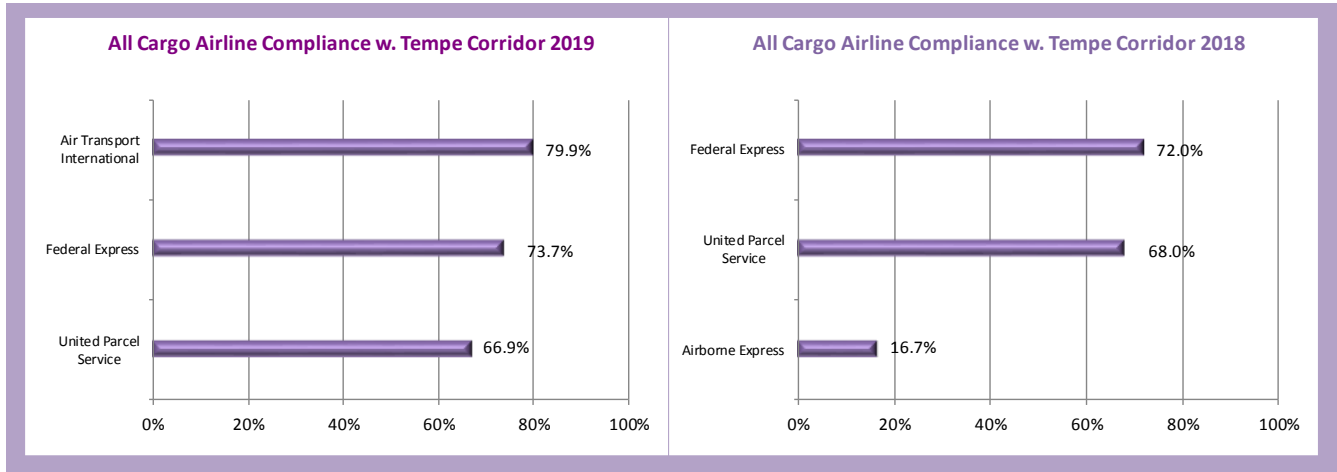
Large Carrier Compliance

The graph shows corridor compliance rates for some of the airport's busiest airlines. Only airlines with on average ≥ 10 departures to the east per month are included.



Top All Cargo Carriers

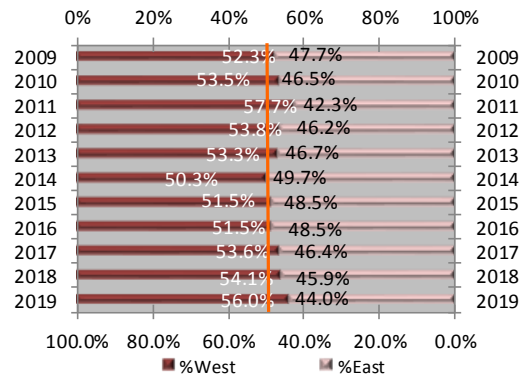
All cargo carriers have on average somewhat lower compliance rates with the Tempe Corridor than the average performing passenger carrier.



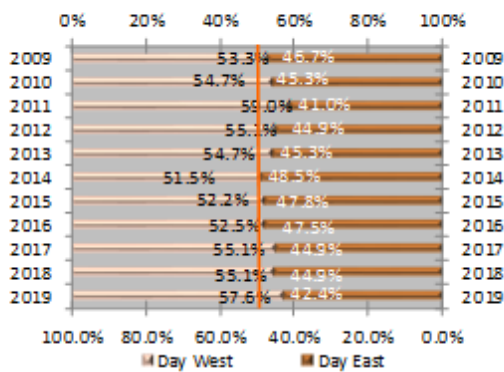
3. East/West Equalization

The annual split in all jet and large turboprop aircraft departures to the east and west of the Phoenix Sky Harbor International Airport differs between day- and day nighttime hours. The most of these operations goes towards the west when both day- and nighttime hours are combined. Departure traffic during the night and early hours of the day is predominantly going towards the east.

Annual Equalization (Day&Night)

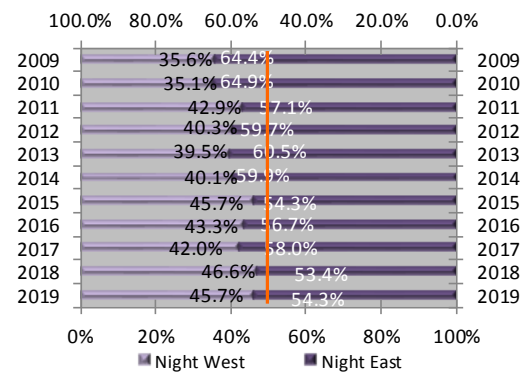


Day Equalization



Day = 7: 00 a.m. to 10:00 p.m. local time

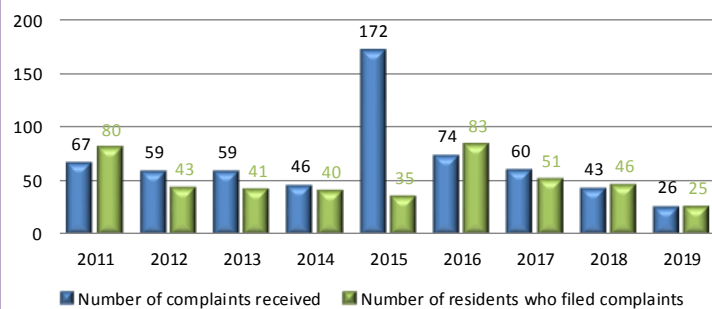
Night Equalization



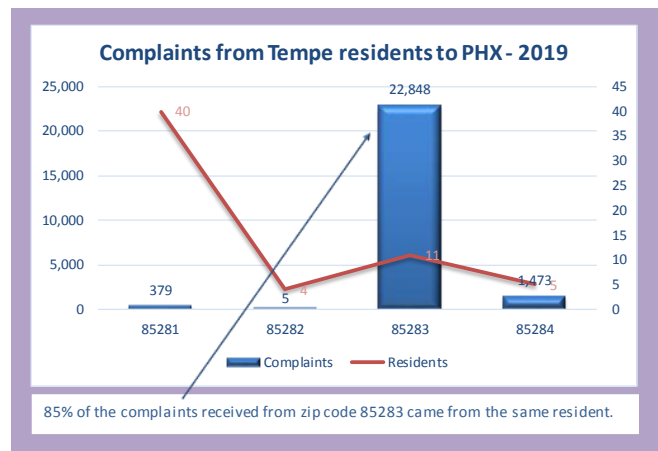
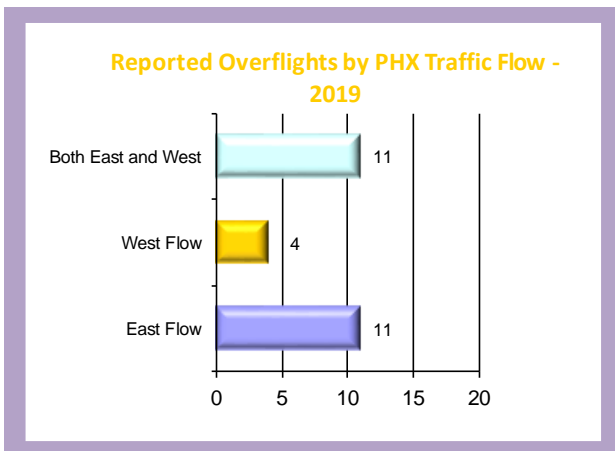
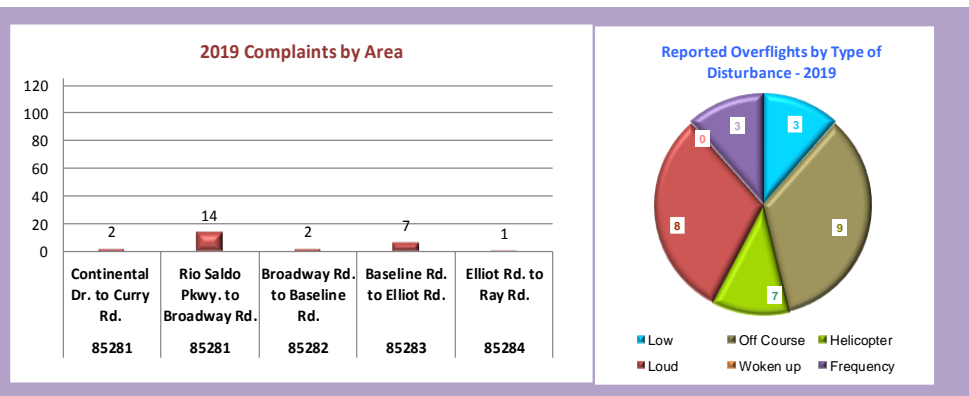
4. Noise Complaints

The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport. Most of the complaints on airline traffic have traditionally come from residents living in north Tempe neighborhoods where aircraft are flying at lower altitudes, but has expanded to areas of central and south Tempe where residents are living under flights paths with more efficient air traffic flow after implementation of area navigation (RNAV) and Required Navigation Performance (RNP) flight procedures used by the larger airlines.

Number of Aircraft Complaints Received by the City of Tempe



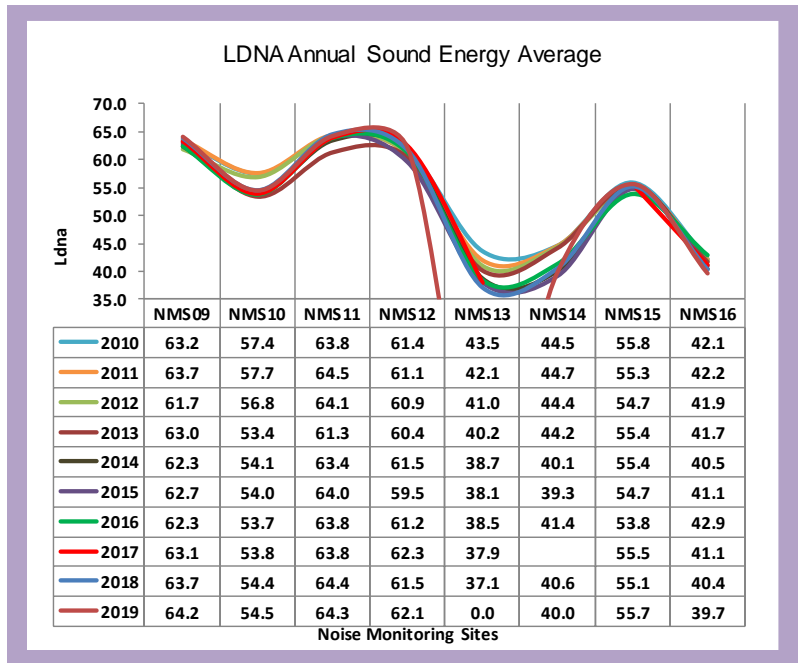
Complaints to the City of Tempe about aircraft noise events that include several identified overflights are registered as single complaints with inclusion of each of the identified overflights. Type of disturbance is also registered. Complaints to the City of Phoenix can be made by using a complaint phone app in addition to e-mail or phone call.



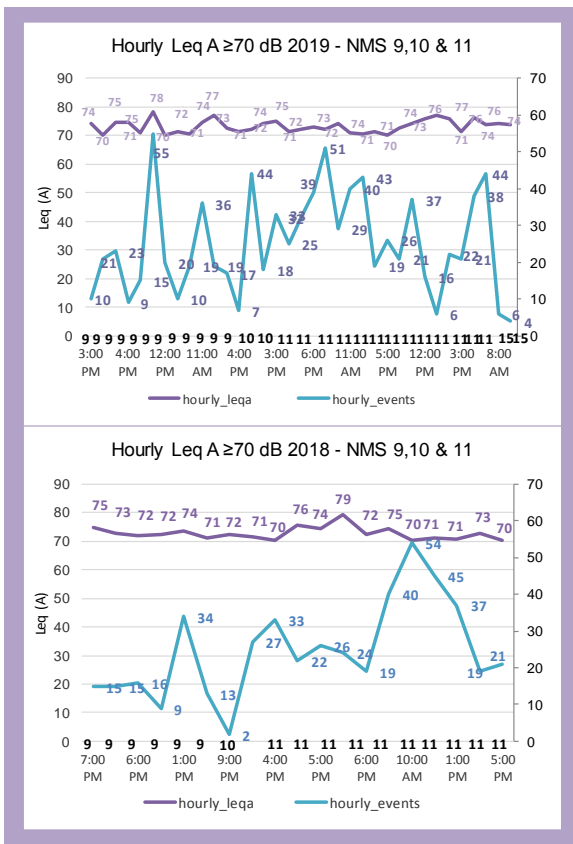
5. Averaged Noise Exposure

Annual average sound levels, Ldn (A) or Day Night Level (DNL), describes the cumulative noise exposure for an average annual day. Exposure based on noise registered at the fixed monitoring sites in Tempe operated by the City of Phoenix are in the graph compared to previous years exposure.

In 2019 NMS 13, which is located close to the City of Scottsdale at North McAllister Avenue and East Continental Drive in North Tempe has been off line because of ongoing upgrades made to the monitoring equipment. In 2017 a housing project on Eight Street east of Rural Road brought NMS 14 off line.



Eight of the Phoenix Sky Harbor International Airport fixed noise monitoring sites, NMS 9 through 16, are located on the north and south side of the Salt River riverbed in Tempe. The 65 Ldn (A) contour has shrunk over the years with airlines modernizing their fleets. This is a depiction of the monitoring sites in Tempe with computed noise exposure contours based on operational data from 2018. The 65 Ldn (A) is depicted in red. The 60 Ldn (A) exposure contour, which is depicted in yellow approximately covers the area of the airport's 1999 DNL 65 dB (A) noise exposure contour.



This is a description of noise based on long-term equivalent level (Leq) where the total sound energy is measured to a time-average, in the graph to one hour. The graph shows a count of equivalent sound levels, at which monitoring sites and during which hours levels equaled or exceeded 70 decibels.

These high hourly levels typically occur at monitoring sites located in downtown areas of Tempe where aircraft fly at lower altitudes. During 2019 a monitoring site in north Temp registered hours with equivalent levels at or above 70 decibels.