

2018 PHX East Annual Summary

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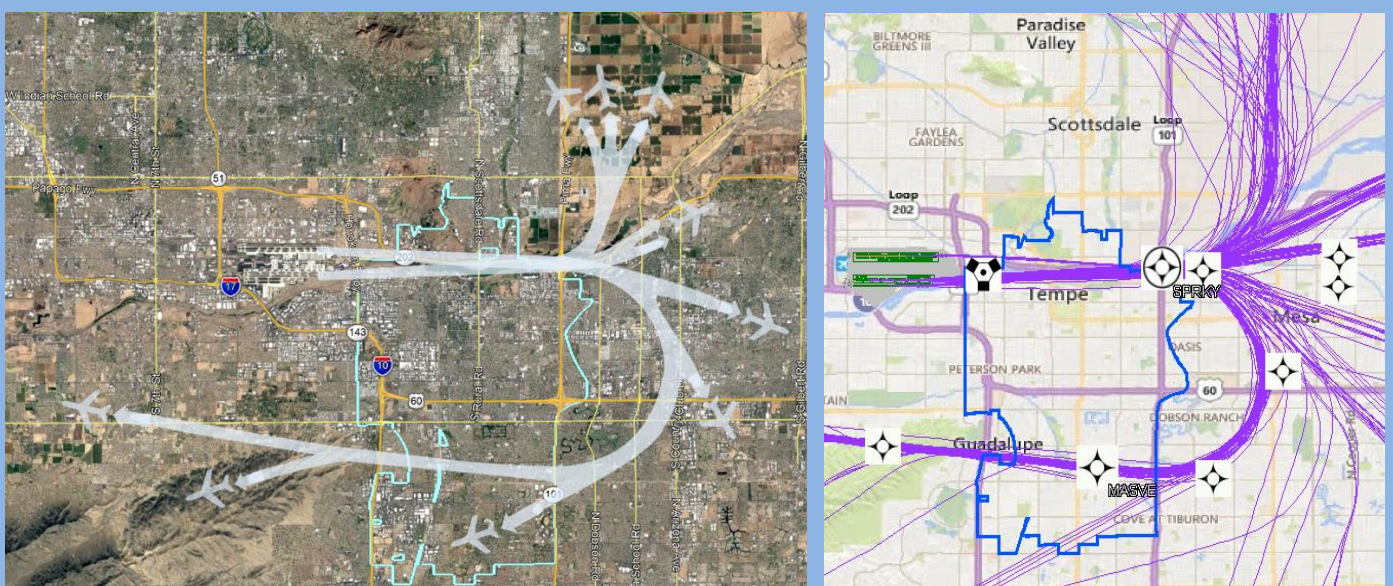
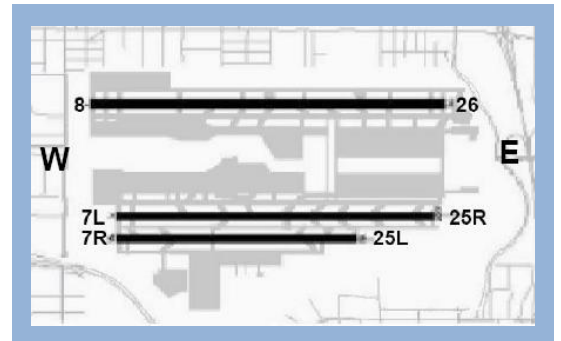
Report prepared for the
Tempe Aviation Commission - TAVCO
by the City of Tempe
255 East Marigold Lane
Tempe, AZ 85281



1. Introduction

This summary is an annual account for the Tempe Aviation Commission (TAVCO) of how airlines 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 impact 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 that was included in the agreement:

- The 4-DME Standard Instrument Departure Procedure to keep jet and large turboprop aircraft that depart to the east 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 departing east and west of the airport during daytime and nighttime hours.



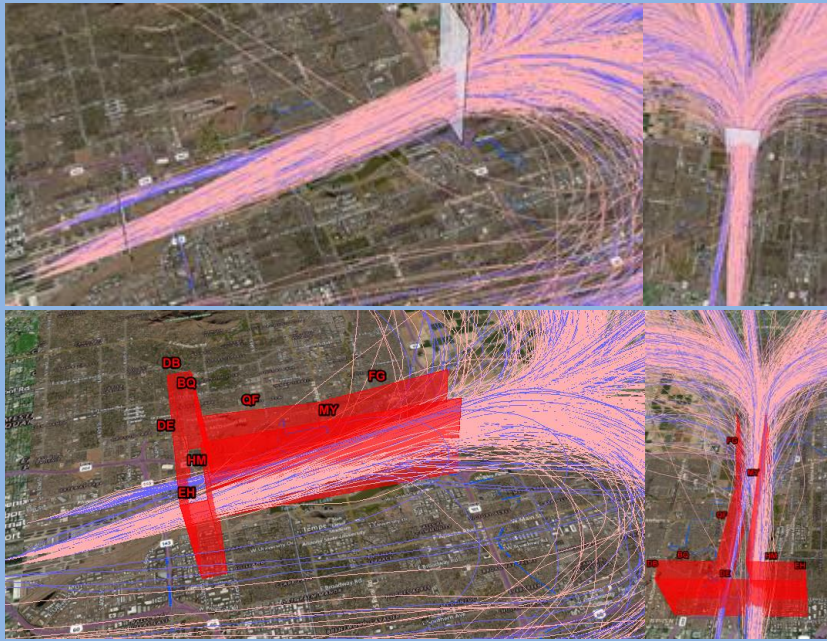
On September 18, 2014 the FAA introduced new satellite-based Area Navigation (RNAV) Standard Instrument Departure (SID) routes at the airport expanding the RNAV SIDs from seven to nine. East bound SIDs were designed with a GPS navigation waypoint, “SPRKY,” located at 4-DME and a route turning departing jets back west south of the airport has a GPS navigation waypoint, “MASVE,” located 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 in South Tempe is part of a departure route used by airlines bound for airports in California. The route has concentrated large volumes of departures over neighborhoods in South Tempe during morning hours. The area is also impacted by a busy afternoon flow of descending jets over the South Mountain Park from the west.

2. East Departure Compliance

Under the 1994 intergovernmental a system of fixed noise monitors and flight track monitoring, Airport Noise & Operations Monitoring System (ANOMS) 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 implemented vertical gate at 4-DME that all east departing jet aircraft need to pass through to stay in compliance with the agreement. TAVCO developed a “Corridor”, which was based on Standard Instrument Departure (SID) procedures that

were in use from the airport’s two runways in operation when the agreement with the City of Phoenix was made. Large turboprop aircraft departures are not included because they are routinely routed outside the 4-DME gate on approximate departure angles of 120° towards the southeast and 60° towards the northeast to keep them out of the paths used by the faster jet aircraft.



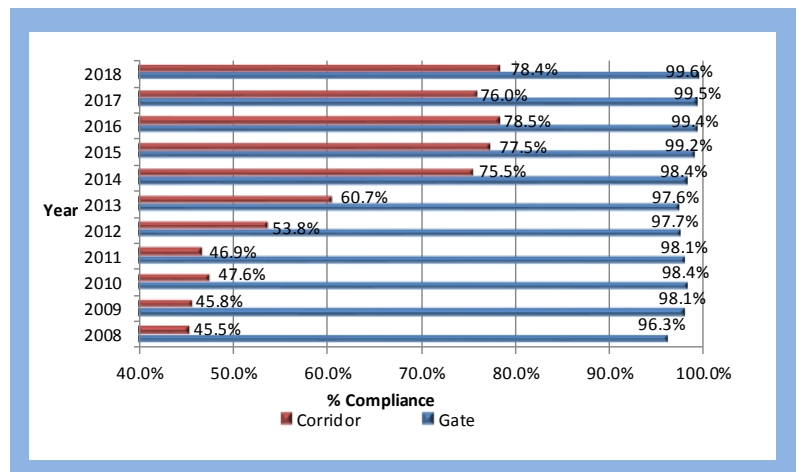
The PHX 4-DME Gate or exit window is shown in white.

The red gate system or corridor was developed by TAVCO and accepted by the City of Tempe as the city’s measure to identify airlines that fail to stay over the riverbed when departing over north Tempe.

Compliance Rates

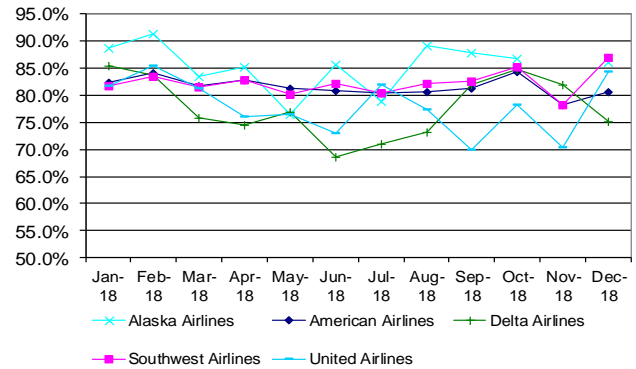
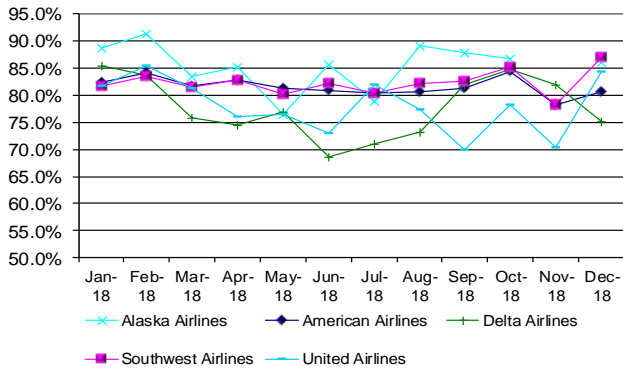
The annual average compliance rates are based on monthly numbers from the TAVCO Noise Mitigation Monitoring Reports. Typically, cross winds of 10 knots or more has been used to filter out deviations due to weather.

Compared to 2017 jet and large turboprop departures towards the east increased 2.6%. Night-time departures increased 1.5%. In total jet and large turboprop departures and arrival operations east of the airport increased 1.2%.

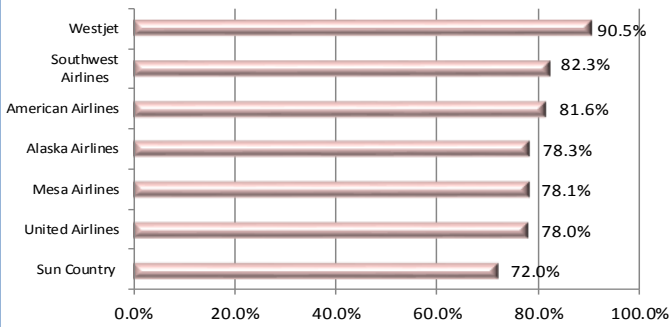


Large Carrier Compliance

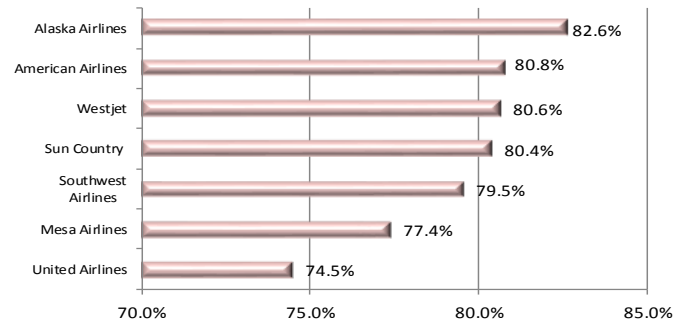
The graph shows corridor compliance rates for some of the airport's busiest airlines. Only airlines with on average ≥ 10 departures to the east per month are included.



Airline Compliance w. Tempe Corridor 2018



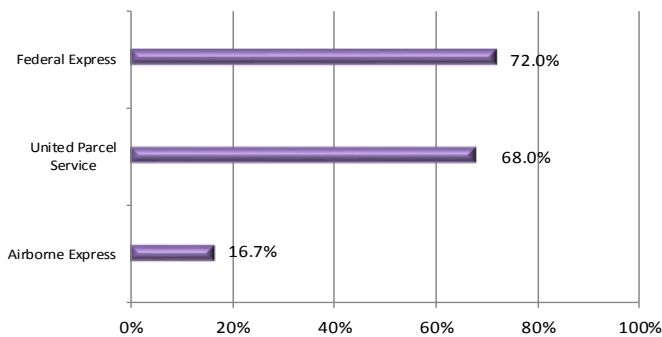
Airline Compliance w. Tempe Corridor 2017



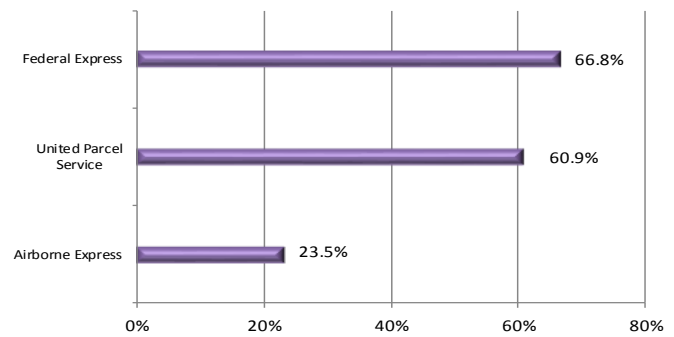
Top All Cargo Carriers

Among the larger, all cargo carriers FedEx had on average best compliance with the Tempe Corridor during 2018.

All Cargo Airline Compliance w. Tempe Corridor 2018

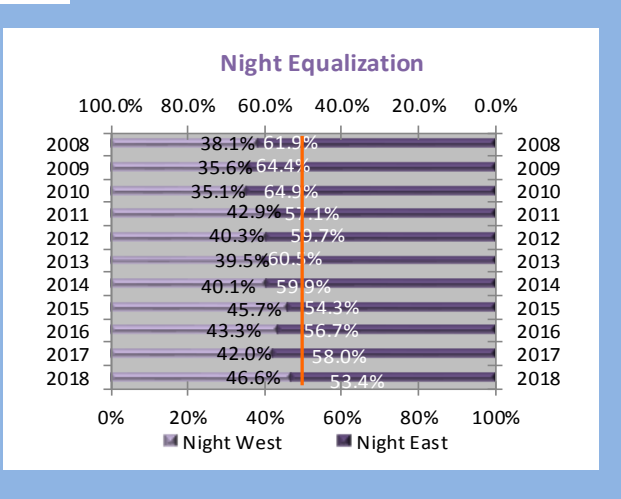
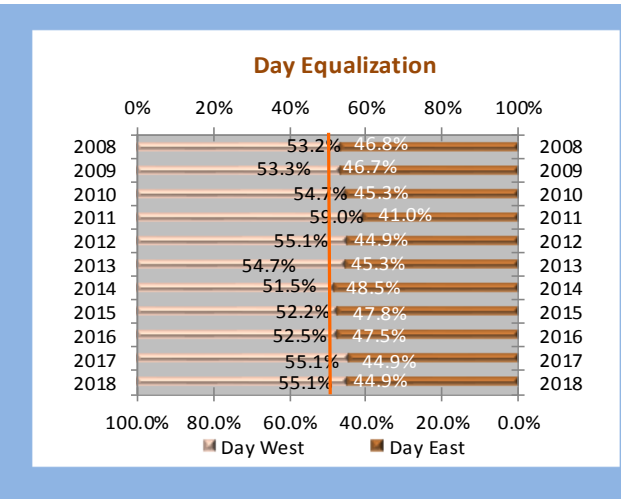
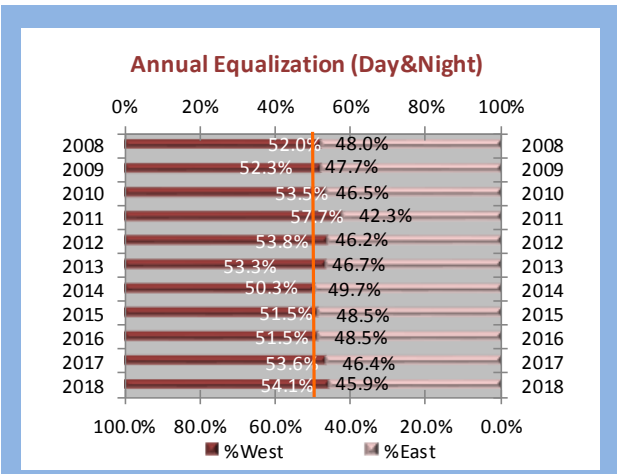


All Cargo Airline Compliance w. Tempe Corridor 2017



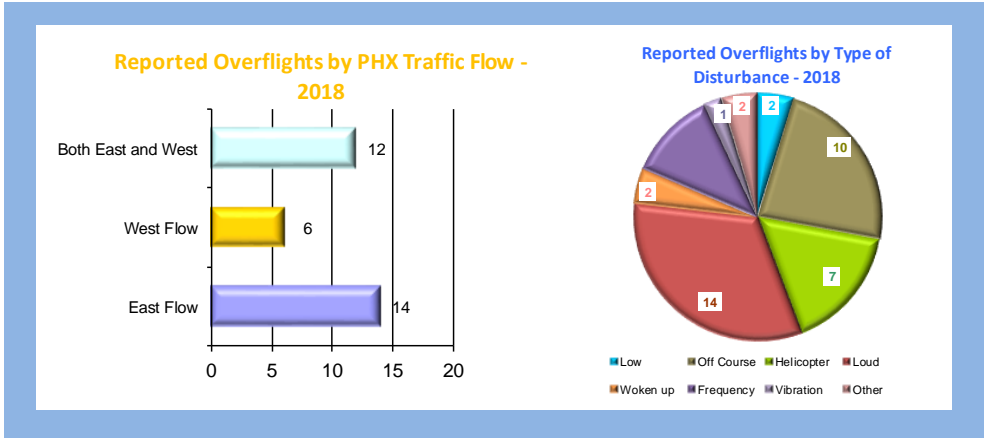
3. East/West Equalization

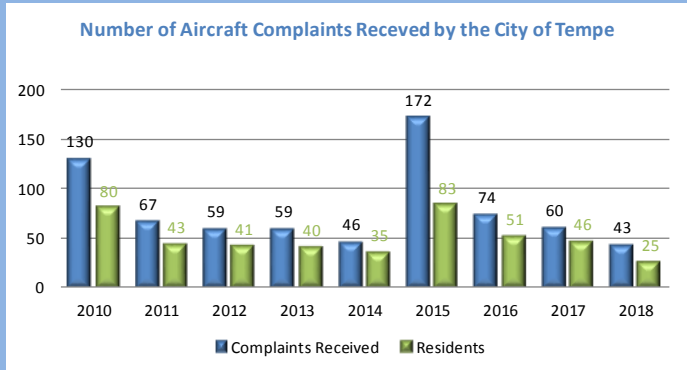
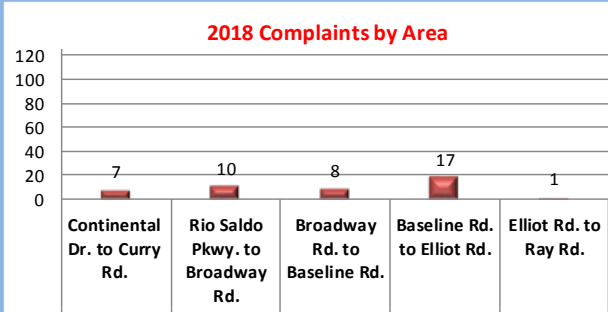
The annual split in all jet and large turboprop aircraft departures to the east and west of the Phoenix Sky Harbor International Airport differs between day- and day nighttime hours. The most of these operations goes towards the west when both day- and nighttime hours are combined. The most of these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



4. Noise Complaints

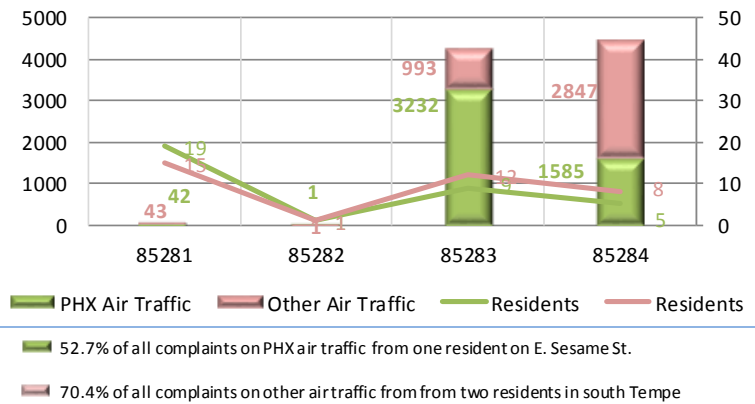
The City of Tempe started registering aircraft noise complaints from Tempe residents in October 2000 after the opening of the third runway at Phoenix Sky Harbor International Airport. The flow of air traffic has become more efficient due to the area navigation (RNAV) and Required Navigation Performance (RNP) flight procedures that the larger airlines are using.





Most of the complaints on airline traffic have traditionally come from residents living in north Tempe neighborhoods where aircraft are at lower altitudes but has expanded to also come from residents living in central and southern areas of Tempe.

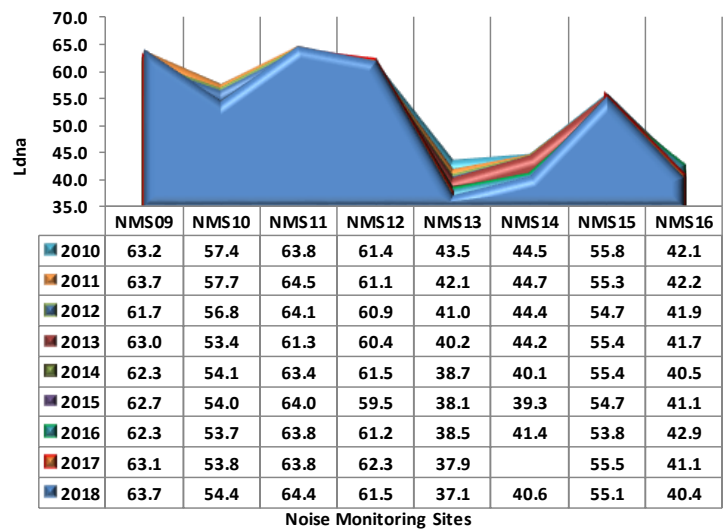
Tempe Citizens Complaints to City of Phoenix in 2018



5. Averaged Noise Exposure

Annual (Day-Night) average sound levels, Ldn (A), describes the cumulative noise exposure for an average annual day. Exposure based on noise registered at the fixed monitoring sites operated by the City of Phoenix are compared to previous years exposure. In 2017 NMS 14 was shut down because of the Valor on Eighth housing project just east of Rural Road and south of University Drive. NMS 13 with numbers in the lower end of the scale is located close to the City of Scottsdale at N. McAllister Avenue and E. Continental Drive in North Tempe.

LDNA Annual Sound Energy Average



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, all in areas where neighborhoods were covered or in immediate vicinity of the 1992 65 Ldn (A) or Day Night Level (DNL) noise exposure contour. 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 1999 65 Ldn (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. The graph shows a count during hours of the day when equivalent sound levels exceeded 70 decibels in 2018.

These high hourly levels were registered at the noise monitoring sites in Tempe located in downtown areas of Tempe where aircraft fly at lower altitudes.

