

PHX EAST COMPLAINT REPORT

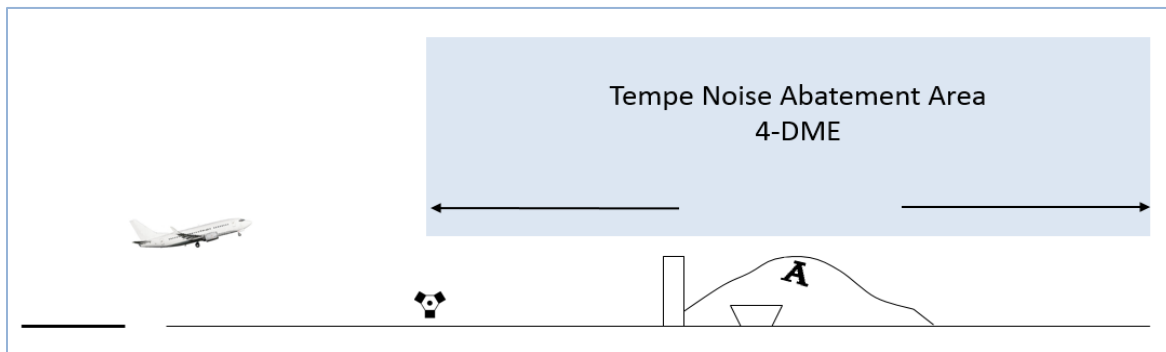
First Quarter 2018

Contents

Departure Compliance:	Page
A. Airline Compliance Measuring	2
B. Airline Corridor Compliance	3
C. Non-Compliance Notification	4
East West Split:	5
Noise Complaints:	6
Noise Exposure:	7
D. Maximum Sound Energy Levels	7
E. Average Sound Energy Levels	8
F. Equivalent Sound Energy Levels	8



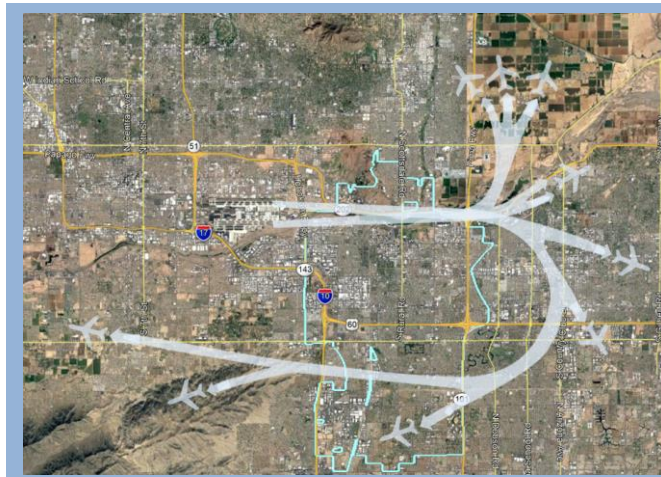
A. Airline Compliance Measuring



In September 1994 the cities of Tempe and Phoenix entered an Intergovernmental Agreement (IGA) to memorialize noise mitigation flight procedures that for decades had the purpose of keeping Phoenix Sky Harbor International Airport (PHX) air traffic over the dry riverbed of the Salt River in north Tempe and away from populated areas on both sides of the riverbed.

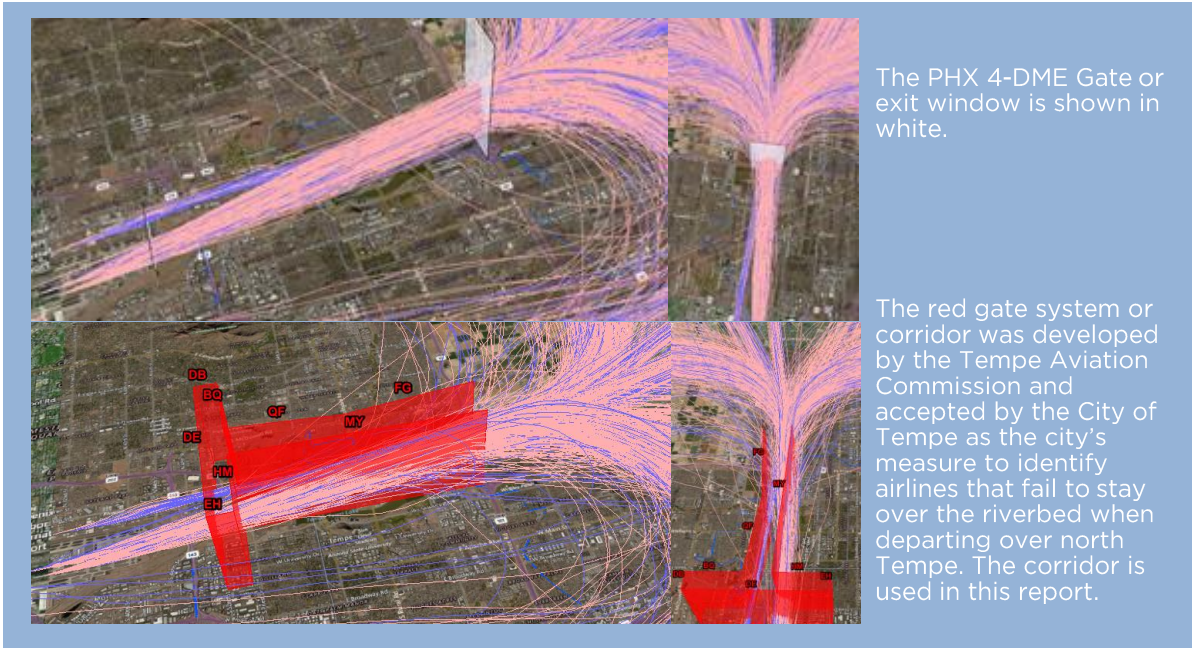
The agreement contains three measures to reduce noise from aircraft taking off and landing; (1) the requirement for jet and large turboprop aircraft departures to keep on headings off the runways to a single point at 4NM (Distance Measuring Equipment) before diverging; (2) equalize east and west of the airport the flow of jet and large turboprop aircraft departures night and day; (3) implement a side-step approach procedure to the third/south from the east.

A voluntary side-step procedure was tested after the opening of the third runway in 2001, but cancelled in March 2002, because of concerns raised by air traffic controllers and airline pilots.



Standard Instrument Departure (SID) routes for PHX towards the east follow paths directly east over the City of Tempe before turns are made towards the route destinations. In September 2014 the FAA expanded the number of departure routes where airlines use satellite based Area Navigation (RNAV) SID procedures from seven to nine. A fly-over waypoint at 4 NM DME was included in the east flow RNAV SIDs.

The 1994 IGA included provisions for installing a Noise and Flight Track Monitoring System also known as Airport Noise and Operations Monitoring System (ANOMS). After the system was installed and became operational in 1997, the cities disagreed about how to properly monitor how the airlines complied with the 4-DME SID procedure. The City of Phoenix set up the system and had final say in how to implement a deviation tool that could be used to identify departing aircraft, which owners or operators would receive notices of deviations from City of Phoenix. The airport developed an imaginary "4-DME Gate" stretching 5,500 feet north to south in the airspace over where the SR-202 and SR-101 Red Mountain exchange is located.

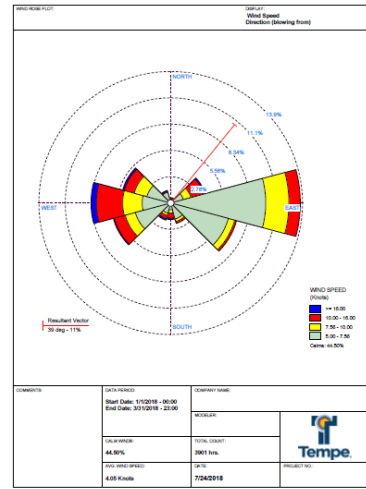


Deviations caused by direction from air traffic control or adverse weather are not included in the notices. Departures deviations within the times of day weather conditions were present that brought departing planes outside the PHX 4-DME Gate are identified by the City of Phoenix and excluded from notices given to airlines by the City of Phoenix and from the total tally of deviations presented in PHX noise reports.

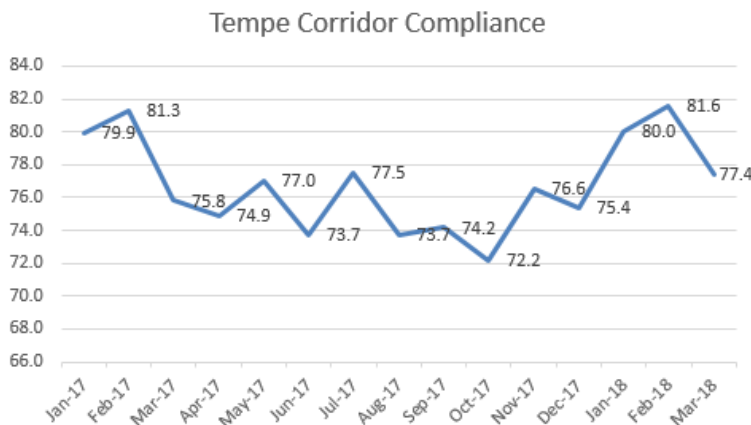
Times east departure deviations were excluded:

01/09 12:55	2/11 08:27	No exclusions
01/09 13:49	2/11 09:01	in March 2018
01/09 17:00	2/11 10:51	
01/24 09:24	2/12 09:15	
01/24 10:26	2/12 12:20	
01/28 19:19	2/12 13:48	
01/29 06:06	2/12 13:50	
01/29 06:11	2/13 13:29	
01/29 08:52	2/14 21:44	
01/29 10:13		
01/30 13:55		

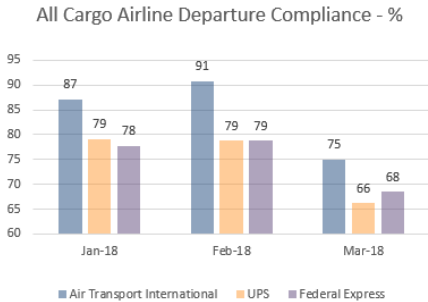
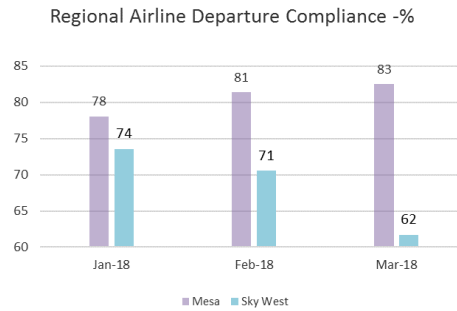
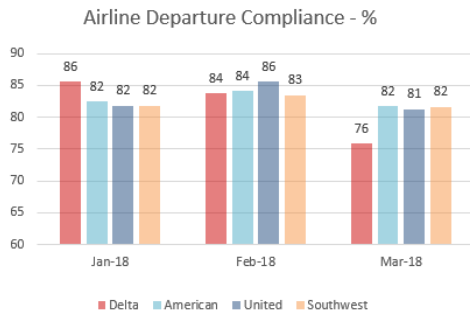
Wind speeds peaked on January 9, February 19 and 27, 2018 from the west and northwest. The average wind speed for the quarter was 4.1 knots.



B. Airline Corridor Compliance:



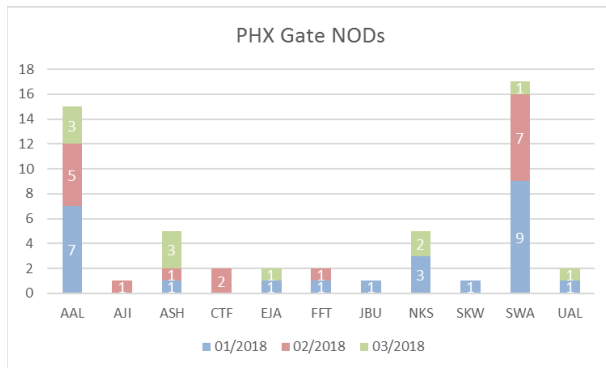
The overall compliance rate with the Tempe corridor was 79.7% for the quarter and 79.3% with the large turboprop aircraft departures included. Large turboprop aircraft are routinely departing on diagonal headings to the northeast and southeast directly after take-off.



Corridor compliance rates for PHX airlines with more than 3% of the total number of departures to east are included. The major being American Airlines and Southwest Airlines each contributing to between 24% and 28% of all jet departures to towards the east. All cargo and regional jets are small volume airlines except for Mesa Airlines which alone attributes to 8-10% of PHX departures to the east.

C. Non-compliance Notification:

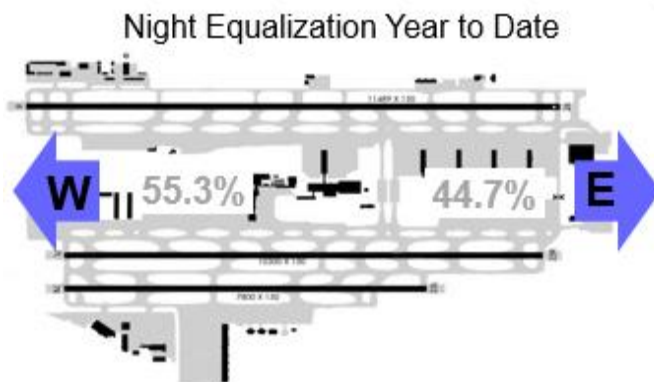
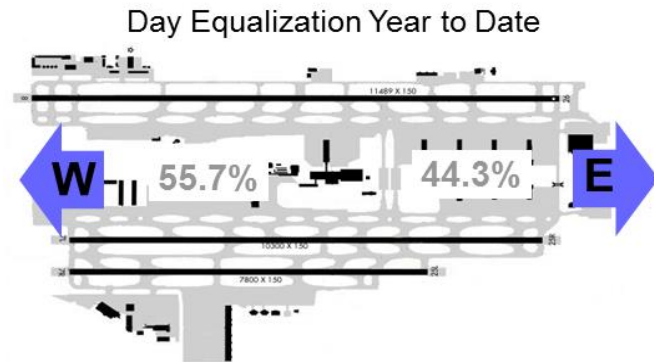
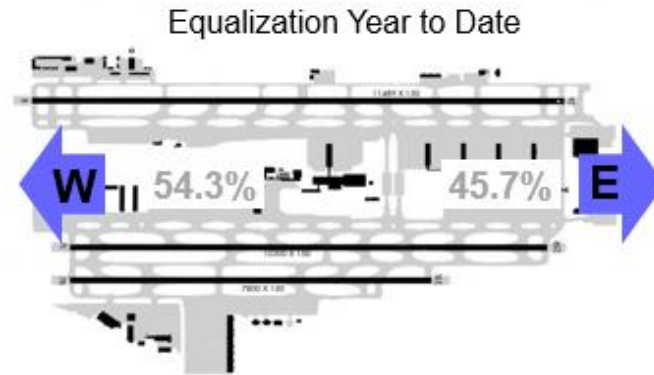
The IGA with City of Phoenix requires notifying the airlines about aircraft that fail to follow the initial part of the Standard Instrument Departure (SID) routing towards the east, which ends at the SR-202 and SR-101 Red Mountain exchange (4-DME) where Phoenix has set up an imaginary gate to determine which aircraft are compliant and which are not.



Notices to non-compliant airlines during the quarter:

- AAL: American Airlines
- ASH: Mesa
- CTF: Cutter Aviation
- EJA: Netjets
- FFT: Frontier
- JBU: Jet Blue
- NKS: Spirit
- SKW: Sky West
- SWA: Southwest
- UAL: United

The noise mitigation agreement between the City of Tempe and the City of Phoenix calls for equalizing the noise burden from jet and large turboprop aircraft departures east and west during daytime and nighttime hours. The agreement calls for FAA compensation for periodic changes in flight pattern so equalization is accomplished over a twelve months period.



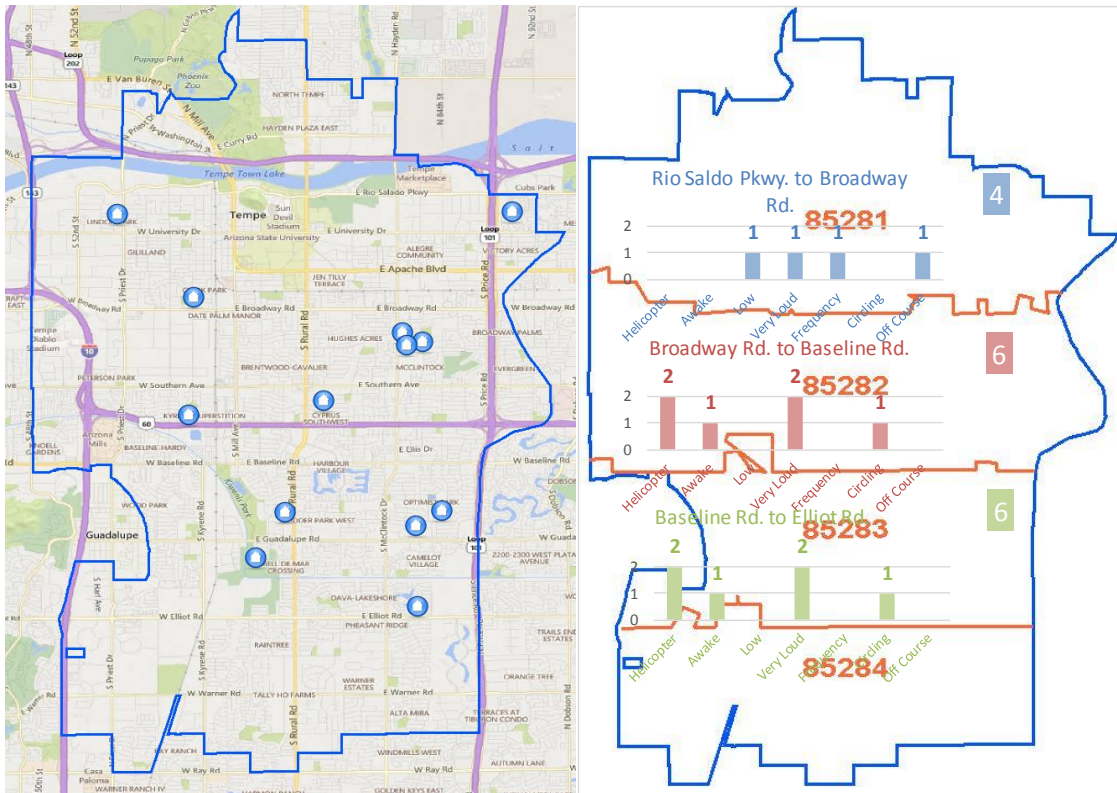
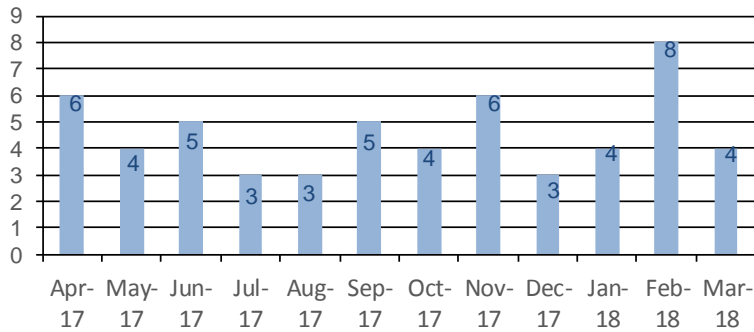


Noise Complaints

Complaints are the number of phone calls, voice-mails, and electronic messages from residents calling in or using the Tempe 311 noise complaint form, <http://www.tempe.gov/city-hall/communication-and-media-relations/tempe-311/submit-service-request>. A city smart phone app is available for download that includes aircraft noise complaint reporting.



Complaints Received by City of Tempe



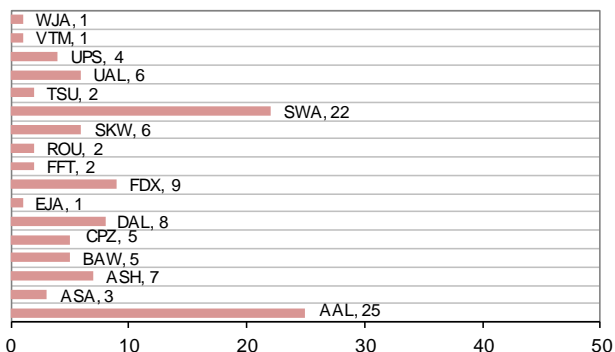
Complaints by Area and Type of Disturbance



D. Maximum Sound Energy Levels:

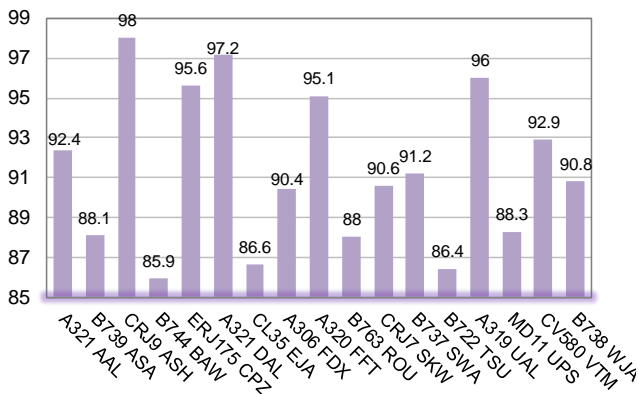
The number of higher sound energy level events attributed to airline operations varies each month, which influences monthly Ldn average levels. Lmax is the maximum A- weighted sound level, dB (A) registered during a sound event. A-weighted means the sound is measured at frequencies that reflect the sensitivity ranges of the human ear.

East Departures - Lmax Events >85 by Airline



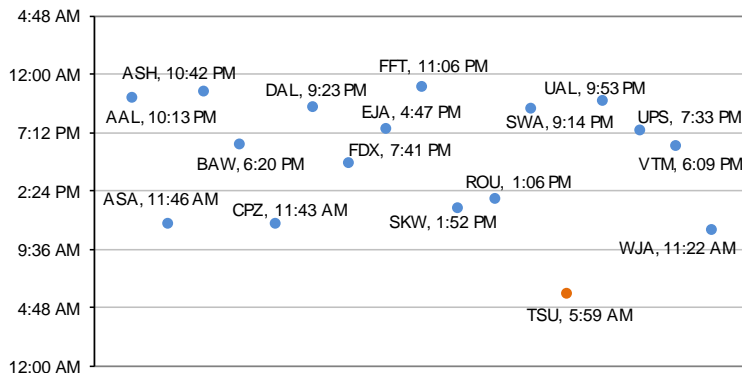
- WJA: Westjet Airlines
- VTM: Aeronaves
- UPS: United Parcel Service
- UAL: United Airlines
- TSU: Contract Air Cargo
- SWA: Southwest Airlines
- SKW: Skywest Airlines
- ROU: Air Canada Rouge Airlines
- FFT: Frontier Airlines
- FDX: FedEx
- EJA: Netjets
- CPZ: Compass Airlines
- BAW: British Airlines
- ASH: Mesa Airlines
- ASA: Alaska Airlines
- AAL: American Airlines

East Departures - Highest Lmax Event by Equipment



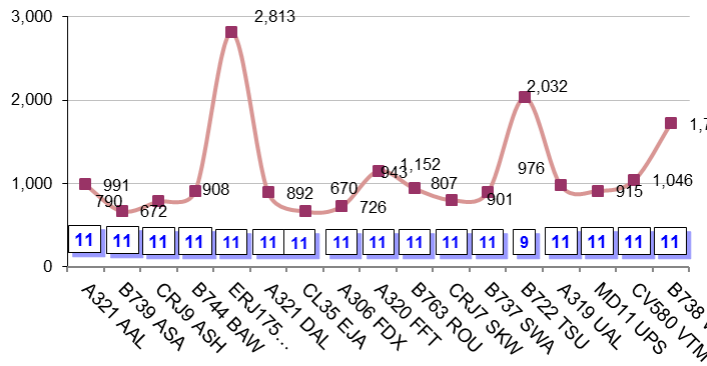
The graphs rank the highest maximum magnitude (Lmax) of sound from a departing jet registered by an airport monitor in Tempe.

East Departures - Highest Lmax Event by Time of Day



Noise magnitudes (Lmax) above 85 dB registered during night-time hours are depicted in red.

East Departures - Event Altitudes for Highest Lmax >85 over Monitoring Sites in Tempe



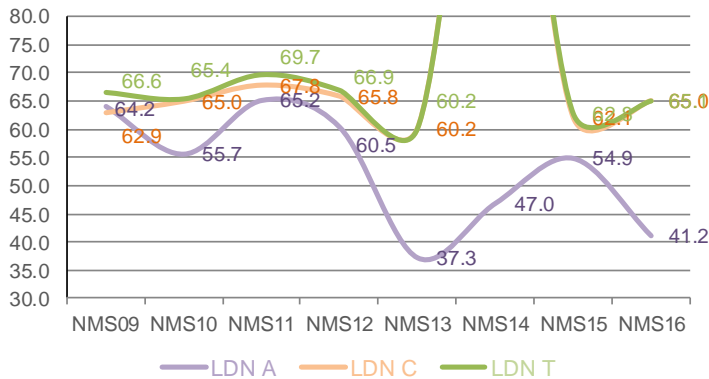
The (PHX) ANOMS has eight fixed Noise Monitoring Sites (NMS) in Tempe located in neighborhoods around the Town Lake/ Rio Salado area.

NMS 9 is located at W. 5th Street west of S. Priest Drive. NMS 11 is located in Tempe Beach Park

E. Averaged Sound Energy Levels:

Average sound exposure levels of aircraft events, are calculated from the Ldn or day-night average sound level also called Day Night Level (DNL) that includes a penalty of 10 dB (A) added for sound events occurring between 22.00-07.00 hours.

Average LDN Levels -Tempe NMS 1st Quarter 2018

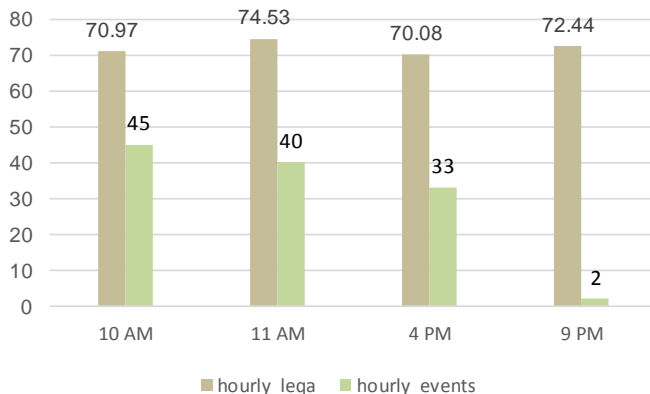


NMS 14 was turned back on in March 2018 after being off line since September 2016 because of the Valor on Eight housing project. The monitoring equipment picked up high levels of ambient construction noise. Noise attributed to aircraft are separated in the graph from ambient community noise and total Ldn exposure.

F. Equivalent Sound Energy levels:

This is a description of noise based on long-term equivalent level (Leq) where the total sound energy is measured over a stated time period.

Hourly Leq A >70 dB 1st Quarter 2018



The graph shows the hours of the day the Leq events were measured to be above 70 dB and how many of those events occurred during those hours.

Except for the 9:00 p.m. levels that were registered by the Jaycee Park monitor, the levels were reached at the monitor in the Tempe Beach Park.