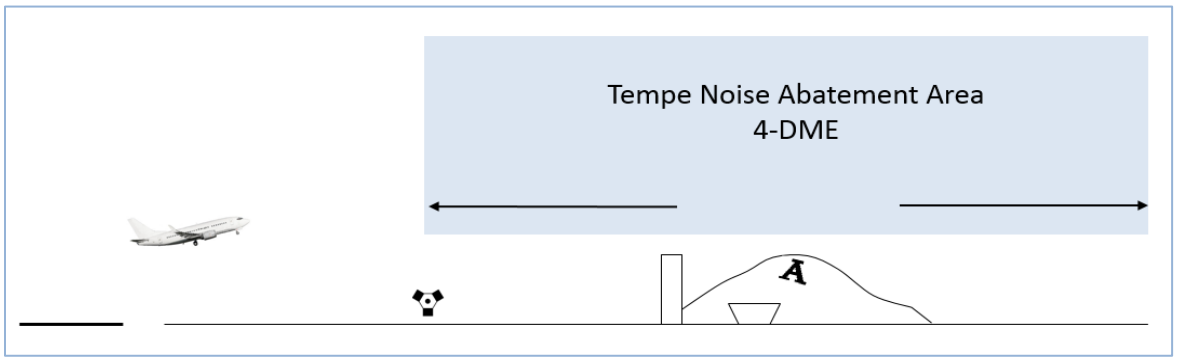
Third Quarter 2018

Contents

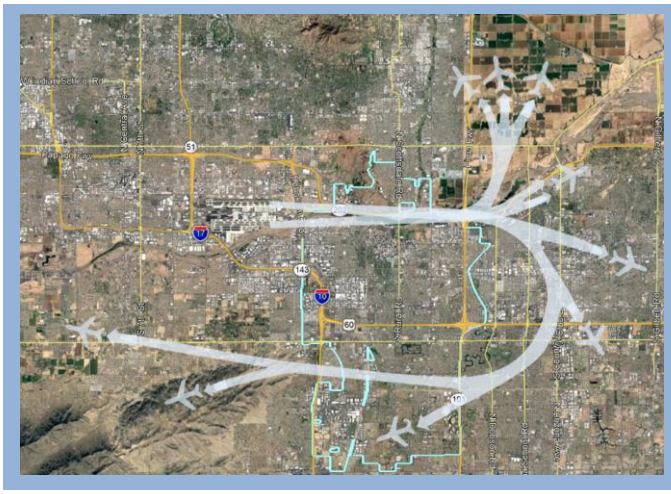
A. Airline Compliance Measuring



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.

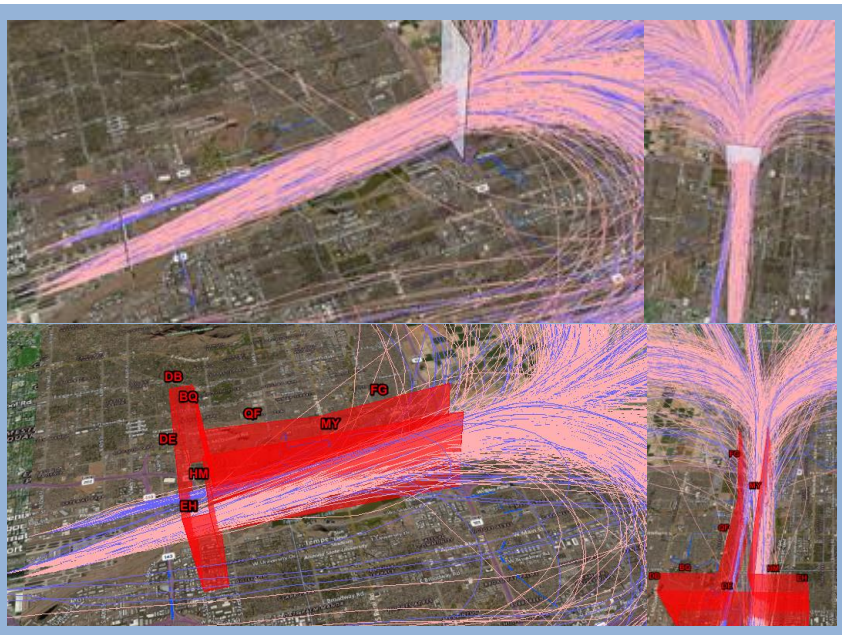
The agreement contains three measures to reduce noise from aircraft taking off and landing; (1) the requirement for jet and large turboprop aircraft departures to keep on headings off the runways to a single point at 4NM (Distance Measuring Equipment) before diverging; (2) equalize east and west of the 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.



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

The red gate system or corridor was developed by the Tempe Aviation Commission and accepted by the City of Tempe as the city's preferred measure to identify airlines that fail to stay over the riverbed when departing over north Tempe. The corridor is used in this report.

Deviations caused by direction from air traffic control or adverse weather are not included in the City of Phoenix notices. Departures deviations within the times of day weather conditions were present 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.

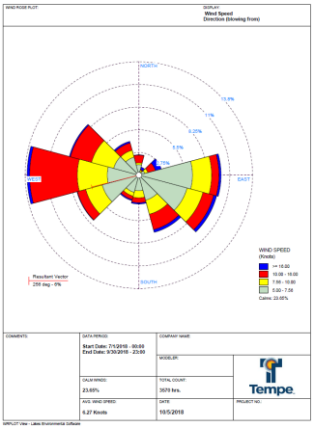
Days when east departure deviations were excluded during identified hours:

July 5, 6, 10, 11, 14, 16, 21 and 30, 2018.

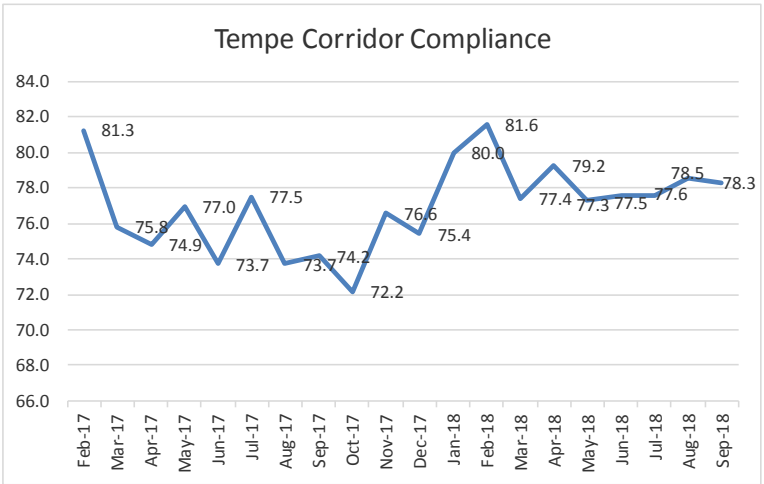
August 7, 9, 10, 21, 22, 23 and 24, 2018.

September 8, 2018

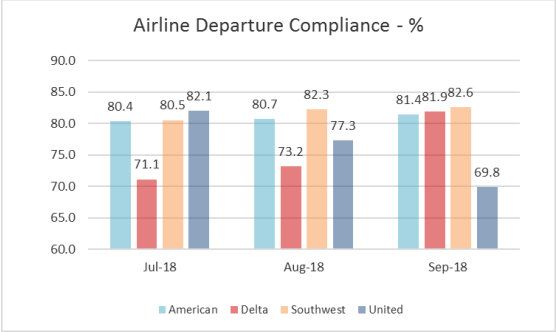
Average wind speeds peaked at their highest levels during the above dates in July and August.

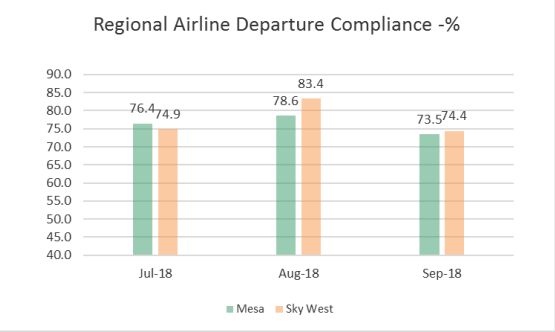


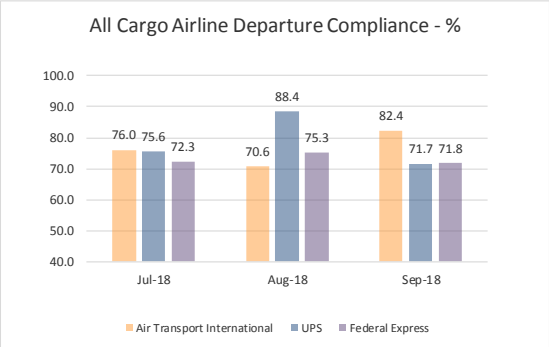
B. Airline Corridor Compliance:



The overall compliance rate with the Tempe corridor was 78.1% for the quarter and 77.7% 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.





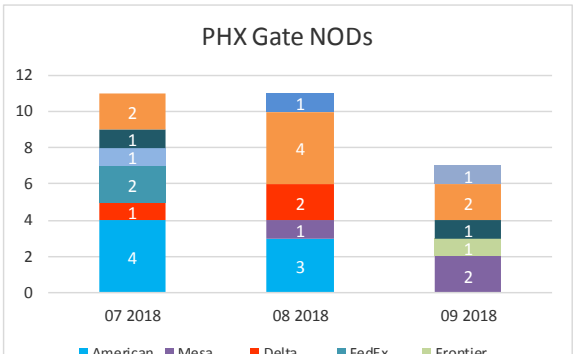


The graphs above show corridor compliance rates for PHX airlines with more than 5% of the total number of departures to east. American Airlines' share of all departures towards the east was 28.2% followed by Southwest Airlines with 27.3%.

All cargo carrier jet departures towards the east amount to 9.3% of the total volume of east jet departures.

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.

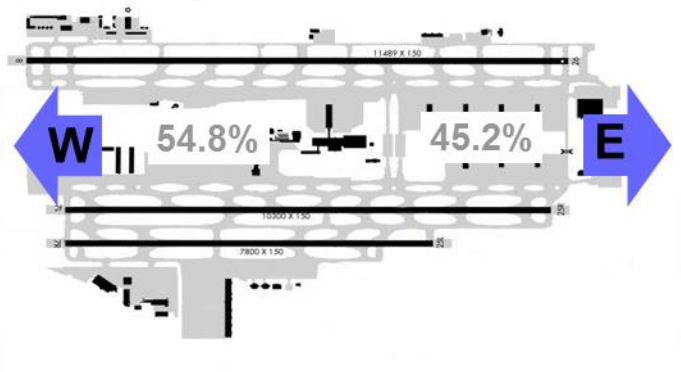


City of Phoenix notices to non-compliant airlines during the quarter

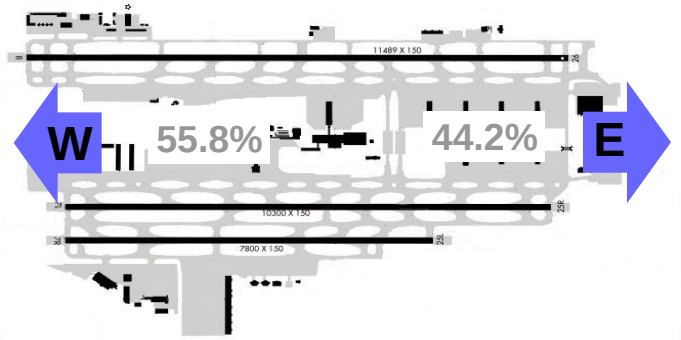
East West Split

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.

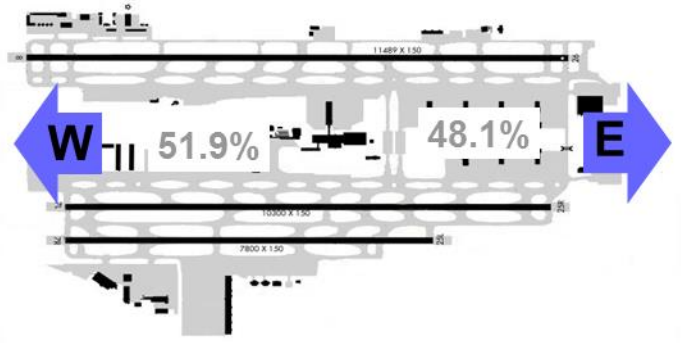
Equalization Year to Date



Day Equalization Year to Date

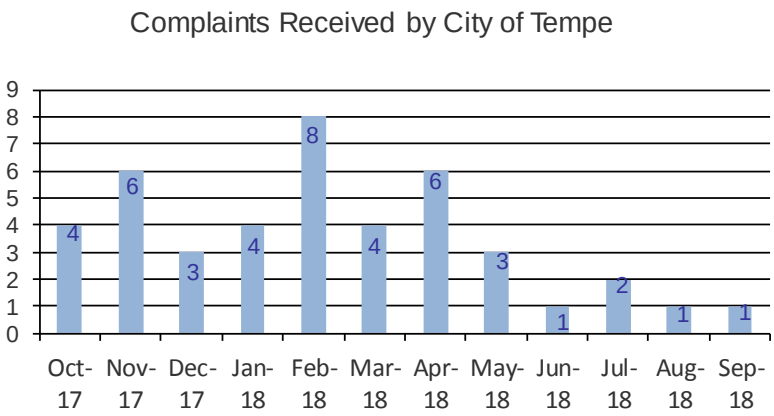


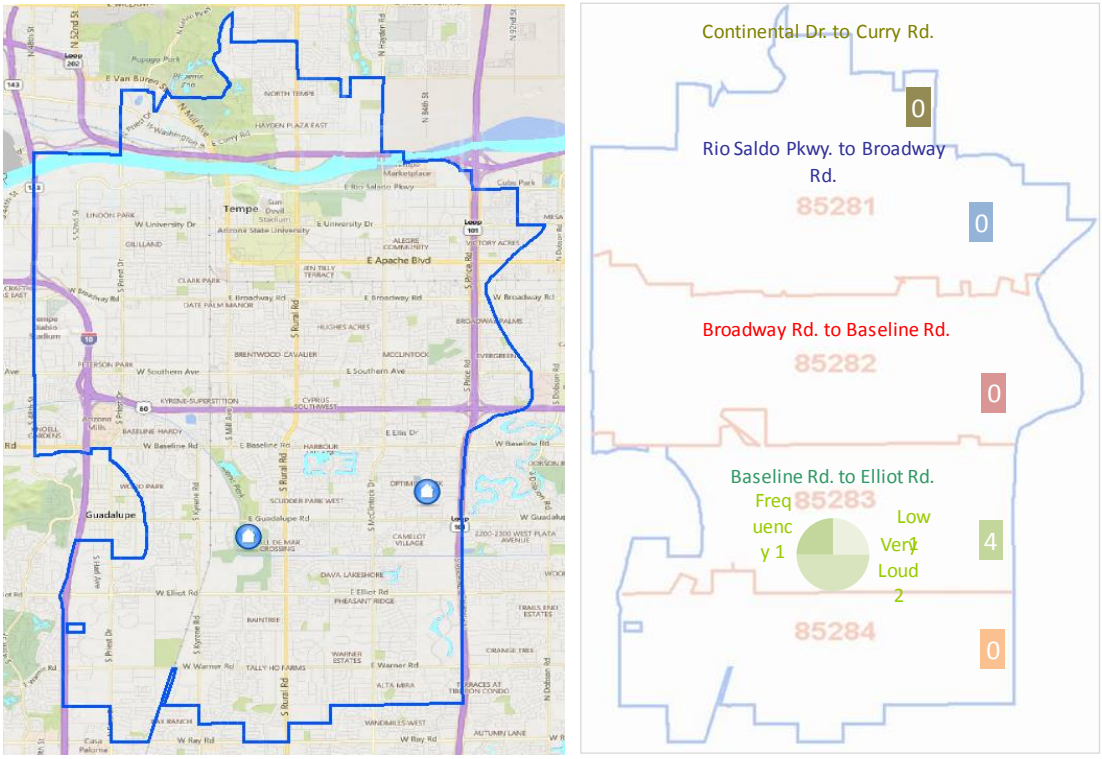
Night Equalization Year to Date



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.



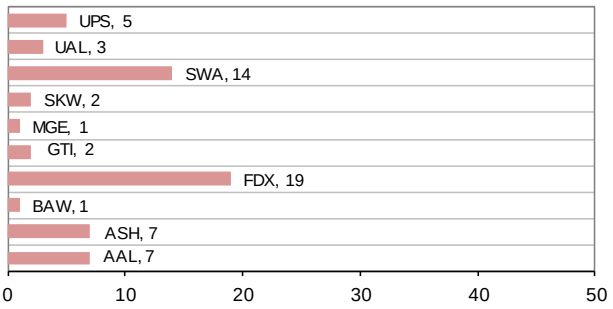


Complaints by location, zip code and type of reported disturbance.

D. Maximum Sound Energy Levels:

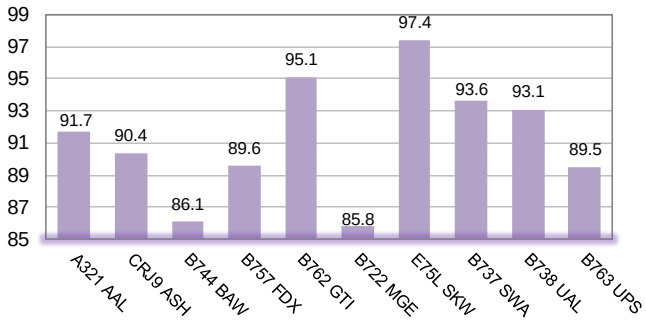
The number of higher sound energy level events attributed to airline operations varies each month, which influences monthly Ldn average levels. Lmax is the maximum A- weighted sound level, dB (A) registered during a sound event. A-weighted means the sound is measured at frequencies that reflect the sensitivity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

East Departures - Lmax Events >85 by Airline



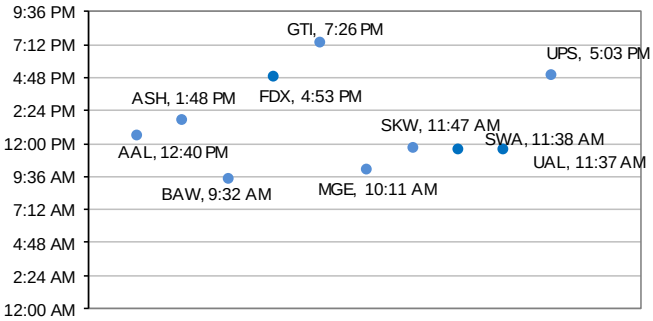
UPS: United Parcel Service
UAL: United Airlines
SWA: Southwest Airlines
SKW: Skywest Airlines
MGE: Aero-Micronesia
GTI: Atlas Air
FDX: FedEx
BAW: British Airways
CTF: Cutter Aviation
ASH: Mesa Airlines
AAL: American Airlines

East Departures - Highest Lmax Event by Equipment

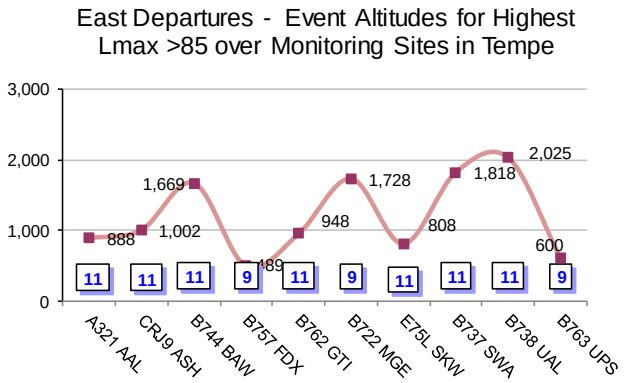


The graphs rank the highest maximum magnitude (Lmax) of sound from a departing jet registered by an airport monitor in Tempe.

East Departures - Highest Lmax Event by Time of Day



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

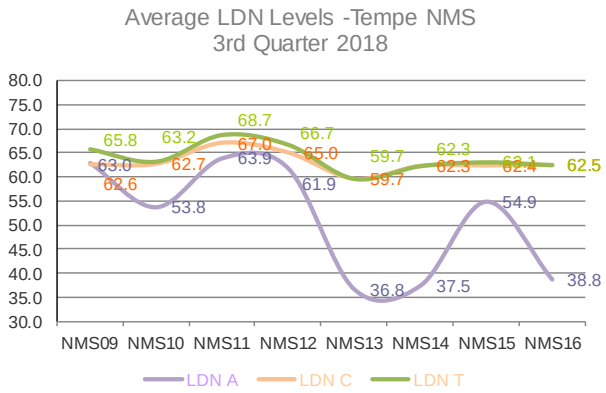


The (PHX) ANOMS has eight fixed Noise Monitoring Sites (NMS) in Tempe located in neighborhoods around the Town Lake/ Rio Salado area.

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

E. Averaged Sound Energy Levels:

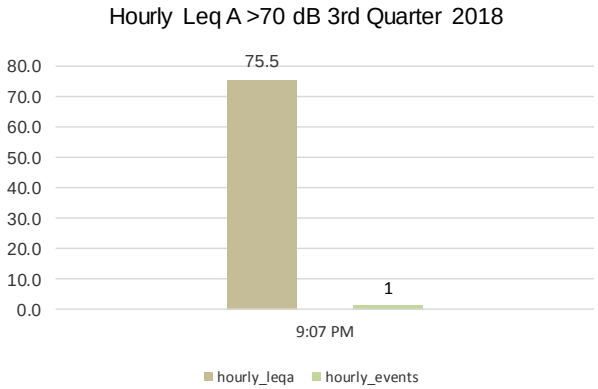
Average sound exposure levels of aircraft events, are calculated from the Ldn or day-night average sound level also called Day Night Level (DNL) that includes a penalty of 10 dB (A) added for sound events occurring between 22.00-07.00 hours.



Ldn A is sound metrics used to identify aircraft sounds. Sound energy from other community sources C, and total Ldn T, are included.

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 period.



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.

One event above 70 dB within the 9:00 p.m. hour. was registered by the Jaycee Park monitor.