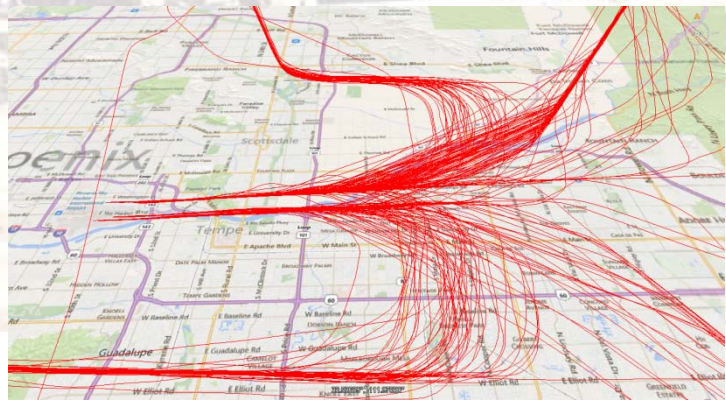
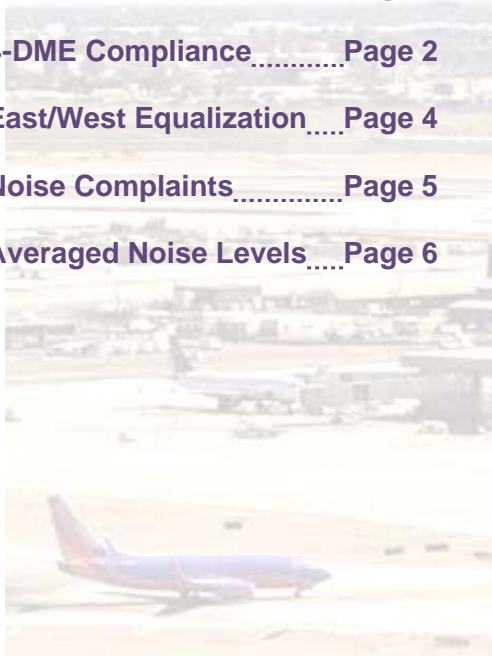
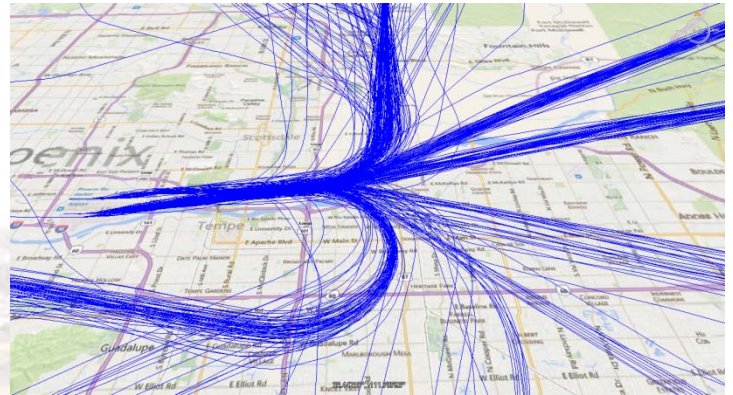


2014

Noise Mitigation Monitoring Summary PHX East

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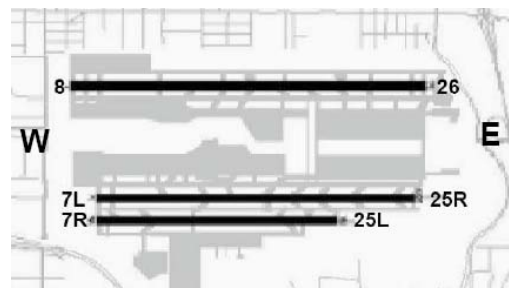
Report prepared for TAVCO
by the City of Tempe
255 East Marigold Lane
Tempe, AZ 85281



1. Introduction

This report summarizes how airline operations at Phoenix Sky Harbor International Airport complied with noise mitigation flight procedures over the City of Tempe in 2014. The City of Tempe is located directly east of the Phoenix Sky Harbor International Airport, which is owned and operated by the City of Phoenix. Two flight procedures remain in place as part of an agreement between Phoenix and Tempe to mitigate noise impact from large aircraft over Tempe:

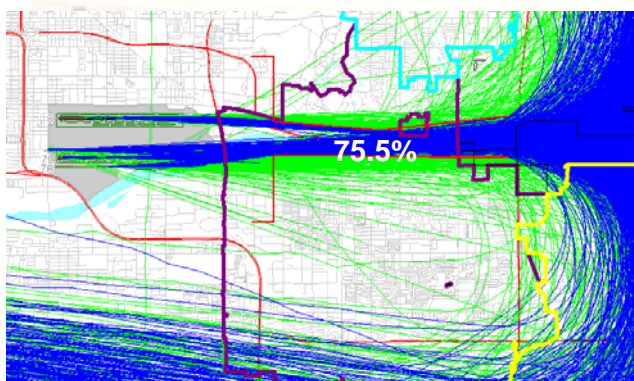
- The 4-DME Standard Instrument Departure (SID) procedure to keep jet and large turboprop aircraft that depart to the east over the Salt River and Tempe Town Lake area until they reach Tempe’s eastern boundary before they make turns towards their route destinations.
- Annual equalization, or a 50/50 east/west split, of all turbojet and large turboprop aircraft departures from PHX during daytime and nighttime hours.



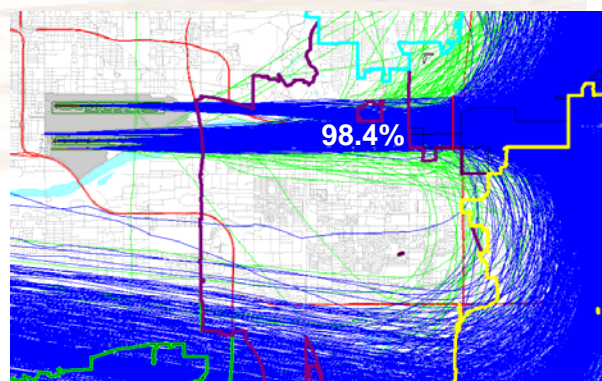
2. 4-DME Compliance

Compliance Rates

A Noise and Flight Track Monitoring System (NFTMS) at the Phoenix Sky Harbor International Airport is used to measure compliance with the 4-DME SID. The procedure was included in the September 2, 1994 intergovernmental agreement between Phoenix and Tempe on noise mitigation flight procedures, and the airport set up an exit “Gate” at Tempe’s eastern boundary that departing jet aircraft must pass through in order to stay in compliance with the SID. This gate is an imaginary vertical line at 4-DME (4 nautical miles east of the airport), which is part of the NFTMS and is used as a filter to measure jet aircraft departure compliance. The Tempe’s Aviation Commission (TAVCO) prefers to measure compliance using an imaginary “Corridor” for the duration of the departure path to best measure the confinement of departures outside of North Tempe’s residential neighborhoods. TAVCO’s design of the Corridor was based on the SID headings from the two runways in use when the intergovernmental agreement with the City of Phoenix was established. Note that compliance measurement using Phoenix’s “gate” and Tempe’s “corridor” yield significantly different compliance rates.



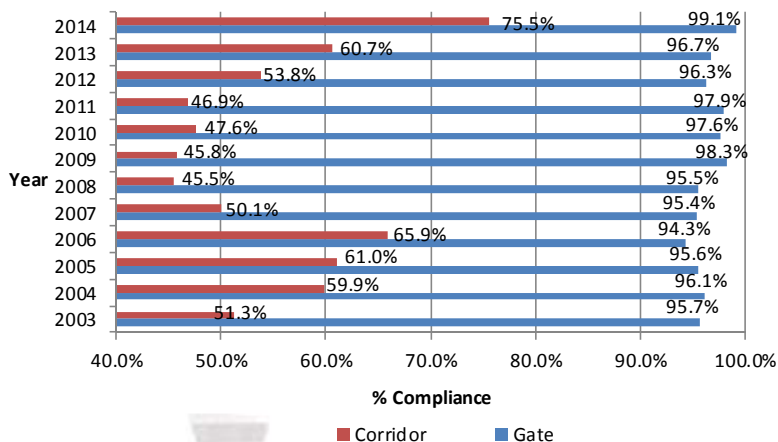
Jet departure tracks during the month of December 2014 inside the Tempe Corridor are shown in blue color.



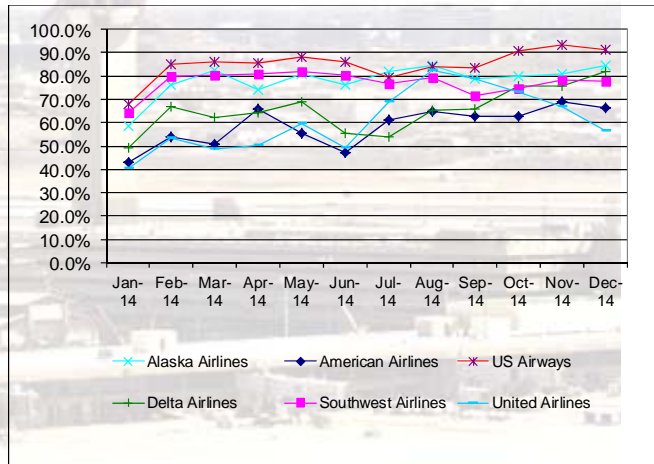
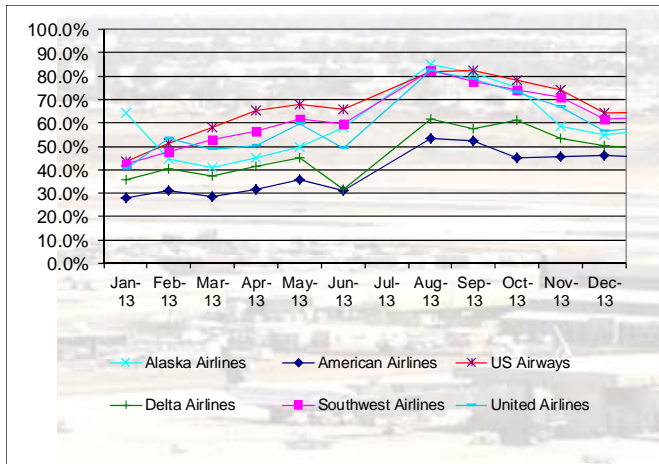
Jet departure tracks over the same period inside the Phoenix Gate depicted in blue.

The annual average compliance rates are based on monthly numbers from the TAVCO Noise Mitigation Monitoring Reports.

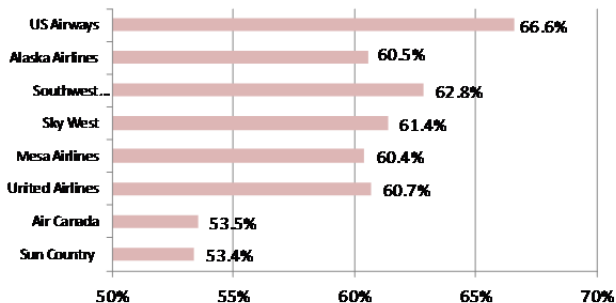
Compared to previous years, monthly departure compliance rates for 2014 improved. Noticeable improvements after September 18th, 2014 resulted from the FAA's implementation of area navigation (RNAV) SIDs. The number of 2014 daytime jet and large turboprop departures towards the east increased 5.7% and night-time departures increased 6.0% over 2013 departures. Overall departure and arrival operations to the east by these aircraft increased 3.2% compared to the previous year.



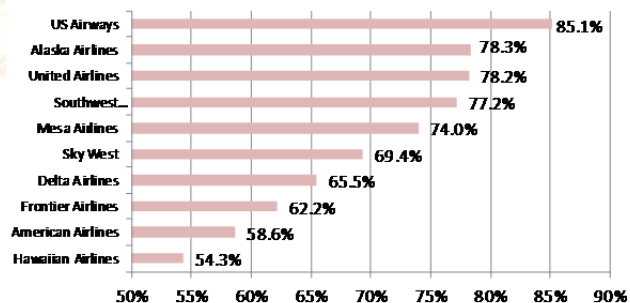
Large Carrier Compliance



Airline Compliance w. Tempe Corridor 2013

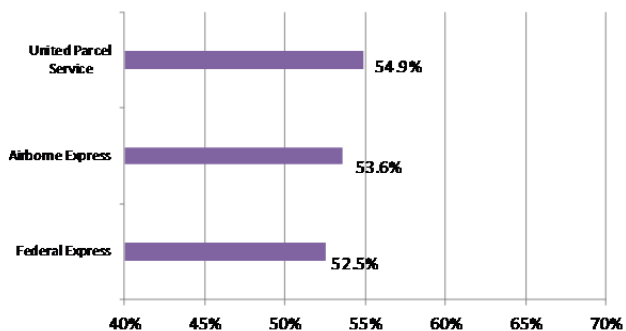


Airline Compliance w. Tempe Corridor 2014

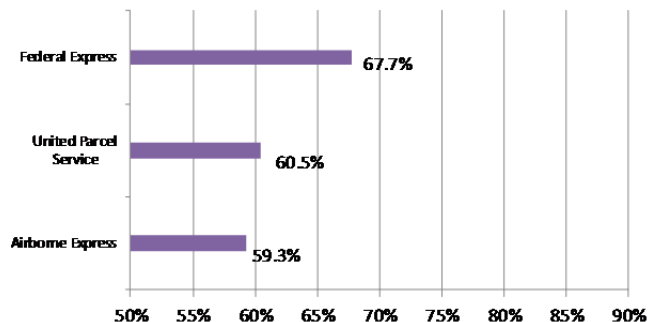


The graphs show corridor compliance rates for some of the airport's busiest airlines. Only airlines with an average of 10 or more departures to the east per month are included.

All Cargo Airline Compliance w. Tempe Corridor 2013



All Cargo Airline Compliance w. Tempe Corridor 2014

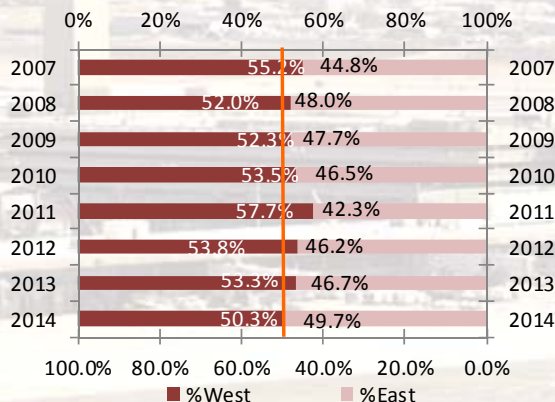


No cargo airlines achieved greater than 50% compliance with the Tempe Corridor compliance measure between 2009 and 2012

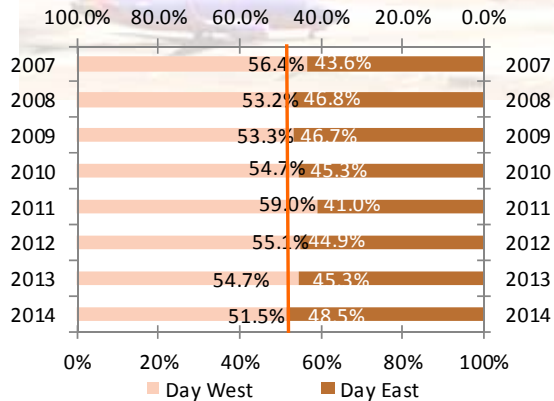
3. East/West Departure Split

The annual split in all turbojet and large turboprop aircraft departures to the east and west of the Phoenix Sky Harbor International Airport differs between daytime and nighttime hours. Combined daytime and nighttime traffic is fairly equal, but slightly more westward. Departure traffic during the night and early hours of the day is predominantly eastward.

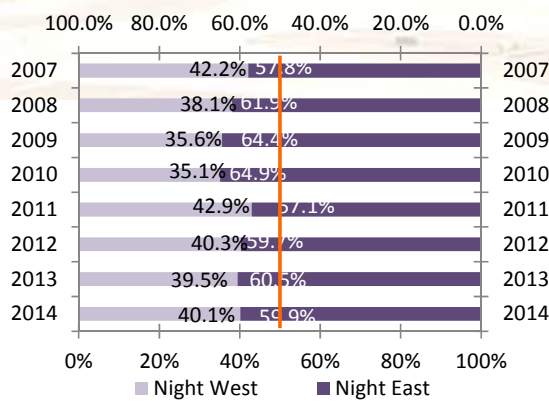
Annual Equalization (Day&Night)



Day Equalization



Night Equalization

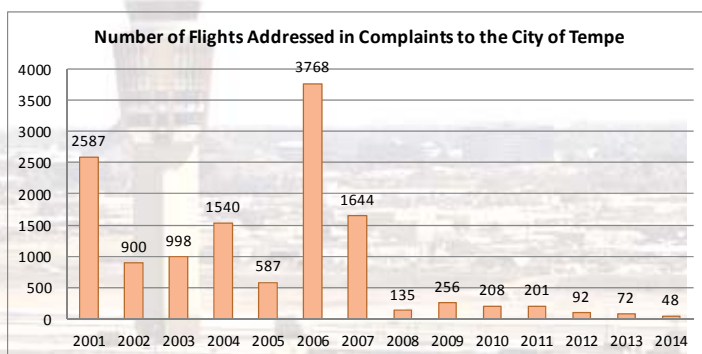
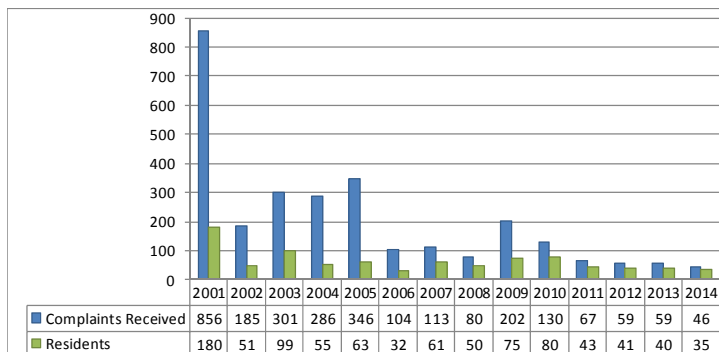


Day = 7: 00 a.m. to 10:00 p.m. local time

Night = 10:00 p.m. to 7:00 a.m.

4. Complaints

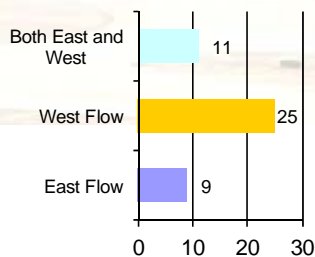
Most aviation noise complaints in Tempe come from residents living in north Tempe neighborhoods responding to low altitude departing and arriving aircraft. Complaints in south Tempe have increased since 2011, when optimized area navigation (RNAV) arrival routes were introduced. The majority of complaints received in 2014 were related to general noise and/or off-course arrivals and departures.



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.

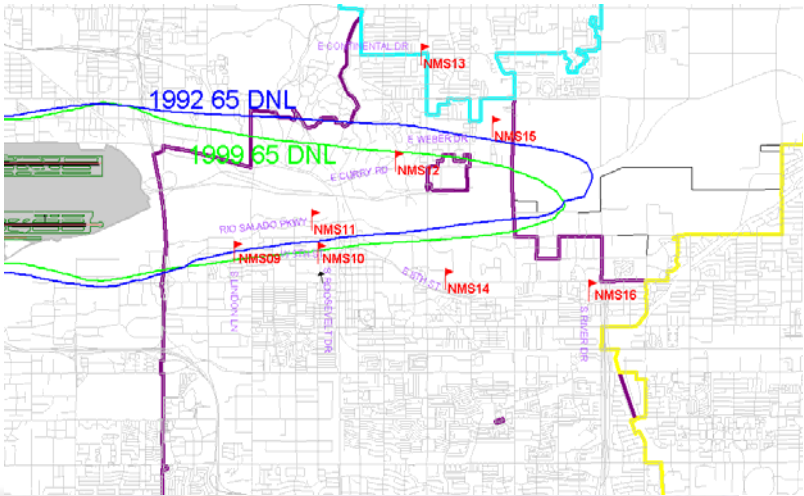
The flow of arrival operations has become more efficient due to the RNAV flight procedures. RNAV routes make the air traffic flow more constant over areas of Tempe during peak hours. Commercial aircraft typically depart with high frequency in the morning hours to the east and line up to land from the east during afternoon hours.

Reported Overflights by PHX Traffic Flow



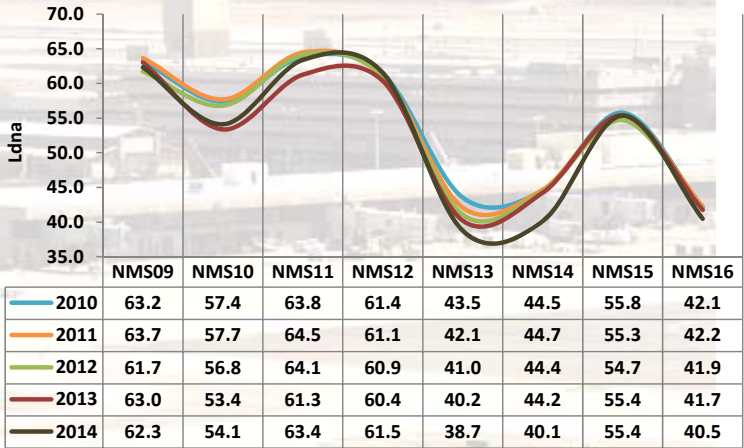
5. Averaged Noise Levels

Eight noise monitoring sites are located in Tempe north and south of the Salt River in neighborhoods close to the main flight paths for the Phoenix Sky Harbor International Airport.



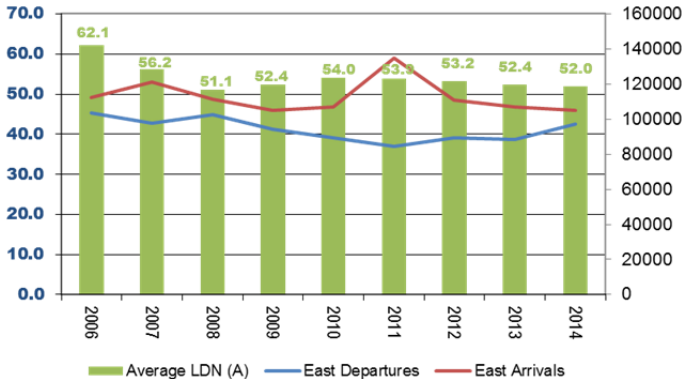
Annual (Day-Night) average sound level, Ldn (A), registered at fixed monitoring sites operated by the City of Phoenix, decreased in 2014 at sites 13 and 14, which reflects increased compliance for departing flights due to the implementation of RNAV procedures.

LDNA Annual Sound Energy Average



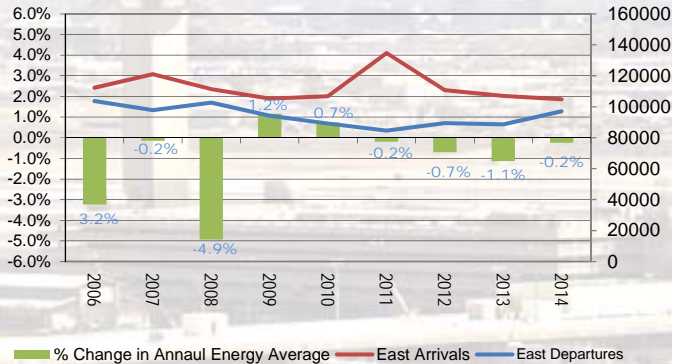
Noise Monitoring Sites

Aircraft Noise Development
Change in Average Ldn A



The number of daytime and nighttime jet departures to the east of the airport increased 6% compared to 2013. The trend of decreasing average Ldn levels continued in 2014 by 0.4%. The average maximum level (Lmax) increased 0.2%.

Aircraft Noise Development
Percent Change in Average Leq A



Aircraft Noise Development
Percent Change in Average LMax

