SFO COMMUNITY ROUNDTABLE

Meeting Packet
Regular Meeting

Meeting No. 314
Wednesday, August 1, 2018 - 7:00 p.m.

David Chetcuti Community Room – Millbrae City Hall
450 Popular Avenue – Millbrae, CA 94030

Note: To arrange an accommodation under the Americans with Disabilities Act to participate in this public meeting, please call (650) 363-1853 at least 2 days before the meeting date.

AGENDA

1. Call to Order / Roll Call / Declaration of a Quorum Present
ACTION
Elizabeth Lewis, Roundtable Chairperson / James A. Castaneda, AICP, Roundtable Coordinator

2. Public Comments on Items NOT on the Agenda
INFORMATION
Speakers are limited to two minutes. Roundtable members cannot discuss or take action on any matter raised under this item

CONSENT AGENDA ITEMS

All items on the Consent Agenda are approved/accepted in one motion. A Roundtable Representative can make a request, prior to action on the Consent Agenda, to transfer a Consent Agenda item to the Regular Agenda. Any items on the Regular Agenda may be transferred on the Consent Agenda in a similar manner.

3. Review of Roundtable Meeting Overview for April 4, 2018
ACTION

1. April 4, 2018 Meeting Overview* pg. 13

4. Airport Director's Reports for March, April, May 2018, Fly Quiet Report Q1 2018
ACTION

1. March 2018 Airport Director's Report* pg. 17
2. April 2018 Airport Director's Report* pg. 23
3. May 2018 Airport Director's Report pg. 29
4. Fly Quiet Report for Q2 2018* pg. 33

REGULAR AGENDA

5. SFO Updates
INFORMATION
Ivar Satero, Director – San Francisco International Airport
Doug Yakel, Public Information Officer – San Francisco International Airport

** items not approved/accepted at prior meeting due to lack of quorum.*

REGULAR AGENDA (continued)

6. Ground-Based Augmentation System (GBAS) updates
INFORMATION
Doug Yakel, Public Information Officer – San Francisco International Airport

7. Discussion with FAA Regarding Questions Provided from Roundtable Chair, email to FAA dated June 29, 2018
INFORMATION
FAA Representative

1. Email from Roundtable Chairperson dated June 28, 2018 pg. 47

8. Follow-Up from July 12, 2017 Technical Working Group meeting
INFORMATION
Gene Reindel, Roundtable Technical Consultant

1. Meeting Summary pg. 53

9. Follow-Up from June 26, 2018 Work Program Subcommittee meeting (Strategic Plan)
INFORMATION
James Castañeda, Roundtable Coordinator

1. Summary Memo pg. 61
2. June 26, 2018 Memo to Work Program Subcommittee pg. 62

10. Follow-Up from July 17, 2018 Legislative Subcommittee meeting
INFORMATION
Janet Borgans, City of Redwood City

1. Summary Memo pg. 65
2. Letter to Senators, dated July 18, 2018 pg. 66

OTHER MATTERS

11. Aviation Noise News and Updates
INFORMATION
Gene Reindel, Roundtable Technical Consultant

12. Member Communications / Announcements
INFORMATION
Roundtable Members and Staff

13. Adjourn
ACTION
Elizabeth Lewis, Roundtable Chairperson

Correspondences / Additional Reports
1. Portola Valley Q2 2018 Monitoring Report pg. 69
2. Woodside Q2 2018 Monitoring Report pg. 73
3. Brisbane Q2 2018 Monitoring Report pg. 77

SFO COMMUNITY ROUNDTABLE

Welcome

The Airport/Community Roundtable is a voluntary committee that provides a public forum to address community noise issues related to aircraft operations at San Francisco International Airport. The Roundtable encourages orderly public participation and has established the following procedure to help you, if you wish to present comments to the committee at this meeting.

- You must fill out a Speaker Slip and give it to the Roundtable Coordinator at the front of the room, as soon as possible, if you wish to speak on any Roundtable Agenda item at this meeting.
- To speak on more than one Agenda item, you must fill out a Speaker Slip for each item.
- The Roundtable Chairperson will call your name; please come forward to present your comments.

The Roundtable may receive several speaker requests on more than one Agenda item; therefore, each speaker is limited to two (2) minutes to present his/her comments on any Agenda item unless given more time by the Roundtable Chairperson. The Roundtable meetings are recorded. Copies of the audio file can be made available to the public upon request. Please contact the Roundtable Coordinator for any request.

Roundtable Meetings are accessible to people with disabilities. Individuals who need special assistance or a disability-related modification or accommodation to participate in this meeting, or who have a disability and wish to request an alternative format for the Agenda, Meeting Notice, Meeting Packet, or other writings that may be distributed at the meeting, should contact the Roundtable Coordinator at least two (2) working days before the meeting at the phone or e-mail listed below. Notification in advance of the meeting will enable Roundtable staff to make reasonable arrangements to ensure accessibility to this meeting.

AIRPORT/COMMUNITY ROUNDTABLE OFFICERS & STAFF

Chairperson:

ELIZABETH LEWIS
Representative, Town of Atherton
elewis@ci.atherton.ca.us

Vice-Chairperson:

RICARDO ORTIZ
Representative, City of BURLINGAME
rortiz@burlingame.org

Roundtable Coordinator:

JAMES A. CASTAÑEDA, AICP
County of San Mateo
Planning & Building Department
jcastaneda@sforoundtable.org

SFO COMMUNITY ROUNDTABLE

About the Roundtable

The Airport/Community Roundtable was established in May 1981, by a Memorandum of Understanding (MOU), to address noise impacts related to aircraft operations at San Francisco International Airport (SFO). The Airport is owned and operated by the City and County of San Francisco, but it is located entirely within San Mateo County. This voluntary committee consists of 22 appointed and elected officials from the City and County of San Francisco, the County of San Mateo, and several cities in San Mateo County (see attached Membership Roster). It provides a forum for the public to address local elected officials, Airport management, FAA staff, and airline representatives, regarding aircraft noise issues. The committee monitors a performance-based aircraft noise mitigation program, as implemented by Airport staff, interprets community concerns, and attempts to achieve additional noise mitigation through a cooperative sharing of authority brought forth by the airline industry, the FAA, Airport management, and local government officials. The Roundtable adopts an annual Work Program to address key issues. In 2017, the Roundtable is scheduled to meet on the first Wednesday of the following months: February, April, June, August, October and December. Regular Meetings are held on the first Wednesday of the designated month at 7:00 p.m. at **the David Chetcuti Community Room at Millbrae City Hall, 450 Poplar Avenue, Millbrae, California** unless noted. Special Meetings and workshops are held as needed. The members of the public are encouraged to attend the meetings and workshops to express their concerns and learn about airport/aircraft noise and operations. For more information about the Roundtable, please contact Roundtable staff at (650) 363-1853.

POLICY STATEMENT

The Airport/Community Roundtable reaffirms and memorializes its longstanding policy regarding the "shifting" of aircraft-generated noise, related to aircraft operations at San Francisco International Airport, as follows:

> **"The Airport/Community Roundtable members, as a group, when considering and taking actions to mitigate noise, will not knowingly or deliberately support, encourage, or adopt actions, rules, regulations or policies, that result in the "shifting" of aircraft noise from one community to another, when related to aircraft operations at San Francisco International Airport."**
> *(Source: Roundtable Resolution No. 93-01)*

FEDERAL PREEMPTION, RE: AIRCRAFT FLIGHT PATTERNS

The authority to regulate flight patterns of aircraft is vested exclusively in the Federal Aviation Administration (FAA). Federal law provides that:

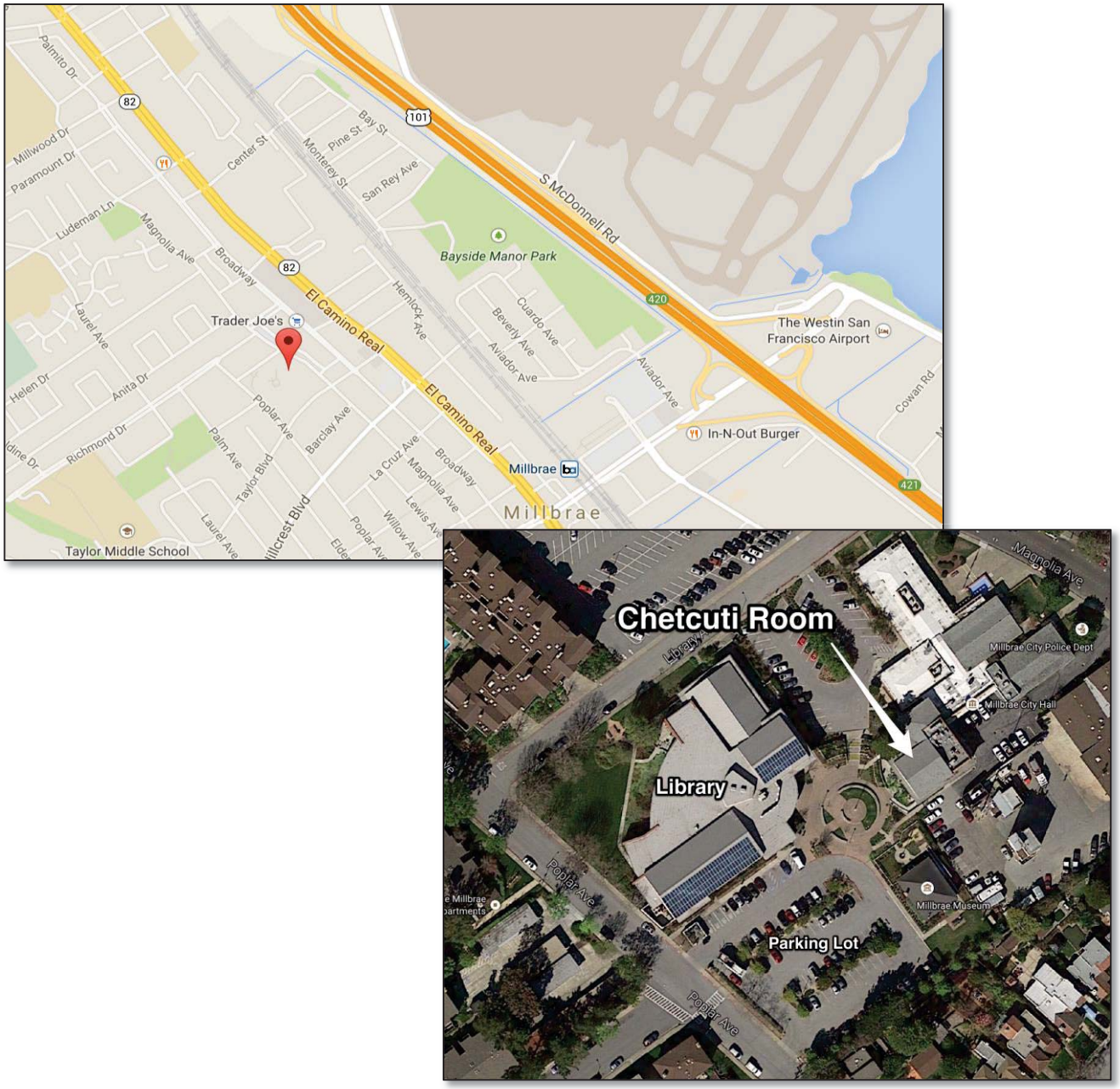
> "No state or political subdivision thereof and no interstate agency or other political agency of two or more states shall enact or enforce any law, rule, regulation, standard, or other provision having the force and effect of law, relating to rates, routes, or services of any air carrier having authority under subchapter IV of this chapter to provide air transportation."
> *(Source: 49 U.S.C. A. Section 1302(a)(1)).*

SFO COMMUNITY ROUNDTABLE

Meeting Location

David Chetcuti Community Room
450 Poplar Avenue - Millbrae, CA 94030

Access through Millbrae Library parking lot on Poplar Avenue



SFO COMMUNITY ROUNDTABLE

Member Roster

August 2018

CITY AND COUNTY OF SAN FRANCISCO BOARD OF SUPERVISORS
Ahsha Safaí, Supervisor

CITY AND COUNTY OF SAN FRANCISCO MAYOR'S OFFICE
David Takashima, (Appointed)

CITY AND COUNTY OF SAN FRANCISCO AIRPORT COMMISSION REPRESENTATIVE
Ivar Satero, Airport Director (Appointed)
Alternate: Doug Yakel, Public Information Officer

COUNTY OF SAN MATEO BOARD OF SUPERVISORS
Dave Pine, Supervisor
Alternate: Don Horsley, Supervisor

CITY/COUNTY ASSOCIATION OF GOVERNMENTS AIRPORT LAND USE COMMITTEE (ALUC)
Adam Kelly, ALUC Chairperson (Appointed)

TOWN OF ATHERTON
Elizabeth Lewis, Mayor
Alternate: Bill Widmer, Council Member

CITY OF BELMONT
Douglas Kim, Council Member
Alternate: Eric Reed, Council Member

CITY OF BRISBANE
Terry O'Connell, Council Member
Alternate: Madison Davis, Council Member

CITY OF BURLINGAME
Ricardo Ortiz, Council Member

CITY OF DALY CITY
Glenn Sylvester, Mayor

CITY OF FOSTER CITY
Sam Hindi, Council Member

CITY OF HALF MOON BAY
Harvey Rarback, Council Member

TOWN OF HILLSBOROUGH
Alvin Royse, Council Member
Alternate: Shawn Christianson, Council Member

CITY OF MENLO PARK
Peter Ohtaki, Council Member

CITY OF MILLBRAE
Anne Oliva, Council Member
Alternate: Ann Schneider, Council Member

CITY OF PACIFICA
Sue Digre, Council Member
Alternate: John Keener, Mayor

TOWN OF PORTOLA VALLEY
Ann Wengert, Council Member
Alternate: Maryann Derwin, Council Member

CITY OF REDWOOD CITY
Janet Borgens, Council Member

CITY OF SAN BRUNO
Marty Medina, Council Member
Alternate: Rico Medina, Council Member

CITY OF SAN CARLOS
Ron Collins: Council Member
Alternate: Matt Grocott, Council Member

CITY OF SAN MATEO
Diane Papan, Council Member

CITY OF SOUTH SAN FRANCISCO
Mark Addiego, Council Member
Alternate: Pradeep Gupta, Council Member

TOWN OF WOODSIDE
Chris Shaw, Council Member
Alternate: Deborah Gordon, Council Member

ROUNDTABLE ADVISORY MEMBERS

AIRLINES/FLIGHT OPERATIONS
Captain James Abell, United Airlines
Glenn Morse, United Airlines

FEDERAL AVIATION ADMINISTRATION
Thann McLeod, NORCAL TRACON
Tony DiBernardo, FAA Sierra-Pacific District

ROUNDTABLE STAFF
James A. Castañeda, AICP, Roundtable Coordinator
Gene Reindel, Technical Consultant (HMMH)
Justin Cook, Technical Consultant (HMMH)
Adam Scholten, Technical Consultant (HMMH)

SAN FRANCISCO INTERNATIONAL AIRPORT NOISE ABATEMENT STAFF
Bert Ganoung, Noise Abatement Manager
David Ong, Noise Abatement Systems Manager
Nastasja von Conta, Senior Noise Abatement Specialist
Anthony Carpeneti, Noise Abatement Specialist
Annelises Taing, Noise Abatement Specialist

San Francisco International Airport

Aircraft Noise Abatement Office

Glossary of common Acoustic and Air Traffic Control terms

A

ADS-B - **Automatic Dependent Surveillance – Broadcast** – ADS-B uses ground based antennas and in-aircraft displays to alert pilots to the position of other aircraft relative to their flight path. ADS-B is a key element of NextGen.

Air Carrier - A commercial airline with published schedules operating at least five round trips per week.

Air Taxi – An aircraft certificated for commercial service available for hire on demand.

ALP - Airport Layout Plan – The official, FAA approved map of an airport's facilities.

ALS – Approach Lighting System - Radiating light beams guiding pilots to the extended centerline of the runway on final approach and landing.

Ambient Noise Level – The existing background noise level characteristic of an environment.

Approach Lights – High intensity lights located along the approach path at the end of an instrument runway. Approach lights aid the pilot as he transitions from instrument flight conditions to visual conditions at the end of an instrument approach.

APU - Auxiliary Power Unit – A self-contained generator in an aircraft that produces power for ground operations of the electrical and ventilation systems and for starting the engines.

Arrival – The act of landing at an airport.

Arrival Procedure - A series of directions on a published approach plate or from air traffic control personnel, using fixes and procedures, to guide an aircraft from the en route environment to an airport for landing.

Arrival Stream – A flow of aircraft that are following similar arrival procedures.

ARTCC – Air Route Traffic Control Center - A facility providing air traffic control to aircraft on an IFR flight plan within controlled airspace and principally during the enroute phase of flight.

ATC - Air Traffic Control - The control of aircraft traffic, in the vicinity of airports from control towers, and in the airways between airports from control centers.

ATCT – Air Traffic Control Tower - A central operations tower in the terminal air traffic control system with an associated IFR room if radar equipped, using air/ground communications and/or radar, visual signaling and other devices to provide safe, expeditious movement of air traffic.

Avionics – Airborne navigation, communications, and data display equipment required for operation under specific air traffic control procedures.

Altitude MSL –Aircraft altitude measured in feet above mean sea level.

B

Backblast - Low frequency noise and high velocity air generated by jet engines on takeoff.

Base Leg – A flight path at right angles to the landing runway. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.

C

Center – See ARTCC.

CNEL – Community Noise Equivalent Level - A noise metric required by the California Airport Noise Standards for use by airport proprietors to measure aircraft noise levels. CNEL includes an additional weighting for each event occurring during the evening (7;00 PM – 9:59 PM) and nighttime (10 pm – 6:59 am) periods to account for increased sensitivity to noise during these periods. Evening events are treated as though there were three and nighttime events are treated as thought there were ten. This results in a 4.77 and 10 decibel penalty

penalty for operations occurring in the evening and nighttime periods, respectively.

CNEL Contour - The "map" of noise exposure around an airport as expressed using the CNEL metric. A CNEL contour is computed using the FAA-approved Integrated Noise Model (INM), which calculates the aircraft noise exposure near an airport.

Commuter Airline – Operator of small aircraft (maximum size of 30 seats) performing scheduled (maximum size of 30 seats) performing service between two or more points.

D

Decibel (dB) - In sound, decibels measure a scale from the threshold of human hearing, 0 dB, upward towards the threshold of pain, about 120-140 dB. Because decibels are such a small measure, they are computed logarithmically and cannot be added arithmetically. An increase of ten dB is perceived by human ears as a doubling of noise.

dBA - A-weighted decibels adjust sound pressure towards the frequency range of human hearing.

dBC - C-weighted decibels adjust sound pressure towards the low frequency end of the spectrum. Although less consistent with human hearing than A- weighting, dBC can be used to consider the impacts of certain low frequency operations.

Decision Height – The height at which a decision must be made during an instrument approach either to continue the approach or to execute a missed approach.

Departure – The act of an aircraft taking off from an airport.

Departure Procedure – A published IFR departure procedure describing specific criteria for climb, routing, and communications for a specific runway at an airport.

Displaced Threshold - A threshold that is located at a point on the runway other than the physical beginning. Aircraft can begin departure roll before the threshold, but cannot land before it.

DME - Distance Measuring Equipment - Equipment (airborne and ground) used to measure, in nautical miles, a slant range distance of an aircraft from the DME navigational aid.

DNL - Day/Night Average Sound Level - The daily average noise metric in which that noise occurring between 10:00 p.m. and 7:00 a.m. is penalized by 10 dB. DNL is often expressed as the annual-average noise level.

DNL Contour - The "map" of noise exposure around an airport as expressed using the DNL metric. A DNL contour is computed using the FAA-approved Integrated Noise Model (INM), which calculates the aircraft noise exposure near an airport.

Downwind Leg – A flight path parallel to the landing runway in the direction opposite the landing direction.

Duration - The length of time in seconds that a noise event lasts. Duration is usually measured in time above a specific noise threshold.

E

En route – The portion of a flight between departure and arrival terminal areas.

Exceedance— Whenever an aircraft overflight produces a noise level higher than the maximum decibel value established for a particular monitoring site, the noise threshold is surpassed and a noise exceedance occurs. An exceedance may take place during approach, takeoff, or possibly during departure ground roll before lifting off.

F

FAA - The Federal Aviation Administration is the agency responsible for aircraft safety, movement and controls. FAA also administers grants for noise mitigation projects and approves certain aviation studies including FAR Part 150 studies, Environmental Assessments, Environmental studies, Environmental Assessments, Environ Impact Statements, and Airport Layout Plans.

FAR – Federal Aviation Regulations are the rules and regulations, which govern the operation of aircraft, airways, and airmen.

FAR Part 36 – A Federal Aviation Regulation defining maximum noise emissions for aircraft.

FAR Part 91 – A Federal Aviation Regulation governing the phase out of Stage 1 and 2 aircraft as defined under FAR Part 36.

FAR Part 150 – A Federal Aviation Regulation governing noise and land use compatibility studies and programs.

FAR Part 161 – A Federal Aviation Regulation governing aircraft noise and access restrictions.

Fix – A geographical position determined by visual references to the surface, by reference to one or more Navaids, or by other navigational methods.

Fleet Mix – The mix or differing aircraft types operated at a particular airport or by an airline.

Flight Plan – Specific information related to the intended flight of an aircraft. A flight plan is filed with a Flight Service Station or Air Traffic Control facility.

FMS – Flight Management System - a specialized computer system in an aircraft that automates a number of in-flight tasks, which reduces flight crew workload and improves the precision of the procedures being flown.

G

GA - General Aviation – Civil aviation excluding air carriers, commercial operators and military aircraft.

GAP Departure – An aircraft departure via Runways 28 at San Francisco International Airport to the west over San Bruno, South San Francisco, Daly City, and Pacifica.

Glide Slope – Generally a 3-degree angle of approach to a runway established by means of airborne instruments during instrument approaches, or visual ground aids for the visual portion of an instrument approach and landing.

GPS - Global Positioning System – A satellite based radio positioning, navigation, and time-transfer system.

GPU - Ground Power Unit – A source of power, generally from the terminals, for aircraft to use while their engines are off to power the electrical and ventilation systems on the aircraft.

Ground Effect – The excess attenuation attributed to absorption or reflection of noise by manmade or natural features on the ground surface.

Ground Track – is the path an aircraft would follow on the ground if its airborne flight path were plotted on the ground the terrain.

H

High Speed Exit Taxiway – A taxiway designed and provided with lighting or marking to define the path of aircraft traveling at high speed from the runway center to a point on the center of the taxiway.

I

IDP - Instrument Departure Procedure - An aeronautical chart designed to expedite clearance delivery and to facilitate transition between takeoff and en route operations. IDPs were formerly known as SIDs or Standard Instrument Departure Procedures.

IFR - Instrument Flight Rules -Rules and regulations established by the FAA to govern flight under conditions in which flight by visual reference is not safe.

ILS - Instrument Landing System – A precision instrument approach system which normally consists of a localizer, glide slope, outer marker, middle marker, and approach lights.

IMC – Instrument Meteorological Conditions - Weather conditions expressed in terms of visibility, distance from clouds, and cloud ceilings during which all aircraft are required to operate using instrument flight rules.

Instrument Approach – A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing, or to a point from which a landing may be made visually.

J

K

Knots – A measure of speed used in aerial navigation. One knot is equal to one nautical mile per hour (100 knots = 115 miles per hour).

L

Load Factor – The percentage of seats occupied in an aircraft.

Lmax – The peak noise level reached by a single aircraft event.

Localizer – A navigational aid that consists of a directional pattern of radio waves modulated by two signals which, when receding with equal intensity, are displayed by compatible airborne equipment as an “on-course” indication, and when received in unequal intensity are displayed as an “off-course” indication.

LDA – Localizer Type Directional Aid – A facility of comparable utility and accuracy to a localizer, but not part of a complete ILS and not aligned with the runway.

M

Middle Marker - A beacon that defines a point along the glide slope of an ILS, normally located at or near the point of decision height.

Missed Approach Procedure – A procedure used to redirect a landing aircraft back around to attempt another landing. This may be due to visual contact not established at authorized minimums or instructions from air traffic control, or for other reasons.

N

NAS – National Airspace System - The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, manpower and material.

Nautical Mile – A measure of distance used in air and sea navigation. One nautical mile is equal to the length of one minute of latitude along the earth's equator. The nautical mile was officially set as 6076.115 feet. (100 nautical miles = 115 statute miles)

Navaid – Navigational Aid.

NCT – Northern California TRACON – The air traffic control facility that guides aircraft into and out of San Francisco Bay Area airspace.

NDB – Non-Directional Beacon - Signal that can be read by pilots of aircraft with direction finding equipment. Used to determine bearing and can "home" in or track to or from the desired point.

NEM – Noise Exposure Map – A FAR Part 150 requirement prepared by airports to depict noise contours. NEMs also take into account potential land use changes around airports.

NextGen – The Next Generation of the national air transportation system. NextGen represents the movement from ground-based navigation aids to satellite-based navigation.

NMS – See RMS

Noise Contour – See CNEL and DNL Contour.

Non-Precision Approach Procedure – A standard instrument approach procedure in which no electronic glide slope is provided.

O

Offset ILS – Offset Parallel Runways – Staggered runways having centerlines that are parallel.

Operation – A take-off, departure or overflight of an aircraft. Every flight requires at least two operations, a take-off and landing.

Outer Marker – An ILS navigation facility in the terminal area navigation system located four to seven miles from the runways edge on the extended centerline indicating the beginning of final approach.

Overflight – Aircraft whose flights originate or terminate outside the metropolitan area that transit the airspace without landing.

P

PASSUR System – Passive Surveillance Receiver - A system capable of collecting and plotting radar tracks of individual aircraft in flight by passively receiving transponder signals.

PAPI – Precision Approach Path Indicator - An airport lighting facility in the terminal area used under VFR conditions. It is a single row of two to four lights, radiating high intensity red or white beams to indicate whether the pilot is above or below the required runway approach path.

PBN –Performance Based Navigation - Area navigation based on performance requirements for aircraft operating along an IFR route, on an instrument approach procedure or in a designated airspace.

Preferential Runways - The most desirable runways from a noise abatement perspective to be assigned whenever safety, weather, and operational efficiency permits.

Precision Approach Procedure – A standard instrument approach procedure in which an electronic glide slope is provided, such as an ILS. GPS precision approaches may be provided in the future.

PRM – Precision Runway Monitoring – A system of high-resolution monitors for air traffic controllers to use in landing aircraft on parallel runways separated by less than 4,300'.

Q

R

Radar Vectoring – Navigational guidance where air traffic controller issues a compass heading to a pilot.

Reliever Airport – An airport for general aviation and other aircraft that would otherwise use a larger and busier air carrier airport.

RMS – Remote Monitoring Site - A microphone placed in a community and recorded at San Francisco International Airport's Noise Monitoring Center. A network of 29 RMS's generate data used in preparation of the airport's Noise Exposure Map.

RNAV – Area Navigation - A method of IFR navigation that allows an aircraft to choose any course within a network of navigation beacons, rather than navigating directly to and from the beacons. This can conserve flight distance, reduce congestion, and allow flights into airports without beacons.

RNP – Required Navigation Performance - A type of performance-based navigation (PBN) that allows an aircraft to fly a specific path between two 3- dimensionally defined points in space. RNAV and RNP systems are fundamentally similar. The key difference between them is the requirement for on- board performance monitoring and alerting. A navigation specification that includes a requirement for on-board navigation performance monitoring and alerting is referred to as an RNP specification. One not having such a requirement is referred to as an RNAV specification.

Run-up – A procedure used to test aircraft engines after maintenance to ensure safe operation prior to returning the aircraft to service. The power settings tested range from idle to full power and may vary in duration.

Run-up Locations - Specified areas on the airfield where scheduled run-ups may occur. These locations are sited, so as to produce minimum noise impact in surrounding neighborhoods.

Runway – A long strip of land or water used by aircraft to land on or to take off from.

S

Sequencing Process – Procedure in which air traffic is merged into a single flow, and/or in which adequate separation is maintained between aircraft.

Shoreline Departure – Departure via Runways 28 that utilizes a right turn toward San Francisco Bay as soon as feasible. The Shoreline Departure is considered a noise abatement departure procedure.

SENEL – Single Event Noise Exposure Level - The noise exposure level of a single aircraft event measured over the time between the initial and final points when the noise level exceeds a predetermined threshold. It is important to distinguish single event noise levels from cumulative noise levels such as CNEL. Single event noise level numbers are generally higher than CNEL numbers, because CNEL represents an average noise level over a period of time, usually a year.

Single Event – Noise generated by a single aircraft overflight.

SOIA – Simultaneous Offset Instrument Approach Is an approach system permitting simultaneous Instrument Landing System approaches to airports having staggered but parallel runways. SOIA combines Offset ILS and regular ILS definitions.

STAR – Standard Terminal Arrival Route is a published IFR arrival procedure describing specific criteria for descent, routing, and communications for a specific runway at an airport.

T

Taxiway – A paved strip that connects runways and terminals providing the ability to move aircraft so they will not interfere with takeoffs or landings.

Terminal Airspace - The air space that is controlled by a TRACON.

Terminal Area – A general term used to describe airspace in which approach control service or airport traffic control service is provided.

Threshold – Specified boundary.

TRACON -Terminal Radar Approach Control – is an FAA air traffic control service to aircraft arriving and departing or transiting airspace controlled by the facility. TRACONs control IFR and participating VFR flights. TRACONs control the airspace from Center down to the ATCT.

U

V

Vector – A heading issued to a pilot to provide navigational guidance by radar. Vectors are assigned verbally by FAA air traffic controllers.

VFR – Visual Flight Rules are rules governing procedures for conducting flight under visual meteorological conditions, or weather conditions with a ceiling of 1,000 feet above ground level and visibility of three miles or greater. It is the pilot's responsibility to maintain visual separation, not the air traffic controller's, under VFR.

Visual Approach – Wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of an air traffic facility and having an air traffic control authorization, may proceed to destination airport under VFR.

VASI – Visual Approach Slope Indicator - An airport lighting facility in the terminal area navigation system used primarily under VFR conditions. It provides vertical visual guidance to aircraft during approach and landing, by radiating a pattern of high intensity red and white focused light beams, which indicate to the pilot that he/she is above, on, or below the glide path.

VMC – Visual Meteorological Conditions - weather conditions equal to or greater than those specified for aircraft operations under Visual Flight Rules (VFR).

VOR - Very High Frequency Omni-directional Range – A ground based electronic navigation aid transmitting navigation signals for 360 degrees oriented from magnetic north. VOR is the historic basis for navigation in the national airspace system.

W

X

Y

Z

how to reach us

SFO Aircraft Noise Abatement Office mailing address is:
P.O. Box 8097, San Francisco, CA 94128

Phone:	**650.821.5100**
Fax:	**650.821.5112**
Noise Complaint Line:	**650.821.4736**
Toll Free Noise Complaint Line:	**877.206.8290**
Noise Complaint E-mail:	**sfo.noise@flysfo.com**
Airport Web Page:	**www.flysfo.com**
Noise Abatement Web Page:	**http://www.flysfo.com/community-environment/noise-abatement**
Roundtable Web Page:	**www.sforoundtable.org**

SFO Airport/Community Roundtable
Meeting No. 312 Action Minutes
Wednesday, April 4, 2018

1. Call to Order / Roll Call / Declaration of a Quorum Present

Roundtable Chairperson, Elizabeth Lewis, called the Regular Meeting of the SFO Airport / Community Roundtable to order, at approximately 7:00 p.m., in the David Chetcuti Community Room at the Millbrae City Hall. James A. Castañeda, AICP, Roundtable Coordinator, called the roll. A quorum (at least 12 Regular Members) was present as follows:

REGULAR MEMBERS PRESENT
Doug Takel – City and County of San Francisco Airport Commission
Don Horsley – County of San Mateo Board of Supervisors
Carlo Ford - C/CAG Airport Land Use Committee (ALUC)
Elizabeth Lewis – Town of Atherton
Doug Kim – City of Belmont
Terry O'Connell – City of Brisbane
Ricardo Ortiz – City of Burlingame
Ann Schneider – City of Millbrae
Sue Digre – City of Pacifica
Janet Borgens – City of Redwood City
Ron Collins – City of San Carlos
Diane Papen – City of San Mateo

REGULAR MEMBERS ABSENT
City and County of San Francisco Board of Supervisors
City and County of San Francisco Mayor's Office
City of Daly City
City of Foster City
City of Half Moon Bay
Town of Hillsborough
City of Menlo Park
Town of Portola Valley
City of San Bruno
City of South San Francisco
Town of Woodside

ROUNDTABLE STAFF
James A. Castañeda, AICP – Roundtable Coordinator
Gene Reindel – Roundtable Consultant (HMMH)

SAN FRANCISCO INTERNATIONAL AIRPORT STAFF
David Ong, Noise Abatement Systems Manager
Nastasja von Contra, Senior Noise Abatement Specialist
Anthony Carpeneti, Noise Abatement Specialist

2. Jon C. Long Fly Quiet Awards for 2015-2016 and 2017

Chairperson Elizabeth Lewis and Noise Abatement Systems Manager David Ong presented the 2015-2016 and 2017 Jon C. Long Fly Quiet Awards.

3. Public Comments on Items NOT on the Agenda

A total of four members of the public spoke during public comments:

Charlie Wambeke
Doreen Gotelli
Elizabeth Lopez
Carolyn Kincaid

4. Review of Roundtable Meeting Overview for December 6, 2017 and February 7, 2018
5. Airport Director's Reports for January & February 2018

ACTION: Terry O'Connel **MOVED** approval of the meeting overview for December 6, 2017 and February 7, 2018, Airport Director's Reports for January and February 2018. The motion was seconded by Janet Borgens and **CARRIED**, unanimously.

6. SFO Updates

Doug Yakel, SFO Public Information Officer for San Francisco International Airport, provided an update as to the operations at SFO, including the forthcoming installation of a Ground Based Augmentation System (GBAS).

7. Report and Recommendation from Work Program Subcommittee of Roundtable FY2017-2018 Budget

ACTION: Ann Schinder **MOVED** approval of Roundtable FY2017-2018 budget. The motion was seconded by Ricardo Ortiz and **CARRIED**, unanimously.

8. Status/Update, FAA Initiative Phase 2 / Technical Working Group Meeting Follow-up

Roundtable Technical Consultant Gene Reindel provided an overview of the Technical Working Group meeting that occurred on March 8, 2018.

9. Update from the Roundtable's Legislative Subcommittee Meeting

Redwood City representative Janet Borgens provided an update and overview of the March 20, 2018 Legislative Subcommittee meeting. Pacifica representative Sue Digre provided additional comments.

10. Discussion, Health Effects of Aircraft Noise on People

Mary Ellen Eagan, president of HMMH, presented on the effects of aircraft noise on people, and the various research that's been conducted on the matter.

11. Follow-up, Expand Roundtable membership to include 2 additional members; one representative from each Santa Clara County and Santa Cruz County

Roundtable Chairperson Elizabeth Lewis introduced Gary Waldeck, Councilmember from Los Altos Hills and member of the Cities Association of Santa Clara County to discuss the current status of the Roundtable creation efforts in the south bay.

12. Upcoming 3-Year Strategic Plan and 2018-2019 Work Plan development, Member Appointment to Work Program Subcommittee

Roundtable Coordinator James Castañeda announced forthcoming efforts to develop the Roundtable's 3-year strategic plan and 2018-2019 work plan.

13. Aviation Noise News and Updates

Roundtable Technical Consultant Gene Reindel provided a brief recap of relevant aviation noise news to the Roundtable.

14. Member Communications / Announcements

None.

15. Adjourn

Chairperson Lewis adjourned the meeting at 9:03 p.m.

Roundtable action minutes are considered draft until approved by the Roundtable at a regular meeting. A video recording of this meeting is available on the Roundtable's website.

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Airport Director's Report

Presented at the June 6, 2018
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
March 2018

SFO San Francisco International Airport

Aircraft Noise Monitoring System

March 2018

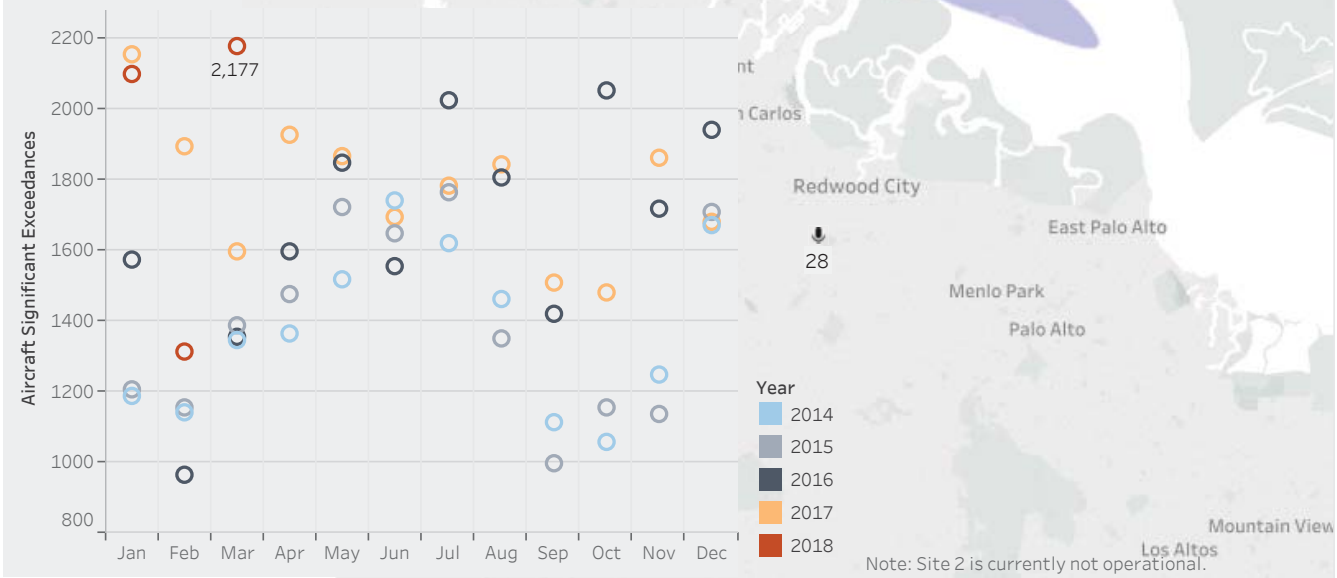
The map shows 29 aircraft noise monitoring locations that keep track of noise levels in the communities around the airport. Image centered on SFO airport shows quartlerly aircraft noise levels (dBA) exposure. The green zone marks 65dBA Community Noise Exposure Level (CNEL). The CNEL metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport.

Site	City	Aircraft Noise Events (AVG Day)	Aircraft CNEL (dBA)	Aircraft SEL (dBA)	Aircraft LMax (dBA)	City CNEL (dBA)
1	San Bruno	229	73	93	78	68
3	SSF	86	56	81	68	64
4	SSF	154	68	90	78	61
5	San Bruno	173	66	88	75	64
6	SSF	149	66	89	76	59
7	Brisbane	32	53	81	71	59
8	Millbrae	338	67	85	69	68
9	Millbrae	47	53	82	71	60
10	Burlingame	26	51	83	71	59
11	Burlingame	28	55	84	72	59
12	Foster City	349	63	82	71	60
13	Hillsborough	7	56	98	73	68
14	SSF	142	61	84	72	60
15	SSF	144	58	81	69	59
16	SSF	130	60	84	72	59
17	SSF	146	61	84	71	60
18	Daly City	139	65	88	75	60
19	Pacifica	120	62	86	74	59
20	Daly City	34	49	79	68	60
21	San Francisco	10	40	77	66	57
22	San Bruno	190	61	83	71	65
23	San Francisco	81	54	80	69	63
24	San Francisco	24	45	78	68	61
25	San Francisco	31	44	77	63	58
26	San Francisco	8	41	78	67	59
27	San Francisco	10	42	79	67	59
28	Redwood City	9	43	81	67	67
29	San Mateo	39	53	82	70	60

Above table shows Aircraft and Community monthly CNEL average for each noise monitoring location. In addition daily average aircraft counts are presented with the average sound exposure level (SEL) and maximum level (LMax).

The graph below shows aircraft noise events that produced a noise level higher than the maximum allowable decibel value established for a particular monitoring site.

Significant Exceedances



Note: Site 2 is currently not operational.

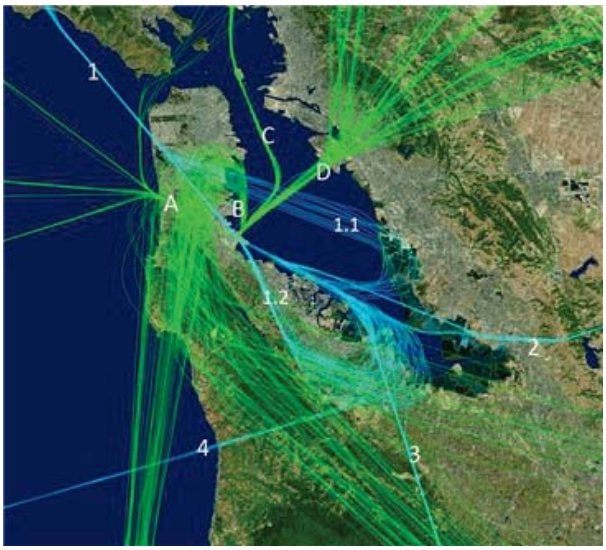
Monthly Operations Summary

March 2018

37,865	1,221	38,232	3.6%
Monthly Operations	Average Daily Operations	12 Month AVG	YOY Growth

March 2018 Average Day (Hourly)

Major Arrival and Departure Route Pattern (West Flow)



Arrivals	
1. BDEGA	25%
2. DYAMD	40%
3. SERFR	30%
4. OCEANIC	6%

Departures	
A. GAP	25%
B. SSTIK	28%
C. NIITE	9%
D. TRUKN RWY 01	35%
D. TRUKN RWY 28	4%

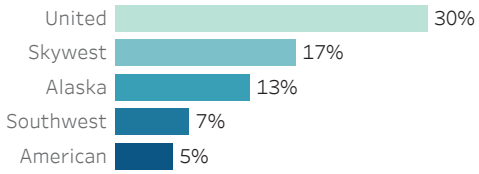
Top Destinations		
Los Angeles	Seattle	Portland
8%	5%	4%

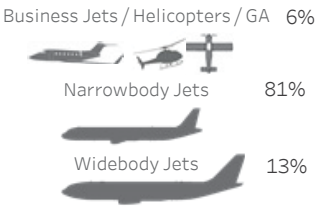
West Flow 93%

Down the Bay vs Peninsula

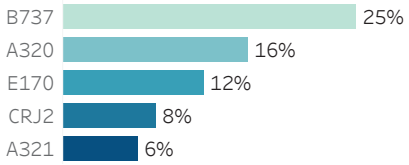
1.1 BDEGA East	25%
1.2 BDEGA West	75%

Airlines with the Most Operations

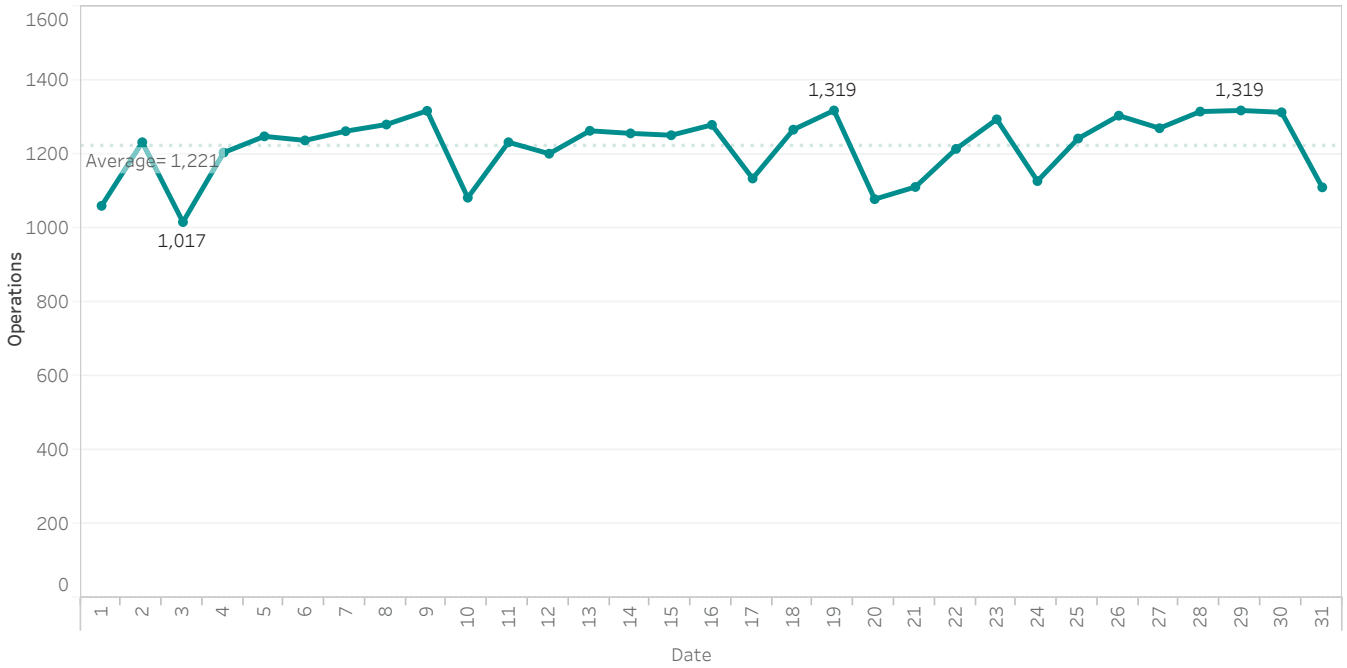




Most Utilized Aircraft Types



Daily Aircraft Operations



Runway Usage and Nighttime Operations

Monthly runway usage is shown for arrivals and departures, further categorized by all hours and nighttime hours. Graph at the bottom of the page shows hourly nighttime operations for each day. Power Runup locations are depicted on the airport map with airline nighttime power runup counts shown below. (Percent [%] rounded to nearest whole number)

Runway Utilization (all hours)

	Arrivals	Departures
01 L/R		68% 12,362
10 L/R		6% 1,071
19 L/R	7% 1,173	1% 175
28 L/R	93% 16,397	25% 4,532

Late Night Preferential Runway Use (1 am - 6 am)

	Departures
10 L/R	19% 117
01 L/R	47% 292
28 L/R	33% 201
19 L/R	1% 5

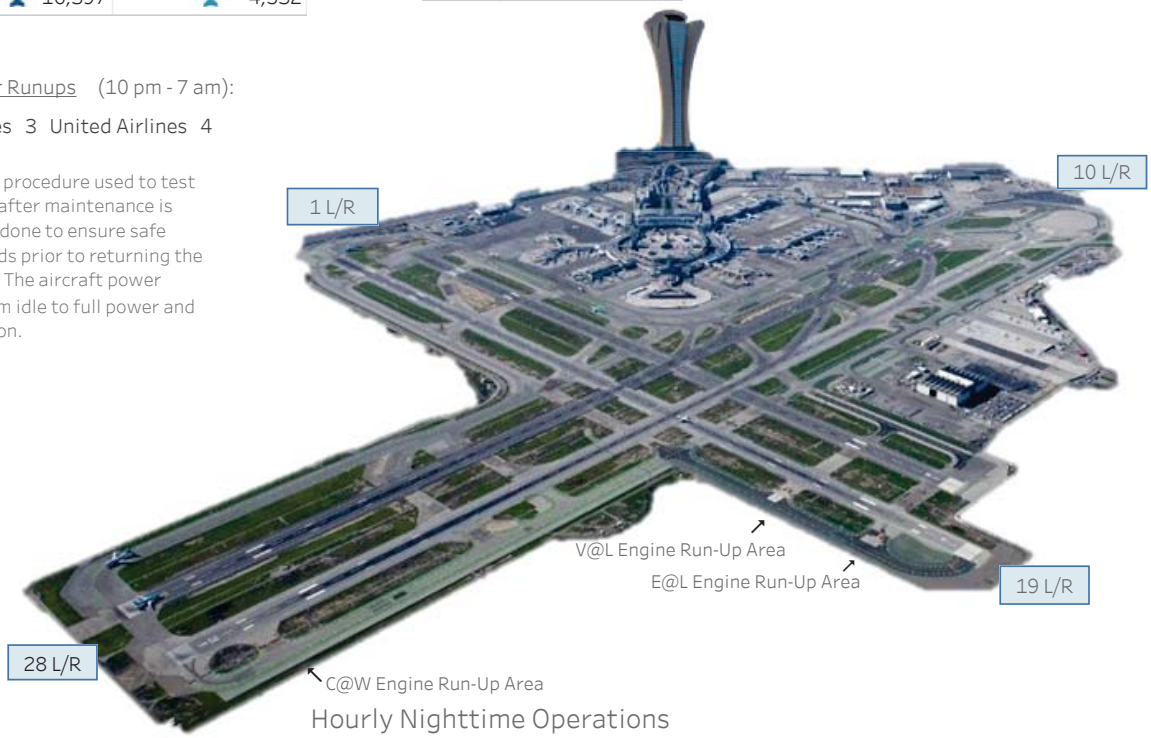
28 L vs R

Arrivals	
28L	28R
46%	54%
Night (10 pm - 7 am)	
34%	66%

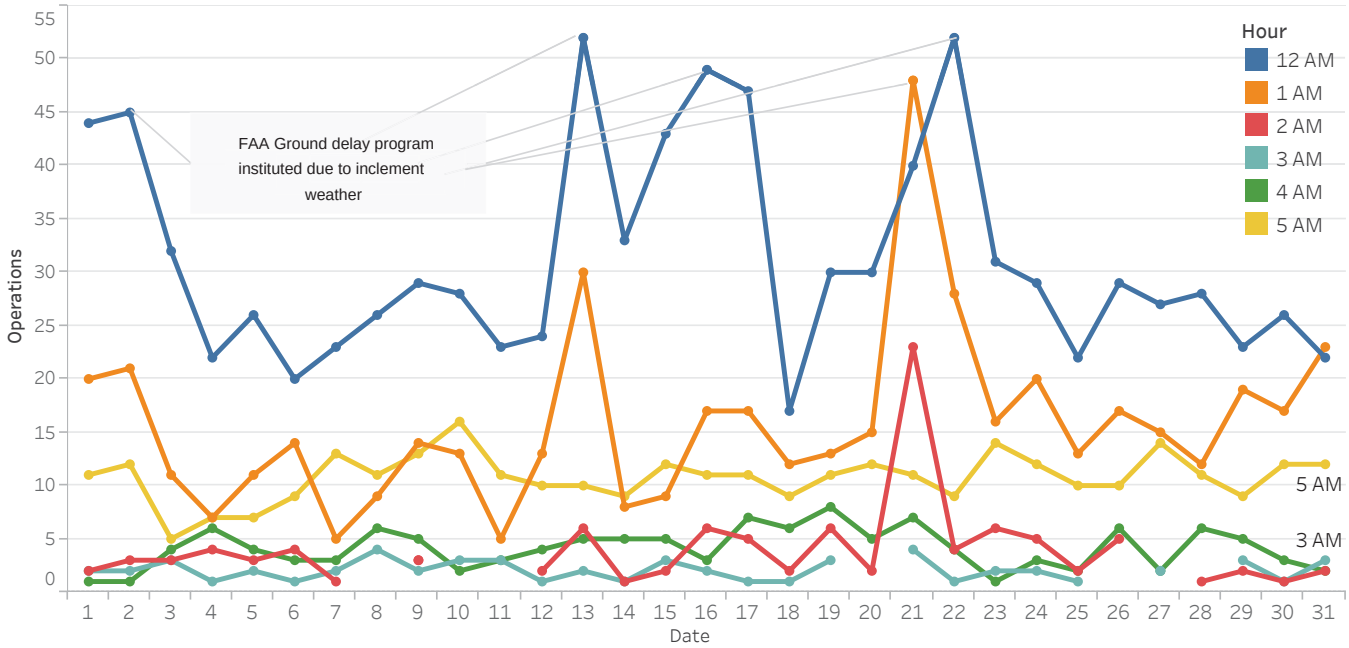
Nighttime Power Runups (10 pm - 7 am):

American Airlines 3 United Airlines 4

A power runup is a procedure used to test an aircraft engine after maintenance is completed. This is done to ensure safe operating standards prior to returning the aircraft to service. The aircraft power settings range from idle to full power and may vary in duration.



Hourly Nighttime Operations



Noise Reports

March 2018

		Noise Reporters	Noise Reports
Roundtable Communities	Atherton	8	853
	Belmont	7	879
	Brisbane	30	3,669
	Burlingame	11	620
	Daly City	10	2,484
	El Granada	4	201
	Foster City	8	278
	Half Moon Bay	10	399
	Menlo Park	29	2,595
	Millbrae	6	52
	Pacifica	61	6,480
	Portola Valley	40	7,497
	Redwood City	16	1,832
	San Bruno	10	350
	San Carlos	3	15
	San Francisco	44	4,986
	San Mateo	14	866
	South San Francisco	13	436
	Woodside	13	1,234
Other Communities	Alameda	3	33
	Albany	1	1
	Aptos	16	1,044
	Ben Lomond	22	687
	Berkeley	5	66
	Bonny Doon	4	189
	Boulder Creek	28	1,582
	Brookdale	2	16
	Capitola	26	3,460
	Carmel	2	112
	Castro Valley	1	10
	Cupertino	3	1,081
	East Palo Alto	2	27
	Felton	40	1,558
	Fremont	2	25
	La Selva Beach	1	34
	Lafayette	1	442
	Los Altos	186	28,338
	Los Altos Hills	35	9,153
	Los Gatos	153	22,822
	Moraga	3	390
	Morgan Hill	2	345
	Mount Hermon	1	2
	Mountain View	67	7,170
	Oakland	42	9,391
	Orinda	1	643
	Palo Alto	244	57,528
	Piedmont	1	5
	San Jose	1	92
	Santa Clara	1	37
	Santa Cruz	159	24,142
	Saratoga	9	846
	Scotts Valley	95	13,259
	Soquel	100	9,420
	Sunnyvale	13	1,077
	Watsonville	1	175
Total		1,610	230,928

99% of noise reports correlate to a flight origin/destination airport:

1,569
Noise Reporters (12 month AVG)

220,500
Noise Reports (12 Month AVG)

148
New Reporters

Felton
New Reporters Top City

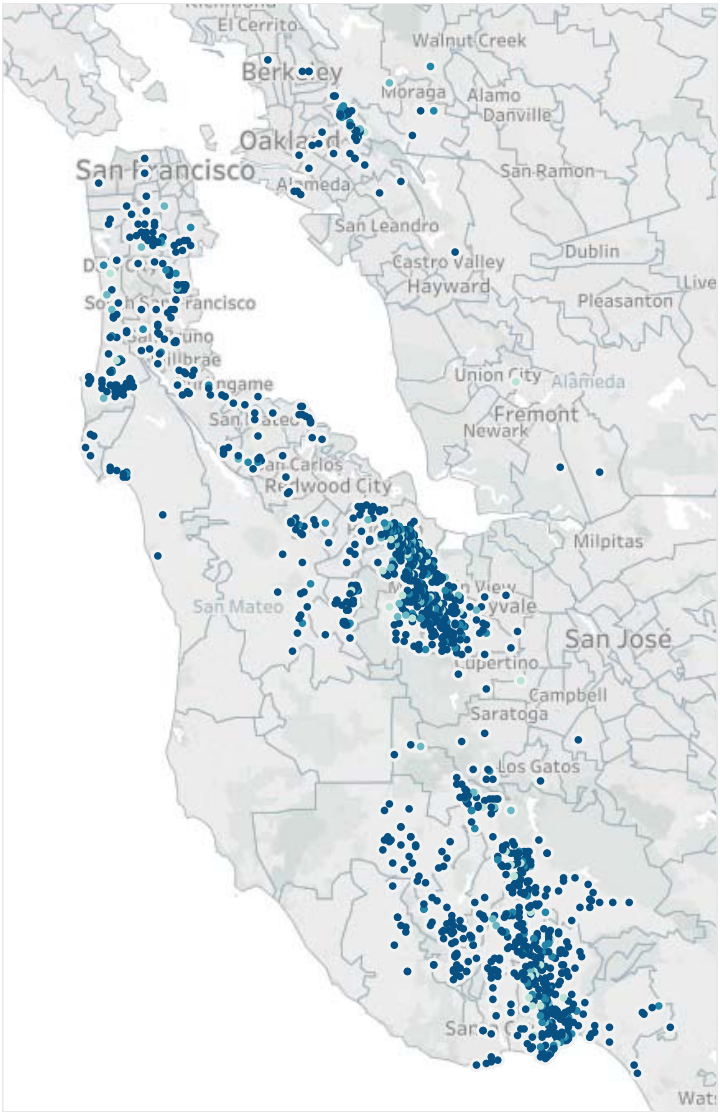
88 miles
Furthest Report

6
Reports per SFO Operation

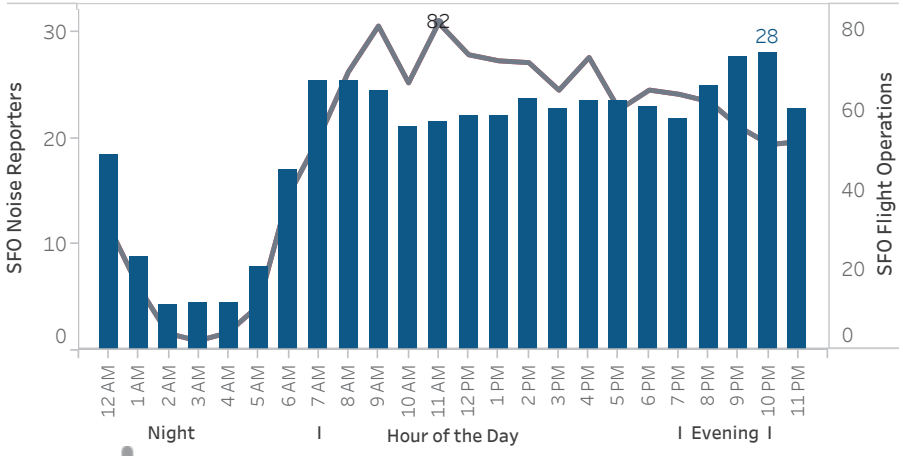
B737
A320
E170
Top Aircraft Type

CMP382*
JBU736
KAL213*
Top Flight Number *Night

Noise Reporters Location Map



Hourly Noise Reporters vs. Flight Operations (AVG Day)



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Source: SFO Intl Airport Noise Monitoring System

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Airport Director's Report

Presented at the June 6, 2018
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
April 2018

SFO San Francisco International Airport

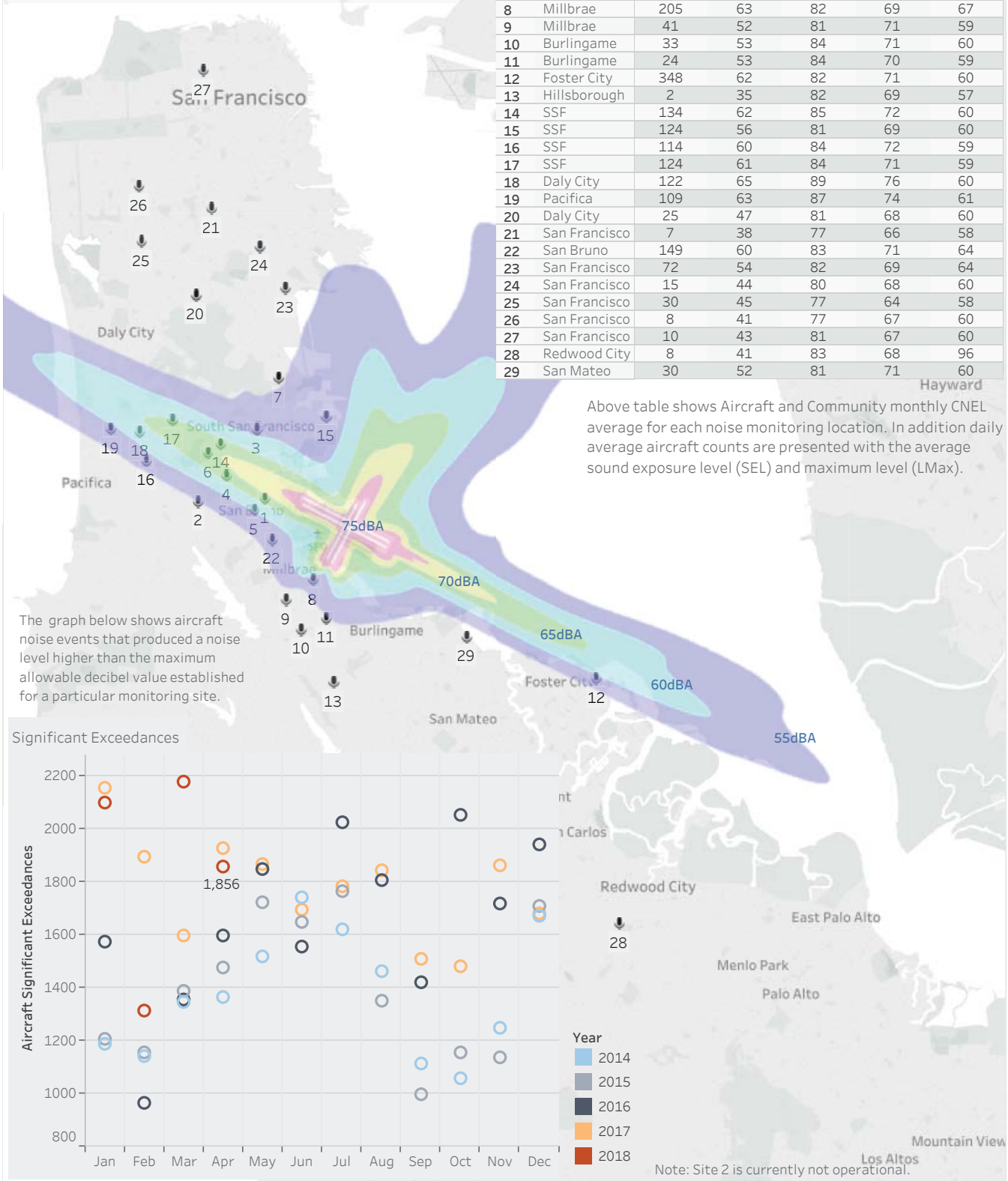
Aircraft Noise Monitoring System

April 2017

The map shows 29 aircraft noise monitoring locations that keep track of noise levels in the communities around the airport. Image centered on SFO airport shows quartlerly aircraft noise levels (dBA) exposure. The green zone marks 65dBA Community Noise Exposure Level (CNEL). The CNEL metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport.

Site	City	Aircraft				City
		Noise Events (AVG Day)	CNEL (dBA)	SEL (dBA)	LMax (dBA)	CNEL (dBA)
1	San Bruno	181	73	94	80	68
3	SSF	97	56	82	69	62
4	SSF	142	69	92	79	60
5	San Bruno	152	66	88	76	63
6	SSF	134	67	90	77	59
7	Brisbane	32	50	81	71	60
8	Millbrae	205	63	82	69	67
9	Millbrae	41	52	81	71	59
10	Burlingame	33	53	84	71	60
11	Burlingame	24	53	84	70	59
12	Foster City	348	62	82	71	60
13	Hillsborough	2	35	82	69	57
14	SSF	134	62	85	72	60
15	SSF	124	56	81	69	60
16	SSF	114	60	84	72	59
17	SSF	124	61	84	71	59
18	Daly City	122	65	89	76	60
19	Pacifica	109	63	87	74	61
20	Daly City	25	47	81	68	60
21	San Francisco	7	38	77	66	58
22	San Bruno	149	60	83	71	64
23	San Francisco	72	54	82	69	64
24	San Francisco	15	44	80	68	60
25	San Francisco	30	45	77	64	58
26	San Francisco	8	41	77	67	60
27	San Francisco	10	43	81	67	60
28	Redwood City	8	41	83	68	96
29	San Mateo	30	52	81	71	60

Above table shows Aircraft and Community monthly CNEL average for each noise monitoring location. In addition daily average aircraft counts are presented with the average sound exposure level (SEL) and maximum level (LMax).



The graph below shows aircraft noise events that produced a noise level higher than the maximum allowable decibel value established for a particular monitoring site.

Significant Exceedances

Note: Site 2 is currently not operational.

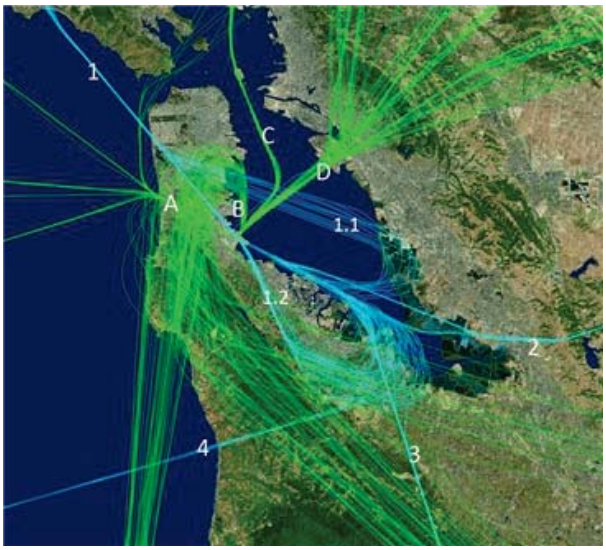
Monthly Operations Summary

April 2018

37,522	1,251	38,232	8.3%
Monthly Operations	Average Daily Operations	12 Month AVG	YOY Growth

April 2018 Average Day (Hourly)

Major Arrival and Departure Route Pattern (West Flow)



Arrivals	
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2. DYAMD	40%
3. SERFR	30%
4. OCEANIC	5%

Departures	
A. GAP	20%
B. SSTIK	31%
C. NIITE	9%
D. TRUKN RWY 01	38%
D. TRUKN RWY 28	3%

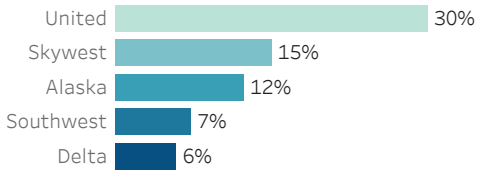
Top Destinations		
Los Angeles	Seattle	Portland
8%	5%	4%

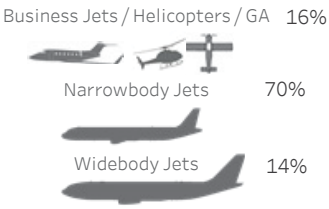
West Flow 97%

Down the Bay vs Peninsula

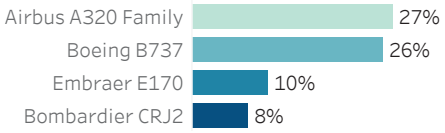
1.1 BDEGA East	30%
1.2 BDEGA West	70%

Airlines with the Most Operations

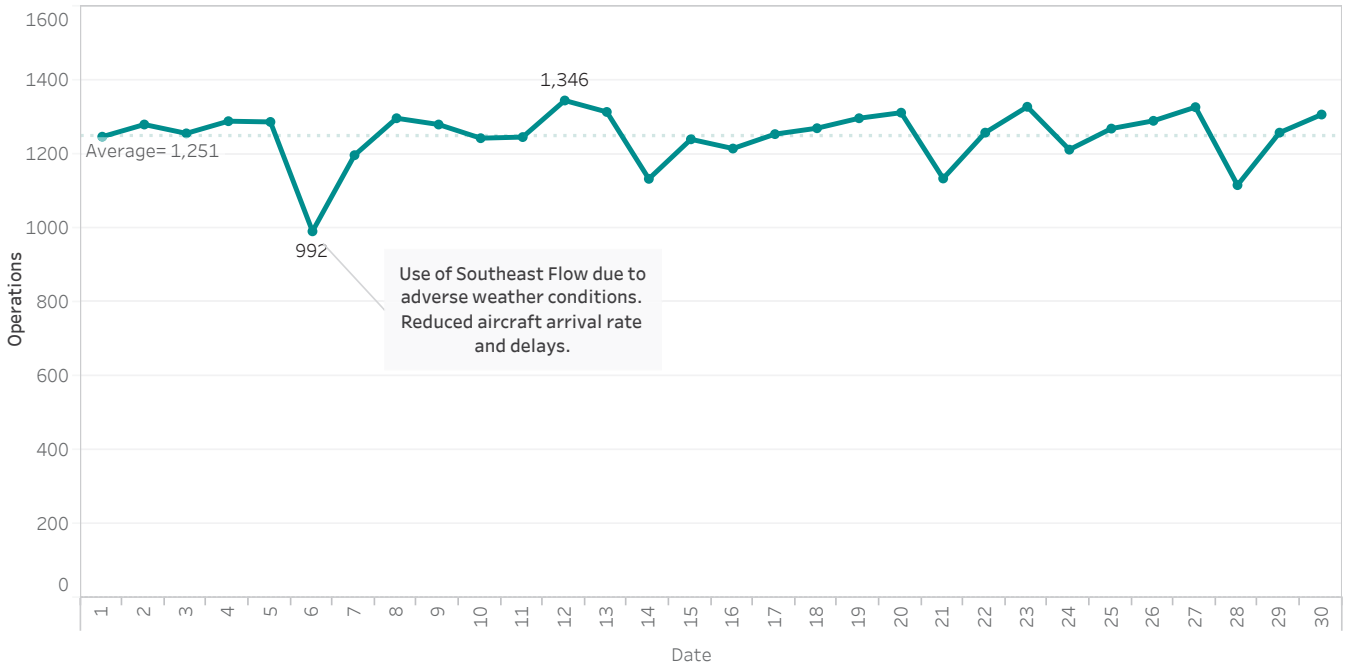




Most Utilized Aircraft Types



Daily Aircraft Operations



Runway Usage and Nighttime Operations

Monthly runway usage is shown for arrivals and departures, further categorized by all hours and nighttime hours. Graph at the bottom of the page shows hourly nighttime operations for each day. Power Runup locations are depicted on the airport map with airline nighttime power runup counts shown below. (Percent [%] rounded to nearest whole number)

Runway Utilization (all hours)

	Arrivals	Departures
01 L/R		78% 13,871
10 L/R	0% 1	3% 532
19 L/R	3% 502	
28 L/R	97% 16,720	19% 3,485

Late Night Preferential Runway Use (1 am - 6 am)

	Departures
10 L/R	8% 51
01 L/R	48% 301
28 L/R	44% 276

28 L vs R

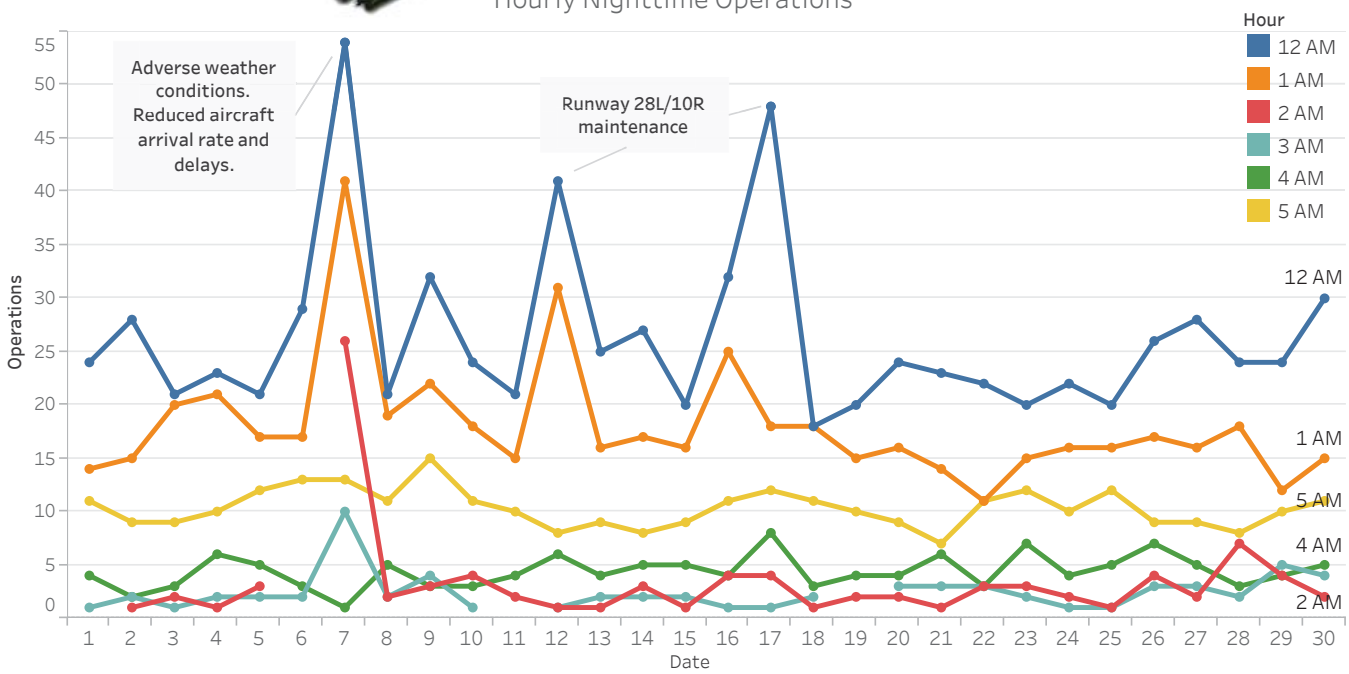
Arrivals	
28L	28R
45%	55%
Night (10 pm - 7 am)	
23%	77%

Nighttime Power Runups (10 pm - 7 am):

American Airlines 3 United Airlines 5 DHL 1

A power runup is a procedure used to test an aircraft engine after maintenance is completed. This is done to ensure safe operating standards prior to returning the aircraft to service. The aircraft power settings range from idle to full power and may vary in duration.

Hourly Nighttime Operations



Noise Reports

April 2018

		Noise Reporters	Noise Reports
Roundtable Communities	Atherton	7	707
	Belmont	5	749
	Brisbane	30	3,897
	Burlingame	9	211
	Daly City	8	1,255
	El Granada	3	222
	Foster City	11	603
	Half Moon Bay	8	1,000
	Hillsborough	1	2
	Menlo Park	24	2,069
	Millbrae	3	3
	Pacifica	61	7,194
	Portola Valley	39	7,702
	Redwood City	18	1,465
	San Bruno	6	492
	San Carlos	2	64
	San Francisco	41	5,474
	San Mateo	9	1,160
	South San Francisco	8	97
	Woodside	12	1,637
Other Communities	Alameda	1	13
	Aptos	15	1,005
	Ben Lomond	13	445
	Berkeley	6	49
	Bonny Doon	4	104
	Boulder Creek	17	805
	Brookdale	1	3
	Capitola	23	4,060
	Carmel	4	366
	Cupertino	3	165
	East Palo Alto	2	68
	Felton	21	892
	Fremont	1	28
	Hayward	1	1
	Lafayette	2	144
	Los Altos	180	28,287
	Los Altos Hills	32	8,961
	Los Gatos	154	28,141
	Moraga	2	594
	Morgan Hill	2	643
	Mountain View	60	5,285
	Oakland	48	8,498
	Orinda	1	192
	Palo Alto	239	57,205
	Richmond	1	1
	San Jose	1	24
	San Leandro	1	188
	Santa Clara	1	15
	Santa Cruz	159	25,475
	Saratoga	9	944
	Scotts Valley	92	15,159
	Soquel	97	9,857
	Sunnyvale	11	205
	Watsonville	1	222
Total		1,510	234,047

1,551
Noise Reporters (12 month AVG)

218,962
Noise Reports (12 Month AVG)

52
New Reporters

Oakland
New Reporters Top City

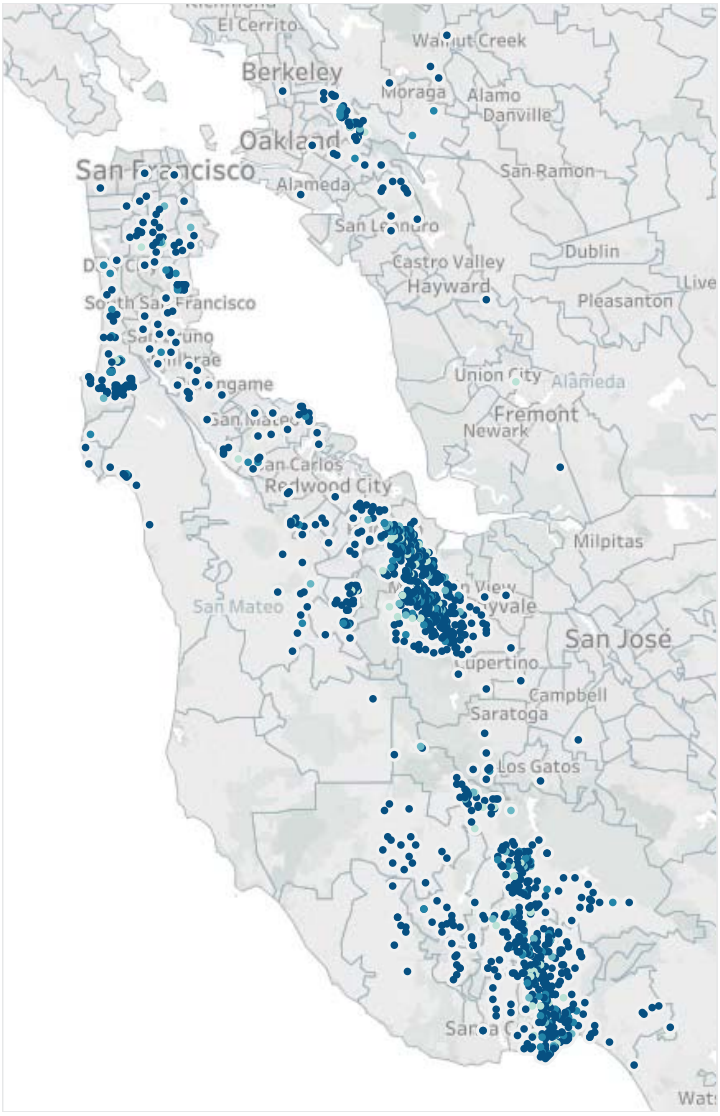
88 miles
Furthest Report

6
Reports per SFO Operation

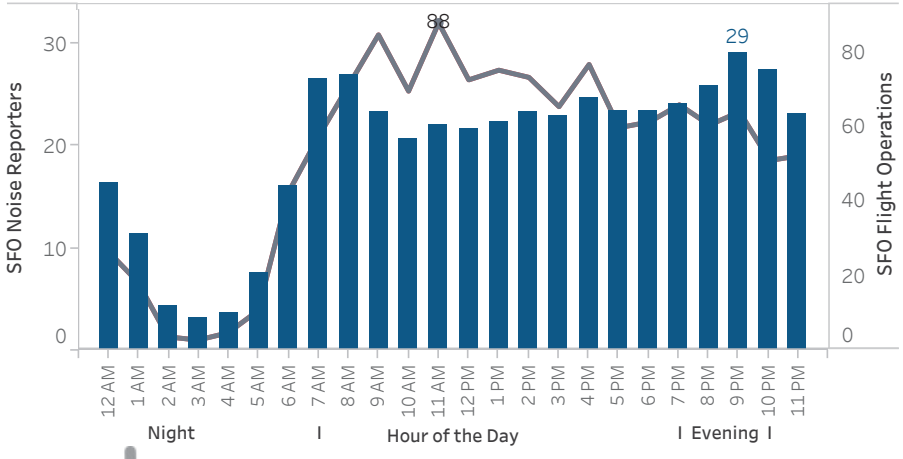
B737
A320
E75L
Top Aircraft Type

CMP382 *
KAL213
JBU736 *
Top Flight Number *Night

Noise Reporters Location Map



Hourly Noise Reporters vs. Flight Operations (AVG Day)



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Aircraft Noise Monitoring System

May 2017

The map shows 29 aircraft noise monitoring locations that keep track of noise levels in the communities around the airport. Image centered on SFO airport shows quartlerly aircraft noise levels (dBA) exposure. The green zone marks 65dBA Community Noise Exposure Level (CNEL). The CNEL metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport.

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12	Foster City	350	62	82	71	60
13	Hillsborough	2	33	82	69	58
14	SSF	157	62	85	72	62
15	SSF	137	59	82	70	62
16	SSF	135	60	84	71	59
17	SSF	148	61	84	71	61
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19	Pacifica	125	62	86	74	59
20	Daly City	37	48	79	68	70
21	San Francisco	15	42	77	66	61
22	San Bruno	198	62	83	71	64
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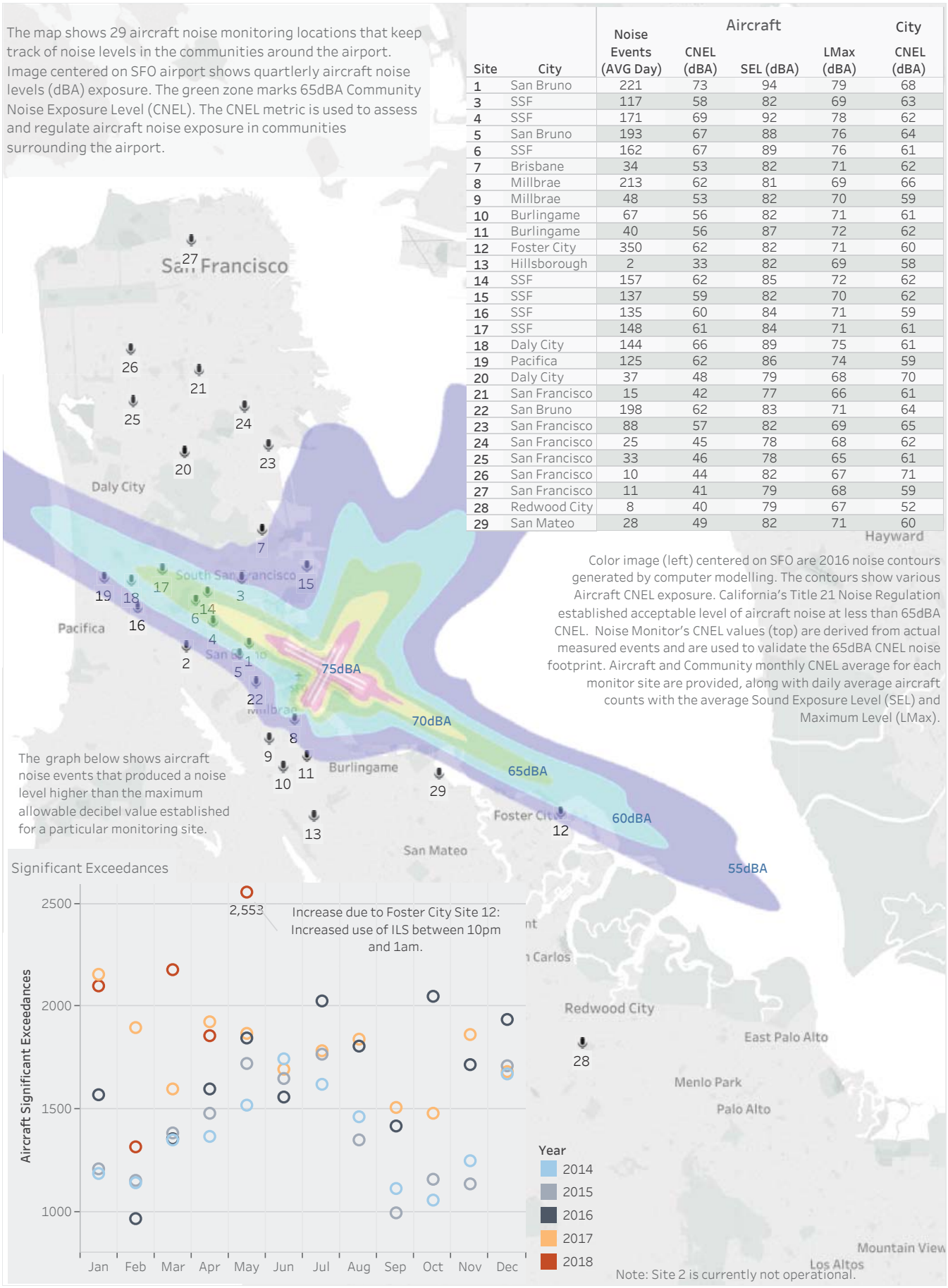
29	San Mateo	28	49	82	71	60



Color image (left) centered on SFO are 2016 noise contours generated by computer modelling. The contours show various Aircraft CNEL exposure. California's Title 21 Noise Regulation established acceptable level of aircraft noise at less than 65dBA CNEL. Noise Monitor's CNEL values (top) are derived from actual measured events and are used to validate the 65dBA CNEL noise footprint. Aircraft and Community monthly CNEL average for each monitor site are provided, along with daily average aircraft counts with the average Sound Exposure Level (SEL) and Maximum Level (LMax).

The graph below shows aircraft noise events that produced a noise level higher than the maximum allowable decibel value established for a particular monitoring site.

Significant Exceedances

Note: Site 2 is currently not operational.

Airport Director's Report

Presented at the August 1, 2018
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
May 2018

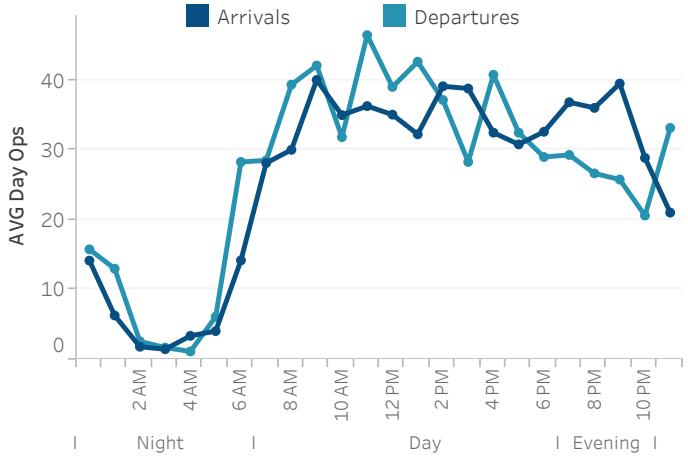
SFO San Francisco International Airport

Monthly Operations Summary

May 2018

39,015	1,259	38,666	2.7%
Monthly Operations	Average Daily Operations	12 Month AVG	YOY Growth

May 2018 Average Day (Hourly)



Major Arrival and Departure Route Pattern (West Flow)

Arrivals	
1. BDEGA	28%
2. DYAMD	38%
3. SERFR	28%
4. OCEANIC	5%

Departures	
A. GAP	29%
B. SSTIK	24%
C. NIITE	8%
D. TRUKN RWY 01	30%
D. TRUKN RWY 28	10%

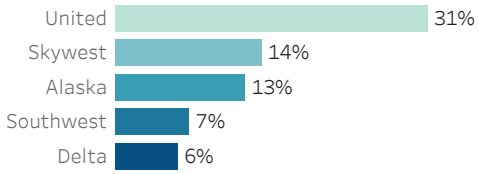
Top Destinations		
Los Angeles	Seattle	Portland
8%	5%	4%

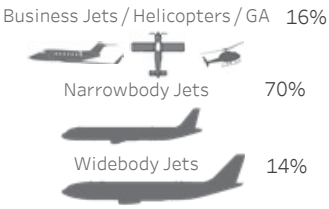
West Flow
100%

Down the Bay vs Peninsula

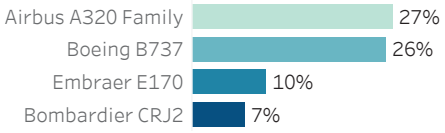
1.1 BDEGA East	24%
1.2 BDEGA West	76%

Airlines with the Most Operations

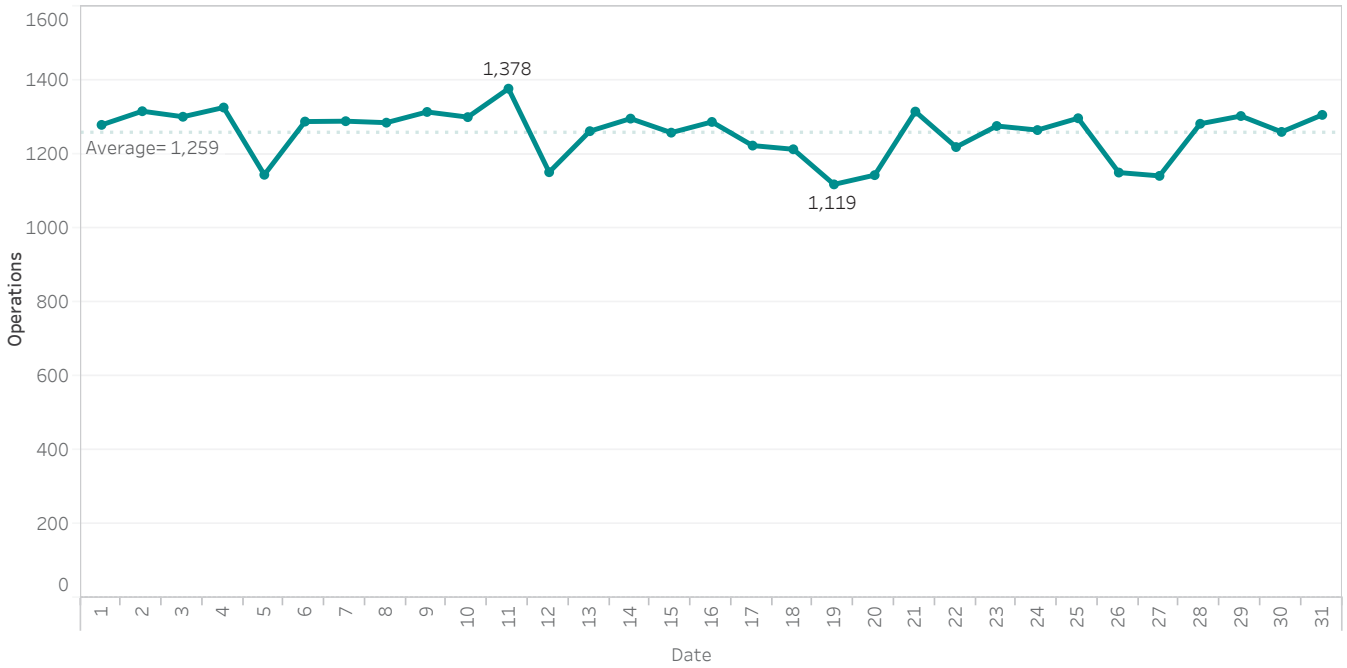




Most Utilized Aircraft Types



Daily Aircraft Operations



Runway Usage and Nighttime Operations

Monthly runway usage is shown for arrivals and departures, further categorized by all hours and nighttime hours. Graph at the bottom of the page shows hourly nighttime operations for each day. Power Runup locations are depicted on the airport map with airline nighttime power runup counts shown below. (Percent [%] rounded to nearest whole number)

Runway Utilization (all hours)

	Arrivals	Departures
01 L/R		63% 11,812
28 L/R	100% 17,934	37% 6,871

Late Night Preferential Runway Use (1 am - 6 am)

	Departures
10 L/R	0% 1
01 L/R	44% 309
28 L/R	56% 400

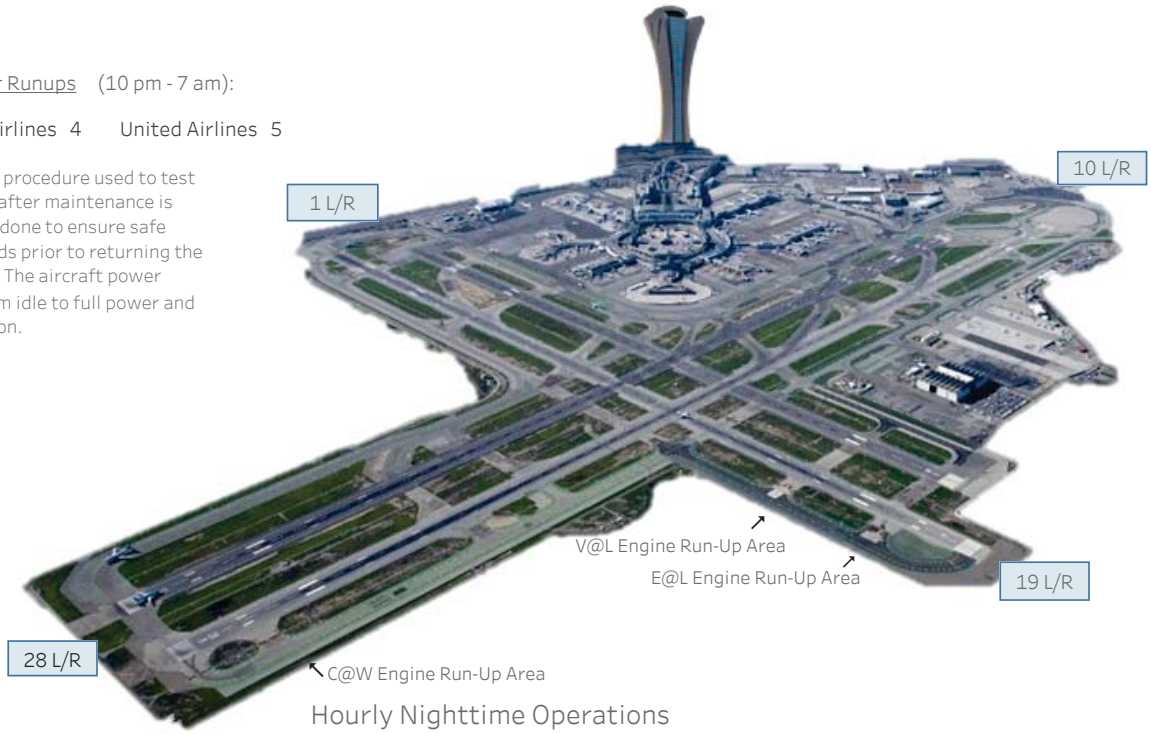
28 L vs R

Arrivals	
28L	28R
52%	48%
Night (10 pm - 7 am)	
46%	54%

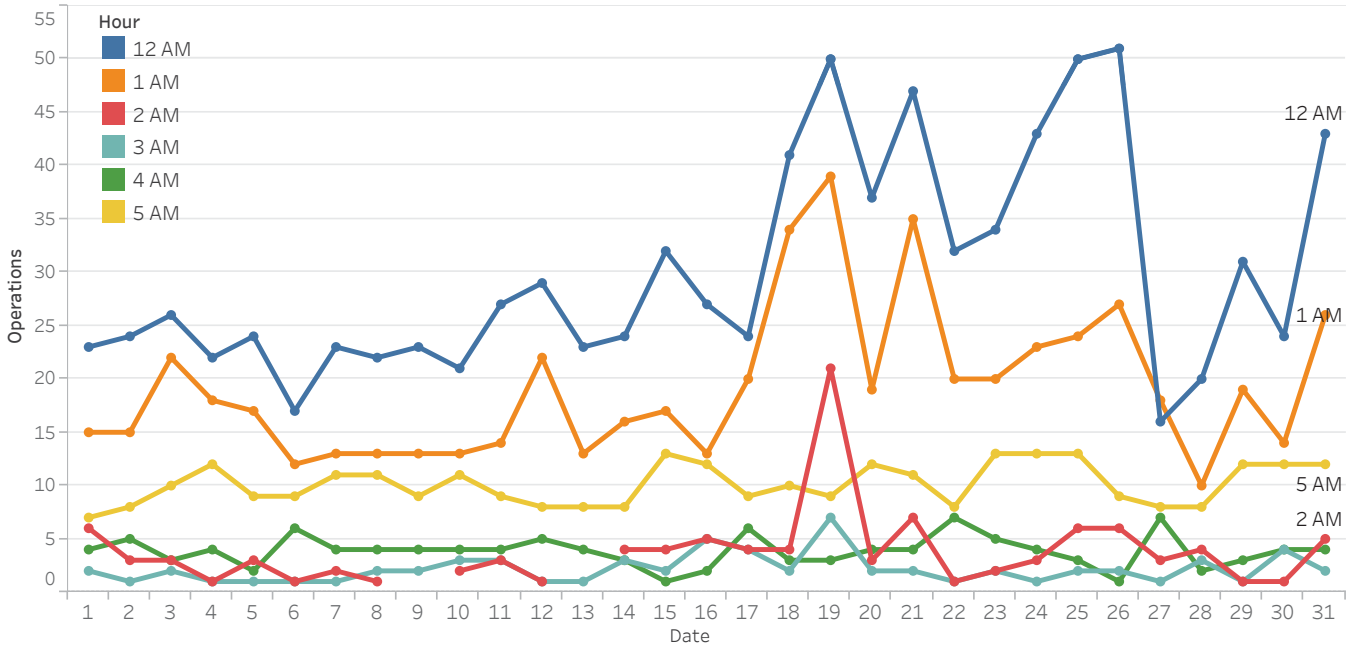
Nighttime Power Runups (10 pm - 7 am):

American Airlines 4 United Airlines 5

A power runup is a procedure used to test an aircraft engine after maintenance is completed. This is done to ensure safe operating standards prior to returning the aircraft to service. The aircraft power settings range from idle to full power and may vary in duration.



Hourly Nighttime Operations



Noise Reports

May 2018

		Noise Reporters / Noise Reports	
Roundtable Communities	Atherton	7	515
	Belmont	6	770
	Brisbane	33	2,893
	Burlingame	6	132
	Daly City	9	2,275
	El Granada	2	730
	Foster City	10	587
	Half Moon Bay	6	522
	Hillsborough	5	6
	Menlo Park	28	1,771
	Millbrae	1	2
	Pacifica	60	8,581
	Portola Valley	43	10,406
	Redwood City	14	2,415
	San Bruno	8	257
	San Carlos	2	22
	San Francisco	39	5,855
	San Mateo	11	1,393
	South San Francisco	17	85
	Woodside	12	2,819
Other Communities	Alameda	1	40
	Aptos	14	732
	Ben Lomond	10	630
	Berkeley	6	952
	Bonny Doon	4	261
	Boulder Creek	17	860
	Brookdale	1	6
	Capitola	23	4,420
	Carmel	4	286
	Cupertino	2	299
	East Palo Alto	3	35
	El Cerrito	1	1
	El Sobrante	1	8
	Felton	26	1,252
	Fremont	1	30
	Lafayette	1	175
	Los Altos	190	27,988
	Los Altos Hills	34	9,146
	Los Gatos	148	26,987
	Moraga	2	208
	Morgan Hill	2	292
	Mountain View	60	6,629
	Oakland	37	8,258
	Orinda	1	228
	Palo Alto	253	56,735
	Richmond	1	8
	San Jose	1	14
	San Leandro	2	6
	Santa Clara	1	22
	Santa Cruz	154	25,117
	Saratoga	9	935
	Scotts Valley	92	14,511
	Soquel	92	9,992
	Sunnyvale	15	607
	Watsonville	1	260
Total		1,529	239,966

99% of noise reports correlate to a flight origin/destination airport:

1,531
Noise Reporters (12 month AVG)

217,887
Noise Reports (12 Month AVG)

59
New Reporters

San Francisco
New Reporters Top City

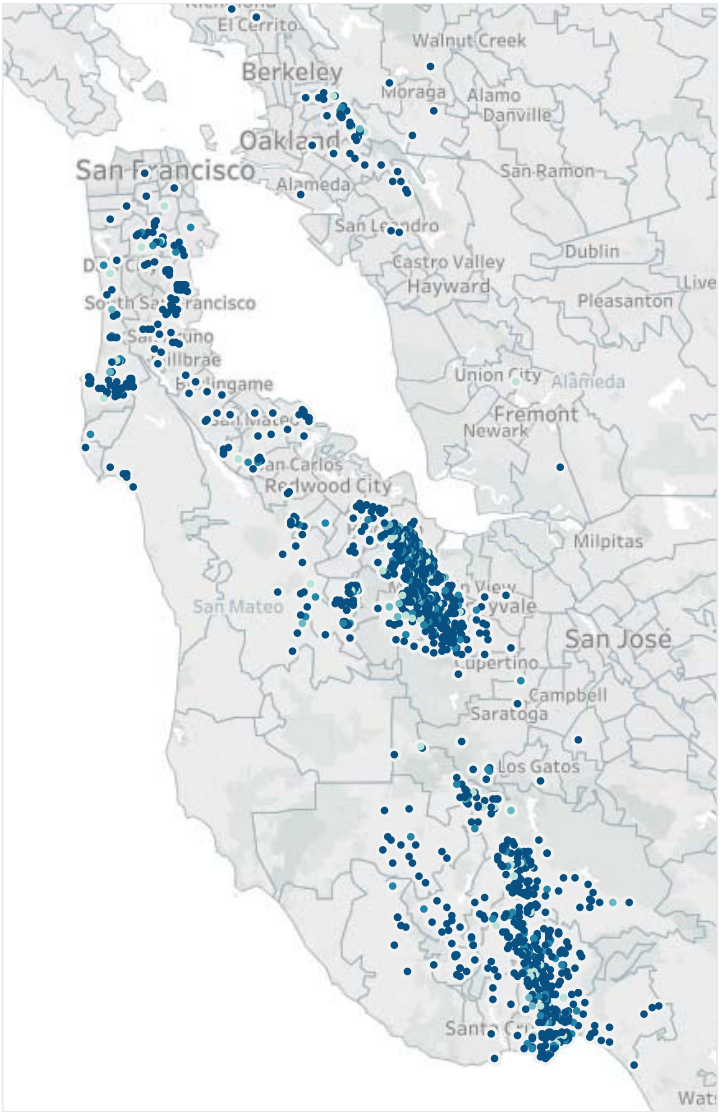
88 miles
Furthest Report

6
Reports per SFO Operation

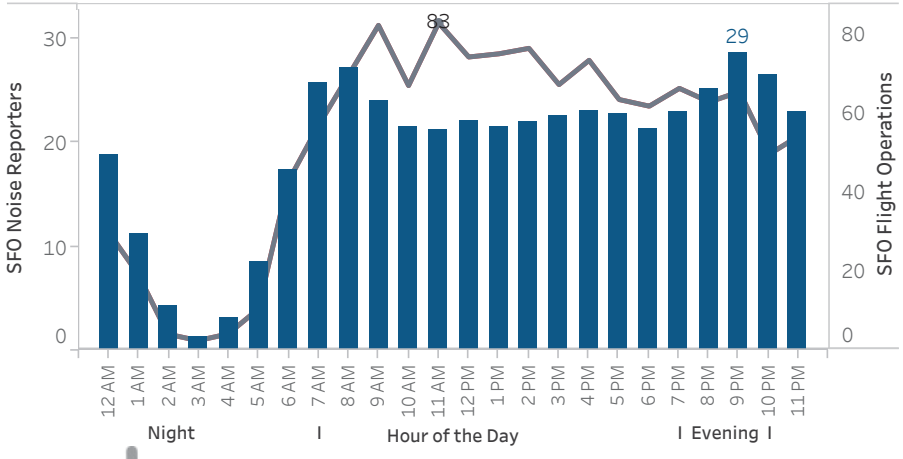
B737
A320
E75L
Top Aircraft Type

KAL213*
CMP382*
JBU736
Top Flight Number *Night

Noise Reporters Location Map



Hourly Noise Reporters vs. Flight Operations (AVG Day)



Our software vendor's address validation relies on USPS-provided ZIP code look up table and USPS-specified default city values.
Source: SFO Intl Airport Noise Monitoring System

Fly Quiet Report

Presented at the June 6, 2018
Airport Community Roundtable Meeting

Aircraft Noise Abatement Office
First Quarter 2018

SFO San Francisco International Airport

Fly Quiet Program

San Francisco International Airport's Fly Quiet Program is an Airport Community Roundtable initiative implemented by the Aircraft Noise Abatement Office. Its purpose is to encourage individual airlines to operate as quietly as possible at SFO. The program promotes a participatory approach in complying with noise abatement procedures and objectives by grading an airline's performance and by making the scores available to the public via newsletters, publications, and public meetings.

Fly Quiet offers a dynamic venue for implementing new noise abatement initiatives by praising and publicizing active participation rather than a system that admonishes violations from essentially voluntary procedures.

Program Goals

The overall goal of the Fly Quiet Program is to influence airlines to operate as quietly as possible in the San Francisco Bay Area. A successful Fly Quiet Program can be expected to reduce both single event and total noise levels around the airport.

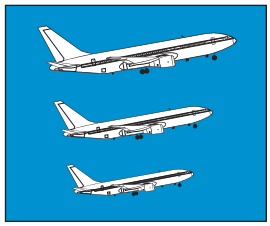
Program Reports

Fly Quiet reports communicate results in a clear, understandable format on a scale of 0-10, zero being poor and ten being good. This allows for an easy comparison between airlines over time. Individual airline scores are computed and reports are generated each quarter. These quantitative scores allow airline management and flight personnel to measure exactly how they stand compared to other operators and how their proactive involvement can positively reduce noise in the Bay Area.

Program Elements

Currently the Fly Quiet Program rates jets and regional jets on six elements : the overall noise quality of each airline's fleet operating at SFO, an evaluation of single overflight noise level exceedences, a measure of how well each airline complies with the preferred nighttime noise abatement runways, assessment of airline performance to the Gap and Shoreline Departures, and over the bay approaches to runways 28L and 28R.

SFO's Fly Quiet Ratings



Fleet Noise Quality

The Fly Quiet Program Fleet Noise Quality Rating evaluates the noise contribution of each airline's fleet as it actually operates at SFO. Airlines generally own a variety of aircraft types and schedule them according to both operational and marketing considerations. Fly Quiet assigns a higher rating or grade to airlines operating quieter, new generation aircraft, while airlines operating older, louder technology aircraft would rate lower. The goal of this measurement is to fairly compare airlines—not just by the fleet they own, but by the frequency that they schedule and fly particular aircraft into SFO.

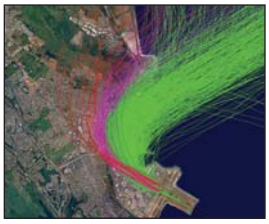
Noise Exceedance

Eliminating high-level noise events is a long-standing goal of the Airport and the Airport Community Roundtable. As a result the Airport has established single event maximum noise level limits at each noise-monitoring site. These thresholds were set to identify aircraft producing noise levels higher than are typical for the majority of the operations.

Whenever an aircraft overflight produces a noise level higher than the maximum decibel value established for a particular monitoring site, the noise threshold is surpassed and a noise exceedance occurs. An exceedance may take place during approach, takeoff, or possibly during departure ground roll before lifting off. Noise exceedances are logged by the exact operation along with the aircraft type and airline name.

Nighttime Preferential Runway Use

SFO's Nighttime Preferential Runway Use program was developed in 1988. Although the program cannot be used 100% of the time because of winds, weather, and other operational factors, the Airport, the Community Roundtable, the FAA, and the Airlines have all worked together to maximize its use when conditions permit. The program is voluntary; compliance is at the discretion of the pilot in command. The main focus of this program is to maximize flights over water and minimize flights over land and populated areas between 1:00 a.m. and 6:00 a.m. Fortunately, because airport activity levels are lower late at night, it is feasible to use over-water departure procedures more frequently than would be possible during the day. Reducing nighttime noise—especially sleep disturbance— is a key goal of SFO's aircraft noise abatement program.



Shoreline Departure Quality

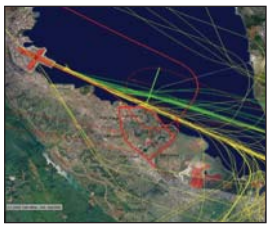
Aircraft departing SFO using Runways 28L and 28R are also considered by the Fly Quiet grading system whenever they use the Shoreline Departure Procedure. This predominately VFR (visual flight rules) departure steers aircraft to the northeast shortly after takeoff in an attempt to keep aircraft and aircraft noise away from the residential communities located to the northwest of SFO. By keeping aircraft east of Highway 101 the majority of the overflights will be experienced by industrial and business parks instead of residential areas.

In order to evaluate each airline's performance when flying a Shoreline Departure, a corridor was established using Interstate 101 (green colored flight tracks) as a reference point. The corridor runs north along 101, beginning approximately one-mile north-northwest of the end of Runways 28L and 28R and continuing up into the City of Brisbane. Departures west of 101 are scored marginal or poor depending on their location.

Gap Departure Quality

Aircraft departing SFO using Runways 28L and 28R frequently depart straight out using a procedure known as the Gap Departure. This procedure directs air traffic to fly a route that takes them over the area northwest of the airport over the cities of South San Francisco, San Bruno, Daly City, and Pacifica. In an attempt to mitigate noise in this specific area, the Gap Departure Quality Rating has been included as a category in the Fly Quiet Program.

Since "higher is quieter", aircraft altitudes are recorded along the departure route. Scores are assigned at specified points or gates set approximately one mile apart, with the higher aircraft receiving higher scores.



Foster City Arrival Quality

The Arrival Quality Rating is the latest addition to the Fly Quiet Program. In an effort to further reduce nighttime noise in neighboring communities, this rating is designed to maximize over-bay approaches to Runways 28 between 11:00 p.m. and 6:00 a.m. Airlines arriving to Runways 28 during these hours are assessed based on which approach flight path was used. Over-the-bay approaches are rated good (green colored flight tracks), versus over-the-communities which are rated poor.

Revised date: 5/15/09

Airline Fly Quiet Summary Report - 1st Quarter 2018

January 1 to March 31, 2018

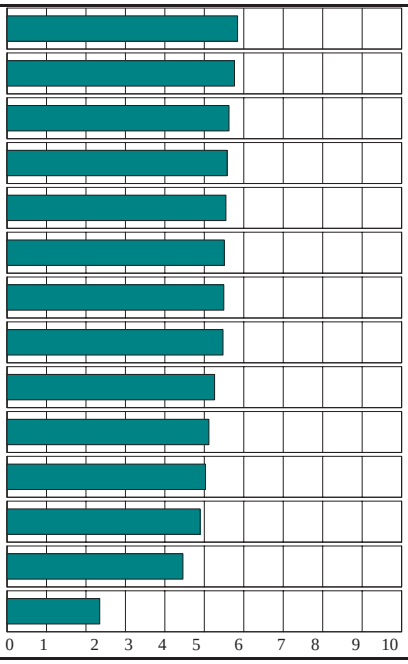
Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures: Shoreline	Departures: Gap	Arrivals: Foster City	Final Score	Airline Fly Quiet Rating
AIR CHINA	CCA	10.00	10.00	-	-	7.86	-	9.29	
Horizon Air	QXE	10.00	9.98	-	-	7.09	-	9.02	
Lufthansa	DLH	9.08	9.59	10.00	-	6.33	-	8.75	
HONGKONG AIRLINES 香港航空	CRK	9.50	10.00	-	-	5.63	-	8.38	
ANA	ANA	7.15	9.97	-	-	7.40	-	8.17	
Emirates	UAE	10.00	9.97	-	-	3.91	-	7.96	
Scandinavian Airlines	SAS	8.17	10.00	-	-	5.66	-	7.94	
JAPAN AIRLINES	JAL	7.15	9.94	-	-	6.26	-	7.79	
AIRFRANCE	AFR	7.08	10.00	-	10.00	4.02	-	7.78	
SkyWest AIRLINES	SKW	10.00	9.95	5.00	9.04	6.91	5.04	7.66	
Compass Airlines	CPZ	10.00	9.87	3.56	9.69	7.23	5.15	7.58	
AIR NEW ZEALAND	ANZ	7.01	9.85	-	-	5.82	-	7.56	
BRITISH AIRWAYS	BAW	5.51	9.60	10.00	-	4.90	-	7.50	
DELTA	DAL	6.02	9.82	5.71	7.86	7.59	7.06	7.34	
AIR CANADA	ACA	5.74	9.73	-	8.31	5.74	6.67	7.24	
SWISS	SWR	7.15	9.97	-	-	4.51	-	7.21	
KLM Royal Dutch Airlines	KLM	8.92	10.00	-	0.50	8.50	-	6.98	
中国東方航空 CHINA EASTERN	CES	6.24	10.00	-	-	4.67	-	6.97	
interjet	AIJ	4.85	9.53	6.67	-	8.75	5.00	6.96	
WOW air	WOW	4.22	10.00	-	5.00	8.41	-	6.91	
Southwest	SWA	5.82	9.83	4.07	9.56	5.99	6.15	6.90	
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	7.15	8.49	-	-	4.91	-	6.85	
volaris	VOI	4.94	9.54	3.33	-	10.00	5.50	6.66	
virgin atlantic	VIR	9.14	9.98	-	0.00	7.52	-	6.66	
FRONTIER AIRLINES	FFT	5.64	9.73	4.01	8.75	3.93	7.57	6.60	
								6.57	SFO AVERAGE
TURKISH AIRLINES	THY	7.15	10.00	-	-	2.56	-	6.57	
Aer Lingus	EIN	4.05	9.86	-	-	5.73	-	6.55	
FedEx	FDX	3.84	9.16	-	8.75	5.50	5.38	6.53	
suncountry airlines	SCX	5.82	9.85	3.33	9.17	4.46	6.15	6.46	
jetBlue	JBU	4.77	9.78	4.67	7.79	5.65	6.12	6.46	
American Airlines	AAL	4.94	9.80	5.00	8.85	3.25	6.70	6.42	
UNITED	UAL	6.05	9.74	3.96	7.59	5.22	5.36	6.32	
Alaska	ASA	5.08	9.82	3.44	9.03	4.56	5.54	6.24	
	AJT	4.87	8.13	-	-	5.83	5.00	5.96	
Avianca	TAI	4.95	8.51	3.76	-	7.68	4.85	5.95	
virgin america	VRD	5.03	9.78	4.44	7.94	3.07	5.26	5.92	
QANTAS	QFA	3.43	8.13	-	-	6.06	-	5.87	
NCA Nippon Cargo Airlines	NCA	8.96	8.55	0.00	-	7.00	4.71	5.84	

Airline Fly Quiet Summary Report - 1st Quarter 2018

January 1 to March 31, 2018

Airline		Fleet Noise Quality	Noise Exceedance	Nighttime Runway Use	Departures Shoreline	Departures Gap	Arrivals Foster City	Final Score
Atlas Air	GTI	4.37	8.68	2.22	7.00	7.78	5.00	5.84
AeroMexico	AMX	5.82	8.89	4.15	-	5.65	4.31	5.76
Cathay Pacific	CPA	7.87	8.39	0.96	-	5.90	5.00	5.63
Fiji Airways	FJI	4.05	7.00	-	-	5.69	-	5.58
Hawaiian Airlines	HAL	4.05	9.10	3.33	-	6.25	5.00	5.55
Air India	AIC	7.15	8.16	0.00	-	7.23	5.00	5.51
China Airlines	CAL	6.30	8.08	1.85	-	6.24	5.00	5.49
Singapore Airlines	SIA	8.32	7.90	1.36	-	4.30	-	5.47
Korean Air	KAL	7.82	6.93	1.60	-	5.39	4.57	5.26
Eva Air	EVA	7.14	7.59	1.43	-	4.42	5.00	5.12
Asiana Airlines	AAR	6.84	5.95	1.90	-	5.96	4.49	5.03
Copa Airlines	CMP	5.82	8.96	1.29	6.25	2.99	4.04	4.89
Philippines	PAL	7.28	5.41	1.43	-	3.71	-	4.46
Kalitta Air	CKS	3.43	0.00	1.67	1.67	4.00	3.33	2.35
SFO Average		**6.57**	**8.99**	**3.47**	**7.14**	**5.80**	**5.31**	**6.57**

Airline Fly Quiet Rating

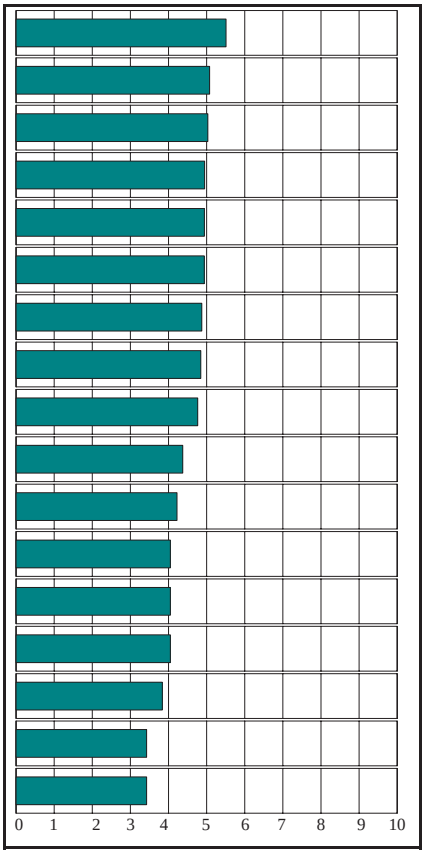


Fleet Noise Quality - 1st Quarter 2018

January 1 to March 31, 2018

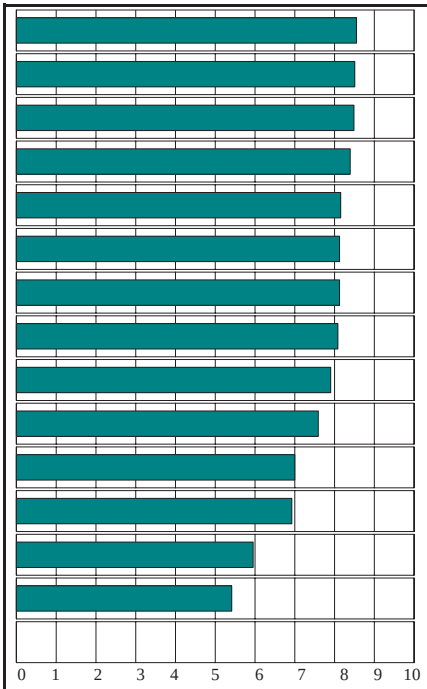
Airline		Nationwide Fleet Noise Quality Rating	San Francisco Average Daily Jet Operations	San Francisco Score	Fleet Noise Quality Rating
AIR CHINA	CCA	3.46	1	10.00	
Emirates	UAE	7.89	1	10.00	
Horizon Air	QXE	10.00	4	10.00	
SkyWest	SKW	10.00	108	10.00	
Compass Airlines	CPZ	10.00	14	10.00	
HONGKONG AIRLINES 香港航空	CRK	0.00	0	9.50	
virgin atlantic	VIR	5.84	2	9.14	
Lufthansa	DLH	6.09	2	9.08	
NCA Nippon Cargo Airlines	NCA	3.90	1	8.96	
KLM Royal Dutch Airlines	KLM	4.67	1	8.92	
SINGAPORE AIRLINES	SIA	5.93	2	8.32	
Scandinavian Airlines	SAS	4.96	1	8.17	
CATHAY PACIFIC	CPA	4.18	3	7.87	
KOREAN AIR	KAL	4.05	3	7.82	
Philippines	PAL	5.09	1	7.28	
AIR INDIA	AIC	4.77	1	7.15	
ANA	ANA	5.43	1	7.15	
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	5.64	1	7.15	
JAPAN AIRLINES	JAL	4.20	1	7.15	
SWISS	SWR	5.17	1	7.15	
TURKISH AIRLINES	THY	6.80	1	7.15	
EVA AIR	EVA	5.05	3	7.14	
AIRFRANCE	AFR	5.49	1	7.08	
AIR NEW ZEALAND	ANZ	4.00	1	7.01	
ASIANA AIRLINES	AAR	3.93	2	6.84	
				6.57	SFO AVERAGE
CHINA AIRLINES	CAL	3.62	2	6.30	
中國東方航空 CHINA EASTERN	CES	4.63	1	6.24	
UNITED	UAL	5.83	171	6.05	
DELTA	DAL	4.92	24	6.02	
AEROMEXICO	AMX	5.54	3	5.82	
CopaAirlines	CMP	6.46	2	5.82	
suncountry airlines	SCX	5.82	1	5.82	
Southwest	SWA	5.70	43	5.82	
AIR CANADA	ACA	6.75	10	5.74	
FRONTIER AIRLINES	FFT	6.41	4	5.64	

Airline		Nationwide Fleet Noise Quality Rating	San Francisco Average Daily Jet Operations	San Francisco Score	Fleet Noise Quality Rating
BRITISH AIRWAYS	BAW	4.34	2	5.51	
Alaska	ASA	5.10	72	5.08	
Virgin America	VRD	5.31	7	5.03	
Avianca	TAI	5.18	2	4.95	
volaris	VOI	0.00	1	4.94	
American Airlines	AAL	3.94	34	4.94	
	AJT	0.05	0	4.87	
interjet	AIJ	0.00	0	4.85	
jetBlue	JBU	6.13	16	4.77	
Atlas Air	GTI	0.93	2	4.37	
WOW air	WOW	0.00	0	4.22	
Aer Lingus	EIN	4.05	1	4.05	
Hawaiian Airlines	HAL	6.21	2	4.05	
Fiji Airways	FJI	0.00	0	4.05	
FedEx	FDX	2.80	1	3.84	
Kalitta Air	CKS	0.60	0	3.43	
Qantas	QFA	3.47	1	3.43	
AVERAGE		**4.62**	**11**	**6.57**	



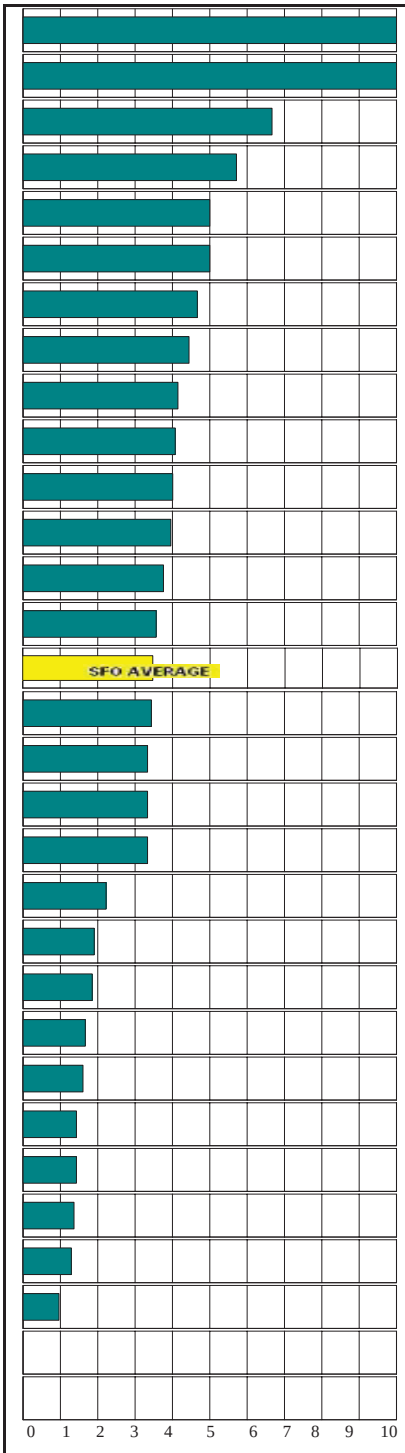
Airline		Noise Exceedances				Noise Exceedance Quality Rating
		Total Noise Exceedances	*Total Quarterly Operations*	*Exceedances per 1000 Operations*	***Score***	
AIRFRANCE	AFR	0	182	0	***10.00***	
AIR CHINA	CCA	0	180	0	***10.00***	
中國東方航空 CHINA EASTERN	CES	0	254	0	***10.00***	
HONGKONG AIRLINES 香港航空	CRK	0	8	0	***10.00***	
KLM Royal Dutch Airlines	KLM	0	180	0	***10.00***	
Scandinavian Airlines	SAS	0	178	0	***10.00***	
TURKISH AIRLINES	THY	0	181	0	***10.00***	
wow air	WOW	0	78	0	***10.00***	
virgin atlantic	VIR	1	302	3	***9.98***	
Horizon Air	QXE	3	766	4	***9.98***	
ANA	ANA	1	180	6	***9.97***	
SWISS	SWR	1	180	6	***9.97***	
Emirates	UAE	1	180	6	***9.97***	
SkyWest	SKW	178	19,364	9	***9.95***	
JAPAN AIRLINES	JAL	2	180	11	***9.94***	
Compass Airlines	CPZ	67	2,488	27	***9.87***	
Aer Lingus	EIN	4	144	28	***9.86***	
AIR NEW ZEALAND	ANZ	5	172	29	***9.85***	
suncountry airlines	SCX	6	195	31	***9.85***	
Southwest	SWA	267	7,738	35	***9.83***	
Alaska	ASA	456	12,904	35	***9.82***	
DELTA	DAL	158	4,404	36	***9.82***	
American Airlines	AAL	250	6,107	41	***9.80***	
virgin america	VRD	53	1,223	43	***9.78***	
jetBlue	JBU	129	2,873	45	***9.78***	
UNITED	UAL	1,593	30,804	52	***9.74***	
AIR CANADA	ACA	94	1,768	53	***9.73***	
FRONTIER AIRLINES	FFT	39	719	54	***9.73***	
BRITISH AIRWAYS	BAW	29	361	80	***9.60***	
Lufthansa	DLH	29	358	81	***9.59***	
volaris	VOI	17	185	92	***9.54***	
interjet	AIJ	3	32	94	***9.53***	
FedEx	FDX	34	202	168	***9.16***	
HAWAIIAN AIRLINES	HAL	65	362	180	***9.10***	
					8.99	SFO AVERAGE
CopaAirlines	CMP	82	396	207	***8.96***	
AEROMEXICO	AMX	121	546	222	***8.89***	
ATLAS AIR	GTI	72	273	264	***8.68***	

Airline		Noise Exceedances				Noise Exceedance Quality Rating
		Total Noise Exceedances	*Total Quarterly Operations*	*Exceedances per 1000 Operations*	***Score***	
Nippon Cargo Airlines	NCA	33	114	289	***8.55***	
Avianca	TAI	94	315	298	***8.51***	
China Southern Airlines	CSN	52	172	302	***8.49***	
Cathay Pacific	CPA	159	495	321	***8.39***	
Air India	AIC	59	160	369	***8.16***	
Amerijet	AJT	3	8	375	***8.13***	
Qantas	QFA	60	160	375	***8.13***	
China Airlines	CAL	146	381	383	***8.08***	
Singapore Airlines	SIA	151	360	419	***7.90***	
Eva Air	EVA	223	463	482	***7.59***	
Fiji Airways	FJI	24	40	600	***7.00***	
Korean Air	KAL	316	514	615	***6.93***	
Asiana Airlines	AAR	259	320	809	***5.95***	
Philippines	PAL	188	205	917	***5.41***	
Kalitta Air	CKS	30	15	2000	***0.00***	



TOTAL	**5,557**	**100,369**		
SFO AVERAGE			**202**	**8.99**

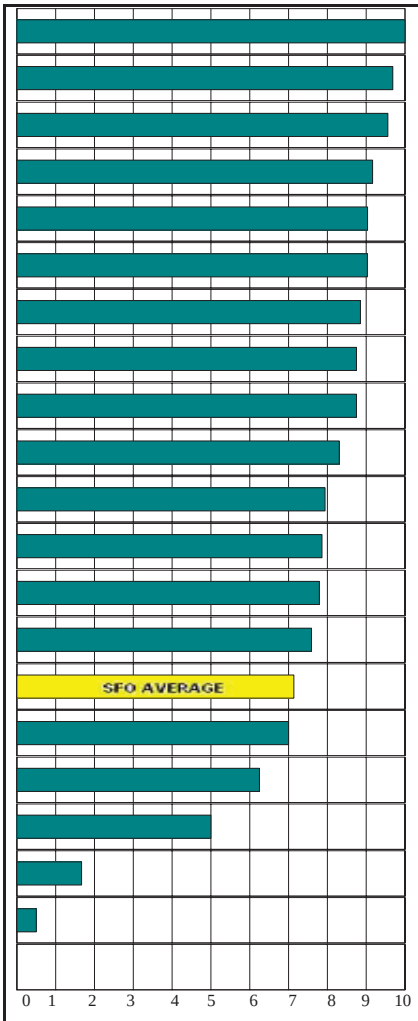
Airline		*Nighttime Departures (1:00 am to 6:00 am)*						Nighttime Runway Use Rating
		Total	*10L/R*	*28L/R Shoreline*	*01L/R*	*28L/R Straight*	***Score***	
BRITISH AIRWAYS	BAW	**1**	100%	0%	0%	0%	***10.00***	
Lufthansa	DLH	**1**	100%	0%	0%	0%	***10.00***	
interjet	AIJ	**2**	50%	0%	50%	0%	***6.67***	
DELTA	DAL	**14**	36%	0%	64%	0%	***5.71***	
American Airlines	AAL	**32**	22%	13%	59%	6%	***5.00***	
SkyWest	SKW	**8**	25%	0%	75%	0%	***5.00***	
jetBlue	JBU	**25**	20%	8%	64%	8%	***4.67***	
virgin america	VRD	**3**	0%	33%	67%	0%	***4.44***	
AEROMEXICO	AMX	**41**	15%	0%	80%	5%	***4.15***	
Southwest	SWA	**72**	13%	0%	85%	3%	***4.07***	
FRONTIER AIRLINES	FFT	**84**	8%	6%	83%	2%	***4.01***	
UNITED	UAL	**374**	10%	4%	82%	5%	***3.96***	
Avianca	TAI	**47**	11%	0%	81%	9%	***3.76***	
Compass Airlines	CPZ	**87**	5%	0%	93%	2%	***3.56***	
							3.47	SFO AVERAGE
Alaska	ASA	**98**	2%	0%	97%	1%	***3.44***	
HAWAIIAN AIRLINES	HAL	**1**	0%	0%	100%	0%	***3.33***	
suncountry airlines	SCX	**3**	0%	0%	100%	0%	***3.33***	
volaris	VOI	**24**	4%	0%	88%	8%	***3.33***	
ATLAS AIR	GTI	**3**	0%	0%	67%	33%	***2.22***	
ASIANA AIRLINES	AAR	**42**	19%	0%	0%	81%	***1.90***	
CHINA AIRLINES	CAL	**27**	19%	0%	0%	81%	***1.85***	
KALITTA AIR	CKS	**4**	0%	25%	0%	75%	***1.67***	
KOREAN AIR	KAL	**81**	16%	0%	0%	84%	***1.60***	
EVA AIR	EVA	**42**	14%	0%	0%	86%	***1.43***	
Philippines	PAL	**7**	14%	0%	0%	86%	***1.43***	
SINGAPORE AIRLINES	SIA	**22**	14%	0%	0%	86%	***1.36***	
CopaAirlines	CMP	**49**	10%	4%	0%	86%	***1.29***	
CATHAY PACIFIC	CPA	**52**	10%	0%	0%	90%	***0.96***	
AIR INDIA	AIC	**3**	0%	0%	0%	100%	***0.00***	
NCA Nippon Cargo Airlines	NCA	**2**	0%	0%	0%	100%	***0.00***	
TOTAL		**1,251**						
SFO AVERAGE			**18%**	**3%**	**44%**	**35%**	**3.47**	



Shoreline Departure Rating - 1st Quarter 2018

January 1 to March 31,2018

Airline		Shoreline Departures					Shoreline Departure Rating
		Total	Successful	Marginal	Poor	Score	
AIRFRANCE	AFR	1	100%	0%	0%	10.00	
Compass Airlines	CPZ	16	94%	6%	0%	9.69	
Southwest	SWA	68	91%	9%	0%	9.56	
suncountry airlines	SCX	6	83%	17%	0%	9.17	
SkyWest Airlines	SKW	171	85%	11%	4%	9.04	
Alaska	ASA	222	81%	18%	0%	9.03	
American Airlines	AAL	135	78%	21%	1%	8.85	
FedEx	FDX	8	75%	25%	0%	8.75	
FRONTIER AIRLINES	FFT	16	75%	25%	0%	8.75	
AIR CANADA	ACA	62	71%	24%	5%	8.31	
Virgin America	VRD	17	59%	41%	0%	7.94	
DELTA	DAL	145	62%	33%	5%	7.86	
jetBlue	JBU	68	56%	44%	0%	7.79	
UNITED	UAL	523	61%	29%	9%	7.59	
						7.14	SFO AVERAGE
Atlas Air	GTI	10	40%	60%	0%	7.00	
Copa Airlines	CMP	4	25%	75%	0%	6.25	
WOW air	WOW	1	0%	100%	0%	5.00	
KALITTA AIR	CKS	3	0%	33%	67%	1.67	
KLM Royal Dutch Airlines	KLM	10	0%	10%	90%	0.50	
virgin atlantic	VIR	1	0%	0%	100%	0.00	



TOTAL	**1,487**				
SFO AVERAGE		**57%**	**29%**	**14%**	**7.14**

Gap Departure Climb Rating - 1st Quarter 2018

January 1 to March 31, 2018

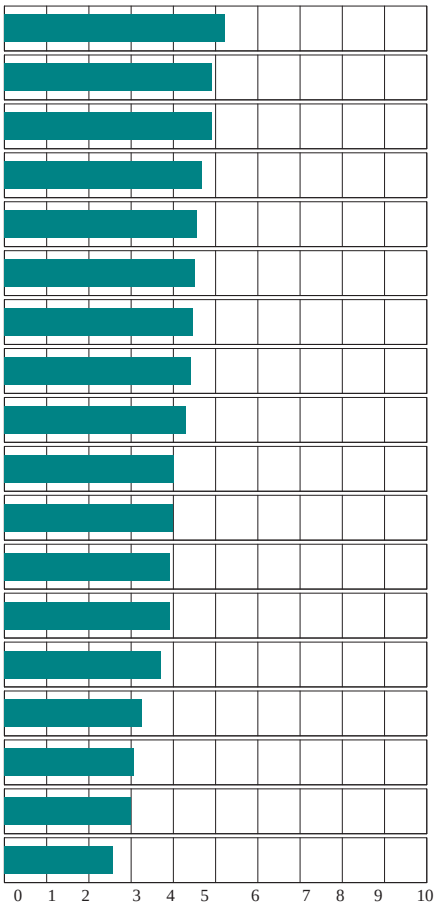
Airline		Gap Departures		Gap Departure Quality Rating
		Total	Score	
volaris	VOI	6	10.00	
interjet	AIJ	1	8.75	
KLM Royal Dutch Airlines	KLM	5	8.50	
WOW air	WOW	11	8.41	
AIR CHINA	CCA	88	7.86	
ATLAS AIR	GTI	27	7.78	
Avianca	TAI	7	7.68	
DELTA	DAL	101	7.59	
virgin atlantic	VIR	54	7.52	
ANA	ANA	88	7.40	
Compass Airlines	CPZ	122	7.23	
AIR INDIA	AIC	78	7.23	
Horizon Air	QXE	40	7.09	
NCA Nippon Cargo Airlines	NCA	55	7.00	
SkyWest AIRLINES	SKW	884	6.91	
Lufthansa	DLH	175	6.33	
JAPAN AIRLINES	JAL	86	6.26	
HAWAIIAN AIRLINES	HAL	13	6.25	
CHINA AIRLINES	CAL	184	6.24	
QANTAS	QFA	78	6.06	
Southwest	SWA	369	5.99	
ASIANA AIRLINES	AAR	149	5.96	
CATHAY PACIFIC	CPA	238	5.90	
	AJT	3	5.83	
AIR NEW ZEALAND	ANZ	84	5.82	
			5.80	SFO AVERAGE
AIR CANADA	ACA	51	5.74	
Aer Lingus	EIN	70	5.73	
FIJI AIRWAYS	FJI	20	5.69	
Scandinavian Airlines	SAS	87	5.66	
AEROMEXICO	AMX	23	5.65	
jetBlue	JBU	73	5.65	
HONGKONG AIRLINES 香港航空	CRK	4	5.63	
FedEx.	FDX	10	5.50	
KOREAN AIR	KAL	241	5.39	

Gap Departure Climb Rating - 1st Quarter 2018

January 1 to March 31, 2018

Airline		Gap Departures Total	Gap Departures Score
UNITED	UAL	3551	5.22
中国南方航空 CHINA SOUTHERN AIRLINES	CSN	82	4.91
BRITISH AIRWAYS	BAW	144	4.90
中国東方航空 CHINA EASTERN	CES	124	4.67
Alaska	ASA	663	4.56
SWISS	SWR	87	4.51
suncountry airlines	SCX	7	4.46
EVA AIR	EVA	221	4.42
SINGAPORE AIRLINES	SIA	174	4.30
AIRFRANCE	AFR	69	4.02
KALITTA AIR	CKS	5	4.00
FRONTIER AIRLINES	FFT	14	3.93
Emirates	UAE	88	3.91
Philippines	PAL	100	3.71
American Airlines	AAL	398	3.25
virgin america	VRD	68	3.07
CopaAirlines	CMP	185	2.99
TURKISH AIRLINES	THY	88	2.56

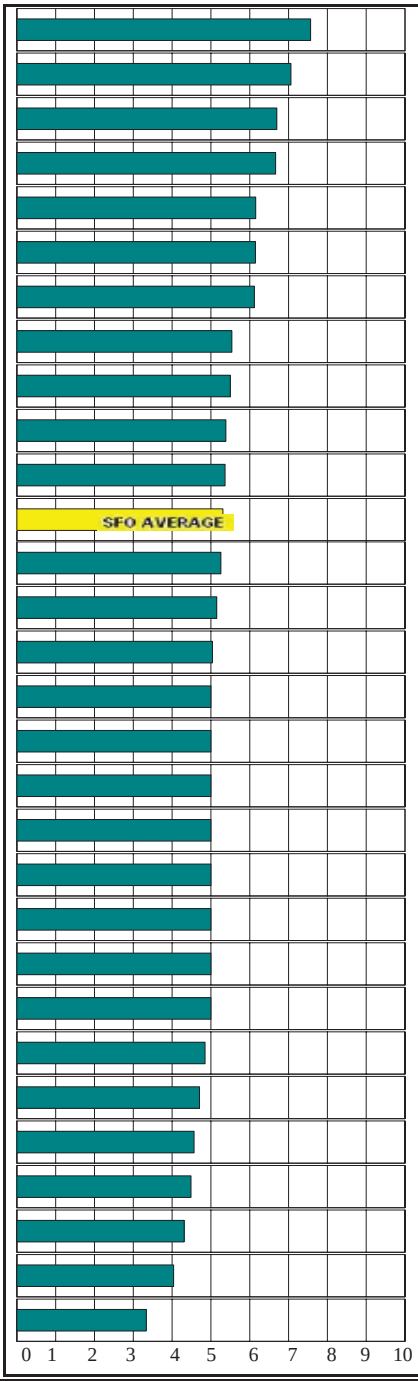
Gap Departure Quality Rating



TOTAL	**9593**	
SFO Average		**5.80**

Airline		*Foster City Arrivals* Total	Successful	Marginal	Poor	Score
FRONTIER AIRLINES	FFT	**74**	51%	49%	0%	***7.57***
DELTA	DAL	**194**	42%	57%	1%	***7.06***
American Airlines	AAL	**324**	36%	61%	2%	***6.70***
AIR CANADA	ACA	**87**	36%	62%	2%	***6.67***
sun country airlines	SCX	**13**	31%	62%	8%	***6.15***
Southwest	SWA	**244**	26%	71%	3%	***6.15***
jetBlue	JBU	**210**	22%	78%	0%	***6.12***
Alaska	ASA	**472**	13%	85%	2%	***5.54***
volaris	VOI	**10**	10%	90%	0%	***5.50***
FedEx	FDX	**39**	8%	92%	0%	***5.38***
UNITED	UAL	**961**	14%	79%	7%	***5.36***
						5.31
virgin america	VRD	**39**	5%	95%	0%	***5.26***
Compass Airlines	CPZ	**100**	3%	97%	0%	***5.15***
SkyWest AIRLINES	SKW	**132**	5%	90%	5%	***5.04***
AIR INDIA	AIC	**28**	0%	100%	0%	***5.00***
interjet	AIJ	**1**	0%	100%	0%	***5.00***
	AJT	**3**	0%	100%	0%	***5.00***
CHINA AIRLINES	CAL	**2**	0%	100%	0%	***5.00***
CATHAY PACIFIC	CPA	**1**	0%	100%	0%	***5.00***
EVA AIR	EVA	**3**	0%	100%	0%	***5.00***
ATLAS AIR	GTI	**61**	3%	93%	3%	***5.00***
HAWAIIAN AIRLINES	HAL	**3**	0%	100%	0%	***5.00***
Avianca	TAI	**66**	2%	94%	5%	***4.85***
NCA Nippon Cargo Airlines	NCA	**17**	6%	82%	12%	***4.71***
KOREAN AIR	KAL	**69**	3%	86%	12%	***4.57***
ASIANA AIRLINES	AAR	**39**	0%	90%	10%	***4.49***
AEROMEXICO	AMX	**29**	3%	79%	17%	***4.31***
CopaAirlines	CMP	**52**	0%	81%	19%	***4.04***
KALITTA AIR	CKS	**3**	0%	67%	33%	***3.33***
TOTAL		**3,276**				
SFO AVERAGE			**11%**	**84%**	**5%**	**5.31**

Foster City Arrival Rating



Subject: Re: FAA Attendance at SFO Roundtable Meetings
Date: Friday, June 29, 2018 at 1:25:16 PM Pacific Daylight Time
From: Elizabeth Lewis
To: Maurice.Hoffman@faa.gov
CC: James A Castañeda, Jodi.McCarthy@faa.gov, dennis.roberts@faa.gov, Ricardo Ortiz, Kathleen Wentworth, Ivar Satero, Beth.White@faa.gov, laura.zabriskie@faa.gov, Leslie.Swann@faa.gov, keiana.scott@humansolutionsinc.com
Attachments: image001.gif, image002.jpg, SFO RT.FAA questions 080118.docx, 20180427_FAA POC vF.pdf.pdf

Dear Maurice,

Thank you for your email acknowledging the San Francisco Airport Community Noise Abatement Roundtable's invitation for an FAA representative to attend our next meeting scheduled for Wednesday, August 1, 2018.

As you are aware, the SFO RT has been active since 1981 and comprises of a Board representing every city in San Mateo County, a representative from the San Francisco Mayor's Office, a representative from the San Francisco Board of Supervisors, a representative from the San Mateo County Board of Supervisors, the SFO Airport Director and PIO, a representative from the ALUC. Chief Pilots from the major airlines are frequent attendees.

I am attaching a copy of a letter I wrote to you dated April 24, 2017 which highlights the SFO RT's history and a complete roster of RT Members.

We welcome the opportunity to work with the FAA as an important community stakeholder in making our communities healthy, happy and safe places to live. Reducing the impacts of overhead aircraft noise is one of the most important aspects of this goal.

We understand the need for the FAA representatives who attend our meetings to be briefed on what topics will be discussed in order to be prepared. To that end, I have attached a list of four questions which will be on our next meeting's Agenda for August 1, 2018.

Our meetings begin promptly at 7:00 pm and it is my goal to end as close to 9:00 pm as possible, respecting everyone's time and also giving everyone who wants to speak an opportunity to share their stories.

Thank you for reviewing these questions and assigning the appropriate FAA representative to attend our next regularly scheduled RT meeting on Wednesday, August 1, 2018.

Yours very truly,
Elizabeth Lewis

Items for FAA representative to discuss at August 1, 2018 Meeting

1. RNAV overlay for the OFFSHORE Departure

   Question: The SFO RT has proposed that an RNAV overlay be designed for the existing conventional OFFSHORE Departure. (SFO RT Recommendations - B35).

The FAA, in their Initiative response in Appendix D, 2.35, cites no ***technical*** reason why this cannot be done.

2.35 Create an RNAV overlay of the OFFSHORE ONE procedure to guide aircraft higher over the Bay before turning to a waypoint located in the ocean.

The OFFSHORE departure procedure is a conventional procedure. It has been replaced by the YYUNG transition on the SSTIK and WESLA departure procedures, both of which are RNAV procedures. However, it has never been activated due its close proximity to military airspace. These procedures have since been corrected and are awaiting publication. There are no plans to develop any additional OFFSHORE RNAV overlays of the existing conventional procedure.

Use of the OFFSHORE Departure *path* in a new RNAV departure procedure would:

a) serve the purposes of the National Airspace System by using satellite technology,

b) respect historical flight procedure paths, and

c) reduce the additional noise impact to residents that is increased by the use of the NextGen SSTIK/YYUNG transition path when compared to the OFFSHORE departure's largely overwater flight path.

Now that the FAA has determined a safe path for the YYUNG transition – avoiding Special Use Airspace—*how can this new knowledge be applied to the creation of an RNAV overlay for the OFFSHORE Departure path?*

What other technical reasons, if any, prohibit the creation of an RNAV overlay or RNAV procedure substantially following the path of the OFFSHORE Departure?

2. Increased noise over areas that had heretofore never experienced overhead aircraft flights.

Question: Why are residents in the Visitation Valley area of San Francisco and residents in Pacifica now suffering from aircraft overhead noise where historically noise from aircraft was either none or much less than currently being experienced?

3. SERFR / BGSUR routes

Question: Can you give us an update and details on the status of changes on the current SERFR THREE flight paths and how those changes will be/ are being implemented?

Also, can you update us on the new entry on the FAA IFP gateway "SERFR FOUR" that appears to be scheduled for December 2019?
https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results&tab=productionPlan&nasrId=SFO#searchResultsTop

4. North Arrivals Assigned to Historical BDEGA East Downwind

Question: Please elaborate on FAA's response to RT's recommendation that, FAA will utilize the BDEGA East Downwind Procedure to the extent "operationally feasible." What percentage of the time does the FAA believe that this procedure can be used?

Background: The SFO RT's recommendation in the Initiative was to maximize use of procedures that route aircraft over the Bay when arriving from the north, such as the BDEGA East Downwind, to avoid over-flying noise sensitive communities during nighttime hours.

It is the RT's opinion that the use of this procedure can be monitored within the SFO's Noise and Operations Monitoring System (NOMS).

San Francisco International
Airport/Community Roundtable

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April 27, 2018

Maurice Hoffman, Director
Mission Support Services – Federal Aviation Administration
Wilbur Wright Building (FOB10B)
FAA National Headquarters
600 Independence Avenue SW
Washington, DC 20597

Re: FAA Attendance at SFO Airport/Community Roundtable Meetings

Dear Mr. Hoffman,

We understand that you are now our Point of Contact at the FAA to coordinate our requests for an FAA representative to attend our San Francisco Airport/Community Roundtable (Roundtable) meetings. As the Chair of the Roundtable, I would like to provide a bit of history, background and outline what our current focus is in light of the FAA's Initiative, and response, to our recommendations.

HISTORY

The Roundtable was established May 1981, via an MOU with San Mateo County, to address noise impacts related to aircraft operations at the San Francisco International Airport (SFO). This voluntary committee consists of 22 appointed and elected officials from the City and County of San Francisco, the County of San Mateo, and all but two of the cities in San Mateo County. A complete roster is attached.

The Roundtable provides a forum for the public to address local elected officials, SFO management, FAA staff, and airline representatives, regarding aircraft noise issues. The Roundtable monitors a performance-based aircraft noise mitigation program, as implemented by Airport staff, interprets community concerns, and attempts to achieve additional noise mitigation through a cooperative sharing of authority brought forth by the airline industry, the FAA, SFO management and local government officials.

The Roundtable adopts an annual Work Program to address key issues and meets on the first Wednesday of the month on a bi-monthly basis at 7:00 pm. The meetings are located at the David Chetcuti Community Room at Millbrae City Hall, 450 Poplar Avenue, Millbrae, California. Our remaining 2018 meetings are as follows.

- June 6, 20019
- August 1, 2018
- September 3, 2018
- December 5, 2018

POLICY STATEMENT

The following Roundtable Policy Statement was formed in 1981, and has been continually reaffirmed.

> *"The Airport/Community Roundtable members, as a group, when considering and taking actions to mitigate noise, will not knowingly or deliberately support, encourage, or adopt actions, rules, regulations or policies, that result in the "shifting" of aircraft noise from one community to another, when related to aircraft operations at San Francisco International Airport."*

For the past 37 years, representatives from the cities/town councils of San Mateo County, San Mateo County Board of Supervisors, City and County of San Francisco Mayor's office, City and County of San Francisco Board of Supervisors, and the airport director of SFO, have worked hard to listen to residents to bring aircraft noise issues to the FAA and NorCal TRACON with the hope to find meaningful noise mitigation solutions.

With the 2014/2015 roll-out of the FAA's NextGen Metroplex procedures, our Roundtable has experienced a tremendous increase of resident complaints, not only from the communities we serve in San Mateo County and the City and County of San Francisco, but also from Santa Clara and Santa Cruz Counties as well.

WORK PLAN

Since receiving the *FAA Reponses to Address Noise Concerns of Santa Cruz/San Mateo/San Francisco Counties* (*FAA Initiative*) *Phase I* document from the FAA in the fall of 2015, our Roundtable has almost exclusively focused on responding to that document which was submitted to Congress Members, Speier, Eshoo, and Farr November 17, 2016; as well as responding to the *FAA Initiative Phase II* upon receipt on November 17, 2017.

TECHNICAL WORKING GROUPS

To better understand the *FAA Initiative Phase II* response, members of our Roundtable meet on a regular basis with our noise consultant, HMMH.

We would like to request an FAA representative to attend each Technical Working Group meeting as scheduled below.

- Thursday, May 3, 2018 from 1:00 pm – 4:00 pm
- Thursday, July 12, 2018 from 1:00 pm – 4:00 pm
- Thursday, September 13, 2018 (tentative)
- Thursday, November 1, 2018 (tentative)

Meetings are typically held at our regular meeting location at the David Chetcuti Community Room at Millbrae City Hall.

The agenda for the upcoming Thursday, May 3, 2018 Technical Working Group meeting includes:

- Near Bay Daytime Operations (RWY 28 Arrivals Only)
- Review/Analysis of Topic 4 – Near Bay Daytime Operations (RWY 28 Departures Only)
- Review/Analysis of Topic 5 – Near Bay Daytime Operations (RWY 10 Departures Only)

For future Technical Working Group meetings, we will provide you with a detailed listing of the *FAA Initiative Phase II* items that we'll be studying in advance of those meetings.

In general, the topics we discuss relate to the *FAA Initiative Phase II* response, and airplane noise over our communities adversely affecting our residents' sleep, peace of mind, health and overall well-being. We seek your help in trying to identify ways to mitigate these adverse effects.

We would appreciate you assigning an FAA subject matter expert who can address not only the theoretical design features related to these recommendations but can also address how these recommendations under discussion would interact with and affect other existing Norcal procedures in use.

In the past, we have been fortunate to have members from NorCal TRACON, such as Thann McLeod, and other members from the FAA, such as Steve Karnes and Mindy Wright, who have been very helpful and knowledgeable.

If you need more information on any our meetings or background information I've provided in this letter, I invite you to visit our website (sforoundtable.org). I look forward to hopefully meeting you some day, and hearing back from you soon.

Regards,

Elizabeth Lewis
Chair, San Francisco Airport/Community Roundtable
Councilmember, Town of Atherton

cc:
Jodi McCarthy, Vice President, Mission Support Services – Federal Aviation Administration (email)
Dennis Roberts, Regional Administrator – Federal Aviation Administration (email)
Members, San Francisco Airport/Community Roundtable

Attached:
Current Roundtable Roster

San Francisco International
Airport/Community Roundtable

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July 18, 2018

TO: Roundtable Members and Interested Parties

FROM: Justin W. Cook – INCE, LEED GA
Roundtable Technical Consultant - HMMH

SUBJECT: Summary of July 12, 2018 Technical Working Group (TWG) Meeting

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The 1st Technical Working Group (TWG) meeting was held August 15, 2017 and focused on reviewing the Federal Aviation Administration's (FAA) Phase 2 Initiative Document[1] and compared the Roundtable's recommendations to the FAA responses that were dated November 2016.

The purpose of 2nd through 5th TWG meetings was to review and analyze the FAA's Update on Phase 2 Initiative Document[2] to: 1) determine how the Roundtable should go about monitoring those measures the FAA will implement and 2) determine if there are any opportunities to work with the FAA on items they found not feasible.

The FAA Update on Phase 2 Initiative Document was released in November 2017 and is an update to the interim Phase 2 Initiative Document released in July 2017. The update provides details on 203 items, which consists of the original 104 recommendations and their associated sub-recommendations.

Below is the agenda for the 5th TWG meeting held on Thursday, July 12, 2018. It is expected that future TWG meetings will follow a similar agenda until the TWG has completed their review and analysis of all FAA responses.

1. Introductions, Brief Overview of the Framework for the Review/Analysis Process
2. Review/Analysis of Topic 5 – Near Bay Daytime Operations (Runway 10 Departures Only)
3. Review/Analysis of Miscellaneous Topics **Time Permitting*
4. Summarize Action Items
5. Discuss and Announce Next Technical Working Group Meeting Dates
6. Public Comments on Items NOT on the Agenda
7. Adjourn

[1] FAA Initiative to Address Noise Concerns of Santa Cruz/Santa Clara/San Mateo/San Francisco Counties, Phase Two, Compiled at the Requests of Representatives Farr (Panetta), Eshoo and Speier, July 2017

[2] FAA Initiative to Address Noise Concerns of Santa Cruz/Santa Clara/San Mateo/San Francisco Counties, Update on Phase Two, Compiled at the Requests of Representatives Farr (Panetta), Eshoo and Speier, November 2017

The following section provides a summary of the 5th TWG discussions for Topic 5, "Near Bay Daytime Operations – Runway 10 Departures Only."

Near Bay Daytime Operations – Runway 10 Departures Only

This section provides brief descriptions of the recommended measures, the FAA responses provided to date and the recommendations resulting from the TWG review grouped into the three areas: recommendations the FAA has or will address, recommendations requiring further analysis/information for the FAA to address and recommendations the FAA determined they would not address.

Recommendations the FAA Has or Will Address

The following recommended measures include those that the FAA either has or will address through changes to their ongoing implementation of the Northern California Metroplex:

1. SAHEY

FAA's Update on Phase 2 Initiative Document Reference: Page 43 – Item 38, Page 65 – Item 42
Summary of Recommendations: Roundtable to work with FAA to redesign the SAHEY departure to mirror historic flight tracks that keep aircraft over the Bay. When using, do not vector and fly procedure as charted.

Summary of FAA Responses: NCT will continue to be active participant in Roundtable meetings. FAA has no plans and is restricted from creating procedures that involve opposite direction operations. The FAA analyzed historic tracks for aircraft that filed the SAHEY procedure and found that 93% of those aircraft pass within 1 NM of the SAHEY waypoint. FAA concurs with recommendation that aircraft fly SAHEY procedure as published to extent feasible. NCT will continue to reinforce the use.

Summary of TWG Discussion: Justin gave a summary of SAHEY recommendation and FAA response. Discussion on previous items discussed in this group and how FAA does not want to conduct opposite direction operations. Question on what cities are most effected by the SAHEY Departure from RWY 10. Don't want to conflict with RWY 28 arrivals. RWY 10 Dep occur when there are winds from the east and the south (generally when rainy) so departures head toward the San Mateo Bridge and occur less than 15% of the time. RT position is that the FAA has misunderstood the recommendation and this is not an opposite direction issue. SAHEY is about 5 nmi out and FAA had a secondary departure off the 10s that went up to the east bay and what has happened is that 10L departure that did transition/turn left after SAHEY has been discontinued based on some aircraft being unable to make the crossing altitude. This procedure was flagged for safety as a conflict. Member question: Is this a safety due to weather issue or is it possible to push back and determine if the shortcuts can be eliminated to provide relief during inclement weather? What aircraft cannot meet the climbing altitude requirements?

2. Create New Departure Procedure

FAA's Update on Phase 2 Initiative Document Reference: Page 42 – Item 36
Summary of Recommendations: SFO Roundtable will provide information to the FAA to assist in a review of options for aircraft to use Runway 10 that does not use same flight path as a Runway 28 arrival.

Summary of FAA Responses: NCT will continue to be active in Roundtable meetings to provide expertise in seeking solutions. Roundtable will provide information to FAA to assist in review of options for aircraft to use Runway 10 that does not use same flight path as Runway 28. However, FAA has no plans and is restricted from creating procedures that involve opposite direction operations.

Summary of TWG Discussion: Justin gave a summary on creating a new departure procedure recommendation and response. Options have not been provided to FAA on creating a new procedure. This concept was put forward before we had the understanding of FAA concerns on opposite direction traffic. This might be one that we don't expend much energy on. The payback on this one is low. James mentioned that the next meeting is going to begin to prioritize the list of recommendations to focus attention and go back to FAA with areas we can believe will have the most benefit. We want to evaluate gains and potential lift. Can we look at this as a peak vs non-peak hour recommendation?

Recommendations Requiring Further Analysis/Information for the FAA to Address

The following recommended measures include those that the FAA responded that additional analysis, investigations and/or information is required to proceed with changes to their ongoing implementation of the Northern California Metroplex:

None

Recommendations the FAA Determined They Will Not Address

The following recommended measures include those that the FAA rejected and stated changes to their ongoing implementation of the Northern California Metroplex will not occur:

3. NIITE

FAA's Update on Phase 2 Initiative Document Reference: Page 40 – Item 24, Page 46 – Item 48

Summary of Recommendations: The NIITE departure and all transitions be amended to include authorization for its safe use by aircraft taking off from Runway 10.

Summary of FAA Responses: The NIITE departure procedure once contained a transition for both Runways 01 and 10, but Runway 10 transition was removed for safety. FAA does not support the reinstatement of a Runway 10 transition to the NIITE procedure.

Summary of TWG Discussion: Justin gave a summary on recommendations FAA will not address starting with the NIITE procedure. This is a similar safety concern with opposite direction flow. If during RWY 10 operations there would be no need to turn the aircraft for southeast rainy flow. The FAA would default to using a straight out down the bay procedure during rainy weather anyway so the ask isn't gaining anything here. Opposite direction flow is a non-starter for FAA at this point.

4. 330 Degree Heading – Up the Bay

FAA's Update on Phase 2 Initiative Document Reference: Page 39 – Item 21, Page 41 – Item 29

Summary of Recommendations: NCT use its longstanding noise abatement procedure to vector Runway 10 departing aircraft up the Bay then vector as needed for routes of flight such as NIITE to GOBBS.

Summary of FAA Responses: The NIITE departure procedure once contained a transition for both Runways 01 and 10, but Runway 10 transition was removed for safety. FAA does not support the reinstatement of a Runway 10 transition to the NIITE procedure. A south transition for the NIITE departure procedure for southbound destinations is feasible but issues of congestion, noise shifting and flying distance remain

Summary of TWG Discussion: Justin gave a summary of 330 degree heading up the bay. Shifting noise and congestion brought up as past discussed topics. If you are going out with RWY 10 and out the bay anyway we are not gaining any benefit by this, unless we are in opposite direction that will not go anywhere with FAA. Question from member: Is there a way to bring this over to an insulation program? Expand the eligibility criteria for Burlingame and Foster City. Since these departures occur 15% of the time, and the CNEL 65 dB is an annual average, it is unlikely to resolve the community noise issues. Discussion on sound insulation, FAA criteria, and guidelines.

5. FOGGG

FAA's Update on Phase 2 Initiative Document Reference: Page 63 – Item 34

Summary of Recommendations: When weather conditions dictate the use of Runway 10, we encourage the use of FOGGG as published and not vector off the procedure.

Summary of FAA Responses: The FOGGG departure procedure has a high climb gradient, requiring aircraft to cross the FOGGG waypoint at 4,000 feet MSL. OAK arrivals pass underneath this at 3,000 feet MSL; there is no room for error (minimum vertical separation between aircraft is 1,000 feet). Many aircraft have been unable to meet this requirement, primarily due to aircraft performance limitations (weight, weather, etc.). Therefore, this has led to the FOGGG departure being unused for safety.

Summary of TWG Discussion: Justin gave a summary of FOGGG recommendation and FAA response. The FOGGG has been decommissioned. Question of what aircraft cannot meet this requirement.

6. Create New Departure Procedure

FAA's Update on Phase 2 Initiative Document Reference: Page 42 – Items 34-35, Page 65 – Item 43, Page 66 – Item 46

Summary of Recommendations: Create a procedure that includes the ability of aircraft to depart Runway 10 on a heading that is not a direct path of aircraft arriving on Runway 28. Create a Runway 10 departure that mirrors the decommissioned DUMBARTON procedure.

Summary of FAA Responses: The FAA does not support creating a departure procedure off Runways 10 for nighttime operations. This would counter to current FAA criteria for opposite direction operations. Creating a procedure that contradicts this program is simply not permissible under opposite direction criteria.

Summary of TWG Discussion: Justin gave a summary of DUMNARTON procedure overlay recommendation and FAA response. Create an RNAV overlay of the DUMNARTON 24/7 use of Runway 10 and the prevailing RWY during Southeast flow. Need to discuss priority and benefits of not going out GAFFT and more over the bay. This one we can push back more than the others – recommendation to highlight (page 65) this is different than the previous cases of an opposite direction

issue. Community comment: To try and reduce noise for our residence and keep the aircraft more over the bay, on departure once over the bay it goes over Palo Alto and then up and around.

Review/Analysis of Miscellaneous Topics

This section provides brief descriptions of the recommended measures, the FAA responses provided to date and the recommendations resulting from the TWG review grouped into the three areas: recommendations the FAA has or will address, recommendations requiring further analysis/information for the FAA to address and recommendations the FAA determined they would not address.

Recommendations the FAA Has or Will Address

The following recommended measures include those that the FAA either has or will address through changes to their ongoing implementation of the Northern California Metroplex:

1. Land Use and Terrain Height Data

FAA's Update on Phase 2 Initiative Document Reference: Page 33 – Item 42

Summary of Recommendations: Roundtable will provide data regarding land use and terrain height for areas throughout the region to assist NCT in using less sensitive noise areas for vectoring. SFO and the Roundtable will work with airline representatives to encourage the use of "noise-friendlier" options for flight planning and operations. Roundtable provide community input to the FAA and make recommendations to the FAA based on community consensus for changes.

Summary of FAA Responses: NCT will continue to be an active participant in Roundtable meetings, providing subject matter expertise in seeking solutions.

Summary of TWG Discussion: Justin gave a summary of the land use and terrain height data recommendation and FAA response. The airport already has land use and terrain data to provide to the FAA, but the question is what will the FAA do with it. Discussion on what the determination of noise sensitive areas would be. The roundtable body or subcommittee has not worked to identify areas. Discussion on outsourcing this as a research project. James mentioned that this originally was to include information for vectoring.

2. Noise Modeling or Other Tools

FAA's Update on Phase 2 Initiative Document Reference: Page 50 – Item 62

Summary of Recommendations: Roundtable is available to provide community input to the FAA with the use of modeling or other tools to determine the effects of other "noise-friendlier" departure paths.

Summary of FAA Responses: NCT will continue to be an active participant in Roundtable meetings, providing subject matter expertise in seeking solutions.

Summary of TWG Discussion: Justin read the summary on noise modeling offer by the Roundtable to provide more data to the FAA. No discussion.

3. Pilot Outreach Program

FAA's Update on Phase 2 Initiative Document Reference: Page 59 – Item 17, Page 60 – Item 20, Page 61 – Item 22

Summary of Recommendations: Work with the SFO ANAO on a pilot outreach program to encourage aircraft to stay over water while on approach after receiving their cleared to land instructions.

Summary of FAA Responses: They reference "noise-friendlier" approach responses. When weather conditions and equipment/crew capabilities allow, the recommended approaches are used to the extent feasible.

Summary of TWG Discussion: Justin read the summary of a pilot outreach program. SFO staff is doing a good job of this (Fly Quiet Program). Not much response from the FAA. Recommendation to make the reporting more public on who is doing a good job. Tabled for further discussion (budget, who, where etc.)

4. HUSSH

FAA's Update on Phase 2 Initiative Document Reference: Page 63 – Item 33
Summary of Recommendations: Encourage use of HUSSH and reduce vectors off the HUSSH departure for the same reasons as NIITE.

Summary of FAA Responses: The requirement for aircraft to remain on NIITE/HUSSH departure procedures as much as operationally feasible was added to NCT's SOP in February 2017. May 2017 analysis of traffic data reveals that 70% of HUSSH aircraft passed within 1 NM of the NIITE waypoint. July 2015 it was at 68% compliance. NCT will continue to reinforce the use of this procedure. After February 2017 update to the NCT SOP, there has been a tradeoff. The capacity limitations of the departure corridor (which contains both NIITE and HUSSH procedures) remains unchanged. Therefore, in order for aircraft on the NIITE and HUSSH procedures to remain on their respective procedure until the NIITE waypoint while also maintaining the required minimum separation, ATC must delay aircraft on the ground prior to departure. June 2017 showed 103 reportable delays at SFO/OAK. June 2016 showed 1 reportable delay at SFO/OAK. (Reportable delay = 15 minutes or more).

Summary of TWG Discussion: Justin gave a summary of the HUSSH recommendation and FAA response. Question on what else is causing the delay, assumption is that it is more flights. Is there a way to ask for clarification of FAA response (and the data they use) because RT is trying to reduce the vectors. Wants to reduce ground-based noise and therefore reduce delays. Most of the delay occurs between 5:30 and 7:00 AM and the delay is therefore not pushing into nighttime hours. Input from SFO construction project manager that the runway overlay project occurred between March and June of 2016 and that the numbers reported by FAA do not state this and other timeframes should be looked at.

Recommendations Requiring Further Analysis/Information for the FAA to Address

The following recommended measures include those that the FAA responded that additional analysis, investigations and/or information is required to proceed with changes to their ongoing implementation of the Northern California Metroplex:

None

Recommendations the FAA Determined They Will Not Address

The following recommended measures include those that the FAA rejected and stated changes to their ongoing implementation of the Northern California Metroplex will not occur:

5. SERFR

FAA's Update on Phase 2 Initiative Document Reference: Page 24 – Item 8, Page 34 – Item 2, Page 35 – Item 5, Page 47 – Item 51

Summary of Recommendations: FAA increase the in-trail spacing of aircraft on the SERFR arrival, flying the procedure as charted, which will decrease need for vectoring. Increase the altitude of the arrivals. Roundtable will work with airline representatives and the FAA to request that all nighttime arrivals from south (SERFR) file for a routing and arrival that would terminate east of the Bay for connection to Runway 28R.

Summary of FAA Responses: FAA is continuously working to improve aircraft setup and sequencing between facilities. As identified in previous meetings with the Select Committee and Roundtable, the Bay Area airspace is very complicated with three major airports close together. SJC airspace lies two miles east of the SERFR arrival. Without coordination with the SJC controller, NCT must keep their aircraft at a minimum of 1.5 miles away from SJC's airspace. Directing aircraft east or north of MENLO will encroach upon it, which the FAA cannot endorse. The higher as aircraft flies while in the vicinity of MENLO, the farther away from SFO it must travel in order to descend to the appropriate altitude for approach. The available airspace does not allow this.

Summary of TWG Discussion: Justin gave a summary of SERFR recommendation and FAA response. Discussion on SJC traffic at night and relation with SFO arrivals. Airspace discussion on interaction with SJC and SFO traffic. About 50% of the SERFR arrivals are being vectored off the procedure. Requested study of in-trail spacing. Recommend keeping the suggestion to terminate routing over the east bay.

6. HUSSH

FAA's Update on Phase 2 Initiative Document Reference: Page 49 – Item 61

Summary of Recommendations: Utilize the OAK HUSSH departure procedure during the day to avoid conflicts with SFO SSTIK, reduce vectoring, increase separation between the flight paths, and increase safety. From CNDEL, direct aircraft to GOBBS and south.

Summary of FAA Responses: Same concerns regarding congestion, noise shifting, and flying distance as previously discussed.

Summary of TWG Discussion: To be discussed at the next meeting.

7. Backblast Noise

FAA's Update on Phase 2 Initiative Document Reference: Page 32 – Item 40

Summary of Recommendations: SFO to allocate funds or work with the FAA to obtain grant money to commission an updated technical study of backblast noise from aircraft departures.

Summary of FAA Responses: Not FAA's action.

Summary of TWG Discussion: To be discussed at the next meeting.

8. Upgraded Radar Display Equipment

FAA's Update on Phase 2 Initiative Document Reference: Page 33 – Item 41

Summary of Recommendations: FAA determine if upgraded radar display equipment or notations on the map using symbols would be helpful to NCT to increase the use of less impactful areas if vectoring is required for safety.

Summary of FAA Responses: NCT is equipped with the latest radar equipment available to FAA Tracons, to include STARS, FUSION, and ADS-B. Adding notations and/or symbols to radar maps is not a step that is taken lightly in the FAA. Every effort is made by the FAA to reduce radar amp clutter for safety.

Summary of TWG Discussion: To be discussed at the next meeting.

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July 25, 2018

TO: Roundtable Representatives, Alternates, and Interested Persons

FROM: James A. Castañeda, AICP, Roundtable Coordinator

SUBJECT: Roundtable Work Program Subcommittee June 26, 2018 Meeting Summary

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On June 26, 2018, the Work Program Subcommittee convened at the San Mateo County Planning and Building Department offices in Redwood City at approximately 1:00 p.m.

Roundtable Members Present
Elizabeth Lewis, Town of Atherton (Roundtable Chairperson)
Janet Borgens, City of Redwood City
Ann Wengert, Town of Portola Valley
Sue Digre, City of Pacifica

Staff & Advisory Present
James Castañeda, Roundtable Coordinator
Justin Cook, Roundtable Technical Consultant
Bert Ganoung, Noise Abatement Office, San Francisco International Airport
Kathleen Wentworth, Congresswoman Jackie Speier's Office
Linda Wolin, San Mateo County Supervisor Dave Pine's Office

Meeting Summary
Roundtable Coordinator James Castañeda started the meeting with an overview of the Roundtable's 3-year Strategic Plan and annual Work Plan (see attached memo). The meeting primary focused on discussing the current Roundtable Strategic Plan and went through each of the four areas to consider revisions and additions to the document.

The meeting concluded with Roundtable members in attendance agreeing to take the documents and provide comments and edits to be consolidated for discussion at the next Work Program Subcommittee meeting in August.

Meeting was adjourned at 2:45 p.m.

Attached: June 26, 2018 Work Program Meeting memo

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June 20, 2018

TO: Roundtable Members and Interested Parties

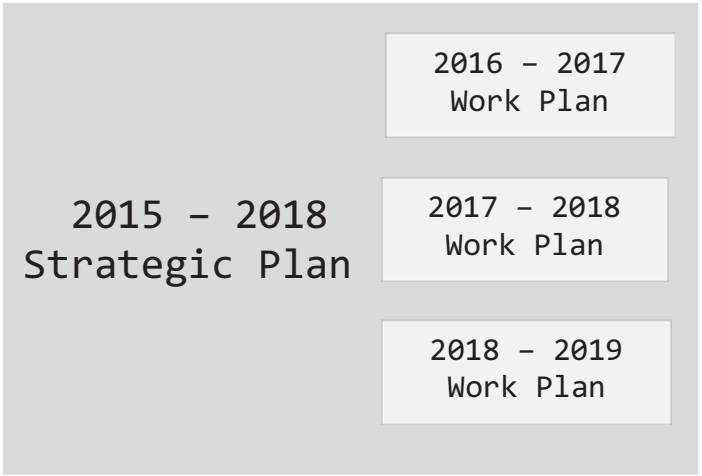
FROM: James A. Castañeda, AICP, Roundtable Coordinator

SUBJECT: Roundtable Strategic Plan and Annual Work Program

As typical during the summer months, the Roundtable's Work Program Subcommittee assembles to evaluate the Roundtable's work over the last year, review the prior year's work program, and develop a recommended work program back to the full Roundtable for its consideration and adoption. In an effort to create both a new 2018-2019 Work Plan as develop a new three-year 2019-2021 Strategic Plan, the Work Program subcommittee collaborate to present these documents to the Roundtable for consideration and adoption.

OVERVIEW

The Roundtable utilize two documents to provide guidance with their goals and objectives.
The Strategic Plan is a strategic planning approach to guide the Roundtable actions over the next three years. The Work Plan, guide by the Strategic Plan, is part of how the Roundtable attempts to both works towards the goals and objectives of the Strategic Plan within a one-year planning horizon. The Work Plan will often have more specific and actionable items that are distilled from the overall Strategic Plan goals; each of the Work Program items are associated with a Strategic Plan goal.



With the Roundtable efforts in evaluating the FAA's response to the Roundtable's recommendations to the *FAA Initiative Phase 2*, both documents should incorporate items, objects and other discussions throughout the Technical Working Group meetings that have been occurring since January 2018 where applicable.

MEETING OBJECTIVES

The objective of this meeting is to review the 2015-2018 Strategic Plan (attached) and discuss how the Roundtable preformed in accordance with the listed goals and objectives. Then discuss how the next three-year 2019-2021 Strategic Plan should look like using the prior Strategic Plan as a template incorporating new ideas and objectives that are reflective of the issues Roundtable is facing presently.

If time allows, the subcommittee can start discussing the Work Plan, but it's anticipated a second meeting will be required to allow for that discussion.

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sforoundtable.org

July 25, 2018

TO: Roundtable Representatives, Alternates, and Interested Persons

FROM: James A. Castañeda, AICP, Roundtable Coordinator

SUBJECT: Roundtable Legislative Subcommittee July 17, 2018 Meeting Summary

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On July 17, 2018, the Legislative Subcommittee convened at the San Mateo County Planning and Building Department offices in Redwood City at approximately 1:30 p.m.

Roundtable Members Present
Janet Borgens, City of Redwood City (Legislative Subcommittee Chairperson)
Sue Digre, City of Pacifica (Legislative Subcommittee Vice-Chairperson)
Elizabeth Lewis, Town of Atherton (Roundtable Chairperson)

Staff & Advisory Present
James Castañeda, Roundtable Coordinator
Justin Cook, Roundtable Technical Consultant
Bert Ganoung, Noise Abatement Office, San Francisco International Airport
Kathleen Wentworth, Congresswoman Jackie Speier's Office
Emily Tranter, N.O.I.S.E.

Meeting Summary
The meeting started with an update and briefing from Emily Tranter from N.O.I.S.E. on the current state of FAA Reauthorization bill. Ms. Tranter outlined areas that N.O.I.S.E. identified as opportunities to be proactive with protentional regulations, and areas in which N.O.I.S.E. is weighing in on.

The Roundtable members in attendance agreed that a letter to Senators Feinstein and Harris should be written and sent at the earliest opportunity as its unknown if the Senate will act on the reauthorization in the coming weeks. The members will coordinate a draft to have sent by the end of the week that focused on increased community relations, support for Performance Based Navigation (PBN), ongoing communication on health and economic issues, support for funding for research, and concerns on super-sonic noise.

Additional discussions included monitoring the Roundtable's Strategic Plan/Work Plan updates efforts.

Meeting was adjourned at 2:48 p.m.

Attached: Letter to Senators Feinstein and Harris, dated July 18, 2018

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July 18, 2018

Senator Dianne Feinstein
1 Post Street, Suite 2450
San Francisco, CA 94104

Senator Kamala Harris
501 I Street, Suite 7-600
Sacramento, CA 95814

Re: FAA Reauthorization Bill (H4)

Dear Senators Feinstein and Harris,

As the Senate prepares to consider the recently passed FAA Reauthorization Bill (HR 4), my colleagues and I on the San Francisco Airport/Community Roundtable would like to impress upon you our strong interest in this legislation and wish to bring to your attention our concerns. The powerfully negative impact of aircraft noise has been experienced throughout - not only our airport-adjacent communities, but the entire San Francisco Bay Area Region as well.

The San Francisco Airport/Community Roundtable (Roundtable) was established in 1981, via a Memorandum of Understanding with airport-adjacent cities, the San Mateo County, and the City and County of San Francisco to address noise impacts related to aircraft operations at the San Francisco International Airport (SFO). This voluntary committee consists of 22 appointed and elected officials from the City and County of San Francisco, the County of San Mateo, and all but two of the cities in San Mateo County. A complete roster is attached.

The Roundtable provides a forum for the public to address local elected officials, SFO management, FAA staff, and airline representatives, regarding aircraft noise issues. The Roundtable monitors a performance-based aircraft noise mitigation program, as implemented by Airport staff, interprets community concerns, and attempts to achieve additional noise mitigation through a cooperative sharing of authority brought forth by the airline industry, the FAA, SFO management and local government officials.

We welcome FAA representatives to our regularly scheduled meetings to listen to and advise our constituents on how to reduce the negative impacts of aircraft over flights in our communities.

1) Increased Community Relations
Our residents applaud the House-passed provisions that focus on improving community relations. Our residents are contributors to the financial success of our valuable air industry.

We support enhanced and continued communication and dialogue between Members of Congress who serve constituents impacted by aircraft noise, leadership in the committees of impacted jurisdictions, as well as the FAA and industry stakeholders.

2) Performance Based Navigation (PBN)
PBN has the potential to bring significant changes to flight patterns across the country, and we believe that the community impacts of aviation noise should be considered as a crucial part of the calculation that determines the overall benefits of the proposed changes. With the increased concentration of over flights due to the narrowing of flight paths and the decrease in separation between aircraft enabled by PBN, air traffic changes have become even more closely tied to changes on the ground resulting in unbearable increases in aircraft noise to residents who had never experienced aircraft noise. Modern modes of reliable noise detecting must be provided, utilized and constantly monitored.

3) Health and Economic issues
Aviation noise is a health and economic issue, therefore we believe that robust, two-way communication with impacted communities is vital to ensuring that the concerns of those residents affected are heard and incorporated into the final design of new airspace as much as fuel savings and efficiency of airspace. This would allow communities under a new or concentrated flight path, guaranteed participation during the implementation of PBN.

4) Funding for Research
Funding for research into aviation noise, how it is measured, monitored and its negative impact to the health and well being of residents on the ground is a critical component to this reauthorization bill.

The standard use of CNEL measurement is outdated and harmful to our residents.

5) Super-Sonic Noise
We believe the best approach would be the one taken in the House language for the final FAA Reauthorization bill. The language in the House-passed bill would give the FAA discretion in setting effective standards based upon the best available data, would safeguard US manufacturers continued access to international markets, and lower the risk of public backlash against the re-introduction of these aircraft.

Our concerns are that the Lee-Gardner amendment, which was passed in the Senate Committee on Commerce, Science, and Transportation in 2017, would require the FAA to set a US domestic landing and takeoff noise standard for supersonic aircraft no more stringent than the 2006 Stage 4 limits for large aircraft as well as promulgate a rule within 3 years to replace the 1973 overland flight ban on supersonic aircraft with an en-route noise standard. If FAA fails to set such a standard, the overland flight ban would be automatically repealed.

The Senate language here is particularly problematic because it is extremely unlikely that FAA could develop an enroute noise standard to replace the overland flight ban in 3 years; therefore, the main effect of this language is to repeal the sonic boom ban without replacing it.

Additionally, none of the near-term supersonic aircraft under development will be low boom. That means that the first aircraft to operate will be comparable to the Concorde in terms of sonic boom.

This would certainly cause considerable noise and harm to our residents.

We commend the Members of Congress who step forward on behalf of our air industry and who have offered amendments to address noise impacts on behalf of our local and surrounding communities. We look forward to continuing to connect as a resource and collaborative partner with Congress, their impacted constituents, and all stakeholders.

The Roundtable will continue to remain engaged with you and your staff as this legislation is further considered in the House and Senate.

Respectfully,

Elizabeth Lewis, Roundtable Chairperson

cc:
Members, San Francisco Airport/Community Roundtable
Congresswoman Jackie Speier
Congresswoman Anna Eshoo

Attached:
Current SFO Airport/Community Roundtable Roster

Dave Ong (AIR)

From: Dave Ong (AIR)
Sent: Monday, July 23, 2018 9:47 AM
To: 'awengert@portolavalley.net'
Cc: 'Sue Chaput'; Bert Ganoung (AIR); 'James Castaneda'
Subject: 2Q 2018 Aircraft Noise Monitoring Results for Portola Valley
Attachments: 2Q 2018 Portola Valley Quarterly Monitoring Report.pdf

Dear Honorable Ann Wengert,

Please find attached the aircraft noise monitoring results for 2Q2018 noise measurements collected in the Town of Portola Valley. Please do not hesitate to call Nastasja von Conta, a Senior Noise Abatement Specialist with our office or me at (650) 821-5100 if you have any questions about the report or would like to discuss this information.

Thank you,

David

David Ong
Noise Systems Manager | Planning, Design & Construction
San Francisco International Airport | P.O. Box 8097 | San Francisco, CA 94128
Tel 650-821-5100 | flysfo.com

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SAN FRANCISCO INTERNATIONAL AIRPORT
CITY & COUNTY OF SAN FRANCISCO

MEMORANDUM

TO: PORTOLA VALLEY COMMUNITY

FROM: SAN FRANCISCO INTERNATIONAL AIRPORT AIRCRAFT NOISE ABATEMENT OFFICE

SUBJECT: 2Q 2018 PORTOLA VALLEY NOISE MONITORING REPORT

DATE: JUNE 21, 2018

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office (ANAO) conducts aircraft noise monitoring in the Town of Portola Valley to determine noise levels within the community from aircraft operations at SFO. Noise monitoring occurs every quarter for a 14-day data collection period. This quarter's measurement period was from May 5, 2018 to May 21, 2018. The monitoring was made possible with the assistance of a Portola Valley resident.

The overall average daily noise level from all aircraft was 43dBA CNEL. The Community daily noise level was 46dBA CNEL. Noise from all aircraft over this location increased the total average daily noise level by 1.7dBA. Non-aircraft noise sources included residential noise.

The Town of Portola Valley is a quiet suburban community with ambient noise levels of 42dBA. On an average day, Portola Valley had 189 overflights out of which 58 exceeded the noise monitor thresholds and recorded a noise event. The thresholds were 55dBA during the daytime and 50dBA for nighttime. Aircraft destined to SFO typically overfly Portola Valley during high traffic conditions or inclement weather days with aircraft vectoring. Also known as delay vectoring, is when a FAA (Federal Aviation Administration) Air Traffic Controller instructs the pilot to fly specific headings. The headings are not the most direct path to the runways. Reasons why aircraft may be vectored include: adjusting the arrival sequence in order to maintain safe separation between all aircraft, maximizing use of available airspace, achieving an expeditious flow of aircraft traffic, avoiding areas of known hazardous weather or known severe turbulence, and maneuvering an aircraft into a suitable position to accommodate a visual approach and landing.

As flights to SFO cross over the peninsula, they are typically between 5,000 and 7,000 feet, and represent about 80 percent of all aircraft noise events over Portola Valley. The remaining aircraft noise events are low-flying general aviation traffic using San Carlos Airport, Palo Alto Airport, and other airports. An average sound exposure level (SEL) for a single noise event for all aircraft were recorded at 70dBA and maximum noise levels (LMax) at 59dBA. SFO aircraft have lower SEL and LMax levels and are slightly quieter than the general aviation traffic as they overfly the area at higher altitudes. On average, there were six nighttime noise events from SFO aircraft. During the noise-monitoring period, SFO ANAO received noise reports from 37 individuals in Portola Valley primarily during the morning and nighttime hours. During these hours, there is a noticeable spike of noise reports disproportionate with aircraft noise events. Overall, it seems reasonable to assume that the morning and evening hours are most disturbing to Portola Valley reporters even though this is the time when SFO operations are at its lowest.

In view of the fact that the monitoring location in Portola Valley is located in a quiet suburb with ambient noise in the low 40dB range, any aircraft noise above this threshold may become a nuisance for the residents.

dBA- stands for A-weighted decibel. Decibel unit measures the loudness of a sound and is computed as the signal to noise ratio. A-weighting is used to adjust for frequency range of human hearing. An increase of ten decibels is perceived by human ear as a doubling of noise.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
LMax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.

Post Office Box 8097 San Francisco California 94128 Tel 650.821.5100 Fax 650.821.5112

Short Term Noise Monitoring Report

Portola Valley 2Q 2018

May 5 - 21

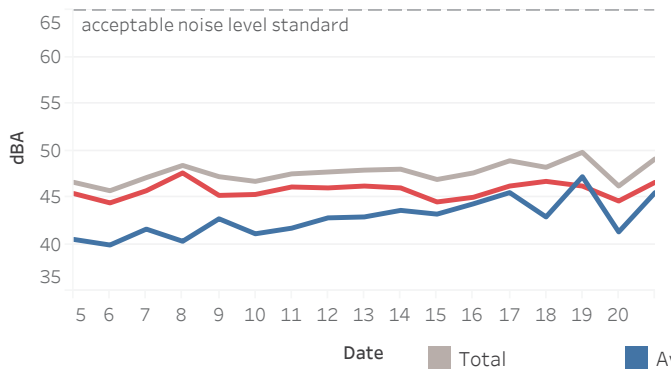
Aircraft CNEL: 43 dBA
Community CNEL: 46 dBA
Total CNEL: 48 dBA
Aircraft SEL: 70 dBA
Aircraft LMax: 59dBA
Ambient Noise: 42dBA
Noise Monitor Treshold: 55dBA (Day), 50dBA(Night)
SFO Aircraft Noise Events:49 per day
SFO Operations Flow: West Flow
Cause of Aircraft Overflights : SFO aircraft arrivals, delayed vectoring, and small general aviation aircraft transitioning the area

Daily Noise Event Averages

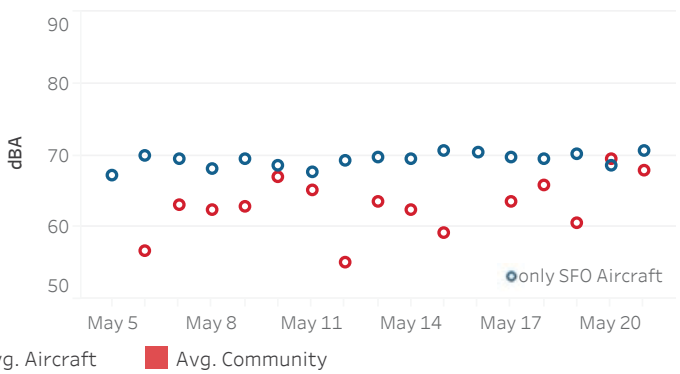
	Date	SFO			Non-SFO			Community		
		Noise Events	SEL (dBA)	Avg. LMax (dB)	Noise Events	SEL (dBA)	Avg. LMax (dB)	Noise Events	SEL (dBA)	Avg. LMax (dB)
May	5	20	67	56	26	72	60			
	6	26	70	58	22	71	60	1	57	52
	7	26	69	57	9	71	61	4	63	55
	8	30	68	57	21	69	59	18	62	54
	9	39	70	58	16	74	58	1	63	53
	10	32	69	58	16	71	60	8	67	61
	11	40	68	57	24	73	61	6	65	60
	12	48	69	58	16	69	60	2	55	52
	13	47	70	58	17	72	61	3	83	70
	14	65	69	58	14	72	61	3	74	66
	15	47	70	59	9	72	62	6	59	53
	16	59	70	59	9	71	59	2	80	67
	17	74	70	58	19	73	61	11	63	55
	18	78	69	58	8	68	59	4	66	57
	19	92	70	58	23	74	63	2	61	55
	20	62	69	58	10	70	61	3	69	57
	21	53	71	59	6	75	61	10	68	55
Daily Average		**49**	**69**	**58**	**16**	**72**	**60**	**5**	**66**	**57**

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
Lmax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.

Community Noise Equivalent Level (CNEL)



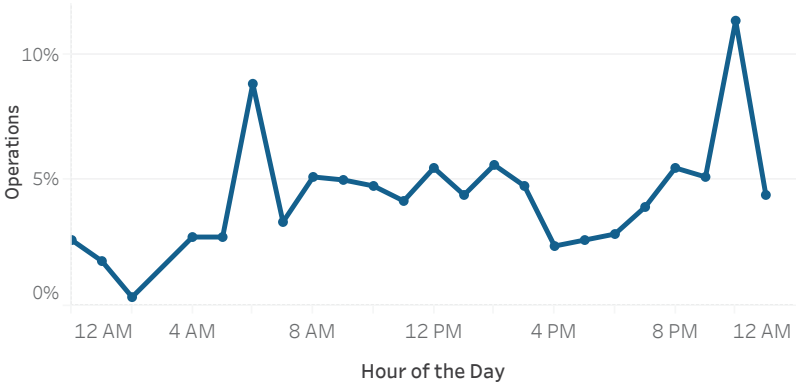
Sound Exposure Level (SEL) Comparison



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	424	51%	70	60	80	60	54	70	18	5	59
Evening	122	15%	69	61	77	59	55	68	16	5	40
Night	292	35%	68	56	78	56	50	67	24	5	60

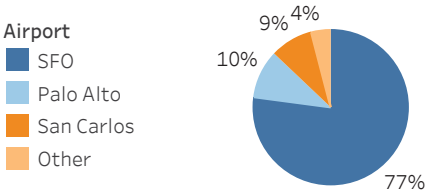
SFO Noise Events by Hour of the Day



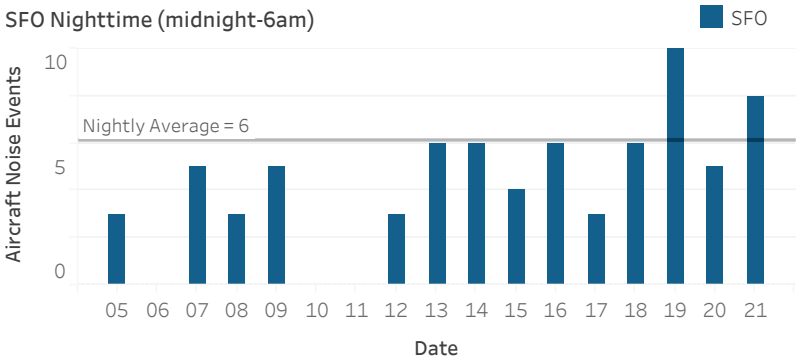
SFO Arrivals Altitude

4,000ft	5,000ft	6,000ft	>7,000ft
15%	41%	30%	13%

Only aircraft that registered a noise event on the monitor are considered.



SFO Nighttime (midnight-6am)



Operation Type

Arrivals	Departures
82%	18%

Aircraft Type

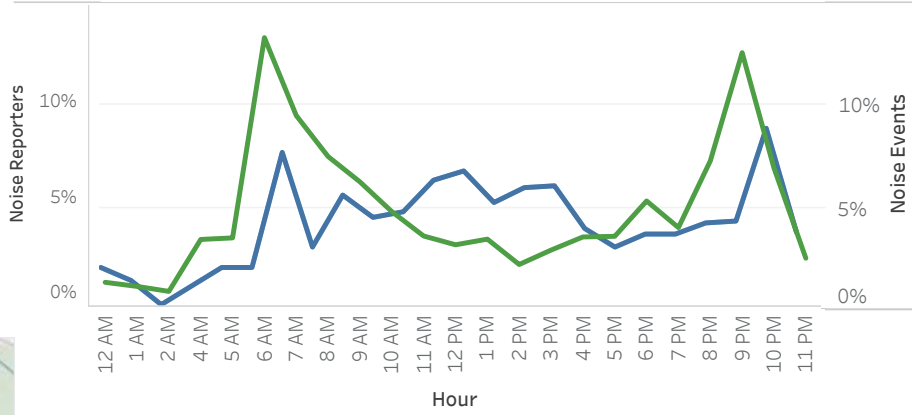
Noise Reporters

		Noise Reporters	Noise Reports
May	5	15	277
	6	23	306
	7	20	276
	8	21	309
	9	27	484
	10	18	264
	11	19	323
	12	19	343
	13	22	399
	14	23	394
	15	20	349
	16	20	326
	17	26	417
	18	21	376
	19	22	465
	20	18	400
	21	25	386
Total		37	6,094

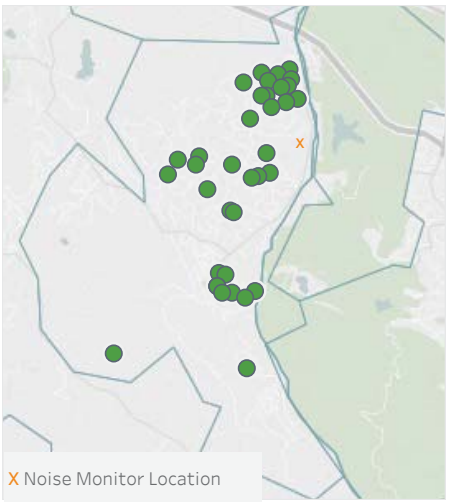
31%

of overflights registered a noise event (189 avg daily overflights of which 58 created a noise event)

Noise Reporters vs Aircraft Noise Events



Noise Reporters Location



Noise Monitor on Location

Dave Ong (AIR)

From: Dave Ong (AIR)
Sent: Monday, July 23, 2018 9:51 AM
To: 'c.shaw@woodsidetown.org'
Cc: 'James Castaneda'; Bert Ganoung (AIR)
Subject: 2Q 2018 Aircraft Noise Monitoring Results for Woodside VOR
Attachments: 2Q 2018 Woodside Noise Monitoring Report.pdf

Dear Honorable Chris Shaw,

Please find attached aircraft noise monitoring results for Second Quarter 2018, for noise measurements collected in the Town of Woodside. Please do not hesitate to call Nastasja von Conta, a Senior Noise Abatement Specialist with our office or me at (650) 821-5100 if you have any questions about the report or would like to discuss this information.

Thank you,

David

David Ong
Noise Systems Manager | Planning, Design & Construction
San Francisco International Airport | P.O. Box 8097 | San Francisco, CA 94128
Tel 650-821-5100 | flysfo.com

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MEMORANDUM

TO: WOODSIDE COMMUNITY

FROM: SAN FRANCISCO INTERNATIONAL AIRPORT AIRCRAFT NOISE ABATEMENT OFFICE

SUBJECT: 2Q 2018 WOODSIDE NOISE MONITORING REPORT

DATE: JULY 20, 2018

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office (ANAO) conducts aircraft noise monitoring in the Town of Woodside to determine noise levels within the community from aircraft operations at SFO. The monitoring occurs every quarter for a 14-day data collection period. This quarter's measurement period was from May 5, 2018 to May 21, 2018. The monitoring is made possible with the assistance of the Federal Aviation Administration (FAA) San Jose Technical Operations team. They continue to provide support and participate in our efforts to collect noise data by allowing us access to their facility to monitor aircraft noise.

The overall average daily noise level from all aircraft was 45dBA CNEL. The Community daily noise level was 48dBA CNEL. Non-aircraft noise sources mainly included strong winds and rustling leaves from nearby trees. Noise from all aircraft over this location increased the total average daily noise level by 1.5dBA.

The Town of Woodside is a quiet suburban community with ambient noise levels of 45dBA. On an average day of this study, Woodside had 188 overflights out of which 84 exceeded the noise monitor thresholds and recorded a noise event. The thresholds were 52dBA during the daytime and 50dBA in the nighttime. Aircraft destined to SFO typically overfly Woodside during high traffic conditions or inclement weather days with aircraft vectoring. Also known as delay vectoring, it is when an FAA Air Traffic Controller instructs the pilot to fly specific headings. These headings are not the most direct path to the runways. Reasons for aircraft vectoring may include adjusting the arrival sequence in order to maintain safe separation between all aircraft, maximizing use of available airspace, achieving an expeditious flow of aircraft traffic, avoiding areas of known hazardous weather or known severe turbulence, and maneuvering an aircraft into a suitable position to accommodate a visual approach and landing.

As flights to SFO cross over the peninsula, they represent 70 percent of all aircraft noise events over Woodside and are typically above 6,000 feet. The remaining 30 percent of aircraft were attributed to general aviation traffic using San Carlos Airport, San Jose International Airport, and Oakland International Airport. An average sound exposure level (SEL) for a single noise event for all aircraft were recorded at 71dBA and maximum noise levels (LMax) at 61dBA. On average, there were seven SFO noise events from midnight to 6 am.

During the noise-monitoring period, SFO ANAO received noise reports from 9 individuals in Woodside. Majority of aircraft noise events occurred between the hours of 2pm and 8pm. The Town of Woodside is a quiet suburban community with ambient noise in the quiet 40-45dBA range; any aircraft noise level above the background may become a nuisance for the residents.

dBA- stands for A-weighted decibel. Decibel unit measures the loudness of a sound and is computed as the signal to noise ratio. A-weighting is used to adjust for a frequency range of human hearing. An increase of ten decibels is perceived by the human ear as a doubling of noise.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
LMax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established the acceptable level of aircraft noise of 65dBA CNEL.

Post Office Box 8097 San Francisco California 94128 Tel 650.821.5100 Fax 650.821.5112

Short Term Noise Monitoring Report

Woodside 2Q 2018

May 5-21

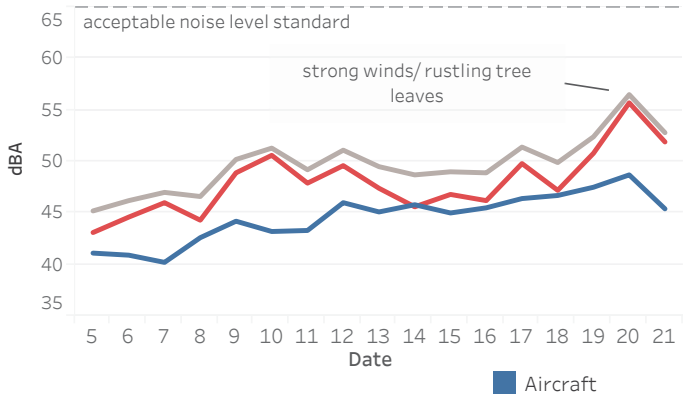
Aircraft CNEL: 45dBA
Community CNEL: 48dBA
Total CNEL: 51dBA
SEL: 71dBA
LMax: 61dBA
Ambient Noise: 45dBA
Noise Monitor Treshold: 52dBA (Day), 50dBA(Night)
SFO Aircraft Noise Events: 72 per day
SFO Operations Flow: West Flow
Cause of Aircraft Overflights: SFO Oceanic Arrival Route, delayed vectoring, nighttime delays, general aviation-small aircraft

Daily Noise Event Averages

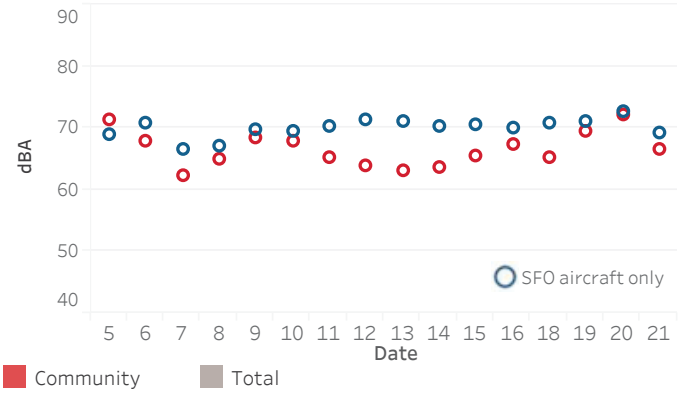
	Date	SFO Noise Events	SFO Avg. SEL (dBA)	SFO Avg. LMax (dB)	Non-SFO Noise Events	Non-SFO Avg. SEL (dBA)	Non-SFO Avg. LMax (dB)	Community Noise Events	Community Avg. SEL (dBA)	Community Avg. LMax (dB)
May	5	43	69	56	22	71	60	8	71	53
	6	27	71	58	17	71	60	18	68	57
	7	34	67	55	19	70	59	22	62	54
	8	39	67	56	33	71	59	4	65	55
	9	75	70	57	24	74	60	155	68	56
	10	40	70	57	54	70	57	309	68	55
	11	40	70	58	32	71	58	80	65	55
	12	60	71	58	45	71	60	95	64	55
	13	69	71	58	44	70	58	37	63	55
	14	76	70	58	40	70	58	19	64	54
	15	78	71	58	39	70	57	145	66	55
	16	84	70	59	28	73	61	5	67	56
	17	115	71	58	45	70	58	287	69	55
	18	98	71	58	39	72	60	71	65	54
	19	120	71	58	31	71	58	365	70	56
	20	158	73	59	53	73	59	772	72	57
	21	74	69	57	50	71	59	294	67	54
Daily Average		**72**	**70**	**58**	**36**	**71**	**59**	**158**	**67**	**56**

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
Lmax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.

Community Noise Equivalent Level (CNEL)



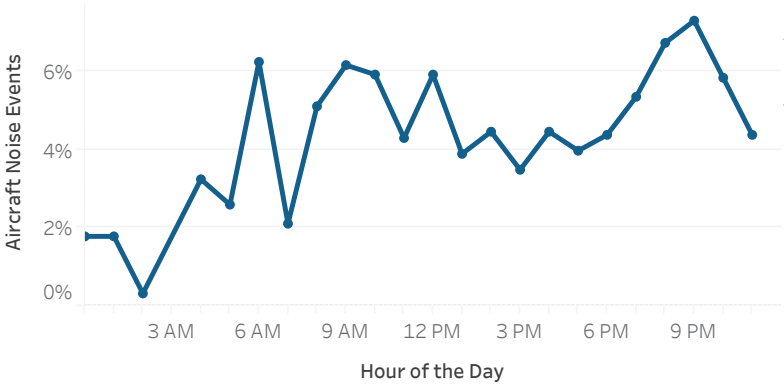
Sound Exposure Level (SEL) Comparison



SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	668	54%	72	56	84	59	52	79	27	2	60
Evening	239	19%	70	53	78	59	52	70	24	1	60
Night	323	26%	68	55	78	56	49	70	23	5	60

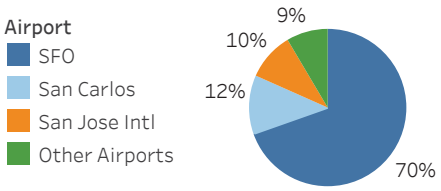
SFO Noise Events by Hour of the Day



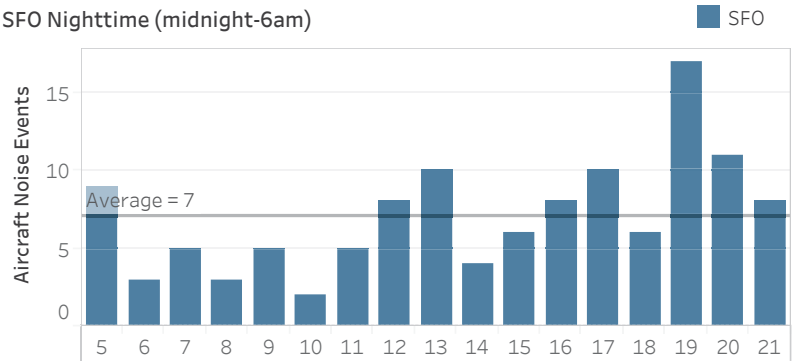
SFO Aircraft Altitude

	≤6000ft	≥6000ft	≥7000ft	≥8,000ft	≥9,000ft
Arrivals	24%	22%	22%	10%	
Departures	7%				5%

Only aircraft that registered a noise event on the monitor are considered.



SFO Nighttime (midnight-6am)



Aircraft Type

PC12	7%
Boeing 737 -700,800,900	33%
Airbus A320-A319,A320, A321	14%
Other 97 Aircraft Types	46%

Noise Reporters

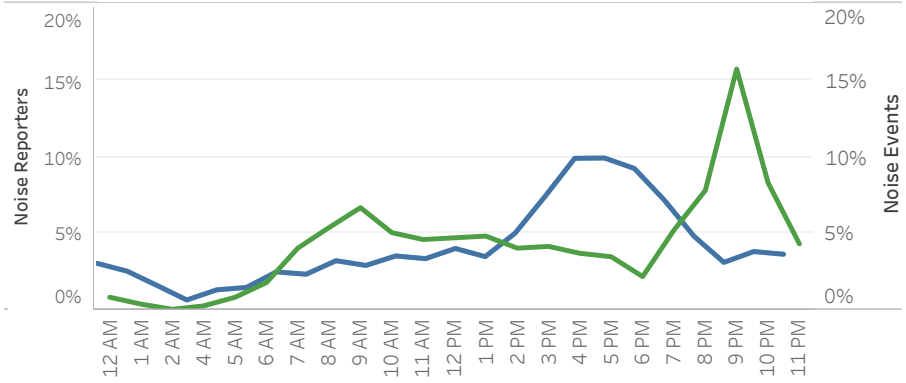
	Noise Reporters	Noise Reports
5	6	60
6	6	81
7	4	39
8	4	88
9	4	66
10	7	60
11	7	103
12	7	120
13	7	90
14	8	120
15	7	94
16	7	92
17	7	122
18	7	108
19	7	135
20	7	165
21	5	100
Total	9	1,643

May

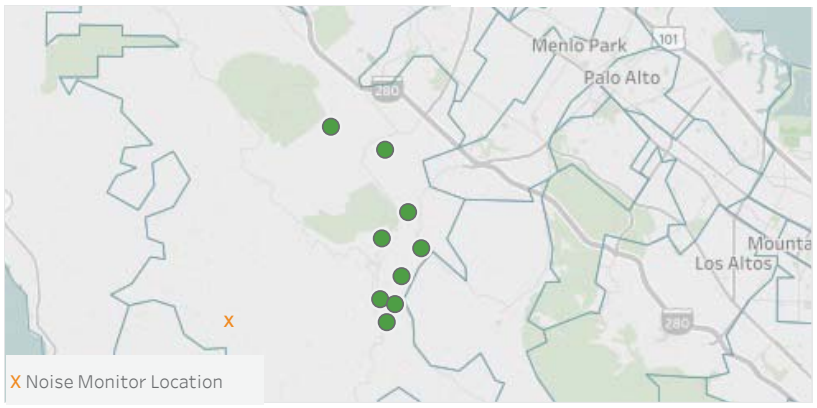
45%

of overflights registered a noise event.
(188 avg daily overflights of which 84 created a noise event)

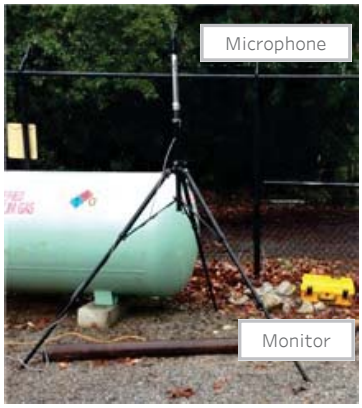
Noise Reporters vs Noise Events



Noise Reporters Location



Noise Monitor on Location



Dave Ong (AIR)

From: Dave Ong (AIR)
Sent: Monday, July 23, 2018 10:14 AM
To: Terry O'Connell
Cc: Holstine, Clay; Bert Ganoung (AIR); 'James Castaneda'
Subject: 2Q 2018 Aircraft Noise Monitoring Results for Brisbane
Attachments: Brisbane 2Q2018 FINAL.pdf

Dear Honorable Terry O'Connell,

Please find attached aircraft noise monitoring results for Second Quarter 2018, for noise measurements collected in the City of Brisbane. Past results are also available online at https://www.flysfo.com/community/noise-abatement/reports-and-resources/aircraft-noise-monitoring-reports. Please do not hesitate to call Nastasja von Conta, a Senior Noise Abatement Specialist with our office or me at (650) 821-5100 if you have any questions about the report or would like to discuss this information.

Thank you,

David

David Ong
Noise Systems Manager | Planning, Design & Construction
San Francisco International Airport | P.O. Box 8097 | San Francisco, CA 94128
Tel 650-821-5100 | flysfo.com

Facebook | Twitter | YouTube | Instagram | LinkedIn

MEMORANDUM

TO: BRISBANE COMMUNITY

FROM: SAN FRANCISCO INTERNATIONAL AIRPORT AIRCRAFT NOISE ABATEMENT OFFICE

SUBJECT: 2Q 2018 BRISBANE NOISE MONITORING REPORT

DATE: JUNE 1, 2018

The San Francisco International Airport (SFO) Aircraft Noise Abatement Office (ANAO) conducts aircraft noise monitoring in the City of Brisbane, California to determine noise levels within the community from aircraft operations at SFO. Noise monitoring occurs every quarter for a 14-day data collection period. This quarter's measurement period was from April 18, 2018 to May 2, 2018. The monitoring is made possible with the assistance of the City Manager, resulting in two temporary sites in Brisbane. The first site was located at Mission Blue Center (Site 966) and the second was located above the Brisbane Community Garden (Site 997) on Solano Street.

The overall average daily noise level from all Aircraft at Site 966 was 52 A-weighted decibels (dBA) Community Noise Equivalent Level (CNEL), and at Site 997 the Aircraft, CNEL was 53dBA. The Community daily noise level at Site 966 was 54dBA CNEL and at Site 997, it was 63dBA. Noise from all aircraft increased the total average daily noise level by 1.6dBA at Site 966 and 1dBA at Site 997. In comparison, the human ear can detect a 3dB sound change and a 6dB increase may result in higher annoyance levels. The results of this monitoring period are consistent with previous quarters.

Brisbane is located approximately 4 miles from the SFO Airport, and aircraft noise events sources include primarily SFO departures utilizing the SSTIK and OFFSHORE departure procedures. During the monitoring period, there were no runway construction projects that altered the departure patterns. Aircraft departing SFO from Runways 01L/R for destinations to the west, south, and southeast typically overfly Brisbane. Occasionally when the winds on the airfield are stronger from the west, the TRUKN or NIITE departures will be utilized for destinations to the northeast and east. Departing aircraft from Runways 28L/R will initiate a right turn once the aircraft reaches the minimum altitude of 520 feet, consequently, this may have some aircraft fly over Brisbane. SFO traffic arriving from the north on the BDEGA, STINS or GOLDEN GATE arrival on a typical day (West Plan) overfly Brisbane at 10,000 feet or higher. The ambient levels within Brisbane during the monitoring period were as follows: Site 966 - 50dBA and Site 997 - 54dBA. Non-aircraft noise sources included residential and vehicular traffic.

Brisbane experienced about 259 daily overflights of which about 32% exceeded the noise monitor threshold and recorded a noise event. The threshold was set at 65dBA (Site 966) and 62dBA (Site 997) for the monitoring period. During the noise-monitoring period, SFO ANAO received noise reports from 28 individuals in Brisbane. Majority of aircraft noise events at both sites occurred between 6 am and 10 pm. On average, there were three nighttime noise events between hours of midnight and 6 am.

In view of the fact that the monitoring locations in Brisbane are located in an urban area with ambient noise in the low 50 dBA, any aircraft noise above this threshold may become a nuisance for the residents. Additionally, the frequency of flights due to the close proximity of the Airport may increase annoyance levels.

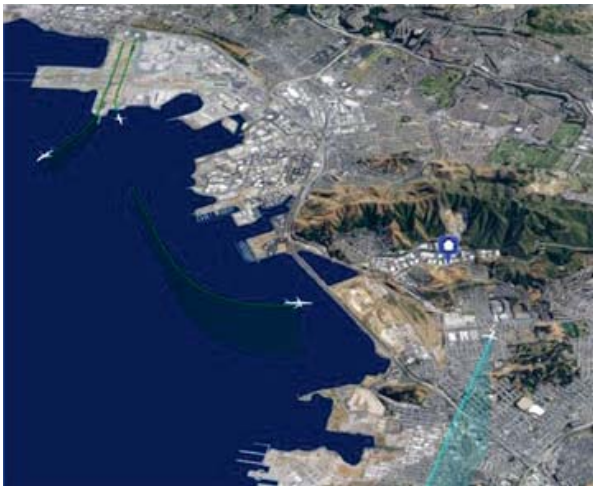
dBA- stands for A-weighted decibel. Decibel unit measures the loudness of a sound and is computed as the signal to noise ratio. A-weighting is used to adjust for frequency range of human hearing. An increase of ten decibels is perceived by human ear as a doubling of noise.
CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.
West Plan – Standard operations at the Bay Area International Airports. Aircraft arrive to the west at all three airports. At San Jose and Oakland Airports, aircraft depart to the west. While at San Francisco Airport, aircraft depart either to the north or to the west depending on wind conditions on the airfield.
TRUKN and NIITE – RNAV departure procedures off Runways 28L/R at SFO, has aircraft climb heading of 284° to 520 feet then right turn to initial fix. These procedures replaced the legacy departures procedures SHORELINE and QUIET, respectively.

City of Brisbane - Site 966
Short Term Noise Monitoring Report

Mission Blue Center 2Q 2018

April 18 - May 2

Aircraft CNEL: 52dBA
Community CNEL: 54dBA
Total CNEL: 56dBA
Aircraft SEL: 78dBA
Aircraft LMax: 68dBA
Ambient Noise: 50dBA
Noise Monitor Treshold: 65dBA
SFO Aircraft Noise Events: 99 per day
SFO Operations Flow: West Flow (all days)
Cause of Aircraft Overflights : SFO SSTIK Departures from Runway 01L/R making the left turn over Brisbane and departures making a right turn from Runways 28L/R performing the TRUKN / NIITE Departure

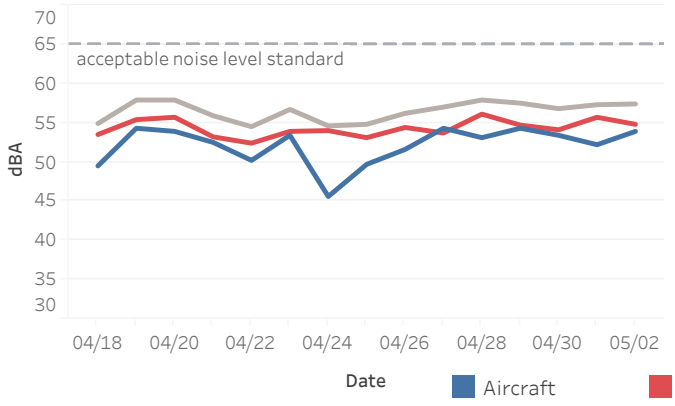


Daily Noise Event Averages

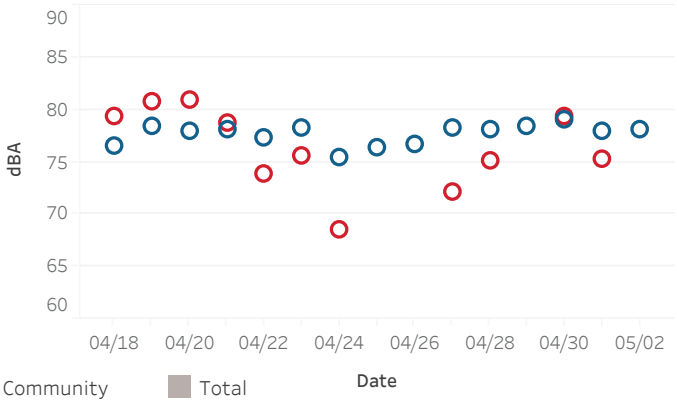
	Date	SFO Noise Events	SFO Avg. SEL (dBA)	SFO Avg. LMax (dB)	Non-SFO Noise Events	Non-SFO Avg. SEL (dBA)	Non-SFO Avg. LMax (dB)	Community Noise Events	Community Avg. SEL (dBA)	Community Avg. LMax (dB)
Apr	18	82	76	67	1	74	68	15	79	67
	19	122	78	68	14	75	65	3	81	72
	20	124	78	67	5	76	66	5	81	71
	21	105	78	67	2	73	67	2	79	73
	22	50	77	67	1	72	63	3	74	67
	23	89	78	67	2	74	65	3	76	68
	24	36	75	66	1	72	65	1	69	63
	25	69	76	67	2	68	62			
	26	80	77	67						
	27	124	78	68	4	72	64	1	72	66
	28	116	78	67				21	75	66
	29	140	78	68	13	72	64			
	30	108	79	68	9	76	65	7	79	67
May	1	122	78	67	8	72	65	1	75	70
	2	121	78	67	3	72	65			
Daily Average		99	78	67	5	73	65	6	76	68

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
Lmax - The maximum noise level is a measurement of the peak level of a noise event.
CNEL- This metric is used to assess and regulate aircraft noise exposure in communities surrounding the airport. California Title 21 Noise Regulations established acceptable level of aircraft noise of 65dBA CNEL.

Community Noise Exposure Level (CNEL)



Sound Exposure Level (SEL) Comparison

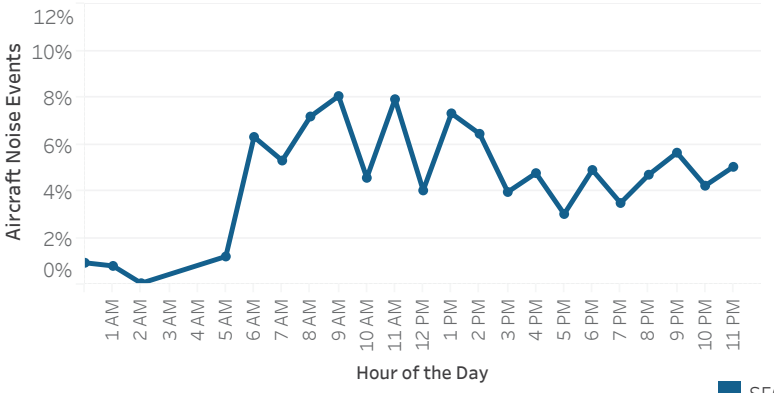


Aircraft Community Total

SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	1,005	68%	78	67	86	68	61	78	18	5	60
Evening	206	14%	77	68	85	67	61	76	17	5	36
Night	277	19%	78	68	84	67	62	74	18	5	38

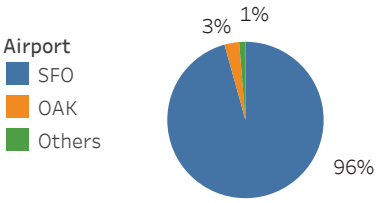
SFO Noise Events by Hour of the Day



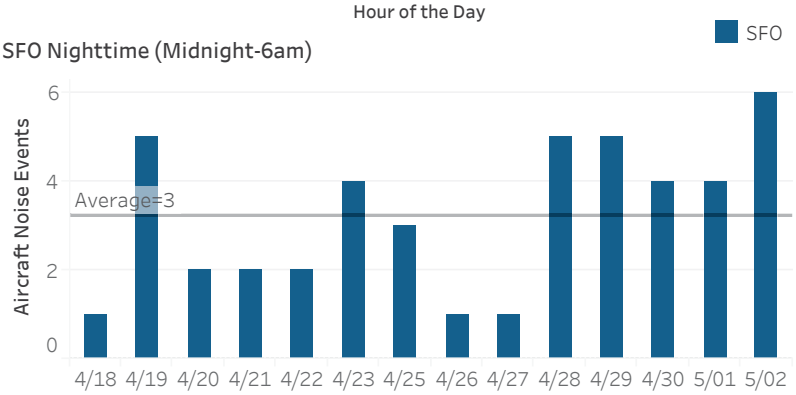
SFO Departures Altitude

≤3000ft	3000ft	3500ft	4000ft	≥4500ft
4%	8%	20%	28%	39%

Only aircraft that registered a noise event on the monitor are considered.

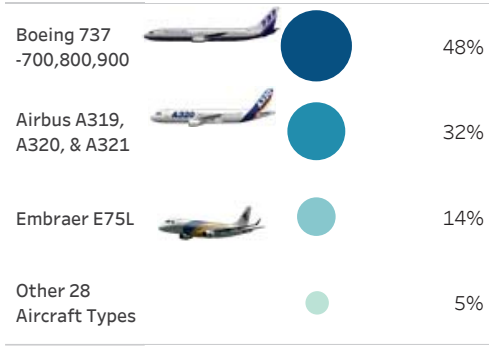


SFO Nighttime (Midnight-6am)



Arrivals	Departures
1%	99%

Aircraft Type



Noise Reporters

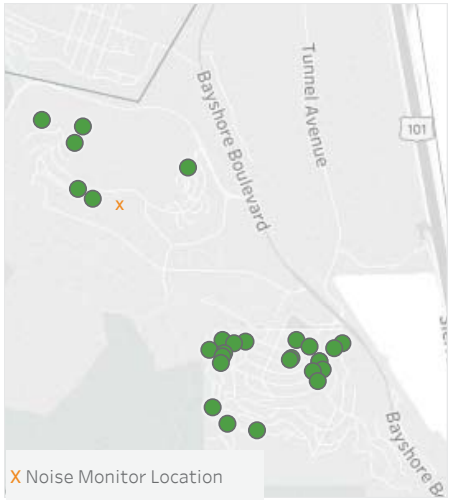
		Noise Reporters	Noise Reports
Apr	17	13	102
	18	12	104
	19	11	115
	20	12	121
	21	11	66
	22	12	102
	23	11	91
	24	4	24
	25	7	79
	26	8	75
	27	11	146
	28	17	133
	29	14	284
	30	14	127
May	1	10	58
	2	15	73
Total		28	1,700

35%

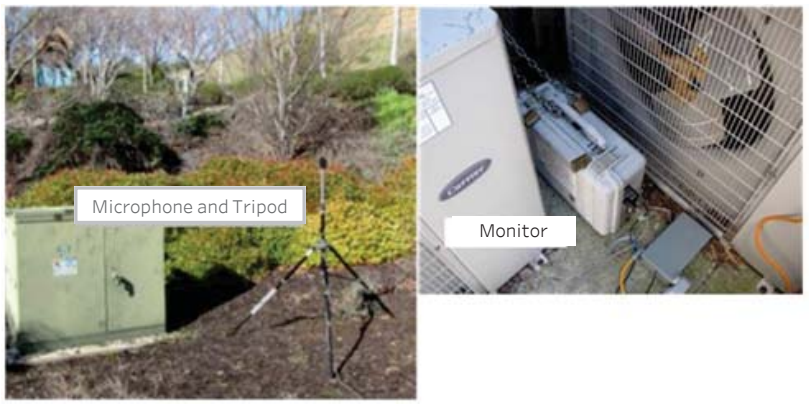
of overflights registered a noise event. (285 avg daily overflights of which 99 created a noise event)

Noise Reporters vs Aircraft Noise Events

Noise Reporters Location



Noise Monitor on Location



City of Brisbane - Site 997
Short Term Noise Monitoring Report

Solano Street 2Q 2018

April 18 - May 2

Aircraft CNEL: 53dBA
Community CNEL: 63dBA
Total CNEL: 63dBA
Aircraft SEL: 79dBA
Aircraft LMax: 70dBA
Ambient Noise: 54dBA
Noise Monitor Treshold: 62dBA
SFO Aircraft Noise Events: 71 per day
SFO Operations Flow: West Flow (all days)
Cause of Aircraft Overflights : SFO SSTIK Departures from Runway 01L/R making the left turn over Brisbane and departures making a right turn from Runways 28L/R performing the TRUKN / NIITE Departure

Daily Noise Event Averages

	Date	SFO Noise Events	SFO Avg. SEL (dBA)	SFO Avg. LMax (dB)	Non-SFO Noise Events	Non-SFO Avg. SEL (dBA)	Non-SFO Avg. LMax (dB)	Community Noise Events	Community Avg. SEL (dBA)	Community Avg. LMax (dB)
Apr	18	64	79	68				7	79	71
	19	97	80	69	12	76	67	8	79	70
	20	88	79	68	2	77	65	26	79	68
	21	73	79	68	2	73	64	13	82	69
	22	41	79	68	1	75	67	7	80	70
	23	59	80	68	2	74	65	4	81	71
	24	25	77	67	5	80	67	18	82	69
	25	45	78	69	1	77	67	20	81	70
	26	60	79	69	1	79	72	9	79	72
	27	71	80	69	3	78	68	4	79	73
	28	61	80	69				2	77	69
	29	112	79	68	4	72	64	2	73	66
	30	85	80	69	3	73	64	15	81	69
May	1	102	80	69	5	76	64	27	81	69
	2	77	79	68	1	72	65	17	79	72
Daily Average		**71**	**79**	**68**	**3**	**75**	**66**	**12**	**80**	**70**

SFO Events are: Single SFO Aircraft, Multiple SFO Aircraft, Simultaneous SFO and Non-SFO Aircraft, and Simultaneous Community and SFO Aircraft.
SEL - Sound Exposure Level of a noise event is measured over time between the initial and final points when the noise level exceeds a predetermined threshold and its energy is compressed into one second.
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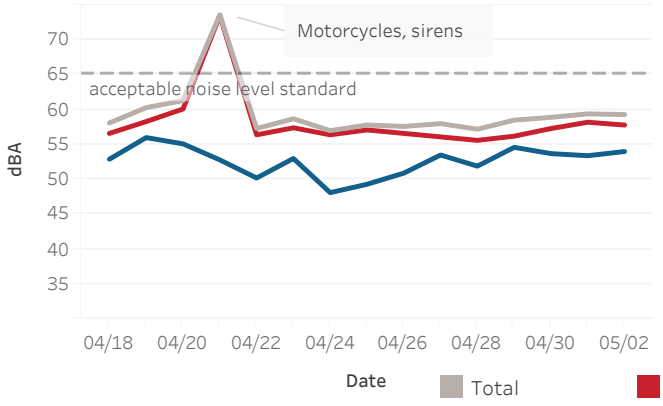
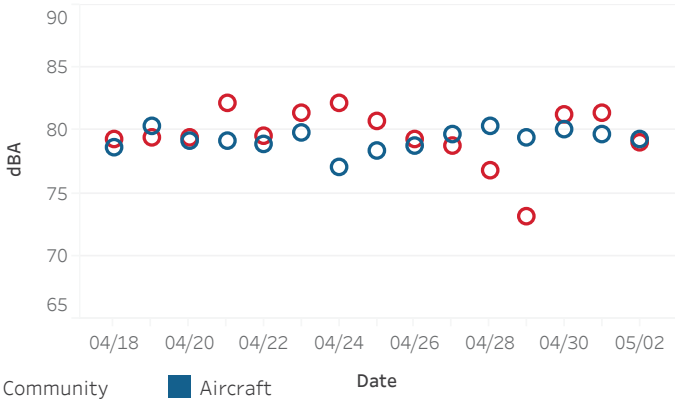
Community Noise Exposure Level (CNEL)



Sound Exposure Level (SEL) Comparison

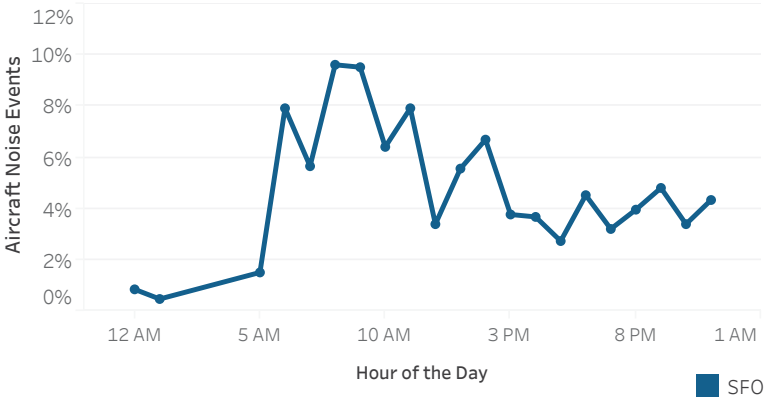


Total Community Aircraft

SFO Aircraft Noise Events by Day (7am-7pm), Evening (7pm-10pm) and Night (10pm-7am)

	Noise Events	SFO Noise Events (%)	Avg. SEL (dBA)	Min. SEL (dBA)	Max. SEL (dBA)	Avg. LMax (dB)	Min. LMax (dBA)	Max. LMax (dBA)	Avg. Duration (sec)	Min. Duration (sec)	Max. Duration (sec)
Day	737	70%	80	70	88	69	62	83	22	8	60
Evening	127	12%	79	71	86	68	63	77	21	8	42
Night	196	18%	79	71	85	68	62	78	22	8	49

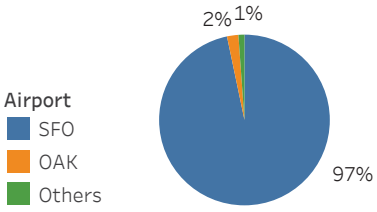
SFO Noise Events by Hour of the Day



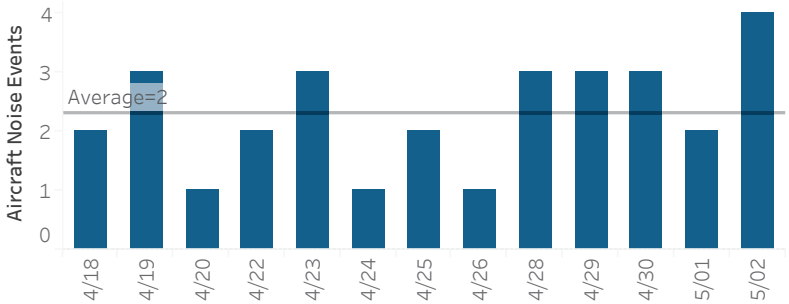
SFO Departures Altitude

≤3000ft	3000ft	3500ft	4000ft	≥4500ft
11%	17%	31%	23%	17%

Only aircraft that registered a noise event on the monitor are considered.



SFO Nighttime (Midnight-6am)



Arrivals	Departures
0%	100%

Aircraft Type

Boeing 737 -700,800,900	52%
Airbus A319, A320, & A321	28%
Embraer E170	13%
Other 27 Aircraft Types	7%

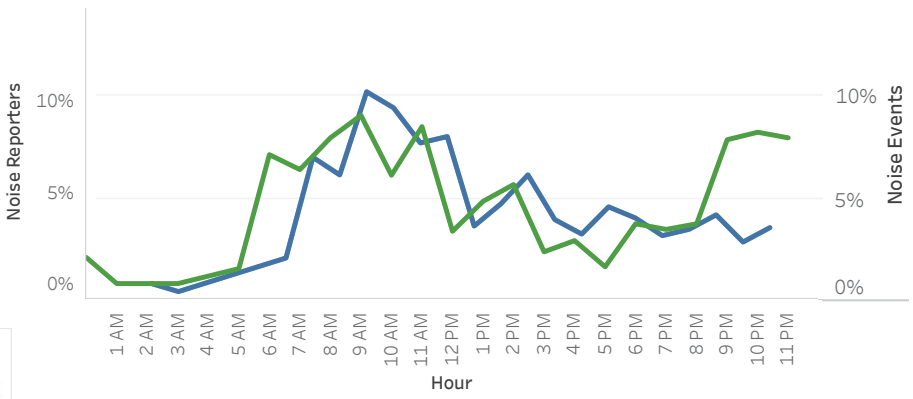
Noise Reporters

		Noise Reporters	Noise Reports
Apr	18	11	63
	19	10	77
	20	10	75
	21	9	39
	22	11	85
	23	10	53
	24	3	8
	25	6	21
	26	7	40
	27	10	87
	28	16	102
	29	13	253
	30	13	83
May	2	1	1
Total		26	987

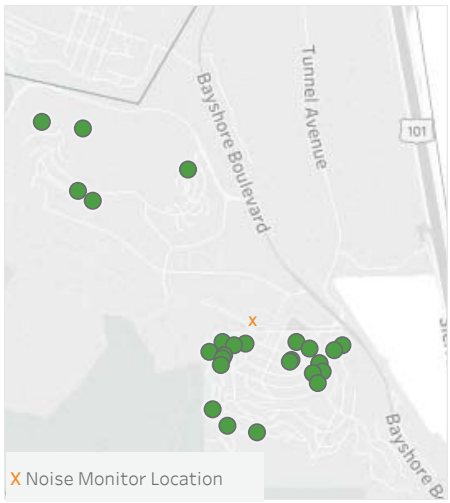
28%

of overflights registered a noise event. (233 avg daily overflights of which 65 created a noise event)

Noise Reporters vs Aircraft Noise Events



Noise Reporters Location



Noise Monitor on Location