



CITY OF  
**PALO  
ALTO**

**CITY OF PALO ALTO  
CITY COUNCIL  
Special Meeting  
Monday, June 12, 2023  
Council Chambers & Hybrid  
5:30 PM**

<b>Agenda Item</b>
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15. Palo Alto Airport 2022 Annual Airplane Noise Report



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## City Council Staff Report

**From: City Manager**

**Report Type: INFORMATION REPORTS**

**Lead Department: Public Works**

**Meeting Date: June 12, 2023**

Report #:2304-1385

### **TITLE**

Palo Alto Airport 2022 Annual Airplane Noise Report

### **RECOMMENDATION**

This is an informational report and no Council action is required.

### **EXECUTIVE SUMMARY**

The purpose of the Palo Alto Airport Annual Aircraft Noise Report is to identify noise trends in the surrounding areas and determine compliance with established voluntary noise abatement procedures. The 2022 Annual Aircraft Noise Report (Attachment A) was prepared by the Public Works Department's Airport Division staff based on the aircraft noise complaints received during the 2022 calendar year.

### **BACKGROUND**

The Palo Alto Airport (PAO) receives noise complaints via e-mail at [pao@cityofpaloalto.org](mailto:pao@cityofpaloalto.org) and a designated hotline at (650) 329-2405. Staff reviews and responds timely to all complaints, ascertaining from complainants their contact information and the date, time, and description of the offending occurrence. Staff reviews and compiles the data to determine flying activity trends. Staff contacts pilots when violations are observed or reported, advising them of established procedures, requesting compliance, and reminding them about the City's strong commitment to limiting community impacts from airplane noise.

### **ANALYSIS**

This report is generated on an annual basis and posted to the Airport's webpage: [www.cityofpaloalto.org/PAO1](http://www.cityofpaloalto.org/PAO1). A copy is attached to this Informational Report as Attachment A.

Airport staff is currently reviewing newly available programs and hardware for monitoring and

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<sup>1</sup> [www.cityofpaloalto.org/PAO](http://www.cityofpaloalto.org/PAO)

tracking operations at the airport, potentially improving the effectiveness of noise monitoring in the future.

### **FISCAL/RESOURCE IMPACT**

There are no fiscal impacts associated with this informational report.

### **STAKEHOLDER ENGAGEMENT**

The Airport has continuously reached out to stakeholders since the transfer of airport operations and will continue to collaborate with stakeholders regarding noise issues and complaints. Airport staff meets monthly with the Palo Alto Airport Association that represents a broad range of airport users including flight schools, charter flight operators, corporate pilots, and private users.

Airport staff attends educational and information conferences including the University of California at Davis Noise Symposium Conference to stay informed on latest industry trends and innovations pertaining to noise and emissions at airports.

As part of the Long-Range Facilities and Sustainability Plan (LRFSP) currently underway, there will be opportunities for public engagement and discussion of both noise and environmental issues at the airport. More information about the LRFSP can be found on the airport website.

### **ENVIRONMENTAL REVIEW**

This is not a project under Section 21065 for purposes of the California Environmental Quality Act (CEQA).

### **ATTACHMENTS**

Attachment A: 2022 PAO Annual Noise Report

### **APPROVED BY:**

Brad Eggleston, Director Public Works/City Engineer



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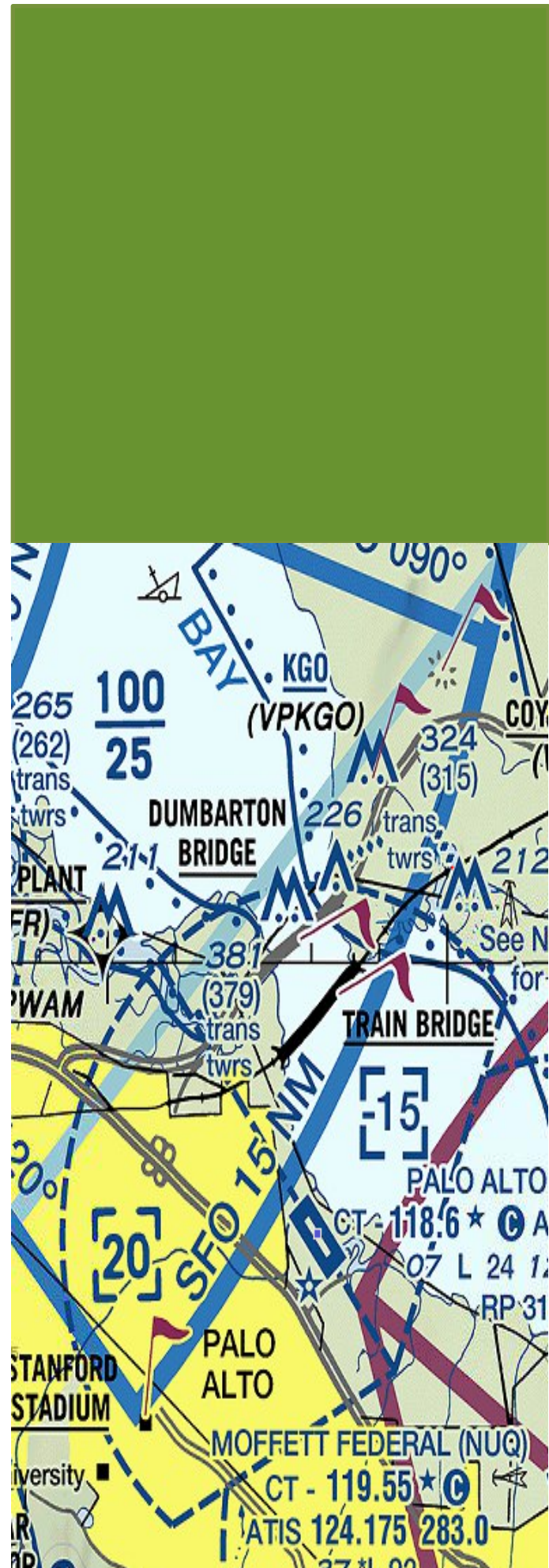
# PALO ALTO AIRPORT

PUBLIC WORKS DEPARTMENT

## 2022 ANNUAL NOISE REPORT

(January 2022 to  
December 2022)

**Vision:** Palo Alto Airport strives to balance the interests of pilots to fly with the interests of neighbors in a peaceful living environment. This document is a report of the noise complaints received by the airport in 2022. Airport staff uses this information to identify trends within Palo Alto and neighboring communities. These trends inform communications between airport staff and pilots on the issue of noise.



## **Introduction:**

The following is a report on noise-related operations and complaints received by Palo Alto Airport (PAO) in 2022. The Federal Aviation Administration (FAA) defines air travel routes and procedures, including defining separation distances between aircraft, determining hazards to aviation and all other safety criteria for aircraft, and is responsible for directing and enforcing the movement of aircraft in flight. Although organizations can petition the FAA regarding flight procedures, the FAA has the final say in what is safe and acceptable. The Airport Noise and Capacity Act (ANCA) of 1990 federally prohibits public-use airports from restricting airspace.

The FAA measures noise based on the Yearly Day and Night Average Sound Level (DNL) and the Community Noise Equivalent Level (CNEL). While both are essentially the same, airports in California use the CNEL method to measure noise. CNEL is a method of averaging single event aircraft noise into a weighted 24-hour average. The system adds penalties to all events occurring during the evening (7pm – 10pm) and the night (10pm – 7am). The Santa Clara County Airport Land Use Commission (SCC ALUC) performed a noise study for the Palo Alto Airport using the CNEL to determine the noise contours for 55, 60, 65, and 70 decibels. The contour map is included as **Attachment A**.

Regarding safety and altitude, the FAA has in place Federal Aviation Regulations (FARs) that establish Minimum Safe Altitudes (MSAs) for aircraft. For fixed wing aircraft, the MSA is 1,000 feet above ground when over congested areas and 500 feet when not over congested areas. These MSAs apply to all fixed wing aircraft except when necessary for landing and takeoff operations. Helicopters are exempt from these altitude restrictions due to the nature of their flight. These minimum altitudes are enforced by the FAA Flight Standards District Office in San Jose, not by Palo Alto Airport. Palo Alto Airport cannot tell pilots when or where to fly; the Airport, however, does have voluntary noise abatement procedures that Palo Alto Airport recommends that pilots follow. (See the Noise Abatement Procedures section below.)

The Airport receives noise complaints via email at [pao@cityofpaloalto.org](mailto:pao@cityofpaloalto.org) and a noise complaint hotline 650-329-2405. Airport staff review and timely respond to all complaints, ascertaining information from complainants including contact information, date, time, and description of the occurrence. Various flight trackers can be used to help identify the aircraft involved and verify if FAA regulations or Palo Alto Airport procedures were violated. The Airport staff reviews and compiles all data to determine trends with flying activities.

## Purpose:

The purpose of the Palo Alto Airport Annual Noise Report is to identify noise trends in the surrounding areas and determine compliance with established voluntary noise abatement procedures.

## Airspace:

The Palo Alto Airport airspace is unique. The congested Bay Area airspace is dominated by SFO Class Bravo airspace, which encompasses a 30 nautical mile radius around SFO. Underneath the Class Bravo airspace lays the Class Charlie airspace of Oakland and San Jose international Airports. Finally, Moffett Airfield lies approximately 4 nautical miles to the southeast of Palo Alto Airport.



Palo Alto Airport Sectional Map  
Palo Alto Airport in Green  
PAO Airspace highlighted in Red

Source: <http://vfrmap.com/?type=vfrc&lat=37.461&lon=-122.115&zoom=10>

As a result, Palo Alto Airport airspace ends only 1.5 nautical miles southeast of the Palo Alto Airport's single runway (Runway 13/31). To land at Palo Alto Airport, aircraft must turn before entering Moffett's airspace, resulting in aircraft having to space themselves in traffic patterns over the peninsula when take-off/landing volumes peak. The FAA's Air Traffic Control Tower (ATCT) at Palo Alto Airport has a letter of agreement with Moffett's ATCT providing Palo Alto Airport aircraft with extensions into Moffett airspace when Moffett airfield is not in use. The additional airspace is a useful mitigation tool during busy times.

Further restrictions in Palo Alto Airport airspace come from San Jose Class C airspace, starting at 1,500 feet Mean Sea Level, just southeast of Palo Alto Airport and SFO Class B airspace, starting at 2,500 feet Mean Sea Level, just northeast of the Palo Alto Airport. Both are identified on the Palo Alto Airport Sectional Map: San Jose Class C is shown with thick magenta lines and SFO Class B is shown with thick blue lines. These restrictions play a vital role in aircraft departures, in turn influencing noise abatement procedures for the Palo Alto Airport.

## Noise Abatement Procedures:

Noise abatement procedures are voluntary procedures that the Airport asks pilots to follow. The Airport is prohibited from restricting airspace. Palo Alto Airport staff will speak with individual pilots and educate them about the voluntary noise abatement procedures. The Palo Alto Airport cannot levy fines on pilots that violate the voluntary noise procedures. For illustrated noise abatement procedures reference Palo Alto Airport Pilots Handout included as **Attachment B**.

The noise abatement procedures depend on the runway that is in use at the time. Depending on weather patterns, aircraft can depart on Runway 31 to the northwest or Runway 13 to the southeast. Approximately 90% of the time, weather conditions require the use of Runway 31. Pilots are asked to not make a left crosswind departure from Runway 31, but instead make a "Left Dumbarton Departure" (fly to the Dumbarton Auto Bridge before making a left turn and flying over East Palo Alto) or a right 270 degree turn before departing to the south or west. When aircraft are using Runway 13, pilots are asked to make

a left 270-degree turn. In addition to these procedures, pilots are asked to climb to 1,500 feet or above ground before crossing Highway 101 and reduce power when safely able.

For arrivals, it is standard practice and necessary for pilots to descend to pattern altitude before entering the traffic pattern around PAO, sometimes requiring aircraft to descend below the 1,500 feet minimum of departing aircraft over Palo Alto. As these aircraft are descending to land the engines are generally powered back and quieter than ascending aircraft.

Airport staff continuously engages with tenants and pilots about the voluntary noise abatement procedures, always noting that safety always supersedes noise.

**Findings:**

The Palo Alto Airport remains one of the busiest general aviation Airports in the Bay Area with an average of 155,803 operations per year since 2013. Airport Operations for the calendar year of 2022 increased 3% compared to the calendar year 2021. An operation is defined as either a takeoff or a landing and a touch-and-go procedure will account for two operations.

**Table 1. Airport Operations for Palo Alto Airport**

Year	Air Taxi	Military	Total	Year	Air Taxi	Military	Total
2003	17	1	212981	2013	1628	14	172653
2004	619	12	199453	2014	1518	22	179900
2005	2397	28	184821	2015	1082	118	172132
2006	1932	17	176570	2016	708	52	153238
2007	1440	318	181883	2017	872	146	148769
2008	1697	280	174332	2018	760	133	146181
2009	1650	301	155556	2019	920	63	150266
2010	2077	6	158217	2020	620	45	112712
2011	1572	8	170389	2021	566	23	158568
2012	1700	16	176564	2022	636	37	163620
AVG	1510.1	98.7	179076.6	AVG	931	65.3	155803.9

During the 2022 Calendar year, the Airport logged 383 total noise complaints from 33 households. **Table 2** shows the number of complaints by quarter and includes the totals from 2021.

**Table 2. Complaints Received**

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total 2022	Total 2021
Complaints	30	197	108	48	383	253
Households	20	10	10	6	33	27

**Table 3** sorts the complaints logged into three sections. The first one is PAO which includes all complaints that involve aircraft that performed an operation at the Airport. The next section is General which includes complaints that did not include a specific aircraft or incident of noise. These complaints may or may not involve aircraft from PAO. The last section is Non-PAO, which include aircraft that are not based or did not operate at the Airport. These flights may include California Highway Patrol, Coast Guard, Air Taxicab, Pipe

Surveys, Stanford Life Flight, Angel Flights, and or banner towing operations. Also included in Table 3 are the totals for 2021.

**Table 3. Aircraft Association**

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total 2022	Total 2021
PAO	20	165	107	45	337	238
General	5	9	0	0	14	9
Non-PAO	5	23	1	3	32	6

**Table 4** below provides a detailed breakdown of the 383 complaints by City. Most complaints came from the City of Palo Alto, with 347 complaints logged from 13 household. One household in the City of Palo Alto provided 314 complaints as can be seen in Attachment C.

**Table 4. PAO Noise Complaints by City**

City	Quarter 1		Quarter 2		Quarter 3		Quarter 4		Total 2022		Total 2021	
	C	H	C	H	C	H	C	H	C	H	C	H
Atherton	0	0	0	0	0	0	0	0	0	0	1	1
East Palo Alto	5	4	0	0	1	1	0	0	6	5	12	3
Fremont	0	0	0	0	0	0	0	0	0	0	2	1
Los Altos	1	1	0	0	0	0	0	0	1	1	1	1
Los Gatos	0	0	0	0	0	0	0	0	0	0	171	1
Menlo Park	4	3	0	0	1	1	0	0	5	4	5	2
Mountain View	0	0	0	0	0	0	0	0	0	0	5	2
Newark	0	0	0	0	1	1	0	0	1	1	0	0
Palo Alto	13	8	185	5	102	4	47	5	347	13	39	8
Pescadero	5	2	12	5	2	2	0	0	19	5	1	1
Pleasanton	1	1	0	0	0	0	0	0	1	1	0	0
Portola Valley	0	0	0	0	0	0	0	0	0	0	2	1
San Jose	0	0	0	0	0	0	0	0	0	0	6	1
San Ramon	0	0	0	0	0	0	1	1	1	1	0	0
Santa Cruz	0	0	0	0	1	1	0	0	1	1	1	1
Santa Clara	0	0	0	0	0	0	0	0	0	0	2	1
Sunnyvale	0	0	0	0	0	0	0	0	0	0	2	1
Unknown	1	1	0	0	0	0	0	0	1	1	2	1
Woodside	0	0	0	0	0	0	0	0	0	0	1	1
Total	30	20	197	10	108	10	48	6	383	33	253	27

**Table 5** below shows the general type of aircraft identified as causing noise complaints at the Airport. There are 2 types of engines for aircraft utilizing PAO. The first is reciprocating which is similar to an automobile engine, and the second is turboprop which is a turbine engine with a propeller that produces thrust. Aircraft are further differentiated by “multi” and “single” which denotes the number of engines for the aircraft. As Table 5, shows single reciprocating aircraft produced the largest portion of noise complaints. This class of aircraft represents most of the fleet at PAO and usually consists of Cessna, Piper and Cirrus aircraft.



**Table 5. Aircraft Type**

	Helicopter	Multi-Reciprocating	Multi-Turboprop	Single-Reciprocating	Single-Turboprop	Unknown
2022 Complaints	15	10	10	241	9	98
2021 Complaints	8	8	4	200	24	9

**Table 6** below shows the number of violations of the established noise abatement procedures. Airport staff makes every effort to talk to all pilots that violate these procedures, but it is difficult to talk to all transient pilots about noise abatement procedures. It is not the role of the FAA Air Traffic Control Tower to advise pilots of the noise abatement procedures, however, the City has developed a working relationship with the Air Traffic Control Tower (ATCT) and Air Controllers do advise pilots of the noise abatement procedures when they have the ability to do so.

**Table 6. Observed Violations of Noise Abatement Procedures**

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total
Tenant	4	11	4	3	22
Transient	1	2	1	5	9
Unknown	0	1	1	0	2
Total	5	14	6	8	33
Complaints	30	197	108	48	383
Operations	40,331	44,117	43,870	35,302	163,620
% Compliance	99.9%	99.9%	100%	99.9%	99.9%

# Attachment A

## PAO Noise Contour Map

Following is a noise contour map for PAO, adopted by the Santa Clara County Airport Land Use Commission (SCC ALUC) in their 2008 Comprehensive Land Use Plan, reflecting the forecasted noise contours for Palo Alto Airport in 2022.

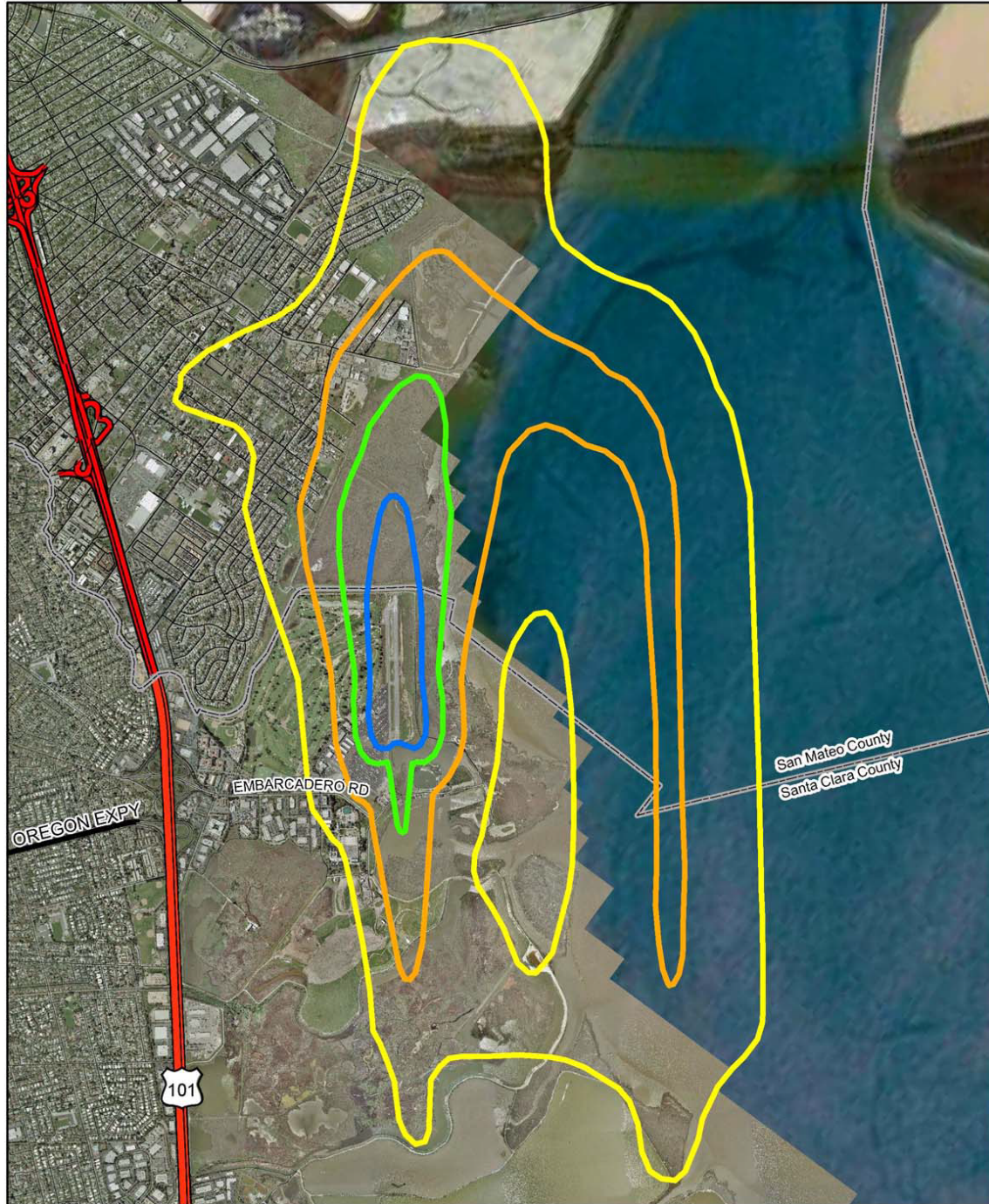
SCC ALUC used the Integrated Noise Model which considers airport altitude, mean temperature, runway configuration, aircraft flight track definition, aircraft departure and approach profiles, aircraft traffic volume and fleet mix, and flight track utilization by aircraft types. All data is entered into the CNEL formula to prepare the noise contours for Palo Alto Airport.

The 65 decibel (db) noise level of the Airport extends beyond the airport boundaries, but is only over Palo Alto Golf Course, Palo Alto Baylands Nature Preserve, and the salt marshes in San Mateo County.

Refer to [https://stgenpln.blob.core.windows.net/document/ALUC\\_PAO\\_CLUP.pdf](https://stgenpln.blob.core.windows.net/document/ALUC_PAO_CLUP.pdf), for a more detailed description of how the SCC ALUC prepared this map.

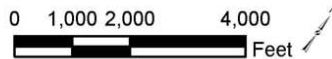
# 2022 Forecasted Palo Alto Airport Noise Contour Map

## Palo Alto Airport



Noise Contours (CNEL)  
55 60 65 70

2022 Aircraft Noise Contours  
Figure 5



This map created by Santa Clara County Planning Office. The GIS data was compiled from various sources. While deemed reliable, the Planning Office assumes no liability. 3/25/2025 - Y:\M&E\ALUC\projects\PAAPA\_figure\_5\_v4.mxd

## **Attachment B**

### **PAO Pilot Handout**

Santa Clara County created a Pilot Handout for Palo Alto Airport that described the noise abatement procedures. When the City of Palo Alto assumed control of the Airport, the existing noise abatement procedures were adopted, with one exception, “pilots must maintain 1,500 feet or above across Highway 101” was replaced with “Aircraft are asked to climb to and maintain at least 1,500 feet before crossing Highway 101.” The change is consistent with the voluntary nature of noise abatement procedures as Airports are Federally prohibited from instructing pilots how to fly.



**CITY OF PALO ALTO**

Palo Alto Airport General Information  
 Bayside Pattern Alt – 800 feet  
 Peninsula Side Pattern Alt – 1000 feet MSL  
 ATCT hours of operation – 0700 – 2100 hrs  
 ATC / CTA Frequency – 118.600  
 ATC Ground Frequency – 125.000  
 Fuel Frequencies – 122.85 or 122.95  
 Airport Office Phone # – (650) 329-2444

Palo Alto Airport asks for your cooperation in reducing the noise impact of aircraft on the neighboring communities.

**CAUTION**

The Palo Alto Baylands preserve is located immediately to the north of the Airport. Watch for birds on or near the Airport.

Be alert for bikes & pedestrians crossing a levee road 290' from departure end to Runway 31.

**Noise Abatement Procedures**

Please fly neighborly and be aware of the surrounding communities. There are noise sensitive areas to the west and south of the Airport. Aircraft are asked to climb and maintain at least 1500 feet before crossing Highway 101.

Fly over the bay whenever possible.

Please use reduced power setting whenever possible to reduce noise impacts. Even a reduction in a 200 RPM can significantly reduce noise.

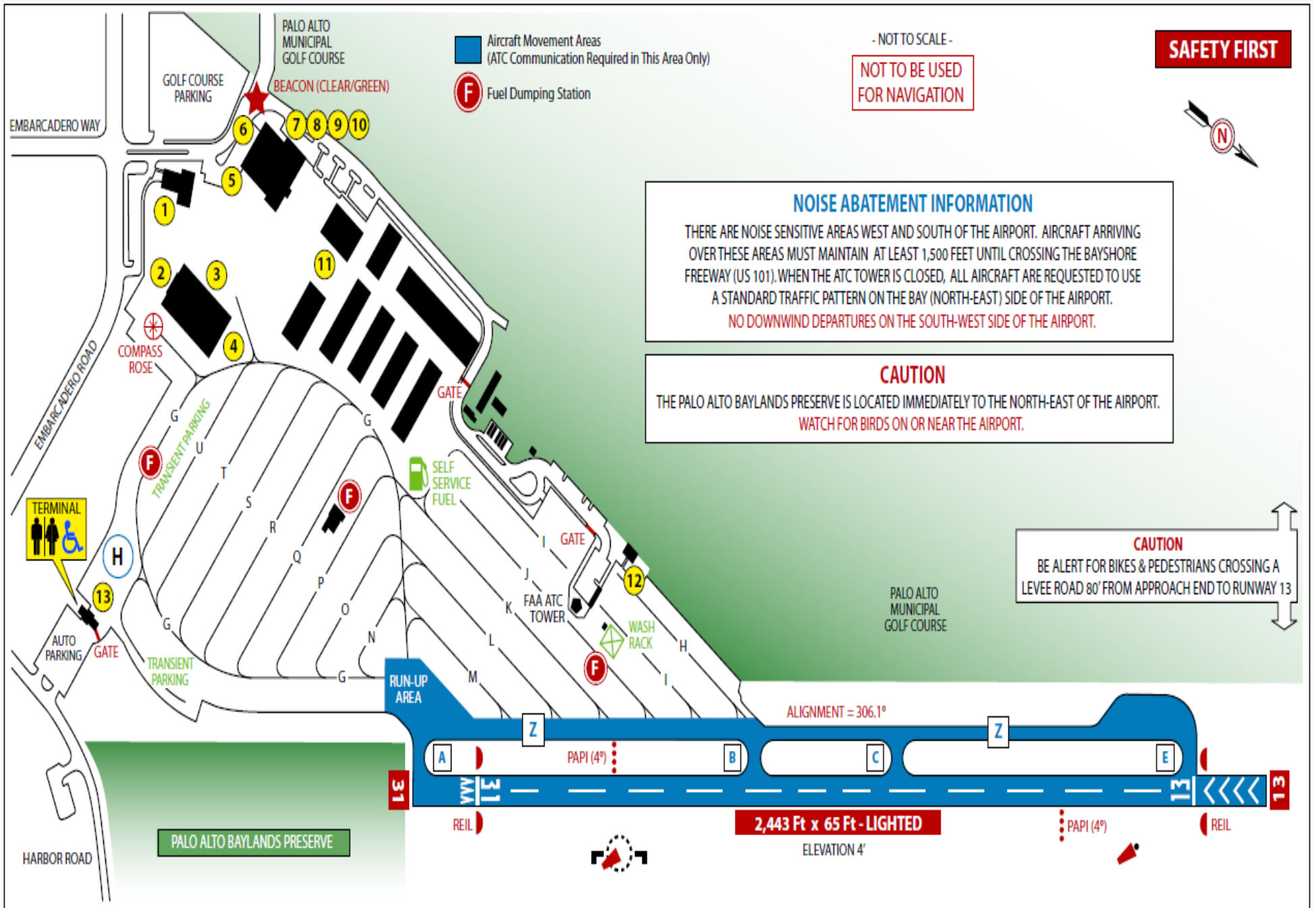
**Safety Always Supersedes Noise Abatement**

**Preferred West Bound Departures**

**Runway 31**  
**Left Dumbarton Departure**  
 When departing runway 31 turn right 10° on takeoff and climb over the bay. Fly straight to Dumbarton Auto Bridge before making a left turn to fly over the peninsula or to the south. Cross Highway 101 at or above 1500 feet.

**Left 270 Departure**  
 After takeoff climb over the bay while making a 270° turn and heading west or south over the peninsula. Cross Highway 101 at or above 1500 feet.

**Runway 13**  
**Right 270 Departure**  
 After takeoff turn right over and climb over the bay while making a 270° turn and heading west or south over peninsula. Cross Highway 101 at or above 1500 feet.



# Attachment C

## Map of Palo Alto Households

