CITY OF PALO ALTO

CITY OF PALO ALTO
CITY COUNCIL
Monday, October 06, 2025
Council Chambers & Hybrid
5:30 PM

Agenda Item

A. 2024 Annual Airport Noise Report and 2025 Noise Program Initiatives

CITY OF PALO ALTO

City Council Staff Report

From: City Manager
Report Type: INFORMATION REPORTS
Lead Department: Public Works

Meeting Date: October 6, 2025
Report #:2504-4477

TITLE
2024 Annual Airport Noise Report and 2025 Noise Program Initiatives

RECOMMENDATION
This is an Informational Report. No Council action is required.

BACKGROUND
The objective of the Palo Alto Airport (PAO) Annual Aircraft Noise Report is to analyze noise patterns in the vicinity and assess adherence to established voluntary noise abatement procedures. The 2024 Annual Aircraft Noise Report (Attachment A) was compiled by Airport Division staff of the Public Works Department, utilizing data from aircraft noise complaints received throughout the 2024 calendar year. This report is generated on an annual basis and posted on the Airport's webpage.

PAO receives noise complaints via email at pao@paloalto.gov 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 the community impacts from airport noise.

ANALYSIS
PAO continues to be one of the busiest general aviation airports in the Bay Area, averaging over 150,000 annual operations since 2015. In calendar year 2024, the Airport totaled 150,123 operations, representing a slight increase compared to 2023.

In 2024, the Airport received a total of 110 noise complaints from 51 individual households. The majority of complaints originated from residents in the City of Palo Alto, with the second highest volume of complaints coming from East Palo Alto.

The Airport's location within the region's complex and congested airspace – bounded by San Francisco Class B, San Jose Class C, and Moffett Field airspace – continues to influence aircraft routing and limits operational flexibility. Despite these constraints, Airport staff remain committed to promoting voluntary noise abatement procedures and continue to engage with Airport users to minimize noise impacts on surrounding communities.

To support these efforts, Airport staff began conducting monthly coordination meetings with Airport users and FAA Air Traffic Control personnel. These meetings allow for the discussion of noise abatement procedures and identify effective strategies for communicating with both based and transient[1] pilots. As a result of the ongoing meetings, the Airport's noise abatement flyer was revised and updated to more clearly communicate procedures and improve pilot awareness.

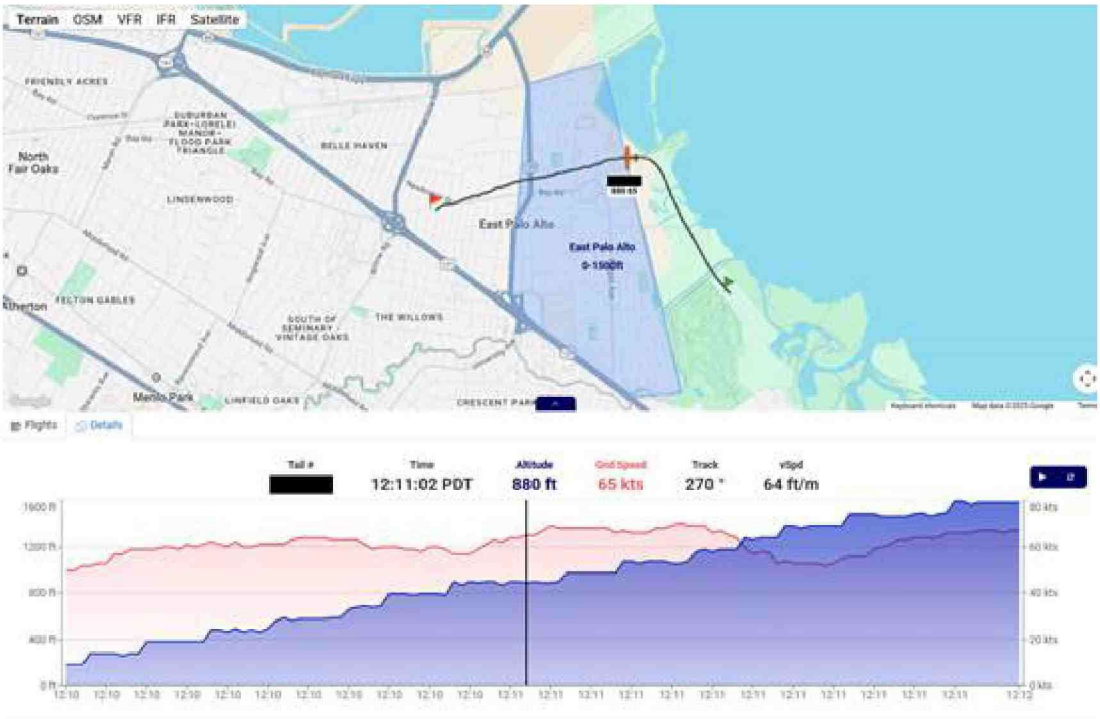
Additionally, PAO staff have participated in regional Bay Area Airport Managers meetings to explore a centralized website to consolidate noise abatement procedures throughout the Bay Area. The goal of this initiative is to improve pilot access to noise-related information and promote greater awareness of recommended procedures across the region. This effort remains an ongoing project and collaboration will continue with participating airports.

To enhance noise monitoring, staff entered into a contract with 1200.Aero and is currently testing a new web-based software system implemented in March 2024. Initial testing is focused on Runway 31, which comprises approximately 90% of operations, with geofencing in place to identify potential deviations from the Airport's noise abatement procedures over East Palo Alto. The geofenced area over East Palo Alto was set up to monitor for straight out departures and early left turns which do not conform to the noise abatement procedures. Additional geofencing will be applied over Palo Alto and Menlo Park as testing progresses to ensure comprehensive monitoring.

This system enables real-time monitoring and tracking of aircraft operations, providing staff with a proactive method of reviewing flights for adherence to the Airport's noise abatement procedures. An example of a notification can be seen below. The Airport's noise abatement procedures request that pilots make a 10 degree turn to the north and avoid turning left until the Dumbarton Auto Bridge. In the example flight, the aircraft made an early left turn, entering into the geofenced area over East Palo Alto and triggering a notification. This software reduces the dependency on community complaints and allows for a more proactive review of flights for potential violations. It should be noted that Air Traffic Control directions supersede noise

[1] Transient pilots are pilots whose aircraft are based at other airports.

abatement procedures, and the below operations would not be considered a deviation if directed by Air Traffic Control.



With 1200. Aero, staff can geofence specific areas and monitor operations within those zones. Whenever an aircraft enters a geofenced area, staff receives automatic notifications. Staff can then promptly review flight data and assess whether a deviation from procedures occurred and determine whether the operation was a result of Air Traffic Control instruction or other justifiable circumstances. Staff then follows up with pilots to provide education and promote awareness of recommended procedures. It is important to note that not every generated notification constitutes a violation of the noise abatement procedures. Staff continue to work closely with 1200. Aero to refine the system's parameters and improve the accuracy of notifications.

1200. Aero began collecting data in April, and between April 3, 2025, and June 30, 2025 the system identified 705 incursions into the airspace above East Palo Alto. After review, staff determined that 560 of these were actual deviations from recommended noise abatement procedures. The remaining flights included arrivals entering the airspace at approximately 1,000 feet which is consistent with noise abatement procedures, aircraft transitioning through the area without operating at PAO, or flights directed by Air Traffic Control for spacing or safety reasons. Staff attempts to contact pilots who do not follow the recommended procedures; however, outreach to transient pilots can be challenging. Airport Operations has been able to follow up on approximately 50% of deviations, as contact information is not available for the remainder. In June, the Airport implemented transient billing software that requests pilots

check in upon landing, which has provided email contacts for many transient pilots and expanded outreach opportunities. Since June, the percentage of deviations responded to has increased, and will continue to rise as contact information is logged. In addition, staff coordinates with neighboring airports to request that they notify pilots based at those airports and reciprocates when other airports request the same.

Additionally, 1200. Aero relies on publicly available ADS-B data and registration information, which is subject to potential changes in FAA policy. The FAA has proposed rules that could restrict access to registration and ADS-B information. In response, the City submitted formal comments on June 4, 2025, emphasizing the critical importance of maintaining access to this data to support the Airport's noise monitoring and abatement programs.[2]

FISCAL/RESOURCE IMPACT

There is no direct fiscal impact associated with this informational report.

STAKEHOLDER ENGAGEMENT

The Airport has consistently engaged stakeholders of the Airport and will continue to collaborate with them regarding noise concerns and complaints. Airport staff attends monthly meetings with the Palo Alto Airport Association, representing a diverse array of Airport users including flight schools, charter flight operators, corporate pilots, and private users. Trends in noise abatement are a common topic of discussion during those meetings.

Additionally, staff actively participates in educational and informational conferences, such as the University of California at Davis Noise & Emissions Symposium Conference, to stay abreast of the latest industry trends and innovations pertaining to noise and emissions at the Airport.

ENVIRONMENTAL REVIEW

This item is informational in nature and does not constitute a project under the California Environmental Quality Act (CEQA).

ATTACHMENTS

Attachment A: 2024 Annual Palo Alto Airport Noise Report

APPROVED BY:

Brad Eggleston, Director Public Works/City Engineer

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[2] Comment on FAA Proposal To Withhold Certain Aircraft Registration Information From Public Dissemination (Docket No. FAA-2025-0638); https://www.paloalto.gov/files/assets/public/v/1/public-works/palo-alto-airport/airplane-noise/june-4-2025-comment-on-faa-proposal-to-withhold-certain-aircraft-registration-information-from-public-disemination.pdf

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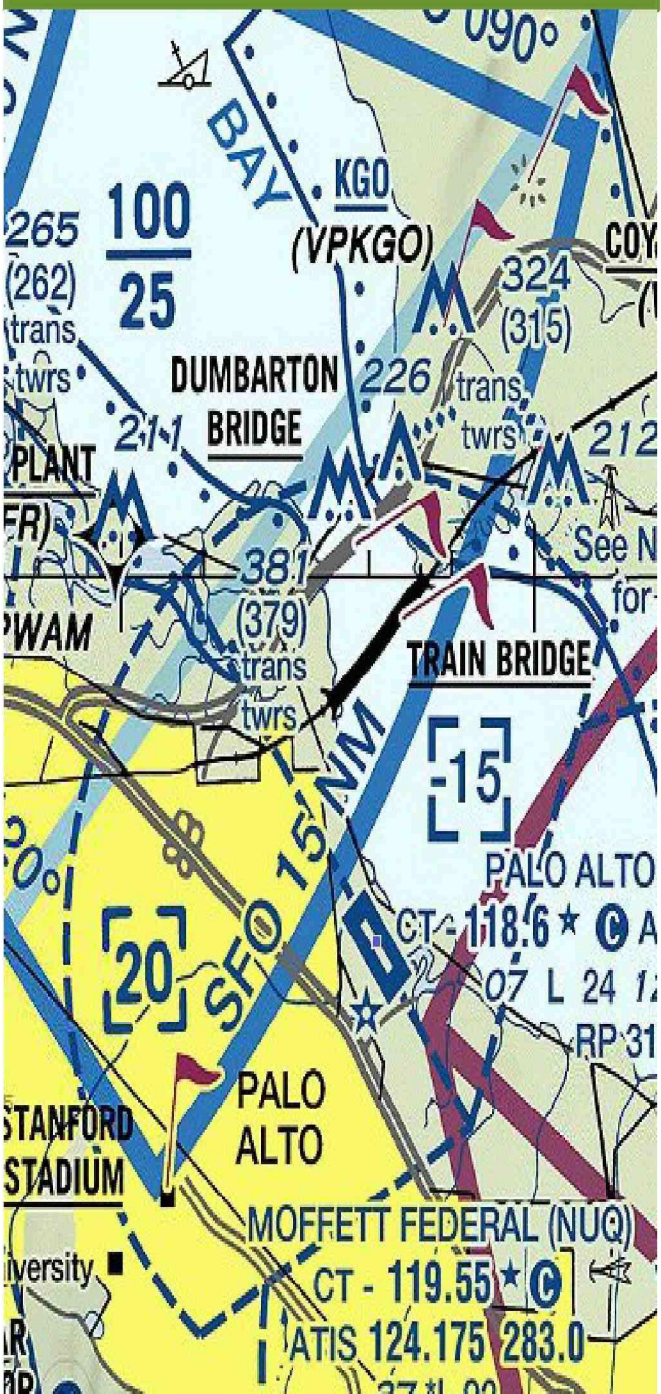
PALO ALTO AIRPORT

PUBLIC WORKS DEPARTMENT



2024
ANNUAL NOISE REPORT

(January 2024 to December 2024)

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 2024. 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 2024. 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 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.

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

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 lies 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.

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 takeoff/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 engage 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 150546.8 operations per year since 2015. Airport Operations for the calendar year of 2024 increased .17% compared to the calendar year 2023. 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
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
2013	1628	14	172653	2023	763	21	149859
2014	1518	22	179900	2024	666	29	150123
AVG	1761.1	101	173088.5	AVG	759.3	66.7	150546.8

During the 2024 Calendar year, the Airport logged 110 total noise complaints from 51 households. While the quarterly household counts add up to 60, the actual total unique households for 2024 are 51. This difference occurs because some households submitted complaints in multiple quarters, but they are only counted once in the yearly total. **Table 2** shows the number of complaints by quarter and includes the totals from 2023.

Table 2. Complaints Received

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total 2024	Total 2023
Complaints	20	24	37	29	110	256
Households	11	13	16	20	51	23

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 Taxis, Pipe Surveys, Stanford Life Flight, Angel Flights, and banner towing operations. Also included in Table 3 are the totals for 2023.

Table 3. Aircraft Association

	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total 2024	Total 2023
PAO	16	18	32	22	88	236
General	2	3	1	5	11	4
Non-PAO	2	3	4	2	11	16

Table 4 below provides a detailed breakdown of the 110 complaints by City. Most complaints came from the City of Palo Alto, with 54 complaints logged from 12 households.

Table 4. PAO Noise Complaints by City

	Quarter 1		Quarter 2		Quarter 3		Quarter 4		Total 2024		Total 2023	
City	C	H	C	H	C	H	C	H	C	H	C	H
Cupertino											1	1
East Palo Alto	5	3	3	2	6	5	2	2	16	10	4	4
Half Moon Bay			2	1			6	2	8	2		
Ladera							3	3	3	3		
Livermore			1	1					1	1		
Los Altos											4	1
Menlo Park											12	2
Mountain View			1	1					1	1	1	1
Newark			2	2	3	3	2	2	7	7	1	1
Palo Alto	7	3	14	5	25	6	8	4	54	15	227	8
Pleasanton	1	1							1	1	2	1
Portola Valley					2	1	2	1	4	1	1	1
San Jose	3	1					1	1	4	1		
Stanford			1	1	1	1			2	2		
Sunnyvale	2	1					3	3	5	3	1	1
Union City							1	1	1	1		
Unknown	1	1					1	1	2	2	1	1
Woodside	1	1							1	1	1	1
Total	21	12	24	13	37	16	29	20	110	51	256	23

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	Drone
2024 Complaints	7	2	5	68	10	6	
2023 Complaints	1	3	4	127	7	101	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 Traffic 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	2	6	7	4	19
Transient	1	4	7	2	14
Unknown			1	1	2
Total	3	10	15	7	35
Complaints	20	24	37	29	110
Operations	33,061	40,904	41,267	34,891	150123
% Compliance	99.94%	99.94%	99.91%	99.91%	99.93%

Attachment A
PAO Noise Contour Map

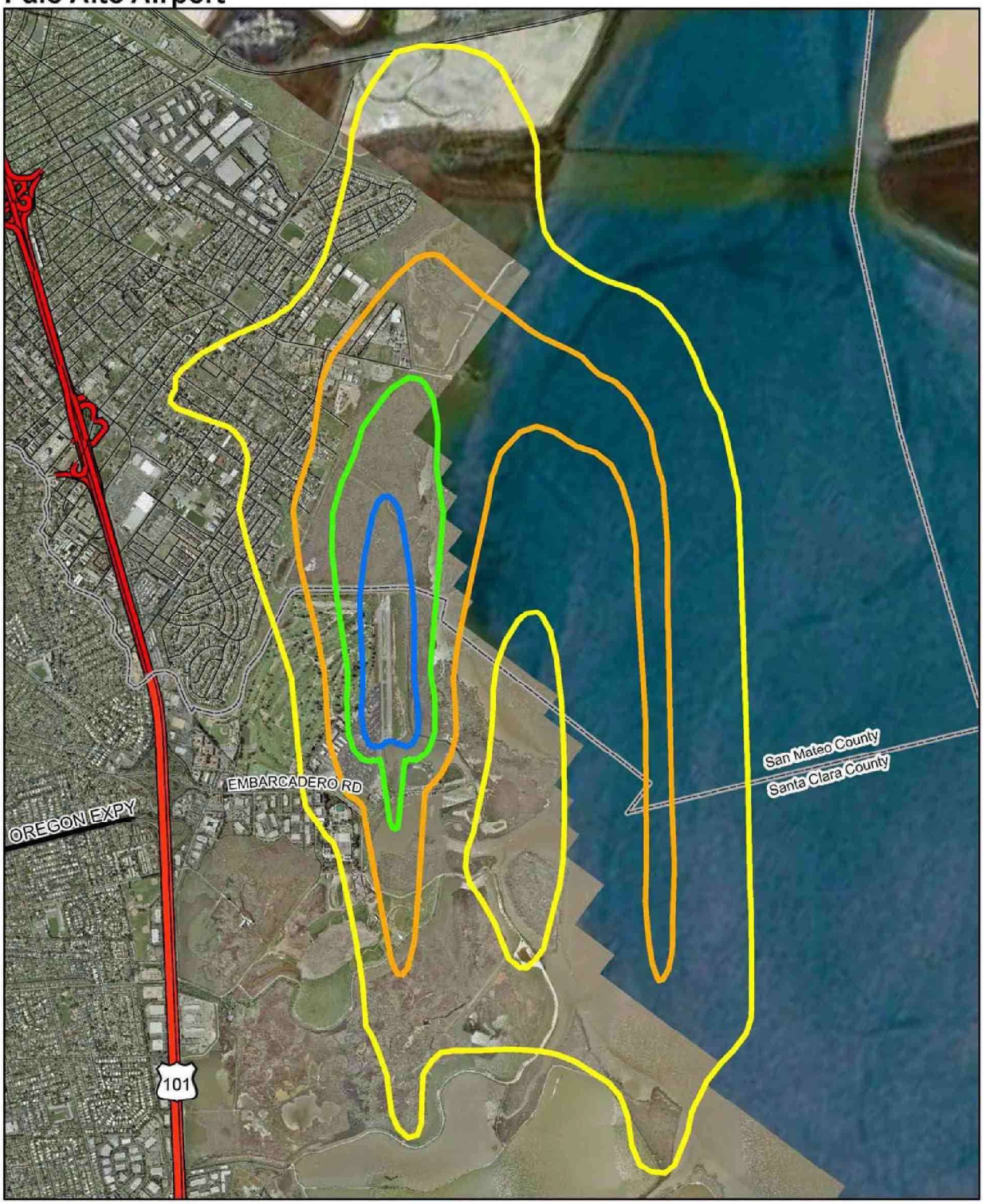
Following is a noise contour map for PAO, adopted by the Santa Clara County Airport Land Use Commission (SCC ALUC) in their 2008 Comprehensive Land Use Plan, reflecting the forecasted noise contours for Palo Alto Airport in 2022.

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, 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

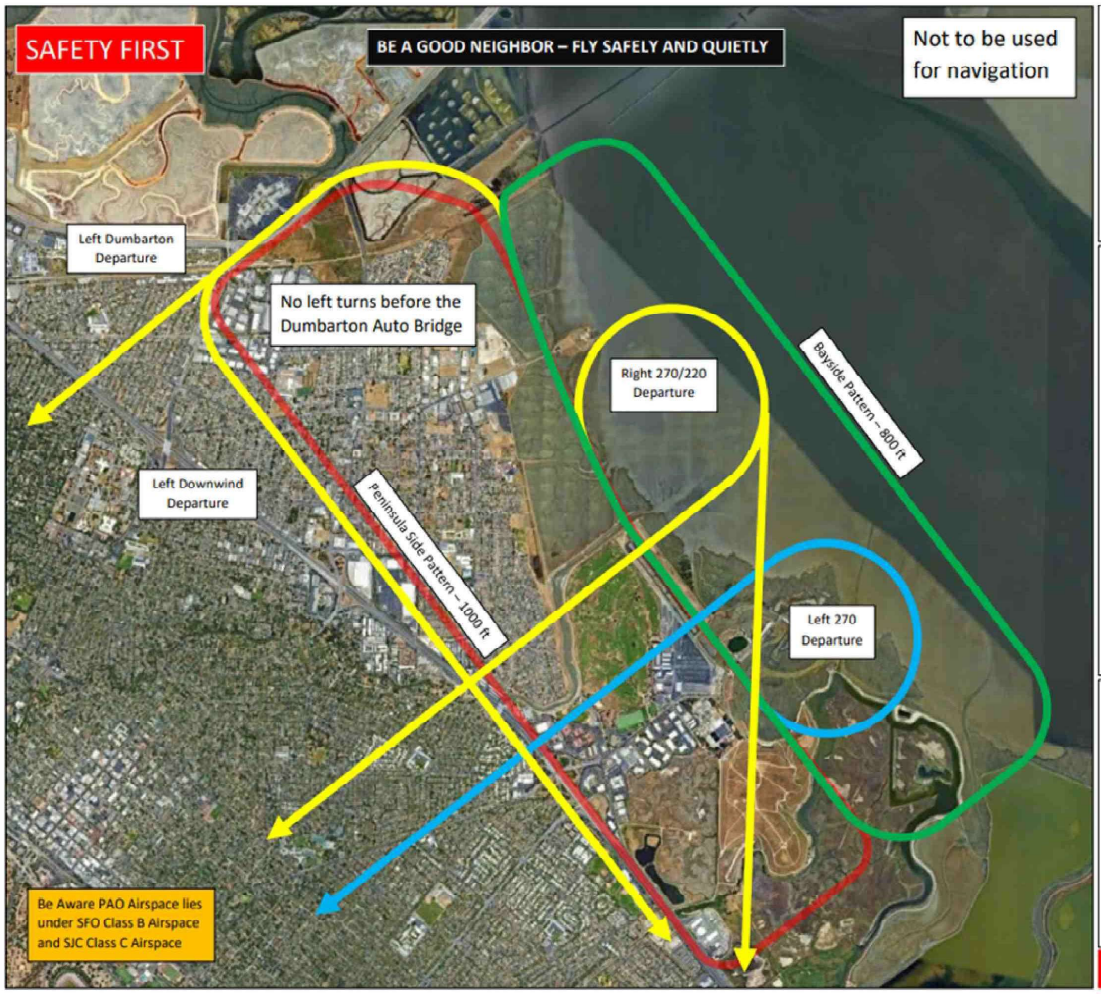
0 1,000 2,000 4,000 Feet

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 3/25/2008 - Y:\Mat\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. In 2024, Airport staff worked with airport users and FAA Air Traffic Controllers to update the handout to better illustrate the Airports Voluntary Noise Abatement Procedures.



PAO 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 to and maintain at least 1500 feet before crossing Hwy 101.**

Fly over the bay whenever possible.

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

Preferred Noise Abatement Procedures

Runway 31

Left Dumbarton Departure

When departing RWY 31 turn right 10° on takeoff and climb over the bay. Fly to the 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.

Right 270°/220° Departure

After takeoff climb over the bay while making a 220° turn to the South or 270° turn to the West. Cross Hwy 101 at or above 1500 feet.

- Clearly make request to PAO ATCT the desire to make a 220° or 270 turn. ATCT will deny all right downwind departures.

Runway 13

Left 270° Departure

After takeoff turn left and climb over the bay while making a 270° turn to the West. Cross over Highway 101 at or above 1500 feet.

PAO General Information

Bayside Pattern Altitude – 800 feet
Peninsula Side Pattern Altitude – 1000 feet
ATCT Hours of Operation – 0700 – 2100 hrs
ACT / CTA Frequency – 118.600
ATC Ground Frequency – 125.000
ATIS Frequency – 135.275
Fuel Frequencies – 122.85 or 122.95
Airport Operations Phone Number – (650) 690-5992

Caution

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

ATCT DIRECTION SUPERSEDES NOISE ABATEMENT

Attachment C

Map of Palo Alto Households