Chapter 5

NOISE ABATEMENT ALTERNATIVES

This chapter evaluates noise abatement alternatives that may be used to decrease noise exposure to noise-sensitive land uses. The Federal Aviation Administration's (FAA) primary criterion for evaluating the effectiveness of alternatives is the reduction of residents and/or noise-sensitive institutions (schools, places of worship, etc.) within the 65-decibel (dB) Community Noise Equivalent Level (CNEL) noise exposure contour; however, as discussed in Chapter Three – Aviation Noise, the Ventura County Department of Airports recognizes that some community members are disturbed by noise at levels below the FAA guidelines for noise exposure.

A community listening session was held on June 4, 2024, to gather input from the community regarding sources of noise disturbance and recommended solutions. A total of 18 community members attended the meeting. Suggestion cards and comment forms printed in both English and Spanish were distributed to attendees. A total of 20 written suggestions and one e-mail were collected. In addition, 19 verbal questions and comments were presented by attendees at the meeting. Community member suggestions for noise abatement fell into the following categories:

- Changes to the standard traffic pattern;
- Restrictions on the number and type of aircraft operations;
- Fees or penalties for violating the voluntary noise abatement procedures;
- Restricting airport hours on weekends; and
- Limiting the use of the airport by flight schools.

Most of the community members in attendance reside in neighborhoods west of the airport, near the coast.

The purpose of this chapter is to identify noise abatement alternatives that reduce the number of people and noise-sensitive land uses within the 65 CNEL noise contour at Oxnard Airport (OXR). Before noise abatement alternatives can be analyzed, it is important to understand the implementation status and success of the current noise abatement measures. It is also important to understand the scope of the aircraft noise impacts on noise-sensitive land uses.

A previous Noise Compatibility Plan (NCP) for Oxnard Airport was provided to the FAA on February 15, 2000; however, the NCP was not formally adopted by the Ventura County Board of Supervisors or submitted for approval by the FAA. The noise abatement element of the previous NCP contained 10 noise abatement program measures, listed in **Table 5A**. All 10 of the previous measures are included in the Ventura County Department of Airports noise abatement procedure handouts, many of which are distributed to pilots and students operating at Oxnard Airport (shown on **Exhibit 5A**). Voluntary noise abatement procedures for Oxnard Airport can also be downloaded from the Ventura County Department of Airports website.[1] Signs have been placed in airport operations areas to promote noise abatement procedures.

TABLE 5A | 2000 NCP Noise Abatement Element Program Measures – Oxnard Airport

		Included on OXR Fly Friendly Pilot Guide?
1	Continue prohibiting formation takeoffs and landings without prior permission from the Director of Airports.	Yes
2	Continue prohibiting touch-and-go's and stop-and-go's between 8:00 p.m. and 7:00 a.m.	Yes, expanded to begin at 8:00 a.m. on weekends.
3	Continue prohibiting high power engine run-ups for maintenance between 7:00 p.m. and 7:00 a.m.	Yes
4	Continue prohibiting Runway 7 departures from midfield intersection (taxiway C).	Yes
5	Designate Runway 25 as the calm wind runway.	No
6	Direct southbound departures from Runway 25 to fly to the coastline before turning left.	Yes, expanded to extend ½ mile past the shoreline.
7	Promote use of NBAA standard noise abatement departure procedures by jets.	No
8	Promote use of AOPA Noise Awareness Steps by light single and twin-engine aircraft.	No
9	Request Part 36 Stage 2 aircraft to avoid takeoffs after 11:00 p.m. and before 6:00 a.m.	Not applicable; Stage 2 aircraft are phased out of the national fleet as of December 31, 2015.
10	Request aircraft certificated as noisier than 84.7 dBA (L_{max}) on takeoff to avoid use of Airport.	Yes, older/louder turbojet aircraft are requested to avoid use of the airport.

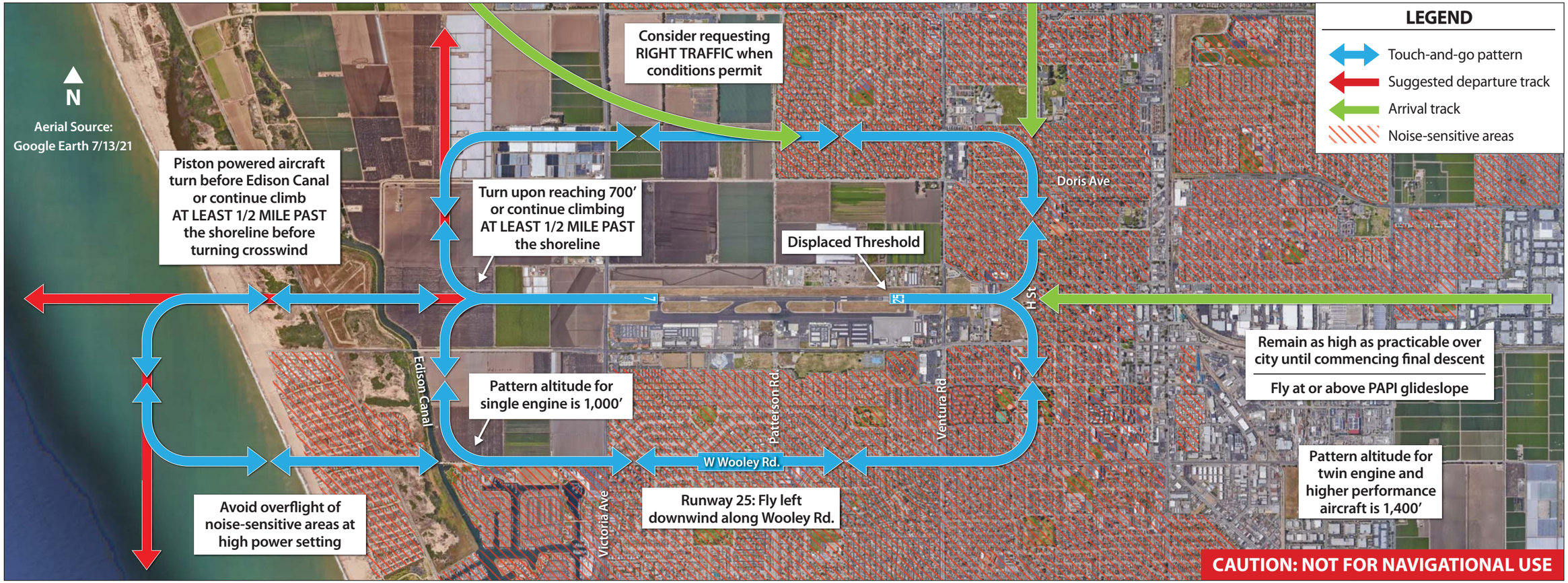
Note: The 2000 NCP for Oxnard Airport was not formally adopted by the Ventura County Board of Supervisors or submitted for approval by the FAA.

Source: Noise Compatibility Program for Oxnard Airport, February 2000

The FAA's primary criterion for approval of a noise abatement measure is the reduction of noise-sensitive land uses within the 65 CNEL noise exposure contours. As discussed in Chapter Four, there are 23 residential dwelling units located within the 2022 and 2027 65 CNEL noise exposure contours.

Public meetings held throughout the course of the study indicate that residents outside the 65 CNEL contour find noise associated with the airport disruptive to day-to-day life, especially when utilizing outdoor space and during night and evening hours; therefore, a coordinated approach to effective noise abatement and mitigation of noise impacts is critical. Responsibility for this task is shared among airport users; aircraft manufacturers; airport proprietors; federal, state, and local governments; and residents of communities near the airport.

[1] https://vcairports.org/oxnard-airport-noise-abatement-procedures/



RECOMMENDED VOLUNTARY NOISE ABATEMENT PROCEDURES:

The airport environs are noise-sensitive in all quadrants. Aircraft operators are requested to practice noise abatement fly quiet procedures whenever possible consistent with safety.

- Please limit consecutive touch-and-go operations to no more than three. Additional pattern work in the same flight should conduct full stop-taxi backs.
- Voluntary curfew - ALL operations - 11:00 p.m. to 6:00 a.m.
- Older/louder turbojet aircraft are requested to avoid use of the airport.
- Remain as high as practical over residential areas during overflight, approaches, and departures.
- Use best rate of climb when departing any runway.
- No touch-and-go's or stop-and-go's between 8:00 p.m. and 7:00 a.m. (8:00 am on weekends).
- No formation takeoffs or landings without prior permission from the Airport Director.
- No high power engine run-ups for maintenance between 7:00 p.m. and 7:00 a.m.
- Late night arrivals use GPS Runway 7 approach when wind, weather, and safety permit.
- Use extreme caution when departing Runway 7 due to opposite direction instrument approach traffic.
- Southbound departures off Runway 25 by piston powered (less than 12,500 lbs.) aircraft, after reaching 700', turn left past the runway end and before the Edison Canal, or continue to climb AT LEAST 1/2 MILE PAST the shoreline.
- Exercise extreme caution on Runway 25 due to Camarillo traffic and instrument approaches being conducted to Oxnard's Runway 25.
- Straight-in arrivals on Runway 25: cross the Camarillo Airport at or above 2000' and remain as high as practical over the city until commencing final descent.
- No departures on Runway 7 from midfield intersection (Taxiway C).
- Runway 25 Pattern: requesting right traffic will reduce overflight of noise sensitive areas. Follow all ATC instructions.

Compliance with recommended noise abatement procedures is encouraged. No procedure should be allowed to compromise flight safety.

LOCATION:

FAA Identification: OXR
Lat/Long: 34-12-02.9050N 119-12-26.0150W
Proximity to Oxnard: 1 mile west of city
Field elevation: 44.8'
Runway 07-25: 5,953' x 100'
(Runway 25 displaced threshold 453')

TRAFFIC PATTERN ALTITUDES:

Single Engine Aircraft - 1,000'
Multi-engine/Turbine Aircraft - 1,400'

COMMUNICATIONS:

CTAF: 134.95 (Pilot Controlled Lighting)
ATIS: 118.05
Oxnard Ground Control: 121.9
Oxnard Tower: 134.95 (7:00 a.m. - 9:00 p.m.)
Point Mugu App/Dep Control: 124.7
Los Angeles Center: 135.5
Santa Barbara RCAG: 327.1
ASOS: Phone (805) 382-0592
Nearest NAVAID: CMA VOR 115.8, 067°/5.2 DME
ILS-Runway 25: 108.7

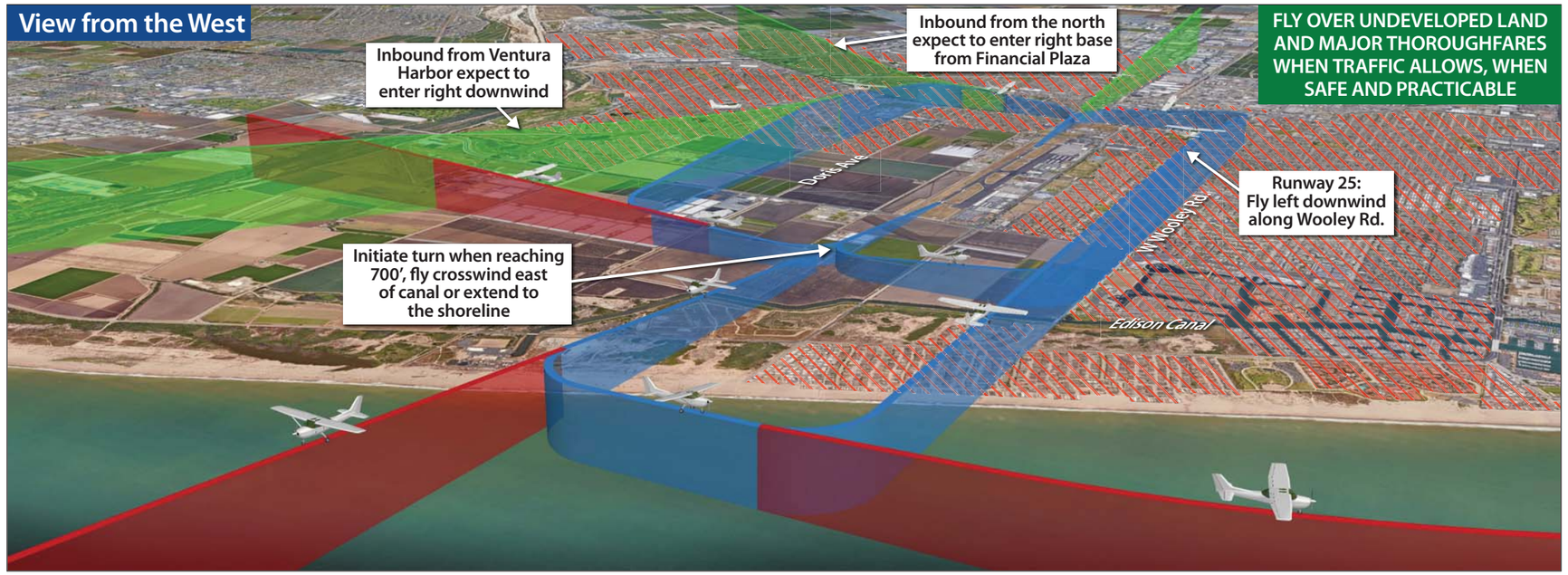
LANDING FEE:

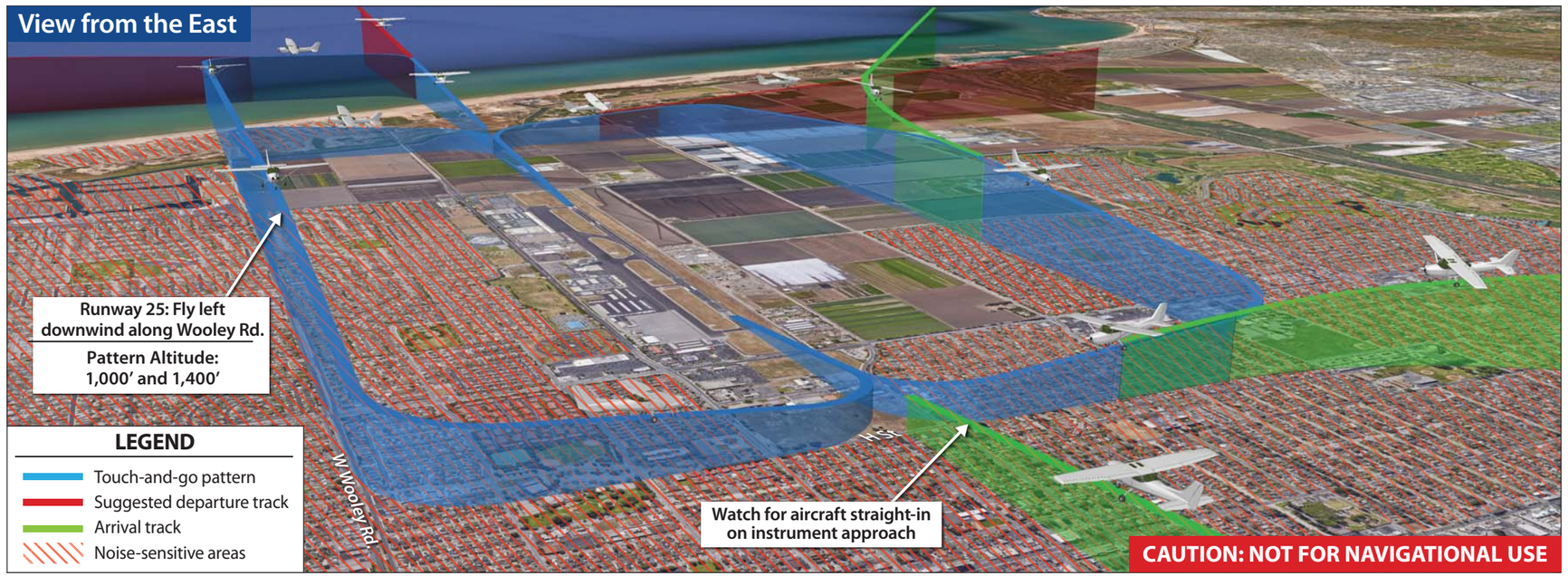
Landing fees apply to aircraft over 12,500 lbs.

AIRPORT SERVICES:

Full Service FBOs:

- ***Oxnard Jet Center*** (805) 985-2490
  AVFuel: 100LL and Jet A
- ***Golden West Jet Center*** (805) 382-9333
  AVFuel: 100LL and Jet A





An airport proprietor may voluntarily undertake a Part 150 noise compatibility study to evaluate and prepare a noise abatement program. An airport noise abatement program has three primary objectives:

1. Reduce the noise-impacted population in the airport vicinity within practical cost and legal constraints.
2. Minimize the exposure of the local population to very loud noise events, where practical. These loud single events can occur outside the CNEL contours and can annoy airport neighbors, and warrant attention.
3. Ensure maximum compatibility of existing and future land uses with aircraft noise at the airport.

The full range of potential noise abatement measures for possible use at Oxnard Airport is evaluated in this chapter. Evaluation criteria include the probable noise reduction over noise-sensitive areas; the potential for compromising safety margins and the ability of the airport to perform its intended function; and the potential for implementation, considering the legal, political, and financial climate of the area. When necessary, additional analysis and modeling will be used to demonstrate the benefits of potential noise abatement measures.

If a noise abatement measure is found to have benefits, based on the above criteria and analysis, an assessment of the feasibility of each measure and the strategies required for its implementation are presented. At the end of each section, a recommendation is presented regarding whether the measure deserves additional consideration. It is important to note that many of the measures discussed in this chapter have already been implemented as part of the Oxnard Airport *Fly Friendly* program depicted on **Exhibit 5A**.

POTENTIAL NOISE ABATEMENT MEASURES

Title 14 Code of Federal Regulations (CFR) Part 150 (14 CFR Part 150 or Part 150) provides a comprehensive list of potential noise abatement measures that must be analyzed as part of this study. These techniques either (1) reduce the sizes of the noise contours or (2) move the noise to other areas in which there are fewer noise-sensitive land uses.

To reduce the sizes of the noise contours, the total sound energy emitted by aircraft must be reduced. This may be achieved by modifying aircraft operating procedures or restricting the number or type(s) of aircraft allowed to operate at the airport. Measures that can be used to shift the location of noise include runway use programs, special flight routes, and airport facility development. Potential noise abatement measures can be assigned to the following four categories:

- Runway Use and Flight Routing
- Airport Facilities
- Aircraft Operational Procedures
- Airport Regulations

A community listening session was held on June 4, 2024, to evaluate each of the following techniques. Additionally, a technical conference was held on June 4, 2024, to discuss the feasibility of suggestions that were posed during the community listening session. Attendees at the technical conference included

professionals who are responsible for the administration, control, and operation of aircraft and facilities at and around Oxnard Airport, including airport staff and local airport users. Following the conference, further investigation regarding the effectiveness of each measure was conducted by the consultant.

RUNWAY USE AND FLIGHT ROUTING

The land use pattern around an airport provides clues to the design of arrival and departure corridors for noise abatement. By redirecting air traffic over compatible land uses, noise impacts may be significantly reduced in incompatible areas. The runway use and flight route alternatives are depicted on **Exhibit 5B** and discussed below.

Preferential and Rotational Runway Use

Preferential runway use programs are intended to direct as much noise as possible over the least noise-sensitive areas. They accomplish this by favoring the runway or runways that lead traffic over compatibly developed areas.

Rotational runway use is intended to distribute aircraft noise equally off all runway ends. At best, a rotational runway use program can only provide temporary relief for one group, at the expense of another.

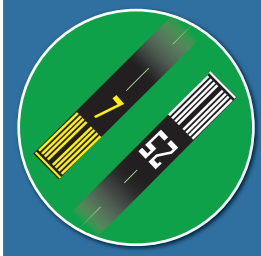
FAA Order 8400.9, *National Safety and Operational Criteria for Runway Use Programs*, provides criteria for establishing runway use programs. It defines two classes of programs: *formal* and *informal*. A formal program must be defined and acknowledged in a Letter of Understanding between the FAA's Flight Standards Division and Air Traffic Organization, the airport proprietor, and the airport users. Once the program is established, participation by aircraft operators is mandatory. Formal programs can be extremely difficult to establish, especially at airports with many different users. An informal program is an approved runway use program that does not require a Letter of Understanding. Informal programs are typically implemented through a tower order and publication of the procedure in the airport/facility directory. Participation in an informal program is voluntary.

Evaluation/Conclusion

Due to prevailing wind conditions in Oxnard coming from the ocean, as well as established operations procedures for nearby Camarillo Airport and Naval Air Station (NAS) Point Mugu, Runway 25 is the preferred runway for arrival operations and is favored for jet departures. As discussed in Chapter Three – Aviation Noise and shown in Table 3E, Runway 25 is used 98.4 to 99.9 percent of the time for arrivals, depending on aircraft category, compared to 0.1 to 1.7 percent utilization for arrivals for Runway 7. These use percentages are based on interviews with airport and airport traffic control tower (ATCT) staff and a review of radar flight track information obtained from automatic dependent surveillance-broadcast (ADS-B) data. The result is that Oxnard Airport currently operates to the west the majority of the time for large aircraft. This is the best operating configuration to promote noise abatement because louder departure noise is to the west over agricultural land; therefore, a special preferential runway use program does not merit further consideration.

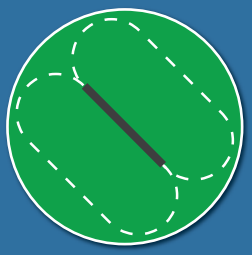
NOISE ABATEMENT ALTERNATIVES

Runway Use and Flight Routes



Preferential Runway Use

Departure Turns/Route



Traffic Pattern Changes

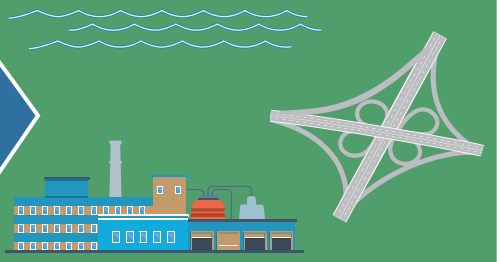
Visual Approach Procedures

Instrument Approach Procedures

How Do They Help?

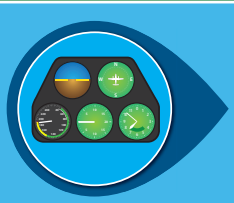
Shift noise from noise-sensitive area...

to noise-compatible area



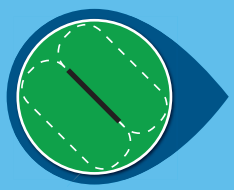
Will These Options Work for Oxnard Airport?

- ✓ Wind conditions favor Runway 25
- ? Other Runway use options

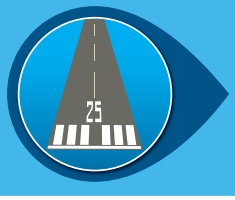


- ✓ GPS approach to Runways 7 & 25
- ? New instrument procedures

- ✓ Runway 25 - Turn before Edison Canal
- ✓ Runway 25 - Continue at least 1/2 mile past the shoreline
- ✓ Runway 7 - No departures from midfield intersection (Taxiway C)
- ? New departure turns/routes



- ✓ Left traffic - Both Runways, fly downwind along Wooley Rd
- ✓ Consider requesting right traffic when conditions permit
- ? Traffic pattern changes



- ✓ Remain as high as practicable over city until commencing final descent
- ✓ Fly at or above PAPI glidescope

Departure Turns

A common noise abatement technique is to route departing aircraft over noise-compatible areas immediately after takeoff. To be fully effective, the compatible corridor must be relatively wide and closely aligned with the runway so that turns over the area are practical.

Evaluation/Conclusion

As shown on **Exhibit 5A**, noise-sensitive areas are located to the north, east, and south within the City of Oxnard. Land to the west and northwest of the airport is agricultural from airport property to the ocean. This agricultural land is protected from long-term development by the *Save Our Agricultural Resources* (SOAR) initiative for Ventura County.

As part of the Oxnard Airport *Fly Friendly* program, piston aircraft departing Runway 25 are instructed to make a turn prior to the Edison Canal to remain east of noise-sensitive land uses in Channel Islands Harbor, or to fly at least 0.5 miles past the shoreline to the west prior to making a turn. The recommendation to turn over the ocean also applies to itinerant traffic. Because there are no noise-sensitive land uses immediately to the north of the departure corridor, pilots are instructed to consider requesting the non-standard right-hand traffic pattern when conditions permit. The non-standard right-hand traffic pattern allows pilots to make turns over the previously mentioned agricultural land for the crosswind leg of the pattern. Additionally, there are no noise-sensitive land uses within the 65 CNEL contours to the west or south of the airport; therefore, additional departure procedures to the west from Runway 25 are not warranted at this time.

The land beneath the existing flight pattern to the east of the airport for aircraft departing Runway 7 is developed with noise-sensitive land uses, except for a buffer of airport property and compatible land uses between W 2nd Street and W 5th street, as shown on **Exhibit 5A**. All noise-sensitive land uses within the 65 CNEL contours are located immediately north of Runway 25; the closest dwelling unit is located within 300 feet of the Runway 25 displaced threshold. The standard left-hand traffic pattern for aircraft departing Runway 7 results in most of the departure noise being generated to the east, where land uses are compatible. In addition, the current published noise abatement procedure for Runway 7 encourages pilots to remain on runway heading until reaching Ventura Road before proceeding on course, which increases the altitude gained prior to making a left-hand turn over noise-sensitive land uses to the north.

Given the limited number of impacts within the 65 CNEL contour (23 residential dwelling units), the noise contours remaining on airport property to the east and west, and the existing noise-sensitive development surrounding the airport to the north, east, and south, new departure procedures for noise abatement from Runway 7-26 do not merit further consideration at this time

Visual and Offset Instrument Approaches

Approaches that involve turns relatively close to the airport can sometimes be defined over noise-compatible corridors. These can be defined as either visual flight rules (VFR) approaches or non-precision instrument approaches. A stabilized, straight-in final approach of at least one mile should be provided. If large aircraft are involved, a longer straight-in final approach of two to three miles is needed.

Evaluation

The Oxnard Airport *Fly Friendly* program includes arrival procedures to both runways that are intended to minimize aircraft noise disturbance from overflights of residential areas to the east within the City of Oxnard. These procedures are depicted on the *Fly Friendly* pilot guide and are summarized below.

Runway 25

- Straight-in arrivals on Runway 25 should cross Camarillo Airport to the east at or above 2,000 feet and remain as high as practicable over the City of Oxnard until commencing final descent.
- Aircraft are instructed to remain as high as practicable over residential areas during approaches to Runway 25.

Runway 7

- Late night arrivals are to use the global positioning system (GPS) Runway 7 approach when wind, weather, and safety permit.
- Aircraft are instructed to remain as high as practicable over residential areas during approaches to Runway 7.

Because the noise contours remain on airport property to the east, where over 99 percent of arrival noise is generated, additional approach procedures for noise abatement from Runway 7-26 do not merit further consideration at this time.

Midfield Departures

Midfield departures refer to aircraft beginning their engine spool-ups and takeoff rolls from a certain point, usually a taxiway intersection (commonly referred to as an intersection takeoff) near midfield. While these operations are usually undertaken to reduce taxi time, such operations can help centralize departure spool-up noise.

Evaluation/Conclusion

No Runway 7 departures from the midfield intersection (Taxiway C) are allowed, according to the current Oxnard Airport *Fly Friendly* program. Due to the relatively short runway length (5,953 feet) at OXR, midfield departures would prevent some fixed-wing aircraft from safely departing the airport. In addition, the nearest residents (located north of the airport) would likely be impacted by greater levels of aircraft noise because most aircraft would not have sufficient distance to gain altitude prior to leaving the airfield. Aircraft that could gain sufficient altitude would be operated at higher thrust levels, which would also generate higher noise levels over noise-sensitive areas near the airport. Because there are no noise-sensitive land uses west of the airport that would benefit from midfield departures, this measure will not be considered further.

AIRPORT FACILITIES

In some cases, airport facilities can be developed or altered to reduce airport noise in noise-sensitive areas. For example, runways can be built or lengthened to shift aircraft noise to compatible areas. Runway thresholds can be displaced or relocated to shift noise, and barriers can be built to shield noise-sensitive areas from aircraft noise on the ground at the airport. The airport facilities alternatives are depicted on **Exhibit 5C** and discussed below.

New Runways and Runway Extensions

New runways aligned with compatible land development or runway extensions that shift aircraft operations farther away from residential areas are proven means of noise abatement. New runways are most effective where there are large compatible areas near an airport and existing runways are aligned with residential areas.

Evaluation/Conclusion

Oxnard Airport is surrounded by noise-sensitive land uses to the north, south, and east. Additionally, land in unincorporated Ventura County is protected from further development by the *Save Open Space and Agricultural Resources* (SOAR) voter initiative, and the existing runway is bounded to the west by Victoria Avenue and to the east by Ventura Road. This makes the prospect of constructing a new runway or runway extension for noise abatement unfeasible due to high construction costs and the high cost of moving existing primary roads; therefore, runway extensions and new runways will not be considered further.

Displaced and Relocated Thresholds

A displaced threshold involves the shifting of the touchdown zone for landings farther down the runway. A relocated threshold involves shifting both the touchdown point and the takeoff initiation point; the original runway end is completely relocated. These techniques can promote noise abatement by effectively increasing the altitude of aircraft at any given point beneath the approach. The amount of noise reduction depends on the increased altitude, which is dependent on the length of the displacement. Another potential noise abatement benefit of runway displacement may be the increased distance between the aircraft and noise-sensitive uses adjacent to the runway from the point at which reverse thrust is applied after touchdown.

Evaluation/Conclusion

Runway 25 currently has an existing 453-foot displaced threshold with a blast pad, while Runway 7 does not have a displaced threshold or blast pad. Additional threshold displacements would decrease the runway length available for landings, which would increase the need for thrust reversal and potentially increase aircraft brake wear and reduce safety margins.

NOISE ABATEMENT ALTERNATIVES

Facilities Development

Runway Lengthening

New Runways

Displaced/Relocated Thresholds

Acoustic Shielding

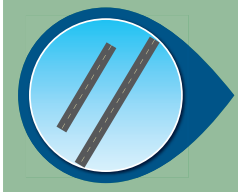
How Do They Help?

Shift noise from noise-sensitive area...

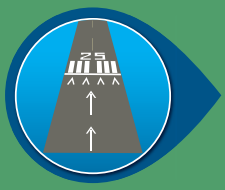
to noise-compatible area

Will These Options Work for Oxnard Airport?

✗ OXR is bounded by incompatible roadways to the east (S. Ventura Road) and to the west (N. Victoria Avenue), limiting runway length.

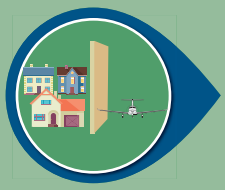


✗ New runway for noise abatement unlikely to be supported or approved by FAA.



✓ Runway 25 - 453 feet displaced threshold

✓ Most effective when noise-sensitive land uses are located near the runway ends



✓ Noise sensitive uses within the 65 dB CNEL contour are located adjacent to noise source

? Evaluate effectiveness of barrier

The determination of the amount of additional threshold displacement must consider the runway length required for landing, in addition to the amount of noise reduction provided by the displacement. A considerable displacement is needed to produce a significant reduction in noise. (For example, if a runway threshold is displaced 1,000 feet, the altitude of an aircraft along the approach path would increase by only 50 feet.)

Unlike threshold displacement, threshold relocation increases noise off the runway end opposite the relocation because of the shift in the point of takeoff. Aircraft would be at lower altitudes at any given down-range location after takeoff than they would be without the relocation. Any reductions in arrival noise caused by threshold relocations would be offset by increases in departure noise off the opposite runway end.

Any measure that would reduce Oxnard Airport's runway length would reduce the safety margins of aircraft currently operating at the airport. Additionally, there are no noise-sensitive land uses within the 65 CNEL contours to the east and the west of the airport that would benefit from additional threshold displacement or relocation; therefore, these techniques do not merit further consideration.

Acoustical Barriers

Acoustical barriers, such as noise walls or berms, are intended to shield areas from ground-based noise emissions from aircraft powering up for takeoff and rolling down the runway. It is also possible to use the orientation of buildings on the airport to provide a noise barrier to protect nearby residential areas from noise. Noise walls work best over relatively short distances, and their benefits are greatly affected by surface topography and wind conditions. The effectiveness of a barrier is directly related to the distance of the noise source from the receiver and the distance of the noise source from the barrier, as well as the angle between the ends of the berm and the receiver.

While noise walls and berms can attenuate noise, they are sometimes criticized by airport neighbors because they obstruct views. Another common complaint is that airport noise can become more alarming, particularly noise from unusual events, because people are unable to see the cause of the noise.

Evaluation/Conclusion

There are a limited number of impacts (23 dwelling units) within the existing and future condition 65 CNEL noise contours that may benefit from a noise wall or berm as a potential mitigation measure. This measure should be considered for inclusion in the NCP to reduce impacts to residents within the 65 CNEL noise contour. However, it is important to note that noise walls and berms are not effective for aircraft overflight noise, which is the primary concern for residents identified in this study.

Aircraft Run-up Location and Enclosures

Engine run-ups are a necessary part of aircraft service and maintenance. Run-ups are necessary to diagnose problems and test the effectiveness of maintenance work. Run-up noise can be especially

disturbing because of its unpredictable nature. While noise from takeoffs and landings is relatively brief and has a particular pattern to which a person can adjust, the duration of a run-up can vary from 30 seconds to several minutes, and the listener has no way of knowing how long any given run-up will be. If the run-up is at or near full power, the resulting noise level can be extremely high.

The location of aircraft run-ups can vary depending on the number of maintenance businesses on the airport and available ramp area for these testing procedures to occur. Designating an area for maintenance run-ups away from noise-sensitive land uses can be an effective way to reduce noise impacts from these operations.

An engine run-up enclosure is a special kind of noise barrier that can be appropriate at airports with aircraft engine maintenance operations. Run-up enclosures are designed so that aircraft can taxi or be towed into them to perform run-up procedures while shielding the surrounding areas from noise. These structures are designed to absorb and deflect the noise from run-ups, thus reducing noise levels off the airport.

Evaluation/Conclusion

The current *Fly Friendly* voluntary noise abatement procedures at Oxnard Airport limit high-power engine run-ups for maintenance between 7:00 p.m. and 7:00 a.m. Additionally, there is a designated marked run-up area to the south of the runway that serves three existing aircraft maintenance facilities at the airport. The run-up area is buffered from noise-sensitive land uses to the south of W 5th Street by airport property, a large apron, and hangar development. Maintenance and pre-flight run ups are also not correlated with noise complaints or comments received during this study; therefore, this measure does not merit further consideration.

AIRCRAFT OPERATIONAL PROCEDURES

Aircraft operating procedures are measures a pilot can take to reduce noise an aircraft makes during takeoff and landing, as well as in flight. It is important to note that safety is the first and foremost deciding factor for a pilot when flying; therefore, although there may be recommended operation procedures that reduce noise, it may not always be safe to use them.

Aircraft operational procedures that may reduce noise impacts are shown on **Exhibit 5D** and include:

- Reduced thrust takeoffs
- Thrust cutbacks after takeoff
- Maximum climb departures
- Minimum approach altitudes
- Use of minimum flaps during approaches
- Steeper approach angles
- Limitations on the use of reverse thrust during landings

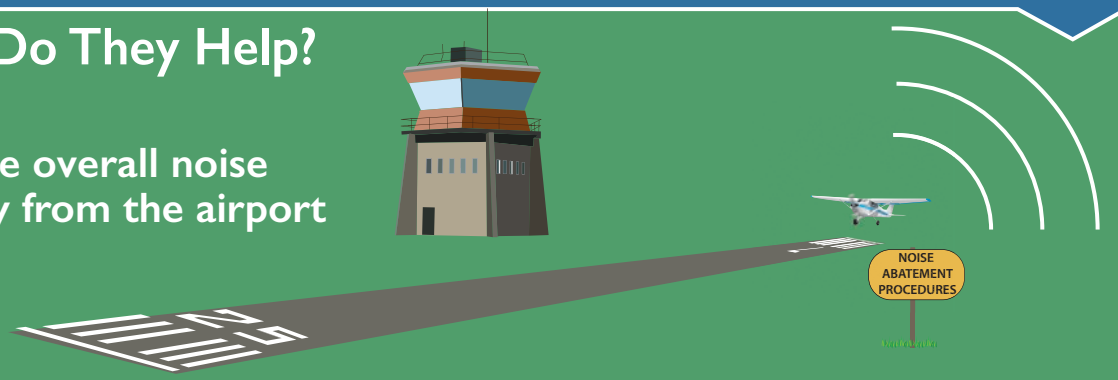
NOISE ABATEMENT ALTERNATIVES

Aircraft Operating Procedures

- Reduced Thrust Takeoffs
- Thrust Cutbacks After Takeoff
- Maximum Climb Departures
- Minimum Approach Altitudes
- Approach Profiles
- Limitations on Reverse Thrust on Landing

How Do They Help?

Reduce overall noise energy from the airport



Will These Options Work for Oxnard Airport?

- ☒ Reduces safety margin
- ✓ Current voluntary noise abatement procedures:
  1. Fly at or above PAPI glideslope
  2. Utilize low energy approaches
- ✓ Manufacturers provide suggested thrust cutbacks after takeoff to reduce noise and fuel consumption
- ☒ Mandated thrust cutbacks are problematic to get approved and enforce
- ☒ Non-standard approach procedures reduce safety margins.
- ✓ Use best rate of climb when departing any runway
- ✓ Turn upon reaching 700' or continue climbing at least 1/2 mile past the shoreline
- ☒ Fixed runway length eliminates this measure

Reduced Thrust Takeoffs

A reduced thrust takeoff for jet aircraft involves takeoff with less than full thrust. A reduced power setting is used throughout takeoff roll and climb. Use of the procedure depends on aircraft weight, weather and wind conditions, pavement conditions, and runway length. Because these conditions vary considerably, it is not possible to safely mandate the use of reduced thrust departures.

Evaluation/Conclusion

In practice, business jet operators use reduced thrust departures to conserve fuel, reduce engine wear, and abate noise. Additional efforts to encourage the use of deeper reduced thrust takeoffs could reduce the operational control and safety of an aircraft and are unlikely to yield noise abatement benefits.

Because of the safety implications of these procedures, they are best left to the discretion of pilots and aircraft operators; therefore, reduced thrust takeoffs do not merit further consideration.

Thrust Cutbacks for Jets

Standardized thrust cutback departure procedures have been established by each aircraft manufacturer to promote safe, efficient use of aircraft, as well as for noise abatement. While the procedures of each aircraft manufacturer differ, they all involve thrust reduction soon after takeoff and initial acceleration. This reduction normally occurs between 1,000 and 3,000 feet above the ground.

The amount of thrust reduction depends on aircraft weight, temperature, and flap setting. A significant but safe reduction in thrust often can reduce noise within the 65 and 70 CNEL noise contours, but also can increase noise down-range from the airport.

Evaluation/Conclusion

While some airports have defined special thrust cutback departure procedures, approval and implementation of these procedures is problematic for several reasons. First, a proliferation of airport-specific procedures may cause difficulty for pilots. Second, mandating the use of thrust cutbacks would require verification and oversight. As a critical flight operation, the use of thrust cutbacks in any given situation should be left to the discretion of the pilot to avoid eroding safety margins.

Jet operations account for less than one percent of local and 3.15 percent of itinerant operations for the existing condition at OXR, and the limited noise impacts (23 residential dwelling units) are located to the north of the runway; therefore, mandating thrust cutbacks for jets does not merit further consideration.

Maximum Climb Departures

Maximum climb departures can reduce noise exposure over populated areas some distance from an airport. This procedure requires the use of maximum thrust with no cutback on departure. Consequently, the potential noise reductions in the outlying areas are at the expense of significant noise increases closer to the airport.

Evaluation/Conclusion

The nearest noise-sensitive land uses are immediately north of the airport; however, noise complaints that correlate with overflight activity come from residential areas surrounding the airport to the west and south. Most of the noise complaints are associated with touch-and-go turns that do not following the existing voluntary noise abatement procedures. Because of the considerable distance of residential areas from the airport at the end of Runway 7, the potential for noise reductions in the outlying areas merits consideration. The benefits of maximum climb departures on Runway 7 are to outlying areas to the west, where overflights occur over noise-sensitive residential neighborhoods.

The current voluntary noise abatement program for Oxnard Airport recommends that pilots use the best rate of climb when departing any runway, which is consistent with this measure. Additionally, there are noise-sensitive land uses (23 residential dwelling units) within the 65 CNEL contour closer to the airport; therefore, mandating thrust cutbacks for jets does not merit further consideration.

Minimum Approach Altitudes

These procedures entail an air traffic control (ATC) requirement that all positively controlled aircraft approaches be conducted at a specified minimum altitude until an aircraft must begin its descent to land. This would affect only aircraft a considerable distance from the airport and well outside the noise contours. Because aircraft on approach use little power, they tend to be relatively quiet. Accordingly, increases in approach altitudes result in only very small reductions in single-event noise.

Evaluation/Conclusion

The pattern altitude at Oxnard Airport is currently 1,000 feet above ground level (AGL) for single-engine aircraft and 1,400 feet AGL for multi-engine/jet aircraft. Minimum altitudes would apply to aircraft some distance from the airport, well outside the noise exposure contour area. Increases in approach altitude can yield only small reductions in noise. Even doubling the altitude of aircraft within the traffic pattern or circling approach would only achieve a noise reduction of four to six dB. Raising the pattern altitude may also create potential conflicts with NAS Point Mugu and Camarillo Airport operations. Additionally, raising the pattern altitude would enlarge the pattern, as aircraft would have to extend each leg of the traffic pattern to climb to or descend from the increased altitude.

Raising approach altitudes into Oxnard Airport would produce only very small noise reductions well outside the 65 CNEL noise contour. In addition, raising the traffic pattern altitude would potentially conflict with NAS Point Mugu and Camarillo Airport operations, and could expose additional individuals

to overflight noise, due to an elongated traffic pattern. Because raising the minimum approach altitude would shift overflight noise to the east due to an elongated pattern, and because there are limited noise-sensitive land uses (23 dwelling units) within the 65 CNEL noise contour, this measure will not be considered further at Oxnard Airport.

Use of Minimum Flaps During Approach and Two-Stage Descent Profiles

Approach procedures to reduce noise impacts were attempted in the early days of noise abatement but are no longer favorably received. The procedures include the minimal use of flaps in order to reduce power settings and airframe noise and the use of two-stage descent profiles.

Evaluation/Conclusion

These techniques raise safety concerns because they are non-standard and require an aircraft to be operated outside its optimal safe operating configuration. The associated higher descent rates and faster speeds reduce pilot reaction time and erode safety margins. They also increase stopping distances on the runway. Some of these procedures have actually been found to increase noise because of power applications needed to arrest high sink rates.

Because these procedures erode safety margins and offer little practical noise abatement benefit, and because there are limited noise-sensitive land uses (23 dwelling units) within the 65 CNEL noise contour, these measures will not be considered further at Oxnard Airport.

Use of Continuous Decent Profiles

A continuous descent approach (CDA) involves maintaining a constant-angle descent (commonly three degrees) during landing until the airport's established approach procedure is met. CDAs are designed to reduce fuel consumption and noise, compared to conventional approaches that "stair-step" as aircraft descend. Ideally, a continuous descent approach starts from the top of descent (i.e., at cruise altitude) and allows the aircraft to utilize its individual optimal vertical profile down to the runway threshold.

Evaluation/Conclusion

The noise benefits a continuous descent approach offers are limited to locations typically around 10 to 25 miles from the runway. There is no difference between a CDA and a conventional approach once an aircraft using the latter approach joins the final glide path, resulting in no change to the CNEL noise exposure contours; the 2022 65 CNEL noise exposure contours do not extend off airport property to the east or to the west.

Because there are limited noise-sensitive land uses (23 dwelling units) within the 65 CNEL noise exposure contours, continuous descent approaches will not be considered further at Oxnard Airport.

Reverse Thrust Restrictions

Thrust reversal is routinely used to slow jet aircraft immediately after touchdown. This is an important safety procedure that has the added benefit of reducing brake wear. Limits on the use of thrust reversal can reduce noise impacts off the sides of the runways, although they would not significantly reduce the size of the noise contours; however, restrictions on the use of reverse thrust are not considered fully safe.

Evaluation/Conclusion

Because there are limited noise-sensitive land uses (23 dwelling units) within the 65 CNEL noise contour for Oxnard Airport, a restriction on thrust reversal on jet aircraft (which comprised less than four percent of the total annual operations at the airport in 2023 and are projected to comprise less than 11 percent in 2027) would not produce material benefits. Limitations on the use of reverse thrust increase runway occupancy time and brake wear on aircraft. Because reverse thrust is an operational flight procedure with a direct effect on safety, decisions about its usage should be left to the discretion of pilots. This procedure does not merit further consideration.

AIRPORT REGULATIONS

In developing noise compatibility programs, Part 150 requires that airports study the possible implementation of airport use restrictions to abate aircraft noise. (See 14 CFR Part 150, B150.7[b][5].) The courts have recognized the rights of airport proprietors to reduce their liability for aircraft noise by imposing restrictions that are reasonable and do not violate contractual agreements with the FAA, conditioning the receipt of federal aid (known as grant assurances), provided that:

- Constitutional prohibitions on unjust discrimination and the imposition of undue burdens on interstate commerce are respected;
- The restrictions are crafted to avoid infringing on regulatory areas preempted by the federal government; and
- The regulations are evaluated under the requirements of 14 CFR Part 161.

It follows that airport noise and access restrictions may be proposed by an airport operator in its Part 150 noise compatibility program; however, the requirements of Part 161 need to be met before a recommended measure in a Part 150 noise compatibility program can be implemented.

It should also be noted that it is FAA policy that airport use restrictions should be considered only as a measure of last resort when other mitigation measures are inadequate to satisfactorily address a noise problem and a restriction is the only remaining option that could provide noise relief. (See FAA Order 5190.6B, *Airport Compliance Manual*.)

14 CFR Part 161

In the *Airport Noise and Capacity Act* (ANCA) of 1990, U.S. Congress established a national phase-out policy for Stage 2 aircraft that weigh more than 75,000 pounds (see Parts 91 and 161 discussion on pages 1-5 of the *Noise Exposure Maps* document), as well as analytical and procedural requirements for airports desiring to establish noise or access restrictions on Stage 2 or Stage 3 aircraft. Regulations implementing these requirements are published in Part 161.

Part 161 requires the following actions to establish a local restriction on Stage 2 aircraft:

- An analysis of the costs and benefits of the proposed restriction and alternative measures
- Publication of a notice of the proposed restriction in the Federal Register and an opportunity for comment on the analysis

While implementation of a Stage 2 aircraft operating restriction does not require FAA approval, the FAA determines whether adequate analysis has been completed and all notification procedures have been followed.

For restrictions on Stage 3 aircraft, Part 161 requires a much more rigorous analysis, as well as final FAA approval of the restriction. Before approving a local Stage 3 noise or access restriction, the FAA must make the following findings:

- The restriction is reasonable, non-arbitrary, and non-discriminatory
- The restriction does not create an undue burden on interstate or foreign commerce
- The restriction maintains safe and efficient use of navigable airspace
- The restriction does not conflict with any existing federal statute or regulation
- The applicant has provided adequate opportunity for public comment on the proposed restriction
- The restriction does not create an undue burden on the national aviation system

Additional information regarding Part 161 studies undertaken to date can be found in the Resource Library at the end of this document.

Regulatory Options

Regulatory options discussed in this section and shown in **Exhibit 5E** include the following:

- Nighttime curfews and operating restrictions
- Landing fees based on noise or time of arrival
- Airport capacity limitations based on relative noisiness
- Noise budgets
- Restrictions based on aircraft noise levels

NOISE ABATEMENT ALTERNATIVES

Airport Restriction and Regulation

Curfews

Noise Based Landing Fees

Capacity Limitations

Aircraft Type Restrictions

Ground/ Training Activity Restrictions

How Do They Help?

Reduce overall noise energy from the airport

Will These Options Work for Oxnard Airport?

- ✓ Voluntary curfew - ALL operations - 11:00 p.m. to 6:00 a.m.
- ✓ No touch-and-go's or stop-and-go's between 8:00 p.m. and 7:00 a.m. (8:00 a.m.) on weekends
- ✓ No high power engine run-ups for maintenance between 7:00 p.m. and 7:00 a.m.

☒ FAA approval of additional airport restrictions and regulations is unlikely because there are no noise-sensitive residential land uses within the 2027 65 Community Noise Equivalent Level (CNEL) noise exposure contours

- Restrictions on touch-and-go operations or multiple approaches
- Restrictions on engine maintenance run-ups

Nighttime Curfews and Operating Restrictions

There are generally three types of curfews or nighttime operating restrictions: (1) closure of the airport to all arrivals and departures (a full curfew); (2) closure to departures only; and (3) closure to arrivals and departures by aircraft that exceed specified noise levels.

Evaluation

The time during which nighttime restrictions could be applied varies. The CNEL metric applies a 10-dB penalty to noise occurring between 10:00 p.m. and 7:00 a.m. and a 4.77-dB decibel penalty to noise occurring between 7:00 p.m. and 10:00 p.m. The 10:00 p.m. to 7:00 a.m. period could be defined as a curfew period. A shorter period that corresponds to very late night hours (e.g., from midnight to 6:00 a.m.) could also be specified.

- *Full Curfews* | While full curfews can totally resolve concerns about nighttime aircraft noise, they can be indiscriminately harsh. Not only would the loudest operations be prohibited, but quieter operations by light aircraft would also be banned by a full curfew. Full curfews also deprive the community of the services of some potentially important nighttime airport users.

  Important economic reasons drive nighttime airport activity. Early morning departures are often preferred by business travelers who wish to reach their destinations with a large part of the workday ahead of them, resulting in a significant savings in the cost of travel by reducing the need for overnight stays. Accordingly, early morning departures are often popular. Late night arrivals are similarly important, as they allow travelers to return home without incurring the costs of another night away.

- *Prohibition of Nighttime Departures* | The prohibition of nighttime departures would allow aircraft arrivals for those returning home, but would prohibit departures, which are generally louder than arrivals. Although somewhat less restrictive, this restriction would have a similar effect as full curfews at Oxnard Airport because scheduled early morning departures for the business travel market would be limited.

  As with a full curfew, a nighttime prohibition on departures would restrict access to the airport by Stage 3 aircraft. A full Part 161 analysis and FAA approval of the restriction would be required before it could be implemented.

- *Nighttime Restrictions Based on Aircraft Noise Levels* | Nighttime operating restrictions can be designed to apply to only aircraft that exceed specified noise levels. The restriction noise level would have to include the loudest and/or most commonly used aircraft at the airport in order to be effective in reducing the size of the CNEL noise contours. These restrictions would be subject to the special analysis procedures of Part 161. Any restrictions that affect Stage 3 aircraft would have to receive FAA approval.

Conclusion

Curfews and nighttime operating restrictions can be an effective way to reduce the size of CNEL noise contours around an airport. Because of the extra 10-dB weight assigned to nighttime noise, removing a single nighttime operation is equivalent to eliminating 10 daytime operations. The effect on the noise contours can be significant.

The current *Fly Friendly* voluntary noise abatement procedures include a voluntary curfew for all operations between 11:00 p.m. and 6:00 a.m. and expanded curfew hours for touch-and-go operations from 8:00 p.m. to 7:00 a.m. Additionally, the Ventura County Department of Airports has invested in radar flight tracking and noise complaint monitoring systems, as well as personnel to monitor night operations and identify and follow up with airport operators to educate them on the existing noise abatement procedures and airport operation hours.

Because there are limited noise-sensitive land uses (23 dwelling units) within the 65 CNEL contours that would be reduced through mandatory curfews, FAA disapproval of a curfew is likely. Additionally, implementation of nighttime restrictions can be costly and problematic and could require the completion and subsequent FAA approval of a Part 161 study; therefore, curfews will not be considered further.

Noise-Based Landing Fees

Differential landing fees based on either the noise level or the time of arrival have been used at some airports as incentives for aircraft owners to use quieter aircraft or operate at less sensitive times. A variable schedule of landing fees would be established based on the relative loudness of the aircraft, with departures by loud aircraft at night being charged the most and arrivals by quiet aircraft during the day being charged the least. To avoid being discriminatory, the fee must relate to both the time of day and certificated approach noise levels. Fees from such a program can finance noise abatement activities. This restriction does not provide a noise abatement benefit unless the fees are high enough to discourage use of the airport by the loudest aircraft.

Evaluation

Oxnard Airport has a fixed landing fee for aircraft over 12,500 pounds. As discussed in Chapter Two – Forecasts, Oxnard Airport experiences a limited number of jet and turboprop aircraft operations. Most local touch-and-go operations are performed by piston aircraft, and analysis of ADS-B flight track data indicates that 97.0 percent of piston aircraft operations at OXR occur during daytime hours. It is estimated that only 2,464 of the 87,871 total operations in 2022 were by piston aircraft operating during hours weighted as evening or night operations for CNEL calculation purposes. Developing a noise-based landing fee would be considered an airport noise restriction under Part 161; therefore, a Part 161 analysis would be required before such a fee system could be implemented. Any fee structure changes that would place a noise surcharge on aircraft would require FAA approval prior to implementation.

Conclusion

A noise-based landing fee system is intended to provide strong incentives for aircraft owners to convert their fleets to quieter aircraft and operate during daytime hours. Most operations at Oxnard Airport occur during daytime hours. Converting the existing landing fee structure to a noise-based landing fee is vulnerable to legal challenges, and FAA disapproval is also likely because there are limited impacts (23 dwelling units) within the 65 CNEL contour; therefore, noise-based landing fees will not receive additional consideration.

Capacity Limitations

Capacity limits are the third airport regulation option and have been used by airports encroached upon by noise-sensitive development to control cumulative noise exposure. This kind of restriction would impose a cap on the number of scheduled operations and is an imprecise way to control aircraft noise, as unscheduled operations would not be subject to the limit. Additionally, the limit on scheduled operations provides no incentive for conversion to quieter aircraft; instead, if passenger demand is increasing, it would encourage airlines to convert to larger aircraft, which often (but not always) tend to be noisier than smaller aircraft in the same Part 36 stage classification.

Evaluation/Conclusion

Airport capacity limitations are intended to control noise related to scheduled aircraft activity. Because all operations at Oxnard Airport are unscheduled, the airport could not enforce a capacity limit to control noise. For this reason, operational capacity limitations will not be discussed further.

Noise Budgets

In the late 1980s, noise budgets gained attention as a potential noise abatement tool. After the enactment of ANCA, which mandated the retirement of Stage 2 aircraft over 75,000 pounds, interest in noise budgets waned. Noise budgets are designed to limit airport noise and allocate noise among airport users. The intent is to encourage aircraft operators to convert to quieter aircraft or shift operations to less noise-sensitive hours. Before ANCA, the intent was to encourage conversion to Stage 3 aircraft and discourage the use of Stage 2 aircraft. As previously mentioned in Chapter One – Inventory, Stage 2 business jets that weigh less than 75,000 pounds are no longer be able to fly in the contiguous United States, in accordance with Title 49 United States Code (USC) § 47354; therefore, conversion to Stage 3 aircraft is already mandated by U.S. Congress.

Conclusion

Noise budgets are complex methods of promoting airport noise reduction. They are particularly vulnerable to criticism on grounds of discrimination and interference with interstate commerce. Noise budgets are extremely difficult to design in a way that will be seen as fair by all airport users and are likely to be quite expensive to develop. Negotiations on noise budget design and noise allocations are

likely to be long and contentious and would require the assistance of noise consultants and attorneys. The costs of administering the system would also be substantial. The documentation requirements are complicated and would require additional administrative staff.

A noise budget does not appear to be a practical option at Oxnard Airport. The process would be long, expensive, and contentious. FAA disapproval of a curfew is also likely because there are limited impacts (23 dwelling units) within the 65 CNEL contour; therefore, this alternative will not be discussed further.

Restrictions Based on Aircraft Noise Levels

Outright restrictions on the use of aircraft that exceed certain noise levels can reduce cumulative noise exposure at an airport. Aircraft that produce noise above certain thresholds, as defined in FAA Part 36, could be prohibited from operating at the airport at all or during certain times of the day. A variation is to impose a non-addition rule, prohibiting the addition of new flights by aircraft that exceed the threshold level at all or during certain times of the day. These restrictions would be subject to the special analysis procedures of Part 161. Any restrictions that affect Stage 3 aircraft would have to receive FAA approval.

Noise limits based on Part 36 certification levels have the virtue of being fixed national standards that are understood industry-wide; however, the values are averages and do not represent variations in noise levels based on different methods of operating the aircraft. As an alternative, restrictions could be based on measured noise levels at the airport. This has the advantage of focusing on noise produced in a specific situation and, in theory, gives aircraft operators increased flexibility to comply with the restrictions by designing special approach and departure procedures to minimize noise. This alternative has the disadvantage of requiring extra administrative effort to design testing procedures, monitor tests, interpret monitoring data, and design the restrictions.

Evaluation

Whether threshold noise levels are based on Part 36 or measured results, care must be taken to ensure that the restriction does not fall with undue harshness on any particular operator. The feasibility of complying with the restriction, given existing technologies and equipment, must also be considered. Such a restriction would be subject to legal challenges and rejection by the FAA as unjustly discriminatory and potentially burdensome to interstate commerce.

Conclusion

The *Fly Friendly* voluntary noise abatement procedures for Oxnard Airport require older and louder turbojet aircraft to avoid use of the airport. Mandatory restrictions based on noise levels could be viewed as discriminatory and could therefore be subject to litigation and rejection by the FAA because there are limited impacts (23 dwelling units) within the 65 CNEL noise contours. In addition, the requirements of a costly 14 CFR Part 161 study would have to be met before any restriction on Stage 3 aircraft could be implemented (restrictions on Stage 2 aircraft under 75,000 pounds are already mandated, as of December 31, 2015); therefore, this alternative will not receive further consideration.

Touch-and-Go Restrictions

Restrictions on touch-and-go or multiple approach operations can be effective in reducing noise when those operations are extremely noisy, unusually frequent, or occur at very noise-sensitive times of the day. At many airports, touch-and-go operations are associated with primary pilot training, although this type of operation is also performed by licensed pilots practicing approaches.

Evaluation

Touch-and-go and multiple approach operations are frequently performed at Oxnard Airport across aircraft types and are the primary source of noise complaints from the community, based on noise complaints and feedback received during the community listening session. Based on the operations count used to develop the 2022 noise exposure contours, there were 55,635 local operations, which account for over half of the total operations at Oxnard Airport. Generally, these training sessions involve multiple approach or touch-and-go operations, which are mainly performed by light single-engine aircraft.

As previously discussed, a separate voluntary curfew has been implemented as part of the *Fly Friendly* voluntary noise abatement measures for Oxnard Airport. The curfew restricts touch-and-go operations to daytime hours, and piston aircraft were operating during daytime hours 97 percent of the time in 2022.

Restricting touch-and-go operations would have legal ramifications, as this type of restriction would conflict with grant assurances, could conflict with the terms of local fixed base operator leases, and would require FAA approval of a Part 161 study. FAA disapproval of a restriction on training operations is likely because there are limited impacts (23 dwelling units) within the 65 CNEL contour.

Conclusion

Multiple approach and touch-and-go operations are a necessary aspect of maintaining pilot proficiency. The area pilots and flight schools that operate at Oxnard Airport need to perform such operations as part of pilot training programs. Restrictions on training operations would seriously impact the viability of these businesses and would be a violation of the airport's grant assurances (see **Appendix C** for a list of the grant assurances). FAA disapproval of a restriction on training operations is likely through the Part 161 study process because there are limited impacts within the 65 CNEL contour; therefore, restrictions on touch-and-go activity will not be considered further.

Engine Run-up Restrictions

Engine run-ups are a necessary and critical part of aircraft operation and maintenance. Engine run-ups are often more annoying than aircraft overflight noise because they are more unpredictable and usually last longer than overflights.

Evaluation/Conclusion

As previously mentioned, engine maintenance run-up activity at Oxnard Airport is not correlated with noise complaints or comments received during this study. The airport has facilities that provide aircraft maintenance to a variety of aircraft types, and occasional maintenance run-up procedures are performed at a designated area on the airfield that is buffered from noise-sensitive land uses to the south. Run-up activity at Oxnard Airport does not cause the 65 CNEL noise exposure contours to extend over noise-sensitive land use, and impacts within the 65 CNEL contour are limited to 23 dwelling units to the north of the runway; therefore, maintenance run-up restrictions are not warranted at this time and will not be considered further.

ADDITIONAL CONSIDERATIONS

The *Fly Friendly* pilot education program for Oxnard Airport has been in place since the 2000 *Oxnard Airport Noise Compatibility Program* was drafted. This education program could be expanded to include local residents. An expanded educational program could include several components that are directed at reducing noise through pilot education and others that are intended to raise the awareness of current and potential residents about the existence of the airport.

These programs could be a cooperative approach that includes the following efforts:

- Continuing distribution of *Fly Friendly* program information brochures and maintenance of on-airport noise abatement signage
- Meetings with pilots and students to discuss safety and noise abatement issues at the airport
- A homeowner outreach program to establish communication with the public about noise issues; airport staff could be made available to meet with homeowner groups to discuss various noise-related issues
- A real estate agent outreach program to educate real estate agents and potential home buyers about Oxnard Airport operations and its presence in the community
- Airport open house events to allow the public to visit the airport and learn about its operations

SUMMARY

This chapter has analyzed the range of potential noise abatement techniques for use at Oxnard Airport. **Table 5B** presents the preliminary list of noise abatement alternatives considered and the conclusion for each measure. Because there are limited noise-sensitive impacts (23 dwelling units) within the 65 CNEL contours, the only viable noise abatement measures are a potential acoustical barrier and continuation of the *Fly Friendly* pilot education and awareness program. The results of this analysis will be reviewed by the planning advisory committee and the general public, and final recommendations will be presented in Chapter Seven – Noise Compatibility Plan.

TABLE 5B | Noise Abatement Alternatives Summary – Oxnard Airport

Runway Use and Flight Routing Measure	Description	Conclusion
Preferential and Rotational Runway Use	Favoring the runway or runways that lead traffic over compatibly developed areas.	No further consideration.
Departure Turns	Routing departing aircraft over noise-compatible areas immediately after takeoff.	No further consideration.
Visual and Offset Instrument Approaches	Modifying approaches that involve turns relatively close to the airport.	No further consideration.
Midfield Departures	Beginning engine spool-ups and takeoff rolls from a certain point near midfield.	No further consideration.
Airport Facilities Measure	**Description**	**Conclusion**
New Runways and Runway Extensions	Installing new runways or runway extensions to shift aircraft operations away from residential areas.	No further consideration.
Displaced and Relocated Thresholds	Shifting the touchdown zone and/or the takeoff initiation point, relocating the original runway end.	No further consideration.
Acoustical Barriers	Using walls, berms, or buildings, to shield areas from ground-based noise.	To be considered.
Aircraft Run-up Location and Enclosures	Designating an area for maintenance run-ups away from noise-sensitive land uses and/or installing a structure to absorb and deflect the noise from run-ups.	No further consideration.
Reduced Thrust Takeoffs	A reduced thrust takeoff for jet aircraft that involves takeoff with less than full thrust.	No further consideration.
Thrust Cutbacks for Jets	Use of standardized thrust cutback departure procedures established by each aircraft manufacturer.	No further consideration.
Maximum Climb Departures	Use of maximum thrust with no cutback on departure.	No further consideration.
Minimum Approach Altitudes	Air traffic control (ATC) requirement that all positively controlled aircraft approaches be conducted at a specified minimum altitude until an aircraft must begin its descent to land.	No further consideration.
Use of Minimum Flaps During Approach and Two-Stage Descent Profiles	Using flaps to reduce power settings and airframe noise and/or using two-stage descent profiles.	No further consideration.
Use of Continuous Decent Profiles	Maintaining a constant-angle descent (commonly three degrees) during landing until the airport's established approach procedure is met.	No further consideration.
Reverse Thrust Restrictions	Limiting the use of thrust reversal.	No further consideration.
Airport Regulations	**Description**	**Conclusion**
Nighttime Curfews and Operating Restrictions	Restricting nighttime operations by closing the airport to all arrivals and departures, to departures only, or to arrivals and departures by aircraft that exceed specified noise levels.	No further consideration.
Noise-Based Landing Fees	Charging differential landing fees based on either the noise level or the time of arrival.	No further consideration.
Capacity Limitations	Imposing a cap on the number of scheduled operations.	No further consideration.
Noise Budgets	Allocating noise among airport users.	No further consideration.
Restrictions Based on Aircraft Noise Levels	Restricting the use of aircraft that exceed certain noise levels.	No further consideration.

Continues on next page.

TABLE 5B | Noise Abatement Alternatives Summary – Oxnard Airport (continued)

Touch-and-Go Restrictions	Restricting touch-and-go or multiple approach operations.	No further consideration.
Engine Run-up Restrictions	Restricting engine run-up activities.	No further consideration.
Additional Considerations	**Description**	**Conclusion**
Fly Friendly Program Information	Continuing distribution of *Fly Friendly* program information brochures and maintenance of on-airport noise abatement signage.	To be considered.
Pilot Meetings	Holding meetings with pilots and students to discuss safety and noise abatement issues.	To be considered.
Homeowner Outreach	Establishing communication with the public about noise issues; meeting with homeowner groups to discuss various noise-related issues.	To be considered.
Real Estate Outreach	Establishing a real estate agent outreach program to educate real estate agents and potential home buyers about Oxnard Airport operations and its presence in the community.	To be considered.
Public Outreach	Hosting airport open house events to allow the public to visit the airport and learn about its operations.	To be considered.