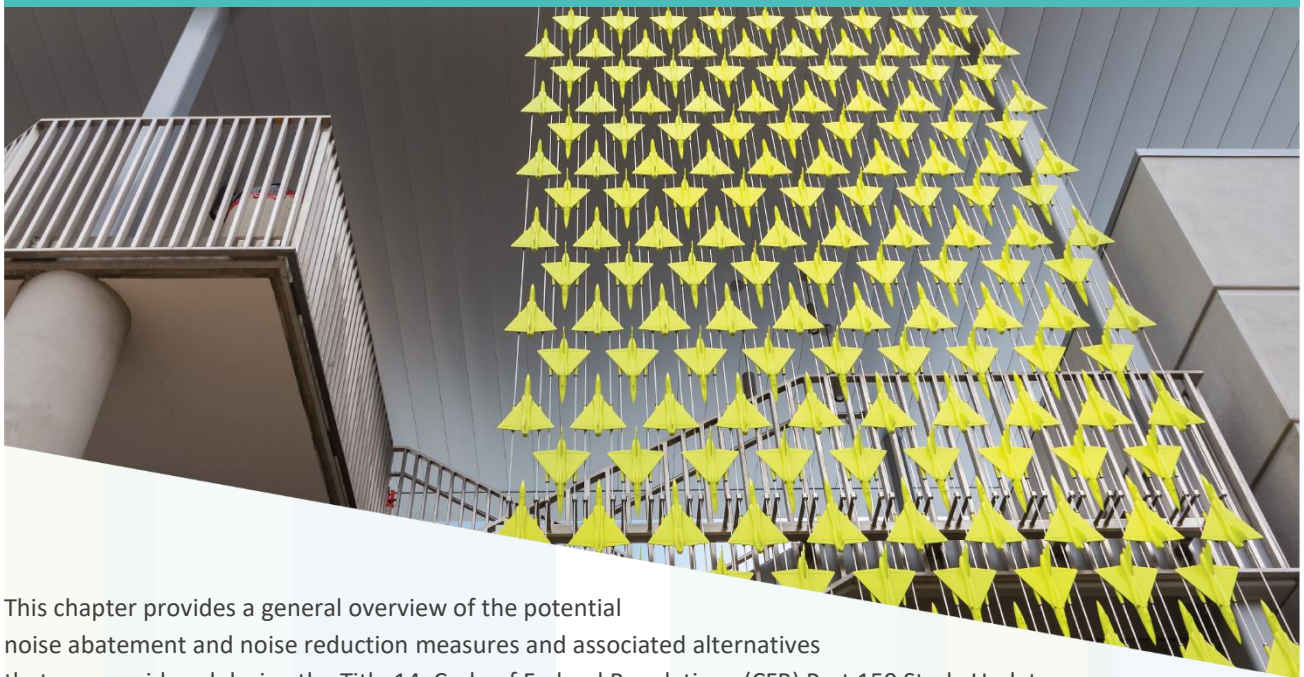


6 | POTENTIAL NOISE ABATEMENT MEASURES

14 CFR
PART 150
UPDATE





This chapter provides a general overview of the potential noise abatement and noise reduction measures and associated alternatives that are considered during the Title 14, Code of Federal Regulations (CFR) Part 150 Study Update (14 CFR Part 150 Study) process. Some alternatives included in this chapter are required for evaluation per 14 CFR Part 150. Other alternatives are included to address specific local noise issues associated with San Diego International Airport (SDIA). This chapter describes each noise abatement and reduction alternative considered and the reasoning for whether each recommendation is carried forward. In addition, this chapter explains the roles and responsibilities of various parties in noise abatement planning and the implementation of various noise abatement measures. Alternatives that are not eliminated are brought forward into **Chapter 7 (Operational Alternatives)** and **Chapter 8 (Facility, Land Use, and Program Management Alternatives)** for further analysis. It is important to note that a 14 CFR Part 150 Study focus is required to be on reducing non-compatible land uses within the 65 CNEL or greater contours.

Information on required program standards, alternatives, guidelines, and regulatory limitations may be found herein. **Chapter 6** is laid out as follows:

- **6.1 Background**
- **6.2 Roles and Responsibilities**
- **6.3 Regulatory Context - National Noise Reduction Efforts**
- **6.4 Discussion of Measures Available**
- **6.5 Summary**

6.1 BACKGROUND

Section B150.5 – *Program Standards* of the 14 CFR Part 150 regulations lists the criteria that every alternative must meet to be considered for inclusion in the Noise Compatibility Program (NCP). The regulation states that, “the airport operator shall evaluate alternative noise control actions and develop an NCP which:

- A. *Reduces existing non-compatible uses and prevents or reduces the probability of the establishment of additional non-compatible uses.*
- B. *Does not impose undue burden on interstate and foreign commerce.*
- C. *Provides for revision in accordance with the regulation.*
- D. *Is not unjustly discriminatory.*
- E. *Does not derogate safety or adversely affect the safe and efficient use of airspace.*
- F. *To the extent practicable, meets both local needs and needs of the national air transportation system, considering tradeoffs between economic benefits derived from the airport and the noise impact.*
- G. *Can be implemented in a manner consistent with all of the powers and duties of the Administrator of Federal Aviation Administration (FAA).”*

In addition to the criteria that each alternative must meet, Section B150.7 – *Analysis of Program Alternatives* of 14 CFR Part 150 identifies a number of specific alternatives that must be considered in developing a 14 CFR Part 150 NCP:

- “1. *Acquisition of land and interests therein, including, but not limited to air rights, easements, and development rights, to ensure the use of property for purposes which are compatible with airport operations.*
- 2. *The construction of barriers and acoustical shielding, including the soundproofing of public buildings.*
- 3. *The implementation of a preferential runway system.*
- 4. *The use of flight procedures (including the modifications of flight tracks) to control the operation of aircraft to reduce exposure of individuals (or specific noise sensitive areas) to noise in the area around the airport.*
- 5. *The implementation of any restriction on the use of the airport by any type or class of aircraft based on the noise characteristics of those aircraft. Such restrictions may include, but are not limited to—*
 - a. *Denial of use of the airport to aircraft types or classes which do not meet Federal noise standards.*
 - b. *Capacity limitations based on the relative noisiness of different types of aircraft.*
 - c. *Requirement that aircraft using the airport must use noise abatement takeoff or approach procedures previously approved as safe by the FAA.*
 - d. *Landing fees based on FAA certificated or estimated noise emission levels or on time of arrival; and*
 - e. *Partial or complete curfews.*



6. *Other actions or combinations of actions which would have a beneficial noise control or abatement impact on the public.*
7. *Other actions recommended for analysis by the FAA for the specific airport.”*

Every alternative described above was reviewed to determine whether it is applicable to SDIA, and whether the implementation of each alternative meets the criteria requirements for alternatives set out in 14 CFR Part 150. Although this study follows the 14 CFR Part 150 process, it is important to note that there are other Federal Laws and regulations that limit how/when alternatives may be implemented.

6.2 ROLES AND RESPONSIBILITIES

Before considering the specific aircraft noise and land use alternatives in more detail, it is important to understand the authority that various parties have in order to make a change that results in minimizing noise impact and/or providing additional noise reduction. This is referred to as roles and responsibilities.

The FAA’s Airport Compliance Manual – Order 5190.6B establishes the following policies regarding roles and responsibilities:

*The **federal government** has the authority and responsibility to control aircraft noise by the regulation of source emissions, by flight operational procedures, and by management of the air traffic control system and navigable airspace in ways that minimize noise impact on residential areas, consistent with the highest standards of safety and efficiency. The federal government also provides financial and technical assistance to airport proprietors for noise reduction planning and abatement activities and, working with the private sector, conducts continuing research into noise abatement technology.*

***Airport sponsors** are primarily responsible for planning and implementing actions designed to reduce the effect of noise on residents of the surrounding area. Such actions include optimal site location, improvements in airport design, noise abatement ground procedures, land acquisition, and restrictions on airport use that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce.*

***State and local governments and planning agencies** should provide for land use planning and development, zoning, and housing regulations that are compatible with airport operations.*

***Air carriers** are responsible for retirement, replacement or retrofit for older jets that do not meet federal noise level standards, and for scheduling and flying airplanes in a way that minimizes the impact of noise on people.*

***Air travelers and shippers** generally should bear the cost of noise reduction, consistent with established federal economic and environmental policy that the costs of complying with laws and public policies should be reflected in the price of goods and services.*



Residents and prospective residents in areas surrounding airports should seek to understand the noise problem and what steps can be taken to minimize its effect on people. Individual and community responses to aircraft noise differ substantially and, for some individuals, a reduced level of noise may not eliminate the annoyance or irritation. Prospective residents of areas impacted by aircraft noise, thus, should be aware of the potential effect of noise on their quality of life and act accordingly.¹

6.3 REGULATORY CONTEXT - NATIONAL NOISE REDUCTION EFFORTS

The history of noise regulations is important to understand the regulatory context for potential alternatives that can be included in a 14 CFR Part 150 Study. Noise abatement measures carried forward in an NCP must meet all the criteria set out in 14 CFR Part 150 and must not conflict with regulations (see **Chapter 3** for discussion on regulations).

A number of existing regulations influence the ability to move noise alternatives forward for evaluation in a 14 CFR Part 150 process. For example, while this 14 CFR Part 150 Study Update examines use restrictions as potential alternatives for noise abatement, a Title 14, Code of Federal Regulations Part 161 (14 CFR Part 161) application, which defines requirements for implementing new access restrictions at airports, must be conducted and approved by the FAA prior to any use restrictions being implemented, and only after all non-regulatory alternatives have been examined.² In addition, CFR Part 161 requires an extensive cost-benefit analysis that the estimated potential benefits of the restriction have a reasonable chance to exceed the estimated potential cost of the adverse effects on interstate and foreign commerce. This is important to remember when reviewing alternatives associated with use restrictions, which allows an airport to impose reasonable restrictions based on the type of aircraft or type of operation that can be safely accommodated at the airport that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce. In addition, SDIA currently has an existing restriction (departure curfew) in place that restricts the time of day that aircraft can depart from the airport. This restriction (curfew) was implemented prior to the Airport Noise and Capacity Act of 1990 (ANCA) and is therefore considered a legacy curfew. Implementing a curfew like the one at SDIA unilaterally without FAA approval through a 14 CFR Part 161 Study would not be possible today based on the statutory requirements of ANCA. Therefore, because this restriction was legaced by ANCA and modifications to the restriction including the core hours, may require a Part 161 application (and jeopardize the ability to keep the curfew), no attempt to modify or expand the restriction will be addressed in this 14 CFR Part 150 Study. This was an agreed upon condition by both the CAC and TAC at the initiation of the Study, because the benefit of the curfew outweighed the risk of jeopardizing it given that few Part 161 applications have ever been approved.

¹ FAA. (2009). ORDER 5190.6B, FAA Airport Compliance Manual (p. 13-2). Retrieved June 1, 2020 from https://www.faa.gov/documentLibrary/media/Order/5190_6b.pdf

² FAA. (2009). ORDER 5190.6B, FAA Airport Compliance Manual, Appendix X (p. 289). Retrieved June 1, 2020 from https://www.faa.gov/documentLibrary/media/Order/5190_6b.pdf



6.4 DISCUSSION OF MEASURES AVAILABLE

The outcome of a 14 CFR Part 150 Study is intended to define a balanced and cost-effective program for reducing land uses non-compatible with existing and future noise levels.³ The 14 CFR Part 150 NCP process focuses on the development of alternatives that can be implemented to address noise associated with aircraft operations. The objective is to explore a wide range of feasible land use measures, aircraft operational measures and facility measures along with administrative actions, seeking accommodation of both airport users and airport neighbors within acceptable safety, economic, and environmental parameters. This section contains a generalized description of potential noise abatement and mitigation measure and the resulting alternatives or actions that may be considered for SDIA.

A general evaluation of each alternative is made based on the regulatory criteria outlined in **Chapter 3 (Background Information on Noise and its Measurements)** that dictate what criteria an alternative must meet to be considered for inclusion in the NCP. To summarize these criteria, an alternative must: 1) have the potential of resolving the problem; 2) be implementable within acceptable economic, environmental, and social costs; and, 3) be implementable in compliance with federal, state, and local legislation, regulations, and ordinances.

Based on Section B150.7 – *Analysis of Program Alternatives* in the 14 CFR Part 150 requirements, the noise alternatives are presented according to the following categories:

- A. *Noise abatement alternatives [includes abatement and mitigation alternatives] for which the airport operator has adequate implementation authority;*
- B. *Noise abatement alternatives [includes abatement and mitigation alternatives] for which the requisite implementation authority is vested in a local agency or political subdivision governing body or a state agency or political subdivision governing body; and,*
- C. *Noise abatement options for which requisite authority is vested in the FAA or other Federal agency.*

It is important to note that these categories refer to the generalized implementation authority (identifying who is most likely to implement), and there is some overlap within alternatives on who can implement or who plays a part in implementation. While implementation may lie with SDCRAA, in certain cases, there might be federal regulations that regulate how an alternative is implemented and the steps required to implement an action.

For instance, many noise actions related to restrictions or limits that are within the implementation authority for SDCRAA are also regulated under 14 CFR Part 161. These alternatives cannot be implemented without SDCRAA completing the steps required in a 14 CFR Part 161 application and having it approved by the FAA. Further, these alternatives cannot be evaluated before all non-restrictive alternatives are examined first.⁴ As stated in **Chapter 3**, the only 14 CFR Part 161 Study approved by FAA was conducted for Naples, Florida and the outcome was a restriction on Stage 2 general aviation aircraft.

³ 14 CFR Part 150, Airport Noise Compatibility Planning, Sec. B150.1 (a) Scope and Purpose. Retrieved June 1, 2020 from <https://www.ecfr.gov/cgi-bin/text-idx?node=pt14.3.150&rtn=div5>.

⁴ FAA. (2009). ORDER 5190.6B, FAA Airport Compliance Manual, Appendix X (p. 183). Retrieved June 1, 2020 from https://www.faa.gov/documentLibrary/media/Order/5190_6b.pdf



6. Potential Noise Abatement Measures

Under 14 CFR Part 150, the FAA must review the NCP alternatives with respect to the program standards outlined in Section B150.5 – *Program Standards* of the 14 CFR Part 150 regulation. In a formal Record of Approval (ROA), the FAA must approve or disapprove each alternative brought forward to be potentially eligible for federal funding. Airport Improvement Program (AIP) eligibility will be determined when a project is ready to be implemented. FAA may also add conditions to be met prior to implementation such as requiring a National Environmental Policy Act (NEPA) review.

Many of the alternatives listed in **Table 6.1** are required to be addressed in a 14 CFR Part 150 Study. However, due to the unique conditions and considerations at SDIA, many of these alternatives have already been implemented or are not feasible. Therefore, **Table 6.1** includes a list of alternatives considered in a 14 CFR Part 150 Study, as well as an explanation why an alternative is or is not brought forward into the analysis. Further, each alternative is assigned to one of three implementation authority categories identifying whether the airport operator, a state/local government, or the federal government is responsible for implementing the measure if it is included in the final NCP.

Those alternatives that are brought forward are examined further in **Chapter 7 (Operational Alternatives)** and **Chapter 8 (Facility, Land Use, and Program Management Alternatives)**. The alternatives that involve operational procedures (**Chapter 7**) will undergo a FAA review considering operational, safety, and airspace considerations. The ANAC recommendations related to these alternatives can be found in **Appendix C – ANAC Recommendations**. Alternatives that are ultimately selected may be modeled in the Future NEM and included in the final NCP.



TABLE 6.1 APPLICABILITY OF MEASURES – 14 CFR PART 150 REQUIRED ALTERNATIVES

Alternatives	Alternatives for Consideration	Implementation Authority			Measure Carried Forward	Summary
		Airport	Local Jurisdictions	FAA		
Airport & Airspace Use Restriction Alternatives	Limit airport access if aircraft do not meet certain noise standards	◆			No	A 14 CFR Part 161 Study can be performed; however, due to the difficulty of conducting the process and successfully gaining FAA approval, this will not be brought forward.*
	Restrictions based on cumulative impact using aircraft noise levels, aircraft type, or no. of ops.	◆			No	A 14 CFR Part 161 Study can be performed; however, due to the difficulty of conducting the process and successfully gaining FAA approval, this will not be brought forward.*
	Restrictions based on Part 36 Certified Single-Event Noise Levels	◆			No	Restricting aircraft operations based on compliance with published noise certification data generally does not meet 14 CFR Part 150 program standards and would put the airport in non-compliance with their grant assurances. A 14 CFR Part 161 Study can be performed; however, due to the difficulty of conducting the process and successfully gaining FAA approval, this will not be brought forward.*
	Landing fees based on noise	◆			No	The implementation of this measure, which would be to charge a landing fee based on the noise emitted by an individual aircraft, would require a 14 CFR Part 161 Study. National experience has shown that it is extremely difficult to have a Part 161 application approved by the FAA. This measure will not be brought forward.*
	Implementation of a complete or partial curfew	◆			No	SDIA has an existing mandatory nighttime (11:30 p.m. to 6:30 a.m.) departure curfew for non-Mercy/Emergency flights that is followed a large majority of the time and that was enacted prior to ANCA (only 46 curfew violations occurred in 2019). There are no scheduled commercial operations during the curfew hours and non-Mercy/Emergency flights that depart may be assessed a fine; implementing any changes to the hours or regulatory requirements of this mandatory curfew may require a 14 CFR Part 161 Study, as it would be a new measure subject to ANCA. This measure will not be brought forward.
	Ban all jet aircraft	◆			No	This measure has been documented by case law that it is not legally possible, putting undue burden on interstate e-commerce and is a discriminatory regulation that violates the tenets of the U.S. Constitution. This measure will not be brought forward. ¹
	Restrict Touch and Go Operations	◆			No	Touch and Go operations involve aircraft that operate landings and takeoffs in a series in the airport environment. Touch and Go operations are already restricted at SDIA. ²

Alternatives	Alternatives for Consideration	Implementation Authority			Measure Carried Forward	Summary
		Airport	Local Jurisdictions	FAA		
Airport Infrastructure or Airport Facilities Alternatives	Noise barriers	◆			Yes, Chapter 8	This is a derivative of an Airport Noise Advisory Committee (ANAC) recommendation. This measure will be brought forward.
	Construct a new runway in a different orientation	◆			No	Based on limited available area, substantial existing development, large implementation cost for purposes of noise reduction and potential for significant environmental impacts, a new runway is not feasible. This measure will not be brought forward.
	Runway extension	◆			No	This type of measure extends the runway end, so departures start takeoff roll further away and lift-off from the runway sooner. This can result in higher departure altitudes over noise sensitive areas. However, runway extensions only work to reduce noise when there are areas of compatible land uses that are feasible to extend the runway. Based on the limited available area at SDIA and the constraints of non-compatible land uses near both runway ends, it would still shift noise toward one of the two runway ends with non-compatible land uses and result in substantial impacts on relocation of existing resources and potential biological resource impacts. Therefore, a runway extension is not feasible and is not considered further in this Study.
	Displaced threshold	◆			No	This type of measure moves a runway landing threshold away from the runway end, which leads to an aircraft landing further down the runway. Moving the touch down point can raise the approach altitude over noise sensitive areas. Runway 9-27 both have displaced runway thresholds and moving either will reduce available landing length. For these reasons, this alternative is not feasible and not brought forward for further consideration.
	High-Speed taxiway exits	◆			No	A high-speed taxiway is angled, providing the ability to exit the runway more quickly and reduce use of reverse thrust, therefore reducing noise. SDCRAA previously reviewed opportunities to redesign taxiway exits located near the end of Runway 27 to high-speed taxiways to reduce the amount of time aircraft occupy the runway upon arrival. The assessment screened three options and concluded that the estimated runway occupancy time would either stay the same or increase. One of the options would have relocated a taxiway exit too far west to be operationally viable. If the occupancy time is the same or more, there would be no noise benefits. This alternative is not expected to provide a level of reduction that would justify the cost associated with modifying runway taxiway exits; therefore, this alternative was not considered further in this Study.



Alternatives	Alternatives for Consideration	Implementation Authority			Measure Carried Forward	Summary
		Airport	Local Jurisdictions	FAA		
Land Use Alternatives	Acquisition of land or interest therein	◆			Yes, Chapter 8	Land use measures related to aircraft noise at airports can include purchasing noise-impacted properties, purchasing an easement from the property owner effectively purchasing the right to create noise, or sound attenuating a home within the 65 Community Noise Event Level (CNEL) or greater noise contours. The airport has an on-going residential sound attenuation program. As such, this alternative will be carried forward.
	Noise monitoring program	◆			Yes, Chapter 8	SDIA has a permanent noise monitoring system in place as part of the Aircraft Noise and Operations Monitoring System (ANOMS). Potential updates to the noise monitoring system will be included in Chapter 8 .
	Land use controls		◆		Yes, Chapter 8	Most airport operators, including SDIA, do not have land use control over the land use development outside of the airport boundaries, as the lands are owned and controlled by other jurisdictions. However, there are many measures local jurisdictions can use to improve the compatibility of land uses around an airport including zoning, easements, transfer of development rights, building code modifications, Capital Improvement Plan, subdivision regulations, and comprehensive planning. These alternatives are examined further in Chapter 8 .
Operational Alternatives	Departure thrust cutback			◆	Yes, Chapter 7	Aircraft that perform a departure thrust cutback use the application of thrust cutbacks at various stages of the take-off; use of this procedure is dependent on the type of land uses around the airport. The FAA defines two types of noise abatement departure profiles, one that reduces noise close-in to the airport, and one that reduces noise further from the airport. Departure thrust cutback procedures are considered in Chapter 7 (Operational Alternatives) , along with potential satellite-based procedures. This alternative is the same as ANAC Recommendation 21, which recommended SDCRAA conduct an engineering analysis of modification to the Noise Abatement Departure Procedure to assess the potential improvement to noise contours around the airport.
	Designated noise abatement take-off/approach paths			◆	Yes, Chapter 7	This alternative would result in the designation of arrival and/or departure paths that minimize overflights of noise sensitive land uses. SDCRAA has recently completed an approach/departure study to evaluate changes to existing procedures based on ANAC Recommendations 14, 15 and 16. The initial departure path or runway transition portion of the Standard Instrument Departure (SID) procedures from Runway 27 for noise abatement flight tracks related to ANAC Recommendation 14 (northbound jet departures) are further considered in Chapter 7 . In addition, the departure paths associated with the nighttime noise abatement procedure are considered as requested in ANAC Recommendation 17. The consideration of the SID procedure design is limited to the runway transition that directs aircraft over noise sensitive areas exposed

Alternatives	Alternatives for Consideration	Implementation Authority			Measure Carried Forward	Summary
		Airport	Local Jurisdictions	FAA		
						to CNEL levels at or greater than 65 A-weighted decibel (dBA). The design does not include other parts of a SID such as the common and en route transition routes (traffic routes or paths at higher altitudes over areas exposed to levels below 65 CNEL).
	NextGen: Performance Based Navigation (PBN) Area Navigation (RNAV)			◆	Yes, Chapter 7	This type of alternative proposes a standard flight procedure designed to avoid noise sensitive areas in a more predictable and repeatable manner using PBN technology that meets RNAV design criteria. These types of procedure designs were evaluated in the Flight Procedure Evaluation Study related to ANAC Recommendations 14, 15 and 16 to address aircraft noise concerns for areas exposed to levels below 65 CNEL. ³ The initial departure path or runway transition portion of SID procedures that use PBN technology for Runway 27 related to ANAC Recommendations 14 and 17 are considered in Chapter 7 , because this part of the SID operates over areas exposed to levels at or greater than 65 CNEL.
Operational Alternatives	Preferential use of take-off paths			◆	Yes, Chapter 7	This type of alternative identifies preferred direction takeoffs in a specific direction or path from a specific runway at an airport to avoid or reduce noise sensitive areas exposed to 65 CNEL or greater levels as much as possible. This alternative is a voluntary measure. A nighttime noise abatement procedure implemented by the FAA that specifies a preferred initial departure path for jets from Runway 27 exists at SDIA but was not recommended in previous Part 150 Studies. This is related to ANAC Recommendation 17, which recommended assessing methods to increase current compliance in nighttime noise abatement procedures to improve noise impacts for affected communities and ensure that ATC is only turning aircraft off this procedure for safety reasons only. In addition, CAC members provided alternatives related to other types of preferential use of take-off paths. These will be considered in Chapter 7 .
	Preferential runway use system			◆	No	This type of alternative identifies preferred direction of landings and takeoffs for specific runways at an airport to avoid noise sensitive areas exposed to levels 65 CNEL or greater as much as possible. This alternative is a voluntary measure. Prevailing wind direction dictates runway use/direction. Over 95% of the operations are to the west (both arrivals and departures) based on the area prevailing winds. Aircraft land and depart into the wind, with a maximum of approximately a 5-knot allowable tailwind component. Because the winds dictate the aircraft flow direction, this alternative is not considered further.

Alternatives	Alternatives for Consideration	Implementation Authority			Measure Carried Forward	Summary
		Airport	Local Jurisdictions	FAA		
Operational Alternatives	Approach power and flap settings/Continuous Descent Approach (CDA) or Optimized Profile Descents (OPD) procedure			◆	No	A CDA or OPD approach is typically associated with aircraft descending from high altitude to a point where aircraft join the final approach. The intent is to descend without interruption or requiring aircraft to go level along the descent. In addition, the intent is to use minimal flaps and keep landing gear up as long as possible. This reduces noise by keeping thrust levels down and lowering the wind noise from the aircraft airframe. Once the aircraft join the final approach, use of the wing flaps and extending landing gear is required. The areas exposed to levels 65 CNEL or greater experience aircraft landings to Runway 27 while on the final approach. In addition, the final approach to Runway 27 involves a steeper than normal decent angle due to development to terrain and development to the east. The higher angle of descent requires application of flaps as needed in order to maintain a stable approach. Therefore, a CDA approach is not considered feasible to reduce noise within the 65 CNEL or greater contours and will not be further evaluated.

SOURCE: 14 CFR Part 150, Airport Noise Compatibility Planning, Sec. B150.7 Analysis of program alternatives. Retrieved June 1, 2020 from <https://www.ecfr.gov/cgi-bin/text-idx?node=pt14.3.150&rgn=div5>.

NOTES:

*CFR Part 161 addresses Stage 2 and 3 aircraft, and Stage 2 aircraft are essentially out of the US fleet. A Stage 3 restriction requires addressing six statutory conditions including providing evidence that the estimated potential benefits of the restriction have a reasonable chance to exceed the estimated potential cost of the adverse effects on interstate and foreign commerce. 14 CFR Part 161, Section 161.305 (e) (2) (ii) (1). As of 2020, many of the Stage 3 aircraft have effectively been retired from the fleet due to the global pandemic.

¹ Santa Monica Airport Ass'n v. City of Santa Monica, 481 F. Supp. 927 (C.D. Cal. 1979). Retrieved June 1, 2020 from <https://law.justia.com/cases/federal/district-courts/FSupp/481/927/2397712/>.

² San Diego County Regional Airport Authority Codes.

³ San Diego International Airport Air Traffic Flight Procedure Evaluation. Retrieved June 1, 2020 from <https://www.san.org/Airport-Noise/FAR-Part-150?EntryId=13636>.

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6.5 SUMMARY

The potential alternatives presented in this chapter are general in nature and provide a broad perspective of actions that could be recommended for further study and implementation and those actions that would have regulatory or other limitations. Those alternatives noted in this chapter as being carried forward will be discussed in more detail, along with additional reasonable alternatives, in **Chapter 7 (Operational Alternatives)** and **Chapter 8 (Facility, Land Use, and Program Management Alternatives)**. Based on the analysis in **Chapters 7 and 8**, recommendations that show promise for noise abatement will be brought forward and discussed in **Chapter 9**.

