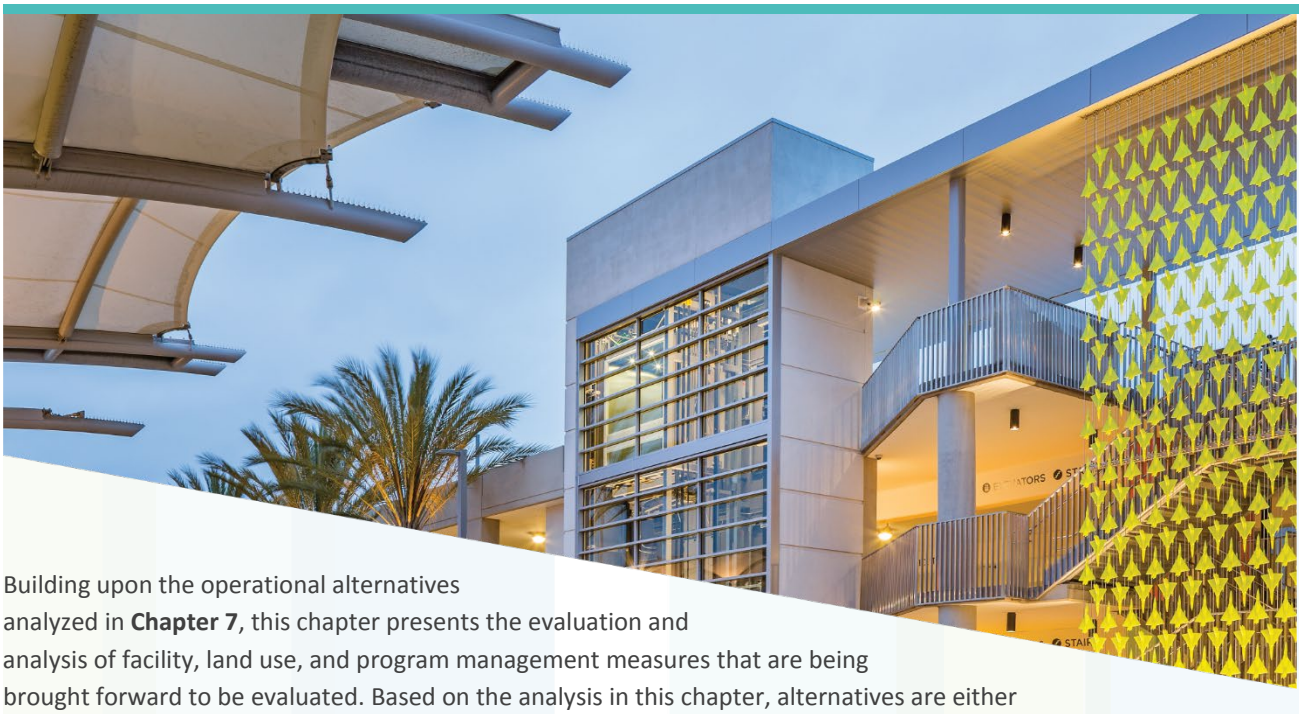
8 FACILITY, LAND USE PLANNING, & PROGRAM MANAGEMENT ALTERNATIVES

14 CFR PART 150 UPDATE

CHAPTER 8. FACILITY, LAND USE, AND PROGRAM MANAGEMENT ALTERNATIVES



Building upon the operational alternatives analyzed in **Chapter 7**, this chapter presents the evaluation and analysis of facility, land use, and program management measures that are being brought forward to be evaluated. Based on the analysis in this chapter, alternatives are either brought forward into the **Recommendations Chapter** (**Chapter 9**) if they provide benefits or eliminated from further consideration if no benefits are found. This analysis includes several measures that arose as a result of the public outreach process and discussions that have taken place at the Airport Noise Advisory Committee (ANAC), Citizen Advisory Committee (CAC), Technical Advisory Committee (TAC), and other public meetings, as well as those measures that were included in the previous 2010 Noise Compatibility Program (NCP) developed as part of the 2010 Part 150 Study Update (2010 Part 150 Study). San Diego County Regional Airport Authority (SDCRAA) has a mature NCP in place, so many measures have already been in place for years, and this chapter examines the continuation or updates of many alternatives as needed, with the addition of several new alternatives. There are four types of alternatives: facility, land use, program management, and operational measures. Operational measures are included in **Chapter 7**. Facility, Land Use, and Program Management alternatives are defined below.

- **Facility Modification Measures:** physical changes to the airport facilities that may affect aircraft noise exposure. Some of these measures such as runway extensions were discussed in **Chapter 6** and dismissed because they were not feasible. Other alternatives such as noise barriers and GBAS were brought forward to this chapter for review and further analysis. These measures generally do not result in noise reductions that would be evident in the Community Noise Equivalent Level (CNEL). However, their implementation could potentially reduce single event noise exposure.
- **Land Use Measures:** mechanisms that local agencies with land use jurisdiction can undertake to improve the compatibility of areas exposed to various noise levels or remedial measures undertaken by the airport sponsor.

- **Program Management Measures:** strategies that SDCRAA can implement and are solely within the airport's discretion. These measures would not result in noise reduction (as can be expected from the implementation of the operational noise abatement procedures) but would enable SDCRAA to monitor the success of the program and to provide enhanced community response to issues of concern.

In the subsequent sections, continued, and updated measures from the previous NCP are noted under each title heading. As stated above, many of the typical facility measures that are examined in a Title 14, Code of Federal Regulations (CFR) Part 150 Study are not applicable at San Diego International Airport (SDIA), as many of them are either already implemented or not feasible due to constraints of the airfield. Several facility, land use, and program management measures were considered in **Chapter 6**, but were dismissed as not being applicable to SDIA for the reasons elaborated in that chapter. All land use measures will be based on the new Future Noise Exposure Map (NEM). Continued measures are those that are carried forward from the previous NCP and updated using the new contours of the Future NEM and changed conditions.

The following table summarizes the facility, land use, and program management measures that are examined in this chapter.

TABLE 8.1 **FACILITY, LAND USE, AND PROGRAM MANAGEMENT MEASURES**

Measures	Responsible Party	Relationship to Previous Part 150 Study
Facility Measures		
Noise Barriers	SDCRAA	Revised, New Analysis
Ground Based Augmentation System (GBAS)	SDCRAA	New
Remedial Land Use Measures		
Sound Attenuation of Eligible Non-Residential Noise Sensitive Buildings	SDCRAA	Continued, updated with new contour
Sound Attenuation of Eligible Residential Units	SDCRAA	Continued, updated with new contour
Prevent New Non-Compatible Land Use Development	Local Jurisdiction – City of San Diego	Continued, updated with new contour
San Diego County Airport Land Use Commission (ALUC)	SDCRAA	Continued, updated with new contour
Compatibility Planning Process	Local Jurisdiction – City of San Diego	Continued, updated with new contour
Program Management Measures		
Aircraft Noise Office and Program Manager	SDCRAA	Continued
Airport Noise and Operations Monitoring System (ANOMS)	SDCRAA	Continued, Updated
Portable Noise Monitoring	SDCRAA	New
Fly Quiet Program	SDCRAA	Continued, Updated with new metric options
Airport Noise Advisory Committee (ANAC)	SDCRAA	Continued
Communicate Noise Issues with Airlines	SDCRAA	Continued
Administer Airport Use Regulations (AURs)	SDCRAA	Continued
California Quarterly Noise Reports	SDCRAA	Continued
Update Noise Exposure Maps (NEMs)	SDCRAA	Continued
Update Noise Compatibility Program (NCP)	SDCRAA	Continued

Sources: SDIA Part 150 Study Update, 2010; Mead & Hunt, 2020.

This chapter focuses on applicable facility, land use and program management measures that could reduce noise exposure for the community surrounding SDIA. Land use options that can protect against non-compatible land uses (identified in the Land Use Compatibility Table in Appendix 1 of the 14 CFR Part 150 regulation and previously introduced in **Chapter 3**) at SDIA through local land use controls, as well as program management measures such as continuing the airport noise monitoring program and the Fly Quiet Program, are discussed.[1]

Land use compatibility actions can be placed in two groups:

- **Remedial or Corrective**: Remedial or corrective actions are directed at correcting existing non-compatible land uses. Remedial actions may include sound insulation of single-family structures, multi-family structures, sleeping portions of fire stations, hospitals, assisted living facilities, religious facilities, schools, and libraries; purchase of non-compatible land uses within high noise contours; purchase of avigation easements; and sales assistance programs.
- **Preventive:** Preventing certain land uses from developing within the aircraft noise exposure contours. Preventive actions do not affect existing land uses but are targeted at preventing future noise sensitive uses from being permitted by the local agencies with land use jurisdictions. Preventive actions include zoning, building codes/subdivision regulation provisions, granting of avigation easements, sound attenuation requirements for new construction, buyer disclosure statements, and comprehensive plan amendments.

Remedial measures are within the authority of the FAA to fund for existing non-compatible land uses inside the 65 CNEL noise contour subject to the FAA's guidelines, which are outlined in Table R6, Noise Compatibility Planning/Project Requirements of the FAA Airport Improvement Program (AIP) Handbook.[2] Preventative measures are within the authority of the local agencies with land use jurisdiction and are implemented for new construction projects. Both types of measures were evaluated along with program management elements that affect the policies and administration for SDCRAA. All measures are discussed in reference to achieving the goal of reducing noise exposure to the community.

8.1 FACILITY MEASURES

Facility options include changes to the Airport facilities that could reduce noise. SDCRAA could implement these measures with or without FAA funding. However, facility measures could be eligible for federal funding, pending availability and compliance with FAA requirements. As described in **Chapter 6**, many facility measures, such as runway extensions are not feasible at SDIA due to substantial airfield constraints. This section, therefore, only focuses on the two facility modifications that were identified as needing more analysis: noise barriers and Ground Based Augmentation System (GBAS).

[1] 14 CFR Part 150. (1984, December 18). App. A, § A150.101(f), Table 1. Retrieved August 2020 from: https://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5#ap14.3.150.0000_0nbspnbspnbsp.a.

[2] FAA. (2019, February 26). FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook. (pp. R-8 – R-24). Retrieved August 2020 from: https://www.faa.gov/airports/aip/aip_handbook/media/AIP-Handbook-Order-5100-38D-Chg1.pdf

8.1.1 Noise Barriers

REVISED, NEW ANALYSIS

GOAL: To reduce single event noise on the non-compatible land uses on the east and south side of the runway associated with takeoff noise.

DESCRIPTION: This alternative evaluates the installation of noise barriers or noise walls in the vicinity of the approach end of Runway 27 (east end of the Airport). There are currently a couple types of blast fences surrounding end of the runway. The blast fences are designed to redirect aircraft jet blast upwards and protect the surrounding area including Laurel Street and Pacific Coast Highway (PCH) from jet blast. There are no existing noise walls in this area. Noise barriers are obstructions to the path of the sound that reduces noise for observers behind the barrier. Barriers can include noise walls or berms (earth mounds). The analysis here assumes the barrier is a noise wall because it would likely provide the greatest benefit in a constrained area (i.e. a larger area would be required to create an earthen berm with similar noise benefits). To be effective in reducing noise, a barrier must either be close to the noise source or noise receiver, thus providing a line-of-sight barrier, which also can reduce the propagation of sound. The potential areas for consideration of noise barrier/wall installation are shown in orange in **Figure 8.1** and described in the following sections. The location and heights for these three walls were recommended based on review of the surfaces associated with the approach end of Runway 27 as illustrated on the Part 77 airspace and Inner Approach Drawings of the SDIA Airport Layout Plan (ALP) Drawing Set dated 9-16-2019.

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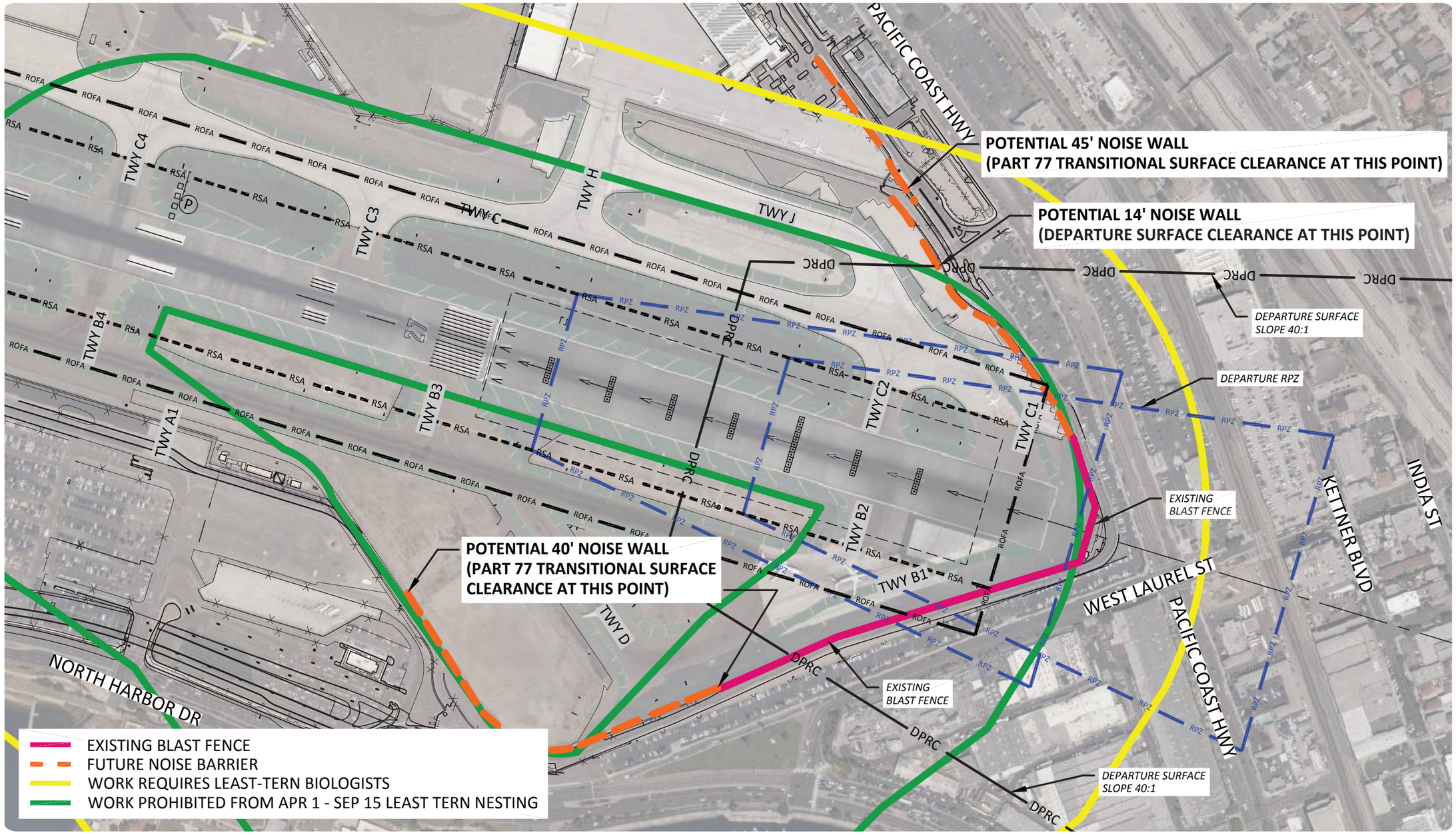

SOURCE: Mead & Hunt, 2020 (noise barrier) and SDIA, 2020 (least tern boundaries), © 2020 Microsoft Corporation © 2020 Maxar ©CNES (2020) Distribution.

FIGURE 8.1 **POTENTIAL NOISE BARRIER LOCATIONS**

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DISCUSSION: A noise barrier is an obstruction to the path of the sound that reduces noise for observers that are "behind" the barrier relative to the noise source. Noise barriers reduce noise levels by interrupting, or blocking, the direct path between a noise source and a receiver. The direct path is often referred to as the line-of-sight. When a noise barrier blocks line-of-sight between a noise source and receiver, the sound must bend around (diffract) the noise barrier to reach the receiver. The more the sound has to bend around the top of the barrier, the greater the noise reduction provided by the barrier. Noise barriers have no impact on noise generated from sources at elevations above the barrier, such as airborne aircraft.

POTENTIAL NOISE BARRIER LOCATIONS: The first location considered for a noise barrier was immediately north of the approach end of Runway 27 at SDIA starting at the point where the existing blast deflector fence (shown with a red line) ends. The barrier/wall would be extended to the northwest along the airport property line and fence line to a point where a vehicle service road enters airport property. The controlling surface for the height of the proposed noise barrier/wall would be the 40:1 departure surface for Runway 9 which is approximately 14 feet above ground level at the point where the wall would cross the edge of the surface.

A second wall is recommended for consideration just across from the point where the service road enters airport property. This wall could potentially be much taller as the 14 CFR Part 77 transitional surface would likely be the surface controlling the height of the wall. The 14 CFR Part 77 transitional surface would allow for a wall up to 45 feet tall in this location. These two noise barriers were analyzed to determine the potential to shield and/or absorb aircraft noise along the Pacific Coast Highway (PCH), Interstate 5 and the residential areas east of Interstate 5.

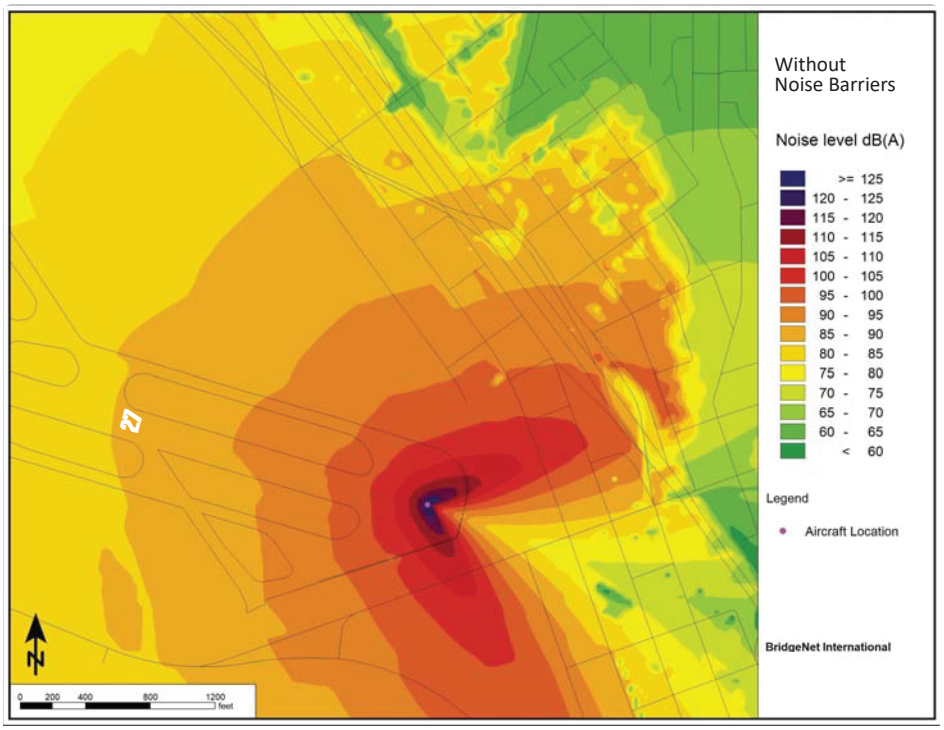
The third wall is located on the south side of the airport and is up to 40 feet high. The location of each wall is shown in **Figure 8.1**.

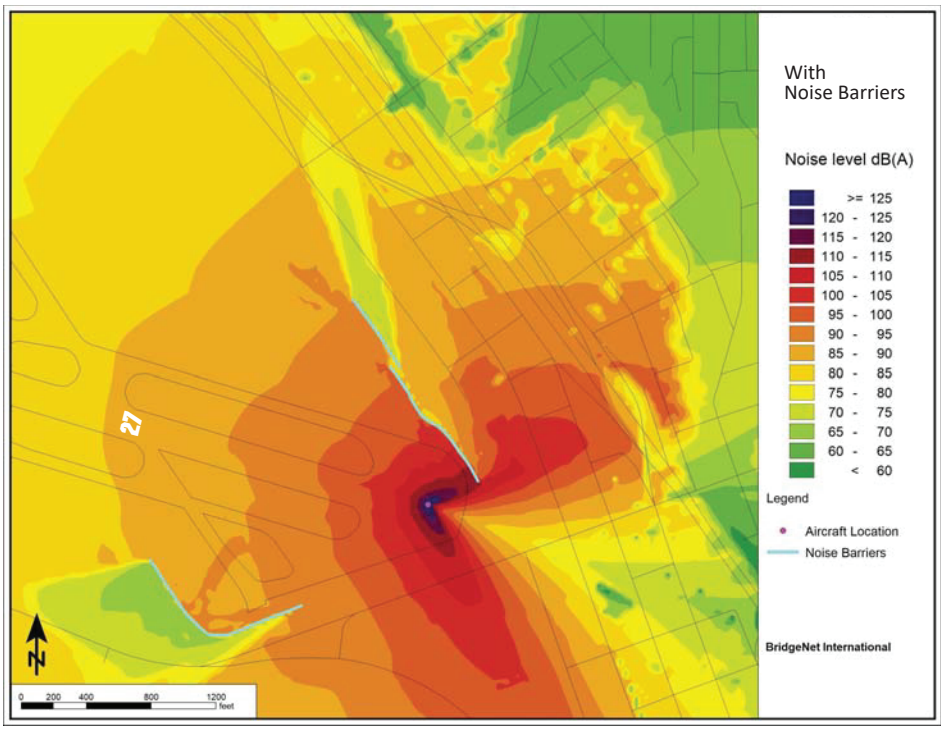
RESULTS: Acoustic modeling of the north side noise barriers was conducted using SoundPLAN Version 8.1. This modeling took topography into account and assumed hard ground surfaces and the proposed noise walls described above. The modeling analyzed one aircraft with and without the noise barriers. The aircraft modeled was the Boeing 737-800 using a Standard departure with full thrust; this aircraft was chosen because it is one of the most common commercial aircraft flown at SDIA. **Figure 8.2** shows the Lmax noise contours for existing conditions compared to the Lmax noise contours with the three noise barriers in place.

As can be seen in this figure, there is little change in the noise levels with and without sound walls on the north side of the airport, which are generally between 75 – 95 dB Lmax. This is due to the topography north of the airport that increases in height further from the airport. Since these areas are at a higher elevation than the airport, the walls are not high enough to shield these areas from departure noise. There is some benefit close into the airport adjacent to PCH, however, there are no sensitive land uses in this area immediately adjacent to the SDIA within the area that would show some benefit.

The south side barrier shows some benefit to shield and/or absorb aircraft noise along and across North Harbor Drive. However, the reduction would be minimal. Additionally, this area to the south is part of the Least Tern habitat, which is a listed endangered species. Due to the low potential for noise reduction over noise sensitive land uses paired with the potential impact to nesting habitat of this endangered species, this is likely not a feasible noise barrier location.

SUMMARY: Noise barriers typically have to either be very close to the noise source, or to the receiver (i.e. residences or other non-compatible land uses). Most often, noise barriers are used to mitigate traffic noise. At an airport, the barriers only reduce noise from aircraft ground operations. Once an aircraft becomes airborne and can be seen above a barrier, the barrier has no further effect. Often, the reduction in aircraft ground activity noise provided by a barrier is overwhelmed by the noise levels from airborne aircraft resulting in negligible decreases in overall long-term average noise levels. Additionally, at SDIA, due to the terrain, the benefits of a noise barrier are limited because it can't break line of sight (which often indicates effectiveness of a barrier reducing sound transmission). The modeling indicates minimal benefit of the noise barrier for these reasons. Additionally, in areas south of the runway, a conflict with existing Least Tern nesting habitat would provide potential environmental issues relative to constructing a barrier in that location. The new terminal building (located near the midpoint of the runway) provides some secondary benefit as a noise barrier because it is nearly 100 feet tall extends about 3,000 feet.





SOURCE: BridgeNet International, 2020.

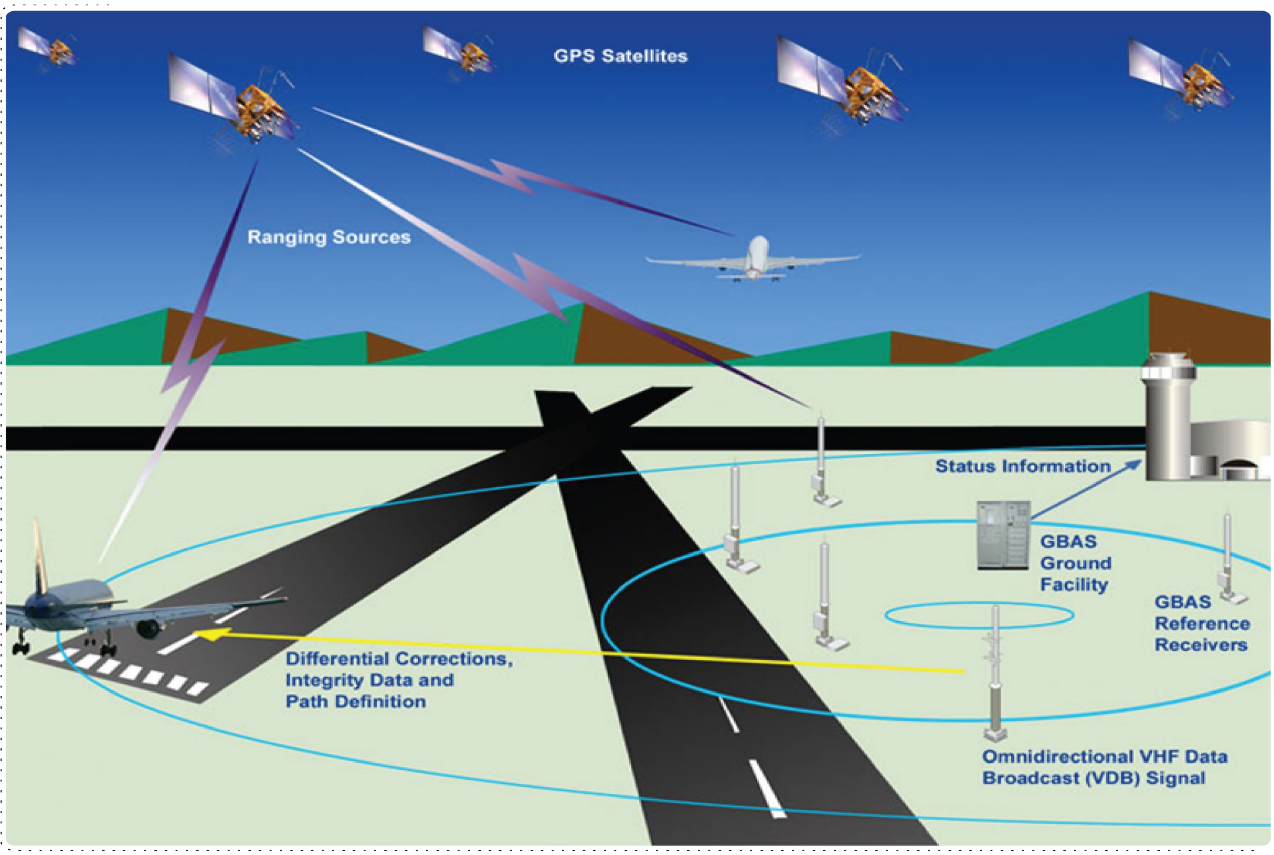
FIGURE 8.2 **NOISE BARRIER Lmax MODELING RESULTS**

8.1.2 Ground-Based Augmentation System (GBAS)

NEW MEASURE

GOAL: To utilize a Ground-Based Augmentation System (GBAS) that includes satellite components that precisely guide aircraft to a runway in all weather conditions.

DESCRIPTION: Similar to an ILS, GBAS's contain ground equipment, but also use signals from GPS satellites. Instrument Landing System (ILS) equipment must be located at the end of each runway. One GBAS can provide precision lateral and vertical guidance for multiple runway ends at the same airport, and even at nearby airports. An aircraft will receive a signal from an on-airport ground reference station and GPS satellites. Unlike an ILS that broadcasts a signal to one runway end (i.e. Runway 27) and for one approach path, GBAS can provide for multiple approaches to the same runway with multiple glidepath angles. GBAS navigation can also provide precision approaches to runways that are unable to accommodate an ILS due to terrain or other constrains, and can provide the ability for more precise, curved arrival paths in conjunction with an RNP. An example of a GBAS is shown in **Figure 8.3**.



SOURCE: Federal Aviation Administration.

FIGURE 8.3 **GBAS ARCHITECTURE**

Since there are obstacle constraints to the east of the Runway 27 approach, the ability to utilize GBAS technology would allow the airport to maintain the existing 3.5-degree approach while providing more precise lateral and vertical guidance. This would create precision approaches that could be used to lower the minimum at which aircraft can use the runway in low visibility weather conditions instead of having to fly in contra flow conditions, landing and departing on Runway 9. The technology provides for more options to land at the airport in various weather conditions.

Since GBAS is a newer technology, the number of commercial aircraft that can fly these procedures is limited compared with those equipped to fly ILS procedures. Generally, only new generation aircraft (i.e. Stage 4 or higher) or aircraft upgraded with the avionics are equipped. Currently in the United States, public GBAS landing systems are at Newark Liberty International Airport and George Bush Intercontinental/Houston Airport; San Francisco International Airport is scheduled for 2021. The technology is more commonly used internationally. As newer aircraft enter the fleet (i.e. Stage 5), they will be equipped to fly a GBAS approach. Additionally, this could also incentivize airlines to schedule their newest, GBAS-capable fleet to SDIA in that it provides for better access opportunities in inclement weather. SDIA and airports system wide have already been seeing a retirement of older aircraft at a faster rate due to the pressures of COVID on air carriers, so it is anticipated that this will hasten the transition to aircraft that can use GBAS at SDIA in the medium term.

DISCUSSION: Chapter 1 (**Inventory of Existing Conditions**) details the types and number of instrument procedures at SDIA, including a localizer (LOC) approach to Runway 27. This non-precision approach provides guidance for aircraft to maintain their lateral path relative to the runway. Due to the obstacles east of SDIA, the LOC approach utilizes a 3.5-degree glide slope. This type of procedure can contain a step-down descent, which is when an aircraft will descend and fly at an altitude, then descend again in a stair-step pattern. Runway 9 has one ILS approach which provides precision approach, using a 3.1-degree slope; Runway 9 can accommodate a precision ILS approach because there are not the same obstacle limitations as is the case with Runway 27.

In addition to the ILS, there are GPS-based approach procedures called RNAV, which stands for Area Navigation; there are three RNAV approaches at SDIA. Instead of navigating to ground-based equipment, these procedures utilized satellites; aircraft on an RNAV approach use GPS-based points of navigation for guidance. At SDIA, there are two types of RNAV approaches, RNAV-Required Navigation Performance (RNP) and RNAV-GPS. The RNAV-GPS are primarily used by general aviation aircraft and provide similar approach guidance as an ILS. RNP procedures allow an aircraft to provide for curved path and descend and land at near-idle power, which can reduce engine noise from arriving aircraft. They are also more precise than ILS approaches, within 0.1 – 0.3 nautical mile accuracy. Additional information on the current arrival and departure procedures at SDIA are in **Chapter 1**.

All commercial aircraft are equipped to use an ILS or LOC Instrument Approach. Not all commercial aircraft are equipped to fly RNP instrument approach procedures; only about 25 percent of all air carriers are currently using RNP. Because of this, the benefit of the alternative is focused highly on future increased use over time and further options to use GBAS for noise abatement may develop as the technology is implemented and further utilized.

SUMMARY: GBAS can provide noise and emissions reductions as follows:

- Ability to land on Runway 27 instead of having to land on Runway 9 in inclement weather,
- Ability to provide for precision approach to Runway 9/27,
- Ability to provide for steeper glidepath angles for noise abatement,
- Reduction/elimination of level segments during the descent, requiring less engine thrust,
- Potential to avoid sensitive land uses with offset approaches,
- Potential for newer, quieter aircraft to fly into SDIA,
- Reduction of miles flown by using curved approaches instead of a long straight-in approach, overflying less people, and
- Reduction of up to 1.5 dBA under the approach path.

Tests of GBAS procedures have shown a reduction of up to 1.5 dBA approximately 0.9 miles from a runway end using a new generation narrowbody aircraft. The reduction in noise can be attributed to the steeper descent angle of 3.5 degrees instead of the standard 3.0 degrees, and the reduced thrust from using a procedure that comes in at idle power instead of using a stair-step approach. While SDIA already utilizes a 3.5-degree approach, the noise reduction could result from a near-idle descent and/or the ability to create a path that avoids sensitive land uses. While the 1.5 dBA reduction would likely not cause a reduction that is easily seen in the 65 CNEL, it could result in a reduction in noise from the single event perspective.

8.2 REMEDIAL LAND USE MEASURES

Reducing the effects of aircraft noise on the SDIA neighbors is important to the well-being of the community and the success of the airport. Such remedial measures are focused on decreasing the annoyance from aircraft noise for non-compatible land uses (those within the 65 CNEL or greater noise contours). Remedial land use measures involve modifying existing structures (called attenuating or sound insulating) to reduce inside noise levels for occupants.

The following summarizes the analysis of remedial land use measures within specific noise contours. 14 CFR Part 150 guidelines, as outlined in the **Chapter 3**, *FAA Part 150 Land Use Compatibility Matrix,* indicate that residential developments are non-compatible within areas exposed to 65 CNEL or greater sound levels without appropriate attenuation. These guidelines are recognized by the FAA, as well as the State of California and local agencies, and as such were used in this 14 CFR Part 150 Study to define compatibility.

8.2.1 Sound Attenuation of Eligible Non-Residential Noise Sensitive Buildings

PREVIOUS PART 150 STUDY – CONTINUED, UPDATED WITH NEW CONTOUR

GOAL: To reduce interior noise levels experienced inside noise sensitive, non-residential land uses within the 65 CNEL or greater contour.

DESCRIPTION: A normal structure in the vicinity of the airport naturally attenuates (reduces noise) from the outside to the inside by 15-20 A-weighted decibel (dBA) depending upon the age of the structure. Thus, a non-residential structure inside the 65 CNEL or greater contour might experience interior sound levels above 45 dB. Noise sensitive, non-residential land uses are non-compatible with aircraft noise if located within the 65 CNEL or greater contour unless properly attenuated. FAA guidelines provide a recommendation of reducing interior noise levels by a minimum of 5 dB and achievement of a maximum 45 dB interior noise level. The noise contour maps identify non-compatible non-residential structures including places of worship, schools, hospitals, and other eligible units that could be eligible for sound attenuation. In addition to meeting inside noise level and other requirements, and by signing a noise easement , eligible property owners could receive acoustic treatments that would reduce interior noise to the desired threshold.[3] Eligibility standards are outlined in Section R-8 and Table R-6 of Appendix R in FAA Order 5100.38D, Airport Improvement Program Handbook[4] and guidance provided by the Quieter Home Program (QHP). In 2020, SDCRAA initiated a Quieter Non-Residential Program, which is distinct and separate from the QHP.

DISCUSSION: The Quieter Non-Residential Program is SDCRAA's sound attenuation program responsible for achieving the goals of this measure for non-residential structures within eligible boundaries. This measure began as a recommendation from the airport's first Part 150 NCP in 1991 and was carried forward in the 2010 NCP to allow eligible properties insulation (windows, doors, etc.) to achieve noise reduction. In 1998, the Unified Port of San Diego (previous operator of SDIA) sound attenuated six schools (five public and one private).

The 2010 Part 150 Study and associated Record of Approval (ROA) identified this recommendation in the NCP as an Approved Measure and identified the potential eligible non-residential properties. **The 2026 Future NEM generated for this 14 CFR Part 150 identifies approximately 56 additional non-residential noise sensitive properties within the 65 CNEL contour that may be eligible for sound attenuation.** It is estimated that each structure costs approximately $3-5 million to attenuate depending on type of structure, resulting in a total of approximately $168 to $280 million. An avigation easement is obtained in return for the attenuation, which grants the airport the right to fly over a particular property and create noise or vibration.

[3] A positive easement (described above as a noise easement) allows an entity to make noise over a defined land area. For more information, see FAA. (1983, August 5). AC 150/5020-1, Noise Control and Compatibility Planning for Airports. (p. 34). Retrieved August 2020 from: https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_150_5020-1.pdf

[4] FAA. (2019, February 26). FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook. (pp. R-3, R-17 - R-20).

SUMMARY: This measure was approved under the previous ROA for the 2010 NCP approved and would be a continuation of that recommendation by addressing newly eligible non-residential structures within the updated 65 CNEL or greater contour. Efforts Quieter Non-Residential Program would reduce aircraft-generated noise impacts to non-residential structures such as educational and religious facilities. This measure would reflect an update to the 2010 NCP to include additional non-residential units within the updated future 65 CNEL or greater contour.

There are approximately 56 non-residential structures within this 14 CFR Part 150 Study 2026 Future Base Case 65 CNEL or greater contour that may be eligible for attenuation and have not completed the program. When finalized, the eligibility boundary developed as part of this 14 CFR Part 150 Study could slightly expand the number of noise sensitive non-residential units. These units would also need to meet FAA funding standards, such as the interior noise requirement of above 45 dB, as well as meet municipal, and State building codes.

8.2.2 Sound Attenuation of Eligible Residential Units

PREVIOUS PART 150 STUDY – CONTINUED, UPDATED WITH NEW CONTOUR

GOAL: To reduce the annoyance of aircraft noise experienced inside residential structures within the 65 CNEL or greater noise contour by providing remediation to decrease aircraft-generated noise levels in their homes.

DESCRIPTION: Residential structures are considered non-compatible with aircraft noise if located within the 65 CNEL or greater contour unless they are properly sound attenuated. Within this contour and with measured interior noise levels of above 45 dB, existing housing units can be considered as eligible for federal funding for sound attenuation if they meet other eligibility requirements.

This measure updates recommendations from the 2010 Part 150 Study by continuing the Airport's QHP, based on the new NEMs generated for this 14 CFR Part 150 Study. The QHP currently provides insulation of existing eligible structures within the previous 65 CNEL or greater noise contour by retrofitting exterior windows and doors in habitable spaces, and installation of ventilation systems. Future efforts for this program include insulation of eligible existing residential structures within the updated 65 CNEL or greater noise contour from the future 2026 NEM, including FAA eligible items.

DISCUSSION: Sound insulation of residential units inside the 65 CNEL or greater may be eligible for Federal funding subject to the FAA requirements, which may include life safety code violations. In addition, any residences or habitable rooms that were constructed subsequent to October 1, 1998, are not eligible to receive sound attenuation per FAA requirements.[5] Residential units located on commercially zoned parcels are also not eligible to receive sound attenuation per FAA requirements.

[5] FAA. (2019, February 26). FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook. (p. R-15).

All housing units that participate in the QHP are sound attenuated in phases by designated groups. Groups are then treated as independent projects. As part of each project, the characteristics of each group, including historical designations, location, and number of dwelling units, are identified. The communities of the City of San Diego impacted by this program include Loma Portal, Ocean Beach, Bankers Hill, Middletown, South Park, and Golden Hill.

An avigation easement is obtained in return for the attenuation, which grants the airport the right to fly over a particular property and create noise or vibration. Under clarified guidance, housing units must also show interior noise levels of 45 dB or higher with all windows closed to be eligible for sound insulation. This measure proposes to voluntarily sound attenuate the habitable rooms in eligible structures as long as a minimum 5 dB reduction can be achieved per FAA requirements as identified in Appendix R, Table R-6 of the AIP Handbook.[6]

The sound attenuation costs for federally eligible properties could be funded primarily by the FAA (approximately 80 percent) with SDCRAA matching the remaining funds. Sound attenuation work associated with the initial sound insulation program included in the 1991 14 CFR Part 150 Study at SDIA had an approximate total cost of $48 million for about 900 residences. At the time of initial analysis (January 2020), at total of approximately 4,000 residences have been treated through the program at a cost of over $200 million. The current average costs for sound attenuation of residential units are illustrated below in **TABLE 8.2**.

TABLE 8.2 **QUIETER HOME PROGRAM SOUND ATTENUATION COSTS**

Residential Property Category	Average Cost per Unit for Sound Attenuation
Non-Historic Single-Family	$24,795
Historic Single-Family	$78,272
Non-Historic Multi-Family	$19,564
Historic Multi-Family	$30,290

SOURCE: Quieter Home Program Office, 2020.

Housing units that were either offered insulation in the past, and opted out, were not eligible due to zoning, or were constructed after October 1, 1998 would not be eligible in this measure. Based on the Future NEM, of the 15,149 housing units within the 65 CNEL or greater noise contour, there are approximately 11,000 housing units that could be eligible for insulation. At an approximate average cost of $50,000 per unit for insulation, this measure could cost about $550 million in today's dollars (although cost per unit would vary depending on the size and historic status of the house in question, number of doors, windows, and type of ventilation system).

[6] FAA. (2019, February 26). FAA Order 5100.38D, Change 1, Airport Improvement Program Handbook. (p. R-14).

The exact eligibility boundary would be based on the official NEM. These boundaries are not necessarily required to follow the 65 CNEL or greater contour exactly, but can be determined by the closest reasonable physical boundary (major street, railroad track, highway, stream, etc.) beyond the contour so that blocks are not separated, to the extent possible. This could slightly expand the number of housing units. These housing units would then also need to meet the other eligibility requirements.

SUMMARY: This measure would be a continuation of recommendations from the 1991 and 2010 Part 150 Studies for the airport with an update based on the NEM prepared for this 14 CFR Part 150 Study. Aircraft technology has gotten quieter over time at SDIA, but the additional operations paired with the one runway system has resulted larger CNEL noise contours. As the system gets more constrained, operations get pushed into the evening hours, with an accompanying 5 dBA penalty for aircraft operations between 7:00 p.m. and 10:00 p.m. and there is a resulting larger 65 CNEL or greater contour forecast for 2026. Although approximately 4,000 eligible housing units within the QHP boundary of the 2010 Part 150 Study have been insulated (or offered insulation but chose not to have the insulation), there are approximately 11,000 housing units within the 2026 Future Base Case 65 CNEL or greater contour that may be eligible for insulation. When finalized, the eligibility boundary could slightly expand the number of housing units which would still have to meet all other eligibility requirements.

8.3 LAND USE PLANNING/CONTROL MEASURES

SDCRAA has been in the process of encouraging the implementation of preventative land use measures for the past several decades since the completion of the first Part 150 Study and the issuance of the ROA in 1991. This analysis focuses on the evaluation of land use measures designed to prevent the development of new non-compatible land use within specific CNEL noise contours. Federal guidelines contained in 14 CFR Part 150 indicate that residential development, along with the other non-residential, noise sensitive uses such as schools, religious facilities, hospitals, and nursing homes, should be discouraged from developing within areas exposed to 65 CNEL or greater noise contours, unless properly sound attenuated at the time of construction. Refer to **Chapter 3** for more information on the Federal land use guidelines. These guidelines are recognized by the FAA, as well as the State of California and local agencies.[7, 8]

8.3.1 Prevent New Non-Compatible Land Use Development

PREVIOUS PART 150 STUDY – CONTINUED MEASURE

GOAL: To work with the City of San Diego to prevent the introduction of new non-compatible land use developments within the SDIA environs in accordance with FAA and State of California standards.

[7] 14 CFR Part 150. (1984, December 18). App. A, § A150.101(f).

[8] 21 CCR. (1990, March 22). § 5014. Retrieved August 2020 from: https://govt.westlaw.com/calregs/Document/ICD224160D45011DEB97CF67CD0B99467?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

DESCRIPTION: The purpose of the SDIA Airport Land Use Compatibility Plan (ALUCP) is to promote the orderly development in the vicinity of the airport and the compatibility between the airport and surrounding future land uses. Airport Influence Areas (AIAs) that surround each San Diego County airport are evaluated for noise, safety standards, navigable airspace protection, and overflight factors as outlined in the California Department of Transportation's (Caltrans) California Airport Land Use Planning Handbook.[9] Airport Land Use Commissions (ALUCs) were mandated by the State of California in 1970. The San Diego Association of Governments (SANDAG), previous ALUC for San Diego County, initially established guidelines for property development in the vicinity of SDIA through implementation of a Comprehensive Land Use Plan (CLUP). The CLUP was adopted in 1992 and amended in 1994 and 2004. SDCRAA now serves as the ALUC for San Diego County. The CLUP has since been replaced by the ALUCP, a required plan providing land use guidance for each of San Diego County's sixteen public-use and military airports. The ALUCP for SDIA is prepared by the SDCRAA ALUC. The most recent ALUCP for SDIA has been adopted since May 2014 and is based on the 2012 FAA approved Airport Layout Plan (ALP). The ALUCP, prepared through a public process, is set to continue and improve established policies using 14 CFR Part 150 and California Title 21 standards.

DISCUSSION: The current AIA for SDIA includes the 60 CNEL to 65 CNEL contour (prepared as a quarterly and annual noise contour). Sound attenuation is recommended by the ALUCP to attenuate exterior noise level to 45 dB indoors in new projects within the 60 CNEL to 65 CNEL contours. The ALUCP only applies to new developments and redevelopments of property within the AIA by defining policies and standards that promote compatible land uses. The adopted SDIA ALUCP is available for viewing online at https://www.san.org/Airport-Projects/Land-Use-Compatibility#7121296-alucps. This alternative would propose to continue the ALUCP recommendations that new housing units would need to be insulated prior to construction.

SUMMARY: SDCRAA, acting as the San Diego County ALUC, would continue to advocate to prevent non-compatible land uses from being established within the SDIA environs, as recommended in the SDIA ALUCP. These efforts require ongoing coordination with the City of San Diego and other local agencies through their implementation of the SDIA ALUCP or when development project proposals are submitted to the ALUC for review. Such coordination would aim at ensuring that the SDIA ALUCP policies and standards are implemented by the City of San Diego when amending their General Plan and other applicable local plans (e.g., Municipal Code which includes the Airport Environs Overlay Zone (AEOZ)).

8.3.2 San Diego County Airport Land Use Commission

PREVIOUS PART 150 STUDY – CONTINUED MEASURE

GOAL: To promote SDCRAA's continuation of serving as the San Diego County ALUC.

[9] State of California Department of Transportation. (2011, October). California Airport Land Use Planning Handbook. (pp. 2-5 – 2-6). Retrieved August 2020 from: https://dot.ca.gov/-/media/dot-media/programs/aeronautics/documents/californiaairportlanduseplanninghandbook-a11y.pdf.

DESCRIPTION: In 2003, State law designated SDCRAA as the San Diego County ALUC. Using guidance from 14 CFR Part 150, the ALUC is charged with monitoring current land uses and evaluating future land uses exposure to aircraft noise. The ALUCP aligns the plans of local agencies with the airport noise exposure guidelines.

DISCUSSION: The measure to establish SDCRAA as the San Diego County ALUC has already been fully implemented. State law designates SDCRAA as a governing body for preparation and adaptation of the ALUCP for SDIA. The ALUC reviews and makes consistency determinations on the land use projects (in the event that the local agencies have not yet implemented the SDIA ALUCP), plans, and regulations submitted by local agencies. General plans, master plans, and zoning codes are required to be updated to be consistent with the SDIA ALUCP or any subsequent updates to the adopted ALUCP. Local agencies that have land use jurisdiction within the AIA are subject to the ALUCP unless its governing body issues two-thirds vote and is able to override the plans because of special findings within state law.

SUMMARY: SDCRAA would continue to serve as the San Diego County ALUC and support measures to protect the public through corrective actions for noise concerns. In addition, the ALUC would adhere to objectives outlined in 14 CFR Part 150 in order to monitor land development that may negatively impact airport operations.

8.3.3 Support Compatibility Planning Process

PREVIOUS PART 150 STUDY – CONTINUED MEASURE

GOAL: To continue to work with the City of San Diego to prevent new, non-compatible land uses through the local land use planning and development policy process.

DESCRIPTION: Comprehensive plans are prepared by local jurisdictions to 1) identify current conditions in a community, 2) identify community goals and policies, and 3) identify plans for that community to achieve the goals. The City of San Diego has more than 50 community plans within the boundaries of the City of San Diego, which include community, precise and specific plans. These plans are policy guides for the future development of particular geographic areas, several of which are established for neighborhoods in the SDIA environs

DISCUSSION: The ALUC is responsible for reviewing any new or updated land use plans and regulations submitted by the local agencies to ensure consistency with the SDIA ALUCP. In 2013, the City of San Diego adopted the latest version of the Airport Environs Overlay Zone (AEOZ) as a supplemental regulation to promote consistency with the SDIA ALUCP and adherence to the provisions in Title 21. The AEOZ serves to provide land use guidance for the areas surrounding SDIA and a mechanism for local property owners to be informed of noise related issues and potential safety hazards. The AEOZ applies to the noise contours presented in the ALUCP and assigns supplemental development regulations based on the type of development proposal:

1. Developments with permits issued before March 18, 1991,
2. Modifications to single dwelling units, and
3. Developments that require building permits, but do not qualify for the 2 categories above.

The land use compatibility table in the ALUCP defines the non-compatible uses for residential development within the 60 CNEL or greater noise contours of the AEOZ.[10] New developments that would increase the total number of dwelling units in the AEOZ require avigation easements if they are located within the 60 or higher CNEL contours. All proposals for development are required to align with the standards set forth in the SDIA Runway Protection Zone (RPZ) and Airport Approach Overlay Zone (AAOZ). All developments in the AEOZ are required to be permitted in compliance with site planning standards. Any exceptions must be granted by the City Manager and filed with the City Clerk. The City Manager may require acoustical testing of interior noise levels to justify the development proposal.

These comprehensive plans are particularly important in the areas around SDIA that may experience noise levels that could affect certain types of residential structures or public buildings. It is desirable that each community develop its plans and policies to be compatible with existing and future aircraft noise levels. This approach would continue to help ensure that compatible development occurs in the future, as it is much easier to avoid the creation of land use non-compatibilities than it is to remedy non-compatibilities in the future.

SUMMARY: A comprehensive plan (community, precise, or specific plan) by itself does not reduce aircraft noise levels nor does it control the use of land, as it is a policy statement of the intended to guide future use of land. However, these plans do influence the development or change in use of any particular piece of property and in the development of land use controls. One of the most influential uses of the comprehensive plan can be to officially adopt the most recent aircraft generated noise contours and use those noise contours to help guide compatible development. This alternative would support the inclusion of noise mitigation measures noted above in any future update to the comprehensive plans in the surrounding communities to be consistent.

8.4 PROGRAM MANAGEMENT MEASURES

The program management measures feature administrative and facility measures that would not directly result in aircraft noise exposure reductions and, as such, have not been modeled. SDIA could implement some of these measures with or without FAA funding. These measures would generally not result in noise reduction or would result in small changes relative to single events (which would not affect the CNEL contours) but rather reflect non-acoustic measures designed to understand and monitor noise program measures. These measures often involve programs that enable SDCRAA to monitor the success of the measures and to provide enhanced response to community concerns and pilot coordination on issues of concern. Because SDCRAA has a mature Noise Compatibility Program in place, most of these alternatives provide continuation of programs or adjustments to the existing program to allow for continued federal eligibility based on the most recent trends in noise mitigation.

[10] San Diego County Regional Airport Authority. (May 2014). Airport Land Use Compatibility Plan. Retrieved August 2020 from: https://san.org/Portals/0/Documents/Land%20Use%20Compatibility/SDIA/SDIA%20ALUCP%20Ch%201-6%20(May%202014).pdf

8.4.1 Aircraft Noise Office and Program Manager

PREVIOUS PART 150 STUDY - CONTINUED MEASURE

GOAL: To utilize staff in the Aircraft Noise Office to effectively monitor noise comments and coordinate noise concerns with the community.

DESCRIPTION: This measure involves continuing to provide support to staff responsible for tracking noise complaints and acting as a community liaison for aircraft noise issues related to SDIA operations. SDCRAA would continue to operate its Aircraft Noise Office, consisting four full time Noise Office Staff, to support recording noise complaints received from citizens, monitor noise efforts, respond to inquiries, run the QHP, and run ANAC. Issues identified by the office are discussed with representatives from the air carriers and FAA to better understand the conditions that led to noise complaints. The Aircraft Noise Office is also responsible for managing and facilitating the QHP and providing technical support for the Aircraft Noise and Operations Monitoring System (ANOMS) and Geographic Information Systems (GIS).

DISCUSSION: This measure is a continuation of an approved measure from the previous Study. SDCRAA would continue to operate its Aircraft Noise Office, four full time Noise Office Staff and 13 full time QHP staff. All records of complaints are reviewed for any non-compliance with SDIA standards. This office demonstrates SDCRAA's commitment to being a good neighbor with the surrounding communities.

Noise monitoring by the Aircraft Noise Office includes the evaluation and compilation of noise reports that are generated at SDIA's 23 Noise Monitoring Terminals (NMTs) that comprise the ANOMS. Quarterly reports are submitted to the State of California's Division of Aeronautics and the County of San Diego. This data is also used to reference any curfew violations, provide context to community noise complaints, and create noise contour maps that identify noise affected areas to meet quarterly reporting requirements for Title 21 and periodic updates to the 14 CFR Part 150 NEMs. SDCRAA operates the website for the ALUCP Mapping Tool, a GIS web application. Maps are used to determine compatibility factors that are associated with any potential project areas based on boundaries defined in the ALUCP. This quick reference tool also aids in the identification of areas within the AIA, noise contours, overflight areas, airspace protection boundaries, or safety zones at SDIA.

The Aircraft Noise Office is also responsible for managing all aspects of the QHP, including homeowner coordination, construction, and budget. This tool is used to help determine whether properties are within the current Program Boundaries for the QHP. Applicants are assisted with determining their eligibility, compiling the application information for FAA funding, and being consulted about options for decreasing interior noise. The QHP staff is also responsible for coordinating between property owners and contractors, keeping records of costs associated with sound attenuation, and evaluating building code enforcement.

Aircraft noise complaint tracking allows the community to voice their concerns about potential curfew violations at SDIA. Residents are able to provide aircraft specific information for their noise complaint by utilizing the WebTrak™ system. The four-step process for aircraft noise complaint reviews is as follows:

1. File an initial complaint via WebTrak™ at https://webtrak.emsbk.com/san, the noise complaint web-based application (available at https://viewpoint-app.emsbk.com/san4), or call the Aircraft Noise Office.
2. Aircraft Noise Office staff review all complaints to verify whether they require further research for potential corrective action.
3. Staff researches all pertinent information in reference to the complaint and provides the complainant with responses to their inquiries.
4. All complaints are published online monthly. Complaint statistics, including total number received, total number of households submitting complaints, types of concerns, and location of the incidents, are reported.

Validated noise complaints are provided to air carriers to inform them of operational issues. Efforts to correct noise issues are rewarded through the SDCRAA Fly Quiet Program.

SUMMARY: This measure would allow the airport to continue to act as a community liaison for several key noise mitigation efforts at SDIA. The Aircraft Noise Office would continue to monitor aircraft noise, handle noise complaints, collaborate with the air carriers to address operational concerns, and assist with sound attenuation efforts through the QHP.

8.4.2 Airport Noise and Operations Monitoring System (ANOMS)

PREVIOUS PART 150 STUDY – CONTINUED, UPDATED MEASURE

GOAL: To update the ANOMS to utilize the latest technology.

DESCRIPTION: This measure would involve the update of the existing noise monitoring system. The ANOMS is a system software that collects data from NMTs that are strategically placed in various areas in the surrounding communities to capture noise events and record instances that exceed established thresholds. A total of 23 NMTs provide data feed for the ANOMS that support the Noise Compatibility Program and provide information to the community.

DISCUSSION: The ANOMS at SDIA provide data to validate the CNEL contours in compliance with the State of California Title 21 Airport Noise Standards. Title 21 is the cornerstone for providing historical and current information to concerned residents regarding operations and noise exposure patterns. Emergent technologies and upgrades to software are constantly being explored and made available in the industry. While the current ANOMS system is adequate, there are new and improved options that would lead to more effective, efficient collection methods and ultimately, improved noise monitoring capabilities and as an alternative could make the upgrades eligible for federal funding. The SDCRAA has continually updated the ANOMS system over the years and would continue to evaluate new options based on cost/benefit as they become available. Some of these new options could include the addition of noise portal add-ins that assist with interactive community functionality.

SUMMARY: SDCRAA staff are actively using ANOMS for reporting on supplemental metrics and tracking. This measure recommends that the noise monitoring system be upgraded when necessary to continue this important Program. Additionally, it is recommended that during the Fly Quiet Program, specific attention is paid to ways to integrate the Fly Quiet Program with the noise monitoring system to accurately track the effectiveness of the Program over time and identify ways to improve the Program and the system, particularly with respect to integrating new technology opportunities noted above.

8.4.3 Portable Noise Monitoring

NEW MEASURE

GOAL: To enable SDRCAA staff to conduct spot check noise measurements at additional locations to supplement the permanent noise monitors and to enhance noise data collection efforts.

DESCRIPTION: This measure would involve SDCRAA purchasing, operating, and maintaining portable noise measurement equipment (referred to as monitors) to deploy around the greater San Diego area. Portable noise monitors can be deployed in the community to measure aircraft noise at additional locations supplementing the ANOMS.

The ANOMS permanent stations are generally set up in places that coincide with the past location of the 65 CNEL contour. Having noise monitors available to record noise in the community can foster positive community relations and add benefit by educating concerned residents on noise levels and assess unique noise environments. While the FAA's Aviation Environmental Data Tool (AEDT) noise model used to create the NEMs has detailed data for aircraft and engine configurations, topography and weather, using portable noise monitors to gather local data can be helpful to determine if there are other factors affecting how noise propagates in communities.

DISCUSSION: The intent of a portable noise monitoring program would be to provide supplemental information on the current noise environment and address concerns of residents. A noise monitor measures the sound levels continuously during a specified time period. The duration for monitoring could range between two weeks to one month depending on the concerns of a resident. The instrumentation used should be Class 1 sound level meter and microphones that can run indefinitely during all weather conditions while remaining connected to the Internet making the data readily available to interested parties. The portable noise monitoring kit should be powered by battery that can continually be charged using solar panels and connected using a cell phone network for remote access. Based on the number of complaints and active participation by neighboring communities at SDIA, it would be recommended that a portable noise monitoring program have at least four portable noise monitoring kits. There would be periods each year when a kit is unavailable due to maintenance and/or re-certification; therefore, four kits may be considered a minimum.

Before commissioning a noise measurement setup, data collection, data quality review and data analysis protocol should be developed. Selection of the location and documentation of the surrounding environment is critical in understanding noise measurement results. Settings in the noise level meter are ideally based on what has been observed during the set-up process.

A protocol would identify the steps and information to be documented during setup, measurement period, and break down. All portable noise measurement data should be imported into and processed using the SDIA ANOMS, which could conduct the aircraft and noise event correlation and aircraft noise metric calculations. A protocol document would list the steps in reviewing the results to ensure measurement data is valid.

The final component of a portable noise measurement program would be documenting the results and sharing it with a concerned resident who requested the portable noise monitor. A standard portable noise monitoring report should be developed to serve as a template for reporting the noise measurements results back to a concerned resident. In some cases, supplemental information may be required to address specific concerns. This would be known based on discussions with a concerned resident at the time the portable noise monitor was requested and deployed. The report should be presented to and reviewed with the resident to ensure the resident understands the results.

SUMMARY: Portable noise monitoring at SDIA would provide flexibility in data collection and enhance the capabilities of the existing ANOMS. This system would allow for a targeted approach to addressing noise concerns by basing monitor placement on community requests, weather patterns, and operational conditions. Portable noise monitoring was conducted as part of this study and provided additional information that helped inform the alternatives. Acquiring portable noise monitors could help look at specific areas of concern of the public outside the permanent noise monitors.

8.4.4 Fly Quiet Program

PREVIOUS PART 150 STUDY – CONTINUED, UPDATED MEASURE

GOAL: To reduce the effect of single event noise levels and to increase awareness of noise sensitive uses and noise abatement procedures for pilots operating at SDIA.

DESCRIPTION: This measure would involve continuation of the existing Fly Quiet Program for SDIA. The Fly Quiet Program's purpose is to encourage commercial operators to operate as quietly as possible at SDIA. One of the features of the program is a scoring system that acknowledges those operators that attempt to follow the noise abatement goals of SDIA. The program creates a participatory atmosphere of the operators working with SDCRAA and the community to actively reduce noise by grading a commercial operator's performance and making the scores available to the public via reports published on the SDIA website, https://www.san.org/Airport-Noise.

The scoring system evaluates the following criteria:

- **Curfew Violations:** *SDCRAA Code 9.40, Airport Use Regulations (AURs)* designates Time of Day Restrictions that act as a curfew that limits and defines permissible aircraft operations during certain timeframes. Arrivals are permitted 24-hours per day; departures during the curfew hours of 11:30 p.m. – 6:30 a.m. are reviewed by the Airport's Curfew Violation Review Panel to determine if the flight is exempt or shall be fined. Noise sensitivity is heightened during nighttime hours, leading to the necessity for regulations with engine run-ups and nighttime **departures. Penalties are imposed for violations of these standards.**
- **Noise Exceedance:** Noise exceedances are measures 6.5 km from the beginning of the takeoff roll from the runway. During daytime hours, the single event threshold is 90dB. This is reduced to 85dB between 7:00 p.m. and 10:00 p.m. and reduced again to 80dB between the hours of 10:00 p.m. and 7:00 a.m. the following morning. All exceedances are captured, and a score is derived by comparing the number of exceedances to the number of a given carriers' operations.
- **Fleet Noise Quality:** Each airline fleet that operates at SDIA is assigned a score based on the age, aircraft size and noise levels produced as described in Title 14, Code of Federal Regulations Part 36 - *Noise Standards: Aircraft Type and Airworthiness Certification*. High scores are assigned to aircraft that create less effects on the SDIA environs through quieter, new generations of aircraft. Part 36 noise certification data is used to describe approach, departure, and sideline noise levels. This helps support the tracking of progress of the fleet from louder Stage 3 aircraft to quieter Stage 4 and 5 aircraft. Of note, preliminary results indicate that a biproduct of the COVID-19 pandemic is the acceleration phasing out of most Stage 3 aircraft from the fleet, due to pressures on air carriers, reduction in operations, and need to use only the more efficient, newer aircraft.[11]

The Fly Quiet Program is intended to grow and change as new procedures and new technologies are incorporated into SDIA's noise abatement program. For example, the Fly Quiet Program at SDIA has been modified to include the Noise Exceedance criteria as a replacement for the Early Turn criteria. The Fly Quiet Program offers a dynamic venue for implementing new noise abatement initiatives by praising and publicizing active participation rather than a system that admonishes violations of mostly voluntary procedures. Another recommended modification based on comments could be the monitoring of landings on Runway 9 at nighttime to identify reasons for use and determine if any modifications are needed to reduce the use of Runway 9 at night.

DISCUSSION: Airline and pilot education is very important to understanding the need for and concerns with aircraft noise exposure at SDIA and compliance with the existing noise abatement measures. The SDIA Fly Quiet Program is distributed to commercial airlines to help educate them on "good neighbor" procedures, which would reduce the effect of flyovers on noise sensitive uses. This is particularly applicable as it relates to the noise sensitive areas of SDIA and the specifications of the Airport Use Regulations. SDCRAA distributes "Fly Quiet Awards" yearly at their March Board Meeting to airlines that have proven their commitment to curfew adherence at SDIA. SDCRAA collaborates with the ANAC to distribute the Fly Quiet Program.

[11] HMMH. (2020, August 27). Preliminary Findings on operations, noise and complaint data, Florida Airport Council. Retrieved October 2020 from: https://hmmh.com/resources/news-insights/blog/will-we-see-permanent-noise-reduction-from-the-covid-19-pandemic/.

Airlines are encouraged to work with the SDCRAA and Aircraft Noise Office staff and the citizens in the surrounding community to evaluate the effects of noise from their aircraft. Award winners have been recognized for cancellation of departures that would constitute curfew violations, transitioning fleet to quieter aircraft, introducing noise-reduction features to existing aircraft and implementing procedural improvements that yield higher program adherence.

SUMMARY: The SDIA Fly Quiet Program is focused on education. Experience with these programs across the nation has indicated that education can be an important tool for reducing single event noise near airports, particularly related to general aviation (GA) operations. Fly Quiet Programs can be more easily revised and updated than a 14 CFR Part 150 Study. Additionally, with the SDIA focus on sustainability, one additional option is to link the Fly Quiet Program with a Fly Green program, which can depict green flying practices that might benefit noise and greenhouse gas emissions.

8.4.5 Airport Noise Advisory Committee (ANAC)

PREVIOUS PART 150 STUDY – CONTINUED MEASURE

GOAL: Continue the ANAC in order to assist with identifying and addressing aircraft noise issues through an ongoing method of communication between the SDCRAA staff and the community.

DESCRIPTION: This measure involves the continuation of the ANAC, a committee established for informing various noise policies within the SDIA environs. Noise metrics and mitigation are complex subjects. The ANAC members and airport staff have invested a significant amount of time in the development of this 14 CFR Part 150 Study, particularly in collaborative efforts and building of relationships. It is particularly important for SDCRAA to maintain the partnership between the airport staff and the ANAC. It is recommended that noise concerns continue to be addressed through committee meetings.

DISCUSSION: This would be a continued measure from both previous Part 150 Studies. The ANAC was initially developed by the San Diego Unified Port District (previous operator of SDIA) in 1981. The ANAC is currently adopted under *SDCRAA Policy 9.20*. The continuation of the committee would assist with on-going noise program implementation efforts. A balance of interested parties is very important for the successful application of the NCP. Current members of the ANAC may include stakeholders from the following categories:

- **Community Representatives**
  - Greater Golden Hill Planning Committee
  - Downtown Community Planning Council
  - Ocean Beach Planning Board
  - Uptown Planners
  - Midway-Pacific Highway Community Planning Group
  - Community Resident at Large within 65 dB CNEL – East
  - Peninsula Community Planning Board
  - Pacific Beach Planning Group
  - Valley De Oro Community Planning Group
  - La Jolla Community Planning Association

  - Mission Beach Precise Planning Board
- **Aviation Stakeholders and Business Representatives**
  - City and County of San Diego airports
  - U.S. Military
  - Active Airline Pilot and Flight Operations
  - Economic Development/Tourism
  - National Business Aviation Association (NBAA)
- **Ex-officio Members (non-voting)**
  - Elected Officials
  - San Diego City Council
  - FAA (Lindbergh ATCT and SoCal TRACON)
  - Acoustician
  - SDCRAA Vice President, Development

The committee is comprised of no more than 18 individuals with voting authority that represent members of the above interested groups. This assortment of members should continue to be a standard committee and additional new members could be added to represent additional interests as needed.

ANAC meetings are being once every two months to address noise concerns. Staff from the Aircraft Noise Office act as organizers to support these meetings and the meetings are facilitated by a professional third-party facilitator. Topics discussed in ANAC meetings include making recommendations to SDCRAA in reference to this 14 CFR Part 150 Study, the QHP, community outreach initiatives, and other issues related to noise monitoring and mitigation.

SUMMARY: Continuation of the ANAC would ensure that the "body of knowledge" gained from community partnerships is not lost and would continue to foster relationships between SDIA stakeholders as the airport continues to increase and improve operations.

8.4.6 Communicate Noise Issues with Airlines

PREVIOUS PART 150 STUDY – CONTINUED MEASURE

GOAL: To keep consistent contact and coordination with airline representatives in support of the SDIA noise program and maintaining a safe and efficient airport.

DESCRIPTION: The Aircraft Noise Office Program Manager is responsible for coordinating meetings with representatives from the air carriers, air cargo tenants, and GA representatives that use the SDIA facilities. Based on trends of high turnover with these stakeholders, SDCRAA is required to continually provide education about the SDIA noise program and corresponding requirements.

DISCUSSION: SDIA is dedicated to being a good neighbor in the San Diego community. Constant communication of the airport's procedures, standards, and regulations to stakeholders that operate aircraft at SDIA allows for the alignment

of aircraft operations with the minimization of noise effects on the local community. The Aircraft Noise Office maintains contact with air carrier corporate representatives regularly.

SUMMARY: SDCRAA staff would continue active coordination of noise abatement issues and procedures with the tenants operating aircraft at SDIA.

8.4.7 Administer Airport Use Regulations (AURs)

PREVIOUS PART 150 STUDY - CONTINUED MEASURE

GOAL: To administer the current AURs that uniquely reduce nighttime activity for the airlines that have service at SDIA.

DESCRIPTION: This measure involves adherence to SDCRAA Code 9.40, *Airport Use Regulations*, a statute that defines a curfew for aircraft operations as SDIA. This regulation, in place since 1976, accounts for the heightened sensitivity to noise during nighttime hours due to low levels of ambient noise. The airlines that service SDIA receive information regarding the noise abatement program as part of the contract that is signed with SDCRAA. SDCRAA requires air carriers to sign copies of the SDIA Airport Rules and Restrictions which include the AURs. AURs embody the time of day restrictions and the applicable penalties for violations.

DISCUSSION: The 1990 Airport Noise Capacity Act (ANCA) placed restrictions on an airports ability to restrict operations. Any local activity restrictions, such as this night curfew, that were in place before November 1990 were legacied. In addition, Congress required FAA to put in place a program for FAA review of actions that affect airport access, known as Title 14, Code of Federal Regulations Part 161 - *Notice and Approval of Airport Noise and Access Restrictions* (14 CFR Part 161), described previously. Because the existing AUR was established well before ANCA, only if it were to be modified relative to its core restrictions would 14 CFR Part 161 come into play.

With the exception of Emergency or Mercy flights, there are restrictions that prohibit departures by any aircraft between the hours of 11:30 a.m. and 6:30 p.m. Stage 3 aircraft may depart SDIA between 6:30 a.m. and 11:30 p.m. and Stage 2 aircraft may only depart between 7:00 a.m. and 10:00 p.m. (while Stage 2 aircraft have been phased out of the fleet, helicopters are an exception as they are still considered Stage 2). Arrivals for all aircraft types are permitted twenty-four hours a day. Air cargo carriers are the primary operators at SDIA during the early morning hours based on business models that revolve around early morning delivery.

The Aircraft Noise Office is responsible for ensuring compliance with the AURs. The Curfew Violation Review Panel reviews all data and documentation related to reported infractions. The Program Manager is responsible for disposition of violations and imposition of fines.

SUMMARY: SDCRAA would continue to deliver the AURs to the scheduled air carriers that service SDIA in order to provide noise control for the community surrounding the airport. No changes to the AURs are recommended as it would trigger a 14 CFR Part 161 Study.

8.4.8 California Quarterly Noise Reports

PREVIOUS PART 150 STUDY – CONTINUED MEASURE

GOAL: To comply with the State of California's Title 21 requirements for quarterly noise reporting.

DESCRIPTION: The FAA and State of California Code of Regulations Title 21 Noise Standards (Title 21) both identify the 65 CNEL as the threshold for non-compatible land uses based on noise sensitivity in the area of a California airport. The SDIA Quarterly Noise Report provides the following information regarding noise in relation to airport activities:

- **Aircraft noise measurements**
- **Statistical summaries for aircraft noise complaints**
- **Aircraft operations**
- **Enforcement actions for Airport Use Regulations violations**
- **QHP reports**
- **ANAC meeting information**
- **Other statistical summaries**

DISCUSSION: Compliance with Title 21 reporting is mandatory. The SDIA quarterly reports are available to the public on the airport website (https://www.san.org/Airport-Noise/CA-Title-21) and through the SDCRAA Clerk's Office. Report elements are also presented in ANAC meetings as part of the standard agenda.

SUMMARY: SDCRAA is currently responsible for authoring Quarterly Noise Reports for SDIA and would continue to do so to maintain compliance with the State of California's Title 21 requirements.

8.4.9 Update Noise Exposure Map

PREVIOUS PART 150 STUDY - CONTINUED MEASURE

GOAL: To update the NEMs as conditions change over time in order to maintain accurate data for noise mitigation and abatement efforts.

DESCRIPTION: This measure would involve the update of the NEMs, when needed, or when dictated by SDCRAA, the ANAC, and/or FAA guidance.

DISCUSSION: The NEMs are required to follow the State of California Variance and Title 21 Noise Regulations.[12] Quarterly comparisons of the FAA-approved NEMs with the size and shape of the noise exposure contours submitted to the State provide verification of any substantial changes in noise exposure.

[12] 21 CCR. (1990, March 22). § 5050 - § 5057. Retrieved August 2020 from: https://govt.westlaw.com/calregs/Document/ICD224160D45011DEB97CF67CD0B99467?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default).

In efforts to control non-compatible land uses within the SDIA environs, the NEMs would be reviewed and updated by SDCRAA with the existing and five-year forecast conditions. In addition, SDCRAA would update NEMs according to the guidance in the 14 CFR Part 150 Regulations whenever changes in airport operations are anticipated to substantially change the size and/or shape of the noise exposure contours. The guideline used by the FAA calls for a review of the NEMs whenever the actual operations are approximately 15 percent different from the forecast operations or substantial changes in the type of aircraft operating at SDIA. In addition, if a change in operations would create any substantial new non-compatible use, the maps should be updated every five years.[13]

SUMMARY: This measure supports updates every five years based on SDCRAA, ANAC, and/or FAA input and measurable conditions justifying updates to the NEMs.

8.4.10 Update Noise Compatibility Program

PREVIOUS PART 150 – CONTINUED MEASURE

GOAL: To update the 14 CFR Part 150 Study when appropriate to ensure the NCP is adjusted as conditions change over time.

DESCRIPTION: This measure would involve a full update of the NCP of the 14 CFR Part 150 Study, when needed based on applicable revisions to the NEMs.

DISCUSSION: A 14 CFR Part 150 Study is intended to be a "living document," to be used as a tool to monitor and guide program development and evaluate aircraft types and operations. SDCRAA should review and update the 14 CFR Part Study as appropriate. As stated in Section 8.4.9, whenever the actual operations are approximately 15 percent different from the forecast operations, the NEMs should be reviewed. However, a review of NEMs does not necessarily require a full 14 CFR Part 150 Study Update. Generally, any time there are significant new non-compatible land uses within the 65 CNEL or greater contours, or if there are airport facility changes which may affect the noise contours, consideration should be given to reviewing the NCP. At the end of the five-year study period (after date of NCP approval), the operations and fleet mix should be re-evaluated to determine the extent to which they have changed and updated if appropriate. Additionally, as technology changes, a Part 150 Study Update can provide a method to identify any future flight procedures that could reduce noise based on updated technology.

SUMMARY: This measure would allow the NCP is adjusted as conditions in the environs of the airport change over time (such as an increase in number/type of traffic or operational changes).

[13] 14 CFR Part 150. (1984, December 18). §150.21 (d).