Appendix G

Noise Compatibility Map and Policy Review

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APPENDIX G
Noise Compatibility Map and Policy Review

Noise is unwanted sound. Sound is created by variations in air pressure and is measured in terms of pressure level. The decibel (dB) scale has been developed to describe sound pressure level. Because the human ear is more sensitive to sound at specific audio frequencies (or pitches), special weighting scales have been developed so that sound measurements can be adjusted to accurately describe what people hear. The A-weighting scale is most common. The A-weighted decibel is often indicated by "dBA." Where the context clearly indicates that the A-weighting scale is being used, as in this Airport Land Use Compatibility Plan (ALUCP), the "A" is usually dropped, and the term "dB" is used.

For airport noise studies, California law requires that noise be described using the Community Noise Equivalent Level (CNEL) metric.[1] It is known as a "24-hour, time-weighted, cumulative noise metric." The CNEL metric, which describes the total noise in a 24-hour period, was developed to aid in predicting the effects of noise on communities. To account for the potential for greater noise disturbance when ambient sound levels are low, 4.8 dB is added to evening noise (between 7:00 p.m. and 10:00 p.m.) and 10 dB is added to nighttime noise (between 10:00 p.m. and 7:00 a.m.).

G.1 FEDERAL AND STATE REGULATIONS AND GUIDANCE RELATED TO AIRCRAFT NOISE

Since the 1960s, aircraft noise has been the subject of numerous federal and state laws, regulations, policies, and guidance aimed at reducing its impact on communities located in the vicinity of airports. The resulting programs can be classified into four broad categories:

- Programs to reduce the noise produced by aircraft
- Noise abatement programs to shift aircraft noise to areas where it will be less disturbing
- Noise mitigation programs to reduce the adverse effects of aircraft noise on noise-sensitive land uses
- Land use compatibility planning to promote the development of compatible land uses and to avoid the development of noise-sensitive land uses in high-noise areas

G.1.1 Key Federal Regulations

Congress has enacted legislation over the past 40 years requiring the reduction of noise in new aircraft designs[2] and requiring the retirement of the loudest aircraft from the civilian aircraft fleet.[3]

Congress has also enacted legislation providing assistance to airport operators that desire to develop and implement noise compatibility plans and programs. The Federal Aviation Administration (FAA) promulgated the regulations governing this voluntary program in Title 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning* (Part 150). After completing a Part 150 Noise Compatibility Program

[1] Title 21, California Code of Regulations, Subchapter 6, *Noise Standards*, Section 5012.
[2] Title 14 Code of Federal Regulations, Part 36, *Noise Standards: Aircraft Type and Airworthiness Certification*.
[3] Title 14 Code of Federal Regulations 91.801 - 91.883 (Subpart I, *Operating Noise Limits*).

(NCP), airport operators are eligible for funding assistance to implement FAA-approved measures in the NCP. The most recent update to the Part 150 NCP for San Diego International Airport (SDIA or the Airport) was approved by the FAA in 2023.[4]

G.1.2 Federal Land Use Compatibility Guidelines

The compatibility of different land uses with varying noise levels depends on the needs and expectations of people as they occupy those land uses. For example, people are generally more sensitive to noise at home when they are relaxing and trying to sleep than when they are shopping or working. Land uses considered as "noise-sensitive" are often regarded as those associated with the following activities:

- sleep, relaxation, or recovery (e.g., residential uses, hospitals, nursing/assisted living homes);
- instruction and study (e.g., pre-schools, schools, colleges, trade schools, libraries);
- contemplation (e.g., places of worship and meditation, museums);
- artistic performance (e.g., amphitheaters, concert halls, performing arts centers); and
- outdoor relaxation, nature study and enjoyment (e.g., nature exhibits, zoos, nature and wilderness parks).

Guidelines for determining the compatibility of various land uses with cumulative aircraft noise levels are provided in 14 CFR Part 150. The guidelines were developed to assist airports and local governments in noise compatibility planning. The guidelines, presented in **Table G-1**, classify land uses as either compatible, incompatible, or conditionally compatible within different yearly day-night average sound level (DNL) ranges.[5] The guidelines are purely advisory and are neither federal standards nor regulations.

[4] San Diego County Regional Airport Authority, *14 CFR Part 150 Update, Noise Exposure Maps and Noise Compatibility Program, Final Report*, May 12, 2022; US Department of Transportation, Federal Aviation Administration, *Record of Approval, 14 CFR Part 150 Noise Compatibility Program, San Diego International Airport, San Diego, California*, January 11, 2023.

[5] DNL is a 24-hour, cumulative, time-weighted noise metric similar to CNEL. DNL differs in not incorporating an extra weight for evening (7:00 to 10:00 p.m.) noise.

Table G-1 (1 of 2) Land Use Compatibility* With Yearly Day-Night Average Sound Levels

LAND USE	YEARLY DAY-NIGHT AVERAGE SOUND LEVEL [DNL] IN DECIBELS					
	BELOW 65	65-70	70-75	75-80	80-85	OVER 85
Residential						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail -- building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade – general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes. [Land use classification from SLUCM.]

* The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Table G-1 (2 of 2) Land Use Compatibility With Yearly Day-Night Average Sound Levels

Key to Table G-1

SLUCM	*Standard Land Use Coding Manual* [Urban Renewal Administration, Housing and Home Finance Agency, and Bureau of Public Roads, Department of Commerce, Washington, D.C., 1965]
Y (Yes)	Land use and related structures compatible without restrictions.
N (No)	Land use and related structures are not compatible and should be prohibited.
Y(x)	[Land use generally compatible subject to stated conditions.]
25, 30, 35	Land use and related structures generally compatible; measures to achieve NLR [Noise Level Reduction] of 25, 30, or 35 dB must be incorporated into design and construction of structure.

Notes for Table G-1

(1)	Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.
(2)	Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
(3)	Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal noise level is low.
(4)	Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas or where the normal level is low.
(5)	Land use compatible provided special sound reinforcement systems are installed.
(6)	Residential buildings require an NLR of 25 [dB].
(7)	Residential buildings require an NLR of 30 [dB].
(8)	Residential buildings not permitted.

SOURCE: 14 CFR A150.101, Table 1. [Bracketed material and color added by Ricondo & Associates, Inc.]

G.1.3 Airport Improvement Program Grant Assurances

Airports that have received grants through the Federal Airport Improvement Program must abide by assurances to comply with certain federal laws and regulations and to effectively manage and maintain airport property and improvements. Grant Assurance 21, quoted below, requires airport sponsors to promote land use compatibility in the airport environs. At SDIA, the grant assurances apply to the San Diego County Regional Airport Authority.

> **21. Compatible Land Use.** It [the airport sponsor] will take appropriate action, to the extent reasonable, including the adoption of zoning laws, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. In addition, if the project is for noise compatibility program implementation, it will not cause or permit any change in land use, within its jurisdiction, that will reduce its compatibility, with respect to the airport, of the

noise compatibility program measures upon which Federal funds have been expended.[6]

G.1.4 California Airport Noise Regulations

The State of California has enacted legislation to encourage the reduction of airport noise impacts and to mitigate the impact of noise on residents. Noise is generally considered the most extensive impact associated with airports because its effects are often experienced well beyond the airport boundary. One specific purpose cited by the California legislature in creating the airport land use compatibility planning process is to "minimize the public's exposure to excessive noise … within areas around public airports …"[7]

California Code of Regulations, Title 21, Subchapter 6, describes airport noise standards developed by the California Department of Transportation (Caltrans), as directed by the state legislature in Section 21669 of the State Aeronautics Act. The regulations establish 65 dB CNEL as the "level of noise acceptable to a reasonable person residing in the vicinity of an airport …"[8]

Land uses described as incompatible with noise above 65 dB CNEL are:

- Residences (all types)
- Schools (public and private)
- Hospitals and convalescent homes
- Places of worship

According to the law, these uses are made compatible with noise above 65 dB CNEL if an avigation easement for noise is granted to the airport operator or if the buildings are treated to attenuate noise to an indoor level of 45 dB CNEL or less in all habitable rooms.[9]

The statute explains that a "noise impact area" exists around an airport if any incompatible uses are within the 65 dB CNEL contour.[10] Airports with noise impact areas are to establish noise monitoring programs and establish measures to reduce and ultimately eliminate the noise impact area. Until they eliminate the noise impact area, airports are required to file quarterly reports on their progress to Caltrans, Division of Aeronautics,[11] and must receive a variance to continue operating.[12]

[6] US Department of Transportation, Federal Aviation Administration, FAA Airports, *Assurances - Airport Sponsors*, May 2022, Section C, Sponsor Certification.
[7] California Public Utilities Code, Section 21670(a)(2).
[8] Title 21, California Code of Regulations, Subchapter 6, *Noise Standards*, Section 5006.
[9] Title 21, California Code of Regulations, Subchapter 6, *Noise Standards*, Section 5014.
[10] Title 21, California Code of Regulations, Subchapter 6, *Noise Standards*, Section 5012.
[11] Title 21, California Code of Regulations, Subchapter 6, *Noise Standards*, Sections 5030-5037 and 5044.
[12] Title 21, California Code of Regulations, Subchapter 6, *Noise Standards*, Sections 5050-5057.

G.1.5 California Building Code

Title 24 of the California Code of Regulations, known as the California Building Code (CBC), requires that noise from exterior sources must not exceed 45 dB CNEL or DNL (day-night average sound level) in habitable rooms. Selection between the CNEL and DNL metrics "shall be … consistent with the noise element of the local general plan."[13]

G.1.6 California Airport Land Use Compatibility Planning

The purpose of the California State Aeronautics Act (SAA)[14] "is to protect the public interest in aeronautics and aeronautical progress." SAA Chapter 4, Article 3.5, *Airport Land Use Commission*, provides for the establishment of airport land use commissions (ALUCs) in counties with public use and military airports.[15] The purpose of the article is "to protect public health, safety, and welfare by ensuring the orderly expansion of airports and the adoption of land use measures that minimize the public's exposure to excessive noise and safety hazards within areas around public airports to the extent that these areas are not already devoted to incompatible uses."[16] Article 3.5 outlines the statutory powers and duties of ALUCs, including the preparation of airport land use compatibility plans (ALUCPs).[17] An ALUCP provides for the orderly growth of an airport and the area surrounding the airport within the jurisdiction of an ALUC.

Caltrans is required to "develop and implement a program or programs to assist in the training and development of the staff of airport land use commissions…"[18] Pursuant to this requirement, Caltrans has developed the *California Airport Land Use Planning Handbook* (Handbook) to provide guidance for preparing airport land use compatibility plans. The current edition of the Handbook includes an extensive discussion of aircraft noise and the factors that ALUCs should consider in establishing ALUCP noise compatibility standards and criteria.[19]

The Handbook suggests that the 60 dB CNEL is an acceptable compatibility threshold at most airports. It is particularly appropriate in mild climates where windows are often open. The Handbook notes that 65 dB CNEL may be an acceptable threshold for airports in noisy urban settings.[20]

G.2 AIRCRAFT OPERATIONS FORECAST AND AIRPORT CAPACITY

The ALUC statute requires that an ALUCP must be based on a long-range airport plan "that reflects the anticipated growth of the airport during at least the next 20 years."[21] The noise exposure contours in the 2014 ALUCP for SDIA were based on the longest range forecast available at the time – a 2030 forecast of 286,100 annual operations.[22] Since adoption of the 2014 ALUCP, the San Diego County Regional Airport

[13] 2022 California Building Code, Title 24, Part 2, Chapter 12, Section 1206.4, *Allowable Interior Noise Levels*.
[14] California Public Utilities Code, Sections 21001-21709.
[15] California Public Utilities Code, Sections 21670-21679.5.
[16] California Public Utilities Code, Sections 21670(a)(2).
[17] California Public Utilities Code, Section 21674.
[18] California Public Utilities Code, Section 21674.5.
[19] California Department of Transportation, Division of Aeronautics, *California Airport Land Use Planning Handbook*, October 2011 (p. 4-1 – 4-12).
[20] California Department of Transportation, Division of Aeronautics, *California Airport Land Use Planning Handbook*, October 2011 (p. 4-7).
[21] California Public Utilities Code, Section 21675(a).
[22] Airport Land Use Commission, San Diego County Regional Airport Authority, *San Diego International Airport Land Use Compatibility Plan*, May 2014 (amended) (p. E-17).

Authority has prepared and approved the Airport Development Plan (ADP) and updated its operations forecasts.

As discussed in Appendix E of this ALUCP (Section E.2.5), the most recent aviation demand forecasts for SDIA were prepared in 2019 for five future years, the latest of which was 2050.[23] SDIA's single runway limits the ability of the Airport to fully serve the forecast air service demand arising purely from market forces – the unconstrained demand. Thus, constrained forecasts were developed to determine how much of the unconstrained demand could be accommodated by the Airport. Operations are projected to increase to 290,100 in 2050, at or near full capacity use of the runway system.

Table G-2 compares the 2050 constrained forecast with actual activity in 2022.[24] Note that the number of operations increases by a much lower proportion than the number of enplaned passengers, reflecting an increasing number of passengers per operation. As SDIA's capacity becomes increasingly constrained, airlines are expected to transition to larger aircraft to serve more passengers per flight while also experiencing higher load factors.[25]

Table G-2 Comparison of 2022 Actual with 2050 Constrained Forecast Airport Activity

Category	Enplaned Passengers[1]	Operations[2]	Cargo & US Mail (tons)
2022 – Actual	11,125,342	210,250	136,644
2050 – Constrained Forecast	20,321,000	290,100	335,400

NOTES:

1 Enplaned passengers are those boarding flights at SDIA, which are forecast to increase by 86 percent from 2022 to 2050.

2 Operations include all takeoffs and landings, which are forecast to increase by 38 percent from 2022 to 2050, reflecting an increase in the number of passengers per operation.

SOURCES: San Diego County Regional Airport Authority, https://www.san.org/DesktopModules/Bring2mind/DMX/API/Entries/Download?EntryId=16174&Command=Core_Download&language=en-US&PortalId=0&TabId=403 (accessed February 13, 2023) (2022 data); LeighFisher, *Draft Final Technical Memorandum, Aviation Activity Forecast Update, San Diego International Airport*, April 2019 (Table 5-1; 2050 forecast).

G.3 AEDT NOISE MODELING INPUT DATA

Noise exposure contours for the 2050 constrained operations forecast were developed for the ADP Environmental Impact Report (EIR), as documented in Appendix R-G2 of the Draft Recirculated EIR.[26] The

[23] LeighFisher, *Draft Final Technical Memorandum, Aviation Activity Forecast Update, San Diego International Airport*, April 2019.

[24] While the COVID-19 pandemic caused a marked decline in Airport activity in 2020 and 2021, passenger enplanements and flight operations largely recovered in 2022. See Appendix E, Table E-1. The forecast is based on a long-term average growth rate that is subject to short-term fluctuations.

[25] LeighFisher, *Draft Final Technical Memorandum, Aviation Activity Forecast Update, San Diego International Airport*, April 2019 (p. D-8 – D-11). The boarding load factor is a description of the proportion of available seats that are occupied by passengers.

[26] Harris Miller Miller and Hanson, Appendix R-G2, *Aircraft Noise Modelling Approach and Input Assumptions*. San Diego County Regional Airport Authority, *Recirculated Draft Environmental Impact Report, Airport Development Plan, San Diego International Airport*, September 2019.

noise contours were developed using the FAA's Aviation Environmental Design Tool (AEDT), Version 2d (the latest available version at the time), the standard tool authorized by the FAA for airport noise analysis.

The AEDT input file included data for the following variables:

- Airport elevation and meteorological data (e.g., mean annual temperature, humidity, barometric pressure, and wind speed);
- Runway layout (runway end and displaced threshold locations, runway end elevations);
- Aircraft flight track definitions;
- Aircraft approach and departure climb profiles;
- Runway use and flight track utilization; and
- Average daily operations by aircraft type and time of day.

The AEDT also uses a digital terrain file of the topography in the Airport area. This allows the noise levels to be calculated in recognition of the distance of aircraft from the varying ground surface elevations in the area.

G.4 AEDT NOISE MODELING OUTPUT

The AEDT noise modeling process produced a digital output file of noise levels throughout the area of analysis. The 2050 forecast noise exposure contours are compared with the 2030 forecast noise exposure contours from the 2014 ALUCP on **Exhibit G-1**.[27] The overall contour pattern, with long and narrow contours on the east and much broader and shorter contours on the west, reflects the predominant west flow runway use pattern at the Airport, with 98 percent of arrivals and departures on Runway 27. The 2050 forecast noise contours extend farther east than the noise contours from the 2014 ALUCP. On the west side, the 2050 noise contours extend about the same distance as the 2014 ALUCP noise contours but are wider.

G.4.1 Reasons for Change in Noise Contours

The reasons for the differences in the 2014 ALUCP noise exposure and the 2050 forecast noise exposure are explained in Attachment 1. To summarize, the major reasons are:

- a greater number of forecast operations;
- a higher proportion of nighttime operations (after 10:00 p.m. and before 7:00 a.m.); and
- a higher proportion of larger aircraft types, which tend to be louder, especially on approach, than the smaller aircraft they replace.

[27] The 2050 forecast noise contours depicted on Exhibit G-1 are modified in one respect from the 2050 noise contours in the ADP Final EIR (San Diego County Regional Airport Authority, *Final Environmental Impact Report, Airport Development Plan, San Diego International Airport*, January 2020 (Exhibit 3.12-12, p.3-60). The noise contours on Exhibit G-1 reflect a modification for the noise levels along the hillside immediately north of the east end of the runway on the east side of Interstate 5. Most of the aircraft noise affecting this area is backblast from aircraft taking off on Runway 27 to the west. Historic noise measurements indicate that noise in this area is higher than calculated through noise modeling. As aircraft power up for takeoff and roll down the runway, the noise propagates through the air directly from the runway to the hillside, rather than being attenuated and scattered as it would be if moving across the ground. This is often referred to as the "hill effect." Noise models include a standard over-the-ground attenuation factor, which is not applicable in this area. For the ALUCP, an adjustment was made to the noise model to reflect the hill effect in this area. The hill effect adjustment was also made for the 2014 ALUCP and is also reflected in the Airport's quarterly noise reports.

Table G-3 shows the annual arrivals and departures, sorted by time of day, modeled for the 2030 (2014 ALUCP) and 2050 forecasts. The 2050 forecast has approximately 4,000 more operations. The 2050 forecast includes 8,651 additional nighttime annual arrivals and 8,325 additional nighttime annual departures, which have a greater impact on the noise contours than evening or daytime operations.[28]

Table G-3 Total Annual Operations By Time-of-Day for the 2030 and 2050 Forecasts

		Forecast Annual Operations	
Operation Type	Time of Day	2030 (2014 ALUCP)	2050
Arrivals	Day	99,688	93,987
	Evening	28,652	27,740
	Night	14,709	23,360
	Total	**143,049**	**145,087**
Departures	Day	109,369	100,558
	Evening	18,643	21,170
	Night	15,035	23,360
	Total	**143,048**	**145,088**
Grand total		**286,096**	**290,175***

NOTE:

* The number of modeled operations differs slightly from the actual forecast (290,175 compared to 290,100) due to the rounding of fractional operations created through the AEDT calculation process. This difference is too small to affect the noise contours.

SOURCE: HMMH, Memorandum to Ricondo, *Contour Comparison of ALUCP 2030 Forecast and ALP FEIR 2050 Study – Revised*, June 19, 2023.

[28] As discussed in Appendix E of this ALUCP, as delays increase, aircraft operators and passengers will make adjustments, as possible. Airlines will switch to larger aircraft to accommodate more passengers per flight; cancel or consolidate flights during peak delay periods; or adjust schedules to shift flights to less congested periods, which may lead to an increase in operations in the nighttime shoulder hours (departures from 10:00 p.m. to 11:30 p.m. and arrivals after 10:00 p.m.) and departures from 6:30 a.m. to 7:00 a.m.

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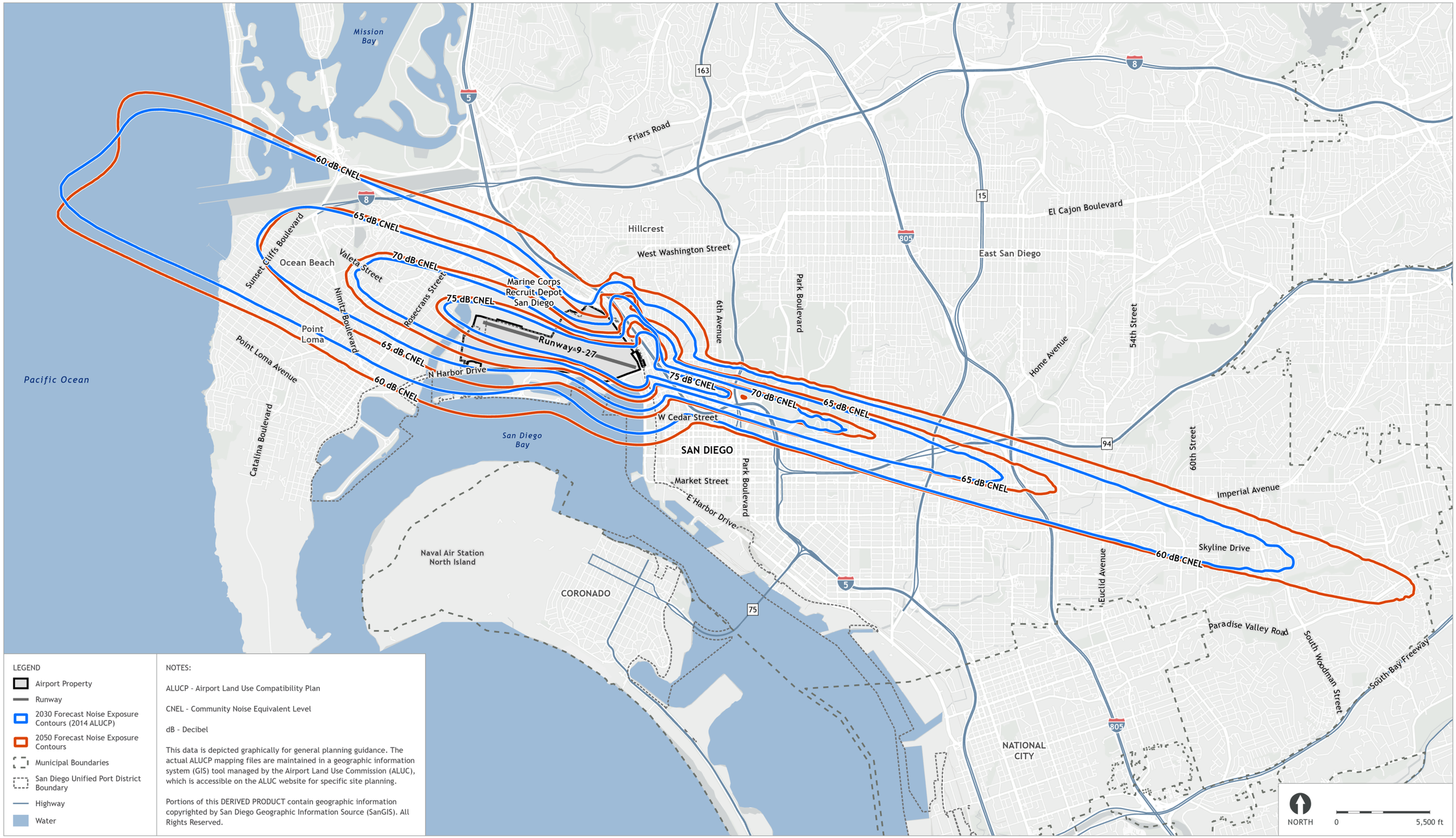

LEGEND

- Airport Property
- Runway
- 2030 Forecast Noise Exposure Contours (2014 ALUCP)
- 2050 Forecast Noise Exposure Contours
- Municipal Boundaries
- San Diego Unified Port District Boundary
- Highway
- Water

NOTES:

ALUCP - Airport Land Use Compatibility Plan

CNEL - Community Noise Equivalent Level

dB - Decibel

This data is depicted graphically for general planning guidance. The actual ALUCP mapping files are maintained in a geographic information system (GIS) tool managed by the Airport Land Use Commission (ALUC), which is accessible on the ALUC website for specific site planning.

AIRPORT LAND USE COMMISSION

SOURCES: SanGIS, California State Parks, Esri, TomTom, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, April 2024 (basemap); San Diego County Regional Airport Authority, *San Diego International Airport, Airport Layout Plan*, August 2021 (Airport property, runway); SanGIS, 2023 (municipalities); San Diego County Regional Airport Authority, 2023 (San Diego Unified Port District Boundary); US Census Bureau, 2022 (roads); County of San Diego, Planning and Development Services, LUEG-GIS Services, 2018 (water); Harris Miller Miller & Hanson, Inc., 2010, cited in Airport Land Use Commission, San Diego County Regional Airport Authority, San Diego International Airport Land Use Compatibility Plan, May 2014 (2030 noise contours); Harris Miller Miller & Hanson, Inc., June 2023 (2050 noise contours).

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EXHIBIT G-1

NOISE CONTOURS FROM 2014 ALUCP AND UPDATED 2050 FORECAST

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Another reason for the differences in the two sets of noise contours is the change in the modeled mix of aircraft from 2030 to 2050. **Table G-4** shows the number of aircraft departures on Runway 27 sorted by FAA weight classes and time of day.[29] The number of small and medium aircraft were reduced by nearly 60 percent from the 2030 to the 2050 forecast. Most of these were replaced with large and heavy jets, which produce more noise than the smaller aircraft. In addition, Table G-4 shows that the number of nighttime annual departures by large jets increased by 6,759 from 2030 to 2050 and the number of nighttime annual departures on Runway 27 by heavy jets increased by 1,643.

Table G-4 Fleet Mix and Time-of-Day for Departures from Runway 27

		Annual Departures on Runway 27 by Aircraft Weight Category*						
Forecast Year	Time of Day	Small	Medium	Large Commuter	Large Jet	B757	Heavy	**Totals****
2030 (2014 ALUCP)	Day	5,459	10,994	3,632	82,414	546	5,233	**108,278**
	Evening	521	1,703	701	14,677	17	801	**18,420**
	Night	400	819	256	12,203	5	1,219	**14,902**
	Total**	**6,379**	**13,516**	**4,589**	**109,294**	**569**	**7,253**	**141,600**
2050	Day	1,073	2,624	3,101	86,581	0	5,009	**98,388**
	Evening	1,073	0	1,073	16,458	358	1,789	**20,751**
	Night	358	0	716	18,962	0	2,862	**22,898**
	Total**	**2,504**	**2,624**	**4,890**	**122,001**	**358**	**9,660**	**142,037**
Difference	Day	-4,385	-8,370	-531	4,167	-546	-224	**-9,889**
	Evening	553	-1,703	372	1,781	340	988	**2,331**
	Night	-42	-819	459	6,759	-5	1,643	**7,995**
	Total**	**-3,874**	**-10,892**	**300**	**12,707**	**-211**	**2,407**	**437**

NOTES:

Only departures on Runway 27, which account for approximately 98 percent of all departures, are included in this table.

* Representative aircraft in each weight category include:

Small – Piper PA28
Medium – Beechcraft 1900D
Large commuter – Bombardier CRJ
Large jet – Boeing 737-700
B757 – Boeing 757
Heavy – Boeing 767-300

** Totals may not sum as indicated due to rounding.

SOURCE: HMMH, Memorandum to Ricondo, *Contour Comparison of ALUCP 2030 Forecast and ALP FEIR 2050 Study – Revised*, June 19, 2023.

[29] The focus of this discussion is on Runway 27 because 98 percent of all operations are on that runway. The Runway 27 activity dominates the CNEL noise contours.

Table G-5 presents the number of arrivals to Runway 27 for each forecast year sorted by FAA weight classes and time of day. The data, of course, are similar to the data for departures presented in Table G-4.

Table G-5 Fleet Mix and Time-of-Day for Arrivals to Runway 27

Forecast Year	Time of Day	Annual Arrivals to Runway 27 by Aircraft Weight Category*						Totals**
		Small	Medium	Large Commuter	Large Jet	B757	Heavy	
2030 (2014 ALUCP)	Day	5,653	10,950	3,464	73,852	547	3,727	**98,193**
	Evening	468	1,707	407	23,268	5	2,290	**28,145**
	Night	184	783	684	11,260	9	1,153	**14,073**
	Total**	**6,305**	**13,439**	**4,555**	**108,379**	**560**	**7,170**	**140,408**
2050	Day	2,504	2,266	3,101	77,995	358	5,724	**91,948**
	Evening	0	0	1,431	24,686	0	1,073	**27,190**
	Night	358	0	716	19,320	0	2,504	**22,898**
	Total**	**2,862**	**2,266**	**5,247**	**122,001**	**358**	**9,302**	**142,036**
Difference	Day	-3,149	-8,684	-363	4,143	-189	1,997	**-6,245**
	Evening	-468	-1,707	1,024	1,418	-5	-1,217	**-955**
	Night	174	-783	32	8,060	-9	1,352	**8,826**
	Total**	**-3,443**	**-11,173**	**692**	**13,621**	**-203**	**2,132**	**1,626**

NOTES:

Only arrivals to Runway 27 are accounted for in this table. Approximately 98 percent of all arrivals are on Runway 27.

* Representative aircraft in each weight category include:

Small – Piper PA28
Medium – Beechcraft 1900D
Large commuter – Bombardier CRJ
Large jet – Boeing 737-700
B757 – Boeing 757
Heavy – Boeing 767-300

** Totals may not sum as indicated due to rounding.

SOURCE: HMMH, Memorandum to Ricondo, *Contour Comparison of ALUCP 2030 Forecast and ALP FEIR 2050 Study – Revised*, June 19, 2023.

The forecast transition to a fleet with higher numbers of large and heavy jets, and fewer small and medium aircraft, has the greatest impact east of the Airport under the approach to Runway 27. The larger aircraft are generally louder than the smaller aircraft. At the same time, however, the new versions of the larger aircraft are quieter than the similar older models that will be retiring from the fleet in the future. This is largely attributable to the reduction in engine noise, which is most pronounced on departure when aircraft operate at high power settings. The difference in noise on approach is much less, as the engines operate at lower power settings, and the airframe itself, with flaps and landing gear deployed, contributes to the noise.

Table G-6 provides more information about the jet aircraft for which noise was modeled. The table presents the forecast total annual operations by aircraft type and time-of-day.

Table G-6 Annual Operations by Aircraft Type and Time-of-Day, 2050 Constrained Forecast

		Number of Arrivals			Number of Departures			
Aircraft Type	Aircraft Model	Day	Evening	Night	Day	Evening	Night	Total
Jet	Airbus 340-211	730	-	-	730	-	-	1,460
	Airbus A320-232	3,650	1,095	730	4,380	365	730	10,950
	Airbus A320-211	1,095	1,095	-	1,095	1,095	-	4,380
	Airbus A321-232	20,075	6,205	4,745	21,900	2,920	5,475	61,320
	Airbus A330-343	365	-	365	730	-	-	1,460
	Boeing 737-700	46,590	14,712	11,120	4,745	1,825	1,460	80,452
	Boeing 737-800 MAX	7,300	1,825	2,920	7,665	2,190	2,190	24,090
	Boeing 737-800	860	253	195	48,545	8,395	9,490	67,738
	Boeing 757-200	365	-	-	-	365	-	730
	Boeing 767-300	365	-	2,190	-	730	1,825	5,110
	Boeing 777-300/300 ER	365	-	-	365	-	-	730
	Boeing B787-8R	4,015	1,095	-	3,285	1,095	1,095	10,585
	CRJ-900, CNA 501, CNA 750	730	-	-	730	-	-	1,460
	Cessna 560 Citation XLS	487	-	-	487	-	-	973
	Challenger 600	1,460	-	-	1,460	-	-	2,920
	Embraer ERJ175	2,190	1,460	730	2,555	1,095	730	8,760
	Gulfstream GIV	243	-	-	243	-	-	487
	Gulfstream GV	365	-	-	365	-	-	730
Twin Turboprop	Beech 99	2,555	-	365	1,095	1,095	365	5,475
Helicopter	Robinson R44	183	-	-	183	-	-	365
Total Operations		93,987	27,740	23,360	100,558	21,170	23,360	290,175
Percentages		32.4%	9.6%	8.1%	34.7%	7.3%	8.1%	100.0%

NOTES:

Totals may not sum as indicated due to rounding.

CRJ 900 – Bombardier CRJ 900;

CNA 501 – Cessna 501 Citation ISP;

CNA 750 – Cessna 750 Citation X

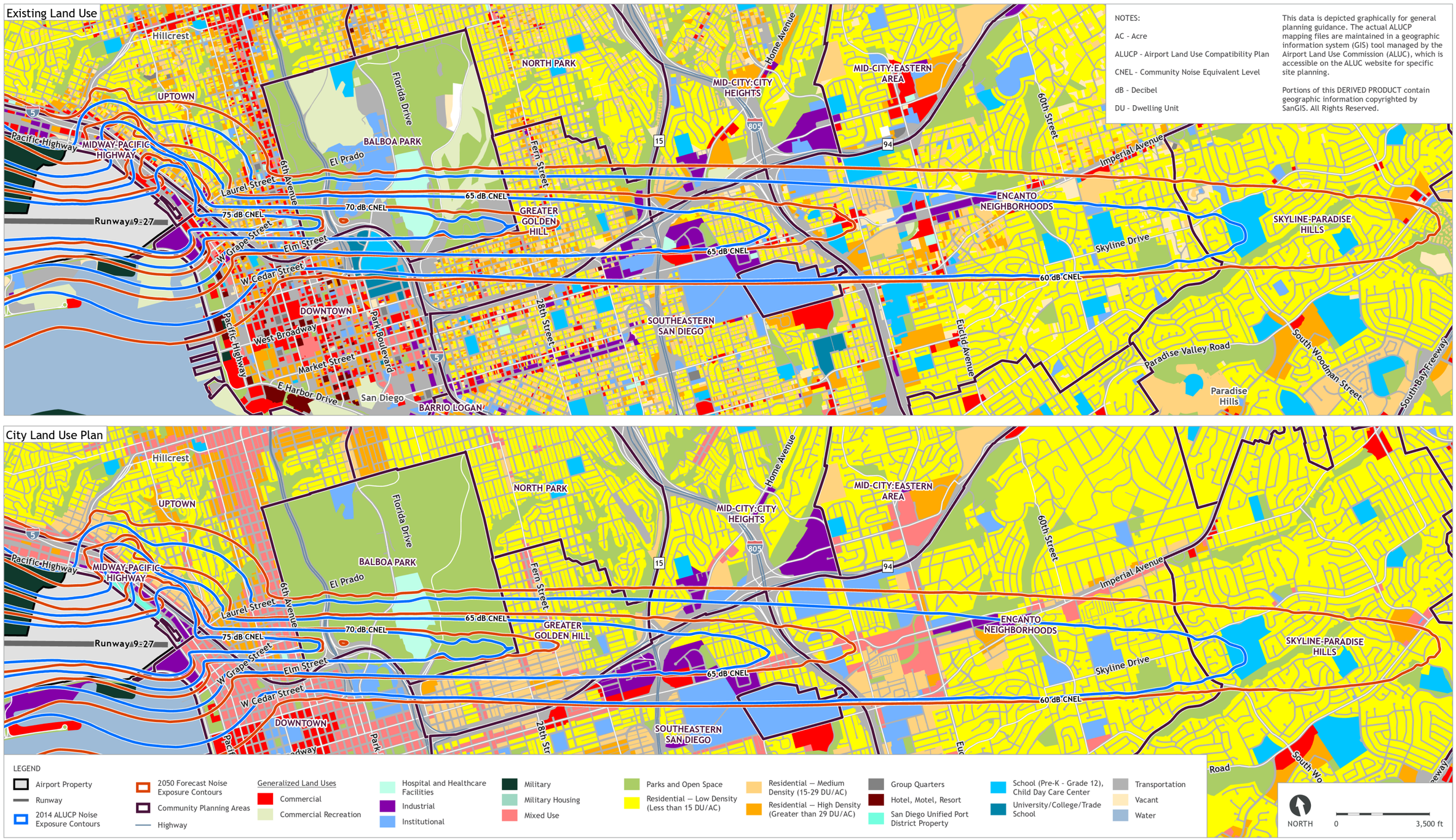
SOURCE: Noise Modeling Approach and Input Assumptions Technical Memorandum, *Airport Development Plan*, Table 8, Recirculated Draft EIR, Appendix R-G2, August 9, 2019, San Diego International Airport. Ricondo computed annual operations by multiplying the average annual daily operations by 365.

G.4.2 Updated Noise Contours and Land Use

Exhibits G-2 and **G-3** compare the 2050 forecast noise contours with the 2014 ALUCP noise contours in relation to existing land use and the City of San Diego's land use plan designations by community planning areas (CPAs) and neighborhood boundaries. On the east side of the Airport, as depicted on Exhibit G-2, the 2050 forecast 60 dB CNEL contour extends farther into the Skyline-Paradise Hills, Encanto Neighborhoods, Southeastern San Diego, Greater Golden Hill, Uptown, and Downtown CPAs. The 2050 forecast 65 dB CNEL contour extends into the Encanto Neighborhoods CPA and extends farther into the Southeastern San Diego, Greater Golden Hill, Uptown, and Downtown CPAs. The 2050 forecast 70 dB CNEL contour extends into the Greater Golden Hill CPA and farther into the Uptown and Downtown CPAs. The 2050 forecast 75 dB CNEL contour is very similar to the 2014 ALUCP contour.

On the west side of the Airport, Exhibit G-3 indicates that the 60 dB CNEL contour extends into the Old Town San Diego CPA, and extends farther into the Midway-Pacific Highway, Mission Beach, Ocean Beach, and Peninsula CPAs. The 65 and 70 dB CNEL contours extend farther into the Midway-Pacific Highway and Peninsula CPAs. The 75 dB CNEL extends farther into the Liberty Station part of the Peninsula CPA.

Exhibits G-2 and G-3 indicate that existing residential land use, including single-family and multi-family housing, is exposed to aircraft noise ranging from 60 dB CNEL to over 75 dB CNEL based on the 2050 forecast. Several schools and other institutions are also exposed to aircraft noise at those levels. The City land use plan designations are similar to the existing land use pattern, reflecting the City's objective to preserve the existing development patterns in most of those areas.



AIRPORT LAND USE COMMISSION

SOURCES: San Diego County Regional Airport Authority, *San Diego International Airport*, *Airport Layout Plan*, August 2021 (Airport property, runway); SanGIS, 2023 (municipalities); San Diego County Regional Airport Authority, 2023 (San Diego Unified Port District Boundary); City of San Diego, Planning Department, 2023 (community plan, general plan land use); US Census Bureau, 2022 (roads); County of San Diego, Planning and Development Services, LUEG-GIS Services, 2018 (water); Harris Miller Miller & Hanson, Inc., 2010, cited in Airport Land Use Commission, San Diego County Regional Airport Authority, San Diego International Airport Land Use Compatibility Plan, May 2014 (2030 noise contours); Harris Miller Miller & Hanson, Inc., June 2023 (2050 noise contours); Ricondo & Associates, Inc., May 2024 (community plan areas based on SanGIS).

File Location: Project:P:\GIS\Projects\SAN\MXD\SAN_ALUCP_2024_Maps\SAN_ALUCP_AppendixG_20240517.aprx Layout: SAN_ALUCP_ExhG-2_UpdatedForecastNoiseExposure_ExistingAndGeneralPlanLandUse_Eastside_20250109

EXHIBIT G-2

UPDATED FORECAST NOISE EXPOSURE WITH EXISTING AND GENERAL PLAN LAND USE - EASTSIDE

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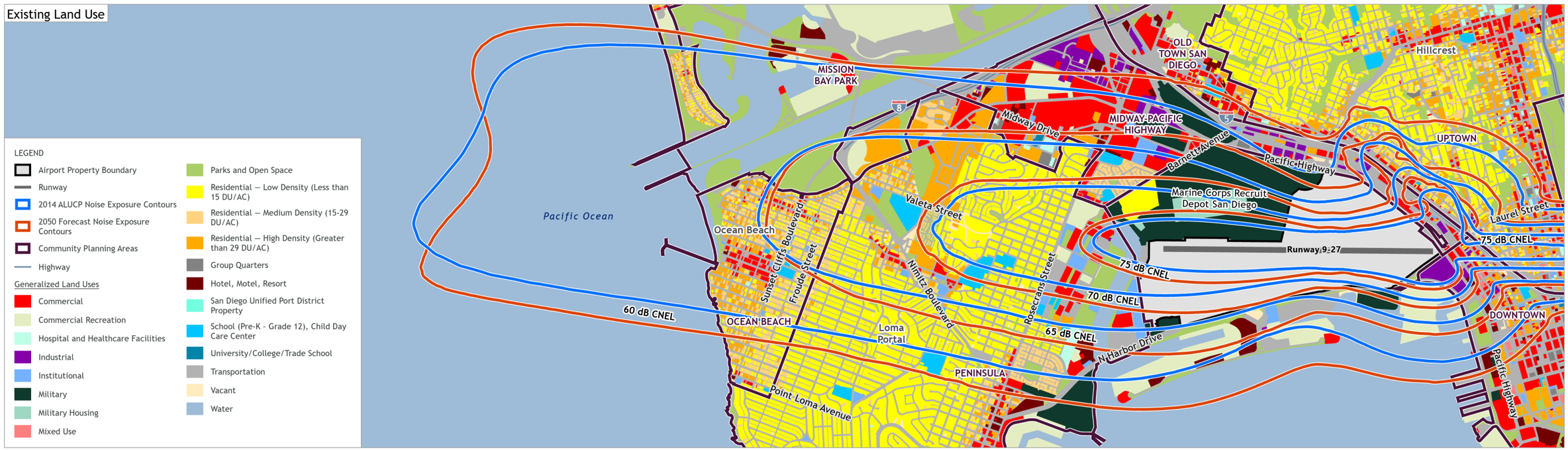
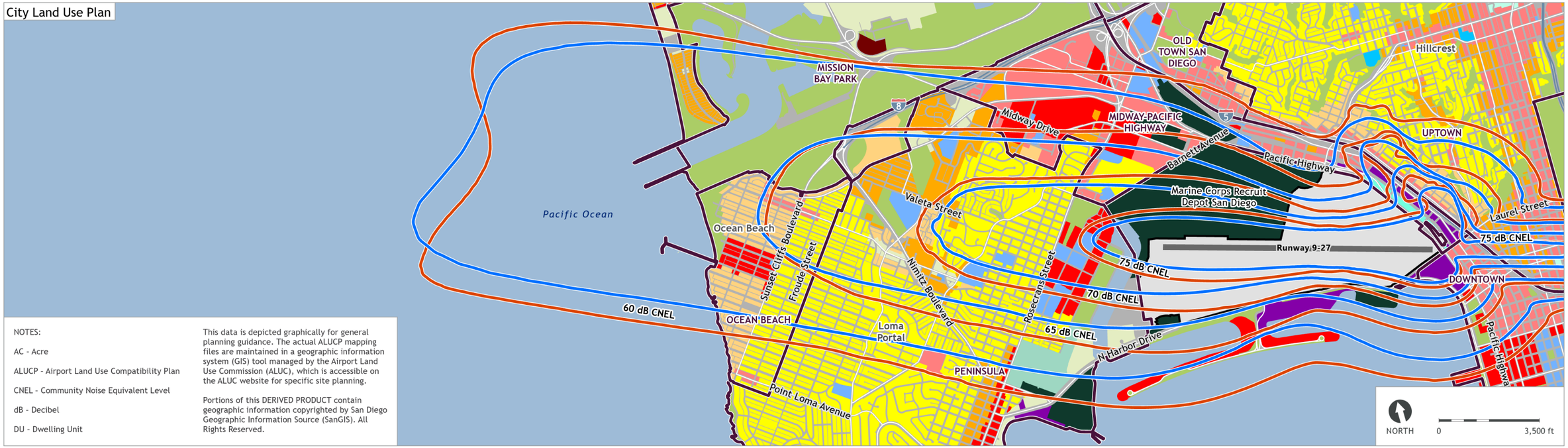
Existing Land Use



City Land Use Plan



NOTES:

AC - Acre

ALUCP - Airport Land Use Compatibility Plan

CNEL - Community Noise Equivalent Level

dB - Decibel

DU - Dwelling Unit

This data is depicted graphically for general planning guidance. The actual ALUCP mapping files are maintained in a geographic information system (GIS) tool managed by the Airport Land Use Commission (ALUC), which is accessible on the ALUC website for specific site planning.

AIRPORT LAND USE COMMISSION

SOURCES: San Diego County Regional Airport Authority, *San Diego International Airport*, *Airport Layout Plan*, August 2021 (Airport property, runway); SanGIS, 2023 (municipalities); San Diego County Regional Airport Authority, 2023 (San Diego Unified Port District Boundary); City of San Diego, Planning Department, 2023 (community plan, general plan land use); US Census Bureau, 2022 (roads); County of San Diego, Planning and Development Services, LUEG-GIS Services, 2018 (water); Harris Miller Miller & Hanson, Inc., 2010, cited in Airport Land Use Commission, San Diego County Regional Airport Authority, San Diego International Airport Land Use Compatibility Plan, May 2014 (2030 noise contours); Harris Miller Miller & Hanson, Inc., June 2023 (2050 noise contours); Ricondo & Associates, Inc., May 2024 (community plan areas based on SanGIS).

File Location: Project:P:\GIS\Projects\SAN\MXD\SAN_ALUCP_2024_Maps\SAN_ALUCP_AppendixG_20240517.aprx Layout: SAN_ALUCP_ExhG-3_UpdatedForecastNoiseExposure_ExistingAndGeneralPlanLandUse_Westside_20240604

EXHIBIT G-3

UPDATED FORECAST NOISE EXPOSURE WITH EXISTING AND GENERAL PLAN LAND USE - WESTSIDE

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G.5 NOISE COMPATIBILITY POLICY ANALYSIS – OVERVIEW

This section discusses policy considerations arising from the updated 2050 noise exposure forecast.

The 2014 ALUCP established the following goal for noise compatibility policies:

> [Ensure] that new development within the noise contours is compatible with aircraft noise by:
>
> - Limiting new noise-sensitive development within the noise compatibility boundary;
> - Ensuring that any new noise-sensitive development includes sound attenuation; and
> - Obtaining avigation easements for new noise-sensitive development.[30]

Four principles were identified to guide development of the updated noise compatibility policies and standards:

1. The standards should set reasonable limits on the amount of new noise-sensitive development that can occur in the noise-impacted area.
2. The standards should be based on guidance established in state law or provided by other authoritative sources, including the Handbook and 14 CFR Part 150.
3. The standards should avoid being so restrictive as to create disincentives to community investment that might lead to future blight.
4. The standards should ensure that any new noise-sensitive development includes sound attenuation to reduce outdoor noise to acceptable indoor levels and that avigation easements are granted to the airport operator in accordance with the state Noise Law (Title 21).[31]

The goal, objectives, and principles remain appropriate for the updated ALUCP. **Table G-7** presents an analysis of the 2014 ALUCP policies. The 2014 ALUCP policies are quoted in the middle column, and policy update considerations are in the righthand column.

[30] Airport Land Use Commission, San Diego County Regional Airport Authority, *San Diego International Airport Land Use Compatibility Plan*, May 2014 (amended) (p. 1-2).

[31] Airport Land Use Commission, San Diego County Regional Airport Authority, *San Diego International Airport Land Use Compatibility Plan*, May 2014 (amended) (p. E-27).

Table G-7 (1 of 5) 2014 ALUCP Noise Policies and Considerations for Update

2014 ALUCP Policy Number	2014 ALUCP Policy Description	Considerations for Updated Policy
Policy N.1	**Noise Contour Map and Table** This ALUCP establishes the 60 dB CNEL contour as the threshold above which noise compatibility standards apply. Noise contours by 5 dB CNEL increments are depicted in Exhibit 2-1 [in the 2014 ALUCP]. Proposed land uses will be evaluated for consistency with the standards contained in **Table G-8**. These standards establish three land use compatibility categories, as follows: Compatible (green): The use is consistent with this ALUCP. Conditionally compatible (yellow): The use is consistent with this ALUCP if the conditions described in **Table G-8** are met. Incompatible (red): The use is inconsistent with this ALUCP. Land uses located outside the 60 dB CNEL contour are not subject to the noise compatibility policies and standards of this ALUCP.	Updated noise contours are larger than in the 2014 ALUCP. See **Exhibit G-1**. See **Exhibits G-2** and **G-3** for existing and general/community plan land use designations on the east and west sides of SDIA. • **60 dB CNEL Contour** – Extends farther into Peninsula, Ocean Beach, Mission Beach, Midway-Pacific Highway, Uptown, Downtown, Greater Golden Hill, Southeastern San Diego, Encanto Neighborhoods, and Skyline-Paradise Hills CPAs. *Effect: New residential, schools, places of assembly, and hospital construction and reconstruction would become subject to noise attenuation per Table G-8.* • **65 dB CNEL Contour** – Extends farther into Peninsula, Midway-Pacific Highway, Uptown, Downtown, Greater Golden Hill, Southeastern San Diego, and Encanto CPAs. *Effect: New schools, places of assembly, hospitals would be incompatible.* • **70 dB CNEL Contour** – Extends into Greater Golden Hill and farther into Peninsula, Midway-Pacific Highway, Uptown, Downtown CPAs. *Effect: General/community plan changes from nonresidential to residential would be incompatible (see Policy N.4).* • **75 dB CNEL Contour** - Extends farther into Liberty Station. *Effect: New convention centers, adult schools, arenas, and stadiums would be incompatible.* **Table G-8**, Noise Compatibility Standards, which follows Table G-7, has been updated to reflect land use categories in the current City of San Diego Land Development Code and acknowledging new land uses associated with renewable energy technologies. Sound attenuation standards for office and meeting areas in parks, recreation, and open space uses within the 70 dB CNEL contour have also been added. Otherwise, the land use compatibility standards are the same as in the 2014 ALUCP.

Table G-7 (2 of 5) 2014 ALUCP Noise Policies and Considerations for Update

2014 ALUCP Policy Number	2014 ALUCP Policy Description	Considerations for Updated Policy
Policy N.2	**Sound Attenuation** Conditionally compatible land uses must incorporate sound attenuation to achieve indoor noise levels as specified in **Table G-8**.	Updated noise exposure has no bearing on this policy. This policy should be continued.
Policy N.3	**Evaluation of Noise Compatibility for Development with a Mix of Uses** When a land use project involves a combination of different land uses listed in **Table G-8**, each component use must comply with the applicable noise standards.	Updated noise exposure has no bearing on this policy. This policy should be continued.
Policy N.4	**Residential Land Use within 70 dB CNEL Contour and Greater** As depicted on Exhibit 2-2 [in the 2014 ALUCP], new residential development is allowed at or above the 70 dB CNEL contour only if the affected property is currently designated to allow for residential use in the applicable general or community plan and it complies with the conditions described in **Table G-8**. In areas exposed to airport noise at or above 70 dB CNEL, general and community plan amendments from nonresidential to residential designations are not allowed.	The area subject to this policy increases with updated noise exposure (**Exhibit G-4**). • East - Greater Golden Hill CPA • West – Peninsula and Midway-Pacific Highway CPAs **Exhibits G-4** and **G-5** indicate the areas where this policy applies. **Exhibit G-4** portrays areas designated in the City land use plans for either residential or nonresidential use. **Exhibit G-5** is a more detailed depiction of City land use plan designations. **Exhibit G-6** depicts existing land use within the 70 dB CNEL contour, which is fully built-out. Thus, this policy effectively applies only to prospective redevelopment. The 70 dB CNEL contour from the 2014 ALUCP is also provided on these exhibits for comparison. This policy should be continued.

Table G-7 (3 of 5) 2014 ALUCP Noise Policies and Considerations for Update

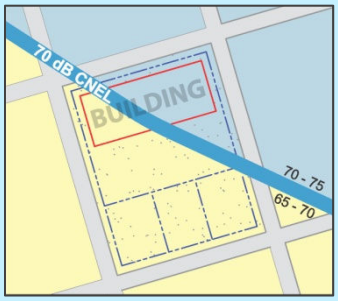
2014 ALUCP Policy Number	2014 ALUCP Policy Description	Considerations for Updated Policy
Policy N.5	**Building Split by a Noise Contour** The standards for the noise contour range within which **more than 50 percent** of the building is located, as determined by gross floor area (in square feet), apply.  *Policies for 70-75 dB CNEL Range Apply* *For Illustrative Purposes Only*	Updated noise exposure has no bearing on this policy. This policy should be continued.
Policy N.6	**Land Uses Not Specified in Table G-8** For any proposed land use that is not specified in **Table G-8**, the ALUC must determine the most similar land use based upon the land use definitions and guidance in Appendix A [of the 2014 ALUCP]. The ALUC may also consider the noise sensitivity of the land use in determining the most similar land use. Considerations include whether the land use involves: 1. Sleeping rooms 2. Activities where a quiet indoor environment is needed Once the ALUC determines the most similar land use, standards for that land use will apply.	Updated noise exposure has no bearing on this policy. This policy should be continued.

Table G-7 (4 of 5) 2014 ALUCP Noise Policies and Considerations for Update

2014 ALUCP Policy Number	2014 ALUCP Policy Description	Considerations for Updated Policy
Policy N.7	**New Uses in Existing Buildings** No consistency review is required when new compatible or conditionally compatible uses, as described in **Table G-8**, are proposed within a portion of an existing building, such as a multi-tenant shopping center. However, consistency review is required for new residential, public assembly and adult school uses.* Incompatible uses are not allowed. Consistency review, including recordation of an avigation easement (if applicable), is required when a new use (or multiple uses) is proposed to entirely occupy an existing building. Only new residential, public assembly and adult school uses require sound attenuation per **Table G-8**.*	Updated noise exposure has no bearing on this policy. This policy should be continued.
Policy N.8	**Avigation Easement Dedication** Conditionally compatible land uses located within the 65 dB CNEL (and higher) noise contour that require an avigation easement per **Table G-8** shall dedicate an avigation easement to the owner or operator of the Airport that includes the following provisions: (a) Provide the right of flight in the airspace above the property. (b) Allow the generation of noise and other impacts associated with the legal operation of aircraft over the property. See Appendix B [of the 2014 ALUCP] for the SDIA avigation easement template.	Updated noise exposure has no bearing on this policy. This policy should be continued.

Table G-7 (5 of 5) 2014 ALUCP Noise Policies and Considerations for Update

2014 ALUCP Policy Number	2014 ALUCP Policy Description	Considerations for Updated Policy
1.6.1 Existing Incompatible Uses	**1.6.1.1 Noise** An existing incompatible land use for noise is not sound attenuated to the levels required by **Table G-8** … and/or has not dedicated an avigation easement to the Airport Authority as required by **Table G-8**. If the existing use is not already attenuated, enlargement and reconstruction of residential and nonresidential uses within the noise contours shown on Exhibit 2-1 [in the 2014 ALUCP] are subject to consistency review and the following requirements: Additional sleeping rooms (bedrooms or rooms used primarily for sleeping) in residential, hotel/motel and institutional uses must be sound-attenuated as required by **Table G-8** (existing sleeping rooms do not require attenuation). Reconstructed buildings must be fully sound-attenuated as required by **Table G-8**. An avigation easement must be recorded as required by **Table G-8**.	The current policy addresses only existing uses classified as "conditionally compatible" (the yellow uses) in Table G-8 but does not directly address uses classified as "incompatible" (the red uses). The policy should be revised to require sound attenuation and avigation easements for additions to or reconstruction of educational, institutional, and public service land uses classified as "incompatible."

NOTES:

* These land use categories account for the only uses defined by state law as incompatible within the noise impact boundary (65 dB CNEL contour), which are classified in the ALUCP as conditionally compatible within the 65 dB CNEL contour. See Title 21, California Code of Regulations, Division 2.5, Subchapter 6, Noise Standards, Section 5014.

SOURCES: Airport Land Use Commission, San Diego County Regional Airport Authority, *San Diego International Airport Land Use Compatibility Plan*, May 2014 (amended) (p. 2-2 – 2-10 and p.1-9 (columns 1 and 2)). Ricondo & Associates, Inc., June 2024 (column 3).

Table G-8 presents the updated noise compatibility standards. Proposed changes are indicated in red text. The following changes are proposed:

- In the Educational, Institutional, Public Services category, create a cultural facility category to include libraries, museums, galleries, planetariums, and aquariums.
- In the Educational, Institutional, Public Services category, create a custody facility category to include jails, prisons, and other detention facilities.
- In the Industrial category, eliminate the "junkyard, dump, recycling center, construction yard" land category and reassign those uses to other refined categories.
- In the Industrial category, establish a new category for "recycling centers handling inorganic matter and construction/material storage yards."
- In the Industrial category, add refuse disposal, junkyards, dumps, and recycling centers handling

organic matter or tires to the “sanitary landfill” category.

- In the Industrial category, separate warehousing from storage facilities to distinguish between long-term storage facilities, with negligible employee presence, and warehouses and distribution centers where staff members are involved in regularly stocking shipments and filling orders for retail stores and customers.
- In the Transportation, Communication, Utilities category, separate small from large electrical power generation facilities. Add battery energy storage systems, a land use supporting wind and solar power facilities, to the “electrical power generation facility (large)” category.
- In the Transportation, Communication, Utilities category, add flood control facilities and wireless communication/transmission facilities, as specified in the City land development code.
- In the Recreation, Park, Open Space category, add fairgrounds, as specified in the City land development code, to the “arena, stadium” land uses.
- In the Recreation, Park, Open Space category, add “botanical gardens, arboretums, zoological parks,” which are specified in the City land development code.
- In the Recreation, Park, Open Space category, add “campgrounds,” a use specified in the City land development code.
- In the Recreation, Park, Open Space category, add outdoor entertainment facilities, such as amphitheaters and bandstands.
- In the Recreation, Park, Open Space category, eliminate the “golf course clubhouse” land use as unnecessarily specific. It is replaced with footnote 4 (noise attenuation) as applied to golf courses.
- Add noise attenuation standards for indoor office and meeting areas in Recreation, Park, Open Space uses. This is for consistency with standards applying to the other nonresidential land use categories (Commercial, Office, Service, Transient Lodging; and Educational, Institutional, Public Services) that are conditionally compatible with noise above 70 dB CNEL.
- In the Recreation, Park, Open Space category, separate “recreation facilities (outdoor) from “park, open space” to distinguish between open space uses and more intensively occupied recreation facilities.
- In the Agriculture category, add “horticulture and floriculture,” uses which are specified in the City land development code, to the “agriculture” land use. Also add “forestry.”

Table G-8 (1 of 3) Updated Noise Compatibility Standards

Land Use Category [1]	Noise Contour Range (dB CNEL)			
	60-65	65-70	70-75	75 +
RESIDENTIAL				
Single-or Multiple Unit	**45**	**45**[2]	**45**[2,3]	**45**[2,3]
Single Room Occupancy (SRO) Facility	**45**	**45**[2]	**45**[2,3]	**45**[2,3]
Group Quarters	**45**	**45**[2]	**45**[2,3]	**45**[2,3]
COMMERCIAL, OFFICE, SERVICE, TRANSIENT LODGING				
Hotel, Motel, Resort	**45/50**	**45/50**	**45/50**	**45/50**
Office - Medical, Financial, Professional Services, Civic			**50**	**50**
Retail (e.g., Convenience Market, Department Store, Drug Store, Pet Store)			**50**	**50**
Service - Low Intensity (e.g., Car Wash, Vehicle Rental, Vehicle Repair)			**50**	**50**
Service - Medium Intensity (e.g., Personal Services, Pet Services, Business Services)			**50**	**50**
Service - High Intensity (e.g., Eating-Drinking Establishment, Funeral Chapel)			**50**	**50**
Sport/Fitness Facility			**50**	**50**
Theater – Movie, Live Performance, Dinner		**45**	**45**	**45**
EDUCATIONAL, INSTITUTIONAL, PUBLIC SERVICES				
Assembly - Adult (Religious, Fraternal, Other)	**45**	**45**[2]	**45**[2]	**45**[2]
Assembly - Children (Instructional Studio, Cultural Heritage School, Religious, Other)	**45**			
Child Day Care Center, Pre-Kindergarten	**45**			
Conference/Convention Center				
Cultural Facility (e.g., Library, Museum, Gallery, Planetarium, Aquarium)		45	45	45
Custody Facility (e.g., Jail, Prison, Detention Facility)		45/50	45/50	45/50
Emergency Service Facility (e.g., Fire and Police Station			**50**	**50**
Medical Care - Congregate Care Facility	**45**			
Medical Care - Hospital	**45**			
Medical Care - Out-Patient Surgery Center	**45**			
School for Adults – College, University, Vocational/Trade School	**45**	**45**[2]	**45**[2]	
School for Children – Kindergarten through Grade 12	**45**			

Table G-8 (2 of 3) Updated Noise Compatibility Standards

Land Use Category [1]	Noise Contour Range (dB CNEL)			
	60-65	65-70	70-75	75 +
INDUSTRIAL				
~~Junkyard, Dump, Recycling Center, Construction Yard~~				
Manufacturing/Processing – General				
Manufacturing/Processing of Biomedical Agents, Biosafety Levels 3 and 4 Only				
Manufacturing/Processing of Hazardous Materials				
Mining, Extractive Industry				
Recycling Center Handling Inorganic Matter, Construction/Material Storage Yards				
Research and Development - Scientific, Technical				
Sanitary Landfill, Refuse Disposal, Junkyard, Dump, Recycling Centers Handling Organic Material or Tires				
Self-storage Facility, Moving/Storage Facility				
Warehousing/Distribution Facility – General				
Warehousing/Storage of Biomedical Agents, Biosafety Levels 3 and 4 Only				
Warehousing/Storage of Hazardous Materials				
TRANSPORTATION, COMMUNICATION, UTILITIES				
Auto Parking				
Electrical Power Generation ~~Plant~~ Facility (large) – Solar/Photovoltaic Power Facility (≥1MW), Wind Turbine Facility (≥100 kW), Battery Energy Storage System associated with a public energy production and distribution system (not including residential battery storage systems)				
Electrical Power Generation Facility (small) – Solar/Photovoltaic Array (<1 MW), Wind Turbine Facility (<100 kW)				
Electrical Substation				
Emergency Communications Facility				
Flood Control Facility				
Marine Cargo Terminal				
Marine Passenger Terminal				
Transit Center, Bus/Rail Station				
Transportation, Communication, Utilities - Other				
Truck Terminal				
Water, Wastewater Treatment Plant				
Wireless Communication/Transmission Facility, excluding emergency communications				

Table G-8 (3 of 3) Updated Noise Compatibility Standards

Land Use Category [1]	Noise Contour Range (dB CNEL)			
	60-65	65-70	70-75	75 +
RECREATION, PARK, OPEN SPACE				
Arena, Stadium, Fairground			4	
Botanical Garden, Arboretum, Zoological Park			4	
Campground			4	
Cemetery				
Entertainment Facility – Outdoor				
~~Golf Course Clubhouse~~	-	-	4	4
Golf Course			4	4
Marina			4	4
Park, Open Space ~~Recreation~~			4	4
Recreation Facility – Outdoor			4	4
AGRICULTURE				
Agriculture, Horticulture, Floriculture, Forestry				
Aquaculture				

LEGEND	
	Compatible: Use is ~~permitted~~ compatible with indicated noise level.
	Conditionally Compatible: Use is ~~permitted~~ compatible subject to stated conditions.
	Incompatible: Use is not ~~permitted~~ compatible under any circumstances. See Section 1.3 for policy regarding existing uses classified as incompatible.
45	Indoor uses: building must be capable of attenuating exterior noise to 45 dB CNEL.
50	Indoor uses: building must be capable of attenuating exterior noise to 50 dB CNEL.
45/50	In sleeping rooms, exterior noise must be attenuated to 45 dB CNEL; ~~and any~~ in other indoor areas, exterior noise must be attenuated to 50 dB CNEL.
1	Refer to Appendix A for definitions of land uses in this table. Land uses not specifically listed must comply with standards for the most similar land use, in accordance with Policy N.6. ~~shall be evaluated, as determined by the ALUC, using the criteria for similar uses. Refer to Appendix A.~~
2	Avigation easement must be dedicated to the Airport owner/operator.
3	New residential use is ~~permitted~~ compatible above the 70 dB CNEL contour only if the current General/Community/Precise Plan designation allows for residential use. General/Community/Precise Plan amendments from a nonresidential designation to a residential designation are not ~~permitted~~ compatible. See Policy N.5.
4	~~Refer to Appendix A for definition of Assembly - Children.~~ Exterior noise in office areas and indoor meeting rooms must be attenuated to 50 dB CNEL indoors.
~~5~~	~~Refer to Appendix A for definitions of manufacturing, processing and storage of hazardous materials.~~
~~6~~	~~If this land use would occur within a single- or multi-family residence, it must be evaluated using the criteria for single- or multi-family residential.~~

SOURCE: Ricondo & Associates, Inc., March 2024.

G.6 SUMMARY

The 2050 noise exposure forecast is indicative of use of the Airport's single runway at or near full operational capacity. Because the noise contours are larger than those in the 2014 ALUCP, a greater amount of land would be subject to noise compatibility policies. The policy that will apply to most of the areas subject to higher forecast noise levels is sound attenuation – the requirement to reduce aircraft noise exposure in new residential and certain institutional land uses to achieve an indoor performance level of 45 dB CNEL (50 dB CNEL for selected commercial and office uses). This policy will apply only to new development or enlargement or reconstruction of existing land uses.

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LEGEND

- Airport Property
- Runway
- 2014 ALUCP Noise Exposure Contours
- 2050 Forecast Noise Exposure Contours
- Community Planning Area
- San Diego Unified Port District Boundary
- Highway
- Water
- Residential Use is Designated [1]
- Residential Use is Not Designated [2]

NOTES:

ALUCP - Airport Land Use Compatibility Plan

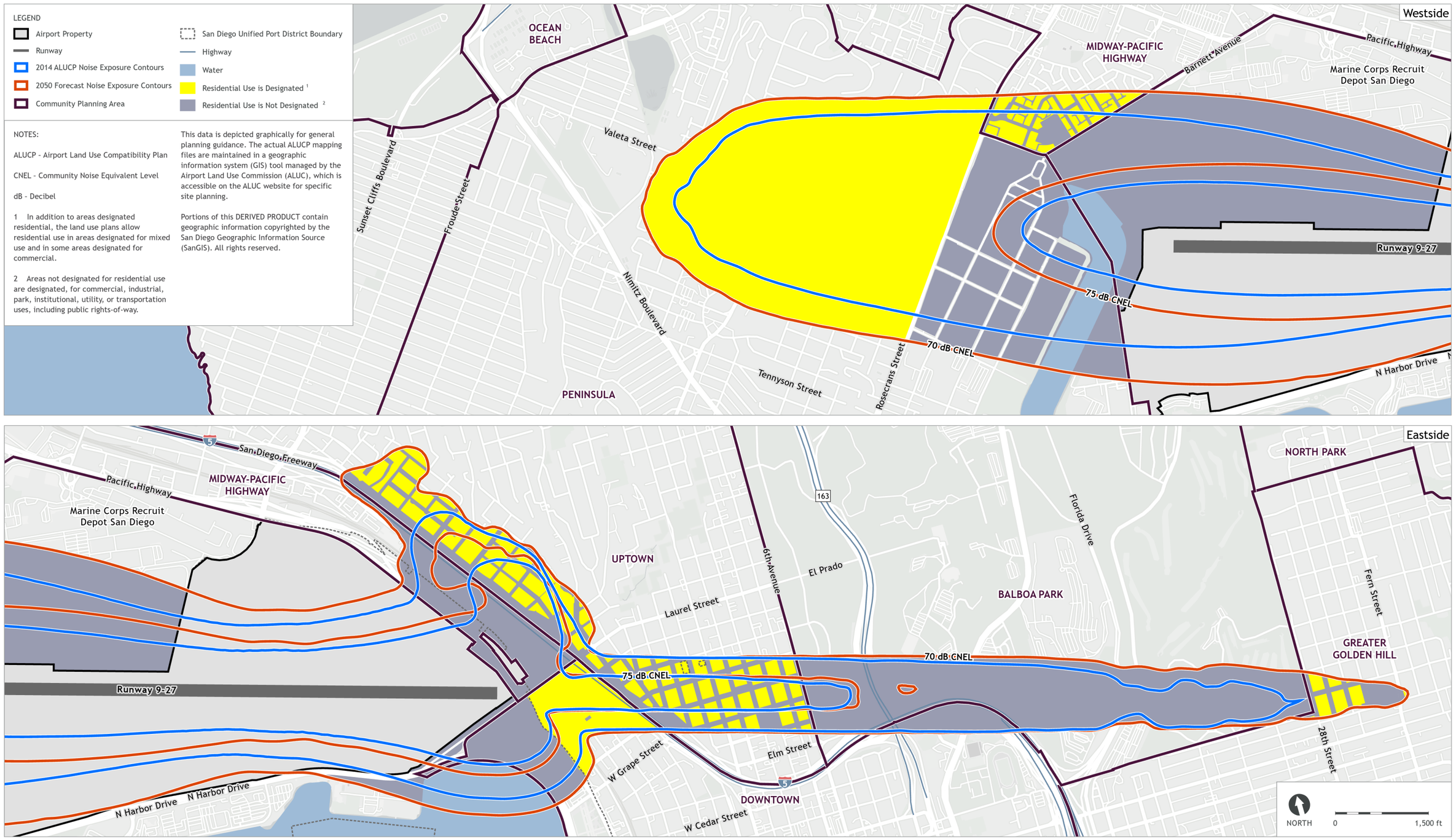
CNEL - Community Noise Equivalent Level

dB - Decibel

1 In addition to areas designated residential, the land use plans allow residential use in areas designated for mixed use and in some areas designated for commercial.

2 Areas not designated for residential use are designated, for commercial, industrial, park, institutional, utility, or transportation uses, including public rights-of-way.

This data is depicted graphically for general planning guidance. The actual ALUCP mapping files are maintained in a geographic information system (GIS) tool managed by the Airport Land Use Commission (ALUC), which is accessible on the ALUC website for specific site planning.



AIRPORT LAND USE COMMISSION

SOURCES: SanGIS, California State Parks, Esri, TomTom, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Sa Diego Unified Port District, April 2024 (basemap); San Diego County Regional Airport Authority, *San Diego International Airport*, *Airport Layout Plan*, August 2021 (Airport property, runway); San Diego County Regional Airport Authority, 2023 (San Diego Unified Port District Boundary); US Census Bureau, 2022 (roads); County of San Diego, Planning and Development Services, LUEG-GIS Services, 2018 (water); Harris Miller Miller & Hanson, Inc., June 2023 (2050 noise contours); Harris Miller Miller & Hanson, Inc., 2010, cited in Airport Land Use Commission, San Diego County Regional Airport Authority, San Diego International Airport Land Use Compatibility Plan, May 2014 (2014 ALUCP noise contours); Ricondo & Associates, Inc., May 2024 (community plan areas based on SanGIS).

File Location: Project:P:\GIS\Projects\SAN\MXD\SAN_ALUCP_2024_Maps\SAN_ALUCP_AppendixG_20240517.aprx Layout: SAN_ALUCP_ExhG-4_GPLU_ResDesignationsWithin70dB_20240604

EXHIBIT G-4

RESIDENTIAL LAND USE ALLOWED WITHIN 70 DB CNEL CONTOUR
BASED ON CITY LAND USE PLANS

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LEGEND

- Airport Property
- Runway
- 2014 ALUCP Noise Exposure Contours
- 2050 Forecast Noise Exposure Contours
- San Diego Unified Port District Boundary
- Community Planning Area
- Highway

Generalized Land Uses

- Commercial
- Commercial Recreation
- Hospital and Healthcare Facilities
- Industrial
- Institutional
- Military
- Mixed Use
- Parks and Open Space
- Residential — High Density (Greater than 29 DU/AC)
- Residential — Low Density (Less than 15 DU/AC)
- Residential — Medium Density (15-29 DU/AC)
- San Diego Unified Port District Property
- Transportation
- Water

NOTES:

AC - Acre

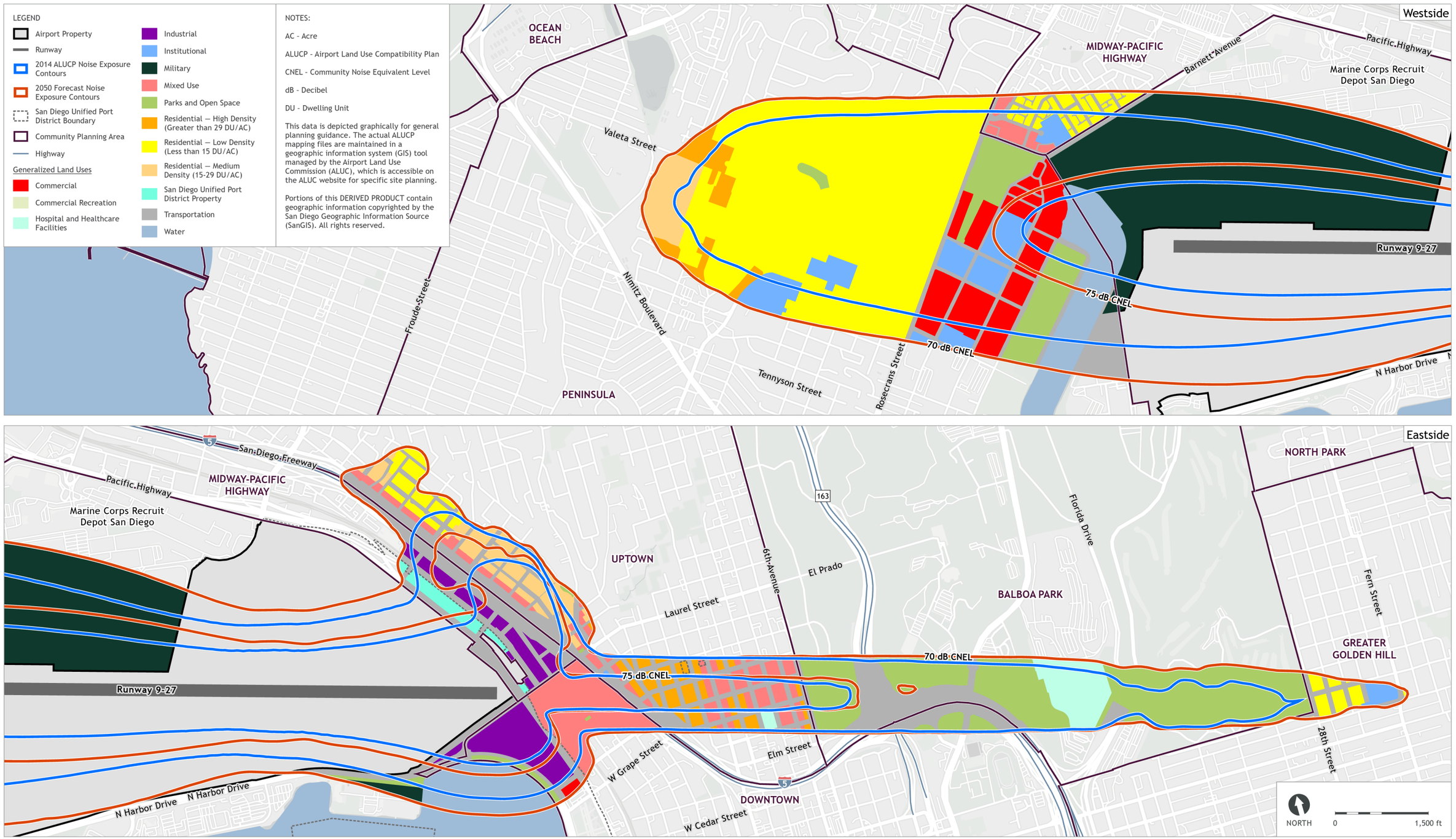
ALUCP - Airport Land Use Compatibility Plan

CNEL - Community Noise Equivalent Level

dB - Decibel

DU - Dwelling Unit

This data is depicted graphically for general planning guidance. The actual ALUCP mapping files are maintained in a geographic information system (GIS) tool managed by the Airport Land Use Commission (ALUC), which is accessible on the ALUC website for specific site planning.



AIRPORT LAND USE COMMISSION

SOURCES: SanGIS, California State Parks, Esri, TomTom, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS, Sa Diego Unified Port District, April 2024 (basemap); San Diego County Regional Airport Authority, *San Diego International Airport, Airport Layout Plan*, August 2021 (Airport property, runway); San Diego County Regional Airport Authority, 2023 (San Diego Unified Port District Boundary); US Census Bureau, 2022 (roads); County of San Diego, Planning and Development Services, LUEG-GIS Services, 2018 (water); Harris Miller Miller & Hanson, Inc., June 2023 (2050 noise contours); Harris Miller Miller & Hanson, Inc., 2010, cited in Airport Land Use Commission, San Diego County Regional Airport Authority, San Diego International Airport Land Use Compatibility Plan, May 2014 (2014 ALUCP noise contours); Ricondo & Associates, Inc., May 2024 (community plan areas based on SanGIS).

File Location: Project:P:\GIS\Projects\SAN\MXD\SAN_ALUCP_2024_Maps\SAN_ALUCP_AppendixG_20240517.aprx Layout: SAN_ALUCP_ExhG-5_GPLU_DesignationsWithin70dB_20240604

EXHIBIT G-5

CITY LAND USE PLAN DESIGNATIONS WITHIN 70 dB CNEL CONTOUR

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LEGEND

- Airport Property
- Runway
- 2014 ALUCP Noise Exposure Contours
- 2050 Forecast Noise Exposure Contours
- San Diego Unified Port District Boundary
- Community Planning Area
- Highway

Generalized Land Uses

- Commercial
- Commercial Recreation
- Hospital and Healthcare Facilities
- Industrial
- Institutional
- Military
- Military Housing
- Mixed Use
- Parks and Open Space
- Residential — Low Density (Less than 15 DU/AC)
- Residential — Medium Density (15-29 DU/AC)
- Residential — High Density (Greater than 29 DU/AC)
- Group Quarters
- Hotel, Motel, Resort
- San Diego Unified Port District Property
- School (Pre-K - Grade 12), Child Day Care Center
- University/College/Trade School
- Transportation
- Vacant
- Water

NOTES:

AC - Acre

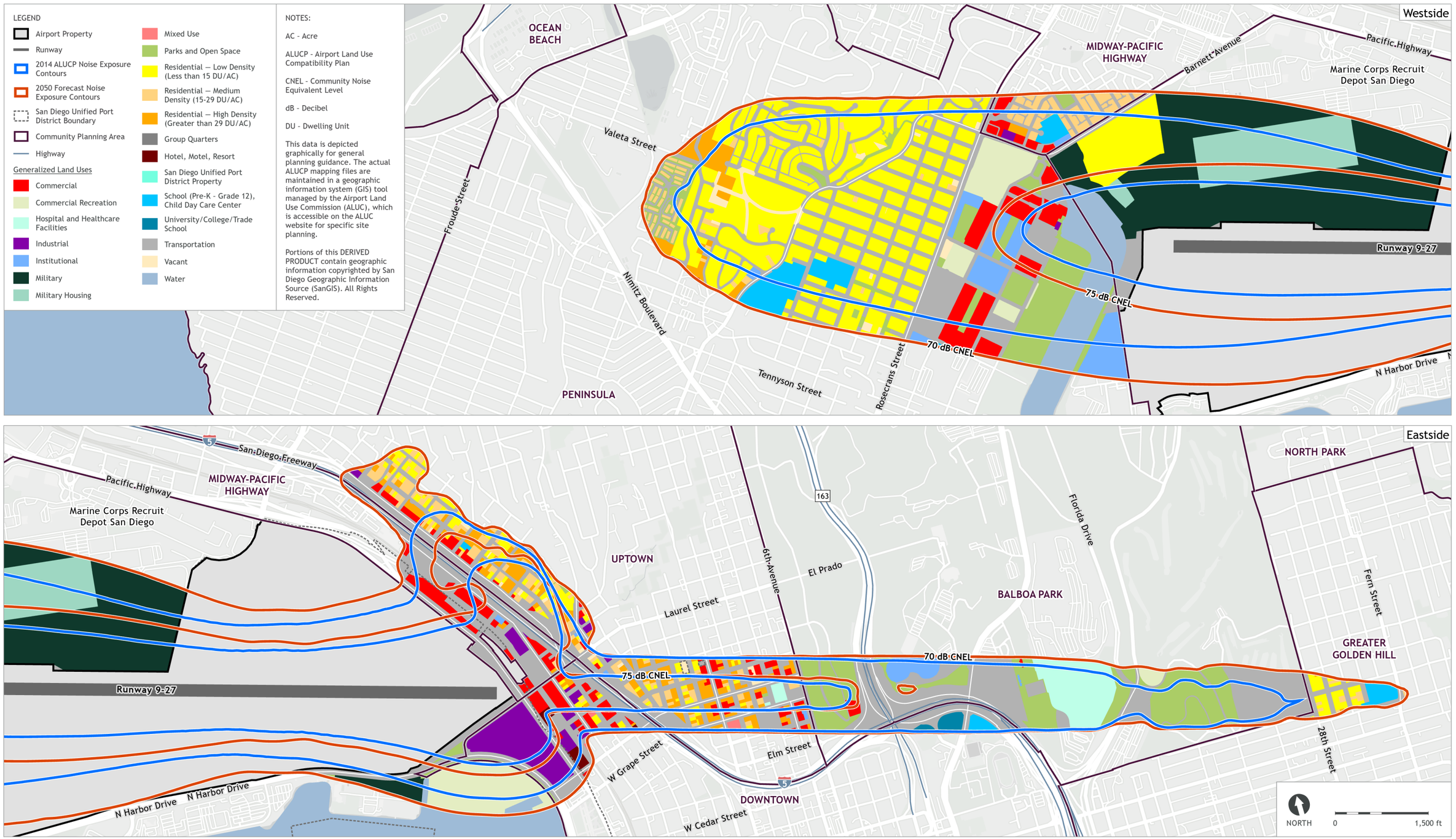
ALUCP - Airport Land Use Compatibility Plan

CNEL - Community Noise Equivalent Level

dB - Decibel

DU - Dwelling Unit

This data is depicted graphically for general planning guidance. The actual ALUCP mapping files are maintained in a geographic information system (GIS) tool managed by the Airport Land Use Commission (ALUC), which is accessible on the ALUC website for specific site planning.



AIRPORT LAND USE COMMISSION

SOURCES: SanGIS, California State Parks, Esri, TomTom, Garmin, Foursquare, SafeGraph, GeoTechnologies, Inc., METI/NASA, USGS, Bureau of Land Management, EPA, NPS, USDA, USFWS, April 2024 (basemap); San Diego County Regional Airport Authority, *San Diego International Airport, Airport Layout Plan*, August 2021 (Airport property boundary, airfield, buildings); SanGIS, 2023 (municipalities); San Diego County Regional Airport Authority, 2023 (San Diego Unified Port District Boundary); City of San Diego, Planning Department, 2023 (community plan, general plan land use); San Diego Association of Governments (SANDAG), 2014 (planned land use); US Census Bureau, 2022 (roads); County of San Diego, Planning and Development Services, LUEG-GIS Services, 2018 (water); Harris Miller Miller & Hanson, Inc., 2010, cited in Airport Land Use Commission, San Diego County Regional Airport Authority, San Diego International Airport Land Use Compatibility Plan, May 2014 (2014 ALUCP noise contours); Harris Miller Miller & Hanson, Inc., June 2023 (2050 noise contours); Ricondo & Associates, Inc., May 2024 (community plan areas based on SanGIS).

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EXHIBIT G-6

EXISTING LAND USE
WITHIN 70 dB CNEL

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Attachment 1

Technical Memorandum – Contour Comparison of ALUCP 2030 Forecast and ALP FEIR 2050 Study – Revised

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HMMH
700 District Avenue, Suite 800
Burlington, MA 01803
781.229.0707

TECHNICAL MEMORANDUM

To:	Stephen C. Smith Ricondo 2111 Palomar Airport Road, Suite 350 Carlsbad, CA 92011
From:	Gene Reindel, HMMH Paul Krusell, HMMH
Date:	June 19, 2023
Subject:	Contour Comparison of ALUCP 2030 Forecast and ALP FEIR 2050 Study - Revised
Reference:	23-0055A.001

The purpose of this technical memorandum is to compare two sets of Community Noise Equivalent Level (CNEL) contours HMMH previously developed in support of San Diego International Airport (SAN) planning projects. The two contours analyzed in this memo are the 2030 forecast aircraft noise exposure contours HMMH developed in 2009 as part of the Noise Exposure Map update in accordance with Title 14 of the Code of Federal Regulations Part 150 (called the "2030 Scenario") and the Airport Development Plan (ADP) Final Environmental Impact Report (FEIR) aircraft noise exposure contours developed in 2019 (called the "2050 Scenario"). Below are short descriptions of each scenario, followed by a comparison between contours.

2030 Scenario:

HMMH generated CNEL contours in 2009 for the 14 CFR Part 150 Study Noise Exposure Map update for SAN. Concurrently, HMMH modeled a 2030 forecast scenario[1] for the SAN Airport Land Use Compatibility Plan (ALUCP), which included one predominant difference from the 2030 forecast contours prepared under Part 150 – we included a unique hill effects grid[2] to adjust the contours for the hill adjacent and to the north of SAN towards the Runway 27 end of the Runway. HMMH used the Integrated Noise Model (INM) Version 7.0a to generate the 2030 scenario noise exposure grid, applied the hill effects grid to the INM output grid, and generated the noise exposure contours from the results after the hill effects were applied.

2050 Scenario:

HMMH generated the 2050 forecast scenario noise exposure contours in 2019 for the Final Environmental Impact Report (FEIR) associated with the Airport Development Plan at SAN. HMMH used the Aviation Environmental Design Tool (AEDT) Version 2d[3], which was the currently available FAA noise model release at the time of the FEIR. HMMH applied the hill effects grid used to develop the 2030 Scenario to adjust the AEDT resulting contours for the 2050 Scenario to include the ground effects to sound propagation up the hill immediately north of the east end of Runway 9-27.

---

[1] Mentzer Jr., Robert C. Memorandum "2030 CNEL Noise Contours and Adjustments for the SDIA ALUCP". September 29, 2009.

[2] HMMH developed a modeling difference grid to remove the over ground sound attenuation applied by the FAA's noise model in the area of the hill as measurements showed there is no ground attenuation. The FAA has not approved the use of the difference grid. Caltrans has accepted the use of the difference grid because it better compares to the measured values near the peak of the hill.

[3] McIntosh, Scott M. Cook, Justin W. Ma, Vincent. Memorandum "San Diego International Airport – Airport Development Plan (ADP) Environmental Impact Report (EIR) – Noise Modeling Approach and Input Assumptions." November 20, 2019.

Contour Comparison

Figure 1 at the end of the technical memorandum shows the two aircraft noise exposure contour sets from the 2030 Scenario and the 2050 Scenario. Both contour sets consist of a wide lobe extending to the west (consistent with a departure lobe as SAN is typically in west flow and departing to the west); a long, narrow lobe extending to the east (consistent with an arrival lobe); and lobe extending north along the San Diego Freeway (due to a noise grid that was added to the model to better represent how sound propagates up the hill as shown through measurements known as the "hill-effect").

In general, the differences between the two modeling scenarios are summed up in the following three categories:

1. Hill effects grid to remove ground effects in the area to the east of Interstate 5 was applied to the 2030 Scenario and the 2050 Scenario, but the 2050 Scenario included greater resolution of the terrain, which accounts for the more varied contour pattern.

2. The arrival lobe (east of SAN) is larger in the 2050 Scenario due to more operations, particularly with newer generation Boeing 737 aircraft at night. While newer generation aircraft have become quieter on departure, the noise has not noticeably changed on arrival. The slight shift of the arrival lobe between the two scenarios is likely due to having used a complete year of flight tracks to model the 2030 Scenario vs. using more typical model tracks in the 2050 Scenario – modeled tracks tend to miss slight shifts from runway centerline that may occur with a complete year of flight tracks modeled as actually flown. It is also possible that from 2009 to 2019, the proportions of traffic on the various arrival routes (before they converge on the runway centerline) have changed.

3. The departure lobe (west of SAN) is more comparable between the two scenarios. While there are more operations in the 2050 Scenario as stated above, particularly at night, the aircraft have become quieter on departure. The overall width of the contours sideline to SAN and along the departure lobe is greater in the 2050 Scenario due to changes to the noise propagation algorithms between AEDT and INM and increased operations. While the extent of the departure lobes is in close proximity between the scenarios, the 60 dB CNEL contour extends further along the 290 departure heading in the 2050 Scenario and less along the 270 heading due more aircraft using the 290 departure heading than in the 2030 Scenario.

The remainder of this technical memorandum provides additional information to support the differences between the two modeling scenarios as summarized above with the exception to number 1 as no further information is available.

The Departure (West) Lobe:

The west lobe of the 2050 Scenario contour set extends approximately 1,000 feet from the lateral extents of the 2030 contour. This is mainly due to the increase in nighttime departures from Runway 27. Table 1 shows the annual arrivals and departures modeled for the 2030 and 2050 Scenarios. Approximately 8,500 new nighttime departure operations were modeled in the 2050 Scenario, overwhelming any contour contraction due to decreased daytime and evening operations. Additionally, the fleet mix (e.g., the representative aircraft chosen for the noise model) changed significantly from the 2030 Scenario to the 2050 Scenario. Table 2 shows the modeled aircraft broken down by FAA weight class categories: the number of small and medium-size aircraft modeled reduced by nearly 60 percent from the 2030 Scenario to the 2050 Scenario. Large and heavy jets replaced these aircraft, leading to higher noise levels generated by larger aircraft. Table 3 provides representative examples of each FAA weight class category. The lobe to the northwest of the 2050 Scenario, particularly the 60 dB CNEL contour extends further due to a greater share of departure operations turning north upon leaving runway heading compared to the 2030 Scenario.

Table 1. Total Annual Airfield Operations at SAN by Time of Day for the 2030 and 2050 Scenarios
Source: HMMH

Operation Type	CNEL Time of Day	Annual Operations	
		2030 Scenario	2050 Scenario
Arrivals	Day	99,688	93,987
	Evening	28,652	27,740
	Night	14,709	23,360
	Total	**143,049**	**145,087**
Departures	Day	109,369	100,558
	Evening	18,643	21,170
	Night	15,035	23,360
	Total	**143,048**	**145,088**
Grand total		**286,096**	**290,175**

Table 2. Fleet Mix for Departures from Runway 27 by Time of Day
Source: HMMH Analysis and FAA Aircraft weights (Weight Class - ASPMHelp (faa.gov))

Scenario	CNEL Time of Day	Annual Operations					
		Small	Medium	Large Commuter	Large Jet	B757	Heavy
2030	Day	5,459	10,994	3,632	82,414	546	5,233
	Evening	521	1,703	701	14,677	17	801
	Night	400	819	256	12,203	5	1,219
	Total	**6,379**	**13,516**	**4,589**	**109,294**	**569**	**7,253**
2050	Day	1,073	2,624	3,101	86,581	-	5,009
	Evening	1,073	-	1,073	16,458	358	1,789
	Night	358	-	716	18,962	-	2,862
	Total	**2,504**	**2,624**	**4,890**	**122,001**	**358**	**9,660**
Difference	Day	-4,385	-8,370	-531	4,167	-546	-224
	Evening	553	-1,703	372	1,781	340	988
	Night	-42	-819	459	6,759	-5	1,643
	Total	**-3,874**	**-10,892**	**300**	**12,707**	**-211**	**2,407**

Table 3. Fleet Mix for Departures from Runway 27
Source: HMMH Analysis

Weight Category	Representative Aircraft
Heavy	Boeing 767-300
B757	Boeing 757
Large Jet	Boeing 737-700
Large Commuter	Bombardier CRJ
Medium	Beechcraft 1900D
Small	Piper PA28

The Arrival (East) Lobe:

To the east of the airfield, the contour extends approximately 7 miles down the centerline of Runway 27. This lobe is mostly caused by arrivals to Runway 27 because both scenarios modeled SAN operating in west flow 98 percent of the time. Table 4 shows the arrival and departure runway splits for each modeled scenario.

The eastward lobe of the 2050 scenario extends approximately 7,000 feet further than the lobe in the 2030 Scenario. This extension is partially due to increased nighttime arrival operations to Runway 27. As seen in Table 5, nighttime arrivals to Runway 27 increase by approximately 8,000 operations from the 2030 Scenario to the 2050 scenario. Nighttime (2200-0700) arrivals substantially affect CNEL values because of their 10-decibel increase applied to night operations. Additionally, the fleet mix (e.g., the representative set of aircraft chosen for the noise model) changed significantly from the 2030 scenario to the 2050 scenario. Table 6 shows the modeled aircraft broken down by FAA weight class categories: the number of small and medium-size aircraft modeled reduced by nearly 60 percent from the 2030 scenario to the 2050 scenario. Large and heavy jets replaced these aircraft, leading to greater noise levels generated by larger aircraft.

Upon closer analysis, the makeup of the Large Jet fleet evolved between the two models. For example, the 2030 Scenario modeled 21,167 annual Boeing 737-300 operations, while the 2050 Scenario removed 737-300's altogether and distributed their operations over 737-800's, 737-Max 8's, and 737-700's. While the sound exposure levels of arrivals to Runway 27 for the 737-800 and 737-300 are similar, the newly modeled 737-Max 8 creates a larger SEL footprint than the aircraft it replaces, and the near doubling of Effective Annual Operations (operations adjusted for CNEL) for 737-800's results in a longer 2050 Scenario contour to the east compared to the 2030 contour.

Table 4. Runway Usage by Time of Day for 2030 and 2050 Scenarios
Source: HMMH

Operation Type	CNEL Time of Day	2030 Scenario		2050 Scenario	
		Rwy 9	Rwy 27	Rwy 9	Rwy 27
Arrivals	Day	1%	99%	2%	98%
	Evening	2%	98%	2%	98%
	Night	4%	96%	2%	98%
Departures	Day	1%	99%	2%	98%
	Evening	1%	99%	2%	98%
	Night	1%	99%	2%	98%

Table 5. Runway 27 Annual Operations by Time of Day
Source: HMMH

Operation Type	CNEL Time of Day	Annual Operations	
		2030 Scenario	2050 Scenario
Arrivals	Day	98,691	92,108
	Evening	28,079	27,185
	Night	14,121	22,893
	Total	**140,891**	**142,186**
Departures	Day	108,276	98,546
	Evening	18,457	20,747
	Night	14,885	22,893
	Total	**141,617**	**142,186**
Grand Total		**282,508**	**284,371**

Table 6. Fleet Mix for Arrivals to Runway 27 by Time of Day
Source: HMMH Analysis and FAA Aircraft weights (Weight Class - ASPMHelp (faa.gov))

Scenario	CNEL Time of Day	Annual Operations					
		Small	Medium	Large Commuter	Large Jet	B757	Heavy
2030	Day	5,653	10,950	3,464	73,852	547	3,727
	Evening	468	1,707	407	23,268	5	2,290
	Night	184	783	684	11,260	9	1,153
	Total	**6,305**	**13,439**	**4,555**	**108,379**	**560**	**7,170**
2050	Day	2,504	2,266	3,101	77,995	358	5,724
	Evening	-	-	1,431	24,686	-	1,073
	Night	358	-	716	19,320	-	2,504
	Total	**2,862**	**2,266**	**5,247**	**122,001**	**358**	**9,302**
Difference	Day	-3,149	-8,684	-363	4,143	-189	1,997
	Evening	-468	-1,707	1,024	1,418	-5	-1,217
	Night	174	-783	32	8,060	-9	1,352
	Total	**-3,443**	**-11,173**	**692**	**13,621**	**-203**	**2,132**

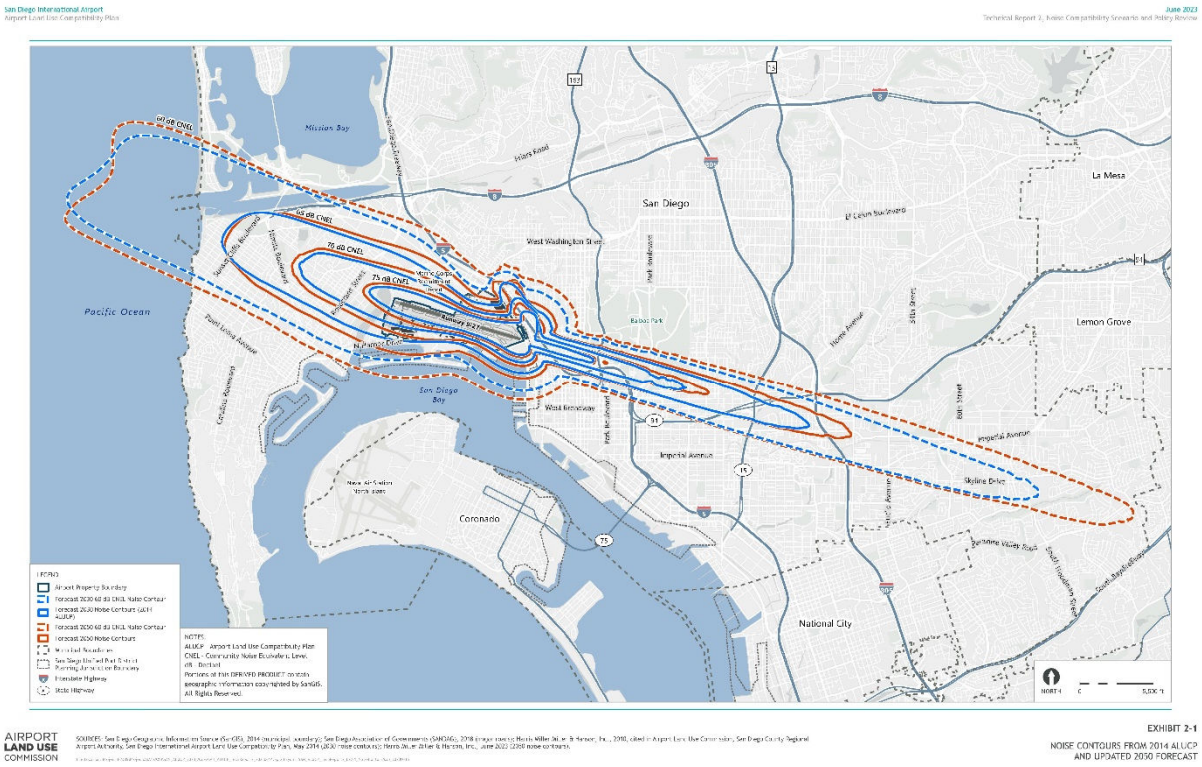

Figure 1. Comparison of Forecast 2030 CNEL Noise Contour (blue) and Forecast 2050 Noise Contour (red)
Source: Ricondo