Attachment 3 – Noise Technical Memoranda

Attachment 3a Roadway Traffic Noise Analysis Technical Memorandum

LAX Airfield and Terminal Modernization Project EIR Addendum

Roadway Traffic Noise Analysis

Technical Memorandum

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1. Summary

This memorandum provides updates to the roadway traffic noise analysis for the Los Angeles International Airport (LAX) Airfield and Terminal Modernization Project (ATMP or "Project") Environmental Impact Report (EIR) that was prepared pursuant to the requirements of the California Environmental Quality Act (CEQA). Detailed information regarding the roadway traffic noise analysis completed for the ATMP EIR is provided in Appendix F.2, *Roadway Traffic Noise Analysis Technical Report,* of the EIR. The updates to the EIR roadway traffic noise analysis that are presented herein account for proposed design refinements to the ATMP roadway system improvements that are a result of more detailed engineering design and planning that has been undertaken since the 2021 certification of the EIR and approval of the Project. The proposed roadway system design refinements are shown on **Figure 1**.

In light of the proposed roadway system design refinements, this memorandum provides updates to the roadway traffic noise impacts analysis of the ATMP EIR, particularly as related to the potential for significant impacts to noise-sensitive receptors.[1] The ATMP EIR noise analysis evaluated potential roadway traffic noise impacts at 18 noise-sensitive locations including residential areas and a recreational use (park) to the north of the ATMP area, and hotels to the east of the ATMP area. (see **Figure 2** and **Table 1**) The updated roadway traffic noise analysis evaluated potential impacts at these same receptors. Similar to the EIR, the updated analysis evaluated potential roadway traffic noise impacts directly related to the proposed roadway improvements as well as potential impacts related to roadway traffic in combination with other major elements of the ATMP such as concourse/terminal improvements and airfield improvements.

The ATMP EIR noise analysis determined that none of the 18 noise-sensitive receptors would be significantly impacted by noise from roadway traffic or from the combined roadway traffic and aircraft noise, which was also found to be the case in the updated roadway traffic noise analysis.

2. General Approach and Methodology

The methodology used to determine roadway noise levels for the updated noise analysis that considers the proposed roadway system refinements is basically the same as was applied in the ATMP EIR, as described below. The updated evaluation of Project-related noise levels due to traffic on the off-airport roadway network due to design changes, traffic noise predictions using the latest version of the SoundPLAN noise model which implements the latest approved version of the Federal Highway Administration (FHWA) Traffic Noise Model (TNM Version 2.5).[2]

Traffic noise levels for the future forecast years, with and without the Project, were computed using the latest version of the SoundPLAN noise model which implements TNM Version 2.5 to compute traffic noise. Using hourly traffic volume data from the traffic demand model developed for the currently proposed roadway system refinements, including the same vehicle mix and distributions as used for the Approved Project in the EIR, SoundPLAN was used to calculate hourly traffic noise levels expressed in terms of the hourly equivalent sound level (L_{eq}(h)) and the Community Noise Equivalent Level (CNEL) in A-weighted decibels (dBA). Shielding of traffic noise from buildings and effects from intervening terrain were included in the predictions. Traffic noise levels were calculated at receiver points throughout the analysis area representing noise-sensitive land uses that have frequent outdoor human use.

Potential traffic noise impacts were evaluated with respect to thresholds of significance characterized by land use compatibility guidelines for traffic noise, as well as changes in the worst noise hour L_{eq} and CNEL.

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1 Noise-sensitive uses are places that might contain noise-sensitive equipment; individuals who are particularly susceptible to noise stimuli, such as children or the elderly; or accommodations for people to sleep. Such uses include residences, hospitals, hotels, and schools.

2 U.S. Department of Transportation, Federal Highway Administration, *FHWA Traffic Noise Model, Version 1.0 User's Guide*. FHWA-PD-96-009, January 1998. Cambridge, MA: U.S. Department of Transportation, Research and Special Programs Administration, John A. Volpe National Transportation Systems Center, Acoustics Facility. Available: http://www.fhwa.dot.gov/environment/noise/traffic_noise_model/old_versions/tnm_version_10/users_guide/index.cfm.

The primary focus of the analysis presented in this memorandum is on the evaluation of whether future increases in roadway traffic attributable to the ATMP with the proposed roadway system refinements would result in significant noise impacts. However, the future growth in passenger activity at LAX, which would occur with or without the Project, would cause future increases in roadway traffic and future increases in aircraft operations. This increased roadway traffic and aircraft operations would, in turn, result in increased noise levels around the airport. As such, this memorandum includes an evaluation of future noise levels associated with the combination of traffic noise and aircraft noise.

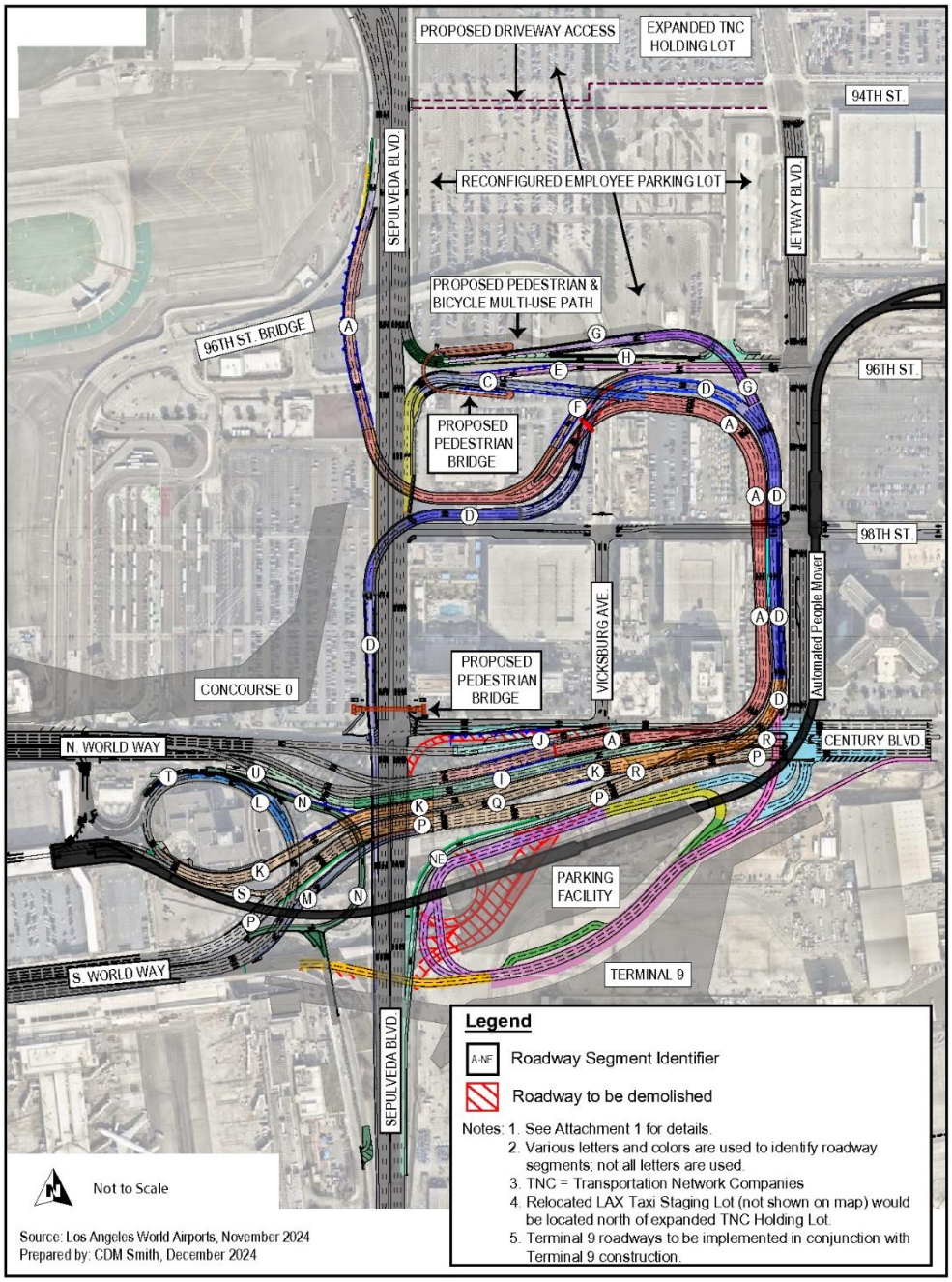

Figure 1. Proposed Roadway System Refinements

2.1 Input to the Model

Traffic noise levels for the future forecast years, with and without the Project, were computed with SoundPLAN which implements the TNM Version 2.5 calculations using existing (Q1 2019) and forecast traffic data. The traffic data were provided as Average Daily Traffic (ADT) volumes for different sections of the study roadways for Existing, Without Project 2028, and Project 2028 conditions. The basis for evaluation of traffic conditions for these three scenarios is explained in the *Analytical Framework* discussion in Section 4, *Environmental Impact Analysis,* of the ATMP EIR, which was also applied in the updated roadway noise impacts analysis. For all future year scenarios, two forecast ADTs were provided for each section of roadway as follows:

- A "Without Project 2028" ADT, which is based upon the traffic demand model developed for the Project and growth of traffic without the Project and implementation of the Landside Access Modernization Program (LAMP) Project.
- A "Project 2028" ADT, which includes the growth in traffic that would occur at the airport based upon changes to airport access due to the Project and implementation of the LAMP Project.

Using SoundPLAN model to implement the TNM Version 2.5 calculations of traffic noise, the $L_{eq}(h)$ and CNEL were calculated at locations considered to be representative of noise-sensitive uses near roadways that carry airport-related traffic, as may be affected by the Project (see **Table 1**). The model includes elevation data from the United States Geologic Survey National Elevation Dataset,[3] and accounts for the locations of the roadways and shielding due to rows of buildings or intervening terrain. The model takes into account the width of the off-airport roadways, hourly vehicle volumes and speeds, vehicle mix, and sound propagation over different types of ground.

[3] https://www.usgs.gov/core-science-systems/national-geospatial-program/national-map.

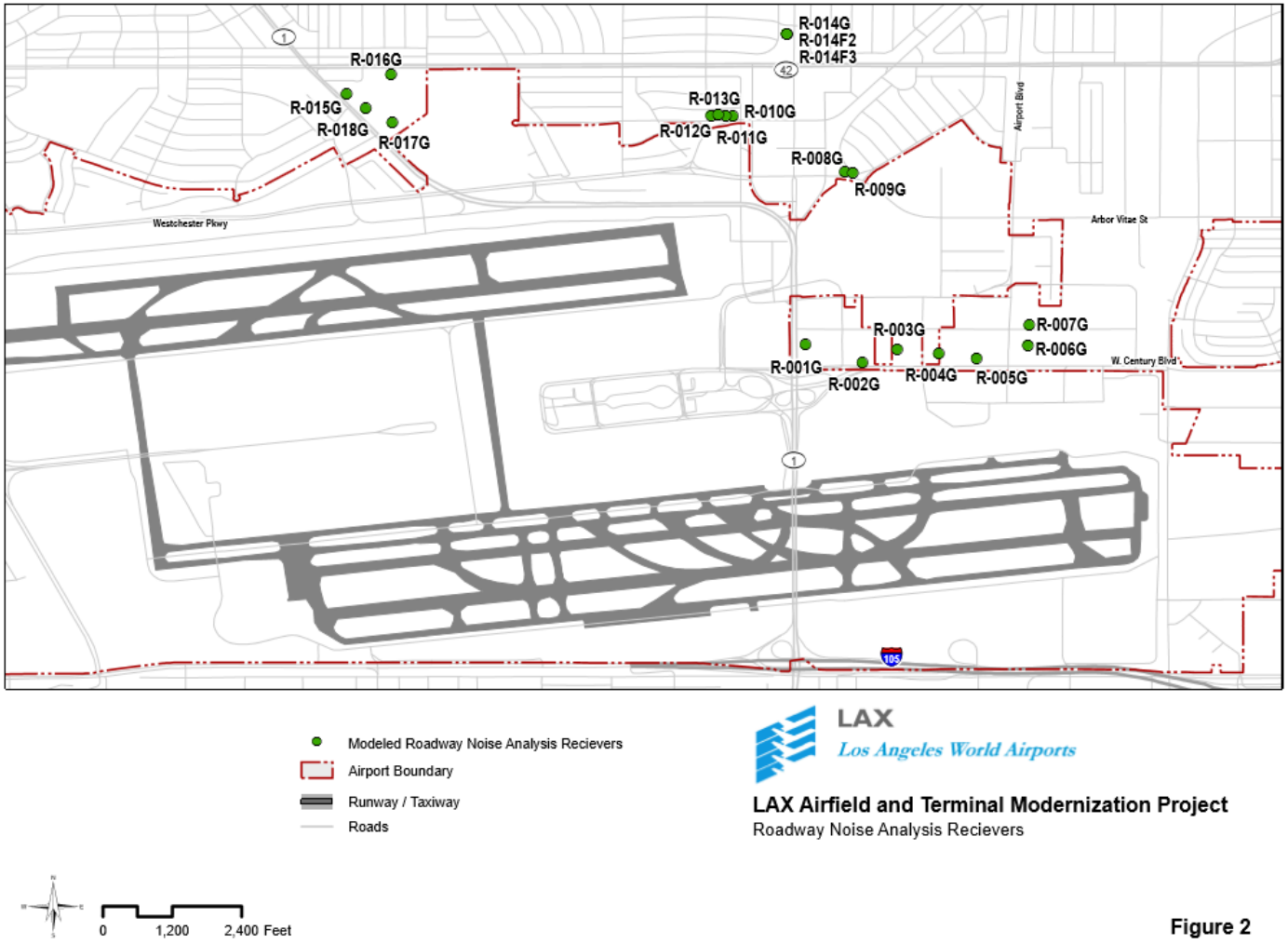

Figure 2. Locations of Noise Modeling Receivers for the Analysis of Roadway Traffic Noise

Table 1. Modelling Locations with Land Use and Dominant Traffic Noise Roadway

Receiver ID	FHWA NAC Designation	Receptor Description	Land Use	Nearest Roadway Contribution
R-001G	E	Hyatt Regency Pool	Hotel	Sepulveda Boulevard
R-002G	E	H Hotel Pool	Hotel	Century Boulevard
R-003G	E	Sheraton Gateway Hotel Pool	Hotel	Century Boulevard
R-004G	E	Sonesta Los Angeles Airport LAX (formerly Crowne Plaza Hotel) Pool	Hotel	Century Boulevard
R-005G	E	Residence Inn Hotel Pool	Hotel	Century Boulevard
R-006G	E	Los Angeles Airport Marriott Pool	Hotel	Century Boulevard/Airport Boulevard
R-007G	E	Four Points Hotel Pool	Hotel	98th Street
R-008G	B	Westchester Parkway and Will Rogers Neighborhood	SF Residential	Westchester Parkway
R-009G	B	Westchester Parkway and Will Rogers Neighborhood	SF Residential	Westchester Parkway
R-010G	B	W 88th Street and La Tijera Neighborhood	SF Residential	La Tijera Boulevard
R-011G	B	W 88th Street and La Tijera Neighborhood	SF Residential	La Tijera Boulevard
R-012G	B	W 88th Street and La Tijera Neighborhood	SF Residential	La Tijera Boulevard
R-013G	B	W 88th Street and La Tijera Neighborhood	SF Residential	La Tijera Boulevard
R-014G	B	Sepulveda West Apartments	MF Residential (1st Floor)	Sepulveda Boulevard
R-014F2	B	Sepulveda West Apartments	MF Residential (2nd Floor)	Sepulveda Boulevard
R-014F3	B	Sepulveda West Apartments	MF Residential (3rd Floor)	Sepulveda Boulevard
R-015G	C	Westchester City Park	Recreation	Lincoln Boulevard
R-016G	C	Westchester City Park	Recreation	Lincoln Boulevard
R-017G	C	Westchester City Park	Recreation	Lincoln Boulevard
R-018G	C	Westchester City Park	Recreation	Lincoln Boulevard

Source: HMMH, 2024.
Key:
G = Ground Floor; F2 = Second Floor; F3 = Third Floor, SF = Single Family Residential; MF = Multi-Family Residential
NAC = Noise Abatement Criteria (refer to Section 1.3.1 in Appendix F.2, Roadway Traffic Noise Analysis Technical Report, of the Final EIR for further information on FHWA NAC)

As noted earlier, the primary focus of this memorandum is on the assessment of roadway traffic noise impacts; however, an evaluation of combined future traffic noise and future aircraft noise is also provided. The methodology and assumptions associated with calculating aircraft noise levels are described in Appendix F.1, *Aircraft Noise Analysis Technical Report,* of the EIR. In estimating the combined traffic and aircraft noise levels at each noise-sensitive receptor evaluated in this memorandum, the AEDT aircraft noise model was used to calculate the future aircraft CNEL value at each receptor location, which was then added logarithmically to the traffic noise CNEL value for that location.

2.2 City of Los Angeles, Noise Element of the General Plan

The City of Los Angeles has developed a Noise Element of the General Plan to guide the development of noise regulations. The Noise Element of the City of Los Angeles General Plan addresses noise mitigation regulations,

strategies, and programs, and delineates federal, state, and City jurisdiction relative to rail, automotive, aircraft, and nuisance noise. The City of Los Angeles has adopted local guidelines based, in part, on the community noise compatibility guidelines established by the California Department of Health Services (CDHS) for use in assessing the compatibility of various land use types with a range of noise levels. CNEL guidelines for specific land uses are classified into four categories: (1) "normally acceptable," (2) "conditionally acceptable," (3) "normally unacceptable," and (4) "clearly unacceptable." As shown in **Table 2**, a CNEL value of 55 dBA is the upper limit of what is considered a "normally acceptable" noise environment for multi-family residential uses, although a CNEL as high as 65 dBA is considered "conditionally acceptable." The limit of what is considered "normally unacceptable" for residential uses is set at 75 dBA CNEL.

Table 2. City of Los Angeles Land Use / Noise Compatibility Guidelines

Land Use Category	Exterior Noise Exposure (CNEL in dBA)						
	50	55	60	65	70	75	80
Residential Single Family, Duplex, Mobile Home	A	C	C	C	N	U	U
Residential Multi-Family	A	A	C	C	N	U	U
Transient Lodging, Motel, Hotel	A	A	C	C	N	U	U
School, Library, Church, Hospital, Nursing Home	A	A	C	C	N	N	U
Auditorium, Concert Hall, Amphitheater	C	C	C	C/N	U	U	U
Sports Arena, Outdoor Spectator Sports	C	C	C	C	C/U	U	U
Playground, Neighborhood Park	A	A	A	A/N	N	N/U	U
Golf Course, Riding Stable, Water Recreation, Cemetery	A	A	A	A	N	A/N	U
Office Building, Business, Commercial, Professional	A	A	A	A/C	C	C/N	N
Agriculture, Industrial, Manufacturing, Utilities	A	A	A	A	A/C	C/N	N

Source: Based on Exhibit I in the City of Los Angeles General Plan, Noise Element, February 3, 1999. Available: https://planning.lacity.org/odocument/b49a8631-19b2-4477-8c7f-08b48093cddd/Noise_Element.pdf. (Additional policies within the Noise Element apply to land use categories exposed to aircraft noise).
A = Normally acceptable. Specified land use is satisfactory, based upon assumption buildings involved are conventional construction, without any special noise insulation.
C = Conditionally acceptable. New construction or development only after a detailed analysis of noise mitigation is made and needed noise insulation features are included in project design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning normally will suffice.
N = Normally unacceptable. New construction or development generally should be discouraged. A detailed analysis of noise reduction requirements must be made, and noise insulation features included in the design of a project.
U = Clearly unacceptable. New construction or development generally should not be undertaken.

3. Significance Thresholds

For purposes of the EIR for the LAX ATMP Project, traffic noise impact will be considered significant if any of the following occur as a result of the Project:

- If, as a direct result of roadway traffic from the Project, the ambient noise level measured at the property line of affected noise-sensitive uses were to increase by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" compatibility category, or by 5 dBA or greater within any category.
- If, as a direct result of roadway traffic from the Project, the worst noise (i.e., peak) hour L_{eq} due to traffic on the off-airport roadways would substantially exceed the existing L_{eq} (i.e. an increase of 12 dB, or more) at noise-sensitive receptors.

4. Impact Analysis

4.1 Computed Traffic Noise Levels – Results

Table 3 provides the TNM-computed L_{eq}(h) for Existing conditions (from SoundPLAN) during the worst traffic hour of the day (5 p.m. to 6 p.m.) which was done by comparing traffic volumes of a 24-hour period of traffic generated by Fehr and Peers. Table 3 also summarizes the change in the Peak Hour Traffic L_{eq} for the Project (with proposed roadway system design refinements) and the Without Project scenario in 2028 compared to Existing conditions. The change in the hourly L_{eq}(h) ranges from -2 to 5 dB relative to Existing conditions for the Project 2028 and from -3 to 5 dB for Without Project conditions 2028. The largest increases in hourly traffic noise levels are expected to occur along new project roadways located east of Sepulveda Boulevard and north of Century Boulevard, as well as from future increases in traffic on existing roadways in that general area. The roadway noise receptor points addressed below in the impacts discussion represent clusters of noise-sensitive land uses in the Project area considered to be most affected by the future increases in traffic. Table 3 also provides a comparison of the L_{eq}(h) noise levels presented in the ATMP EIR at each of the noise-sensitive receptors to the L_{eq}(h) noise levels determined at each location with implementation of the proposed roadway design refinements.

All the increases in the future hourly L_{eq}(h) relative to Existing conditions are less than 12 dB, which is one of the thresholds of significance. Consequently, the noise impacts from the Project, based on this criterion would be less than significant. Changes due to the proposed roadway system design refinements throughout the study area resulted in incremental noise changes at five locations (R-001G, R-002G, R-003G, R-008G, and R-009G) compared to noise levels for the approved ATMP analyzed in the EIR. The maximum change in L_{eq}(h) noise levels in comparing those in the EIR to those in the updated roadway noise analysis is 0.5 dBA. None of the changes resulted in any exceedances of acceptable land uses in the study area.

Table 3. Change in Peak Hour Traffic Leq With Project – EIR Levels Compared to Design Refinements Levels

Receiver ID	Existing 2019 Peak Hour Traffic Leq dBA Sound Level	Without Project 2028 Peak Hour Traffic Leq Sound Level	Change between Existing and 2028 Without Project Traffic Leq Sound Levels	With Project 2028 Peak Hour Traffic Leq Sound Levels Identified in EIR	With Project 2028 Peak Hour Traffic Leq Sound Levels With Roadway Design Refinements	Change from between Existing and Project Traffic Leq Sound Levels With Roadway Design Refinements	Significant Impact for Project With Roadway Design Refinements?
R-001G	53.0	49.8	-3.2	57.5	58.0	5.0	No
R-002G	66.1	66.4	0.3	64.6	65.1	-1.0	No
R-003G	54.7	59.6	4.9	59.9	60.2	5.5	No
R-004G	54.9	56.3	1.4	57.9	57.9	3.0	No
R-005G	62.5	64.3	1.8	62.7	62.7	0.2	No
R-006G	52.6	53.9	1.3	54.4	54.4	1.8	No
R-007G	58.1	61.3	3.2	61.7	61.7	3.6	No
R-008G	63.9	66.4	2.5	64.1	63.9	0.0	No
R-009G	62.6	65.1	2.5	62.8	62.5	-0.1	No
R-010G	44.4	45.5	1.1	45.2	45.2	0.8	No
R-011G	44.3	45.5	1.2	45.0	45.0	0.7	No
R-012G	43.3	43.7	0.4	43.4	43.4	0.1	No
R-013G	44.6	45.6	1.0	45.2	45.2	0.6	No
R-014G	49.0	51.6	2.6	48.4	48.4	-0.6	No
R-014F2	51.8	54.3	2.5	51.2	51.2	-0.6	No
R-014F3	58.4	61.3	2.9	58.1	58.1	-0.3	No
R-015G	62.7	64.9	2.2	62.3	62.3	-0.4	No
R-016G	56.3	55.7	-0.6	55.7	55.7	-0.6	No
R-017G	54.8	56.7	1.9	54.3	54.3	-0.5	No
R-018G	56.6	58.7	2.1	56.2	56.2	-0.4	No

Source: HMMH, 2024.
Note:
Numbers may not add due to rounding.

Key:
G = Ground Floor; F2 = Second Floor; F3 = Third Floor

Table 4 provides the computed CNEL for Existing conditions based on the ADTs developed for this analysis for different sections of the study roadways. Table 4 also summarizes the change in the CNEL for the Project (with proposed roadway system design refinements) and the Without Project scenario in 2028 relative to Existing conditions, as related to future changes in roadway traffic. Table 4 also provides a comparison of the CNEL noise levels presented in the ATMP EIR at each of the noise-sensitive receptors to the CNEL noise levels determined at each location with implementation of the proposed roadway design refinements.

There are no instances in which the future CNEL with the Project exceeds the Los Angeles allowable CNEL limit (i.e., the City's Land Use/Noise Compatibility Guidelines). There are also no locations where existing roadway traffic noise CNELs would be increased by 3 dBA or more where the Existing traffic noise levels are already at or above the acceptable land use sound levels. The Without Project scenario in 2028 would not have CNEL increases of 3 dBA or greater at any location and, therefore, would not exceed the acceptable land use noise level designation from the City of Los Angeles. Changes due to the proposed roadway system design refinements throughout the study area resulted in incremental changes at three locations compared to the EIR (R-001G, R-002G, and R-003G). No changes resulted in any exceedances of acceptable land uses in the study area.

Table 4. Change in Average Daily Traffic CNEL - EIR Levels Compared to Design Refinements Levels

Receiver ID	Existing 2019 CNEL Sound Level	Without Project 2028 CNEL Sound Level	Change between Existing and Without Project CNEL Sound Levels	Project 2028 CNEL Sound Levels Identified in EIR	Project 2028 CNEL Sound Levels With Roadway Design Refinements	Change from between Existing and Project CNEL Sound Levels With Roadway Design Refinements	Significant Impact for Project With Roadway Design Refinements?
R-001G	71.8	71.7	-0.1	72.0	72.3	0.6	No
R-002G	72.9	72.9	0.1	72.3	72.6	-0.3	No
R-003G	69.1	69.8	0.7	70.0	70.1	1	No
R-004G	69.7	69.8	0.1	70.1	70.1	0.4	No
R-005G	71.9	72.5	0.5	72.0	72.0	0.0	No
R-006G	70.7	70.7	0.0	70.8	70.8	0.1	No
R-007G	70.0	70.7	0.6	70.8	70.8	0.8	No
R-008G	72.9	73.8	0.9	73.0	73.0	0.0	No
R-009G	72.6	73.3	0.7	72.6	72.6	0.0	No
R-010G	68.8	68.8	0.0	68.8	68.8	0.0	No
R-011G	68.8	68.9	0.0	68.8	68.8	0.0	No
R-012G	68.9	68.9	0.0	68.9	68.9	0.0	No
R-013G	68.9	68.9	0.0	68.9	68.9	0.0	No
R-014G	63.9	64.2	0.3	63.9	63.9	-0.1	No
R-014F2	64.3	64.7	0.4	64.2	64.2	-0.1	No
R-014F3	66.0	67.5	1.4	65.9	65.9	-0.1	No
R-015G	68.2	70.5	2.3	68.3	68.3	0.1	No
R-016G	64.4	64.5	0.1	64.2	64.2	-0.2	No
R-017G	65.3	66.0	0.8	65.2	65.2	0.0	No
R-018G	65.2	66.5	1.3	65.2	65.2	0.0	No

Source: HMMH, 2024.
Note:
Numbers may not add due to rounding.

Key:
G = Ground Floor; F2 = Second Floor; F3 = Third Floor

4.2 Computed Noise Levels for Future Traffic Noise and Aircraft Noise Combined

The analysis above addresses the potential for significant roadway traffic noise impacts associated with future increases in roadway traffic associated with operation of the Project in 2028. As noted in Section 2, increases in activity levels at LAX in the future, which would occur with or without the Project, would result in more vehicle traffic and more aircraft operations. This increased roadway traffic and aircraft operations would, in turn, result in increased noise levels around the airport. The combined noise levels are evaluated in terms of CNEL and not evaluated relative to worst-hour L_{eq} as that metric and threshold are directed to the evaluation of changes in worse-hour (i.e., peak-hour) surface traffic. Moreover, the combination of traffic and aircraft noise in terms of CNEL characterizes overall daily (24-hour) noise exposure levels, including noise penalties for evening and nighttime noise for both roadway traffic noise and aircraft noise.

There are no locations where combined existing roadway traffic and aircraft noise CNELs would be increased by 3 dBA or more where the Existing traffic and aircraft combined noise levels are already at or above the acceptable land use sound levels. Similarly, the Without Project scenario in 2028 would not have CNEL increases of 3 dBA or greater at any location and, therefore, would not exceed the acceptable land use noise level designation from the City of Los Angeles. The revisions to the roadway design did not alter the combined future traffic noise and aircraft noise as aircraft is the dominant noise source in the study area. Therefore, no results are presented herein, and no mitigation measures are required to be analyzed as a part of the updated roadway noise analysis.