4.9 NOISE

This section provides an overview of noise and vibration and evaluates impacts associated with the Proposed Project. Supporting data and calculations are included in **Appendix E** of this Draft EIR. Topics addressed include short-term construction and long-term operational noise and vibration. The following information provides noise and vibration characteristics and effects.

NOISE CHARACTERISTICS AND EFFECTS

Characteristics of Sound. Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA.[1] **Figure 4.9-1** provides examples of A-weighted noise levels from common sounds.

Noise Definitions. This noise analysis discusses sound levels in terms of Community Noise Equivalent Level (CNEL), Day-Night Noise Level (L_{dn}), and Equivalent Noise Level (L_{eq}).

Community Noise Equivalent Level (CNEL). CNEL is an average sound level during a 24-hour period. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Humans perceive sound between 7:00 p.m. and 10:00 p.m. as if the sound were actually 5 dBA higher than if it occurred from 7:00 a.m. to 7:00 p.m. From 10:00 p.m. to 7:00 a.m., humans perceive sound as if it were 10 dBA higher, due to the lower background level. Hence, the CNEL is obtained by adding an additional 5 dBA to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and 10 dBA to sound levels in the night from 10:00 p.m. to 7:00 a.m. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.[2]

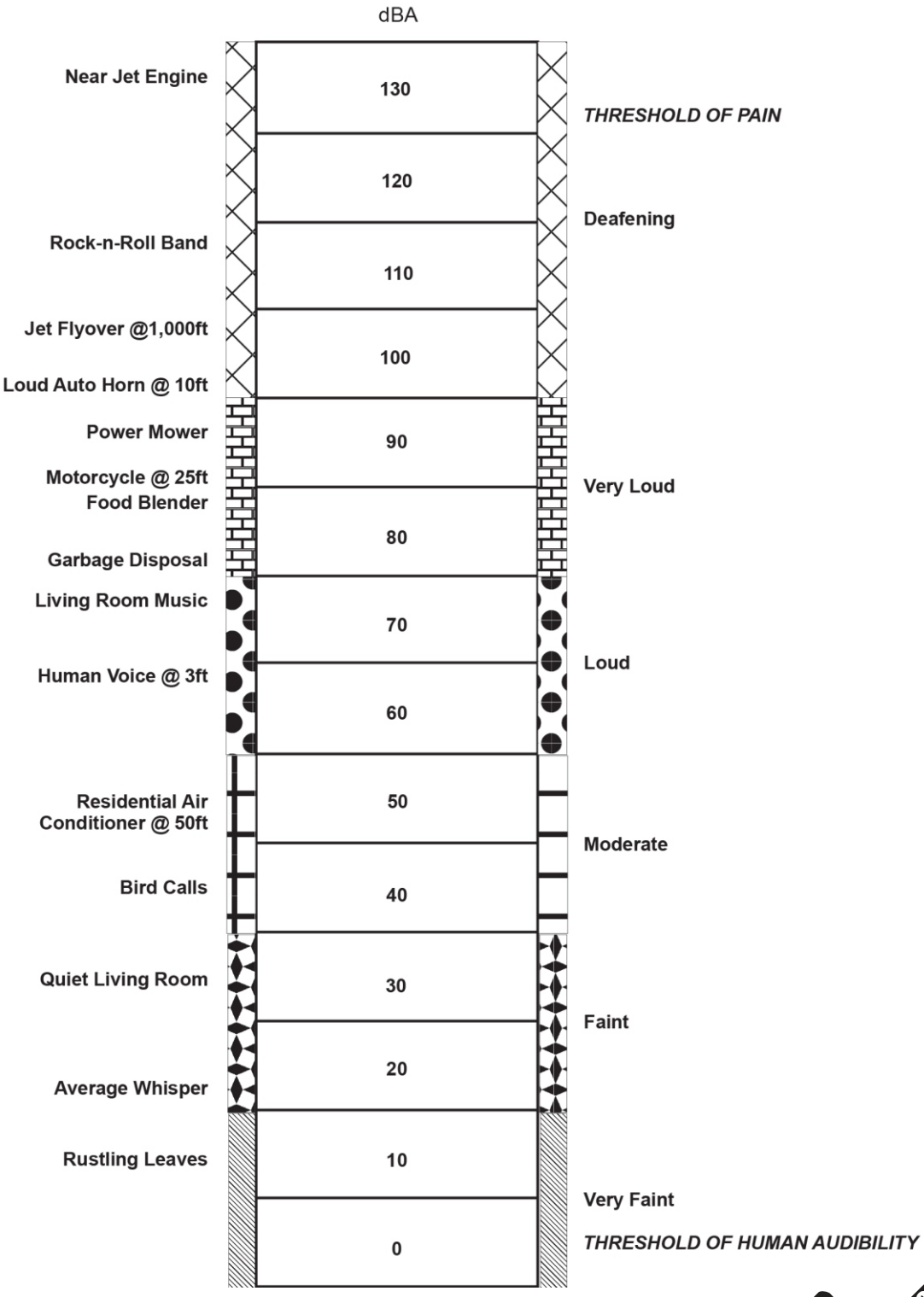
Day-Night Noise Level (L_{dn}). L_{dn} is similar to CNEL except that it does not include a 5 dBA penalty from 7:00 p.m. to 10:00 p.m.[3]

Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.[4]

Effects of Noise. Noise is generally defined as unwanted sound. The degree to which noise can impact the human environment ranges from levels that interfere with speech and sleep (annoyance and nuisance) to levels that cause adverse health effects (hearing loss and psychological effects). Human response to noise is subjective and can vary greatly from person to person. Factors that influence individual response include the intensity, frequency, and pattern of noise, the amount of background noise present before the intruding noise, and the nature of work or human activity that is exposed to the noise source.

[1]City of Los Angeles, *CEQA Thresholds Guide*, 2006.
[2]California Department of Transportation, *Technical Noise Supplement*, 2013.
[3]*Ibid*.
[4]*Ibid*.

Figure 4.9-1 A-Weighted Decibel Scale



SOURCE: City of Los Angeles and TAHA, 2017.

Audible Noise Changes. Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and would likely evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness.[5]

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or "point source," will decrease by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance.[6] For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level would be 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet, and so on. Noise generated by a mobile source will decrease by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance.

Noise is most audible where there is a direct line-of-sight.[7] Solid barriers, such as walls, berms or buildings, that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not solid or not high or long enough to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

VIBRATION CHARACTERISTICS AND EFFECTS

Characteristics of Vibration. Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration.[8] Vibration can be a serious concern, causing buildings to shake and rumbling sounds to be heard. In contrast to noise, vibration is not a common environmental problem. It is unusual for vibration from sources such as buses and trucks to be perceptible, even in locations close to major roads. Some common sources of vibration are trains, buses on rough roads, and construction activities, such as blasting, pile driving, and heavy earth-moving equipment.

Vibration Definitions. There are several different methods that are used to quantify vibration. The peak particle velocity (PPV) is most frequently used to describe vibration impacts to buildings and is usually measured in inches per second. The PPV is defined as the maximum instantaneous peak of the vibration signal. The root mean square (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (Vdb) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.[9]

Effects of Vibration. High levels of vibration may cause physical personal injury or damage to buildings. Ground-borne vibration levels rarely affect human health. Instead, most people consider ground-borne vibration to be an annoyance that can affect concentration or disturb sleep. High levels of ground-borne vibration can damage fragile buildings or interfere with equipment that is highly sensitive to ground-borne vibration (e.g., electron microscopes). Although responses to vibration differ, 65 Vdb is the approximate threshold of perception for many people.[10] The approximate dividing line between barely and distinctly perceptible is 75 Vdb and 85 Vdb is typically only acceptable if there are an infrequent number of events per day.

[5]California Department of Transportation, *Technical Noise Supplement*, 2013.
[6]*Ibid*.
[7]Line-of-sight is an unobstructed visual path between the noise source and the noise receptor.
[8]Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.
[9]City of Los Angeles, *CEQA Thresholds Guide*, 2006.
[10]Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

REGULATORY FRAMEWORK

NOISE

FEDERAL

Federal Aviation Administration (FAA). The FAA sets noise limits for commercial aircrafts (14 Code of Federal Regulations (CFR) Part 36) and establishes procedures for airport noise studies and land use compatibility evaluations (14 CFR Part 150) in the Federal Aviation Regulations. Part 150 prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs. It prescribes single systems for (a) measuring noise at airports and surrounding areas that generally provides a highly reliable relationship between projected noise exposure and surveyed reaction of people to noise; and (b) determining exposure of individuals to noise that result from the operations of an airport. CFR Part 150 also identifies those land uses which are normally compatible with various levels of exposure to noise by individuals. It provides technical assistance to airport operators, in conjunction with other local, state, and federal authorities, to prepare and execute appropriate noise compatibility planning and implementation programs.

U.S. Department of Housing and Urban Development (HUD). HUD regulations may be found in 24 CFR Part 51, Subpart B and include exterior noise standards for new housing construction assisted or supported by the department. HUD states that an acceptable noise level is 65 dBA L_{dn} or less, a normally unacceptable noise level exceeds 65 dBA L_{dn} but does not exceed 75 dBA L_{dn} (appropriate sound attenuation measures must be provided to achieve an acceptable status), and an unacceptable noise level exceeds 75 dBA L_{dn}. HUD regulations do not contain standards for interior noise levels. The noise environment inside a building is considered acceptable if the noise environment external to the building is acceptable and the building is constructed in a manner common to the area.

STATE

Department of Health Services. The State of California, Department of Health Services, Environmental Health Division, has published the Guidelines for Noise and Land Use Compatibility (the State Guidelines) which recommend guidelines for local governments to use when setting standards for human exposure to noise and preparing noise elements for general plans. The State Guidelines, which are illustrated in **Table 4.9-1** indicate that residential land uses and other noise sensitive receptors generally should be located in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or L_{dn}).

Application of this compatibility matrix to development projects is not mandated by the Department of Health Services; however, each jurisdiction is required to consider the State Guidelines when developing its General Plan Noise Element and when determining acceptable noise levels within its community. According to the State Guidelines, an exterior noise level of 60 dBA CNEL is considered to be a "normally acceptable" noise level for single-family, duplex, and mobile homes involving normal, conventional construction, without any special noise insulation requirements. Exterior noise levels up to 65 dBA CNEL are typically considered "normally acceptable" for multi-family units and transient lodging without any special noise insulation requirements. Between these values and 70 dBA CNEL, exterior noise levels are typically considered "conditionally acceptable," and residential construction should only occur after a detailed analysis of the noise reduction requirements is made and needed noise attenuation features are included in the project design. Exterior noise attenuation features include, but are not limited to, setbacks to place structures outside the conditionally acceptable noise contour and orientation.

TABLE 4.9-1: GUIDELINES FOR NOISE COMPATIBLE LAND USE

Land Use Category	Community Noise Exposure (dBA, CNEL) 55	60	65	70	75	80
Residential - Low Density Single-Family, Duplex, Mobile Homes						
Residential - Multi-Family						
Transient Lodging - Motels Hotels						
Schools, Libraries, Churches, Hospitals, Nursing Homes						
Auditoriums, Concert Halls, Amphitheaters						
Sports Arena, Outdoor Spectator Sports						
Playgrounds, Neighborhood Parks						
Golf Courses, Riding Stables, Water Recreation, Cemeteries						
Office Buildings, Business Commercial and Professional						
Industrial, Manufacturing, Utilities, Agriculture						

Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.

Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable - New construction or development should generally not be undertaken.

SOURCE: California Office of Noise Control, Department of Health Services.

Department of Housing and Community Development. The State Department of Housing and Community Development has required that new residential units should not be exposed to outdoor ambient noise levels in excess of 65 dBA (CNEL or L_{dn}), and, if necessary, sufficient noise insulation must be provided to reduce interior ambient levels to 45 dBA. Within a 65 dBA exterior noise environment, interior noise levels are typically reduced to acceptable levels (to at least 45 dBA CNEL) through conventional construction, but with closed windows and fresh air supply systems or air conditioning.

LOCAL

The Noise Element of the City of Los Angeles General Plan (General Plan) establishes CNEL guidelines for land use compatibility and includes a number of goals, objectives, and policies for land use planning purposes. The City also has regulations to control unnecessary, excessive, and annoying noise, as cited by the Los Angeles Municipal Code (LAMC) Chapter XI Noise Regulation. These regulations are described further below.

City of Los Angeles General Plan Noise Element. The City of Los Angeles General Plan Noise Element identifies potentially significant noise sources, addresses vibration issues, identifies historic and current noise management approaches and guides the development of noise regulations. It addresses noise mitigation regulations, strategies and programs and delineates federal, state and City jurisdiction relative to rail, automotive, aircraft and nuisance noise. **Table 4.9-2** identifies the Noise Element goals, objectives, and policies that are relevant to the Proposed Plan. The City's noise compatibility guidelines mirror the State Guidelines, as illustrated in **Table 4.9-1**, and indicate that residential land uses and other noise sensitive receptors generally should be located in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or L_{dn}).

TABLE 4.9-2: RELEVANT GENERAL PLAN NOISE GOALS, OBJECTIVES, AND POLICIES

Goal/Objective/Policy	Goal/Objective/Policy Description
NON-AIRPORT	
P5	Continue to enforce, as applicable, city, state, and federal regulations intended to abate or eliminate disturbances of the peace and other intrusive noise.
P6	When processing building permits, continue to require appropriate project design and/or insulation measures, in accordance with the California Noise Insulation Standards (Building Code Title 24, Section 3501 et seq.), or any amendments thereto or subsequent related regulations, so as to assure that interior noise levels will not exceed the minimum ambient noise levels, as set forth in the City's noise ordinance (LAMC Section 111 et seq., and any other insulation related requirements) for a particular zone or noise sensitive use, as defined by the California Noise Insulation Standards.
LAND USE DEVELOPMENT	
P11	For a proposed development project that is deemed to have a potentially significant noise impact on noise sensitive uses, require mitigation measures, as appropriate, in accordance with California Environmental Quality Act and City procedures.
P12	When issuing discretionary permits for a proposed noise-sensitive use or subdivision of four or more detached single-family units and which use is determined to be potentially significantly impacted by existing or proposed noise sources, require mitigation measures, as appropriate, in accordance with procedures set forth in the California Environmental Quality Act so as to achieve an interior noise level CNEL of 45 dB, or less, in any habitable room as required by LAMC Section 91.
P13	Continue to plan, design and construct or oversee construction of public projects, and projects on City owned properties, so as to minimize potential noise impacts on noise sensitive uses and to maintain or reduce existing ambient noise levels.
P15	Continue to take into consideration, during updating/revision of the City's general plan community plans, noise impacts from freeways, highways, outdoor theaters and other significant noise sources and to incorporate appropriate policies and programs into the plans that will enhance land use compatibility.
P16	Use, as appropriate, the "Guidelines for Noise Compatible Land Use", or other measures that are acceptable to the City, to guide land use and zoning reclassification, subdivision, conditional use and use variance determinations and environmental assessment considerations, especially relative to sensitive uses within a CNEL of 65 dB airport noise exposure areas and within a line-of-sight of freeways, major highways, railroads or truck haul routes.
P17	Continue to encourage the California Department of Transportation, the Los Angeles County Metropolitan Transportation Authority, or their successors, and other responsible agencies, to plan and construct transportation systems so as to reduce potential noise impacts on adjacent land uses, consistent with the standards and guidelines contained in the noise element.

SOURCE: City of Los Angeles, *Noise Element of the Los Angeles City General Plan*, February 3, 1999.

Los Angeles Municipal Code (LAMC). The City of Los Angeles has established noise ordinances concerning the generation and control of noise that could adversely affect its citizens and noise sensitive land uses. There are numerous specific ordinances, many of which do not relate to the impact analysis presented below. This discussion summarizes the general regulations and focuses on the ordinances most relevant to the Proposed Plan.

Regarding construction, Section 41.40 (Noise Due to Construction, Excavation Work – When Prohibited) in Chapter IV (Public Welfare) of the LAMC indicates that no construction or repair work shall be performed between the hours of 9:00 p.m. and 7:00 a.m., since such activities would generate loud noises and disturb persons occupying sleeping quarters in any adjacent dwelling, hotel, apartment or other place of residence. No person, other than an individual home owner engaged in the repair or construction of his/her single-family dwelling, shall perform any construction or repair work of any kind or perform such work within 500 feet of land so occupied before 8:00 a.m. or after 6:00 p.m. on any Saturday or on a federal holiday, or at any time on Sunday. Under certain conditions, the City may grant a waiver to allow limited construction activities to occur outside of the limits described above.

LAMC Section 91.106.4.8 requires a construction site notice to be provided that includes the following information: job site address, permit number, name and phone number of the contractor and owner or owner's agent, hours of construction allowed by code or any discretionary approval for the sites, and City telephone numbers where violations can be reported. The notice shall be posted and maintained at the construction site prior to the start of construction and displayed in a location that is readily visible to the public and approved by the City's Department of Building and Safety.

Chapter XI (Noise Regulation) of the LAMC addresses sources of noise other than construction activities. Chapter XI is intended to prohibit unnecessary, excessive and annoying noises from all sources within the City. A noise level increase from certain regulated noise sources of 5 dBA over the existing or presumed ambient noise level at an adjacent property line is considered a violation of the Noise Regulations. The 5-dBA increase above ambient is applicable to City-regulated noise sources (e.g., mechanical equipment), and it is applicable any time of the day. The LAMC states that the baseline ambient noise shall be the actual measured ambient noise level of the City's presumed ambient noise level, whichever is greater. The actual ambient noise level is the measured noise levels averaged over a period of at least 15 minutes. The LAMC indicates that in cases where the actual measured ambient conditions are not known, the City's presumed noise levels should be used. The presumed ambient noise levels are in Section 111.03 (Minimum Ambient Noise Level) of the LAMC.

To account for people's increased tolerance for short-duration noise events, the LAMC provides a 5 dBA allowance for noise sources occurring more than 5 minutes but less than 15 minutes in any 1-hour period (for a total of 10 dBA above the ambient), and an additional 5 dBA allowance (total of 15 dBA above the ambient) for noise sources occurring 5 minutes or less in any 1-hour periods. These additional allowances for short-duration noise sources are applicable to noise sources occurring between the hours of 7:00 a.m. and 10:00 p.m. (daytime hours). Furthermore, LAMC provides a reduction of 5 dBA for steady high-pitched noise or repeated impulsive noise.

LAMC Section 112.02 requires that any heating, ventilation, and air conditioning (HVAC) system within any zone of the City not cause an increase in ambient noise levels on any other occupied property or if a condominium, apartment house, duplex, or attached business, within any adjoining unit to exceed the ambient noise level by more than 5 dBA.

Section 112.05 (Maximum Noise Level of Powered Equipment or Powered Hand Tools) of the LAMC specifies the maximum noise level of powered equipment or powered hand tools. Any powered equipment or hand tool that produces a maximum noise level exceeding 75 dBA at a distance of 50 feet is prohibited. However, this noise limitation does not apply where compliance is technically infeasible. Technically infeasible means the

above noise limitation cannot be met despite the use of mufflers, shields, sound barriers and/or any other noise reduction device or techniques during the operation of equipment.

City of Los Angeles Planning and Zoning Code (LAMC Chapter 1) contains a variety of provisions that directly or indirectly reduce noise impacts on, or impacts that are associated with, different types of land uses and zones. The Planning and Zoning Code contains regulations for each of these different zoning classifications. These regulations guide land use considerations by setting maximum ambient noise levels for specific zones.

The most basic noise management measure is traditional zoning that separates agricultural, residential, commercial and industrial uses. Another is the front yard setback that not only adds attractiveness to a neighborhood but serves to distance homes from adjacent street noise. Side and rear yards also serve as noise buffers. Through zone change and subdivision processes, site or use specific conditions can be imposed to assure compatibility of land use and to protect users of a site from impacts from adjacent uses. The commercial (C zones) and manufacturing (M zones) provisions of the code contain use specific requirements intended to reduce noise, odor and other impacts on adjacent uses. These include prohibiting of certain commercial and industrial uses within so many feet of residential or less restrictive uses or zones, requiring increased setbacks from residential uses, limiting hours of operation, containing uses wholly within an enclosed building, requiring sound walls, prohibiting openings that face residential uses and prohibiting audibility of noise outside a facility.

Conditional use permits and variances (LAMC Sections 12.24, 12.27, 12.28 and 12.29) allow the planning commission, zoning administrators and, on appeal, City Council to assess potential inconsistencies and impose conditions to control noise for certain uses that may need special conditions to ensure compatibility with the surrounding land uses. Conditional use permits are required for various land uses in certain zones including, but not limited to, schools, churches, alcohol sales, parks, mixed use development, and automobile repair facilities. In most cases, the uses are allowed by right in less restrictive zones. Some are prohibited entirely in residential zones. The permitting procedures include site investigations, notice to neighbors and hearings to assist decision makers in determining if the use should be permitted and, if permitted, allow imposition of appropriate conditions of approval. Typical conditions include specific site design, setbacks, use limitations on all or parts of the site, walls and hours of operation so as to minimize noise and other impacts.

Variances are required when a proposed development needs to deviate from the Planning and Zoning Code. The permitting procedures for variances include site investigations, notice to neighbors and hearings to assist decision makers in determining whether a property has special conditions that makes it difficult for a proposed development to adhere to the Planning and Zoning Code. If a variance is granted, the requested variance must not be materially detrimental to the public welfare or injurious to the property in the same zone or vicinity in which the property is located. As with conditional use permits, the zoning administrator may impose conditions on variances to protect the public health, safety or welfare, including conditions to minimize noise.

The City has the authority to revoke, discontinue a use, or impose nuisance abatement conditions on uses that were allowed under the conditional use permit. Conditional use permits may be revoked by the planning commission, zoning administrator, or, on appeal, by the City Council for nuisance (including disturbance of the peace) or noncompliance with the conditions of the conditional use permit. In addition, for existing commercial or industrial development that had previously required discretionary approval, a zoning administrator may discontinue or, on appeal, the City Council may impose operational conditions on the uses that are deemed a nuisance, including for excessive noise or disturbance of the peace. These two procedures can be utilized to encourage owners to operate activities on their properties in a manner that is compatible with adjacent uses, particularly residential uses.

Other Planning and Zoning Code provisions allow a zoning administrator to conditionally permit, without public hearing, particular uses allowed in a zone, provided that the uses meet certain criteria, such as provision of

additional parking or walls. The additional parking requirements for such uses as health clubs, restaurants, trade schools and auditoriums, in part, would prevent spillover parking on adjacent residential neighborhoods, which would minimize noise impacts, especially in the evening and at night on residential neighborhoods.

City of Los Angeles Building Sound Insulation Regulations. With the development of inexpensive insulation materials, air conditioning and improved noise reduction techniques, it became economically feasible to design buildings that provide effective insulation from outside noise as well as from weather conditions. It has been estimated that standard insulation, window sealing efficiency and other energy conservation measures reduce exterior-to-interior noise by approximately 15 decibels. Such a reduction generally is adequate to reduce interior noise from outside sources, including street noise, to an acceptable level. Building setbacks and orientation also reduce noise impacts.

Sound transmission control requirements are included in the International Building Code (IBC), which are the basis for the 2016 California Building Code (CBC). CBC states noise insulation standards (CBC Title 24, Section 1207.4). The standards require that intrusive noise not exceed 45 dB in any habitable room and has been incorporated into the City of Los Angeles Building Code (LAMC Section 91).

The City of Los Angeles Building Code guides building construction. The insulation provisions are intended to mitigate interior noise from outside sources, as well as sound between structural units. The provisions vary according to the intended use of the building, e.g., residential, commercial, industrial. The regulations are intended to achieve a maximum interior sound level equal to or less than the ambient noise level standard for a particular zone, as set forth in the City's Noise Ordinance.

VIBRATION

FEDERAL

Federal Transit Administration (FTA). The FTA regulates vibration levels from proposed transit projects. According to the FTA, vibration impacts associated with human annoyance would be significant if vibration caused by new development exceeds 85 VdB, which is the vibration level that is considered to be acceptable only if there are an infrequent number of events per day. In terms of ground-borne vibration impacts on structures, the FTA vibration damage threshold is approximately 90 VdB for buildings extremely susceptible to building damage (e.g., historic structures) and 98 VdB for engineered concrete and masonry buildings without plaster (e.g., typical urban development).[11]

STATE

There are no adopted state policies or standards for ground-borne vibration. The traditional view has been that common vibrations related to roadway traffic and construction activities pose no threat to buildings or structures. The California Department of Transportation recommends that extreme care be taken when sustained pile driving occurs within 7.5 meters (25 feet) of any building and 15 to 30 meters (50 to 100 feet) of a historic building or a building in poor condition.

LOCAL

There are no adopted City standards for ground-borne vibration.

EXISTING SETTING

Existing Noise Levels. The ECTNP Area includes a wide variety of land uses and localized ambient noise levels. Because the Proposed Project encompasses a large area, the existing noise environment is best characterized using the presumed levels in the LAMC.

[11]Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

Section 111.03 (Minimum Ambient Noise Level) of the LAMC has set forth the presumed ambient noise levels for various land uses (**Table 4.9-3**). The daytime and nighttime ambient noise levels for residential areas are presumed to be 50 and 40 dBA, respectively. However, urban areas typically experience ambient noise levels higher than the conservative levels presented in the table. Areas near freeways, high volume surface streets, and industrial uses also typically experience higher noise levels than land uses located farther from these sources.

TABLE 4.9-3: PRESUMED EXISTING AMBIENT NOISE LEVEL

		dBA	
	Zones	**Daytime (7:00 a.m. to 10:00 p.m.)**	**Nighttime (10:00 p.m. to 7:00 a.m.)**
Residential	A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5	50	40
Commercial	P, PB, CR, C1, C1.5, C2, C4, C5, and CM	60	55
Industrial	M1, MR1, and MR2	60	55
	M2 and M3	65	65

SOURCE: LAMC Section 111.03 and City of Los Angeles, *CEQA Thresholds Guide*, 2006.

Existing Vibration Levels. The vibration environment is dominated by vehicular movement. Heavy trucks can generate vibrations that vary depending on vehicle type, weight, and pavement conditions. As trucks typically operate on major streets, existing vibration in the project area is largely related to truck traffic on the surrounding roadway network.

SENSITIVE RECEPTORS

Some land uses are considered more sensitive to changes in noise and vibration levels than others, depending on the population groups and the activities involved. Noise- and vibration-sensitive land uses include locations where people reside or where the presence of unwanted sound could adversely affect the use of the land. Residences, schools, hospitals, guest lodging, libraries, and some passive recreation areas would each be considered noise- and vibration-sensitive and may warrant unique measures for protection from intruding noise.

Figure 4.9-2a and **Figure 4.9-2b** show proposed zoning changes that would result in land uses considered sensitive to high noise levels. The figures also show existing sensitive land uses outside the zone change areas that may be impacted by construction noise, increased mobile source noise on local roadways, and stationary source noise (e.g., mechanical equipment).

THRESHOLDS OF SIGNIFICANCE

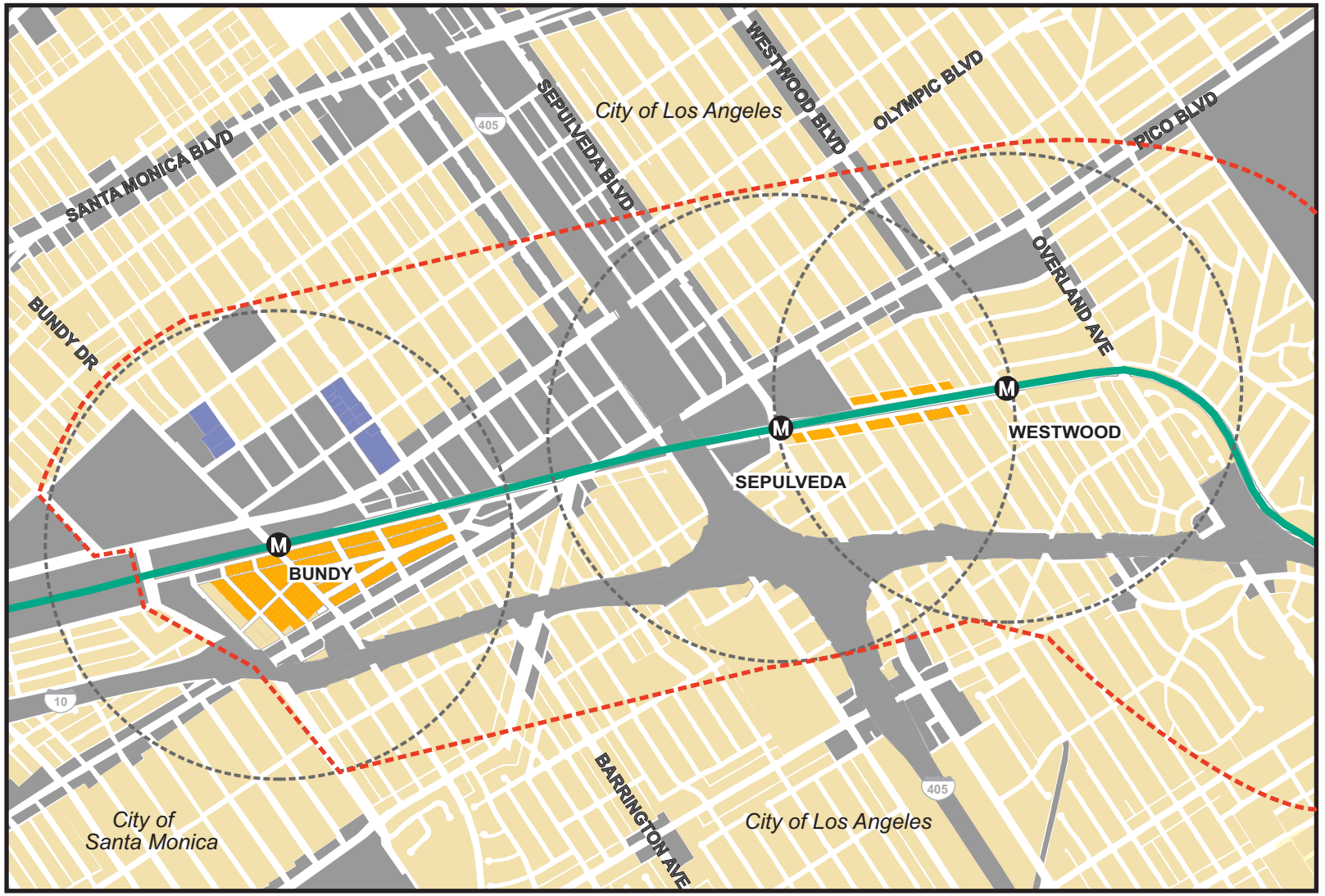
In accordance with Appendix G of the CEQA Guidelines, the Proposed Project would have a significant impact related to noise if it would:

- Expose persons to or generate noise in levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose people to or generate excessive vibration or ground-borne noise levels;
- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; and/or
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- Expose people working or residing within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport to excessive noise levels.
- Expose people working or residing within the vicinity of a private airstrip to excessive noise levels.

Exposition Corridor Transit Neighborhood Plan

Figure 4.9-2a Sensitive Receptors Around Bundy, Sepulveda, and Westwood Stations

Los Angeles Department of City Planning



LEGEND:

- ECTNP Boundary
- Expo LRT
- Light Rail Station
- 0.5-Mile Radius
- Proposed Hybrid Industrial: Residential Emphasis
- Proposed Multi-Family Residential
- Existing Sensitive Land Uses
- Land Uses Not Considered As Sensitive Receptors

Approx. Scale

N

0 350 750 FEET

A project partially funded by the Los Angeles County Metropolitan Transportation Authority.

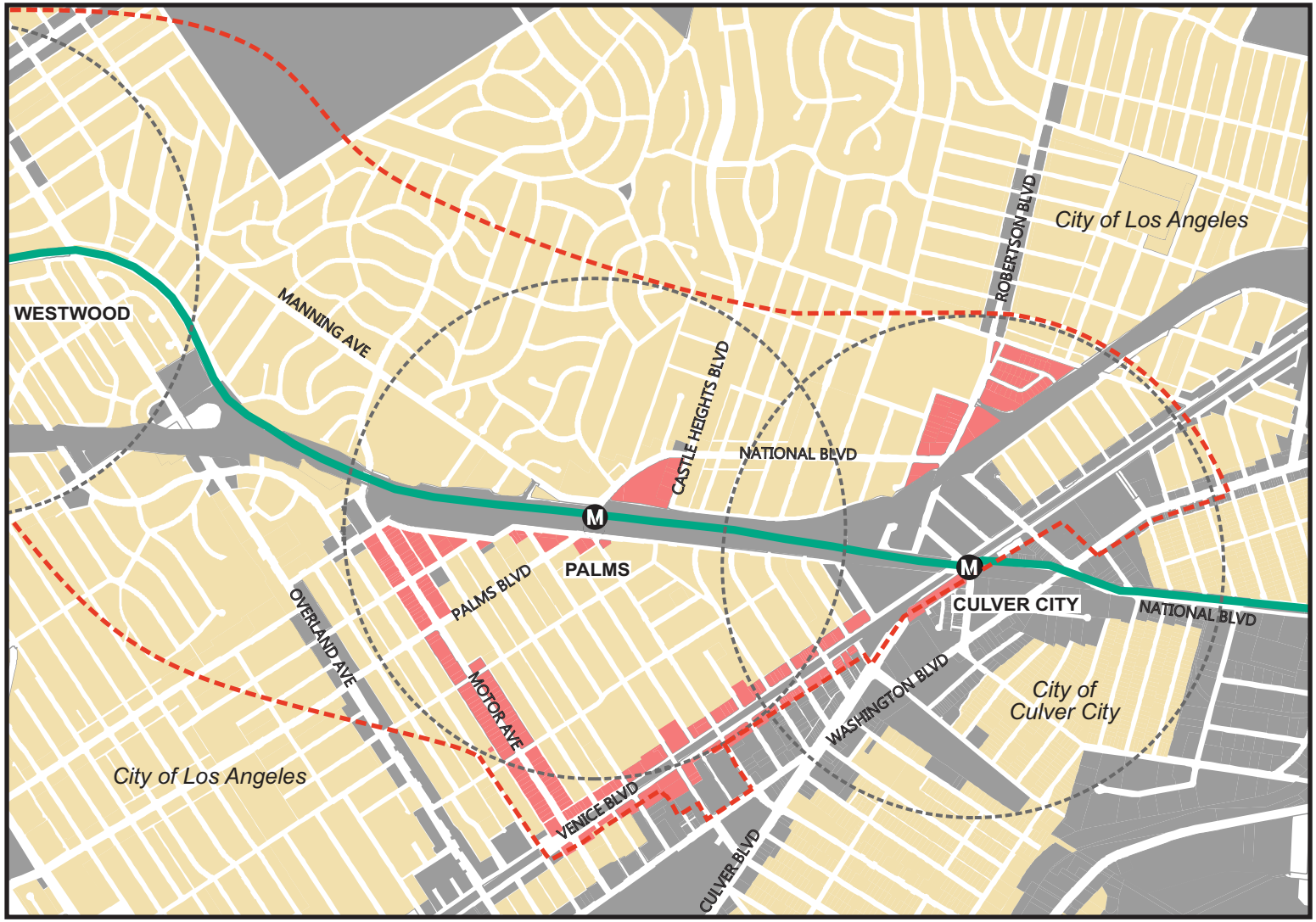
LOS ANGELES TRANSIT NEIGHBORHOOD PLAN

SOURCE: City of Los Angeles and TAHA, 2017.

Exposition Corridor Transit Neighborhood Plan

Figure 4.9-2b Sensitive Receptors Around Palms and Culver City Stations

Los Angeles Department of City Planning



LEGEND:

- ECTNP Boundary
- Expo LRT
- Light Rail Station
- 0.5-Mile Radius
- Proposed Mixed-Use: Commercial/Residential
- Existing Sensitive Land Uses
- Land Uses Not Considered As Sensitive Receptors

Approx. Scale

N

0 350 750 FEET

A project partially funded by the Los Angeles County Metropolitan Transportation Authority.

LOS ANGELES TRANSIT NEIGHBORHOOD PLAN

SOURCE: City of Los Angeles and TAHA, 2017.

2012-058

CITY OF LOS ANGELES CEQA THRESHOLDS GUIDELINES

Based on the criteria set forth in the 2006 Los Angeles CEQA Thresholds Guide (Thresholds Guide), the Proposed Project would have a significant impact on noise levels from construction if:

- Construction activities lasting more than one day would exceed existing ambient noise levels by 10 dBA or more at a noise-sensitive use;
- Construction activities lasting more than ten days in a three-month period would exceed existing ambient noise levels by 5 dBA or more at a noise-sensitive use; and/or
- Construction activities would exceed the ambient noise level by 5 dBA at a noise-sensitive use between the hours of 9:00 p.m. and 7:00 a.m. Monday through Friday, before 8:00 a.m. or after 6:00 p.m. on Saturday, or anytime on Sunday.

Based on the Thresholds Guide, the Proposed Project would have significant impact on noise levels from operations, including mobile noise, if:

- Ambient noise level measured at the property line of affected uses increases by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories, as shown in **Table 4.9-1**, or any 5 dBA or more increase in noise level.

Section I.4 of the Thresholds Guide includes a significance threshold related to the construction or expansion of an airport or heliport. This significance threshold does not apply to the Proposed Project, and has not been utilized in the analysis.

There are no adopted City standards for vibration. According to the FTA, vibration impacts associated with human annoyance would be significant if vibration caused by implementation of the proposed plans exceeds 85 VdB, which is the vibration level that is considered to be acceptable only if there are an infrequent number of events per day. In terms of ground-borne vibration impacts on structures, the FTA vibration damage threshold is approximately 90 VdB for buildings extremely susceptible to building damage (e.g., historic structures) and 98 VdB for engineered concrete and masonry buildings without plaster (e.g., typical urban development).

METHODOLOGY

The noise and vibration analysis considers construction and operational sources. Construction noise levels were based on example equipment levels provided in the Thresholds Guide. Construction noise levels were also provided for various phases of construction activity based on the same source. Construction vibration levels were based on example equipment levels provided in FTA's Transit Noise and Vibration Impact Assessment guidance document.[12] Mobile source noise levels were estimated using the Federal Highway Administration (FHWA) RD-77-108 methodology. This methodology accounts for traffic volumes, roadway width, and vehicle mix. The analysis also discussed operational mechanical equipment noise (e.g., HVAC), land use/compatibility, and operational vibration.

Regarding the mobile source noise analysis, there are two CEQA cases that address analysis scenarios of long-range planning documents: 1) *Sunnyvale West Neighborhood Assoc. v. City of Sunnyvale City Council (6th Dist. 2010) 190 Cal.App.4th 1351* (Sunnyvale West) and 2) *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority (2013) 57 Cal.4th 439* (Expo II). The first case indicated that project impacts should be compared directly to existing conditions. The second case clarified that comparison to an existing condition may *not* be appropriate if there is, "substantial evidence that an analysis based on existing conditions would tend to be misleading or without informational value to EIR users." For a planning project that would be implemented over time, comparison of full implementation of the plan (with all reasonably

[12]Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

foreseeable development constructed and occupied) to existing conditions would be misleading and of no or little informational value because it is likely infeasible for all development in the plan area to occur immediately. Impacts would not occur in the context of existing conditions but rather in the future context, once the plan has had time to be realized. For a planning project, significance of impacts is appropriately assessed based on a comparison between Future (2035) with Project conditions (at the earliest time full implementation could reasonably be expected) and Future (2035) No Project conditions. The ECTNP is a plan that is anticipated to only be fully realized over time, with all improvements anticipated to be implemented by 2035 or later. Therefore, an analysis of the Proposed Project's future (2035) land use changes and associated mobile noise impacts are compared to future mobile noise impacts in 2035 without the Proposed Project. Although it is only a theoretical scenario, a comparison to what would happen if the Proposed Project (comprised of transit-oriented development) were fully implemented by 2015 (after the Expo LRT Line Phase 2 is operational) is provided (Project in 2015 compared to No Project in 2015) for informational purposes.

As discussed in detail above, the Thresholds Guide provides guidance for the determination of significance of noise related impacts. This guidance is based on CEQA Guidelines Appendix G and provides specific criteria to be considered when making a significance determination. In some cases (see above), the Thresholds Guide includes quantitative thresholds. For purposes of this analysis, CEQA Guidelines Appendix G criteria are used, supplemented by thresholds identified in the Thresholds Guide, where appropriate.

A recent court case found that how existing environmental conditions impact a project's future users or residents, is not required to be analyzed in CEQA documents unless a project exacerbates existing conditions.[13] The Proposed Project would not change noise levels associated with operation of the Santa Monica Airport. Nonetheless, noise levels associated with the Airport are presented for informational purposes. The FAA and the City of Santa Monica plan to maintain airport operations through 2028, after which the City may discontinue its use as an airport.[14]

This discussion of noise addresses impacts for the entire Project Area. No distinction is made between areas of proposed change and areas within the ECTNP Area where zoning controls would not change because noise levels are a direct function of both mobile sources (traffic in the Project Area) and construction activity throughout the ECTNP Area.

IMPACTS

IMPACT 4.9-1 WOULD IMPLEMENTATION OF THE PROPOSED PROJECT EXPOSE PERSONS TO OR GENERATE NOISE IN LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES? THIS IMPACT IS CONSIDERED SIGNIFICANT AND UNAVOIDABLE.

Construction

Construction noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. The primary source of construction noise would be heavy-duty equipment.

[13] *California Building Industry Association v. Bay Area Air Quality Management District (2015) __Cal.4th__* (Case No. S213478)

[14] Federal Aviation Administration, *Press Release – FAA Reaches Settlement Agreement with City of Santa Monica*, January 28, 2017, https://www.faa.gov/news/press_releases/news_story.cfm?newsId=21394, accessed February 28, 2017.

Typical noise levels at 50 feet from various types of equipment that may be used during construction are listed in **Table 4.9-4**. The loudest noise levels are typically generated by impact equipment (e.g., pile drivers) and heavy-duty equipment (e.g., scrapers and graders).

TABLE 4.9-4: MAXIMUM NOISE LEVELS OF COMMON CONSTRUCTION MACHINES

Noise Source	Noise Level at 50 feet (dBA) /a/
Front Loader	73-86
Trucks	82-95
Cranes (moveable)	75-88
Cranes (derrick)	86-89
Vibrator	68-82
Saws	72-82
Pneumatic Impact Equipment	83-88
Jackhammers	81-98
Pumps	68-72
Generators	71-83
Compressors	75-87
Concrete Mixers	75-88
Concrete Pumps	81-85
Back Hoe	73-95
Pile Driving (peaks)	95-107
Tractor	77-98
Scraper/Grader	80-93
Paver	85-88

/a/ Machinery equipped with noise control devices or other noise-reducing design features generates less noise than shown in the table.
SOURCE: City of Los Angeles, *CEQA Thresholds Guide*, 2006.

The LAMC regulates construction noise levels through the provisions of Section 41.40 and Section 112.05. As described in Regulatory Framework above, Section 41.40 states that construction activities may only occur between the designated hours (7:00 a.m. to 9:00 p.m. Monday through Friday, and 8:00 a.m. to 6:00 p.m. on Saturdays). LAMC Section 112.05 establishes performance standards for powered equipment or tools. The maximum allowable noise level for most construction equipment within 500 feet of any residential zone is 75 dBA measured at 50 feet from the noise source. This restriction holds unless compliance is not technically feasible even with the use of noise "mufflers, shields, sound barriers, and/or other noise reduction devices or techniques."

Noise could be experienced by sensitive uses due to construction activities associated with development pursuant to the ECTNP. Sensitive uses are located in and around the ECNTP, and as specific development plans have not yet been determined at individual sites, for the purpose of this analysis it is assumed that sensitive receptors could be as close as 50 feet from where construction would take place. As shown in **Table 4.9-4**, above, sensitive receptors in the ECNTP could experience noise levels from construction equipment ranging from 68 to 107 dBA L_{eq}. Although LAMC regulations discussed above place limits on construction noise levels, there is still a possibility that typical construction noise levels could exceed the LAMC standard of 75 dBA L_{eq} at 50 feet in both areas of proposed change and areas within the ECTNP Project Area where zoning controls would not change. Details about future development projects and their ability to incorporate noise reduction devices or techniques per LAMC Section 112.05 are not known at this time. Therefore, prior to implementation of mitigation, the Proposed Project would result in a significant impact related to construction noise exceeding established standards.

Operation

The greatest potential for operational noise impacts would be related to changing the current zoning adjacent to existing sensitive land uses. These potential incompatibilities between the areas of change and surrounding uses are shown in **Table 4.9-5**. This table assesses the impacts of the proposed zones on the surrounding community (e.g., future industrial adjacent to existing residential). It does not assess the impact of the existing community to a new zone (e.g., existing manufacturing adjacent to future residential). Development could occur anywhere in the Project Area, both inside and outside areas of proposed change/Subareas. Impacts could occur throughout the Plan Area if intensified development is proposed adjacent to sensitive receptors.

TABLE 4.9-5: POTENTIAL NOISE INCOMPATIBILITY ADJACENT TO ZONE CHANGE AREAS

Station Area	Areas of Proposed Change		Adjacent Land Uses Outside of Change Areas	Potential Noise Incompatibility from Zone Changes?
	Existing Zone	Proposed Zone		
BUNDY	Manufacturing (M2)	New Industry; Hybrid Industrial: Jobs Emphasis; Hybrid Industrial: Residential Emphasis	Single-Family Residential Multi-Family Residential Public Facilities Commercial	No
	Single-Family Residential (R1)	Multi-Family Residential (R3, R1.5)	Multi-Family Residential Commercial Manufacturing	No
	Single-Family Residential (R1)	Residential/Accessory Services (RAS4)	Multi-Family Residential Commercial	**Yes**
SEPULVEDA	Manufacturing (M2)	New Industry; Hybrid Industrial: Jobs Emphasis	Single-Family Residential Multi-Family Residential Commercial Manufacturing	No
	Commercial (C2)	Residential/Accessory Services (RAS4)	Single-Family Residential Multi-Family Residential Commercial	No
	Multi-Family Residential (R2)	Multi-Family Residential (R3)	Single-Family Residential	No
WESTWOOD	Commercial (C2)	Residential/Accessory Services (RAS4)	Single-Family Residential Commercial	No
	Multi-Family Residential (R2)	Multi-Family Residential (R3)	Single-Family Residential Multi-Family Residential	No
PALMS	Manufacturing (M1)	New Industry	Multi-Family Residential Commercial	No
	Commercial (C2, CR, P1)	Mixed Use: Commercial/ Residential	Multi-Family Residential Public Facilities	No
	Multi-Family Residential (R3, R4)	Mixed Use: Commercial/ Residential	Multi-Family Residential Public Facilities Commercial	**Yes**
CULVER CITY	Manufacturing (M1, M2)	New Industry and Hybrid Industrial: Jobs Emphasis	Multi-Family Residential Manufacturing	No
	Commercial (C2, C4, P1)	Mixed Use: Commercial/ Residential	Multi-Family Residential Public Facilities Commercial	No
	Multi-Family Residential (RD2, R3)	Mixed Use: Commercial/ Residential	Multi-Family Residential Public Facilities	**Yes**

SOURCE: TAHA, 2017.

As specific development plan have not yet been determined at individual sites, for the purpose of this analysis, assumptions are made based off the compatibility of land uses. The assessment considers the general compatibility between land uses allowed in areas of proposed changed and the type of existing adjacent (i.e., abutting and across the street) land uses. Using the Thresholds Guide criteria, **Table 4.9-5** considers whether the noise level of a new proposed use in the ECTNP would exceed the ambient noise level of an existing adjacent use by at least 3 dBA to or within the "normally unacceptable" or "clearly unacceptable" categories (as indicated in **Table 4.9-1**), or would exceed the noise level by at least 5 dBA.

For example, the Bundy Station Area includes the conversion of some manufacturing zoning to the New Industry zone or either one of two the Hybrid Industrial zones. The New Industry and Hybrid Industrial zones would not allow traditional industrial uses, rather uses tailored toward 21st century industries, such as creative office, research and development, media, and technology. It is not anticipated that New Industry land uses would generate more noise than existing manufacturing facilities, which typically include substantial operations of mechanical equipment. New Industry and Hybrid Industrial land uses would include the operations of some mechanical equipment (e.g. HVAC equipment); however, the noise generated by this equipment would be similar or less than the noise generated by heavier equipment that is typically associated with manufacturing facilities allowed in the existing Manufacturing zones. Therefore, the proposed zoning would have a lesser impact on adjacent sensitive uses compared to the existing zoning, and would not increase the current ambient noise level of adjacent sensitive uses.

Another example is the conversion of a single-family residential zone to the Residential/Accessory Service (RAS4) zone in the Bundy Station Area. The RAS4 zone allows multi-family land use as well as neighborhood-serving commercial land uses such as grocery stores. A new grocery store located next to a single-family or multi-family residence could increase noise levels due a variety of noise sources, including truck deliveries and parking activity and thus would be potentially incompatible. Trucks in loading zones can generate noise levels up to 79 dBA at 50 feet, which would exceed the City's presumed ambient noise levels for residential uses (approximately 50 dBA during the daytime, as shown in **Table 4.9-3**) by more than 5 dBA.[15] This type of noise source would also likely exceed baseline noise levels, if they are already higher than the presumed ambient level, in existing residential areas by more than 5 dBA. In this case, the proposed zoning would potentially have a greater noise impact on adjacent sensitive uses compared to existing zoning.

In the Palms and Culver City Station Areas, some Multi-Family Residential zones (RD2, R3, and R4) would be converted to the Mixed Use Commercial/Residential zone. The Mixed Use zone would mostly be developed with residential uses, but could also be developed entirely as commercial use. Thus, commercial uses could be operational adjacent to residences, schools, or other existing sensitive uses. As discussed above for the proposed RAS4 zone in Bundy Station Area, due to noise sources such as truck delivery, commercial uses would potentially impact adjacent sensitive uses by increasing the ambient noise levels by more than 5 dBA.

As shown in **Table 4.9-5**, the Bundy, Palms, and Culver City Station Areas include zone changes that have the potential to generate a noise impact on an existing adjacent sensitive land use. A "No" in the last column of the table does not necessarily mean that the proposed zone is compatible with the adjacent uses. It may mean that the proposed zone is simply more compatible (less incompatible) than the existing zone. A "Yes" means that zone changes could create new land use incompatibilities. As discussed above, zone changes could increase noise levels at adjacent sensitive uses by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories, as shown in **Table 4.9-1**, or increase noise by levels at least 5 dBA. This general incompatibility is not related to any specific exceedance of a standard in the LAMC (e.g., HVAC equipment) but land use incompatibility as a whole. Implementation of the ECTNP would result in a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project. Therefore, prior to implementation of mitigation, due to the introduction of new land uses the

[15]California Department of Transportation, *Technical Noise Supplement*, November 2009.

Proposed Project would result in a significant impact related to exposing persons to or generating noise levels in excess of established standards.

An additional source of operational noise includes new stationary sources such as HVAC systems. Large HVAC systems could result in noise levels that average between 50 and 65 dBA L_{eq} at 50 feet from the equipment. HVAC units would be mounted on the rooftops and, as required by LAMC Section 112.02, HVAC units would be required to reduce noise such that the noise levels of adjoining units and adjacent properties do not exceed ambient noise levels by 5 dBA. Compliance with Section 112.02 would ensure that noise levels from the introduction of new HVAC units remains below LAMC standards and exposure to persons to noise levels above City's standards would not occur. Therefore, the Proposed Project would result in a less than significant impact related to exceeding established noise standards for operational noise from new HVAC uses. The predominant noise source for the Proposed Project is vehicular traffic. **Table 4.9-6** shows the incremental increase in mobile source noise levels between the 2035 Future with Project and Future No Project conditions.

TABLE 4.9-6: OPERATIONAL MOBILE SOURCE NOISE LEVELS – FUTURE WITH PROJECT CONDITIONS

Roadway	CNEL		
	Future No Project (2035)	Future With Project (2035)	Project Impact
BUNDY STATION			
Cloverfield Blvd., North of Olympic Blvd.	70.2	70.2	0.0
Bundy Dr., North of Wilshire Blvd.	69.8	69.8	0.0
Ohio Ave., East of Bundy Dr.	61.8	62.2	0.4
Olympic Blvd., West of Bundy Dr.	72.0	72.1	0.1
Bundy Dr., North of Olympic Blvd.	71.2	71.4	0.2
SEPULVEDA STATION			
Barrington Ave., South of Olympic Blvd.	70.0	70.0	0.0
Sawtelle Blvd., South of Santa Monica Blvd.	67.5	67.6	0.1
Sepulveda Blvd., North of Olympic Blvd.	70.1	70.4	0.3
Pico Blvd., East of Sepulveda Blvd.	71.4	71.7	0.3
Sepulveda Blvd., North of Exposition	71.7	71.9	0.2
WESTWOOD STATION			
Westwood Blvd., South of Olympic Blvd.	69.7	69.8	0.1
Westwood Blvd., North of Pico Blvd.	69.4	69.5	0.1
Westwood Blvd., South of Pico Blvd.	69.5	69.6	0.1
National Blvd., West of Westwood Blvd.	70.4	70.4	0.0
Overland Ave., South of Pico Blvd.	71.5	71.6	0.1
PALMS STATION			
Palms Blvd., East of Motor Ave.	70.4	70.6	0.2
Overland Ave., South of Culver Blvd.	71.1	71.2	0.1
Motor Ave., South of Palms Blvd.	68.3	68.6	0.3
Motor Ave., North of Palms Blvd.	67.8	68.1	0.3
Venice Blvd., East of Motor Ave.	71.3	71.3	0.0
CULVER CITY STATION			
Culver Blvd., South of Venice Blvd.	69.0	69.0	0.0
Venice Blvd., East of Culver Blvd.	72.2	72.3	0.1
Robertson Blvd., North of National Blvd.	71.0	71.0	0.0
Washington Blvd., East of National Blvd.	70.7	70.8	0.1
Cattaragus Ave., East of Robertson Blvd.	62.8	63.0	0.2

SOURCE: TAHA, 2017.

Table 4.9-7 shows the incremental increase in mobile source noise levels between the Project in 2015 and No Project in 2015. None of the analyzed roadway segments would experience an increase in mobile source noise that exceeds the most conservative noise threshold from the Thresholds Guide of 3-dBA CNEL. Therefore, the Proposed Project would result in a less than significant impact related to exceeding standards for mobile noise levels.

TABLE 4.9-7: OPERATIONAL MOBILE SOURCE NOISE LEVELS – EXISTING PLUS PROJECT CONDITIONS

Roadway	CNEL		
	No Project (2015)	With Project (2015)	Project Impact
BUNDY STATION			
Cloverfield Blvd., North of Olympic Blvd.	70.2	70.2	0.0
Bundy Dr., North of Wilshire Blvd.	69.6	69.6	0.0
Ohio Ave., East of Bundy Dr.	61.5	61.9	0.4
Olympic Blvd., West of Bundy Dr.	71.8	72.0	0.1
Bundy Dr., North of Olympic Blvd.	70.9	71.1	0.2
SEPULVEDA STATION			
Barrington Ave., South of Olympic Blvd.	69.6	69.7	0.0
Sawtelle Blvd., South of Santa Monica Blvd.	67.4	67.5	0.1
Sepulveda Blvd., North of Olympic Blvd.	69.7	70.0	0.3
Pico Blvd., East of Sepulveda Blvd.	71.2	71.5	0.3
Sepulveda Blvd., North of Exposition Blvd.	71.1	71.2	0.2
WESTWOOD STATION			
Westwood Blvd., South of Olympic Blvd.	69.5	69.6	0.1
Westwood Blvd., North of Pico Blvd.	69.2	69.3	0.1
Westwood Blvd., South of Pico Blvd.	69.1	69.2	0.1
National Blvd., West of Westwood Blvd.	69.8	69.9	0.1
Overland Ave., South of Pico Blvd.	71.3	71.4	0.1
PALMS STATION			
Palms Blvd., East of Motor Ave.	70.2	70.4	0.2
Overland Ave., South of Culver Blvd.	70.8	70.8	0.1
Motor Ave., South of Palms Blvd.	67.9	68.2	0.3
Motor Ave., North of Palms Blvd.	67.6	68.0	0.4
Venice Blvd., East of Motor Ave.	70.8	70.9	0.1
CULVER CITY STATION			
Culver Blvd., South of Venice Blvd.	68.1	68.1	0.0
Venice Blvd., East of Culver Blvd.	71.4	71.5	0.1
Robertson Blvd., North of National Blvd.	70.7	70.8	0.0
Washington Blvd., East of National Blvd.	70.5	70.6	0.1
Cattaragus Ave., East of Robertson Blvd.	61.9	62.1	0.2

SOURCE: TAHA, 2017.

In conclusion, before mitigation, the Proposed Project would result in potentially significant impacts related to exceeding standards for construction noise, as well as exceeding ambient noise levels of existing uses due to the introduction of new uses. The Proposed Project would result in less than significant impacts relating to exceeding standards for operational noise from new HVAC units, as well as mobile noise levels.

MITIGATION MEASURES

N1 The City, as a condition of any approval for applicable projects within the ECTNP, shall require all contractors to include the following best management practices in contract specifications:

- Construction haul truck and materials delivery traffic shall avoid residential areas whenever feasible. If no alternatives are available, truck traffic shall be routed on streets with the fewest residences.
- The construction contractor shall locate construction staging areas away from sensitive uses.
- When construction activities are located within 500 feet of noise-sensitive land uses, noise barriers (e.g., temporary walls or piles of excavated material) shall be constructed between activities and noise sensitive uses.
- Impact pile drivers shall be avoided where possible in noise-sensitive areas. Drilled piles or the use of a sonic vibratory pile driver are quieter alternatives that shall be utilized where geological conditions permit their use. Noise shrouds shall be used when necessary to reduce noise of pile drilling/driving.
- Construction equipment shall be equipped with mufflers that comply with manufacturers' requirements.
- The construction contractor shall use on-site electrical sources to power equipment rather than diesel generators where feasible.

N2 The following conditions shall apply to future development within New Industry, Hybrid Industrial: Jobs Emphasis, Hybrid Industrial-Residential Emphasis, and Mixed Use: Commercial/Residential zones with direct line-of-site to adjacent residential and other sensitive land uses:

- Industrial activity yards that include the operation of heavy equipment shall be shielded by sound barriers that block line-of-sight to sensitive receptors.
- Mechanical equipment (e.g., HVAC Systems) shall be enclosed with sound buffering materials.
- Truck loading/unloading activity shall be prohibited between the hours of 10:00 p.m. and 7:00 a.m. when located within 200 feet of a residential land use.
- Parking structures located within 200 feet of any residential use shall be constructed with a solid wall abutting the residences and utilize textured surfaces on garage floors and ramps to minimize tire squeal.

SIGNIFICANCE OF IMPACTS AFTER MITIGATION

Implementation of Mitigation Measure **N1** would reduce construction noise levels at existing and future noise-sensitive receptors during construction activities associated with implementation of the Proposed Project; however, as identified in **Table 4.9-4**, above, noise levels from various mechanized construction equipment would exceed 75 dBA at distances of 50 feet from the equipment which could exceed the limitations established in LAMC Section 112.05. Depending on the location of construction activities, typical construction noise levels could still exceed 75 dBA despite implementation of mitigation. Implementation of Mitigation Measure **N1** would help to reduce this impact, but not necessarily to less than significant, because certain construction activities may still be required in proximity to nearby sensitive receptors and construction-related noise levels could exceed the 75 dBA threshold. Construction activity would be short-term and temporary at each location, although construction is anticipated to occur throughout the time frame of the Proposed Project. Regardless, with mitigation, the Proposed Project would result in a significant and unavoidable impact related to the generation of construction noise in excess of the LAMC standards.

Operational impacts related to HVAC and mobile sources noise were determined to be less than significant. However, impacts related to operational land use incompatibilities were determined to be potentially significant without mitigation. While difficult to quantify noise reduction associated with Mitigation Measure **N2**, implementing these conditions would reduce noise levels. For example, sound barriers between industrial activities and a receptor would reduce noise levels by 5 dBA to 15 dBA, depending on the height of the barrier. However, depending on the specific land uses proposed at a specific location, operational activities could still potentially increase noise levels at adjacent receptors by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories, as shown in **Table 4.9-1**, or could increase any ambient noise level by 5 dBA or more. Therefore, the Proposed Project is considered to result in a significant and unavoidable impact related to operational noise after mitigation.

IMPACT 4.9-2 WOULD IMPLEMENTATION OF THE PROPOSED PROJECT RESULT IN A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE PROPOSED PROJECT VICINITY ABOVE LEVELS EXISTING WITHOUT THE PROJECT? THIS IMPACT IS CONSIDERED SIGNIFICANT AND UNAVOIDABLE.

See Impact 4.9-1 for a discussion of permanent noise. The Proposed Project is a planning document and detailed noise impacts cannot be identified in the absence of specific projects. Impact 4.9-1 includes examples of specific projects that would potentially result in substantial increases in permanent noise. For example, in the Palms and Culver City Station Areas, some Multi-Family Residential zones (RD2, R3, and R4) would be converted to the Mixed Use Commercial/Residential zone. It is anticipated that the Mixed Use zone would mostly be developed with residential uses, but could also be developed entirely as commercial use. Thus commercial uses could be operational adjacent to residences, schools, or other existing sensitive uses. Noise sources such as truck deliveries at commercial uses could impact adjacent sensitive uses by increasing the ambient noise levels at adjacent receptors by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories, as shown in **Table 4.9-1**, or increase noise by levels at least 5 dBA. This would result in a substantial permanent increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project. Therefore, prior to implementation of mitigation, the Proposed Project could result in a significant impact related to operational noise.

MITIGATION MEASURES

Refer to Mitigation Measure **N2** above for mitigation related to permanent noise from operational activity.

SIGNIFICANCE OF IMPACTS AFTER MITIGATION

Impacts related to operational noise were determined to be significant without mitigation. While difficult to quantify noise reduction associated with Mitigation Measure **N2**, implementing these conditions would reduce noise levels. For example, sound barriers between industrial activities and a receptor would reduce noise levels by 5 dBA to 15 dBA, depending on the height of the barrier. However, depending on the specific land uses proposed at a specific location, operational activities could still increase noise levels at adjacent receptors by 3 dBA CNEL to or within the "normally unacceptable" or "clearly unacceptable" categories, as shown in **Table 4.9-1**, or could increase any ambient noise level by 5 dBA or more. Therefore, the Proposed Project is considered to result in a significant and unavoidable impact related to operational noise after mitigation.

IMPACT 4.9-3 WOULD IMPLEMENTATION OF THE PROPOSED PROJECT RESULT IN A SUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS IN THE PROPOSED PROJECT VICINITY ABOVE LEVELS EXISTING WITHOUT THE PROJECT? THIS IMPACT IS CONSIDERED SIGNIFICANT AND UNAVOIDABLE.

As discussed above in Impact 4.9-1, land uses sensitive to increased noise levels (e.g., residences) are located throughout the ECTNP and surrounding communities. Construction activity typically involves the operation of multiple pieces of equipment at the same time.

Table 4.9-8 shows noise levels by construction phase at 50 feet. The grading/excavation and finishing phases typically generate the loudest noise levels at 89 dBA L_{eq} without equipment mufflers, and 86 dBA L_{eq} with equipment mufflers.

TABLE 4.9-8: OUTDOOR CONSTRUCTION NOISE LEVELS

Construction Phase	Noise Level At 50 Feet (dBA, L_{eq})	Noise Level At 50 Feet With Mufflers (dBA, L_{eq})
Ground Clearing	84	82
Grading/Excavation	89	86
Foundations	78	77
Structural	85	83
Finishing	89	86

SOURCE: City of Los Angeles, *CEQA Thresholds Guide*, 2006.

The existing daytime noise level in residential areas is presumed to be 50 dBA (**Table 4.9-3**). As discussed in Impact 4.9-1, it is anticipated that construction activity within the ECNTP would be located within 50 feet of residences and other sensitive receptors. Based on **Table 4.9-8**, the daytime ambient noise levels would increase between 28 and 39 dBA depending on the construction phase. Construction noise would increase ambient noise levels by more than 10 dBA for activities lasting more than one day, and by more than 5 dBA for construction activities lasting more than ten days in a three month period. This would result in a substantial temporary or periodic increase in ambient noise levels in the Proposed Project vicinity above levels existing without the Proposed Project. Therefore, prior to implementation of mitigation, the Proposed Project would result in a significant impact related to construction noise.

MITIGATION MEASURES

Refer to Mitigation Measure **N1** above for mitigation related to temporary and periodic noise from construction activity.

SIGNIFICANCE OF IMPACTS AFTER MITIGATION

Impacts related to temporary and periodic noise from construction activity were determined to be significant without mitigation. While difficult to quantify, the noise reduction associated with each part of Mitigation Measure **N1** would noticeably reduce noise levels. For example, requiring equipment mufflers would reduce engine noise by at least 3 dBA. However, in the absence of detailed noise analyses associated with specific projects, it is anticipated that construction noise levels at various sensitive land uses would exceed the City's thresholds of significance. Therefore, the Proposed Project would result in a significant and unavoidable impact related to temporary and periodic noise after mitigation.

IMPACT 4.9-4 WOULD IMPLEMENTATION OF THE PROPOSED PROJECT EXPOSE PEOPLE TO OR GENERATE EXCESSIVE VIBRATION OR GROUND-BORNE NOISE LEVELS? THIS IMPACT IS CONSIDERED SIGNIFICANT AND UNAVOIDABLE.

Construction

Construction activity can result in varying degrees of ground vibration depending on the equipment and methods employed. Operation of construction equipment causes vibrations that spread through ground and diminish in strength with distance. Buildings founded on the soil in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the lowest levels, low rumbling sounds and perceptible vibrations at moderate levels, and slight damage at the highest levels.

Table 4.9-9 shows construction equipment vibration levels based on various reference distances. Construction vibration is a localized event and is typically only perceptible to a receptor that is in close proximity to the vibration source. The type of low- or mid-rise buildings anticipated to be built under the Proposed Project would typically be constructed with loaders and bulldozers. However, it is possible that pile driving would be necessary depending on site-specific geologic conditions. Construction equipment would typically generate vibration levels up to 87 Vdb at 25 feet, although pile driving could generate a vibration level of 112 Vdb at 25 feet. Without detailed project-specific construction plans, it is possible that heavy equipment could operate within 25 feet of, or adjacent to, nearby buildings. The vibration levels associated with this equipment could exceed the 90 VdB for buildings extremely susceptible to building damage (e.g., historic structures) and 98 VdB for engineered concrete and masonry buildings without plaster (e.g., typical urban development). Therefore, prior to mitigation, the Proposed Project would result in a significant impact related to construction vibration.

TABLE 4.9-9: VIBRATION SOURCE LEVELS FOR CONSTRUCTION EQUIPMENT

	Approximate Vdb			
Equipment	**25 Feet**	**50 Feet**	**75 Feet**	**100 Feet**
Pile Driver (Impact)	112	106	102	100
Large Bulldozer	87	81	77	75
Loaded Trucks	86	80	76	74
Jackhammer	79	73	69	67
Small Bulldozer	58	52	48	46

SOURCE: FTA, *Transit Noise and Vibration Impact Assessment*, May 2006.

Operation

It is not anticipated that the ECTNP would be developed with substantial sources of operational vibration (e.g., blasting activities). Operational ground-borne vibration would be generated by vehicular travel on the local roadways. According to the FTA, *Transit Noise and Vibration Impact Assessment* guidance document, vibration from traffic is rarely perceptible.[16] It is not anticipated that the Proposed Project would result in new mobile or stationary sources of operational vibration. Similar to existing conditions, traffic vibration levels would not be perceptible by sensitive receptors. Therefore, the Proposed Project would result in less than significant impacts related to operational vibration.

[16]Federal Transit Authority, *Transit Noise and Vibration Impact Assessment*, May 2006.

MITIGATION MEASURES

N3 As part of project conditions for new development within the ECTNP Area, the City shall require all contractors to include the following best management practices in contract specifications:

- The construction contractor shall manage construction phasing (scheduling demolition, earthmoving, and ground-impacting operations so as not to occur in the same time period), use low-impact construction technologies, and shall avoid the use of vibrating equipment where possible to avoid construction vibration impacts.

- The construction contractor shall utilize alternatives to impact pile drivers, such as sonic pile drivers or caisson drills. If geotechnical limitations require the use of pile driving, control measures shall be used to reduce vibration levels. These measures may include, but are not limited to:

  - Predrilled holes;
  - Cast-in-place or auger cast piles;
  - Pile cushioning (i.e., a resilient material placed between the driving hammer and the pile);
  - Jetting (i.e., pumping a mixture of air and water through high-pressure nozzles to erode the soil adjacent to the pile); and
  - Non-displacement piles (i.e., piles that achieve capacity from the end bearing rather than the pile shaft).

SIGNIFICANCE OF IMPACTS AFTER MITIGATION

Impacts related to construction vibration were determined to be significant without mitigation. While difficult to quantify the vibration reduction associated with Mitigation Measure **N3**, implementing caisson drilling instead of impact pile driving would reduce vibration levels by approximately 87 Vdb at 25 feet. It is anticipated that mitigation would substantially reduce/control construction vibration. However, in the absence of construction details associated with specific projects and without knowing the proximity of construction activities to specific receptors, it is anticipated that construction vibration levels at adjacent buildings could exceed the thresholds of significance. Therefore, after mitigation the Proposed Project is considered to result in a significant and unavoidable impact related to construction vibration after mitigation.

Impacts related to operational vibration were determined to be less than significant without mitigation.

IMPACT 4.9-5 WOULD IMPLEMENTATION OF THE PROPOSED PROJECT EXACERBATE LEVELS OF EXPOSURE FOR PEOPLE WORKING OR RESIDING WITHIN AN AIRPORT LAND USE PLAN OR, WHERE SUCH A PLAN HAS NOT BEEN ADOPTED, WITHIN TWO MILES OF A PUBLIC AIRPORT OR PUBLIC USE AIRPORT TO EXCESSIVE NOISE LEVELS? THE PROJECT WOULD NOT AFFECT EXISTING NOISE RELATED TO OPERATION OF SANTA MONICA AIRPORT AND THEREFORE THERE WOULD BE NO IMPACT ASSOCIATED WITH AVIATION NOISE.

The City's community noise exposure standards are presented in **Table 4.9-1**, above. This table can be used to determine if a proposed land use is compatible with existing ambient noise levels, including noise levels generated by an airport. The ECTNP Project Area is approximately 1,400 feet north of the Santa Monica Airport. The nearest proposed zone or land use designation change is located approximately 2,800 feet north of the Santa Monica Airport. The Santa Monica Airport has developed noise contours to characterize the Airport's influence on community noise levels.[17] The noise contours indicate that Santa Monica Airport-related noise levels at new development associated with the Proposed Project would be less than 60 dBA CNEL. These airport-related noise levels would be consistent with the City's acceptable community noise exposure standards for all land uses, as presented in **Table 4.9-1**. Therefore, the Proposed Project would result in no significant impact related to exacerbating levels of exposure for people working or residing near

[17]City of Santa Monica, *Calendar Year 2012 CNEL Contours for the Santa Monica Municipal Airport*, September 2013.

the Santa Monica Airport to excessive noise levels. Additionally, the FAA and the City of Santa Monica plan to maintain airport operations through 2028, after which the City may discontinue its use as an airport.[18]

MITIGATION MEASURES

The Proposed Project would not exacerbate existing conditions with respect to aviation noise. No mitigation measures are required.

SIGNIFICANCE OF IMPACTS AFTER MITIGATION

No impacts related to aviation noise were identified to result from the Proposed Project.

IMPACT 4.9-6 WOULD IMPLEMENTATION OF THE PROPOSED PROJECT EXACERBATE LEVELS OF EXPOSURE FOR PEOPLE WORKING OR RESIDING WITHIN THE VICINITY OF A PRIVATE AIRSTRIP TO EXCESSIVE NOISE LEVELS? THE PROJECT AREA IS NOT LOCATED WITHIN THE VICINITY OF A PRIVATE AIRSTRIP. THE PROJECT WOULD NOT AFFECT EXISTING NOISE RELATED TO OPERATION OF AN AIRSTRIP AND THEREFORE THERE WOULD BE NO IMPACT ASSOCIATED WITH AVIATION NOISE.

The Project Area is not located within the vicinity of a private airstrip. Development of the Proposed Project would not exacerbate levels of exposure for people residing or working in the project area to excessive noise related to airstrip operations. Therefore, the Proposed Project would have no impact related to airstrip noise, and no further analysis of this issue is required.

MITIGATION MEASURES

The Proposed Project would not exacerbate existing conditions with respect to aviation noise. No mitigation measures are required.

SIGNIFICANCE OF IMPACTS AFTER MITIGATION

No impacts related to aviation noise were identified to result from the Proposed Project.

[18]Federal Aviation Administration, *Press Release – FAA Reaches Settlement Agreement with City of Santa Monica*, January 28, 2017, https://www.faa.gov/news/press_releases/news_story.cfm?newsId=21394, accessed February 28, 2017.