



## 5.6 Noise

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## 5.6 NOISE

### 5.6.1 PURPOSE

This section identifies existing noise conditions within the Study Area and provides an analysis of potential impacts associated with implementation of the General Plan Update. Potential impacts are identified and mitigation measures to address potentially significant impacts are recommended, as necessary.

Information in this section was obtained from the *Rancho Santa Margarita Municipal Code* (Municipal Code). For the purposes of mobile source noise modeling and contour distribution, traffic information contained in the *City of Rancho Santa Margarita General Plan Traffic Impact Analysis* (July 23, 2018) was utilized; refer to [Appendix C, Traffic Impact Analysis](#). [Appendix E, Noise Data](#), includes data to support the analysis in this section.

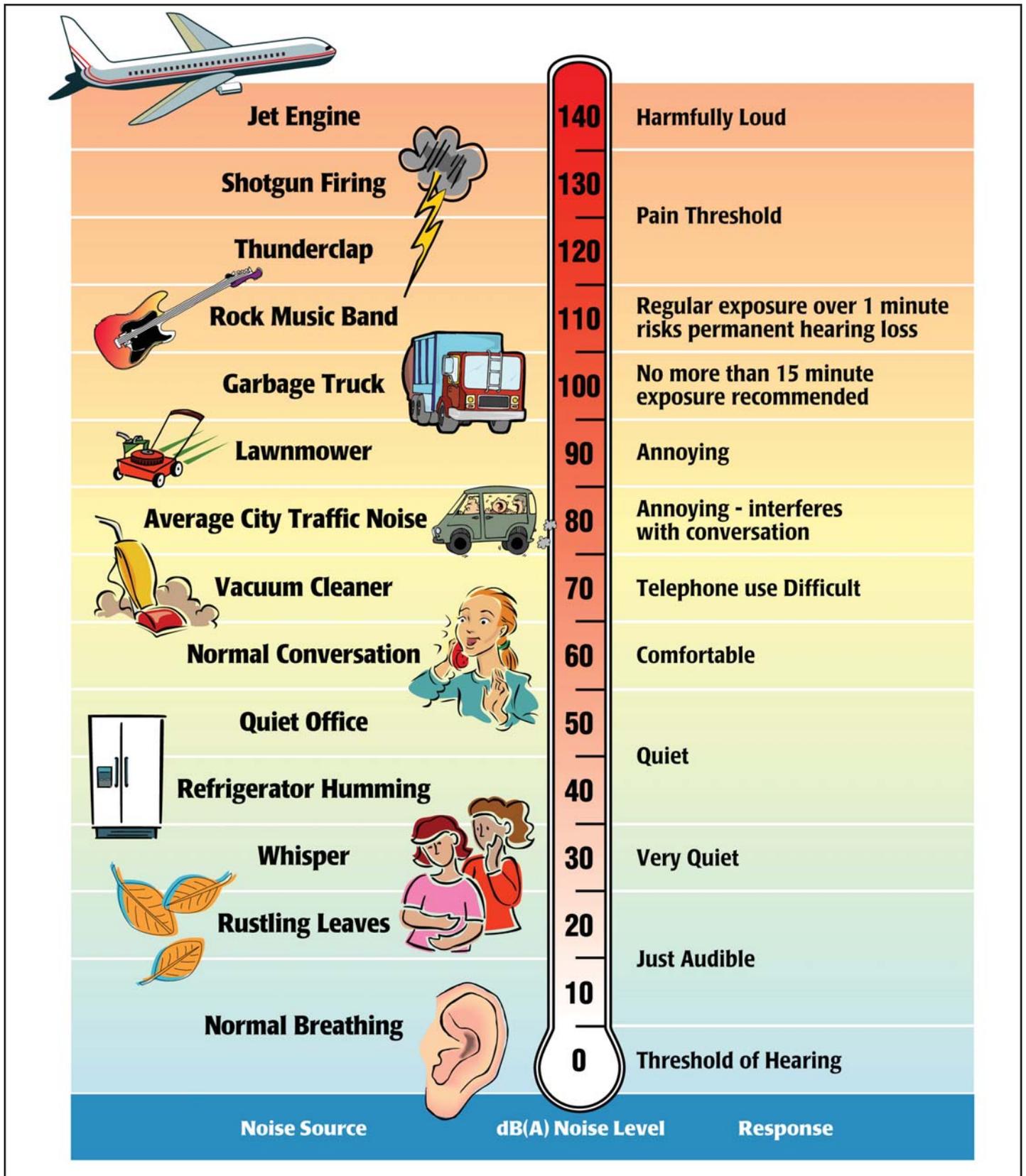
### 5.6.2 EXISTING REGULATORY SETTING

Sound is described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the decibel (dB). Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

The perceived loudness of sound is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and should be approximated by the A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of an environmental noise assessment.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The  $L_{eq}$  is the foundation of the composite noise descriptor, Ldn, and shows very good correlation with community response to noise.

Decibels are based on the logarithmic scale. The logarithmic scale compresses the wide range in sound pressure levels to a more usable range of numbers in a manner similar to the Richter scale used to measure earthquakes. In terms of human response to noise, a sound 10 dBA higher than another is judged to be twice as loud and 20 dBA higher four times as loud, and so forth. Everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Examples of various sound levels in different environments are illustrated on [Exhibit 5.6-1, Sound Levels and Human Response](#).



Source: Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA/ONAC 550/9-74-004), March 1974.





Many methods have been developed for evaluating community noise to account for, among other things:

- The variation of noise levels over time;
- The influence of periodic individual loud events; and
- The community response to changes in the noise environment.

Numerous methods have been developed to measure sound over a period of time; refer to [Table 5.6-1, Noise Descriptors](#).

**Table 5.6-1  
Noise Descriptors**

Term	Definition
Decibel (dB)	The unit for measuring the volume of sound equal to 10 times the logarithm (base 10) of the ratio of the pressure of a measured sound to a reference pressure (20 micropascals).
A-Weighted Decibel (dBA)	A sound measurement scale that adjusts the pressure of individual frequencies according to human sensitivities. The scale accounts for the fact that the region of highest sensitivity for the human ear is between 2,000 and 4,000 cycles per second (hertz).
Equivalent Sound Level ( $L_{eq}$ )	The sound level containing the same total energy as a time varying signal over a given time period. The $L_{eq}$ is the value that expresses the time averaged total energy of a fluctuating sound level.
Maximum Sound Level ( $L_{max}$ )	The highest individual sound level (dBA) occurring over a given time period.
Minimum Sound Level ( $L_{min}$ )	The lowest individual sound level (dBA) occurring over a given time period.
Community Noise Equivalent Level (CNEL)	A rating of community noise exposure to all sources of sound that differentiates between daytime, evening, and nighttime noise exposure. These adjustments are +5 dBA for the evening, 7:00 PM to 10:00 PM, and +10 dBA for the night, 10:00 PM to 7:00 AM
Day/Night Average ( $L_{dn}$ )	The $L_{dn}$ is a measure of the 24-hour average noise level at a given location. It was adopted by the U.S. Environmental Protection Agency (EPA) for developing criteria for the evaluation of community noise exposure. It is based on a measure of the average noise level over a given time period called the $L_{eq}$ . The $L_{dn}$ is calculated by averaging the $L_{eq}$ 's for each hour of the day at a given location after penalizing the "sleeping hours" (defined as 10:00 PM to 7:00 AM), by 10 dBA to account for the increased sensitivity of people to noises that occur at night.
Exceedance Level ( $L_n$ )	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% ( $L_{01}$ , $L_{10}$ , $L_{50}$ , $L_{90}$ , respectively) of the time during the measurement period.

Source: Cyril M. Harris, *Handbook of Noise Control*, dated 1979.

It is difficult to specify noise levels that are generally acceptable to everyone; what is annoying to one person may be unnoticed by another. Standards may be based on documented complaints in response to documented noise levels or based on studies of the ability of people to sleep, talk, or work under various noise conditions. Regulatory



requirements related to environmental noise are typically promulgated at the local level. However, Federal and State agencies provide standards and guidelines to local jurisdictions.

## **FEDERAL**

The Federal Noise Control Act of 1972 established programs and guidelines to identify and address the effects of noise on public health, welfare, and the environment. In 1981, the U.S. Environmental Protection Agency (EPA) administrators determined that subjective issues such as noise would be better addressed at more local levels of government, thereby allowing more individualized control for specific issues by designated Federal, State, and local government agencies. Consequently, in 1982 responsibilities for regulating noise control policies were transferred to specific Federal agencies, and State and local governments. However, noise control guidelines and regulations contained in the U.S. EPA rulings in prior years remain in place.

## **STATE**

The State of California has adopted noise standards in areas of regulation not preempted by the Federal government. State standards regulate noise levels of motor vehicles, sound transmission through buildings, occupational noise control, and noise insulation. State regulations governing noise levels generated by individual motor vehicles (i.e., the *California Vehicle Code*) and those governing occupational noise control (i.e., Occupational Safety and Health Administration) are not applicable to planning efforts nor are these areas typically subject to CEQA analysis. Thus, these regulatory guidelines are not included in this analysis. The following are State regulations deemed applicable to this project.

### **State Guidelines and Standards**

In 1974, the California Commission on Housing and Community Development adopted noise insulation standards for residential buildings (California Code of Regulations Title 24, Part 2, Chapter 12, Section 1207.11.2). Title 24 establishes standards for interior room noise attributable to outside noise sources. Title 24 also specifies that acoustical studies should be prepared whenever a residential building or structure is proposed to be located in areas with exterior noise levels 60 dB Ldn or greater. The acoustical analysis must show that the building has been designed to limit intruding noise to an interior level not exceeding 45 dB for any habitable room.

Section 1092 of Title 25, Chapter 1, Subchapter 1, Article 4, of the California Administrative Code includes noise insulation standards which detail specific requirements for new multi-family structures (hotels, motels, apartments, condominiums, and other attached dwellings) located within the 60 CNEL contour adjacent to roads, railroads, rapid transit lines, airports, or industrial areas. An acoustical analysis is required showing that these multi-family units have been designed to limit interior noise levels, with doors and windows closed, to 45 CNEL in any habitable room. Title 21 of the California Administration Code (Subchapter 6, Article 2, Section 5014) also specifies that noise levels in all habitable rooms shall not exceed 45 CNEL. A community's sensitivity to noise may be evaluated by starting with the general guidelines developed by the State of California, and then



applying adjustment factors. These allow acceptability standards to be set which reflect the desires of the community and its assessment of the relative importance of noise pollution, and are below the known levels of health impairment.

### Governor’s Office of Planning and Research

California Government Code Section 65302(f) mandates that the legislative body of each county, town, and city adopt a noise element as part of their Comprehensive General Plan. The local noise element must recognize the land use compatibility guidelines established by the State Department of Health Services. *The State of California General Plan Guidelines*, published by the State Governor’s Office of Planning and Research (OPR), provides guidance for the acceptability of specific land use types within areas of specific noise exposure. Table 5.6-2, Land Use Compatibility for Community Noise Environments, presents guidelines for determining acceptable and unacceptable community noise exposure limits for various land use categories. The guidelines also present adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community’s sensitivity to noise, and the community’s assessment of the relative importance of noise pollution. OPR guidelines are advisory in nature. Local jurisdictions, including the City of Rancho Santa Margarita, have the responsibility to set specific noise standards based on local conditions. The City’s local regulations are set forth below.

**Table 5.6-2  
Land Use Compatibility for Community Noise Environments**

Land Use Category	Community Noise Exposure (CNEL)			
	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential-Low Density, Single-Family, Duplex, Mobile Homes	50 – 60	55 - 70	70 – 75	75 – 85
Residential – Multiple Family	50 – 65	60 – 70	70 – 75	70 – 85
Transient Lodging – Motel, Hotels	50 – 65	60 – 70	70 – 80	80 – 85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50 – 70	60 – 70	70 – 80	80 – 85
Auditoriums, Concert Halls, Amphitheaters	NA	50 – 70	NA	65 – 85
Sports Arenas, Outdoor Spectator Sports	NA	50 – 75	NA	70 – 85
Playgrounds, Neighborhood Parks	50 – 70	NA	67.5 – 77.5	72.5 – 85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50 – 70	NA	70 – 80	80 – 85
Office Buildings, Business Commercial and Professional	50 – 70	67.5 – 77.5	75 – 85	NA
Industrial, Manufacturing, Utilities, Agriculture	50 – 75	70 – 80	75 – 85	NA
CNEL = community noise equivalent level; NA = not applicable				
<b>NORMALLY ACCEPTABLE:</b> Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.				
<b>CONDITIONALLY ACCEPTABLE:</b> New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features have been included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.				
<b>NORMALLY UNACCEPTABLE:</b> New construction or development should 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 must be included in the design.				
<b>CLEARLY UNACCEPTABLE:</b> New construction or development should generally not be undertaken.				
Source: Office of Planning and Research, California, <i>General Plan Guidelines</i> , July 2017.				

As depicted in Table 5.6-2, the range of noise exposure levels overlap between the normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable categories. OPR’s *State General Plan Guidelines* note that noise planning



policy needs to be rather flexible and dynamic to reflect not only technological advances in noise control, but also economic constraints governing application of noise-control technology and anticipated regional growth and demands of the community. In project specific analyses, each community must decide the level of noise exposure its residents are willing to tolerate within a limited range of values below the known levels of health impairment. Therefore, the City may use their discretion to determine which noise levels are considered acceptable or unacceptable, based on land use, project location, and other project factors.

## LOCAL REGULATIONS

### City of Rancho Santa Margarita Noise Standards

#### CITY OF RANCHO SANTA MARGARITA GENERAL PLAN

The existing *Rancho Santa Margarita General Plan (2002 General Plan) Noise Element* has been the guiding document for the City's noise policy and contains various goals and policies designed to protect residents and businesses from excessive and persistent noise intrusions. The Noise Element describes the existing noise environment, goals and policies, as well as Federal, State, and City noise regulations.

#### CITY OF RANCHO SANTA MARGARITA MUNICIPAL CODE

The City of Rancho Santa Margarita's regulations with respect to noise are included in Municipal Code Chapter 5.04, *Noise Control*, also known as the Noise Ordinance. Construction-related and operational noise restrictions are discussed below.

Municipal Code Sections 5.04.050, *Exterior noise standards*, and 5.040.060, *Interior noise standards*, define the interior and exterior noise level limits for residential land uses; refer to [Table 5.6-3, City of Rancho Santa Margarita Sound Level Limits](#). The City does not have specific noise level limits for commercial or industrial zones.

**Table 5.6-3  
City of Rancho Santa Margarita Sound Level Limits**

Residential Zones	Sound Level Limits dBA $L_{eq}$ – one hour average	
	7:00 a.m. to 10:00 p.m. (day and evening)	10:00 p.m. to 7:00 a.m. (night)
Interior Noise Levels Limits	55	45
Exterior Noise Levels Limits	55	50

Source: City of Rancho Santa Margarita, *City of Rancho Santa Margarita Municipal Code Sections 5.04.050 and 5.04.060*, May 2016.

Municipal Code Section 5.04.050(b) further defines the applicability of the exterior noise level limits in the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dB(A). According to Municipal Code Section 5.04.050(c), "it is unlawful for any person within the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person,



when the foregoing causes the noise level, when measured on any other residential property, to exceed:

1. The noise standard for a cumulative period of more than 30 minutes in any hour;
2. The noise standard plus five dBA for a cumulative period of more than 15 minutes in any hour;
3. The noise standard plus 10 dBA for a cumulative period of more than five minutes in any hour;
4. The noise standard plus 15 dBA for a cumulative period of more than one minute in any hour; and
5. The noise standard plus 20 dBA for any period of time."

Municipal Code Section 5.04.050(d) states that "in the event the ambient noise level exceeds any of the first four noise limit categories listed in 5.04.050, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level."

Municipal Code Section 5.04.060(b) sets forth the applicability of the interior noise level limits in the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five dB(A). According to Municipal Code Section 5.04.060(c), "it is unlawful for any person within the City to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured within any other dwelling unit on any other residential property, to exceed:

1. The interior noise standard for a cumulative period of more than five minutes in any hour; or
2. The interior noise standard plus five db(A) for a cumulative period of more than one minute in any hour; or
3. The interior noise standard plus ten db(A) for any period of time."

Municipal Code Section 5.04.060(d) states that "in the event the ambient noise level exceeds either of the first two noise limit categories in Municipal Code Section 5.04.060, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category, the maximum allowable noise level under said category shall be increased in reflect the maximum ambient noise level."

Municipal Code Section 5.04.070, *Special Provisions*, regulates construction noise. Municipal Code Section 5.04.070(5) states that noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 7:00 a.m. on weekdays, including



Saturday, or at any time on Sunday or a Federal holiday are exempt from the noise provisions of Municipal Code Chapter 5.04, *Noise Control*.

## VIBRATION STANDARDS

The City does not have regulatory standards for construction or operational vibration sources. The Federal Transit Administration (FTA) and Caltrans have published guidelines for the analysis of groundborne noise and vibration relating to transportation and construction-induced vibration. Caltrans guidelines recommend that a standard of 0.2 inches/second (in/sec) peak particle velocity (PPV) not be exceeded for the protection of normal residential buildings, and that 0.08 in/sec PPV not be exceeded for the protection of old or historically significant structures.<sup>1</sup> The ground motion caused by vibration is measured as particle velocity in inches per second and, in the United States is referenced as vibration decibels (VdB). With respect to human response within residential uses (i.e., annoyance), FTA recommends a maximum acceptable vibration standard of 80 VdB.<sup>2</sup>

### 5.6.3 EXISTING ENVIRONMENTAL SETTING

Human response to sound is highly individualized. Annoyance is the most common issue regarding community noise. The percentage of people claiming to be annoyed by noise generally increases with the environmental sound level. However, many factors also influence people's response to noise. The factors can include the character of the noise, the variability of the sound level, the presence of tones or impulses, and the time of day of the occurrence. Additionally, non-acoustical factors, such as the person's opinion of the noise source, the ability to adapt to the noise, the attitude towards the source and those associated with it, and the predictability of the noise, all influence people's response. As such, response to noise varies widely from one person to another and with any particular noise, individual responses will range from "not annoyed" to "highly annoyed."

When the noise level of an activity rises above 70 dBA, the chance of receiving a complaint is possible, and as the noise level rises, dissatisfaction among the public steadily increases. However, an individual's reaction to a particular noise depends on many factors, such as the source of the sound, its loudness relative to the background noise, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community.

The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on the community can be organized into six broad categories:

1. Noise-Induced Hearing Loss
2. Interference with Communication

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1 California Department of Transportation, *Transportation and Construction-Induced Vibration Guidance Manual*, June 2004.

2 Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006.



3. Effects of Noise on Sleep
4. Effects on Performance and Behavior
5. Extra-Auditory Health Effects
6. Annoyance

Noise-Induced Hearing Loss. Although it often causes discomfort and sometimes pain, noise-induced hearing loss usually takes years to develop. Noise-induced hearing loss can impair the quality of life through a reduction in the ability to hear important sounds and to communicate with family and friends. Hearing loss is one of the most obvious and easily quantified effects of excessive exposure to noise. While the loss may be temporary at first, it could become permanent after continued exposure. When combined with hearing loss associated with aging, the amount of hearing loss directly caused by the environment is difficult to quantify. Although the major cause of noise-induced hearing loss is occupational, substantial damage can be caused by non-occupational sources. According to the United States Public Health Service, nearly ten million of the estimated 21 million Americans with hearing impairments owe their losses to noise exposure.

Interference with Communication. Noise can mask important sounds and disrupt communication between individuals in a variety of settings. This process can cause anything from a slight irritation to a serious safety hazard, depending on the circumstance. Noise can disrupt face-to-face communication and telephone communication, and the enjoyment of music and television in the home. It can also disrupt effective communication between teachers and pupils in schools, and can cause fatigue and vocal strain in those who need to communicate in spite of the noise. Interference with communication has proved to be one of the most important components of noise-related annoyance.

Effects of Noise on Sleep. Noise-induced sleep interference is one of the critical components of community annoyance. Sound level, frequency distribution, duration, repetition, and variability can make it difficult to fall asleep and may cause momentary shifts in the natural sleep pattern, or level of sleep. It can produce short-term adverse effects on mood changes and job performance, with the possibility of more serious effects on health if it continues over long periods.

Effects on Performance and Behavior. Recent research indicates that moderate noise levels can produce disruptive after-effects, commonly manifested as a reduced tolerance for frustration, increased anxiety, decreased incidence of "helping" behavior, and increased incidence of "hostile" behavior. Noise can cause adverse effects on task performance and behavior at work, and non-occupational and social settings. These effects are the subject of some controversy, since the presence and degree of effects depends on a variety of intervening variables. Most research in this area has focused mainly on occupational settings, where noise levels must be sufficiently high and the task sufficiently complex for effects on performance to occur.

Extra-Auditory Health Effects. Noise has been implicated in the development or exacerbation of a variety of health problems, ranging from hypertension to psychosis. As



with other categories, quantifying these effects is difficult due to the amount of variables that need to be considered in each situation. As a biological stressor, noise can influence the entire physiological system. Most effects seem to be transitory, but with continued exposure some effects have been shown to be chronic in laboratory animals.

Annoyance. Annoyance can be viewed as the expression of negative feelings resulting from interference with activities, as well as the disruption of one's peace of mind and the enjoyment of one's environment. Field evaluations of community annoyance are useful for predicting the consequences of planned actions involving highways, airports, road traffic, railroads, or other noise sources. The consequences of noise-induced annoyance are privately held dissatisfaction, publicly expressed complaints to authorities, and potential adverse health effects, as discussed above. In a study conducted by the United States Department of Transportation, the effects of annoyance to the community were quantified. In areas where noise levels were consistently above 60 dBA CNEL, approximately nine percent of the community is highly annoyed. When levels exceed 65 dBA CNEL, that percentage rises to 15 percent. Although evidence for the various effects of noise have differing levels of certainty, it is clear that noise can affect human health. Most of the effects are, to a varying degree, stress related.

## **MOTOR VEHICLE NOISE**

In order to assess the potential for mobile source noise impacts, it is necessary to determine the noise currently generated by vehicles traveling through the project area. The existing roadway noise levels in the vicinity of the project site were projected. Noise models were run using the Federal Highway Administration's Highway Noise Prediction Model (FHWA RD-77-108). The model calculates the average noise level at specific locations based on traffic volumes, average speeds represented by the posted speed limit, roadway geometry, and site environmental conditions.

Existing noise contours were calculated for roadways with the highest traffic volumes in and in close proximity to the Study Area. Noise generation for each roadway link was calculated and the distance to the 60 dBA  $L_{dn}$ , 65 dBA  $L_{dn}$ , and 70 dBA  $L_{dn}$  contours was determined; refer to [Table 5.6-4, Existing Traffic Noise Levels](#). Resulting noise contours are illustrated on [Exhibit 5.6-2, Existing Roadway Noise Contours](#). As shown in [Table 5.6-4](#), the existing traffic noise levels range from a low of 56.6 CNEL along Bienvenidos (Antonio Parkway to Alma Aldea) to a high of 73.7 along Santa Margarita Parkway (Alicia Parkway to Avenida Empresa).

## **Highways and Streets**

The roadways within the City that generate the most traffic noise include the major north-south trending State Route 241 (SR-241) due to higher traffic volumes and vehicle speeds than other roadways. Major arterials that generate the most noise include Santa Margarita Parkway, Antonio Parkway, Alicia Parkway, and Avenida Empresa.



**Table 5.6-4  
Existing Traffic Noise Levels**

Roadway Segment	Existing				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet) <sup>1</sup>		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
<b>Alas De Paz</b>					
Antonio Parkway to Plano Trabuco Road	8,900	61.3	154	49	15
<b>Alicia Parkway</b>					
Santa Margarita Parkway to City Limits	24,700	69.1	997	315	100
<b>Alma Aldea</b>					
Avenida De Las Banderas to La Promesa	9,600	62.8	225	71	23
La Promesa to Santa Margarita Parkway	6,400	59.8	110	35	11
<b>Antonio Parkway</b>					
City Limits to Avenida De Las Banderas	34,800	71.6	1790	566	179
Avenida De Las Banderas to Valerosa	27,700	70.6	1425	451	143
Valerosa to Avenida Empresa	27,500	70.5	1414	447	141
Avenida Empresa to Bienvenidos	27,100	70.1	1392	440	139
Bienvenidos to La Promesa/Coto De Caza Drive	27,200	70.4	1399	442	140
La Promesa/Coto De Caza Drive to Santa Margarita Parkway	16,950	68.5	871	275	87
Santa Margarita Parkway to Avenida De Las Flores	5,000	61.2	156	49	16
<b>Avenida De Las Banderas</b>					
Antonio Parkway to Arroyo Vista	11,800	64.9	367	116	37
Arroyo Vista to Avenida Empresa	13,200	65.4	410	130	41
Avenida Empresa to Comercio	8,100	63.2	252	80	25
Comercio to Aventura/Esperanza	8,200	63.4	255	81	25
Aventura/Esperanza to Avenida De Las Flores/Alma Aldea	14,900	65.9	463	146	46
<b>Avenida De Las Flores</b>					
Avenida De Las Banderas to Santa Margarita Parkway	16,750	65.0	393	124	39
Santa Margarita Parkway to Via Con Dios	12,150	63.7	284	90	28
Via Con Dios to Avenida De Los Fundadores	8,200	62.2	192	61	19
Avenida De Los Fundadores to Antonio Parkway	4,450	59.7	104	33	10
<b>Avenida Empresa</b>					
Santa Margarita Parkway to Aventura	26,000	67.1	610	193	61
Aventura to Avenida De Las Banderas	20,300	65.9	476	150	48
Avenida De Las Banderas to Antonio Parkway	12,900	63.9	302	96	30
<b>Bienvenidos</b>					
Antonio Parkway to Alma Aldea	4,300	56.6	53	17	5
<b>Coto De Caza Drive</b>					
Antonio Parkway to Entry Gate	16,800	63.9	290	92	29
<b>Dove Canyon Drive</b>					
Plano Trabuco Road to Entry Gate	15,100	64.7	354	112	35
<b>La Promesa</b>					
Antonio Parkway to Alma Aldea	13,100	61.2	162	51	16



**Table 5.6-4 [continued]  
Existing Traffic Noise Levels**

Roadway Segment	Existing				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet) <sup>1</sup>		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
<b>Los Alisos Boulevard</b>					
SR-241 Eastbound Ramps to Altisima	11,900	66.0	480	152	48
<b>Melinda Road</b>					
Altisima to Rancho Trabuco	9,200	63.9	286	90	29
Rancho Trabuco to SR-241 Overcrossing	9,400	58.4	81	25	8
<b>Plano Trabuco</b>					
Dove Canyon Road to Alas De Paz	15,800	60.6	136	43	14
Alas De Paz to Santa Margarita Parkway	12,200	65.1	379	120	38
Santa Margarita Parkway to Robinson Ranch Road	13,300	64.2	312	99	31
Robinson Ranch Road to Trabuco Canyon Road	4,000	59.1	94	30	9
<b>Robinson Ranch Road</b>					
East of Plano Trabuco	10,100	61.7	174	55	17
<b>Santa Margarita Parkway</b>					
Melinda Road to Alicia Parkway	37,000	71.8	1902	601	190
Alicia Parkway to Avenida Empresa	58,300	73.7	2995	947	300
Avenida Empresa to Avenida De Las Flores	51,250	72.1	2069	654	207
Avenida De Las Flores to Antonio Parkway	30,950	69.9	1250	395	125
Antonio Parkway to Plano Trabuco Road	23,200	67.8	721	228	72
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Note:					
1. Roadway noise levels and contours were calculated using the FHWA RD-77-108 model.					
Source: Michael Baker International, Rancho Santa Margarita General Plan Update Existing Conditions Report, December 2017.					





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## **RAILWAYS**

There are no railroads traversing the City; therefore, railroad noise does not currently present annoyance within the City.

## **STATIONARY NOISE SOURCES**

The most common sources of stationary noise within the City consist of construction activities, as well as commercial and industrial uses. Commercial and industrial land uses located near residential areas currently generate occasional noise impacts. Residential land uses and areas identified as noise-sensitive should be protected from excessive noise from stationary sources including commercial, business park, and auto centers. These noise sources are best controlled through effective land use planning and application of the City's Noise Ordinance.

### **Construction**

Construction noise is one of the most common stationary noise sources in the City. The use of pile drivers, drills, trucks, pavers, graders, and a variety of other equipment can result in short, sporadic elevated noise levels. Although construction noise impacts are generally short-term in nature, it can often disturb nearby sensitive uses.

### **Commercial**

Commercial uses within the City are generally located along the SR-241 corridor, as well as other major roadways such as Santa Margarita Parkway, Antonio Parkway, Avenida de las Flores, and El Paseo. Commercial uses that serve nearby neighborhoods are also located along Plano Trabuco Road and Dove Canyon Drive. The primary noise sources associated with these facilities are caused by delivery trucks, trash trucks, air compressors, generators, outdoor loudspeakers, and gas venting. Residential, institutional, and park uses are located adjacent to several commercial areas of the City. Commercial operations may cause annoyance to these nearby sensitive receptors.

### **Industrial Noise**

Industrial noise sources are located in areas zoned Business Park and Auto Center Overlay throughout the City. In general, industrial noise sources are not creating large-scale problems, but some localized noise problems related to industrial sources do occur. Industrial uses are generally found along the SR-241 corridor, Santa Margarita Parkway, Antonio Parkway, Avenida Empresa, and Avenida De Las Banderas. There are a few auto dealerships located in the City along Santa Margarita Parkway and Avenida Empresa.

Industrial land uses have the potential to generate noise that can be considered intrusive to sensitive land uses. Depending on the type of industrial operation, noise sources could involve mechanical equipment, loading and unloading of vehicles and trucks, as well as amplified or un-amplified communications. The level and intrusiveness of the noise generated also vary depending on the size and type of the facility, type of business, hours of operation, and location relative to sensitive land uses.



## SENSITIVE NOISE RECEPTORS

Sensitive populations are more susceptible to the effects of noise than are the general population. Land uses considered sensitive by the State of California include schools, playgrounds, athletic facilities, hospitals, rest homes, rehabilitation centers, long-term care and mental care facilities. Generally, a sensitive receptor is identified as a location where human populations (especially children, senior citizens, and sick persons) are present.

Land uses less sensitive to noise are business, commercial, and professional developments. Noise receptors categorized as being least sensitive to noise include industrial, manufacturing, utilities, agriculture, natural open space, undeveloped land, parking lots, warehousing, and transit terminals. These types of land uses often generate high noise levels. Moderately sensitive land uses typically include multi-family dwellings, hotels, motels, dormitories, and outpatient clinics. Current land uses located within the City of Rancho Santa Margarita that are sensitive to intrusive noise include residential uses, schools, churches, and parks.

## SENSITIVE RECEPTORS NOISE MEASUREMENT SITES

Noise measurements were taken within the City at seven locations; refer to [Exhibit 5.6-3, Noise Measurement Locations](#). The noise measurement locations were selected along major roadways as a representative sample of the City in order to identify ambient baseline levels. Ambient noise levels are generated by typical community noise sources, such as lawn mowers, air conditioners, and barking dogs. Ambient baseline levels do not specifically include roadway noise sources that fluctuate over time. Roadway noise levels and associated roadway noise contours are discussed in the preceding section.

Noise levels at the seven selected sites were measured by Michael Baker International on June 9, 2016 using a Brüel & Kjær model 2250 sound level meter (SLM) equipped with Brüel & Kjær pre-polarized freefield microphone, which meets standards of the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Each measurement was for 10 minutes, and the measured noise levels ranged from approximately 45.6 to 67.5 dBA. The results of the field measurements are summarized in [Table 5.6-5, Noise Measurements](#) and [Appendix E, Noise Data](#).

**Table 5.6-5  
Noise Measurements**

Site No.	Location	Leq (dBA)	Lmin (dBA)	Lmax (dBA)	Time
1	Along Porcelana	67.5	36.9	92.1	1:52 p.m.
2	Within Arroyo Vista Park, approximately 220 feet west of Avenida De Las Banderas	62.1	44.9	93.3	2:22 p.m.
3	Approximately 175 feet west of SR-241 and approximately 300 feet east of Tomas	49.0	42.1	61.1	2:41 p.m.
4	Within Central Park, approximately 235 southeast of Buena Suerte	51.2	40.3	67.4	3:03 p.m.
5	Along Brisa Del Lago and Via Acuatica	45.6	43.2	61.5	3:24 p.m.
6	Within the southern portion of Dove Canyon Plaza, approximately 220 feet northeast of Dove Canyon Drive	61.6	39.1	92.4	3:44 p.m.
7	Along Coppercrest Drive and Birdhollow Drive	52.9	31.1	70.1	4:01 p.m.

Leq = equivalent sound level; dBA = A-weighted decibel.  
Source: Michael Baker International, June 9, 2016.





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## 5.6.4 SIGNIFICANCE THRESHOLDS AND CRITERIA

Appendix G of the California Environmental Quality Act (CEQA) Guidelines contains the Initial Study Environmental Checklist, which includes questions relating to noise. The issues presented in the Initial Study Environmental Checklist have been utilized as thresholds of significance in this section. Accordingly, a project may create a significant environmental impact if it would:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- Expose persons to or generate excessive ground-borne 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;
- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located 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, expose people residing or working in the project area to excessive noise levels (as explained in Section 9.0, *Effects Found Not To Be Significant*, further analysis of this topic is not required in this EIR); and/or
- For a project within the vicinity of a private airstrip, expose people residing or working in the project area to excessive noise levels (as explained in Section 9.0, *Effects Found Not To Be Significant*, further analysis of this topic is not required in this EIR).

Based on these standards, the effects of the proposed project have been categorized as either a "less than significant impact" or a "potentially significant impact." Mitigation measures are recommended for potentially significant impacts. If a potentially significant impact cannot be reduced to a less than significant level through the application of mitigation, it is categorized as a significant and unavoidable impact.

## CUMULATIVE NOISE EXPOSURE

### Significance of Changes in Traffic Noise Levels

A project is considered to have a significant noise impact where it causes an adopted noise standard to be exceeded for the project site or for adjacent sensitive receptors. Therefore, it is important to consider the existing noise environment when considering impacts associated with the introduction of new noise sources in an area. In community noise assessments, it is "generally not significant" if noise-sensitive sites are not located within the project vicinity, or if permanent increases in community noise levels associated



with implementation of the project would not exceed an increase of three dB at noise-sensitive locations in the project vicinity.<sup>3</sup> A limitation in using a single value to evaluate an impact related to a noise level increase would be the failure to account for the preexisting ambient noise environment to which a person has become accustomed. Studies assessing the percentage of people highly annoyed by changes in ambient noise levels indicate that when ambient noise levels are low, a greater change is needed to cause a response. As ambient noise levels increase, a lesser change in noise levels is required to elicit significant annoyance. The significance criteria listed in Table 5.6-6, Significance of Changes in Cumulative Noise Exposure, are based on published guidance from the Federal Interagency Committee on Noise (FICON), the California Department of Transportation (Caltrans), and OPR, and considered to correlate well with human response to permanent changes in ambient noise levels.

**Table 5.6-6  
Significance of Changes in Cumulative Noise Exposure**

Ambient Noise Level Project (Ldn or CNEL)	Significant Impact Assumed to Occur if the Ambient Noise Level is Increased by:
< 60 dBA	5.0 dBA or more
> 60 dBA	3.0 dBA or more

Sources: California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

## 5.6.5 PROJECT IMPACTS AND MITIGATION MEASURES

### SHORT-TERM CONSTRUCTION NOISE

- CONSTRUCTION-RELATED ACTIVITIES RESULTING FROM IMPLEMENTATION OF THE GENERAL PLAN UPDATE COULD RESULT IN A SUBSTANTIAL TEMPORARY OR PERIODIC INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT VICINITY ABOVE LEVELS EXISTING WITHOUT THE PROJECT NOR WOULD IT EXPOSE PERSONS TO OR GENERATE EXCESSIVE GROUND-BORNE NOISE LEVELS.**

**Impact Analysis:** Typical activities associated with construction are a highly noticeable temporary noise source. Noise from construction activities is generated by two primary sources: (1) the transport of workers and equipment to construction sites and (2) the noise related to active construction equipment. These noise sources can be a nuisance to local residents and businesses or unbearable to sensitive receptors (i.e., residences, hospitals, senior centers, schools, day care facilities, etc.).

While implementation of the General Plan Update would not directly result in new development within the City, it projects additional development within the City, which would generate noise during construction activities. Construction noise levels are dependent upon the specific locations, site plans, and construction details of individual projects, which have not yet been identified. Construction would be localized and would occur intermittently for varying periods of time. Because specific project-level information is not available at this time, it is not possible to quantify the construction noise impacts at

<sup>3</sup> California Department of Transportation, *Technical Noise Supplement*, September 2013.



specific sensitive receptors. Construction of individual developments associated with implementation of the General Plan Update could temporarily increase the ambient noise environment in the vicinity of each individual project. Pursuant to Municipal Code Section 5.04.70, *Special Provisions*, construction of future projects would be limited to occur between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday, and between 9:00 a.m. and 8:00 p.m. on Sunday's and Federal holidays per the City's Noise Ordinance. Development projects would be subject to environmental review, and specific mitigation measures would be implemented to reduce noise impacts during construction.

Construction noise levels would be reduced through implementation of Mitigation Measure NOI-1, which would require construction best management practices (BMPs) for projects subject to CEQA review (i.e., non-exempt projects). Further, Municipal Code Chapter 12.04, Vehicle Size, Weight, and Load, would require heavily loaded construction trucks to route away from residential streets, which would further reduce construction noise. Therefore, compliance and/or adherence to the City's Noise Ordinance, Municipal Code, and recommended Mitigation Measure NOI-1, would reduce short-term construction noise impacts to less than significant levels.

## **Proposed General Plan Update Goals and Policies:**

### **NOISE ELEMENT**

#### **Goal 3: Minimize current and future non-transportation related noise impacts.**

- Policy 3.2:** Incorporate noise-reducing features within the site design of new construction or rehabilitation projects impacted by non-transportation-related noise for items such as, but not limited to: parking and loading areas, ingress/egress points, HVAC units, entertainment speakers, and refuse collection areas.
- Policy 3.3:** Direct noise emanating from stationary noise sources, construction activities, and special events away from noise-sensitive land uses.

#### **Mitigation Measures:**

NOI-1 For projects that are subject to California Environmental Quality Act (CEQA) review (i.e., non-exempt projects), project applicants shall ensure through contract specifications that construction best management practices (BMPs) will be implemented by all project contractors to reduce construction noise levels. Contract specifications shall be included in construction documents, which shall be reviewed and approved by the City Development Services Department prior to issuance of a grading or building permit (whichever is issued first). BMPs to reduce construction noise levels may include, but are not limited to, the following:

- Ensure that construction equipment is properly muffled according to industry standards and is in good working condition.



- Place noise-generating construction equipment and construction staging areas away from sensitive uses.
- Construction activities shall occur between the hours of 7:00 a.m. and 8:00 p.m. Monday through Saturday, pursuant to Section 5.04.070(5) of the Rancho Santa Margarita Noise Ordinance.
- Implement noise attenuation measures, as needed, which may include, but are not limited to, temporary noise barriers or noise blankets around stationary construction noise sources.
- Use electric air compressors and similar power tools rather than diesel equipment, where feasible.
- Construction-related equipment, including heavy-duty equipment, motor vehicles, and portable equipment, shall be turned off when not in use for more than five minutes.
- Construction hours, allowable workdays, and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action, and report the action taken to the reporting party and the Development Services Department.

**Level of Significance After Mitigation:** Less Than Significant Impact With Mitigation Incorporated.

## SHORT-TERM CONSTRUCTION VIBRATION

- **CONSTRUCTION-RELATED ACTIVITIES RESULTING FROM IMPLEMENTATION OF THE GENERAL PLAN UPDATE COULD EXPOSE PERSONS TO OR GENERATE EXCESSIVE GROUND-BORNE VIBRATION.**

**Impact Analysis:** Vibration is the periodic oscillation of a medium or object with respect to a given reference point. Sources of vibration include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) and those introduced by human activity (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, (e.g., machinery) or transient in nature (e.g., explosions). Vibration levels can be depicted in terms of amplitude and frequency relative to displacement, velocity, or acceleration. Vibration amplitudes are commonly expressed in peak particle velocity (PPV) or root-mean-square (RMS) vibration velocity. PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings. PPV and RMS vibration velocity are normally described in inches per second (inches/second). Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. The response of the human body to vibration relates well to



average vibration amplitude; therefore, vibration impacts on humans are evaluated in terms of RMS vibration velocity. Similar to airborne sound, vibration velocity can be expressed in decibel notation as vibration decibels (VdB). The logarithmic nature of the decibel serves to compress the broad range of numbers required to describe vibration.

The types of construction vibration impact include human annoyance and building damage. Human annoyance occurs when construction vibration rises significantly above the threshold of human perception for extended periods of time. Building damage can be cosmetic or structural. Ordinary buildings that are not particularly fragile would not experience any cosmetic damage (e.g., plaster cracks) at distances beyond 25 feet. This distance can vary substantially depending on the soil composition and underground geological layer between the vibration source and the receiver. In addition, not all buildings respond similarly to vibration generated by construction equipment. Construction activities that may result under the General Plan Update have the potential to generate low levels of ground-borne vibration. Table 5.6-7, Typical Vibration Levels for Construction Equipment, identifies various vibration velocity levels for types of construction equipment that would operate within the City during construction.

**Table 5.6-7  
Typical Vibration Levels for Construction Equipment**

Equipment	Approximate ground velocity in decibels at 25 feet (VdB)	Approximate ground velocity in decibels at 50 feet (VdB)
Pile Driver (impact)	104	98
Large Bulldozer	87	81
Loaded Trucks	86	80
Jackhammer	79	73
Small Bulldozer	58	52

Note: Root mean square amplitude ground velocity in decibels (VdB) referenced to one micro-inch/second.  
Source: Federal Transit Administration, Transit Noise and Vibration Impact Assessment Guidelines, May 2006.

Similar to noise, ground-borne vibration would attenuate at a rate of approximately six VdB per doubling of distance. The ground-borne vibration generated during construction activities would primarily impact existing sensitive uses that are located adjacent to or within the vicinity of specific projects. Based upon the information provided in Table 5.6-7, vibration levels could reach up to 87 VdB for typical construction activities (and up to 104 VdB if pile driving activities were to occur) at sensitive uses located within 25 feet of construction. For sensitive uses that are located at or within 25 feet of potential project construction sites, sensitive receptors at these locations may experience vibration levels during construction activities that exceed the Federal Transit Administration (FTA) vibration impact threshold of 85 VdB for human annoyance. However, pursuant to Mitigation Measure NOI-2, should construction activities take place within 25 feet of an occupied structure, a project-specific vibration impact analysis shall be conducted. In addition, Mitigation Measure NOI-3 would prohibit pile driving within 50 feet of historic structures and instead utilize alternative installation methods; a preconstruction survey of all designated historic buildings within 50 feet of proposed construction activities; and vibration monitoring prior to and during pile driving operations occurring within 100 feet of historic structures.



Compliance and/or adherence to the City's Noise Ordinance and Mitigation Measures NOI-2 and NOI-3 would reduce short-term vibration impacts to a less than significant level.

**Proposed General Plan Update Goals and Policies:** Refer to the General Plan Update goals and policies cited above.

**Mitigation Measures:**

NOI-2 Projects that are subject to California Environmental Quality Act (CEQA) review (meaning, non-exempt projects) with construction activities within 25 feet of an occupied sensitive use (i.e., historical buildings, residential, senior care facilities, hospitals, and schools/day care centers) shall be required to prepare a project-specific vibration impact analysis to evaluate potential construction vibration impacts associated with the project, and to determine any specific vibration control mechanisms that shall be incorporated into the project's construction bid documents to reduce such impacts. Contract specifications shall be included in construction documents, which shall be reviewed and approved by the City Engineer prior to issuance of a grading permit.

NOI-3 Projects that are subject to California Environmental Quality Act (CEQA) review (meaning, non-exempt projects) within 100 feet of a historic structure(s) shall implement the following measures to reduce the potential for architectural/structural damage resulting from elevated groundborne noise and vibration levels:

- Pile driving within 50 feet of any historic structure(s) shall utilize alternative installation methods, such as pile cushioning, jetting, predrilling, cast-in-place systems, and resonance-free vibratory pile drivers.
- As accessible, a preconstruction survey of all eligible for listing or listed historic buildings under the National Register of Historic Places, California Register of Historic Resources, and/or local historic database(s) within 50 feet of proposed construction activities shall be conducted. Fixtures and finishes within 50 feet of construction activities susceptible to damage shall be documented photographically and in writing. The preconstruction survey shall determine conditions that exist before construction begins for use in evaluating any damage caused by construction activities. Construction vibration monitoring shall be conducted at the edges of these historic properties and construction activities shall be reduced, as needed, to ensure no damage occurs.
- Vibration monitoring shall be conducted prior to and during pile driving operations occurring within 100 feet of the historic structure(s). Contractors shall limit construction vibration levels during pile driving and impact activities in the vicinity of the historic structure(s) in accordance with the California Department of Transportation (Caltrans) *Transportation and Construction Vibration Guidance Manual*, dated September 2013.



**Level of Significance After Mitigation:** Less Than Significant Impact With Mitigation Incorporated.

## LONG-TERM OPERATIONAL IMPACTS

- FUTURE NOISE LEVELS ASSOCIATED WITH IMPLEMENTATION OF THE GENERAL PLAN UPDATE COULD RESULT IN A SUBSTANTIAL PERMANENT INCREASE IN AMBIENT NOISE LEVELS IN THE PROJECT VICINITY ABOVE LEVELS WITHOUT THE PROJECT AND EXPOSE PERSONS TO OR GENERATE NOISE LEVELS IN EXCESS OF STANDARDS ESTABLISHED IN THE LOCAL GENERAL PLAN OR NOISE ORDINANCE, OR APPLICABLE STANDARDS OF OTHER AGENCIES.**

### Impact Analysis:

#### MOBILE SOURCES

Existing and future noise levels have been calculated for various roadway segments within the City of Rancho Santa Margarita. [Table 5.6-4](#) outlines the City's existing roadway noise levels and [Exhibit 5.6-2](#) illustrates the existing noise contours. [Table 5.6-8, Year 2040 Traffic Noise Levels](#), outlines the City's future roadway noise levels under proposed General Plan Update development conditions and [Exhibit 5.6-4, General Plan Year 2040 Noise Contours](#), illustrates General Plan Update noise contours.

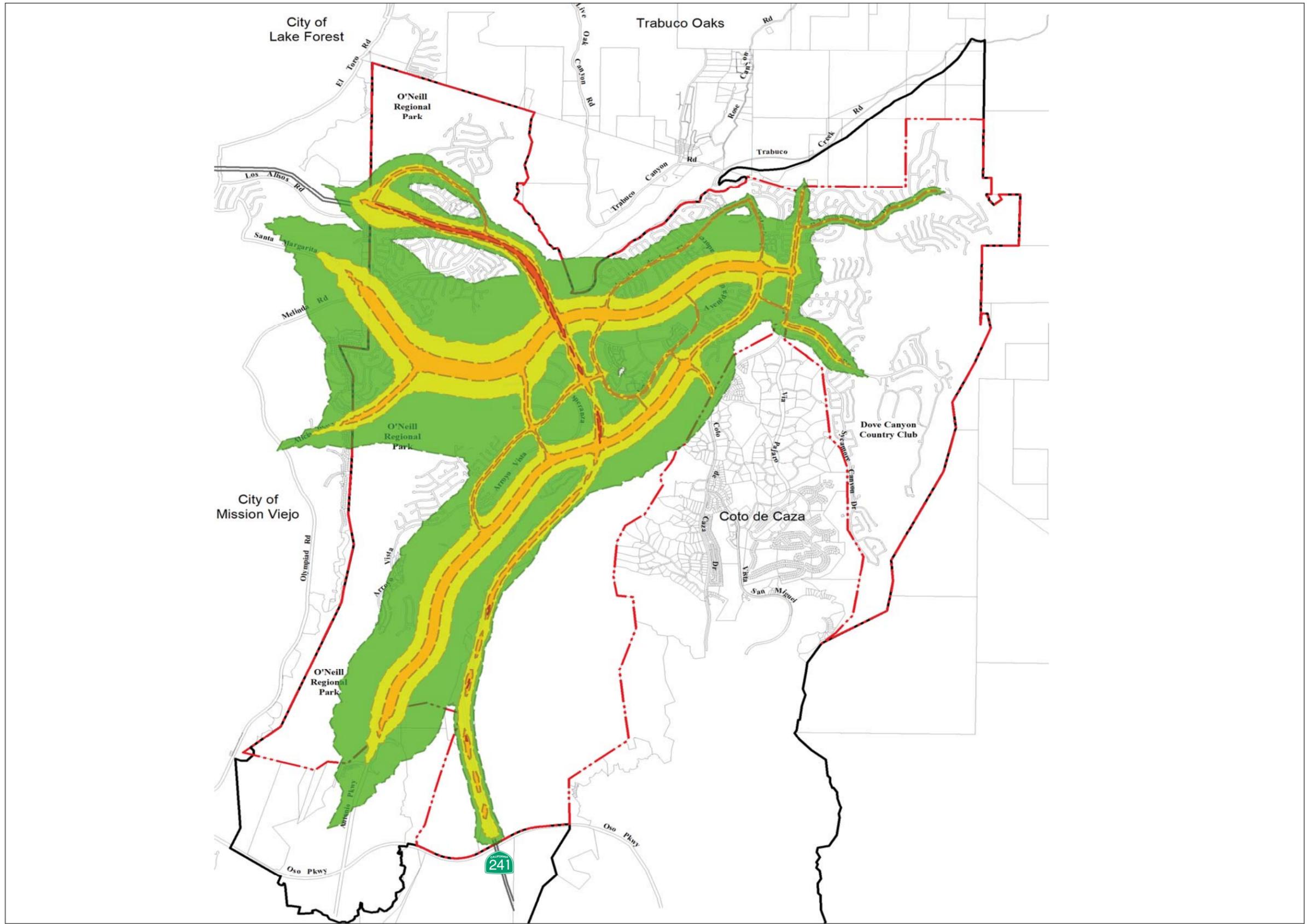
**Table 5.6-8  
Year 2040 Traffic Noise Levels**

Roadway Segment	Year 2040				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet) <sup>1</sup>		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
<b>Alas De Paz</b>					
Antonio Parkway to Plano Trabuco Road	8,900	61.2	153	49	15
<b>Alicia Parkway</b>					
Santa Margarita Parkway to City Limits	25,400	69.2	1,026	324	103
<b>Alma Aldea</b>					
Avenida De Las Banderas to La Promesa	13,100	64.1	307	97	31
La Promesa to Santa Margarita Parkway	7,900	60.8	136	43	14
<b>Avenida Empresa</b>					
Santa Margarita Parkway to Aventura	31,400	67.8	736	233	74
Aventura to Avenida De Las Banderas	25,900	67.0	607	192	61
Avenida De Las Banderas to Antonio Parkway	14,100	64.3	330	104	33
<b>Antonio Parkway</b>					
City Limits to Avenida De Las Banderas	36,300	71.8	1865	590	187
Avenida De Las Banderas to Valeroso	30,200	71.0	1,552	491	155
Valeroso to Avenida Empresa	30,300	70.9	1,556	492	156
Avenida Empresa to Bienvenidos	31,300	71.0	1607	508	161
Bienvenidos to La Promesa/Coto De Caza Drive	32,800	71.3	1,686	533	169
La Promesa/Coto De Caza Drive to Santa Margarita Parkway	18,400	66.6	573	181	57
Santa Margarita Parkway to Avenida De Las Flores	5,000	61.0	156	49	16

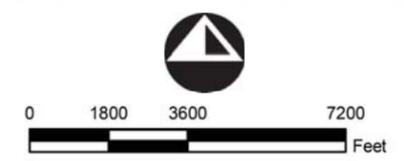


**Table 5.6-8 [continued]  
Year 2040 Traffic Noise Levels**

Roadway Segment	Year 2040				
	ADT	dBA @ 100 Feet from Roadway Centerline	Distance from Roadway Centerline to: (Feet) <sup>1</sup>		
			60 CNEL Noise Contour	65 CNEL Noise Contour	70 CNEL Noise Contour
<b>Avenida De Las Banderas</b>					
Antonio Parkway to Arroyo Vista	12,400	65.1	386	122	39
Arroyo Vista to Avenida Empresa	13,400	65.5	417	132	42
Avenida Empresa to Comercio	12,000	64.9	373	118	37
Comercio to Aventura/Esperanza	12,100	65.0	376	119	38
Aventura/Esperanza to Avenida De Las Flores/Alma Aldea	19,300	67.1	600	190	60
<b>Avenida De Las Flores</b>					
Avenida De Las Banderas to Santa Margarita Parkway	16,750	65.0	393	124	39
Santa Margarita Parkway to Via Con Dios	15,500	64.8	363	115	36
Via Con Dios to Avenida De Las Fundadores	9,450	62.9	221	70	22
Avenida De Las Fundadores to Antonio Parkway	5,600	60.6	131	42	13
<b>Bienvenidos</b>					
Antonio Parkway to Alma Aldea	4,600	59.6	108	34	11
<b>Coto De Caza Drive</b>					
Antonio Parkway to Entry Gate	24,500	65.3	422	134	42
<b>Dove Canyon Drive</b>					
Plano Trabuco Road to Entry Gate	15,300	66.0	475	150	48
<b>La Promesa</b>					
Antonio Parkway to Alma Aldea	18,000	62.7	222	70	22
<b>Los Alisos Boulevard</b>					
SR-241 Eastbound Ramps to Altisima	13,800	66.8	557	176	56
<b>Melinda Road</b>					
Altisima to Rancho Trabuco	11,100	64.7	345	109	34
Rancho Trabuco to SR-241 Overcrossing	10,300	58.8	88	28	9
<b>Plano Trabuco Road</b>					
Dove Canyon Road to Alas De Paz	15,800	60.6	136	43	14
Alas De Paz to Santa Margarita Parkway	12,200	65.1	379	120	38
Santa Margarita Parkway to Robinson Ranch Road	20,400	66.1	479	151	48
Robinson Ranch to Trabuco Canyon Road	10,200	63.4	239	76	24
<b>Robinson Ranch Road</b>					
East of Plano Trabuco	9,250	61.4	159	50	16
<b>Santa Margarita Parkway</b>					
Melinda Road to Alicia Parkway	42,700	72.5	2,193	694	219
Alicia Parkway to Avenida Empresa	64,600	74.2	3,320	1,050	332
Avenida Empresa to Avenida De Las Flores	53,200	72.3	2148	679	215
Avenida De Las Flores to Antonio Parkway	63,100	72.1	1964	621	196
Antonio Parkway to Plano Trabuco Road	26,000	68.2	809	256	81
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level					
Note:					
1. Roadway noise levels and contours were calculated using the FHWA RD-77-108 model.					
Source: Urban Crossroads, City of Rancho Santa Margarita General Plan Traffic Impact Analysis, August 2018.					



- LEGEND**
- 75 CNEL
  - 70 CNEL
  - 65 CNEL
  - 60 CNEL
  - City Boundary
  - Sphere of Influence



Source: Michael Baker International, 2018.



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The following is a summary of the calculated traffic noise levels associated with development under the General Plan Update:

- Nine of the roadway segments modeled (along Antonio Parkway and Santa Margarita Parkway) would generate noise levels above 70 dBA CNEL at 100 feet from centerline.
- 15 of the roadway segments modeled (along Alicia Parkway, Antonio Parkway, Avenida De Las Banderas, Avenida De Las Flores, Avenida Empresa, Coto De Caza Drive, Dove Canyon Drive, Los Alisos Boulevard, Plano Trabuco Road, and Santa Margarita Parkway) would generate noise levels between 65 dBA CNEL and 70 dBA CNEL at 100 feet from the centerline.
- 14 modeled roadway segments (along Alas De Paz, Alma Aldea, Antonio Parkway, Avenida De Las Banderas, Avenida De Las Flores, Avenida Empresa, La Promesa, Melinda Road, Plano Trabuco Road, and Robinson Ranch Road) would generate noise levels between 60 dBA CNEL and 65 dBA CNEL at 100 feet from the centerline.

It is noted that the computer noise model used to project the potential ambient noise levels with implementation of the General Plan Update does not consider the existing noise attenuating features such as sound walls, buildings, landscaping, or topography. As such, the roadway noise contours may not reflect true noise conditions and may be conservative in such aspects. Intervening structures or other noise-attenuating obstacles between the roadway and sensitive receptors may reduce roadway noise levels at the receiving receptor. However, there would almost certainly be receptors that would experience roadway noise levels very similar to those indicated by the noise contours.

With implementation of the General Plan Update, some residential uses would experience noise levels that would exceed the City's Noise and Land Use Criteria Compatibility Criteria (refer to [Table 5.6-2](#)) due to the increase in roadway noise. However, long-term mobile traffic noise impacts would be less than significant. It is noted that individual development projects would be reviewed for project-specific impacts during any required environmental review. If project-specific significant impacts are identified, specific mitigation measures will be required.

## STATIONARY SOURCES

Commercial and industrial land uses would be located near sensitive receptor areas. These uses currently generate occasional stationary noise impacts. Primary noise sources associated with these facilities are due to customer trips, delivery trucks, heavy machinery, air compressors, generators, outdoor loudspeakers, and gas vents. Residential uses would create stationary noise such as children playing, amplified music, and mechanical equipment. Other significant stationary noise sources within the City include construction activity, street sweepers, and gas-powered leaf blowers.



## Residential Uses

Residential uses make up approximately 20 percent (1,638 acres) of the total land in the City. Future development of residential lots would create stationary noise typical of any new residential development. Noise that is typical of single-family residential areas includes children playing, pets, amplified music, pool and spa equipment operation, mechanical equipment, woodworking, car repair, and home repair. Noise from residential stationary sources would primarily occur during the "daytime" activity hours assuming noises decrease during nighttime hours (e.g., people go to sleep and/or close their windows), and thus, result in a less than significant impact.

## Commercial Uses

As discussed under Section 5.6.3, *Existing Environmental Setting*, noise sources associated with commercial uses are typically caused by delivery trucks, trash trucks, air compressors, generators, outdoor loudspeakers, and gas venting. Compliance and/or adherence to the City's Noise Ordinance would reduce these impacts to a less than significant level.

## Mechanical Equipment

Typical mechanical equipment associated with stationary sources includes heating, ventilation, and air conditioning units (HVAC). Actual activity levels would vary from season to season and day to day, and noise level reference data for the HVAC units are only available for high activity levels more characteristic of conditions during daytime hours on a warm summer day. Typical HVAC units would operate in unoccupied mode throughout the entire nighttime period, using a temperature threshold for cooling that is unlikely to be triggered during those hours. HVAC related noise levels would be substantially lower during the nighttime hours than during the loudest daytime hour. As discussed above, temporal variations in noise emissions from the HVAC units are expected to be complex and cannot be accurately distilled into a single diurnal pattern. It is reasonable to expect that, for at least a single daytime hour during warmer times of the year, all or nearly all of the HVAC units could be operating simultaneously and nearly continuously. New development may include HVAC units, thus adjacent sensitive uses may experience noise levels that exceed City Noise Standards. However, implementation of Mitigation Measure NOI-4 would reduce noise generated by mechanical equipment through placement away from sensitive receptors and utilization of acoustical shielding. Compliance and/or adherence to the City's Noise Ordinance, and Mitigation Measure NOI-4 would reduce these impacts to less than significant levels.

## Slow-Moving Trucks (Deliveries)

In commercial and business areas, noise sources at loading areas may include maneuvering and idling trucks, truck refrigeration units, fork lifts, banging and clanging of equipment (i.e., hand carts and roll-up doors), noise from public address systems, and voices of truck drivers and employees. Compliance and/or adherence to the City's Noise Ordinance would reduce these impacts to less than significant levels.



## Parking Areas

Traffic associated with parking lots is not of sufficient volume to exceed community noise standards that are based on a time averaged scale such as the CNEL scale. However, the instantaneous maximum sound levels generated by a car door slamming, an engine starting-up, and car passing by may be an annoyance to adjacent sensitive receptors. Conversations in parking areas may also be an annoyance to adjacent sensitive receptors. Compliance and/or adherence to the City's Noise Ordinance would reduce these impacts to less than significant levels.

## Landscape Maintenance

Implementation of the General Plan Update would introduce new landscaping requiring periodic maintenance. Noise generated by maintenance equipment such as gasoline-powered lawnmowers, leaf-blowers, or hedge trimmers could be a nuisance to nearby sensitive receptors. Maintenance activities would be conducted during daytime hours for brief periods of time and would increase ambient noise levels.

In conclusion, all mobile and stationary source impacts would be reduced to less than significant levels by complying with the City's Noise Ordinance and mitigation measures.

## Proposed General Plan Update Goals and Policies:

### NOISE ELEMENT

**Goal 1: Minimize the effects of noise through land use planning, project design and development review.**

**Policy 1.1:** Consider the compatibility of new development and reuse/revitalization projects with the noise environment by utilizing noise/land use compatibility standards and the Noise Contours Map as a guide.

**Policy 1.2:** Require the inclusion of noise-reducing features within the site design of development and reuse/revitalization projects to reduce impacts on noise-sensitive uses.

**Policy 1.3:** Ensure proposed development meets noise insulation standards for noise-sensitive uses.

**Goal 2: Minimize transportation-related noise impacts.**

**Policy 2.1:** Reduce and avoid excessive transportation-related noise levels to noise-sensitive land uses that may occur due to the transition of existing uses or the development of noise-sensitive uses located near the toll road (SR-241) or major arterials, through the use of noise control measures within the site design of development and reuse/revitalization projects.



**Policy 2.2:** Identify and implement a system of truck routes that provide for the effective transport of goods while minimizing impacts on noise-sensitive land uses.

**Goal 3: Minimize current and future non-transportation related noise impacts.**

**Policy 3.1:** Reduce the impacts of noise-producing land uses, activities, and businesses on noise-sensitive land uses for items such as, but not limited to: delivery and service hours, parking and loading areas, ingress/egress points, landscape maintenance activities, and refuse collection areas.

**Policy 3.2:** Incorporate noise-reducing features within the site design of new construction or rehabilitation projects impacted by non-transportation-related noise for items such as, but not limited to: parking and loading areas, ingress/egress points, HVAC units, entertainment speakers, and refuse collection areas.

**Policy 3.3:** Direct noise emanating from stationary noise sources, construction activities, and special events away from noise-sensitive land uses.

**Policy 3.4:** Orient mixed-use and multi-family residential units and the location of balconies and common recreation areas away from major roadways and other noise sources.

**Mitigation Measures:**

NOI-4 Prior to issuance of any building permits for projects that are subject to California Environmental Quality Act (CEQA) review (meaning, non-exempt projects) adjacent to sensitive uses (i.e., residential, senior care facilities, hospitals, and schools/day care centers), the applicant shall submit plans for review and approval by the City Engineer that demonstrate all noise from HVAC equipment will be shielded from sensitive uses such that stationary noise associated with the HVAC equipment is 65 dBA or less when measured 50 feet from the noise source.

**Level of Significance After Mitigation:** Less Than Significant Impact With Mitigation Incorporated.

### 5.6.6 CUMULATIVE IMPACTS

#### CUMULATIVE SHORT-TERM CONSTRUCTION NOISE

- **CUMULATIVE SHORT-TERM CONSTRUCTION NOISE AS A RESULT OF IMPLEMENTATION OF THE GENERAL PLAN UPDATE COULD RESULT IN CUMULATIVELY CONSIDERABLE IMPACTS.**

**Impact Analysis:** Due to Rancho Santa Margarita's history as a planned community, the City is almost fully developed, leaving little room for significant new development (with the exception of Chiquita Ridge and the Northeast Future Planned Community). Based on historical development patterns and reasonable assumptions of development, it is



anticipated that new development would occur with only a limited number of parcels being developed at the maximum density or intensity. Further, it is speculative to determine at this time where new development or redevelopment would occur within the City. Thus, it is unlikely the City would experience intensive construction activity with implementation of the General Plan Update. Short-term construction noise is a localized activity and would affect only land uses that are immediately adjacent to a specific project site. Each construction project would have to comply with the local noise ordinance, as well as mitigation measures that may be prescribed pursuant to CEQA provisions that require significant impacts to be reduced to the extent feasible. In addition, it is unlikely that all construction projects would occur simultaneously within the City. Thus, a less than significant impact would occur.

**Proposed General Plan Update Goals and Policies:** Refer to the General Plan Update goals and policies cited above.

**Mitigation Measures:** Refer to Mitigation Measures NOI-1 through NOI-3.

**Level of Significance After Mitigation:** Less Than Significant Impact With Mitigation Incorporated.

## CUMULATIVE LONG-TERM OPERATIONAL IMPACTS

- **CUMULATIVE LONG-TERM OPERATIONAL NOISE AS A RESULT OF IMPLEMENTATION OF THE GENERAL PLAN UPDATE COULD RESULT IN CUMULATIVELY CONSIDERABLE IMPACTS.**

**Impact Analysis:** Cumulative impacts are based upon assumptions made within [Appendix E](#), and [Section 5.4, \*Traffic and Circulation\*](#), to address noise impacts within the City of Rancho Santa Margarita. Cumulative stationary noise sources would generally be less than significant with compliance with the City's Noise Ordinance. However, as traffic noise tends to be the main source of noise within the City of Rancho Santa Margarita, the analysis below considers whether the increase in traffic noise would be noticeable and significant per the applicable criteria.

### MOBILE SOURCES

[Table 5.6-9, \*Cumulative Noise Scenario\*](#), compares the "Existing" scenario to the "General Plan Year 2040" scenario and outlines the anticipated noise level changes adjacent to specific roadways in the City as a direct result of implementation of the General Plan Update. It should be noted that as ambient noise levels increase, a smaller degree of change in noise levels is required to elicit significant annoyance; refer to the significance criteria listed in [Table 5.6-6](#). Existing noise levels below 60 dBA would require an increase of five dBA or more to be significant, while existing noise levels that are 60 dBA or above would require an increase of three dBA or more to be significant.



**Table 5.6-9  
Cumulative Noise Scenario**

Roadway Segment <sup>1</sup>	Existing		Year 2040		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact? <sup>2</sup>
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline		
<b>Alas De Paz</b>						
Antonio Parkway to Plano Trabuco Road	8,900	61.3	8,900	61.2	-0.1	No
<b>Alicia Parkway</b>						
Santa Margarita Parkway to City Limits	24,700	69.1	25,400	69.2	0.1	No
<b>Alma Aldea</b>						
Avenida De Las Banderas to La Promesa	9,600	62.8	13,100	64.1	1.3	No
La Promesa to Santa Margarita Parkway	6,400	59.8	7,900	60.8	1.0	No
<b>Antonio Parkway</b>						
City Limits to Avenida De Las Banderas	34,800	71.6	36,300	71.8	0.2	No
Avenida De Las Banderas to Valerosa	27,700	70.6	30,200	71.0	0.4	No
Valerosa to Avenida Empresa	27,500	70.5	30,300	70.9	0.4	No
Avenida Empresa to Bienvenidos	27,100	70.1	31,300	71.0	0.9	No
Bienvenidos to La Promesa/Coto De Caza Drive	27,200	70.4	32,800	71.3	0.9	No
La Promesa/Coto De Caza Drive to Santa Margarita Parkway	16,950	68.5	18,400	66.6	-1.9	No
Santa Margarita Parkway to Avenida De Las Flores	5,000	61.2	5,000	61.0	-0.2	No
<b>Avenida De Las Banderas</b>						
Antonio Parkway to Arroyo Vista	11,800	64.9	12,400	65.1	0.2	No
Arroyo Vista to Avenida Empresa	13,200	65.4	13,400	65.5	0.1	No
Avenida Empresa to Comercio	8,100	63.2	12,000	64.9	1.7	No
Comercio to Aventura/Esperanza	8,200	63.4	12,100	65.0	1.6	No
Aventura/Esperanza to Avenida De Las Flores/Alma Aldea	14,900	65.9	19,300	67.1	1.2	No
<b>Avenida De Las Flores</b>						
Avenida De Las Banderas to Santa Margarita Parkway	16,750	65.0	16,750	65.0	0.0	No
Santa Margarita Parkway to Via Con Dios	12,150	63.7	15,500	64.8	1.1	No
Via Con Dios to Avenida De Los Fundadores	8,200	62.2	9,450	62.9	0.7	No
Avenida De Los Fundadores to Antonio Parkway	4,450	59.7	5,600	60.6	0.9	No
<b>Avenida Empresa</b>						
Santa Margarita Parkway to Aventura	26,000	67.1	31,400	67.8	0.7	No
Aventura to Avenida De Las Banderas	20,300	65.9	25,900	67.0	1.1	No
Avenida De Las Banderas to Antonio Parkway	12,900	63.9	14,100	64.3	0.4	No
<b>Bienvenidos</b>						
Antonio Parkway to Alma Aldea	4,300	56.6	4,600	59.6	3.0	No
<b>Coto De Caza Drive</b>						
Antonio Parkway to Entry Gate	16,800	63.9	24,500	65.3	1.4	No
<b>Dove Canyon Drive</b>						
Plano Trabuco Road to Entry Gate	15,100	64.7	15,300	66.0	1.3	No
<b>La Promesa</b>						
Antonio Parkway to Alma Aldea	13,100	61.2	18,000	62.7	1.5	No
<b>Los Alisos Boulevard</b>						
SR-241 Eastbound Ramps to Altisima	11,900	66.0	13,800	66.8	0.8	No



**Table 5.6-9 [continued]  
Cumulative Noise Scenario**

Roadway Segment <sup>1</sup>	Existing		Year 2040		Difference in dBA @ 100 feet from Roadway	Potentially Significant Impact? <sup>2</sup>
	ADT	dBA @ 100 Feet from Roadway Centerline	ADT	dBA @ 100 Feet from Roadway Centerline		
<b>Melinda Road</b>						
Altissima to Rancho Trabuco	9,200	63.9	11,100	64.7	0.8	No
Rancho Trabuco to SR-241 Overcrossing	9,400	58.4	10,300	58.8	0.4	No
<b>Plano Trabuco</b>						
Dove Canyon Road to Alas De Paz	15,800	60.6	15,800	60.6	0.0	No
Alas De Paz to Santa Margarita Parkway	12,200	65.1	12,200	65.1	0.0	No
Santa Margarita Parkway to Robinson Ranch Road	13,300	64.2	20,400	66.1	1.9	No
Robinson Ranch Road to Trabuco Canyon Road	4,000	59.1	10,200	63.4	4.3	No
<b>Robinson Ranch Road</b>						
East of Plano Trabuco	10,100	61.7	9,250	61.4	-0.3	No
<b>Santa Margarita Parkway</b>						
Melinda Road to Alicia Parkway	37,000	71.8	42,700	72.5	0.7	No
Alicia Parkway to Avenida Empresa	58,300	73.7	64,600	74.2	0.5	No
Avenida Empresa to Avenida De Las Flores	51,250	72.1	53,200	72.3	0.2	No
Avenida De Las Flores to Antonio Parkway	30,950	69.9	63,100	72.1	2.2	No
Antonio Parkway to Plano Trabuco Road	23,200	67.8	26,000	68.2	0.4	No
ADT = average daily trips; dBA = A-weighted decibels; CNEL = community noise equivalent level						
Notes:						
1. Roadway noise levels and contours were calculated using the FHWA RD-77-108 model. Freeway contours were calculated using TNM 2.5. TNM 2.5 produces graphical contours and does not report distances from the centerline to each contour. Therefore, numerical values for freeway contours are not provided above.						
2. Existing noise levels below 60 dBA would require an increase of five dBA or more to be significant, while existing noise levels that are 60 dBA or above would require an increase of three dBA or more to be significant.						
Source: Michael Baker International, Rancho Santa Margarita General Plan Update Existing Conditions Report, December 2017. Urban Crossroads, City of Rancho Santa Margarita General Plan Traffic Impact Analysis, August 2018.						

As indicated in [Table 5.6-9](#), development assumed under the General Plan Update would not generate a significant audible noise level increase along any of the segments. It should be noted that a 3.0 dBA increase would be experienced along Bienvenidos (Antonio Parkway to Alma Aldea) and a 4.3 dBA increase would be experienced along Plano Trabuco (Robinson Ranch Road to Trabuco Canyon Road). However, both roadway segments contain existing noise levels below 60 dBA and therefore would require an increase of five dBA or more to be significant. Thus, implementation of the General Plan Update would result in a less than significant cumulative noise impact.

## STATIONARY SOURCES

Noise caused by stationary sources would not substantially increase with implementation of the General Plan Update as the City is generally built out. Through implementation of the General Plan Update, it is anticipated that there would be few new stationary sources. In addition, all new stationary noise sources would be required to comply with the provisions and noise standards within the Noise Ordinance. Further, implementation of Mitigation Measure NOI-4 would require mechanical equipment from future development to be placed away from sensitive receptors and incorporate acoustical



shielding methods. Therefore, a less than significant impact would occur with regard to cumulative stationary noise exposure.

**Proposed General Plan Update Goals and Policies:** Refer to the General Plan Update goals and policies cited above.

**Mitigation Measures:** Refer to Mitigation Measure NOI-4.

**Level of Significance After Mitigation:** Less Than Significant Impact With Mitigation Incorporated.

### **5.6.7 SIGNIFICANT UNAVOIDABLE IMPACTS**

Noise impacts associated with implementation of the General Plan Update would be less than significant with implementation of the identified mitigation measures. No significant unavoidable noise impacts would occur as a result of the General Plan Update.

### **5.6.8 SOURCES CITED**

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

California Department of Transportation, *Transportation and Construction-Induced Vibration Guidance Manual*, June 2004.

California Office of Noise Control, *Guidelines for the Preparation and Content of Noise Elements of the General Plan*, February 1976.

City of Rancho Santa Margarita, *City of Rancho Santa Margarita Municipal Code*, Chapter 5.04, Noise Control.

Federal Transit Administration, *Transit Noise and Vibration Impact Assessment Guidelines*, May 2006.

Harris, Cyril M., *Handbook of Noise Control*, 1979.

Michael Baker International, *Rancho Santa Margarita General Plan Update Existing Conditions Report*, December 2017.

Office of Planning and Research, California, *General Plan Guidelines*, July 2017.

Urban Crossroads, *City of Rancho Santa Margarita General Plan Traffic Impact Analysis*, August 2018.