5.10 NOISE

This section of the Draft Environmental Impact Report (DEIR) discusses the fundamentals of sound; examines federal, state, and local noise guidelines, policies, and standards; reviews noise levels at existing receptor locations; evaluates potential noise impacts associated with the City of Industry General Plan Update; and provides mitigation to reduce noise impacts at noise-sensitive locations. This section of the DEIR evaluates the potential for implementation of the City of Industry General Plan Update to result in noise impacts in the City, its Sphere of Influence (SOI), and surrounding areas adjacent to the City. Noise calculations on which this analysis is based are included in Appendix E, *Noise Monitoring and Modeling Data.*

5.10.1 Environmental Setting

Noise Descriptors

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as “noisiness” or “loudness.”

The following are brief definitions of terminology used in this section:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}).** The mean of the noise level, energy averaged over the measurement period.

- **Statistical Sound Level (L_n).** The sound level that is exceeded “n” percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the “median sound level.” The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the “intrusive sound level.” The L_{90} is the sound level exceeded 90 percent of the time and is often considered the “effective background level” or “residual noise level.”

- **Day-Night Sound Level (L_{dn} or DNL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

- **Community Noise Equivalent Level (CNEL).** The energy-average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the levels occurring during the period from 7:00 PM to 10:00 PM and 10 dB added to the sound levels occurring during the period from 10:00 PM to 7:00 AM.

Characteristics of Sound

When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). The human hearing system is not equally sensitive to sound at all frequencies. Therefore, to approximate the human, frequency-dependent response, the A-weighted filter system is used to adjust measured sound levels. The normal range of human hearing extends from approximately 0 dBA (the threshold of detection) to 140 dBA (the threshold of pain).

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale to better account for the large variations in pressure amplitude (the above range of human hearing, 0 to 140 dBA, represents a ratio in pressures of one hundred trillion to one). All noise levels in this study are relative to the industry-standard pressure reference value of 20 micropascals. Because of the physical characteristics of noise transmission and perception, the relative loudness of sound does not closely match the actual amounts of sound energy. Table 5.10-1 presents the subjective effect of changes in sound pressure levels.

Table 5.10-1
Change in Apparent Loudness

± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen 2009.

Sound is generated from a source and the decibel level decreases as the distance from that source increases. Sound dissipates exponentially with distance from the noise source. This phenomenon is known as spreading loss or distance attenuation.

When sound is measured for distinct time intervals, the statistical distribution of the overall sound level during that period can be obtained. For example, L_{50} is the noise level that is exceeded 50 percent of the time. Similarly, the L_{02}, L_{08}, and L_{25} values are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour. The energy-equivalent sound level (L_{eq}) is the most common parameter associated with community noise measurements. The L_{eq} metric is a single-number noise descriptor of the energy-average sound level over a given period of time. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values are the minimum and maximum root-mean-square (RMS) noise levels obtained over the stated measurement period.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and nighttime hours, state law requires that, for planning purposes and to account for this increased receptiveness of noise, an artificial decibel increment is to be added to quiet-time noise levels to calculate the 24-hour CNEL noise metric.

Psychological and Physiological Effects of Noise

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions, thereby affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA results in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. For community environments, the ambient or background noise problem is widespread and generally more concentrated in urban areas than in outlying, less-developed areas. Elevated ambient noise levels can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance. Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level (SPL) number means. To help relate noise level values to common experience, Table 5.10-2 shows typical noise levels from noise sources.

Table 5.10-2
Typical Noise Levels

Common Outdoor Activities	*Noise Level (dBA)*	*Common Indoor Activities*
	110	Rock Band
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 300 feet	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2009.

Vibration Fundamentals

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. Vibration is normally associated with activities such as railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is the velocity, and the rate of change of the speed is the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During project construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure. These types of vibration are best measured and described in terms of velocity and acceleration.

The three main types of waves associated with groundborne vibrations are surface or Rayleigh waves, compression or P-waves, and shear or S-waves.

- Surface or Rayleigh waves travel along the ground surface. They carry most of their energy along an expanding *cylindrical* wave front, similar to the ripples produced by throwing a rock into a lake. The particle motion is more or less perpendicular to the direction of propagation.

- Compression or P-waves are body waves that carry their energy along an expanding *spherical* wave front. The particle motion in these waves is longitudinal, in a push-pull motion. P-waves are analogous to airborne sound waves.

- Shear or S-waves are also body waves, carrying their energy along an expanding *spherical* wave front. Unlike P-waves, however, the particle motion is transverse, or perpendicular to the direction of propagation.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the RMS velocity. PPV is the maximum instantaneous peak of the vibration signal and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, whereas RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all PPV and RMS velocity levels are in in/sec and all vibration levels are in dB relative to one microinch per second (abbreviated as VdB). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration. Even the more persistent Rayleigh waves decrease relatively quickly as they move away from the source of the vibration. Man-made vibration problems are, therefore, usually confined to relatively short distances (500 to 600 feet or less) from the source (FTA 2006).

Construction operations generally include a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures generate the highest vibrations. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at up to 200 feet. Heavy trucks can also generate groundborne vibrations, which can vary, depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, differential settlement of pavement, etc., all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration from normal traffic flows on streets and freeways with smooth

pavement conditions. Trains generate substantial quantities of vibration due to their engines, steel wheels, heavy loads, and wheel-rail interactions.

Noise- and Vibration-Sensitive Receptors

Certain land uses are particularly sensitive to noise and vibration, including residential, school, and open space/recreation areas where quiet environments are necessary for enjoyment, public health, and safety. Sensitive land uses in the City, SOI, and areas adjacent to the City boundaries includes residences, schools, churches, and recreational areas such as the Golf Course in Industry Hills. Commercial and industrial uses are not considered noise- and vibration-sensitive uses for the purposes of this analysis.

Regulatory Framework

To limit population exposure to physically and/or psychologically damaging as well as intrusive noise levels, the federal government, the State of California, various county governments, and most municipalities in the state have established standards and ordinances to control noise.

State of California Noise Standards

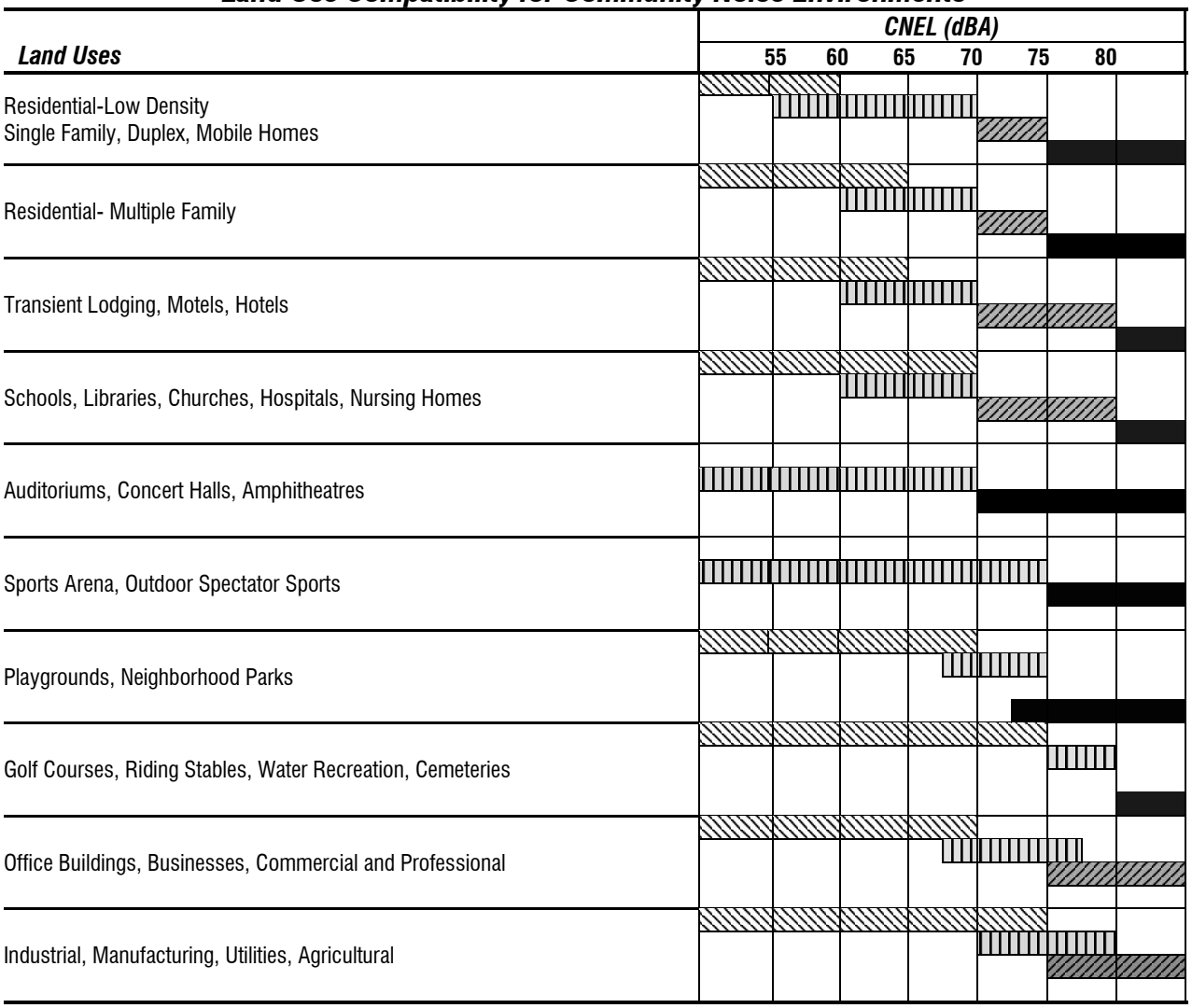
State of California Building Code

The state of California's noise insulation standards are codified in the California Code of Regulations, Title 24, *Building Standards Administrative Code*, Part 2, *California Building Code*. These noise standards are applied to new construction in California for the purpose of interior noise compatibility from exterior noise sources. The regulations specify that acoustical studies must be prepared when noise-sensitive structures, such as residential buildings, schools, or hospitals, are located near major transportation noise sources, and where such noise sources create an exterior noise level of 65 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that the structure has been designed to limit interior noise in habitable rooms to acceptable noise levels. For new residential buildings, schools, and hospitals, the acceptable interior noise limit for new construction is 45 dBA CNEL.

State of California Land Use Compatibility Criteria

Table 5.10-3 presents a land use compatibility chart for community noise adopted by the State of California as part of its General Plan Guidelines. This table provides urban planners with a tool to gauge the compatibility of new land uses relative to existing and future noise levels. This table identifies normally acceptable, conditionally acceptable, and clearly unacceptable noise levels for various land uses. A conditionally acceptable designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in the design. By comparison, a normally acceptable designation indicates that standard construction can occur with no special noise reduction requirements.

Table 5.10-3
Land Use Compatibility for Community Noise Environments



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 the needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction 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 generally should not be undertaken.

Source: California Office of Noise Control. Guidelines for the Preparation and Content of Noise Elements of the General Plan. February 1976. Adapted from the US EPA Office of Noise Abatement Control, Washington D.C. Community Noise. Prepared by Wyle Laboratories. December 1971.

City of Industry Noise Element

The City of Industry adopted a Noise Element in 1974. The City's noise element includes long- and short-range goals regarding siting industries that generate objectionable noise and goals for limiting objectionable noise levels from stationary and mobile sources. However, the City has not adopted policies establishing noise compatibility criteria for evaluating new land uses.

City of Industry Municipal Code

The City of Industry addresses public nuisances under Chapter 1.30 (Public Nuisance) of the City's Municipal Code, and noise from entertainment uses is addressed under Chapter 17.12. However, the City does not have a Noise Ordinance prescribing maximum permissible noise levels. For CEQA analyses and corresponding mitigation recommendations, the City typically defers to the County of Los Angeles's Noise Ordinance. For the purpose of CEQA analysis for projects in the City, the noise standards contained in the County's noise ordinance are used as significance thresholds for noise.

County of Los Angeles Code

The County of Los Angeles regulates noise through the County Code, Title 12, Chapter 12.08 (Noise Control). Pursuant to the County Code, the county restricts noise levels generated at a property from exceeding certain noise levels for extended periods of time.

Exterior Noise Standards

The county applies the Noise Control Ordinance standards summarized in Table 5.10-4 to non-transportation fans, blowers, pumps, turbines, saws, engines, and other like machinery. These standards do not gauge the compatibility of developments in the noise environment, but provide restrictions on the amount and duration of noise generated at a property, as measured at the property line of the noise receptor. The county's noise ordinance is designed to protect people from objectionable non-transportation noise sources such as music, construction activity, machinery, pumps, and air conditioners. The noise standards in Table 5.10-4, unless otherwise indicated, apply to all property within a designated noise zone.

Table 5.10-4
County of Los Angeles Exterior Noise Standards

Noise Zone	Time Period	Maximum Permissible Noise Level (dBA)[1,2]				
		L_{50}	L_{25}	L_{08}	L_{02}	L_{max}
Noise-Sensitive Area	Anytime	45	50	55	60	65
Residential Properties	10 PM to 7 AM	45	50	55	60	65
	7 AM to 10 PM	50	55	60	65	70
Commercial Properties	10 PM to 7 AM	55	60	65	70	75
	7 AM to 10 PM	60	65	70	75	80
Industrial Properties	Anytime	70	75	80	85	90

Source: County of Los Angeles Municipal Code, Section 12.08.390.
Notes:
[1] According to Section 12.08.390, if the ambient noise levels exceed the exterior noise standards in Table 5.10-4, then the ambient noise level becomes the noise standard. If the source of noise emits a pure tone or impulsive noise, the exterior noise levels limits shall be reduced by five decibels.
[2] If the measurement location is on a boundary property between two different zones, the noise limit shall be the arithmetic mean of the maximum permissible noise level limits of the subject zones; except when an intruding noise source originates on an industrial property and is impacting another noise zone, the applicable exterior noise level shall be the daytime exterior noise level for the subject receptor property.

Refuse Collection Vehicles: Under Section 12.08.520 of the County Code, compacting mechanisms on any motor vehicle that compacts refuse between the hours of 10 PM and 6 AM the following day in a residential areas, noise-sensitive zone, or within 500 feet of a residential zone or noise sensitive area is prohibited. Compactors are also prohibited from generating noise levels in excess of 86 dBA when measured at a distance of 50 feet.

Loading/Unloading Operations: Loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10 PM and 6 AM in such a manner as to cause noise levels in excess of the maximum permissible noise level limits is prohibited.

Places of Public Entertainment: The county prohibits persons from operating, playing, or permitting the operation or playing of any radio, television, phonograph, drum, musical instrument, sound amplifier, or similar device that produces, reproduces, or amplifies sound in any place of public entertainment at a sound level greater than 95 dBA at any point when it is normally occupied by a customer, unless a conspicuous and legible sign is near each public entrance, stating "Warning: Sound Levels Within May Cause Hearing Impairment."

Construction Noise

The county prohibits the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7 PM and 7 AM, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance. The county also sets maximum noise levels not to exceed the following maximum noise levels from mobile equipment (non-scheduled, intermittent, short-term operations for less than 30 days) as summarized in Table 5.10-5.

Table 5.10-5
County of Los Angeles Mobile Construction Equipment Noise Limits

	Single-Family Residential	*Multifamily Residential*	*Semi-Residential/ Commercial*
Daily, except Sundays and legal holidays, 7 AM to 8 PM	75 dBA	80 dBA	85 dBA
Daily, 8 PM to 7 AM and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA

Source: County of Los Angeles Municipal Code, Section 12.08.440. For nonscheduled, intermittent, short-term operations for less than 30 days.

Maximum noise levels from stationary equipment (repetitively scheduled and relatively long-term operations of ten days or more) are summarized in Table 5.10-6.

Table 5.10-6
County of Los Angeles Stationary Construction Equipment Noise Limits

	Single-Family Residential	*Multifamily Residential*	*Semi-residential/ Commercial*
Daily, except Sundays and legal holidays, 7 AM to 8 PM	60 dBA	65 dBA	70 dBA
Daily, 8 PM to 7 AM and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

Source: County of Los Angeles Municipal Code, Section 12.08.440. For repetitively scheduled and relatively long-term operations of ten days or more.

Vibration Standards

The City of Industry does not have regulatory standards for construction or operational vibration sources. To evaluate project impacts for CEQA analyses, the City relies on the Los Angeles County Municipal Code to address vibration impacts from the operation of equipment to adjacent uses.

Los Angeles County

The County of Los Angeles Municipal Code, Section 12.08.560, prohibits the operation of any device that creates vibration that is above 0.01 in/sec at or beyond the property boundary of the source if on private property, or at 150 feet from the source if on a public space, or right-of-way. This criterion will be utilized to evaluate vibration-annoyance impacts from industrial uses to nearby sensitive receptors.

Federal Standards

The United States Department of Transportation (Federal Transit Administration [FTA]) provides criteria for acceptable levels of groundborne vibration for various types of special buildings that are sensitive to vibration. The human reaction to various levels of vibration is highly subjective and varies from person to person. The upper end of the range shown for the threshold of perception, or roughly 65 VdB, may be considered annoying by some people. Vibration below 65 VdB may also cause secondary audible effects such as a slight rattling of doors, suspended ceilings/fixtures, windows, and dishes, any of which may result in additional annoyance.

FTA provides criteria to evaluate potential human annoyance due to groundborne vibration caused by frequent and intermittent events. These FTA criteria are used in this analysis to evaluate impacts from transportation sources to sensitive land uses throughout the City.

Table 5.10-7
Groundborne Vibration and Noise Impact Criteria

	Groundborne Vibration Impact Levels (VdB re 1 micro-inch/second)		Groundborne Noise Impact Levels (dB re 20 micropascals)	
Land Use Category	**Frequent Events[1]**	**Infrequent Events[2]**	**Frequent Events[1]**	**Infrequent Events[2]**
Category 1: Buildings where low ambient vibration is essential for interior operations.	65 VdB[3]	65 VdB[3]	NA[4]	NA[4]
Category 2: Residences and buildings where people normally sleep.	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	83 VdB	40 dBA	48 dBA

Source: United States Department of Transportation Federal Transit Administration, "Transit Noise and Vibration Impact Assessment" manual, May 2006.

Notes:

[1] "Frequent Events" is defined as more than 70 vibration events per day.

[2] "Infrequent Events" is defined as fewer than 70 vibration events per day.

[3] This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels.

[4] Vibration-sensitive equipment is not sensitive to groundborne noise.

FTA provides criteria to evaluate potential structural damage associated with vibration, and these FTA criteria are used in this analysis. Structures amplify groundborne vibration and wood-frame buildings, such as typical residential structures, are more affected by ground vibration than heavier buildings. The level at which groundborne vibration is strong enough to cause architectural damage has not been determined conclusively. The most conservative estimates are reflected in the FTA standards, shown in Table 5.10-8.

Table 5.10-8
Groundborne Vibration Criteria: Architectural Damage

Building Category	PPV (in/sec)	L_v (VdB)[1]
I. Reinforced concrete, steel, or timber (no plaster)	0.5	102
II. Engineered concrete and masonry (no plaster)	0.3	98
III. Non-engineered timber and masonry buildings	0.2	94
IV. Buildings extremely susceptible to vibration damage	0.12	90

Source: FTA 2006.
[1] RMS velocity calculated from vibration level (VdB) using the reference of one microinch/second.

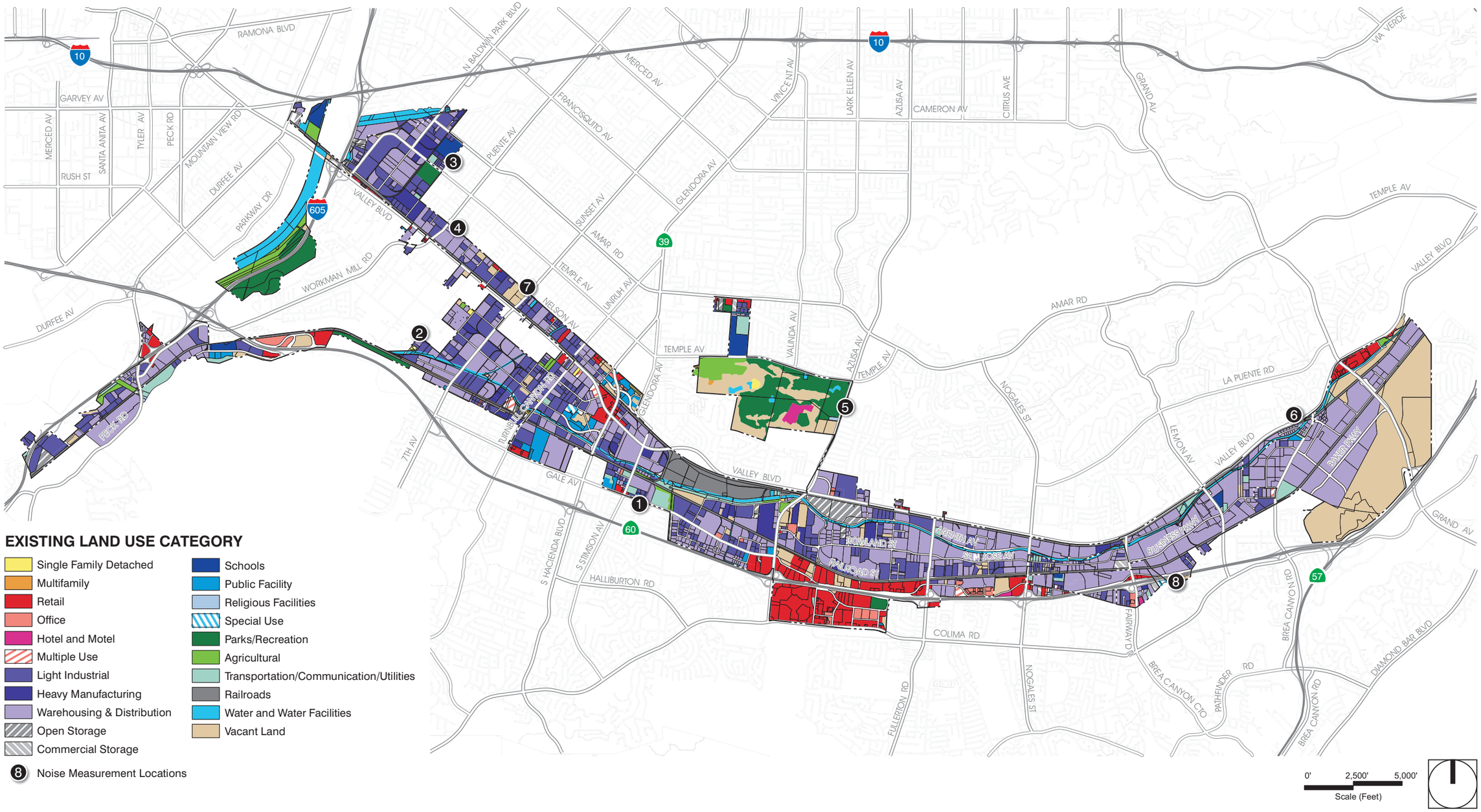
Existing Noise Environment

The City of Industry is surrounded by portions of unincorporated Los Angeles County (including Valinda and South San Jose Hills) and the cities of La Puente, Baldwin Park, West Covina, and Walnut to the north; the cities of Pomona and Diamond Bar to the east; unincorporated portions of Los Angeles County (including Hacienda Heights and Rowland Heights) to the south; and portions of unincorporated Los Angeles County (including Bassett and Avocado Heights) and the cities of Pico Rivera and El Monte to the west. These communities and cities have various land use designations that border the City of Industry, consisting mostly of residential and commercial uses.

Existing ambient noise levels were measured at eight locations in the City to document representative noise levels at several locations. These locations are shown on Figure 5.10-1, *Noise Monitoring Locations*. Short-term (ST) noise level measurements were taken at six locations for a minimum period of 10 minutes during the daytime on February 23, 2012, between 7:45 AM and 3:40 PM. Long-term (LT) noise level measurements were taken at two locations for a period of 24 hours. The noise levels were measured using a Larson-Davis Model 820 sound level meter, which satisfies the American National Standards Institute for Type 1 general environmental noise measurement instrumentation. The sound level meter and microphone were mounted on a tripod five feet above the ground and equipped with a windscreen during all measurements. The sound level meters were programmed to record noise levels with the “slow” time constant and using the “A” weighting filter network. Meteorological conditions during the measurement periods were favorable and were noted to be representative of typical conditions; that is, with clear skies, daytime temperatures of approximately 75 degrees Fahrenheit (°F), and less than five mile per hour winds. The following describes the noise level measurement locations:

ST Noise Measurement 1: Located in a residential area at the front yard of the single-family residence at 1103 Hinnen Avenue in Hacienda Heights south of Gale Avenue. Noise monitoring started at 7:47 AM and lasted for 15 minutes. The primary sources of noise measured at this location was traffic on Gale Avenue, and included background train noise and noise from the operation of machinery at a factory across the street.

Noise Monitoring Locations



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ST Noise Measurement 2: Located at the front yard of the single-family residence at 14226 Don Juan Road adjacent to a warehouse. Noise monitoring started at 8:33 AM and lasted for 15 minutes. The primary source of noise measured at this location was traffic on Don Juan Road.

ST Noise Measurement 3: Located at the southeastern corner of the Torch Middle School near the ball fields court area, approximately 10 feet from Vineland Avenue. The measurement was taken near a pet supply factory and its driveway entrance. Noise monitoring started at 9:04 AM and lasted for 15 minutes. The primary sources of noise measured at this location was traffic on Vineland Avenue and included background noise from truck maneuvers and on the factory driveway.

ST Noise Measurement 4: Located at the front yard of a single-family residence at 305 Mayland Avenue in the City of La Puente. The measurement was taken facing Nelson Avenue across from factories in the City of Industry. Noise monitoring started at 9:28 AM and lasted for 14 minutes. The primary sources of noise measured at this location was traffic on Vineland Avenue and included background noise from truck maneuvers and on the factory driveway.

ST Noise Measurement 5: Located at the front yard of the Pacific Palms Golf Club entrance. Noise monitoring started at 10:12 AM and lasted for 16 minutes. The measurement was taken approximately 100 feet from Azusa Avenue; the primary source of noise measured at this location was vehicular traffic.

ST Noise Measurement 6: Located at the corner of Valley Boulevard and Summerset Avenue near backyard walls of single family homes, with warehouse or manufacturing uses located approximately 800 feet away across Valley Boulevard. Noise monitoring started at 3:27 PM and lasted for 16 minutes. The primary source of noise measured at this location was vehicular traffic on Valley Boulevard.

LT Noise Measurement 7: Located at a vacant industrial use in the City of Industry. The noise monitoring was performed approximately 50 feet from Nelson Avenue at the same distance from the road centerline where single-family homes are located across the street in the City of La Puente. Noise monitoring started on February 23, 2012, at 11:20 AM and was recorded for a period of 24 hours. The primary source of noise measured at this location was vehicular traffic on Nelson Avenue.

LT Noise Measurement 8: Located at the backyard of a single-family home at the corner of Walnut Drive and Calbourne Drive in the City of Industry. The noise monitoring was performed approximately 200 feet from the Interstate 60 (I-60) centerline, and approximately 100 feet from the freeway sound wall. Noise monitoring started on February 23, 2012, at 11:40 AM and was recorded for a period of 24 hours. The primary sources of noise measured at this location were vehicular traffic from I-60 and background traffic noise on Walnut Drive.

The noise levels measured at the eight locations during the ambient survey are summarized in Table 5.10-9. As shown in this table, the average noise levels during the daytime at the locations where the short-term measurements were taken ranged from 51.7 to 70.4. The long-term noise level measurements ranged from 69.2 to 70.5 dBA CNEL. The detailed noise measurement outputs are included in Appendix E. During the noise monitoring and field reconnaissance, it was observed that noise from the operation of industrial uses was sporadic and included loading/unloading activities, the operation of mechanical equipment, and industrial blowers/fans. However, the existing noise levels in the City are dominated mostly by transportation noise. The highest noise levels were observed in areas near the I-60, State Route 57 (SR-57), I-605, the Burlington Northern Santa Fe (BNSF) and Union Pacific Rail Road (UPRR) rail lines, and along major City roads including Valley Boulevard, Gale Avenue, Azusa Avenue, Hacienda Avenue, 7th Avenue, Nogales Street, Fairway Drive, and Lemon Drive.

Table 5.10-9
Noise Measurements

Monitoring Site	L_{min}	L_{eq}	L_{max}	CNEL
ST-1	59.9	72.0	84.0	—
ST-2	53.4	68.0	79.0	—
ST-3	51.7	67.2	83.2	—
ST-4	70.1	85.2	51.4	—
ST-5	70.4	78.5	43.3	—
ST-6	70.3	79.3	51.5	—
LT-7	—	—	—	69.2
LT-8	—	—	—	70.5

Noise monitoring conducted by The Planning Center|DC&E between 7:45 AM on February 21 and 11:50 AM on February 22, 2012.

On-Road Vehicles

Freeways that run along the City's western and eastern boundaries are I-605 and SR-57, respectively. The circulation network serving the City is essentially a grid system of roadways generally oriented in the north-south and east-west directions. Valley Boulevard and SR-60 are the only continuous roadways that span the entire length of the City, which makes them primary carriers of regional traffic and the most heavily travelled corridors in the City. City streets that carry relatively high traffic volumes include Nogales Street, Colima Road, Gale Avenue, Sunset Avenue-7th Avenue, Hacienda Boulevard-Vincent Avenue, Azusa Avenue, and Grand Avenue. Due to the predominant land uses in the City (industrial), the City has a heavier-than-average percentage of trucks. Existing and future traffic noise is discussed in further detail below.

Train Noise

Two major UPRR rail lines traverse the City of Industry going east–west. These lines consist of a mixture of single-track and double-track lines. The northern route through the City is the UPRR Alhambra Line, which begins at the Los Angeles/Long Beach ports and runs through Pomona and Colton to points farther east. The southern route is the UPRR Los Angeles Subdivision Line, which also begins at the Los Angeles/Long Beach ports and runs through Pomona, but travels southeast to Riverside and points farther east. The UPRR Alhambra Line is mostly single track, while the UPRR Los Angeles Subdivision Line is mostly a double-track. An intermodal terminal is operated by UPRR in City along the Alhambra Line. The Southern California Regional Rail Authority (SCRRA) currently operates the Riverside Line, running 12 daily passenger diesel-locomotive commuter trains per weekday along the UPRR Los Angeles Subdivision Line. The SCRRA also operates the San Bernardino line, running 22 trains per weekday in a portion of the UPRR Alhambra Line. Noise generated by the train traffic on the Alhambra and the Los Angeles Subdivision Lines contributes to the ambient noise environment along these two transportation routes.

Aircraft Noise

The City is approximately 40 miles from the Los Angeles International Airport, approximately 18 miles from Ontario International Airport, approximately 5 miles from the Brackett Field Airport, and approximately 2 miles from the El Monte Airport, which is the closest airport. No areas of the City lie within the airport land use plan or runway protection zone of any of these airports. While occasional noise from aircraft overflights is heard, the City is located outside any airport land use plan and well outside any airport 65 dBA CNEL noise contour zone.

Heliports

The City has three private heliports: the Recreation and Conference Center Heliport, Los Angeles County Sheriff's Department Heliport, and Haddicks Heliport. The Haddicks heliport is located at Valley Boulevard west of Turnbull Canyon Avenue. The County of Los Angeles Sheriff Substation and the Recreation and Conference Center heliports are less than 500 feet apart, located near the intersection of Stafford Street and Hudson Avenue. Helicopter operations in the City are not frequent; no helicopters are based in these heliports. Noise from helicopter operations in the City is very sporadic and short-term. However, single-event noise from helicopter overflights can substantially elevate noise levels at receptors in the vicinity of each heliport during take-offs and landings.

Stationary Source Noise

Stationary sources of noise may occur from all types of land uses. The City is mostly developed with industrial, manufacturing, warehousing, and retail uses. Commercial uses would generate noise from heating, ventilation, air conditioning (HVAC) systems, loading docks, trash compactors, and other sources. Industrial uses may generate HVAC systems, loading docks, and machinery required for manufacturing processes. Noise generated by commercial uses is generally short and intermittent. Industrial uses may generate noise on a more continual basis, or intermittently, depending on the processes involved and the type of machinery involved.

In addition to onsite mechanical equipment, which generates stationary noise, warehousing and industrial land uses generate substantial truck traffic that results in additional sources of noise on local roadways in the vicinity of industrial operations.

Outdoor activities that occur on school campuses throughout the City generate noticeable levels of noise in the vicinity of the campus. While it is preferable to have schools located within a residential setting to support the neighborhood, noise generated on both the weekdays (from physical education classes and sports programs) and weekends (from use of the fields by youth organizations) can elevate noise levels within the community.

5.10.2 Thresholds of Significance

According to Appendix G of the CEQA Guidelines, a project would normally have a significant effect on he environment if the project would result in:

N-1 Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

Based on local noise criteria as established by the City, the following would be considered significant:

- New land uses that would expose noise-sensitive land uses to noise levels that are clearly incompatible with the projected ambient noise levels (see Table 5.10-3).
- Noise generated by hypothetical build-out of the proposed Land Use Plan that would result in stationary, non-transportation noise which exceeds the applicable standards (see Table 5.10-4) at noise-sensitive receptors.

N-2 Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels.

Based on applicable thresholds, the following would be considered significant:

- Implementation of the General Plan Update that would expose receptors to vibration levels exceeding 0.01 in/sec due to industrial use activity, or exceed the criteria for annoyance from transportation sources presented in Table 5.10-7.
- Implementation of the General Plan Update that would exceed the criteria presented in Table 5.10-8 that could cause buildings architectural damage.

N-3 A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

Based on applicable thresholds, the following would be considered significant:

- Implementation of the General Plan Update that would cause traffic increases that would result in an increase of ambient noise at any noise-sensitive receptor by 3 dB. A minimum 3 dB change in noise levels is necessary for human hearing to discern a change in noise levels.
- Noise generated by hypothetical buildout of the proposed Land Use Plan that would result in stationary, non-transportation noise which exceeds the applicable standards shown in Table 5.10-3 on noise-sensitive receptors.

N-4 A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Based on applicable criteria, the following would be considered significant:

- Construction activities occurring between weekday hours of 7 PM and 7 AM, or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real-property line, except for emergency work of public service utilities or by variance.
- Maximum noise levels from construction equipment exceed the criteria described in Tables 5.10-5 and 5.10-6.

N-5 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.

N-6 For a project within the vicinity of a private airstrip, expose people residing or working the project area to excessive noise levels.

The Initial Study, included as Appendix A, substantiates that impacts associated with the following thresholds would be less than significant: Threshold N-5. This impact will not be addressed in the following analysis.

5.10.3 Environmental Impacts

The following impact analysis addresses thresholds of significance for which the Initial Study disclosed potentially significant impacts. The applicable thresholds are identified in brackets after the impact statement.

IMPACT 5.10-1: FUTURE DEVELOPMENT THAT WOULD BE ACCOMODATED BY THE GENERAL PLAN UPDATE WOULD RESULT IN AN INCREASE IN TRAFFIC ON LOCAL ROADWAYS IN THE CITY OF INDUSTRY, WHICH WOULD SUBSTANTIALLY INCREASE THE EXISTING NOISE ENVIRONMENT. [THRESHOLDS N-1 AND N-3]

Impact Analysis: Potential impacts from future development associated with the proposed General Plan Update Land Use Plan stem mainly from the addition of vehicles along roadways in the City and trains on the UPRR rail lines. The average daily traffic (ADT) volumes provided by the *City of Industry General Plan Update EIR Traffic Impact Analysis* (LLG 2011) were used to identify roadway segments where future traffic noise levels would or may be substantially increased over existing conditions. Traffic noise contour boundaries are often utilized by local land planning and zoning authorities to evaluate sound level exposures on land near roadways that is being considered for development. Noise contour boundaries are utilized in this analysis to assess the traffic noise level impacts associated with future development from implementation of the General Plan Update. The traffic noise contour boundaries for existing and long-range conditions were estimated using the Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (RD-77-108). The calculations showing the anticipated 60, 65, and 70 dBA CNEL contours represented as a distance from the centerline of each roadway segment for existing and post-2035 scenarios are included in Appendix E.

Figures 5.10-2 and 5.10-3 show the noise contours from railroad activities and roadway traffic along major thoroughfares within the City for existing and post-2035 conditions, respectively. Noise levels in these figures do not account for noise attenuation provided by intervening structures or topographical barriers. Table 5.10-10 compares the calculated future (2035) noise levels for the proposed General Plan Update to the existing noise levels. Table 5.10-10 shows increases in noise levels adjacent to the study area roadway segments of up to 3.2 dB. The greatest increases from existing conditions are expected in areas subject to increased land use intensity, especially in the IBC area in the eastern portion of the City. According to the criteria described in threshold N-3, these noise increases could create significant noise impacts to uses adjacent to Baker Parkway west of Grand Avenue resulting from the anticipated increase in traffic. However, all existing uses and land use designations for future development adjacent to this roadway segment are warehousing and industrial, which would not be negatively impacted by noise increases. The remaining segments would be below the 3 dB criteria for potential significant impacts. Therefore, noise impacts from the anticipated traffic increase associated with implementation of the General Plan Update would not be significant.

IMPACT 5.10-2 NOISE-SENSITIVE USES COULD BE EXPOSED TO ELEVATED NOISE LEVELS FROM TRANSPORTATION AND STATIONARY SOURCES ASSOCIATED WITH FUTURE DEVELOPMENT THAT WOULD BE ACCOMMODATED BY THE GENERAL PLAN UDPATE. [THRESHOLDS N-1 AND N-3]

Stationary-Source Noise Impacts

Theoretical buildout of the General Plan Update would result in an increase of approximately 13,715,300 square feet of employment and commercial uses within the City. Future commercial and industrial uses may include additional sources of stationary noise such as loading docks and machinery, which would have the potential to cause increases in noise in the vicinity of each development project. The siting of new industrial developments may increase noise levels to nearby uses. Each individual development project would be subject to review under CEQA. New industrial, retail, and institutional projects would have to demonstrate that the operation of each project would not exceed the thresholds presented in Table 5.10-4. Consequently, stationary-source noise from these types of proposed land uses would not substantially increase the noise environment, and impacts from stationary noise sources would not occur.

Transportation-Related Noise Impacts

Future development in accordance with General Plan Update would cause increases in traffic along local roadways. Traffic on I-605, SR-60, and SR-57 is also projected to increase due to regional growth. For the purpose of assessing the compatibility of new development with the anticipated ambient noise, the City utilizes the state's Community Noise and Land Use Compatibility standards, summarized in Table 5.10-3. A significant impact could occur if the proposed Land Use Plan designates noise-sensitive land uses in areas where the ambient noise level clearly exceeds levels that are compatible for the designated land use. Commercial and industrial areas are not considered noise-sensitive and have much higher tolerances for exterior noise levels. Since implementation of the General Plan Update would not include noise-sensitive uses, it would not expose new sensitive land uses to excessive noise from transportation sources. Therefore, impacts from transportation noise sources would not occur.

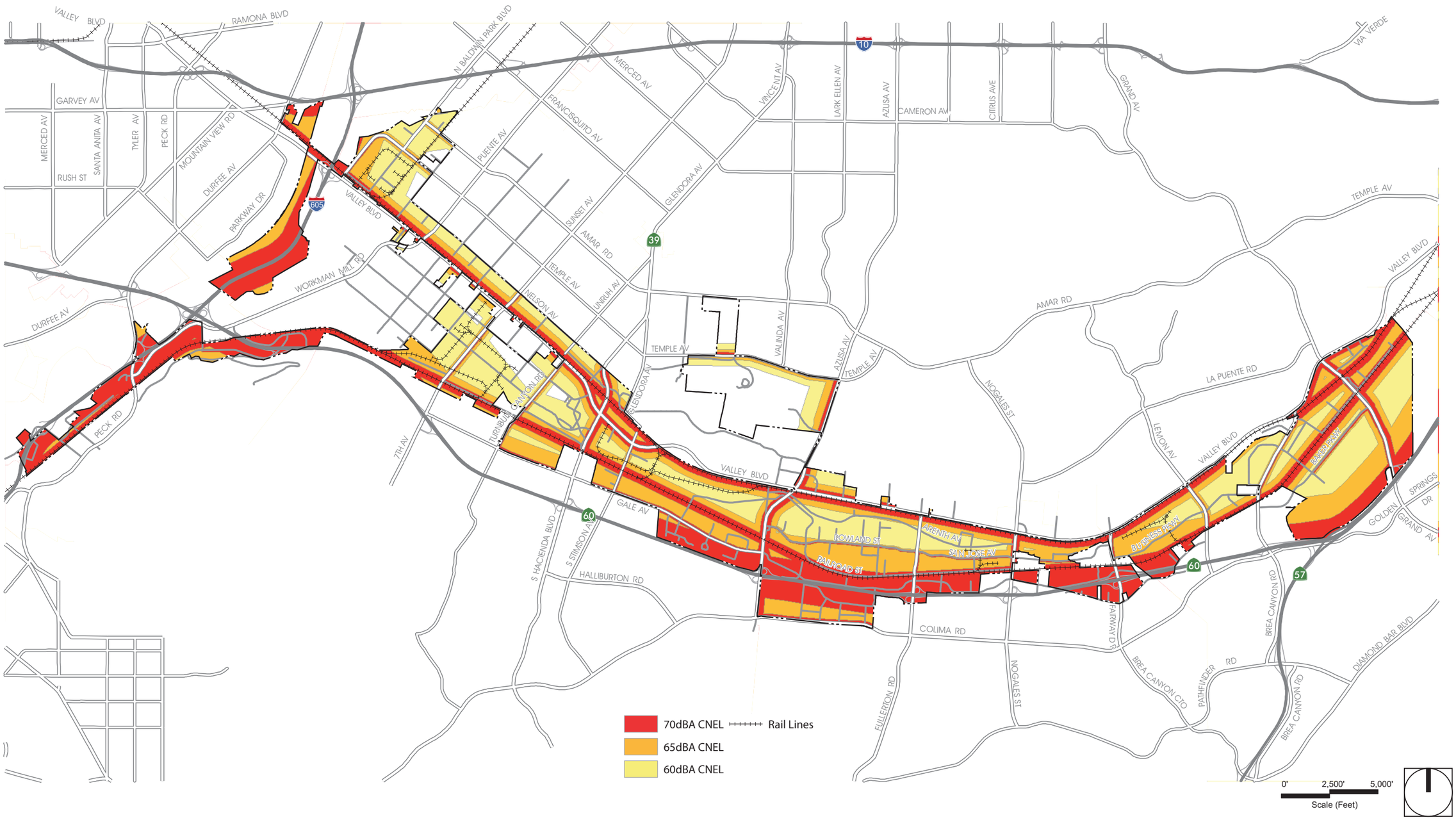
Train-Related Noise Impacts

Noise generated by the train traffic on the Alhambra and the Los Angeles Subdivision Lines contributes to the ambient noise environment along these two transportation routes. Noise from trains on the UPRR is generated by warning horns and crossing bells at at-grade crossings, engines, exhaust systems, cooling fans, and other mechanical gear noise. The interaction of steel wheels and rails generates rolling noise, including the metal-to-metal continuous contact, impact noise when a wheel encounters a discontinuity (such as a rail joint, turnout, or crossover), and squeals generated by friction on tight curves. Trains are required by the Federal Railroad Administration (FRA) to sound a warning horn at one-quarter mile from all at-grade crossings and at a maximum 110 dBA, as measured at 100 feet, except those crossing that have been established as a Quiet Zone. A Quiet Zone is a segment of rail line where locomotive horns are not routinely sounded. There are no Quiet Zones established for the City of Industry. In addition, railroad activity is expected to increase from existing to 2020 conditions by 160 percent (LLG 2011).

However, in 2011, the City of Industry applied to FRA to designate the crossings along the UPRR Alhambra Line at Brea Canyon Road, Lemon Avenue, and Fairway Drive as a Quiet Zone. Essentially, the Quiet Zone will occur between Pomona Boulevard in the City of Pomona to Fullerton Road in the City of Industry, a distance of approximately 6.2 miles. To qualify as a Quiet Zone, all required improvements (e.g., raised medians, gates, etc.) must be in place at the rail crossings. Once designated as a Quiet Zone, train operators would be exempt from the federal requirement to blow their horns at railroad crossings where there are crossstreets level with the tracks. To date, the following facilities are in place or completed for the proposed Quiet Zone: 1) three quadrant gates at the Fairway Drive crossing, including all UPRR communications system, conduits and cabling, control house, electronic equipment, loop sensors, and median modifications, 2) four quadrant gates at the Lemon Avenue crossing, including all UPRR communications system, conduits and cabling, control house, electronic equipment, loop sensors, and median modifications, 3) two entry gates at the Brea Canyon Road crossing, including widening and channelization of the railroad service road northeast of the tracks and median modifications, and 4) removal of the railroad gates at the Old Benton Road private crossing.

Several items are still needed to complete the physical improvements required for this Quiet Zone, namely 1) moving the presignal traffic signal system at Fairway Drive and Valley Boulevard from the south side of the railroad tracks to the north side of the tracks, 2) Quiet Zone signing and striping modifications for Fairway Drive from San Jose Avenue to Valley Boulevard, 3) Quiet Zone signing and striping modifications for Lemon Avenue from 300 feet south of the tracks to Valley Boulevard, 4) installation of flasher lights by UPRR at the service road northeast of the Brea Canyon Road crossing, and 5) acceptance of the application and final inspection by the FRA of the Quiet Zone facilities in place. It is estimated that all of these pending items will be completed by the end of 2012 (Ballas 2012). Once completed, it is anticipated that train-related noise impacts at these crossings would be reduced.

Existing Noise Contours



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Post-2035 Noise Contours

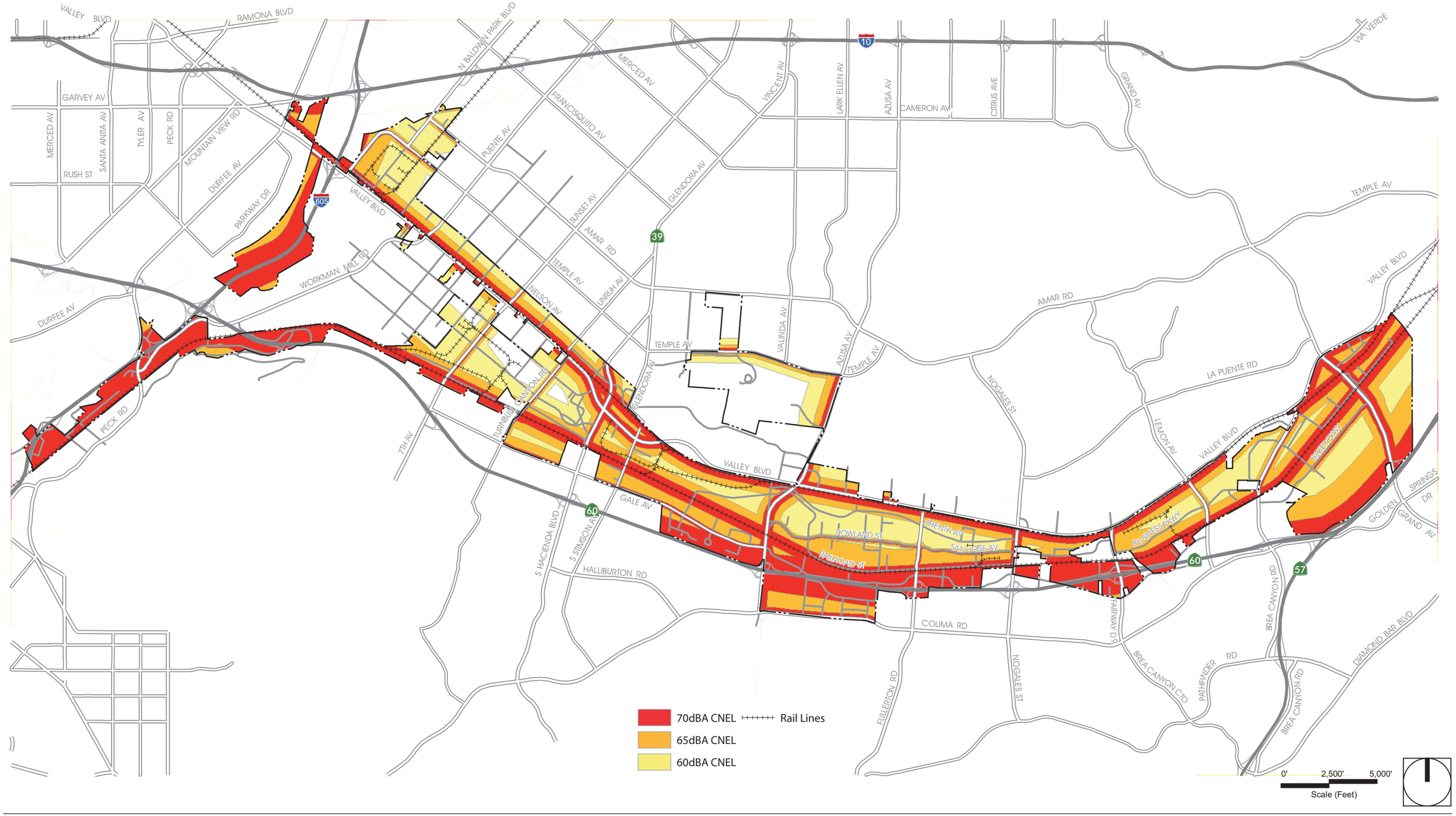

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Table 5.10-10
Long-Range Traffic Noise (dBA CNEL)

Roadway	Segment	Existing (50' from road centerline)	Post-2035 (50' from road centerline)	Increase
Valley Boulevard	West of 7th Street	78.3	80.0	1.6
Valley Boulevard	East of 7th Street	80.0	81.6	1.6
Valley Boulevard	West of Turnbull Canyon Road	80.6	81.7	1.1
Valley Boulevard	West of Hacienda Boulevard	80.5	81.9	1.4
Valley Boulevard	East of Hacienda Boulevard	80.9	81.8	1.0
Valley Boulevard	East of Old Valley Boulevard	80.7	81.7	1.0
Valley Boulevard	East of Fullerton Road	79.6	81.1	1.5
Valley Boulevard	West of Nogales Street	78.8	80.4	1.6
Valley Boulevard	West of Fairway Drive	79.0	80.7	1.7
Valley Boulevard	West of Lemon Avenue	78.6	80.8	2.3
Valley Boulevard	East of Lemon Avenue	78.6	81.1	2.4
Valley Boulevard	West of Grand Avenue	80.6	82.6	2.0
Valley Boulevard	East of Grand Avenue	79.9	82.0	2.1
Durfee Avenue	South of Clora Place	74.7	75.3	0.6
Peck Road	North of Rooks Road	74.1	74.7	0.6
Peck Road	South of Pellissier Place	72.8	73.4	0.6
Rose Hills Road	South of I-605 Northbound Ramps	72.4	73.0	0.5
Workman Mill Road	North of Crossroads Parkway South	68.5	69.1	0.5
Crossroads Parkway South	East of Workman Mill Road	72.7	73.3	0.5
Amar Road	West of Vineland Avenue	73.4	74.1	0.7
Temple Avenue	West of Vineland Avenue	74.4	75.0	0.5
Sunset Avenue	North of Valley Boulevard	74.8	75.4	0.6
7th Street	South of Don Julian Road	74.7	75.4	0.7
Turnbull Canyon Road	South of Proctor Avenue	72.8	73.3	0.5
Gale Avenue	East of Turnbull Canyon Road	77.0	77.2	0.3
Hacienda Boulevard	North of Valley Boulevard	80.1	80.8	0.6
Hacienda Boulevard	South of Valley Boulevard	79.8	79.5	-0.3
Stimson Avenue	South of Valley Boulevard	72.9	73.8	0.9
Temple Avenue	West of Azusa Avenue	76.0	76.6	0.6
Azusa Avenue	South of Temple Avenue	81.6	82.2	0.6
Azusa Avenue	North of Hurley Street	81.1	81.7	0.6

Table 5.10-10
Long-Range Traffic Noise (dBA CNEL)

Roadway	Segment	Existing (50' from road centerline)	Post-2035 (50' from road centerline)	Increase
Azusa Avenue	South of Hurley Street	81.1	81.6	0.5
Azusa Avenue	South of Chestnut Street	80.8	81.4	0.5
Azusa Avenue	South of Gale Avenue	82.7	83.1	0.4
Azusa Avenue	South of SR-60 Eastbound Ramps	82.1	82.6	0.6
Colima Road	East of Azusa Avenue	79.3	81.0	1.8
Rowland Street	West of Fullerton Road	70.6	71.5	1.0
Rowland Street	East of Fullerton Road	69.8	70.7	0.9
Fullerton Road	South of Rowland Street	74.8	76.5	1.7
Nogales Street	South of Valley Boulevard	79.2	80.5	1.3
Fairway Drive	South of Valley Boulevard	75.3	75.9	0.6
Fairway Drive	North of SR-60 Westbound Ramps	75.4	76.1	0.7
Lemon Avenue	South of Valley Boulevard	74.6	75.2	0.6
Brea Canyon Road	South of Valley Boulevard	73.7	76.5	2.7
Baker Parkway	West of Grand Avenue	71.2	74.4	3.2
Grand Avenue	South of Valley Boulevard	80.3	82.7	2.5
Grand Avenue	South of Baker Parkway	79.9	81.9	2.0

IMPACT 5.10-3: ***CONSTRUCTION ACTIVITIES FOR DEVELOPMENT OF THE INDIVIDUAL LAND USES THAT WOULD BE ACCOMODATED BY THE GENERAL PLAN UPDATE COULD EXPOSE SENSITIVE USES TO STRONG LEVELS OF GROUNDBORNE VIBRATION. [THRESHOLD N-2]***

Impact Analysis:

Construction Vibration Impacts

Construction operations can generate varying degrees of ground vibration, depending on the construction procedures and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish with distance from the source. The effect on buildings in the vicinity of the construction site varies depending on soil type, ground strata, and receptor-building construction. The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibrations at moderate levels, and slight structural damage at the highest levels. Vibration from construction activities rarely reaches the levels that can damage structures, but groundborne vibration and groundborne noise can reach perceptible and audible levels in buildings that are close to the construction site. Table 5.10-11 lists vibration levels for construction equipment.

Table 5.10-11
Groundborne Vibration Levels for Construction Equipment

Equipment	Approximate Velocity Level at 25 Feet (VdB)	Approximate RMS[1] Velocity at 25 Feet (in/sec)
Pile Driver (impact) Upper Range	112	1.518
Pile Driver (impact) Lower Range	104	0.644
Pile Driver (sonic) Upper Range	105	0.734
Pile Driver (sonic) Lower Range	93	0.170
Large Bulldozer	87	0.089
Caisson Drilling	87	0.089
Jackhammer	79	0.035
Small Bulldozer	58	0.003
Loaded Trucks	86	0.076
FTA Criteria – Human Annoyance (Daytime)	78 to 90 [2]	—
FTA Criteria – Structural Damage	—	0.2 to 0.5 [3]

Source: FTA 2006.
[1] RMS velocity calculated from vibration level (VdB) using the reference of 1 microinch/second.
[2] Depending on affected land use, see Table 5.10-7.
[3] Depending on affected building structure, see Table 5.10-8.

As shown in Table 5.10-11, vibration generated by construction equipment has the potential to be substantial. However, groundborne vibration is almost never annoying to people who are outdoors, so it is usually evaluated in terms of indoor receivers (FTA 2006). Significant vibration impacts may occur from construction activities for individual development projects. Implementation of the General Plan Update anticipates an increase in development intensity, but specific locations, site plans, and construction details have not been developed at this time. 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 vibration impacts at specific sensitive receptors.

In construction projects, grading and demolition activities typically generate the highest vibration levels during construction activities. Except for pile driving, maximum vibration levels measured at a distance of 25 feet from an individual piece of typical construction equipment do not exceed the thresholds for human annoyance for industrial uses, nor the thresholds for architectural damage. Because construction activities associated with any individual development may include pile driving near sensitive receptors, vibration impacts associated with construction during individual development projects associated with implementation of the General Plan Update are considered significant.

IMPACT 5.10-4: SENSITIVE LAND USES ALONG THE FREEWAYS AND THE UNION PACIFIC RAILROAD CORRIDORS WOULD BE EXPOSED TO STRONG LEVELS OF GROUNDBORNE VIBRATION. [THRESHOLD N-2]

Impact Analysis:

On-Road Mobile-Source Vibration Impacts

The California Department of Transportation (Caltrans) has studied the effects of propagation of vehicle vibration on sensitive land uses and notes that “heavy trucks, and, quite frequently, buses, generate the highest earthborn vibrations of normal traffic.” Caltrans further notes that the highest traffic-generated vibrations are along freeways and state routes. Their study finds that “vibrations measured on freeway shoulders (five meters from the centerline of the nearest lane) have never exceeded 0.08 inch per second,

with the worst combinations of heavy trucks. This level coincides with the maximum recommended safe level for ruins and ancient monuments (and historic buildings)." Typically, trucks do not generate high levels of vibration because they travel on rubber wheels and do not have vertical movement, which generates ground vibration. Vibrations from trucks may be noticeable if there are any roadway imperfections such as potholes (FTA 2006). Under implementation of the General Plan Update, vibration-sensitive structures or uses are not, and would not be sited within five meters (approximately 16 feet) of the centerline of the nearest lane of I-605, SR-57, or SR-60. The nearest existing home structures from a freeway are located approximately 100 feet from the nearest freeway lane. Because vibration dissipates rapidly with distance, and implementation of the General Plan Update would not site vibration-sensitive uses adjacent to any freeway or major road, any potential for significant vibration impacts would not occur.

Railroad Vibration Impacts

Vibration levels in the City from trains are dependent on specific site conditions such as geology and the condition of the railroad track and train wheels. To provide an order of magnitude of vibration levels generated by railroad operations, vibration measurements taken for other projects are described in this analysis. For the purpose of this analysis, vibration measurements were taken for the impact analysis prepared in November 2007 for the Puente Hills Intermodal Facility Environmental Impact Report. These vibration measurements, taken along the UPRR Los Angeles Subdivision line at distances ranging from approximately 40 to 450 feet from the tracks, ranged from 68.5 to 60.6 VdB. These levels are well below the FTA's strictest criteria for architectural damage of 90 VdB for buildings extremely susceptible to vibration damage, and below the levels of human annoyance land uses included in the City, including residences and institutional uses with primarily daytime use.

If current levels at the existing land uses are not causing architectural damage to structures along the railroad lines, future increases in rail traffic would not increase the maximum vibration levels at nearby uses; there would only be an increase in frequency of daily events. In addition, implementation of the General Plan Update would not add new sensitive land uses to areas adjacent to the UPPP lines and, as a result, no new vibration-sensitive land uses would be exposed to excessive groundborne vibration from train operations. Therefore, no significant railroad vibration impacts would occur.

Industrial Vibration Impacts

The use of heavy equipment associated with industrial operations can create elevated vibration levels in their immediate proximity. Soil conditions have a strong influence on the levels of groundborne vibration. In general, the majority of industrial uses would not be immediately adjacent to vibration-sensitive uses. The County of Los Angeles Municipal Code, Section 12.08.560, prohibits the operation of any device that creates vibration that is above 0.01 in/sec at or beyond the property boundary of the source if on private property or at 150 feet from the source if on a public space or right-of-way. Consequently, no significant vibration impacts would occur from vibration generated by industrial uses.

IMPACT 5.10-5: CONSTRUCTION ACTIVITIES FOR DEVELOPMENT OF THE INDIVIDUAL LAND USES THAT WOULD BE ACCOMODATED BY THE PROPOSED LAND USE PLAN WOULD SUBSTANTIALLY ELEVATE NOISE LEVELS IN THE VICINITY OF NOISE-SENSITIVE LAND USES. [THRESHOLD N-4]

Impact Analysis: Short-term noise impacts that could occur during construction include vehicular traffic noise from construction workers, vendor vehicles and haul trucks on public roadways, and heavy construction equipment operating on individual project sites.

First, the transport of workers and movement of materials to and from development project sites could incrementally increase noise levels along roadways. The second type of short-term noise impact is related to demolition, site preparation, grading, and/or physical construction. Construction is performed in distinct steps, each of which has its own mix of equipment, and, consequently, its own noise characteristics. However, despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 5.10-12 lists typical construction equipment noise levels recommended for noise-impact assessments, based on a distance of 50 feet between the equipment and the noise receptor.

Table 5.10-12
Construction Equipment Noise Emission Levels

Construction Equipment	Typical Noise Level (dBA) at 50 Feet from the Source	Construction Equipment	Typical Noise Level (dBA) at 50 Feet from the Source
Air Compressor	81	Pile-Driver (Impact)	101
Backhoe	80	Pile-Driver (Sonic)	96
Ballast Equalizer	82	Pneumatic Tool	85
Ballast Tamper	83	Pump	76
Compactor	82	Rail Saw	90
Concrete Mixer	85	Rock Drill	98
Concrete Pump	71	Roller	74
Concrete Vibrator	76	Saw	76
Crane, Derrick	88	Scarifier	83
Crane, Mobile	83	Scraper	89
Dozer	85	Shovel	82
Generator	81	Spike Driver	77
Grader	85	Tie Cutter	84
Impact Wrench	85	Tie Handler	80
Jack Hammer	88	Tie Inserter	85
Loader	85	Truck	88
Paver	89		

Source: FTA 2006.

Significant noise impacts during construction may occur from operation of heavy earthmoving equipment and truck haul that would occur with construction of individual development projects. Implementation of the General Plan Update anticipates an increase in development intensity, but specific locations, site plans, and construction details have not been developed. 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 specific sensitive receptors.

Construction of individual developments associated with implementation of the General Plan Update would temporally increase the ambient noise environment in the vicinity of each individual project. When construction creates a noise disturbance across a residential or commercial real-property line, the City restricts the hours of construction activities[1] to the least noise-sensitive portions of the day (i.e., between 7:00 AM and 7:00 PM for Monday through Saturday). In addition, the City relies on the County of Los Angeles construction noise limits presented in Tables 5.10-5 and 5.10-6. Because construction activities associated with any individual development may occur near noise-sensitive receptors and noise disturbances may occur for prolonged periods of time, construction noise impacts associated with implementation of the General Plan Update are considered significant.

IMPACT 5.10-6: THE HELIPORTS IN THE CITY WOULD RESULT IN EXPOSURE OF FUTURE RESIDENTS AND WORKERS TO OVERFLIGHT-RELATED NOISE. [THRESHOLD N-5]

Impact Analysis: As noted earlier, the City has three private heliports: the Recreation and Conference Center Heliport, Los Angeles County Sheriff's Department Heliport, and Haddicks Heliport. Single-event noise from helicopter overflights can substantially elevate noise levels at receptors in the vicinity of each heliport during take-offs and landings. None of these heliports have helicopters based at these locations, and there are no plans to expand service and operations at these heliports. Noise from helicopter operations in the City is very sporadic and short term. The nearest noise-sensitive locations from any heliport are residences located 750 feet away from the Los Angeles Sheriff's Department Heliport. Because there are no plans to expand helicopter operations at these locations, and noise from the operation of the heliports are sporadic and short term when they occur, implementation of the General Plan Update would not cause significant noise impacts to future residents and workers in the City or in nearby cities. Therefore, noise impacts from heliports would not occur.

5.10.4 Relevant General Plan Update Policies

The following are relevant policies of the General Plan Update that help reduce noise impacts. Policy number references are provided in parentheses.

Land Use Element

- Minimize impacts (including noxious fumes, air pollutants, excessive noise, and hazardous materials) to non-business uses through the use of land use regulations, site planning, and design controls (LU-3).

Safety Element

- Coordinate with Caltrans, San Gabriel Valley Council of Governments, Southern California Association of Governments, neighboring jurisdictions, and other transportation providers in the preparation and maintenance of transportation and land use plans to minimize noise impacts and provide appropriate mitigations measures (S6-1).

- Address noise impacts through the effective enforcement of the noise ordinance, project and environmental review, and compliance with state and federal noise standards (S6-2).

[1] Except for emergency work of public service utilities or by variance.

- Consider the noise levels likely to be produced by any new businesses or substantially expanded business activities location near existing noise-sensitive uses such as schools, community facilities, and residences as well as adjacent to established businesses involving vibration-sensitive activities (S6-3).

5.10.5 Existing Regulations

State and Local

- California Code of Regulations, Title 21, Part 1, Public Utilities Code (Regulation of Airports)
- California Code of Regulations, Title 24, Part 2, California Building Code
- County of Los Angeles Code, Title 12, Chapter 12.08, Noise Control
- City of Industry Municipal Code, Chapter 1.30, Public Nuisances

5.10.6 Level of Significance Before Mitigation

Upon implementation of regulatory requirements and compliance with the General Plan Update policies, the following impacts would be less than significant: 5.10-1, 5.10-2, 5.10-4, and 5.10-6.

Without mitigation, the following impacts would be **potentially significant**:

- Impact 5.10-3 Construction activities associated with development associated with the General Plan Update may expose sensitive uses to strong levels of groundborne vibration
- Impact 5.10-5 Construction activities associated with development associated with the General Plan Update may substantially elevate noise levels in the vicinity of noise-sensitive land uses.

5.10.7 Mitigation Measures

Impact 5.10-3

10-1 Individual development projects that involve vibration-intensive pile-driving activities during construction, as determined during any accompanying CEQA analysis, will be evaluated for potential vibration impacts to nearby structures. If construction-related vibration is determined to exceed the Federal Transit Administration criteria for architectural damage of 0.2 peak particle velocity (PPV) inches per second (in/sec) for non-engineered timber and masonry buildings, 0.3 PPV in/sec for engineered concrete and masonry buildings, or 0.5 PPV in/sec for reinforced concrete, steel, or timber buildings, additional requirements, such as use of less vibration-intensive equipment or construction techniques, will be implemented during construction (e.g., drilled piles to eliminate use of vibration-intensive pile driving).

Impact 5.10-5

10-2 Construction activities associated with new development that occurs near (nominally within 500 feet) sensitive receptors will be evaluated for potential noise impacts. Mitigation measures such as installing temporary sound barriers for construction activities that occur adjacent to occupied noise-sensitive structures, equipping construction equipment with mufflers, and reducing nonessential idling of construction equipment to no more than five minutes will be incorporated into the construction plans to reduce construction-related noise to the extent feasible.

5.10.8 Level of Significance After Mitigation

Mitigation Measure 10-1 (construction-related vibration) would reduce the potential impacts associated with construction activities to the extent feasible. However, due to the potential proximity of construction activities to sensitive uses and the potential longevity of construction activities, Impact 5.10-3 (construction vibration) could be significant.

Mitigation Measure 10-2 (construction-related noise) would reduce the potential impacts associated with construction activities to the extent feasible. However, due to the potential proximity of construction activities to sensitive uses and the potential longevity of construction activities, Impact 5.10-5 could be significant.

The mitigation measures identified above would reduce potential impacts associated with noise and vibration. However, despite the application of mitigation measures, due to the proximity of construction activities to sensitive receptors, impacts 5.10-3 and 5.10-5 were found to be **significant and unavoidable**.