

## Appendix

# Appendix H Noise Background and Modeling Data

## Appendix

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# Fundamentals of Noise

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## NOISE

Noise is most often defined as unwanted sound; whether it is loud, unpleasant, unexpected, or otherwise undesirable. 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.”

### Noise Descriptors

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

- **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, expressed on a logarithmic scale and with respect to a defined reference sound pressure. The standard reference pressure is 20 micropascals (20  $\mu\text{Pa}$ ).
- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second ( $1 \times 10^{-6}$  in/sec).
- **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 ( $L_{eq}$ ); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the  $L_{eq}$  metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.
- **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 from 7:00 PM to 10:00 PM and 10 dB from 10:00 PM to 7:00 AM. NOTE: For general community/environmental noise, CNEL and  $L_{dn}$  values rarely differ by more than 1 dB (with the CNEL being only slightly more restrictive – that is, higher than the  $L_{dn}$  value). As a matter of practice,  $L_{dn}$  and CNEL values are interchangeable and are treated as equivalent in this assessment.
- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

## Characteristics of Sound

When an object vibrates, it radiates part of its energy in the form of a pressure wave. Sound is that pressure wave transmitted through the air. Technically, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure that creates sound waves.

Sound can be described in terms of amplitude (loudness), frequency (pitch), or duration (time). Loudness or amplitude is measured in dB, frequency or pitch is measured in Hertz [Hz] or cycles per second, and duration or time variations is measured in seconds or minutes.

### *Amplitude*

Unlike linear units such as inches or pounds, decibels are measured on a logarithmic scale. 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 1 presents the subjective effect of changes in sound pressure levels. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dB are usually not discernible (even under ideal conditions). A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dB change is perceived as a doubling (or halving) of the sound.

**Table 1** Noise Perceptibility

Change in dB	Noise Level
± 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

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Source: Bies, David A. and Colin H. Hansen. 2009. *Engineering Noise Control: Theory and Practice*. 4th ed. New York: Spon Press.

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### *Frequency*

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all, but are “felt” more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to approximate the response of the human ear. The A-weighted noise level has been found to correlate well with people’s judgments of the “noisiness” of different sounds and has been used for many years as a measure of community and industrial noise. Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of the existing conditions (e.g., quiet rural or busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of event occurrences and their repetitiveness
- Time of day that the event occurs

### *Duration*

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called  $L_{eq}$ ), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the  $L_{50}$  noise level represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the  $L_2$ ,  $L_8$  and  $L_{25}$  values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These “n” values are typically used to demonstrate compliance for stationary noise sources with many cities’ noise ordinances. Other values typically noted during a noise survey are the  $L_{min}$  and  $L_{max}$ . These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level ( $L_{dn}$ ). The CNEL descriptor requires that an artificial increment (or “penalty”) of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The  $L_{dn}$  descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher). The CNEL or  $L_{dn}$  metrics are commonly applied to the assessment of roadway and airport-related noise sources.

## Sound Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as “spreading loss.” For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, if a backhoe at 50 feet generates 84 dBA, at 100 feet the noise level would be 79 dBA, and at 200 feet it would be 73 dBA. This drop-off rate is appropriate for noise generated by on-site operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective (“hard site”) surface such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by an additional 1.5 dB for each doubling of distance.

## 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, though generally worse 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 number means. To help relate noise level values to common experience, Table 2 shows typical noise levels from familiar sources.

**Table 2**      **Typical Noise Levels**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
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: California Department of Transportation (Caltrans). 2009, November. Technical Noise Supplement ("TeNS"). Prepared by ICF International.

## 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 stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers. As with noise, vibration can be described by both its amplitude and frequency. Vibration displacement is the distance that a point on a surface moves away from its original static position; velocity is the instantaneous speed that a point on a surface moves; and acceleration is the rate of change of the speed. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During 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.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (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 and RMS is typically more suitable for evaluating human response.

As with airborne sound, annoyance with vibrational energy is a subjective measure, depending on the level of activity and the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons accustomed to elevated ambient vibration levels, such as in an urban environment, may tolerate higher vibration levels. Table 3 displays the human response and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

**Table 3 Human Reaction to Typical Vibration Levels**

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of “architectural” (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to “architectural” damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause “architectural” damage and possibly minor structural damage

Source: California Department of Transportation (Caltrans). 2004, June. Transportation- and Construction-Induced Vibration Guidance Manual. Prepared by ICF International.



**Rancho Cucamonga Municipal Code**[Up](#)[Previous](#)[Next](#)[Main](#)[Search](#)[Print](#)[Title 17 DEVELOPMENT CODE](#)[ARTICLE IV. SITE DEVELOPMENT PROVISIONS](#)[Chapter 17.66 PERFORMANCE STANDARDS](#)**17.66.050 Noise standards.**

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A. *Purpose.* In order to control unnecessary, excessive, and annoying noise and vibration in the city, it is hereby declared to be the policy of the city to prohibit such noise generated from or by all sources as specified in this section. The provisions apply within all jurisdictions within all zoning districts. Provisions apply based on the designated noise zones:

Noise Zone I: All single- and multiple-family residential properties.

Noise Zone II: All commercial properties.

B. *Decibel measurement criteria.* Any decibel measurement made pursuant to the provisions of this section shall be based on a reference sound pressure of 20 micropascals as measured with a sound level meter using the A-weighted network (scale) at slow response.

C. *Exterior noise standards.*

1. It shall be unlawful for any person at any location within the city to create any noise or allow the creation of any noise on the property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured on the property line of any other property to exceed the basic noise level as adjusted below:

- a. Basic noise level for a cumulative period of not more than 15 minutes in any one hour; or
- b. Basic noise level plus five dBA for a cumulative period of not more than ten minutes in any one hour; or
- c. Basic noise level plus 14 dBA for a cumulative period of not more than five minutes in any one hour; or
- d. Basic noise level plus 15 dBA at any time.

2. If the measurement location is a boundary between two different noise zones, the lower noise level standard shall apply.

3. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, the measured noise level obtained while the noise is in operation shall be compared directly to the allowable noise level standards as specified respective to the measurement's location, designated land use, and for the time of day the noise level is measured. The reasonableness of temporarily discontinuing the noise generation by an intruding noise source shall be determined by the planning director for the purpose of establishing the existing ambient noise level at the measurement location.

D. *Special exclusions.* The following activities shall be exempted from the provisions of this section:

1. City- or school-approved activities conducted on public parks, public playgrounds, and public or private school grounds including, but not limited to, athletic and school entertainment events between the hours of 7:00 a.m. and 10:00 p.m.
2. Occasional outdoor gatherings, dances, shows, and sporting and entertainment events, provided said events are conducted pursuant to the approval of a temporary use permit issued by the city.
3. Any mechanical device, apparatus, or equipment used, related to, or connected with emergency machinery, vehicle, work, or warning alarm or bell, provided the sounding of any bell or alarm on any building or motor vehicle shall terminate its operation within 30 minutes in any hour of its being activated.

4. Noise sources associated with, or vibration created by, construction, repair, remodeling, or grading of any real property or during authorized seismic surveys, provided said activities:
  - a. When adjacent to a residential land use, school, church or similar type of use, the noise generating activity does 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 national holiday, and provided noise levels created do not exceed the noise standard of 65 dBA when measured at the adjacent property line.
  - b. When adjacent to a commercial or industrial use, the noise generating activity does not take place between the hours of 10:00 p.m. and 6:00 a.m. on weekdays, including Saturday and Sunday, and provided noise levels created do not exceed the noise standards of 70 dBA at the when measured at the adjacent property line.
5. All devices, apparatus, or equipment associated with agricultural operations, provided:
  - a. Operations do not take place between 8:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a national holiday.
  - b. Such operations and equipment are utilized for protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.
  - c. Such operations and equipment are associated with agricultural pest control through pesticide application, provided the application is made in accordance with permits issued by, or regulations enforced by, the state department of agriculture.
6. Noise sources associated with the maintenance of real property, provided said activities take place between the hours of 7:00 a.m. and 8:00 p.m. on any day.
7. Any activity to the extent regulation thereof has been preempted by state or federal law.

E. *Schools, churches, libraries, health care institutions.* It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or similar health care institution, church, or library while the same is in use, to exceed the noise standards specified in this section and prescribed for the assigned noise zone in which the school, hospital, church, or library is located.

F. *Residential noise standards.*

1. Table 17.66.050-1 (Residential Noise Limits) includes the maximum noise limits in residential zones. These are the noise limits when measured at the adjacent residential property line (exterior) or within a neighboring home (interior).

TABLE 17.66.050-1 RESIDENTIAL NOISE LIMITS

Location of Measurement	Maximum Allowable	
	10:00 p.m. to 7:00 a.m.	7:00 a.m. to 10:00 p.m.
Exterior	60 dBA	65dBA
Interior	45 dBA	50dBA

Additional:

- (A) It shall be unlawful for any person at any location within the city to create any noise or to allow the creation of any noise which causes the noise level when measured within any other fully enclosed (windows and doors shut) residential dwelling unit to exceed the interior noise standard in the manner described herein.
- (B) If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be determined, each of the noise limits above shall be reduced five dBA for noise consisting of impulse or simple tone noise.

2. *Other residential noise limitations.*

- a. *Peddlers; use of loud noise, etc., to advertise goods, etc.* No peddler or mobile vendor or any person in their behalf shall shout, cry out, or use any device or instrument to make sounds for the purpose of advertising in such a manner as to create a noise disturbance.
- b. *Animal noises.* No person owning or having the charge, care, custody, or control of any dog or other animal or fowl shall allow or permit the same to habitually howl, bark, yelp, or make other noises, in such a manner as to create a noise disturbance.

c. *Radios, television sets, musical instruments, and similar devices.* No person shall operate or permit the operation or playing of any device which reproduces, produces, or amplifies sound, such as a radio, musical instrument, phonograph, or sound amplifier, in such a manner as to create a noise disturbance.

i. Across any real property boundary or within Noise Zone I, between the hours of 10:00 p.m. and 7:00 a.m. on the following day (except for activities for which a temporary use permit has been issued).

ii. At 50 feet from any such device, if operated on or over any public right-of-way.

G. *Commercial and office noise provisions.* All operations and businesses shall be conducted to comply with the following standards:

1. All commercial and office activities shall not create any noise that would exceed an exterior noise level of 65 dBA during the hours of 10:00 p.m. to 7:00 a.m. and 70 dBA during the hours of 7:00 a.m. to 10:00 p.m. when measured at the adjacent property line.

2. *Loading and unloading.* No person shall cause the loading, unloading, opening, closing, or other handling of boxes, crates, containers, building materials, garbage cans, or similar objects between the hours of 10:00 p.m. and 7:00 a.m., in a manner which would cause a noise disturbance to a residential area.

3. *Vehicle repairs and testing.* No person shall cause or permit the repairing, rebuilding, modifying, or testing of any motor vehicle, motorcycle, or motorboat in such a manner as to increase a noise disturbance between the hours of 10:00 p.m. and 8:00 a.m. adjacent to a residential area.

H. Industrial noise provision included in Table 17.66.110-1 (Industrial Performance Standards). (Code 1980, § [17.66.050](#); Ord. No. 855 § 4, 2012)

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# Chapter 8: Public Health and Safety

R A N C H O C U C A M O N G A G E N E R A L P L A N

## Introduction

Rancho Cucamonga has long emphasized a proactive approach to public health and safety planning. This effort involves identifying and mitigating hazards present in the environment that may adversely affect property and threaten lives, health, and safety. While recognizing that there is a limit regarding the level of protection that can be afforded, through a proactive approach to planning and the efforts of the dedicated police and fire personnel plus the contributions of community volunteers, the City endeavors to avoid or mitigate these hazards. In addition to planning for and reacting to potential hazards, another important component of maintaining public health and safety is ensuring that we lead sustainable lives, decreasing the impact on global warming and climate change to maintain a healthy Earth.

Since the City's founding, providing adequate public safety has been a core value within the community. In order to provide excellent fire protection and emergency medical services, the City created a subsidiary agency, the Rancho Cucamonga Fire Protection District (RCFPD). The RCFPD has become recognized as a statewide leader in innovation. The police services that are provided by the San Bernardino County Sheriff's Department have been custom tailored to meet the needs of this unique community. The low crime rates and safe streets have been cited as one of the primary reasons why people choose to live and raise their families in Rancho Cucamonga.

### **Chapter 8: Public Health and Safety**

This Chapter consists of the following sections:

- Fire and Emergency Services
- Crime Prevention
- Seismic and Geologic Hazards
- Flood Hazards and Inundation
- Wind Hazards
- Aviation Hazards
- Air Quality, Atmosphere, and Climate
- Noise

In response to these concerns, California enacted legislation in 2006 and 2008 that requires jurisdictions to comprehensively address how long-range plans will begin to reduce greenhouse gas emissions and help achieve statewide air quality goals. AB 32, the Global Warming Solutions Act of 2006, established a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gas emissions. The law aims to reduce carbon emissions in California to 1990 levels by 2020.

SB 375, Redesigning Communities to Reduce Greenhouse Gases, passed into law in 2008, is implementing legislation for AB 32. This legislation endeavors to control greenhouse gas emissions by curbing sprawl (the unplanned, uncontrolled spread of urban development). The legislation encourages compact development patterns that reduce the need to drive, thereby reducing air pollution from car exhaust, conserving water, and protecting habitat, among other benefits. To achieve these goals, this law is designed to align regional land use, housing, and transportation plans with greenhouse gas reduction targets.

Without a reduction in greenhouse gas emissions, global changes affecting Rancho Cucamonga in the future could include:

- More frequent heat waves
- More extreme weather events
- More frequent and increased severity droughts
- Increased potential for tropical insect-borne diseases

Rancho Cucamonga recognizes the importance of reducing greenhouse gas emissions to preserve a high quality of life and safety for generations to come. Many actions undertaken by the City directly or indirectly improve air quality. These include building residential units near the Metrolink station, pursuing Mixed Use development, supporting transit use, development of bicycle routes and trails, and supporting the use of alternative fuel vehicles (AFVs) in the City's fleet and in the community. Considering air quality issues in the decision-making process will ensure that new development results in limited emission levels to the extent feasible. Rancho Cucamonga also leads by example, with sustainable building and operation processes for City government.

Transportation and energy production are among the leading activities associated with greenhouse gas emissions. As such, it is important to understand how the long-range planning decisions as well as daily activities can have implications on local air quality. As SB 375 indicates, air quality issues are intricately related to policies in the Managing Land Use, Community Design, and Historic Resources Chapter and the Community Mobility Chapter of the General Plan that reduce use of and dependence on automobiles. Implementation of sustainability policies throughout this General Plan will help minimize the City's contribution to global climate change.

## Noise

Noise is commonly defined as intrusive or undesired sound. Excessive noise can be disruptive, be it from the continuous thrum of trucks traveling along a busy roadway or the whine of gasoline-powered leaf blowers on an otherwise quiet morning. Noise may interfere with communication, work, rest, recreation, and sleep, and can impact residents' quality of life. In extreme cases, excessive noise may produce

physiological or psychological damage. For all of these reasons, the City evaluates noise-generating sources and ambient noise conditions in land use planning and decision making.

This section provides policy direction for minimizing noise impacts on the community and for coordinating with surrounding jurisdictions and other entities regarding noise control. By identifying noise-sensitive land uses and establishing compatibility guidelines for land use and noise, noise considerations will influence the general distribution, location, and intensity of future land use. The result is that effective land use planning and mitigation can alleviate the majority of noise problems.

## Noise Metrics

Sound intensity is measured and expressed by decibels (dB), with an adjustment referred to as the A-weighted measure (dBA) to correct for the relative frequency response of the human ear. Decibels are measured on a logarithmic scale, representing points on a sharply rising curve. For example, a noise level of 10 decibels is 10 times more intense than one decibel, 20 decibels represents a noise 100 times more intense, and 30 decibels reflects a noise condition 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than a zero decibel level.

The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. A 10-decibel increase in sound level is perceived by the human ear as only doubling of the loudness of the sound. Ambient sounds in the urban environment generally range from 30 dBA (very quiet) to 100 dBA (very loud), as indicated in Table PS-4: Typical Sound Levels.

Because people generally are more sensitive to noise intrusions during the evening and night hours, State law requires, for planning purposes, use of such metrics as the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (Ldn). These metrics add an artificial decibel increment to quiet time noise levels in a 24-hour noise descriptor to account for increased sensitivity during late hours. The CNEL descriptor requires that an artificial increment of 5 dBA be added to the actual noise level for the hours from 7:00 a.m. to 10:00 p.m., and 10 dBA for the 10:00 p.m. to 7:00 a.m. period. The Ldn descriptor uses the same methodology, except that no artificial increment is added to the hours between 7:00 a.m. and 10:00 p.m. Both descriptors yield roughly the same 24-hour level, with the CNEL being only slightly more restrictive (that is, higher).

Table PS-4: Typical Sound Levels			
Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Example Noise Environment	Perception
Shotgun (at shooter's ear)	140	Aircraft carrier flight deck	Painfully Loud
Civil defense siren (100 ft)	130		Threshold of Pain
Jet takeoff (200 ft)	120		



**Table PS-4: Typical Sound Levels**

Noise Source at a Given Distance	A-Weighted Sound Level in Decibels	Example Noise Environment	Perception
Loud rock music	110	Rock music concert	Very Loud
Pile driver (50 ft)	100		
Ambulance siren (100 ft)	90	Boiler room	
Pneumatic drill (50 ft)	80	Noisy restaurant	Moderately Loud
Busy traffic; hair dryer	70		
Normal conversation (5 ft)	60	Data processing center	
Light traffic (100 ft); rainfall	50	Private business office	Quiet
Bird calls (distant)	40	Average living room/library	
Soft whisper (5 ft); rustling leaves	30	Quiet bedroom	
Normal breathing	20	Recording studio	Threshold of Hearing
	10		

Source: Beranek, L.L. 1998. *Noise and Vibration Control*. Institute of Noise Control Engineering.

## Effects of Noise

At 60 dBA, noise can impair a person's ability to understand what someone else is saying, and sound levels over 40 to 45 dBA can disturb sleep. A person's likelihood of hearing loss strongly increases at prolonged exposure to sound levels over 85 dBA.

The level of background (ambient) noise is the key factor used to determine whether a particular land use should locate in a particular location. In Rancho Cucamonga's neighborhoods, residents expect to experience ambient noise conditions that allow them to conduct their day-to-day activities without interference from noise. Face-to-face conversations at a distance of about five feet can be conducted with relative ease where A-weighted noise levels are as high as 66 dBA. In conversations involving groups of people, the level of background noise needs to be between 50 and 60 dBA to allow people to hear each other.

With regard to sleep disturbance and noise, sleep generally follows similar patterns in people of all ages, from falling asleep, to deep sleep, to waking states, to in-between. The time spent in each state varies, but sound can interfere with any sleep stage. Although people can acclimate themselves to certain noises and sleep through them, quieter night-time noise levels generally are more conducive to restful sleep patterns, and as noted, residents expect their neighborhoods to be quiet at night.

Because of the ways that different people perceive noise, in any given noise environment a variety of reactions can be expected, ranging from serious annoyance to no awareness. As a general observation, studies have shown that if a noise problem is allowed to occur, a greater reduction in the noise level (ranging from five dBA to 10 dBA) is often necessary to appease complaints than would have been necessary if the noise had instead been addressed at the design stage. For this reason, the preferred approach regarding noise control is to address it early in the development process.

## Noise Standards

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 for the purpose of providing suitable interior noise environments. 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 60 dBA CNEL or higher. Acoustical studies that accompany building plans must demonstrate that structures have 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.

City noise standards are included in the Development Code for each land use district. In addition, the City has adopted a Noise Abatement section of the Development Code (Section 17.02.120) that has special provisions for determining and addressing noise issues. Noise complaints are addressed on an individual basis.

Figure PS-8: Noise Compatibility Matrix generally reflects guidelines promulgated by the California Office of Noise Control. This matrix provides the City with an integral tool to gauge the compatibility of land uses relative to existing and future noise levels.

The Noise Compatibility Matrix allows for higher ambient noise levels for residential development within areas designated for higher density residential uses and Mixed Use. However, where Mixed Use is allowed in Rancho Cucamonga, and where residential neighborhoods directly interface with commercial development, such as along Foothill Boulevard, careful review of site design and operational characteristics of individual commercial uses will allow the City to address any site-specific noise concerns through design and operational conditions applied to individual projects.

## The Noise Environment

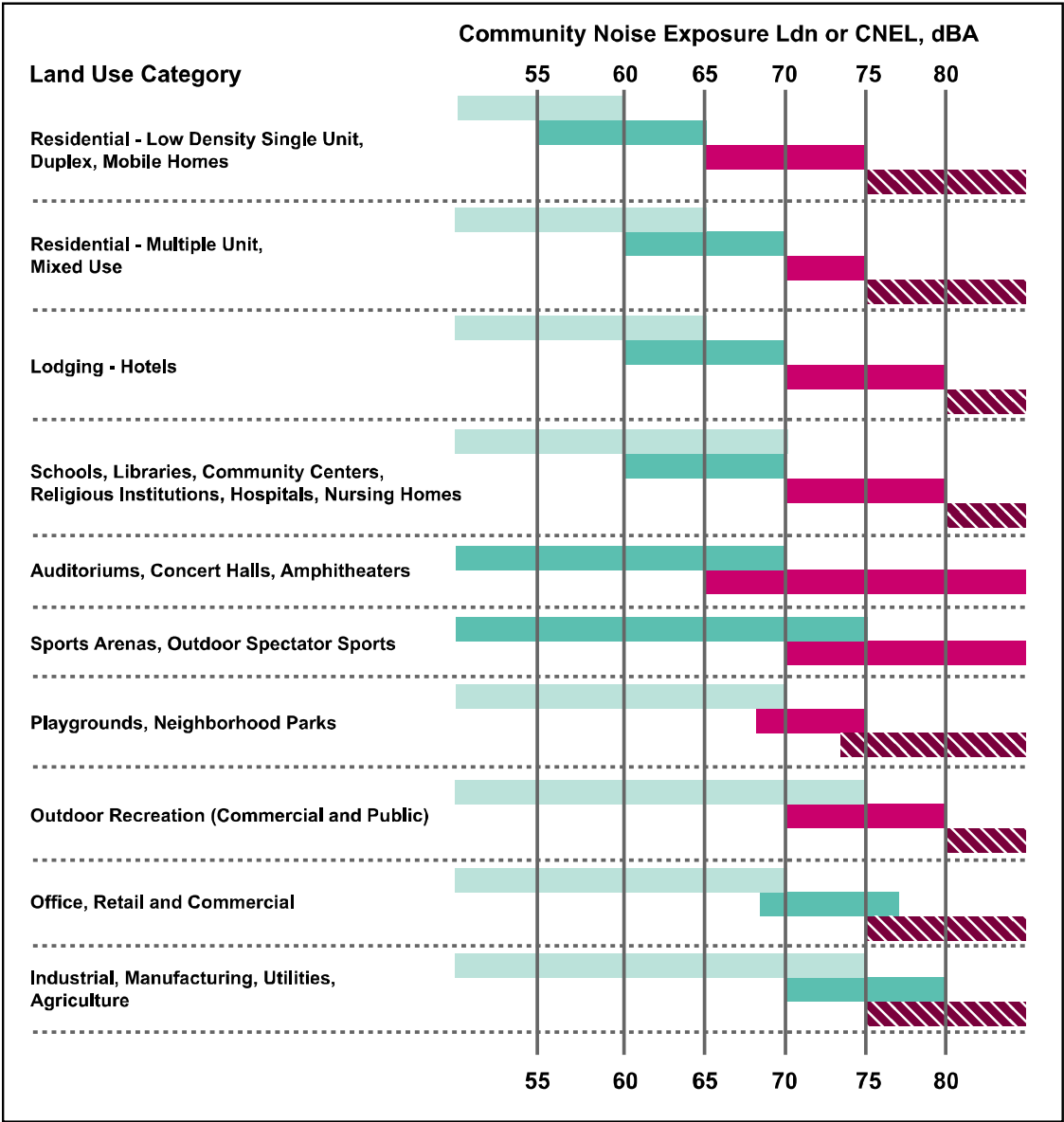
### Noise Conditions - 2009

Noise surveys conducted in 2009 revealed that the ambient noise environment in Rancho Cucamonga largely is influenced by roadway noise (Figure PS-9: Existing Noise Contours - 2009). To a lesser degree, aircraft operations at LA/Ontario International Airport and trains contribute to noise conditions in the areas near these activities. Distinct truck, railroad, and aircraft noise are notable in the southern portion of the City.

Two types of noise sources are considered in the community noise inventory: stationary sources and mobile sources. Stationary sources include industrial and construction activities (including truck loading), playgrounds, outdoor sports facilities,



Figure PS-8: Noise Compatibility Matrix



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

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

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

**Clearly Unacceptable**  
New construction or development should generally not be undertaken. Construction costs to make the indoor environment acceptable would be prohibitive and the outdoor environment would not be usable.

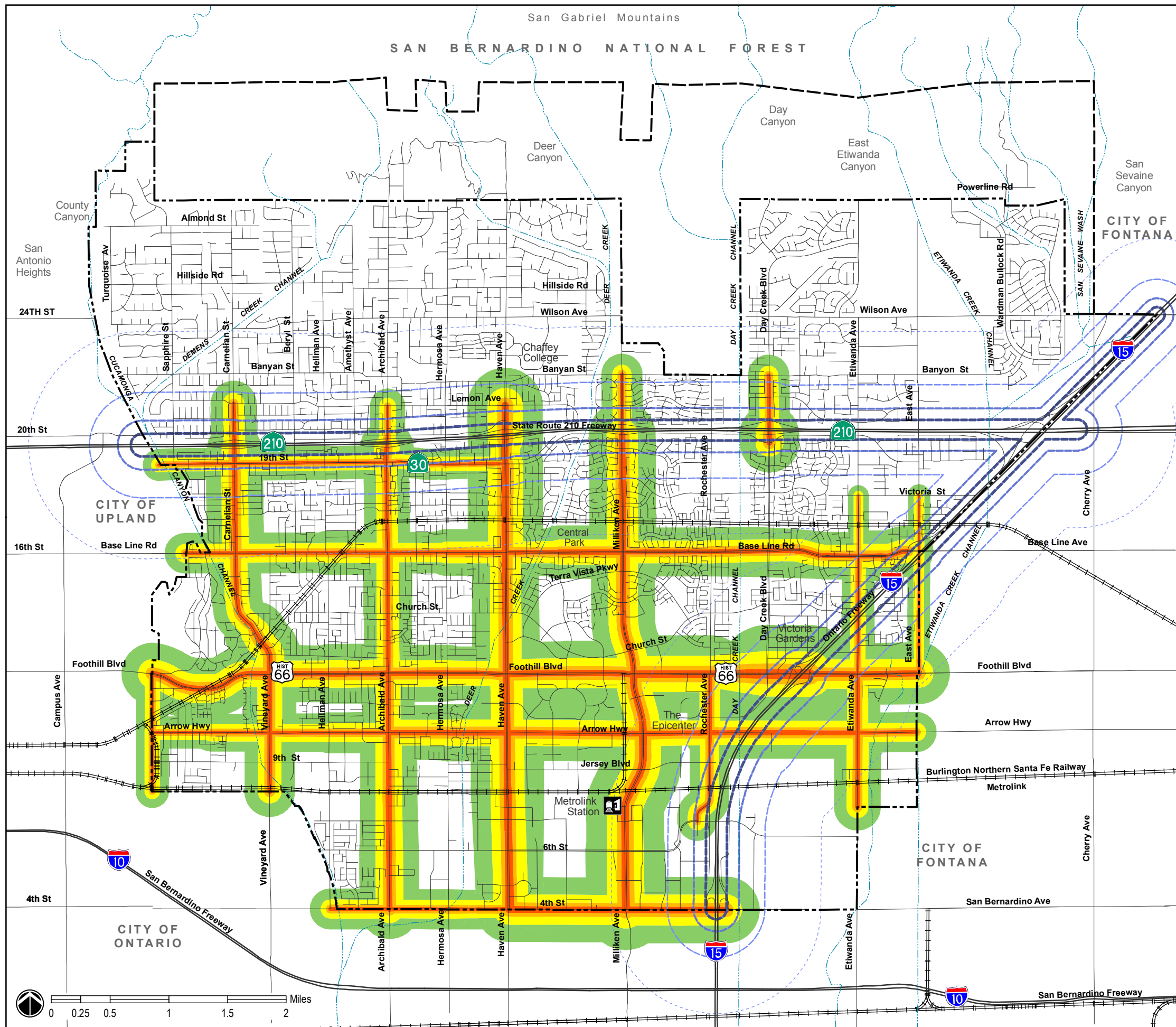
landscape maintenance equipment, construction activities, and the typical sounds heard in a residential neighborhood (power tools, barking dogs, etc.). Mobile noise sources refer to cars, trucks, motorcycles, buses, aircraft, and trains.

In Rancho Cucamonga, the key transportation corridors that contribute to ambient noise levels are I-15, SR-210, and the Metrolink rail line. Areas adjacent to freeways experience noise levels approximately 70 to 75 dBA CNEL. Sound walls along I-15 and SR-210 help alleviate some of the noise impacts from the freeways. Areas adjacent to the Metrolink railroad can experience levels of noise up to 71 dBA when trains are passing through. There are residential uses adjacent to the railroad immediately west of Haven Avenue. Land uses east of Haven Avenue generally consist of industrial uses, so train noise is not a major concern.

**Vehicles traveling on Haven Avenue can generate noise levels up to 75 CNEL along the edge of the roadway.**



Foothill Boulevard, Base Line Road, Haven Avenue, Milliken Avenue, Day Creek Boulevard, 19<sup>th</sup> Street, Archibald Avenue, Arrow Highway, and Vineyard Avenue/Carnelian Street are roadways in the City that carry significant vehicle volumes. Measurements taken in residential neighborhoods near these roadways in 2009 indicated that noise levels typically range from 60 to 70 dBA CNEL. Local traffic contributes considerably to noise levels throughout the City.



**Noise Contours**

- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

**Freeway Noise Contours**

- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

**Base Map**

- City Boundary
- Sphere of Influence
- Waterways
- Freeway
- Roads
- Railroads

Note: The CNEL contours on this map do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Source: Mestre Greve Associates, 2009.



Figure PS-9:  
Existing Noise  
Contours: 2009

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With regard to aircraft noise, the jet landing patterns at LA/Ontario International Airport are oriented east-west. Occasional aircraft noise can be heard in southern areas of Rancho Cucamonga. No noise contours over 60 dBA CNEL extend into Rancho Cucamonga. Jurisdictions that experience the brunt of airplane departure and arrival noise levels are Ontario, Fontana, and Montclair.

### Future Noise Environment (2030)

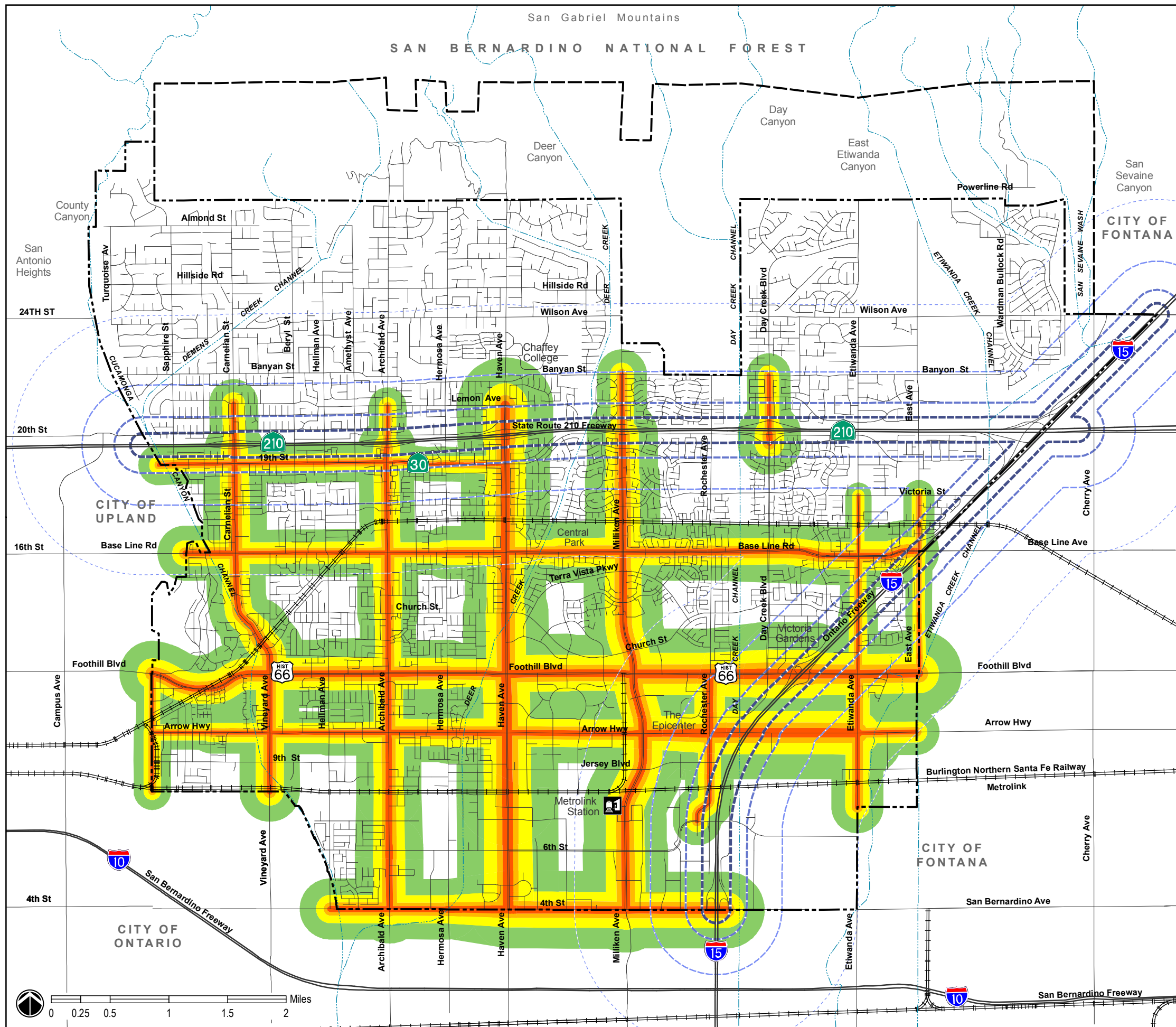
The projected noise exposure contours for year 2030 are indicated in Figure PS-10: Future Noise Contours - 2030. The future noise contours should be considered as a guide to identifying potential land use/noise compatibility issues and will be used to determine the requirement for project specific noise studies and mitigation. In comparison to the 2009 noise contours presented in Figure PS-9, future noise levels will increase, but not significantly. Noise level increases are projected to occur along Haven Avenue, Milliken Avenue, and Foothill Boulevard due to increased traffic volumes.

## Public Health and Safety Issues

Key issues relative to public health and safety are:

- **Wildland Urban Interface Fires.** Rancho Cucamonga's location adjacent to the San Bernardino National Forest and San Gabriel Mountains puts it at high risk for Wildland Urban Interface (WUI) fires. This type of fire begins in the chaparral north of the City and can spread to structures in those areas and on the perimeter of the City.
- **Emergency Medical Services.** Rancho Cucamonga Fire Protection District (RCFPD) is the first responder to medical emergencies. EMS responses are the most common response made by RCFPD, and service demands have been steadily increasing. As the Rancho Cucamonga population ages, and new residents and employees locate here, the EMS program will continue to be impacted.
- **Emergency Management.** In the event of an emergency or natural disaster, it is important to have clear, up-to-date plans to expedite response. Public outreach and education regarding emergency preparedness is also crucial.
- **Hazardous Materials.** Releases of explosive, reactive, corrosive, toxic, and flammable materials can cause injury, life loss, and property damage and may necessitate evacuations. Emergency plans and trained personnel are necessary to adequately respond to hazardous materials emergencies.
- **Crime Prevention.** Rancho Cucamonga has set high standards for public safety and protection, and as a result is one of the safest cities of its size in the nation. To maintain these high levels of public safety, it will be important to continue to evaluate existing programs, meet response time goals, and support crime prevention through environmental design. In addition, involving the community in crime prevention programs is integral to the City's public safety success.





**Noise Contours**

- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

**Freeway Noise Contours**

- 70 dBA CNEL
- 65 dBA CNEL
- 60 dBA CNEL
- 55 dBA CNEL

**Base Map**

- City Boundary
- Sphere of Influence
- Waterways
- Freeway
- Roads
- Railroads

Note: The CNEL contours on this map do not take into account the effect of any noise barriers or topography that may affect ambient noise levels.

Source: Mestre Greve Associates, 2009.



Figure PS-10:  
Future Noise  
Contours: 2030

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# Public Health and Safety Goals and Policies

The following goals and policies are aimed at providing guidance and policy direction regarding public health and safety in Rancho Cucamonga.

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**GOAL PS-1: Plan, promote, and demonstrate a readiness to respond and reduce threats to life and property through traditional and innovative emergency services and programs.**

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**Policy PS-1.1: Reduce the loss of life, property, and injuries incurred as a result of fires by offering and supporting comprehensive fire prevention, public education, and emergency response programs.**



*Discussion:* Fire hazards pose a threat to Rancho Cucamonga residents, especially in areas near the Wildland Urban Interface (WUI). Fire prevention is effective when it includes public education and appropriate land use restrictions, as well as adequate facilities and personnel to mitigate fires when they occur. The Fire District is expected to continually develop effective prevention and response strategies to address this constant risk.

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**Policy PS-1.2: Strive to limit loss of life and property as a result of wildland fires through adequate wildland fire protection services, education and enforcement of defensible space and brush clearance requirements, and wildland fire evacuation and preparedness plans.**

*Discussion:* The dry vegetation north of the City is conducive to quick moving and high-heat fires that can spread rapidly and cause damage to structures and homes. Keeping brush and vegetation away from structures is critical to decreasing risks to these structures, and evacuation and preparedness plans are necessary to ensure that responses to wildland fires are coordinated and efficient.

The Fire District shall routinely assess the current threat to life and property in the WUI. Needs for improvements in response capability will be identified.

The City should also expand the existing education and warning system that can be activated following significant wildland fires on the hillsides above the City. Education efforts can include mailers to households in the affected areas, public meetings, and/or door-to-door education campaigns that inform the public of wildland fire safety tips and procedures.

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**Policy PS-12.8:** **Develop green procurement plans and ensure energy savings in City operations and maintenance.**



*Discussion:* The City of Rancho Cucamonga has set a course towards achieving environmental sustainability. In keeping with the Healthy RC Initiative, City staff has proposed actions that focus on policies and City operations initiatives that will facilitate the integration of a Healthy Mind, Body, and Earth. Working with other stakeholders, the City will set an example by exploring, utilizing, and sharing best practices with the community. One component of this is procuring products that conserve energy and are healthy for users. The City will also ensure energy savings through conservation by design and practice as well as utilizing renewable energy sources.

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**Policy PS-12.9:** **Develop energy- or climate change-themed publications and workshops, facilitating energy audits for residents, and establishing partnerships to reduce greenhouse gas emissions. Increase public awareness about climate change, and encourage residents and businesses to become involved in activities and lifestyle changes that help reduce greenhouse gas emissions.**



*Discussion:* A primary component necessary to reduce greenhouse gas emissions and curb climate change is raising public awareness and providing information for both residents and businesses to reduce their energy use. As greenhouse gas emissions are a community and regional issue, cooperation and partnerships are necessary to ensure that as many persons as possible contribute in reduction programs.

---

**GOAL PS-13: Minimize the impacts of excessive noise levels throughout the community, and adopt appropriate noise level requirements for all land uses.**

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**Policy PS-13.1:** **Consider the compatibility of proposed land uses with the noise environment when preparing or revising community and/or specific plans and when reviewing development proposals. The contour map depicting future noise levels (Figure PS-10) should be used by the City as a guide to land use/noise compatibility.**

*Discussion:* Land use compatibility with noise is an important consideration in the planning and design process. Some land uses are more sensitive to noise intrusion than others. Sensitive receptors, such as residences, schools, health care facilities, and churches should not be located in proximity to major noise sources.

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**Policy PS-13.2:** **Consider noise impacts as part of the development review process, particularly the location of parking, ingress/egress/loading, and refuse collection areas relative to surrounding residential development and other noise-sensitive land uses.**

*Discussion:* The City's Planning Department uses the project review process to identify potential noise issues and works with developers and land owners to apply site planning and other strategies to reduce noise impacts. By taking advantage of the natural shape and contours of the site, it is often possible to arrange buildings and other uses in a manner that can reduce and possibly eliminate noise impacts.

---

**Policy PS-13.3: Consider the use of noise barriers or walls to reduce noise levels generated by ground transportation noise sources and industrial sources.**

*Discussion:* In cases where adverse noise levels are not adequately addressed through proper site planning or building design layout, sound walls or landscaped barriers may be considered. The following guidelines are intended to ensure the effectiveness of a noise barrier:

- A noise barrier must be massive enough to prevent significant noise transmission through it and high enough to shield the receiver from the noise source.
- The barrier must be carefully constructed so that there are no cracks or openings.

---

**Policy PS-13.4: Require that acceptable noise levels are maintained near residences, schools, health care facilities, religious institutions, and other noise sensitive uses in accordance with the Development Code and noise standards contained in the General Plan.**

*Discussion:* Noise issues should always be considered during the planning process so that needed measures are incorporated in design and location of land uses. Noise evaluations should be conducted when a proposed project would result in sensitive land uses and major noise generators within close proximity to each other, in order to identify potential mitigation to address noise impacts.

---

**Policy PS-13.5: Limit the hours of operation at noise generating sources that are adjacent to noise-sensitive uses, wherever practical.**

*Discussion:* When different uses operate on differing schedules, noise disturbances can result. As more Mixed Use projects develop in the City, care must be taken to ensure a healthy noise environment for residents and a healthy business environment for restaurants, shops, and entertainment venues. To ensure compatibility of uses, business hours may need to be regulated.

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**Policy PS-13.6: Implement appropriate standard construction noise controls for all construction projects.**

*Discussion:* Construction activities and noise associated with public works projects or private development occur throughout the City. Construction activities are temporary; however, they must still abide by noise control standards, including hours of operation.

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**Policy PS-13.7: Require all exterior noise sources (construction operations, air compressors, pumps, fans, and leaf blowers) to use available noise suppression devices and techniques to bring exterior noise levels down to acceptable levels.**

*Discussion:* Sources of community noise are often associated with ordinary daily activities such as property maintenance and construction. Excessive noise from lawnmowers, leaf blowers, mechanical equipment, power tools, and the like can generate complaints when noise-generating activities occur in the evening or during restful weekend hours. The City's noise standards help maintain optimal interior and exterior noise levels within residential areas.

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**Policy PS-13.8: Require that Mixed Use structures be designed to account for noise from adjacent uses.**

*Discussion:* Land use policy encourages new housing development within Mixed Use areas along Foothill Boulevard, near the Metrolink Station, and near the I-15 and Victoria Gardens. The City understands that a mix of uses is integral to creating an exciting and walkable environment. At the same time, mixing uses can also contribute to noise incompatibilities. As such, care should be taken at the design stage to minimize noise intrusion for residential uses.

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**Policy PS-13.9: Provide, as appropriate, funding to monitor noise levels and investigate noise complaints.**

*Discussion:* Because land use patterns in Rancho Cucamonga are well established, little opportunity exists to relocate noise-sensitive uses to areas with lower ambient noise levels. In addition, as the community continues to grow and evolve, new noise conflicts could arise.

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**Policy PS-13.10: Provide education to the community at large about the importance of maintaining a healthy noise environment, and identify ways residents can assist in noise abatement efforts.**

*Discussion:* Experiencing elevated noise can cause hearing impairment, hypertension, annoyance, and sleep disturbance. It is important to educate the community about the health effects of noise, and measures they can take to reduce noise in their environment.

---

**Policy PS-13.11: Continue to work with the surrounding communities to allow for compliance with Rancho Cucamonga's land use and noise compatibility goals and objectives at the City's boundaries.**

*Discussion:* Noise is not limited to jurisdictional boundaries. In cases where proposed projects are located near the City's boundary and include potential noise impacts, the City will communicate with neighboring jurisdictions regarding potential noise mitigation measures.

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**GOAL PS-14: Minimize the impacts of transportation-related noise.**

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**Policy PS-14.1: Consult with Caltrans and other regional agencies to minimize the impact of transportation-related noise, including noise associated with freeways, major arterials, and rail lines.**

*Discussion:* Freeway and State highway noise issues may result from residents expressing concern related to an existing noise source or for new/expanded roadway projects. In such cases, coordination with Caltrans is required to assess the level of impact and identify the most effective mitigation strategies. The City should continue participating in the Route 210 Joint Powers Authority (JPA) quarterly meetings with surrounding cities to address noise and other related issues with Caltrans.

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**Policy PS-14.2:** **Require development that is, or will be, affected by railroad noise to include appropriate measures to minimize adverse noise effects on residents and businesses.**

*Discussion:* Railroad operation noise is notable in the southern portion of the City along two railroad spurs. In addition to noise from movement along the tracks, other sources of noise include warning signals sounded at grade crossings. New development should understand and address the noise environment through appropriate mitigation measures.

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Bldg  
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 05/22/2018  
Case Description: Bldg Constr

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
residences	Residential	50.0	50.0	50.0

Description	Impact Device	Usage (%)	Spec Lmax (dBA)	Equipment		
				Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No	20		74.7	150.0	0.0
Man Lift	No	20		74.7	150.0	0.0
Crane	No	16		80.6	150.0	0.0

Results

Noise Limit Exceedance (dBA)							Noise Limits (dBA)		
-----									
-----									
Night	Day		Calculated (dBA)		Day		Evening		
			Evening		Night				
-----									
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			
-----									
-----									
Man Lift			65.2	58.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Man Lift			65.2	58.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Crane			71.0	63.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Total			71.0	65.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Trenching  
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 05/22/2018  
Case Description: Trenching

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
residences	Residential	50.0	50.0	50.0

Description	Impact Device	Usage (%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Front End Loader	No	40		79.1	150.0	0.0
Excavator	No	40		80.7	150.0	0.0

Results

Noise Limit Exceedance (dBA)							Noise Limits (dBA)		
-----									
-----									
Night		Day	Calculated (dBA)		Day		Evening		
			Evening	Night	Night				
-----									
Equipment	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			
-----									
Front End Loader			69.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Excavator			71.2	67.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Total			71.2	69.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

paving  
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 05/22/2018  
Case Description: Paving

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
Residences	Residential	50.0	50.0	50.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Roller	No	20		80.0	150.0	0.0
Paver	No	50		77.2	150.0	0.0
Vacuum Street Sweeper	No	10		81.6	150.0	0.0

Results

Noise Limit Exceedance (dBA)						Noise Limits (dBA)			
-----									
-----									
Night	Calculated (dBA)				Day	Evening			
	Day	Evening			Night				
-----									
Equipment		Lmax	Leq		Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			
-----									
Roller			70.5	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Paver			67.7	64.7	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Vacuum Street Sweeper			72.0	62.0	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Total			72.0	68.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			



Grading  
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 05/22/2018  
Case Description: Grading

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
residences	Residential	50.0	50.0	50.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Front End Loader	No	40		79.1	150.0	0.0
Roller	No	20		80.0	150.0	0.0
Dump Truck	No	40		76.5	150.0	0.0

Results

Noise Limit Exceedance (dBA)							Noise Limits (dBA)		
-----									
-----									
Night	Day		Calculated (dBA)		Day		Evening		
			Evening		Night				
-----									
Equipment		Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax		Lmax	Leq	Lmax	Leq			
-----									
-----									
Front End Loader			69.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller			70.5	63.5	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dump Truck			66.9	62.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total			70.5	68.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

Demo  
Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 05/22/2018  
Case Description: Demo

\*\*\*\* Receptor #1 \*\*\*\*

Description	Land Use	Daytime	Baselines (dBA)	
			Evening	Night
residences	Residential	50.0	50.0	50.0

Description	Impact Device	Usage (%)	Equipment		Receptor Distance (feet)	Estimated Shielding (dBA)
			Spec Lmax (dBA)	Actual Lmax (dBA)		
Excavator	No	40		80.7	150.0	0.0
Front End Loader	No	40		79.1	150.0	0.0
Dump Truck	No	40		76.5	150.0	0.0

Results

Noise Limit Exceedance (dBA)							Noise Limits (dBA)		
-----									
-----									
Night	Day		Calculated (dBA)		Day		Evening		
			Evening		Night				
-----									
Equipment			Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax
Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq			
-----									
Excavator			71.2	67.2	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Front End Loader			69.6	65.6	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Dump Truck			66.9	62.9	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Total			71.2	70.3	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A			

# 1. Victoria Park Lane & Baseline Rd

## EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
49	57	72	101	67	46	51	472	53	111	465	90

N Link	S Link	E Link	W Link
412	409	1311	1136

## 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1	1	1	1	1	0	1	5	1	1	5	1

## CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	1	0	0	1	0

## PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
33	8	0	8	0	0	0	32	0	0	0	0
20%	5%		5%			20%					
0	0		1			1					

## EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
50	58	73	102	68	46	52	477	54	112	470	91

## EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
82	65	72	109	67	46	51	504	53	111	465	90

N Link	S Link	E Link	W Link
428	450	1351	1201
Noise Increase	0.165	0.4	0.13
	0.242		

## 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
50	58	73	102	68	46	52	478	54	112	471	91

## 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
83	66	73	110	68	46	52	510	54	112	471	91

### 13. I-15 NB On-Ramps & Base Line Road

#### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
294	0	251	0	0	0	333	483	0	0	748	129

N Link	S Link	E Link	W Link
462	545	1611	1858

#### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
3	0	3	0	0	0	4	5	0	0	8	1

#### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1	0	0	0	0	0	14	4	0	0	4	0

#### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	8	8	0	0	8	0
						5%	5%		5%		
						0	0		1		

#### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
297	0	254	0	0	0	337	488	0	0	756	130

#### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
294	0	251	0	0	0	341	491	0	0	756	129

N Link	S Link	E Link	W Link
470	545	1627	1882
Noise Increase	0.1	0	0.04
			0.056

#### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
298	0	254	0	0	0	351	492	0	0	760	130

#### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
298	0	254	0	0	0	359	500	0	0	768	130

12. I-15 SB Off & Base Line Road

EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	383	0	269	0	408	215	0	544	565

N Link	S Link	E Link	W Link
1217	215	1900	1436

2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	4	0	3	0	4	2	0	6	6

CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	13	0	1	0	2	1	0	2	0

PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	8	0	17	33	0	8	0
						5%	10%	20%			
						I	O	O			I

EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	387	0	272	0	412	217	0	550	571

EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	383	0	277	0	425	248	0	552	565

N Link	S Link	E Link	W Link
1225	248	1925	1502
Noise Increase	0.028	0.6	0.06
		0.06	0.195

2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	400	0	273	0	414	218	0	552	571

2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	400	0	281	0	431	251	0	560	571

# 11. Etiwanda Avenue & Base Line Road

## EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
105	124	189	47	117	54	69	465	87	202	503	36

N Link	S Link	E Link	W Link
447	824	1442	1283

## 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1	1	2	0	1	1	1	5	1	2	5	0

## CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	2	0	3	2	1	1	0	0	0	0	3

## PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	8	50	0	8	0	0	0	40	16	0	0
5% 30%			5%			25% 10%					
0 0			1			1 1					

## EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
106	125	191	47	118	55	70	470	88	204	508	36

## EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
105	132	239	47	125	54	69	465	127	218	503	36

N Link	S Link	E Link	W Link
463	946	1508	1323
Noise Increase	0.2	0.6	0.19
			0.133

## 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
106	127	191	50	120	56	71	470	88	204	508	39

## 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
106	135	241	50	128	56	71	470	128	220	508	39

## 10. Etiwanda Avenue & Existing Project Driveway

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
3	278	0	0	387	4	107	0	112	0	0	0

N Link	S Link	E Link	W Link
776	780	0	226

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	3	0	0	4	0	0	0	0	0	0	0

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	12	0	0	12	0	0	0	0	0	0	0

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
72	0	0	0	0	64	58	0	66	0	0	0
45%			40%			35%			40%		
I			I			O			O		

### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
3	281	0	0	391	4	107	0	112	0	0	0

### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
75	278	0	0	387	68	165	0	178	0	0	0

N Link	S Link	E Link	W Link (along driveway)
898	918	0	486
Noise Increase	0.6	0.7	#DIV/0!
			3.3

### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
3	293	0	0	403	4	107	0	112	0	0	0

### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
75	293	0	0	403	68	165	0	178	0	0	0

## 9. Etiwanda Avenue & Church Street/ Miller Avenue

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
102	169	39	14	257	251	149	225	162	42	223	14

N Link	S Link	E Link	W Link
854	771	557	1112

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1	2	0	0	3	3	2	2	2	0	2	0

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	11	0	0	11	1	1	0	0	0	0	0

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	64	0	8	33	25	0	0	0	0	0	8
40%			5%			20%			15%		
I			O			O			O		



## 8. Etiwanda Avenue & Foothill Boulevard

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
178	104	103	45	150	302	274	671	148	104	773	51

N Link	S Link	E Link	W Link
926	787	1747	2346

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
2	1	1	0	2	3	3	7	2	1	8	1

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1	1	6	11	1	0	0	36	1	6	35	9

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	17	0	17	48	0	0	0	0	16
			10%	10%	30%				10%		
			0	0	1				1		

### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
180	105	104	45	152	305	277	678	150	105	781	52

### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
178	104	103	62	150	319	322	671	148	104	773	67

N Link	S Link	E Link	W Link
1024	787	1780	2411
Noise Increase	0.437	0	0.08
		0.119	

### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
181	106	110	56	153	305	277	714	151	111	816	61

### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
181	106	110	73	153	322	325	714	151	111	816	77

## 7. I-15 NB Off-Ramps & Foothill Boulevard

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1362	0	539	0	0	0	0	962	303	0	1435	252

N Link	S Link	E Link	W Link
252	2204	3188	4062

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
14	0	6	0	0	0	0	10	3	0	15	3

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	23	0	0	0	0	23	0	0	31	14

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	32	0	0	0	0	16	0	0	17	0
20%			10%			10%					
I			I			O					

### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1376	0	545	0	0	0	0	972	306	0	1450	255

### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1362	0	571	0	0	0	0	978	303	0	1452	252

N Link	S Link	E Link	W Link
252	2236	3253	4095
Noise Increase	0	0.06	0.09
			0.035

### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1376	0	568	0	0	0	0	995	306	0	1481	269

### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1376	0	600	0	0	0	0	###	306	0	1498	269

## 6. I-15 SB On-Ramps & Foothill Boulevard

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	222	0	723	0	1054	921	0	2207	0

N Link	S Link	E Link	W Link
945	921	3483	4905

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	2	0	8	0	11	10	0	23	0

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	14	23	0	0	8	0	0	8	0

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	16	0	0	17	0
						10%			10%		
						I			O		

### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	224	0	731	0	1065	931	0	2230	0

### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	222	0	723	0	1070	921	0	2224	0

N Link	S Link	E Link	W Link
945	921	3516	4938
Noise Increase	0	0	0.04
			0.029

### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	238	23	731	0	1073	931	0	2238	0

### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	238	23	731	0	1089	931	0	2255	0

## 5. Victoria Park Lane/ Victoria Gardens Lane & Church Street

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
55	83	166	38	94	76	46	331	56	168	382	15

N Link	S Link	E Link	W Link
352	622	1100	946

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
1	1	2	0	1	1	0	4	1	2	4	0

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	8	0	0	0	0	16	0	0	8	17	0

5%	10%	5%	10%
I	I	O	O

### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
56	84	168	38	95	77	46	335	57	170	386	15

### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
55	91	166	38	94	76	62	331	56	176	399	15

N Link	S Link	E Link	W Link
376	638	1125	979
Noise Increase	0.3	0.1	0.1

### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
56	84	168	38	95	77	46	335	57	170	386	15

### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
56	92	168	38	95	77	62	335	57	178	403	15

#### 4. Victoria Park Lane & Long Meadow Drive

##### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
9	134	3	10	201	15	16	0	15	3	2	19

N Link	S Link	E Link	W Link
395	365	37	57

##### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	1	0	0	2	0	0	0	0	0	0	0

##### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

##### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	24	0	0	0	0	0	0	0	0	0	0

15%  
I

##### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
9	135	3	10	203	15	16	0	15	3	2	19

##### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
9	158	3	10	201	15	16	0	15	3	2	19

N Link	S Link	E Link	W Link
419	389	37	57
Noise Increase	0.3	0.3	0

##### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
9	135	3	10	203	15	16	0	15	3	2	19

##### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
9	159	3	10	203	15	16	0	15	3	2	19

### 3. Victoria Park Lane & Proposed Project Driveway

#### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	170	0	0	226	0	0	0	0	0	0	0

N Link	S Link	E Link	W Link
396	396	0	0

#### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	2	0	0	2	0	0	0	0	0	0	0

#### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

#### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	24	0	0	0	0	0	0	0	0	41

15%  
I

25%  
O

#### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	172	0	0	228	0	0	0	0	0	0	0

#### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	170	24	0	226	0	0	0	0	0	0	41

N Link	S Link	E Link	W Link
437	420	65	0
Noise Increase	0.4	0.3	#DIV/0!

#### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	172	0	0	228	0	0	0	0	0	0	0

#### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	172	24	0	228	0	0	0	0	0	0	41

## 2. Victoria Park Lane & Wine Cellar Court

### EXISTING

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	165	5	0	226	0	0	0	0	0	0	3

N Link	S Link	E Link	W Link
394	396	8	0

### 2021 AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	2	0	0	2	0	0	0	0	0	0	0

### CUMULATIVE

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

### PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	41	0	0	0	0	0	0	0	0	0	0

25%  
0

### EXISTING PLUS AMBIENT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	167	5	0	228	0	0	0	0	0	0	3

### EXISTING PLUS PROJECT

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	206	5	0	226	0	0	0	0	0	0	3

N Link	S Link	E Link	W Link
435	437	8	0
Noise Increase	0.4	0.4	#DIV/0!

### 2021 NO PROJECT (E+A+C)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	167	5	0	228	0	0	0	0	0	0	3

### 2021 WITH PROJECT (E+A+C+P)

NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	0	0	0	0	0	0	0	0	0	0	0

SUNDAY PEAK HOUR											
NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND		
L	T	R	L	T	R	L	T	R	L	T	R
0	208	5	0	228	0	0	0	0	0	0	3