

CHAPTER 11

Noise Element

Introduction

Pico Rivera recognizes the relationship between noise and the well-being of the community. Residents seek a peaceful living environment, and businesses seek the ability to conduct business without being interrupted by excessive noise levels. As a result, excessive noise levels can affect the physical health, property values, and economic productivity of the city's residents and businesses.

Regulating noise is thus essential to creating a peaceful and productive community. The City's ability to regulate noise falls into three broad classifications: achieving noise compatible land uses, addressing noise generated by transportation, and dealing with noise generated by temporary construction activities. Achieving noise compatible land use involves making sure that new development is placed within an appropriate noise setting and that adjacent land uses do not generate so much noise that they disturb adjacent uses. Addressing transportation noise generated by the highways, roadway, and rail lines that run through the community, focuses attention on protecting the land uses adjacent to these transportation facilities from excessive noise. Finally, dealing with noise generated by temporary construction activities includes regulating the timing of constructing during the day and working with developers to reduce noise generated by construction equipment.

This element examines noise sources in Pico Rivera with a view toward identifying and evaluating the potential for noise conflicts, and identifies ways to reduce existing and potential noise impacts. This element addresses noise that affects the community at large, rather than noise associated with site-specific conditions. It contains goals, policies, and implementation programs to achieve and maintain noise levels compatible with various land uses.

Noise Context

Noise has long been an accepted part of modern civilization and the urbanization process. The City of Pico Rivera is subject to noise sources that can be generally classified as transportation noise sources and stationary noise sources.

- **Traffic Noise.** Primary noise sources in Pico Rivera are and will continue to be transportation related. Existing and future traffic noise is greatest along the city's major roadways which include Rosemead Boulevard, Paramount Boulevard, Beverly Boulevard, Whittier Boulevard, Washington Boulevard,

Slauson Boulevard, and Telegraph Road, as shown in **Appendix G, Tables G-1 and G-2**. Future roadway noise exposure and contour distances based on development allowed under this General Plan are presented in **Appendix G, Table G-3**.

- **Railroads.** Both the Burlington Northern Santa Fe (BNSF) and Union Pacific railroads maintain lines through the city, as shown in **Figure 5-4**. Metrolink, a regional rail system that includes commuter and passenger services also has lines through the city. Existing and future railroad noise is shown in **Appendix G, Tables G-1 and G-2**.

Future transit facilities to be located in the city are being considered and include the Metro Gold Line light rail but is not anticipated to generate a significant amount of noise. The California High Speed Rail Authority is also considering an east-west alignment of the High Speed Rail line through the city, to be located north of Slauson Avenue. Implementation of either transit facility would result in substantially higher, although intermittent noise levels along those transit corridors and within adjacent areas.

- **Stationary Sources.** Stationary noise sources also contribute to the ambient noise environment in Pico Rivera. Within the community, stationary noise sources related to industry and construction are present. Industrial noise is typically generated by industrial processing and operations, as well as maintenance yards. Construction noise sources can be from diesel engines, air compressors, and electric motors. Residential areas can generate noise through the use of heating and cooling equipment, and through landscape maintenance activities such as gasoline-powered lawnmowers. Commercial uses can generate noise through the operation of rooftop heating and cooling equipment, and other activities such as trash collection and deliveries.

Characteristics of Noise

The principal characteristics of sound are its loudness (amplitude) and frequency (pitch). The frequency of a sound is significant because the human ear is not equally sensitive to all frequencies. The ear is not very sensitive to low frequencies, characterized as a rumble or roar. The ear, however, is most sensitive at higher frequencies, characterized as a screech or a whine. To reflect this varying sensitivity, an A-weighted decibel scale (dBA) is typically used to measure the perceived loudness of a sound.

Noise refers to sound pressure variations audible to the ear. Whether the sound is judged as noise depends largely on the listener's current activity and attitude toward the sound source as well as the amplitude and frequency of the sound. To obtain convenient measurements and sensitivities at extremely low and high sound pressures, sound is measured in units of the decibel (dBA). A listener often judges an increase in sound levels of 10 dBA as a doubling of sound. Examples of the decibel level of various noise sources are shown in **Figure 11-1**.

Maximum Sound Level

The Maximum Sound Level is the highest A-weighted sound level observed during a single noise event no matter how long the sound may persist.

Sound Exposure Level (SEL)

The Sound Exposure Level value represents the A-weighted sound level integrated over the entire duration of one second. Hence, it normalizes the event to a 1-second event. Typically, most events last longer than one second, and the SEL value will be higher than the maximum sound level of the event. SEL is usually applied in situations with multiple sound events, each one having its own characteristic SEL.

Equivalent Noise Level (Leq)

The equivalent noise level (Leq) is a measure of the exposure resulting from the accumulation of A-weighted sound levels over a particular time period. Conceptually, Leq may be thought of as a constant sound level over the period of interest that contains as much sound energy as the actual time-varying sound level with its normal peaks and valleys.

Day-Night Average Sound Level (Ldn)

The Day-Night Average Sound Level is the 24-hour energy average A-weighted sound level with a 10dBA weighing added to those levels occurring between 10 p.m. and 7 a.m. the following morning. The 10 dBA weighing is a penalty representing the added intrusiveness of noise during normal sleeping hours. Ldn is used to determine land use compatibility with noise from aircraft and surface traffic. The expression Ldn is often used in equations to designate the day-night average sound level.

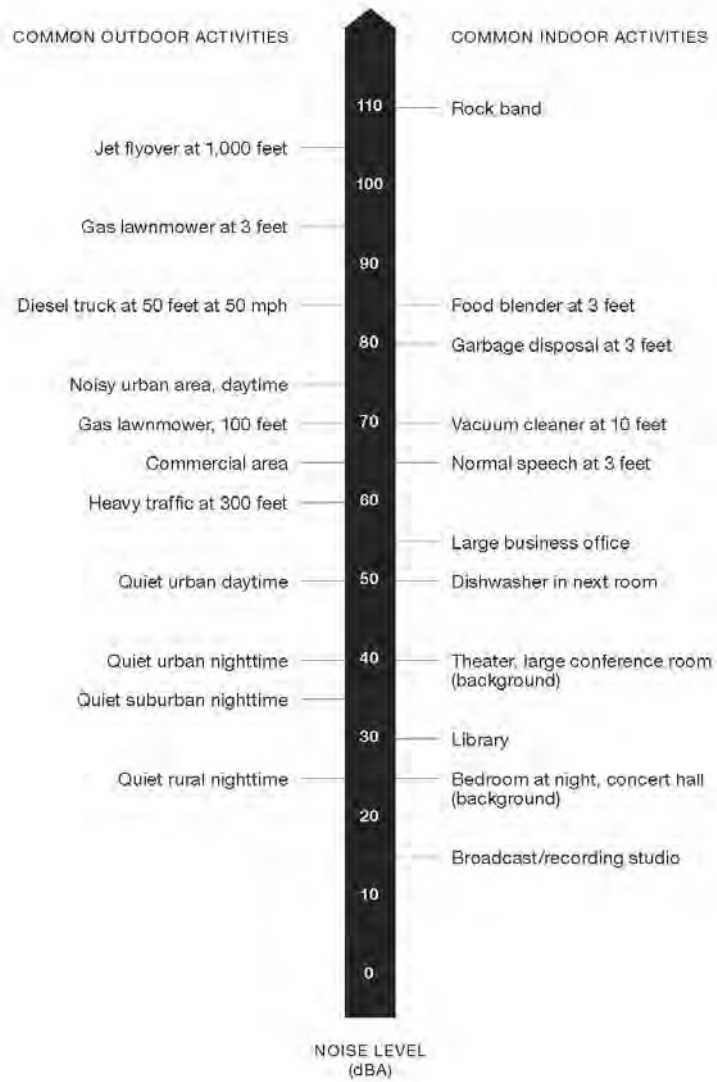


Figure 11-1: Common Noise Sources

Community Noise Equivalent Level (CNEL)

The Community Noise Equivalent Level is an artificial decibel increment added to quiet-time noise levels in a 24-hour noise receptor because community receptors are more sensitive to unwanted noise intrusion during the evening and at night. An addition of five decibels is added to sound levels that occur in the evening from 7:00 p.m. to 10:00 p.m., and an addition of 10 decibels to sound levels that occur between 10:00 p.m. and 7:00 a.m. An interior CNEL of 45 dBA is mandated for multi-unit residential dwellings and is considered a desirable noise exposure for single-unit residential dwellings as well. Since typical noise attenuation within residential structures with closed windows is well over 20 decibels, an exterior noise exposure of 65 decibels CNEL is generally the noise/land use compatibility guideline for new residential dwellings in California.

Vibration

Vibration is produced when moving objects in contact with the ground radiate mechanical energy through the ground. If the object is massive enough and/or close enough to an observer, the ground vibrations are perceptible. Vibration magnitude is measured in vibration decibels (VdB).

Effects of Noise

Documented effects of excessive noise on people can range from annoyance and inconvenience to temporary or permanent hearing loss. However, problems associated with noise can be much more widespread. Although no human illness is known to be directly caused by noise, studies have shown that noise is an important cause of physical and psychological stress, and stress has been directly linked to many common health problems. Therefore, noise can be associated with many disabilities and diseases, such as heart disease, high blood pressure, headaches, fatigue, and irritability. Noise is also suspected to interfere with children's learning. Excessive background noise can reduce the amount and quality of verbal exchange and, therefore, impact education, family lifestyles, occupational efficiency, and the quality of recreation and leisure time.

Sensitive Noise Receptors

Noise sensitive land use are defined as those specific land uses that have associated indoor and/or outdoor human activities that may be subject to stress and/or significant interference from noise produced by community sound sources. Such human activity typically occurs daily for continuous periods of 24 hours or is of such a nature that noise is significantly disruptive to activities that occur for shorter periods. Specifically, noise-sensitive land uses in Pico Rivera include: residences of all types, health care facilities, libraries, cultural facilities, places of worship, schools and day care centers. Minimizing noise exposure to sensitive areas is important to ensure the proper function of land uses and to maintain the quality of life.

Relatively noise tolerant land uses are business, commercial, and professional developments. Noise tolerant receptors include industrial, manufacturing, utilities, natural open space, undeveloped land, parking lots, and transit terminals.

Goals, Policies, and Implementation Actions

Land Use Compatibility

Goal 11.1

An acceptable noise environment for existing and future residents that also meets the business needs of the community.

Policy 11.1-1 Land Use Compatibility. Strive to achieve and maintain land use patterns that are consistent with the noise compatibility guidelines set forth in **Table 11-1**.

Table 11-1:
Maximum Allowable Environmental Noise Standards

Land Use	Hours of Day	
	Exterior Noise Level From Property Line Ldn/CNEL, dB	Interior Noise Level (1) Ldn/CNEL, dB
Residential (Low Density, Multi Family, Mixed-Use)	65	45
Transient Lodging (Motels/Hotels)	65	45
Schools, Libraries, Churches, Hospitals/Medical Facilities, Nursing Homes, Museums	70	45
Theaters, Auditoriums	70	N/A
Playgrounds, Parks	75	N/A
Golf Courses, Riding Stables, Water Recreation	75	N/A
Office Buildings, Business Commercial and Professional	70	N/A
Industrial, Manufacturing, and Utilities	75	N/A

The noise level standard is the maximum decibel level which may be imposed upon the referenced land use.

Where a proposed use is not specifically listed on this table, the use shall comply with the noise exposure standards for the nearest similar use as determined by the Planning Director.

1) This noise exposure maximum requires window and doors to remain closed to achieve the acceptable interior noise level and will necessitate the use of an air conditioning unit and/or exterior noise level reduction measures such as a block wall and double pane windows.

Policy 11.1-2 Existing Noise Incompatibilities. Within areas where existing or future noise levels exceed the guidelines set forth in Table 11-1, encourage establishment of noise buffers and barriers, modifications to noise-generating operations, and/or retrofitting of buildings housing noise-sensitive uses, where feasible and appropriate.

Implementation Program for Policies 11.1-1 through 11.1-2:

- *Adopt regulations in the zoning ordinance addressing acceptable noise and vibration levels and duration.*

Policy 11.1-3 New Noise-Sensitive Development. Require development of new noise-sensitive land uses to provide appropriate noise buffers or barriers, as well as to implement feasible building designs needed to meet the noise compatibility guidelines shown in Table 11-1.

Policy 11.1-4 New Stationary Noise Sources. Require new stationary noise sources to mitigate impacts on noise-sensitive uses consistent with the noise compatibility guidelines set forth in Table 11-1.

Policy 11.1-5 Development Site Planning. Encourage new mixed use and multi-unit residential developments to provide for separation of onsite noise-sensitive and noise-generating uses to the extent feasible, as well as to use appropriate building placement to create noise barriers that protect noise-sensitive uses. In addition to sound barriers, design techniques to mitigate noise impacts may include, but are not limited to:

- Increase building setbacks to increase the distance between the noise source and sensitive receptor.
- Orient buildings which are compatible with higher noise levels adjacent to noise generators or in clusters to shield more noise sensitive areas and uses.
- Orient delivery, loading docks, and outdoor work areas away from noise-sensitive uses.
- Place noise tolerant uses, such as parking areas, and noise tolerant structures, such as garages, between the noise source and sensitive receptor.
- Cluster office, commercial, or multi-unit residential structures to reduce noise levels within interior open space areas.
- Provide double glazed and double paned windows on the side of the structure facing a major noise source, and place entries away from the noise source to the extent possible.

Implementation Program for Policies 11.1-3 through 11.1-5:

- *Require preparation of noise studies as part of the development review process for projects involving development of noise sensitive uses in proximity to major noise sources or development that has the potential to impact noise sensitive land uses. Mitigation should minimize noise-related annoyance, sleep disruption, speech interference, and other similar effects using metrics and methodologies appropriate to the effect(s) to be assessed and avoided.*

Transportation-Related Noise

Goal 11.2

Minimize disruptions to residential neighborhoods and businesses caused by transportation-related noise.

Policy 11.2-1 New High Noise-Generating Uses. Locate future transit stations, rail projects such as the potential Metro Gold Line light rail and High Speed Rail, or other high noise-generating uses away from noise-sensitive land uses to the extent feasible.

Implementation Program for Policy 11.2-1:

- *Request that transportation agencies proposing facilities improvements and routes through Pico Rivera fully analyze potential noise impacts, and provide noise reducing measures as part of project design such that noise impacts of proposed transportation facilities are consistent with the standards set forth in Table 11-1.*

Policy 11.2-2 Mitigation along Roadways. Include noise mitigation measures in the design of street and highway improvement projects adjacent to noise-sensitive areas. Measures should emphasize the establishment of natural buffers or use of setbacks between roadways and adjoining noise sensitive uses, and use of pavements that reduce roadway noise, when feasible.

Policy 11.2-3 Speed Limits. Enforce established speed limits to control noise levels.

Implementation Program for Policy 11.2-3:

- *Consider installation of traffic calming improvements along roadways within residential areas where speeding is an ongoing problem.*

Policy 11.2-4 Truck Routes. Maintain a system of truck routes that avoid truck travel through or adjacent existing and future residential neighborhoods, to the extent feasible.

Policy 11.2-5 Development along Major Roadways and Rail Lines. Require that noise attenuation measures be incorporated into all new development and remodels of noise-sensitive uses in close proximity to major roadways and existing or known planned rail lines where railroad-generated noise levels exceed the guidelines set forth in **Table 11-1**.

Implementation Program for Policy 11.2-5:

- *As part of railroad grade separation projects, consider acquisition of residential uses immediately adjacent to the rail line as part of project improvements.*

Policy 11.2-6 Railroad Noise. Work with the railroad lines operating in Pico Rivera to minimize noise levels produced by trains and whistle noise by continuing to construct additional grade separations at busy intersections, reducing nighttime operations, and maintaining consistency with the noise levels shown in Table 11-1.

Implementation Program for Policy 11.2-6:

- *Continue to pursue federal, State, regional, and local funds to construct additional grade separations at busy intersections within the City.*

Construction Noise Sources

Goal 11.3

Minimize disruptions to residential neighborhoods and businesses caused by construction-related noise.

Policy 11.3-1 Construction Noise. Minimize construction-related noise and vibration by limiting construction activities within 500 feet of noise-sensitive uses from 7:00 A.M. to 7:00 P.M. seven days a week; after hour permission shall be granted by City staff, Planning Commission, or the City Council.

- Require proposed development adjacent to occupied noise sensitive land uses to implement a construction-related noise mitigation plan. This plan would depict the location of construction equipment storage and maintenance areas, and document methods to be employed to minimize noise impacts on adjacent noise sensitive land uses.
- Require that construction equipment utilize noise reduction features (e.g., mufflers and engine shrouds) that are no less effective than those originally installed by the manufacturer.
- Require that haul truck deliveries be subject to the same hours specified for construction. Additionally, the plan shall denote any construction traffic haul routes where heavy trucks would exceed 100 daily trips (counting those both to and from the construction site). To the extent feasible, the plan shall denote haul routes that do not pass sensitive land uses or residential dwellings.

Policy 11.3-2 Vibration Standards. Require construction projects and new development anticipated to generate a significant amount of vibration to ensure acceptable interior vibration levels at nearby noise-sensitive uses based on Federal Transit Administration criteria as shown in **Table 11-2**.

Table 11-2:
Groundborne Vibration Impact Criteria for General Assessment

Land Use Category	Impact Levels (VdB)		
	Frequent Events ^a	Occasional Events ^b	Infrequent Events ^c
Category 1: Buildings where vibration would interfere with interior operations	65 ^d	65 ^d	65 ^d
Category 2: Residences and buildings where people normally sleep	72	75	80
Category 3: Institutional land uses with primarily daytime uses	75	78	83

Vibration levels are measured in or near the vibration-sensitive use.

- “Frequent Events” is defined as more than 70 vibration events of the same source per day.
- “Occasional Events” is defined as between 30 and 70 vibration events of the same source per day.
- “Infrequent Events” is defined as fewer than 30 vibration events of the same source per day.
- 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.

Source: Federal Transit Administration, Transit Noise Impact and Vibration Assessment, May 2006.

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