

# Chapter 8: Noise Element

## Table of Contents

I. Introduction .....	150
II. Background .....	150
Noise Measurement.....	150
Noise Environment.....	151
Community Attitudes Toward Noise Impacts .....	153
Noise Levels .....	153
Regulatory Framework.....	153
III. Issues .....	155
Reducing Noise Impacts Through Planning.....	156
IV. Goals and Policies .....	156

## I. Introduction

Unacceptable noise levels can have a significant impact on quality of life. As a public policy issue, excessive levels of noise result in increased neighborhood annoyance, dissatisfaction, and in some cases, health and safety hazards. Due to the County’s geographic, environmental, and cultural diversity, the levels and types of noise issues vary significantly throughout the County.

The Noise Element addresses the General Plan’s Guiding Principles by addressing community concerns around noise, which is an environmental impact that impacts planning for Healthy, Livable, and Equitable Communities. The Noise Element emphasizes the role of land use and transportation planning to protect sensitive users from noise impacts. Policies to reduce incompatible land uses that contribute to noise impacts on scenic and open space resources areas work toward achieving Environmental Resource Management and Smart Growth goals. Furthermore, as transportation and industries are the largest generators of noise impacts, noise is an important consideration in planning for Sufficient Community Services and Infrastructure and a Strong and Diversified Economy.

The purpose of the Noise Element is to limit the exposure of the general public to excessive noise levels. The Noise Element sets the goals and policy direction for the management of noise in the County.

## II. Background

### Noise Measurement

Noise is often described in qualitative terms, and individuals differ greatly on what noises are considered pleasant or annoying. The community noise metrics used in Noise Elements are either Community Noise Equivalent Level (CNEL) or Day-Night Average Level (Ldn). CNEL and Ldn are the metrics used to describe annoyance due to noise and to establish land use planning criteria regarding noise.

- **Community Noise Equivalent Level (CNEL):** The average equivalent A-weighted sound level during a 24 hour day, obtained after addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night from 10 p.m. to 7 a.m. The CNEL metric is currently used by the State Aeronautics Code for the evaluation of noise impacts at specific airports that have been declared to have a noise problem. Local compliance with the state airport standard requires that community noise levels be expressed in CNEL.
- **Day-Night Average Level (Ldn):** The average equivalent A-weighted sound level during a 24 hour day, obtained after addition of 10 decibels to sound levels in the night after 10 p.m. and before 7 a.m. The Ldn represents a simplification of the CNEL.

Basic levels of noise measurement include:

- **Ambient Noise:** The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.
- **Decibel, dB:** A unit measurement describing the amplitude of sound, equal to 20 times the logarithm to the base of 10, or the ratio of the pressure of the sound measured to the reference pressure, which are 20 micropascals.
- **Intrusive Noise:** The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence, and tonal or informational content, as well as the prevailing noise level.
- **Leq: Equivalent energy level.** The sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1, 8 and 24 hour sample periods.
- **Noise Contours:** Lines drawn about a noise source indicating equal levels of noise exposure.
- **Statistical Values:** These are statistical methods used to account for the variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example, the County of Los Angeles uses the L50 as a statistical value. Thirty minutes is 50 percent of 60 minutes, so the L50 is the noise level that is equal to or exceeded for 30 minutes in a 60 minute measuring period. L(%) is typically used in noise ordinances and municipal codes.
- **Weighted Level:** The sound level in decibels as measured on a sound level meter using the A weighting filter network. This filter deemphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear, giving a good correlation with subjective reactions to noise.

## **Noise Environment**

The typical community noise environment is made up of background or “ambient noise,” and higher, “intrusive” levels of noise. In the unincorporated areas, the major sources of noise come from transportation systems, such as commercial and private airports, rail and bus networks, and the County's regional freeway and highway system. Other major sources of noise have historically been identified with industrial uses, such as manufacturing plants.

Table 8.1 lists disturbances from excessive noise that range from minor sleep annoyance to potential hearing loss. Schools and hospitals, and other land uses that house sensitive receptors, or those at high risk of being affected by high noise levels, are considered noise-sensitive uses. In addition to the effects on human physiology and behavior, excessive noise impacts other species. For example, birds living in noisier environments tend to sing louder at night.

**Table 8.1: Sources and Effects of Common Noise**

<b>dB</b>	<b>Effects</b>	<b>Observation</b>	<b>Source</b>
130	Hearing loss	Pain threshold	Hard rock band Thunder
120		Deafening	
110			Jet take-off
100			Loud auto horn at 10 ft.
90		Very loud	Noisy city street
85			
80			School cafeteria
75			
70	Physiological effects	Loud	Vacuum cleaner at 10 ft.
65			
60	Interference with speech	Loud	Normal speech at 3 ft.
55			
50	Sleep interruption	Moderately loud	Average office Dishwasher in next room
45			
40	Sleep disturbance	Moderately loud	Soft radio music Quiet residential area
35			
30		Faint	Interior of average residence
20			Average whisper at 6 ft.
10			Rustle of leaves in wind
5			Very faint

0	Audibility threshold		
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Source: Compilation of scientific and academic literature, generated by FHWA and EPA.

## Community Attitudes Toward Noise Impacts

The County conducted two surveys to assess the subjective noise annoyance factor in unincorporated areas.

In compliance with the County Noise Ordinance, the Department of Public Health performed noise complaint assessments from 1996 through 1999. During this period, the Department responded to a total of 111 noise complaints under its statutory authority. In addition, the countywide outreach efforts for the General Plan Update revealed that both urban and rural communities experience neighborhood disturbances, such as barking dogs, leaf blowers, garbage trucks, buses, and motorcycles. Urban residential areas seemed to be affected by commercial and industrial spillover noise, such as trucks making late night deliveries at neighborhood shopping centers. Virtually all communities objected to noise generated by freeways and major arterials. All communities reacted to aircraft noise to some extent, with the strongest reaction from those whose homes and businesses lie beneath the flight path of major airports.

## Noise Levels

Table 8.2 provides the current and projected noise levels for major sources of noise in the unincorporated areas.

**Table 8.2: Current and Projected Noise Levels for Major Sources (coming soon)**

Source	Current	Projected
Highways and Freeways		
Primary Arterials and Major Local Streets		
Online Railroad Operations and ground Rapid Transit Systems		
Airport Operations		
Industrial Plants		

## Regulatory Framework

The following section outlines federal, state and County noise-level standards.

### Federal Regulations

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce;

- Assisting state and local abatement efforts; and,
- Promoting noise education and research.

The Federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and inter-agency committees. For example, the Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies, such as with the Federal Aviation Administration (FAA), which regulates noise generated by aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA), which requires that all rail systems receiving federal funding be constructed and operated in accordance with its regulations and specifications. The Federal Railroad Administration (FRA) sets forth and enforces safety standards, including noise emissions within railroad locomotive cabs. Transit noise is regulated by the FTA, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). The FHWA has adopted and promulgated noise abatement criteria for highway construction projects. The federal government encourages local jurisdictions to use their land use regulatory authority to site new development to minimize potential noise impacts. For information on federal guidelines for acceptable environmental noise levels, please refer to Appendix G.

### **State Regulations**

A major source of excessive noise is airports. Title 21 of the California Code of Regulations establishes the maximum acceptable level of aircraft noise in proximity to residences, schools, hospitals, and places of worship at 65 dB CNEL. The County's Airport Land Use Plan, which was adopted by the Airport Land Use Commission (ALUC) in 1991, contains noise contours based on the state standards for all public use airports within the County, as shown in Figure 8.1. The County's Airport Land Use Plan can be found on the Department of Regional Planning's web site, located at <http://planning.lacounty.gov/ALUC>.

### **Figure 8.1: Los Angeles County Airport Noise Contours**

Additional state regulatory codes that relate to noise abatement include:

- Uniform Building Code: Title 24 of the California Code of Regulations requires certain noise insulation measures to be used in the design of all new residential construction other than detached, single family dwellings;
- Vehicle Code: Establishes maximum noise levels for motor vehicles; and,
- California Code of Regulations: Establishes maximum acceptable levels of aircraft noise.

The California Department of Health Service's Office of Noise Control (ONC), established in 1973, was instrumental in developing regulatory tools to control and abate noise for use by local agencies. One significant model is the Land Use Compatibility for Community Noise Environments Matrix, which allows a local jurisdiction to clearly delineate the compatibility of sensitive uses with various incremental levels of noise. The County has adapted this matrix to develop the County's exterior noise standards, as seen in Table 8.2.

## County Regulations

The County maintains the health and welfare of its residents with respect to noise through nuisance abatement ordinances and land use planning. The County Noise Control Ordinance, Title 12 of the County Code, was adopted by the County Board of Supervisors in 1977 "...to control unnecessary, excessive, and annoying noise and vibration..." It declares that County policy was to "...maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the county where noise levels are above acceptable values." (Section 12.08.010 of the County Code).

On August 14, 2001, the County Board of Supervisors approved an ordinance amending Title 12 of the County Code to prohibit loud, unnecessary, and unusual noise that disturbs the peace and/or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area. Regulations can include requirements for sound barriers, mitigation measures to reduce excessive noise, or the placement and orientation of buildings, and can specify the compatibility of different uses with varying noise levels, as shown in Table 8.2. For more information on noise barrier strategies, please see Appendix G.

**Table 8.2: Los Angeles County Exterior Noise Standards**

Noise Zone	Designated Noise Zone Land Use (Receptor Property)	Time Interval	Exterior Noise Level (dB)
I	Noise sensitive area, designated to ensure exceptional quiet	Anytime	45
II	Residentially zoned properties, per County Code Title 22	10:00 p.m. to 7:00 a.m. (nighttime)	45
		7:00 a.m. to 10:00 p.m. (daytime)	50
III	Commercially zoned properties, per County Code Title 22	10:00 p.m. to 7:00 a.m. (nighttime)	55
		7:00 a.m. to 10:00 p.m. (daytime)	60
IV	Industrially zoned properties, per County Code Title 22	Anytime	70

Source: Section 12.08.390 of the L.A. County Code (a portion of the Noise Control Ordinance)

Figure 8.2 shows the County noise contours. For an analysis of the noise contours and land uses, please refer to the Appendix G (coming soon).

**Figure 8.2: Los Angeles County Noise Contours (coming soon)**

## III. Issues

## Reducing Noise Impacts Through Planning

Since excessive noise affects the quality of life of people working and living in the County, existing and future noise levels must be considered when making land use planning decisions to minimize exposure to excessive noise. Noise-sensitive uses, such as residences, hospitals, schools, child care facilities, and places of assembly are especially vulnerable to excessive noises generated by the airports, rail, freeways and primary arterials, heavy industry and warehousing facilities. Planning these noise-sensitive uses must include sufficient spatial separation or site design and construction to ensure compatibility with noise-generating uses.

Coordinated transportation and land use planning plays a critical role in the prevention and mitigation of excessive noise impacts. Land use planning decisions on land adjacent to transportation facilities, such as the airports, freeways and other major highways, both existing and future noise levels of these transportation facilities must be considered to assure the compatibility of proposed uses.

In addition, the condition of road surfaces and traffic congestion can contribute to vehicle noise. Local roadway design features, traffic management, and traffic calming techniques can minimize noise from traffic speed and frequent vehicle acceleration and deceleration, while innovative roadway paving material can further reduce traffic noise.

## IV. Goals and Policies

Goal N-1: The reduction of excessive noise impacts.

- Policy N 1.1: Utilize land uses, such as parks and commercial uses, to buffer noise-sensitive uses from excessive noise impacts.
- Policy N 1.2: Reduce exposure to noise impacts by promoting land use compatibility.
- Policy N 1.3: Minimize impacts to noise-sensitive land uses by ensuring adequate mitigation, such as landscaping, soundproofing and double-paned windows.
- Policy N 1.4: Enhance noise abatement programs in an effort to maintain acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards.
- Policy N 1.5: Ensure compliance with the State Noise Insulation Standards (Title 24, California Code of Regulations and Chapter 35 of the Uniform Building Code), such as noise insulation of new multifamily dwellings constructed within the 60 dB (CNEL or Ldn) noise exposure contours.
- Policy N 1.6: Ensure cumulative impacts related to noise do not exceed excessive levels.
- Policy N 1.7: Utilize traffic management and noise suppression techniques to minimize noise from traffic and transportation systems.
- Policy N 1.8: Minimize noise impacts to pedestrians and transit-riders in the design of transportation facilities and mobility networks.

**Table 8.3: Noise Element Implementation Actions**

<b>Program</b>	<b>Location in Part III</b>
Noise Abatement Guidelines	See Healthy, Livable and Equitable Communities
County Noise Ordinance Update	

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