



Laguna Hills GENERAL PLAN Noise Element

July 14, 2009





Laguna Hills GENERAL PLAN

City Council

Mayor: Joel Lautenschleger
Mayor Pro Tem: Randal Bressette
Council Member: Melody Carruth
Council Member: R. Craig Scott
Council Member: L. Allan Songstad, Jr.

City Staff

Bruce Channing, City Manager
 Donald White, Assistant City Manager
 David Reynolds, Deputy City Manager/
 Community Services Director
 Vern Jones, Community Development Director
 Julie Molloy, Project Manager
 Peggy Johns, City Clerk
 Ken Rosenfield, Public Services Director/
 City Engineer
 Steve Doan, Chief of Police Services
 Greg Simonian, City Attorney
 Jennifer Luna, Administrative Assistant

General Plan Advisory Committee

Larry Bertino	Tom McCabe
Barbara Breazeale	Carol Meyers
Bud Freedman	John Oldroyd
Donald Froelich	Melissa Palencia
Steve Geidt	Charles Reames
Steve Kazarian	Christina Salcido
Mary King	Marty Samuel
Joe Martinez	Don Sedgwick
Susan Masson	Everett Stone

Consultants to the City

EDAW | AECOM

In Association with:

Austin Foust Associates
 Stanley R. Hoffman Associates
 Wilson Geosciences

Table of Contents

NOISE	N-1
Introduction	N-1
Purpose and Scope of the Noise Element	N-1
Background	N-1
Effects of Noise on People	N-2
Noise Plan	N-3
Noise Measurement	N-3
Noise and Land Use Planning	N-4
Noise Standards	N-6
Transportation-Related Noise.....	N-9
Noise Control at Reception Sites.....	N-9
Nontransportation-Related Noise.....	N-10
Noise Ordinance.....	N-11
Goals and Policies	N-11
Noise and Land Use Planning	N-12
Transportation-Related Noise.....	N-12
Nontransportation-Related Noise.....	N-13
Summary of Approach	N-13

Figures

N-1 Land Use Compatibility Guidelines	N-5
N-2 Noise Contours 2008.....	N-7
N-3 Noise Contours 2030.....	N-8



Tables

N-1 Common Noise Levels.....	N-3
N-2 Residential Noise Standards	N-6
N-3 Description of Actions to Address Noise Issues	N-14

Noise



Introduction

Noise is unwanted sound that interferes with living, working, and enjoying daily life. Exposure to excessive noise can affect general well-being and contributes to annoyance and undue stress. The Noise Element is intended to reduce unwanted sounds for the health, safety, and welfare of the community. Removing or reducing significant sources of noise where feasible will improve the quality of life for Laguna Hills residents, workers, and visitors.

Purpose and Scope of the Noise Element

The purpose of the Noise Element is to identify and assess existing noise sources in the community, and to discuss the City's role in ensuring comfortable and safe noise levels in the future. As a part of the General Plan process, citizens and City officials identified goals for the future relating to balancing land uses in the City, in part to minimize incompatibilities and exposure to excessive noise

while providing the range of uses needed to maintain a high quality of life. The goals, policies, and programs will assist in achieving noise compatibility between land uses.

The State of California recognizes the relationship between noise and noise sensitive uses and has adopted guidelines for noise elements that have been followed in the preparation of this Element.

Background

Laguna Hill is located in an urbanized and developed area and is subject to numerous noise sources, primarily vehicular traffic on major roadways. The City is also subject to typical urban noise sources such as construction, police and fire department sirens, landscaping equipment, barking dogs, and car alarms.

Major noise sources in the City include traffic on Interstate 5 (I-5), State Route 73 (SR-73), and major arterials throughout the City. Truck traffic is prevalent on these roadways and generates higher noise levels relative to other vehicle types that travel

on local roadways. Train traffic on the Atchison, Topeka, and Santa Fe Railway (AT&SF) rail line, which runs parallel to I-5, is another source of noise in the City. The AT&SF rail line traffic includes daily passenger (Amtrak), transit (Metrolink), and freight service. The nearest airport is John Wayne International Airport, approximately 10 miles northwest of Laguna Hills. The distance from the airport results in no noise impact from aircraft overflight.

The City has land uses that are sensitive to noise and may be significantly affected by interference from noise. Noise sensitive land uses include residences, schools, churches, hospitals, convalescent (nursing) homes, hotels, and certain parks. Excessive noise exposure to human receptors can cause adverse physical and psychological responses, in addition to interfering with speech and concentration, and diminishing the quality of life.

In addition to humans, protected animal species and their habitats may be considered sensitive receptors if located near construction and operational noise sources, especially during the species' breeding seasons. The City of Laguna Hills is located within a region where there is the potential habitat for noise sensitive bird species, such as the coastal California gnatcatcher and least Bell's vireo, that nest or forage in upland scrub vegetation.

EFFECTS OF NOISE ON PEOPLE

The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and in the extreme, hearing impairment or loss. While physical damage to the ear from an intense noise is rare, degradation of auditory acuity can occur within a community noise environment. Hearing loss occurs mainly due to chronic exposure to excessive noise, but it may be due to a single event such as an explosion. Table N-1 provides typical instantaneous noise levels of common activities.

Noise is generally defined as unwanted sound. Its effects can range from annoyance to health problems.

**Table N-1
Common Noise Levels**

Noises	Sound Level (dBA)
Threshold of Pain	140
Rock Band, Leaf Blower, Car Horn	110
Gas Lawn Mower, Train Approaching (Engines)	90
Diesel Truck, Food Blender	80
Gas Lawn Mower, Vacuum Cleaner	70
Normal Conversation, Heavy Traffic at 300 feet	60
Large Business Office, Dishwasher in Next Room	50
Quiet residential area	40
Library	30
Normal Breathing	10
Lowest Threshold of Human Hearing	0

These are typical noise levels. Distance from the source will reduce the noise level. A 10 dB increase doubles perceived loudness. Continued exposure to noise above 85 dB can cause hearing loss. A single exposure to 140 dB noise can cause some hearing loss.

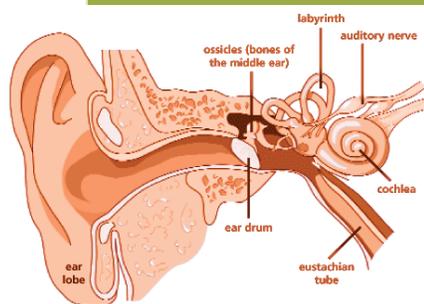
Noise Plan

As Laguna Hills and surrounding communities continue to grow, noise levels associated with transportation- and nontransportation-related noise continue to increase. The City seeks ways to safeguard the community from excessive noise as the ambient noise level in the community rises. The goals, policies, and the Plan in this section describe the means to reduce the negative effects of noise in the City. Programs addressing noise, contained in the Implementation Program section of the General Plan, are an extension of the Noise Plan and contain specific actions that the City uses to protect the community from excessive noise.

NOISE MEASUREMENT

Evaluating noise is complex. Noise levels are measured as decibels (dB) on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, doubling the energy of a noise source (e.g., traffic volume) would not double the noise level.

The human ear is not equally sensitive to all frequencies within the sound spectrum. The most common method to characterize sound is the “A-weighted” sound level, or dB(A), which filters out noise frequencies not audible to the human ear, thereby weighting the audible frequencies. Therefore, the dBA is used for noise measurements and standards involving the human perception of noise.



In addition to instantaneous noise levels, noise levels measured over a period of time are used to assess noise limits and impacts. Noise levels measured over 1 hour are usually expressed as dBA L_{eq} , the equivalent 1-hour noise level. Time of day is also an important factor for noise assessment; noise levels that may be acceptable during the day may interfere with the ability to sleep during evening or nighttime hours. Therefore, 24-hour noise levels are used. The community noise equivalent level (CNEL) is the cumulative noise exposure in a community during a 24-hour period, which adds 5 dB(A) to evening sound levels (between 7:00 p.m. and 10:00 p.m.), and 10 dB(A) to the nighttime sound levels (between 10:00 p.m. and 7:00 a.m.). The day/night average sound level (L_{dn}) is the same as the CNEL, except the 3-hour evening period is considered part of the daytime period.

In addition to noise measurement, traffic noise levels for freeways and arterials can be modeled using a traffic noise model with traffic volumes, mix, and speed characteristics.

NOISE AND LAND USE PLANNING

Accumulation of noise from transportation and nontransportation sources determine the overall noise environment within a community. Transportation noise refers to noise from automobile use, trucking, airport operations and rail operations. Nontransportation noise typically refers to noise from stationary sources such as commercial establishments, machinery, air conditioning systems, compressors, and landscape maintenance equipment.

Regardless of the type of noise, noise levels are highest near the source and substantially decrease with distance. Most noise impacts can be avoided when noise sources, sensitive land uses, and information about the future noise environment are considered in land use planning and development decisions. Land uses that generate significant noise should be separated from uses that are particularly sensitive to noise.

To establish the compatibility of various land uses with exterior noise levels, the City uses CNEL in its planning guidelines. CNEL takes into account heightened sensitivity of persons to noise during evening and nighttime periods.

Figure N-1 illustrates Laguna Hills' land use compatibility guidelines.

Noise levels can be estimated and represented as noise contour lines, which indicate the area subject to a particular noise level. Figures N-2 and N-3 show the estimated existing and projected future noise contours in Laguna Hills, based on traffic volume counts and projected 2030 traffic volumes on the City's arterials.

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE						
	Ldn or CNEL, dBa						
	55	60	65	70	75	80	85
Residential - Single family, Duplex, Mobile Home	Green	Green	Green	Green	Green	Green	Green
Residential - Multi-Family	Green	Green	Green	Green	Green	Green	Green
Transient Lodging, Motels, Hotels	Green	Green	Green	Green	Green	Green	Green
Schools, Libraries, Churches, Hospitals, Nursing Homes	Green	Green	Green	Green	Green	Green	Green
Auditoriums, Concert Halls, Amphitheaters	Green	Green	Green	Green	Green	Green	Green
Sports Arena, Outdoor Spectator Sports	Green	Green	Green	Green	Green	Green	Green
Playgrounds, Parks	Green	Green	Green	Green	Green	Green	Green
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Green	Green	Green	Green	Green	Green	Green
Office Buildings, Business Commercial, Professional	Green	Green	Green	Green	Green	Green	Green
Industrial, Manufacturing, Utilities, Agriculture	Green	Green	Green	Green	Green	Green	Green



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.



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 and needed noise insulation features included in the design.



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



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Source: Guidelines for the Preparation and Content of Noise Elements of the General Plan, California Office of Planning and Research, 1998.

Figure N-1
Land Use Compatibility Guidelines

The noise contours are used as a guide for land use and development decisions. Land uses within contours of 60 dB(A) or greater may be noise impacted depending on the use. When noise sensitive land uses are proposed within these contours, an acoustical analysis may be required. For a project to be approved in a noise impacted area, the analysis must demonstrate that the project is designed to attenuate noise to meet the City’s noise standards as defined in Table N-1. If the project is not designed to meet the noise standards, mitigation measures can be recommended in the analysis. If the analysis demonstrates that the noise standards can be met with implementation of the mitigation measures, the project can be approved with the mitigation measures required as conditions of project approval.

NOISE STANDARDS

Table N-2 summarizes the City of Laguna Hills exterior and interior noise standards. The standards represent the maximum acceptable noise levels as measured from any residential property in the City. Accordingly, it is unlawful to cause the noise level on any residential property to exceed the exterior noise standards:

1. for a cumulative period of more than 30 minutes in any hour;
2. plus 5 dB(A) for a cumulative period of more than 15 minutes in any hour;
3. plus 10 dB(A) for a cumulative period of more than 5 minutes in any hour;
4. plus 15 dB(A) for a cumulative period of more than 1 minute in any hour; or
5. plus 20 dB(A) for any period of time.

In addition, it is unlawful to cause the noise level on any residential property to exceed the interior noise standards (see Table N-2):

1. for a cumulative period of more than 5 minutes in any hour;
2. plus 5 dB(A) for a cumulative period of more than 1 minute in any hour; or
3. plus 10 dB(A) for any period of time.

Table N-2 Residential Noise Standards		
	Daytime Noise Standards (7:00 am to 10:00 pm)	Nighttime Noise Standards (10:00 pm to 7:00 am)
Exterior Noise Standards	55 dB(A)	50 dB(A)
Interior Noise Standards	55 dB(A)	45 dB(A)

Source: Laguna Hills Municipal Code Chapter 5-24.

Note: Standards are based on measurements taken from any residential property in the City.



Note: Noise Contours are based on flat terrain and hard surfaces.



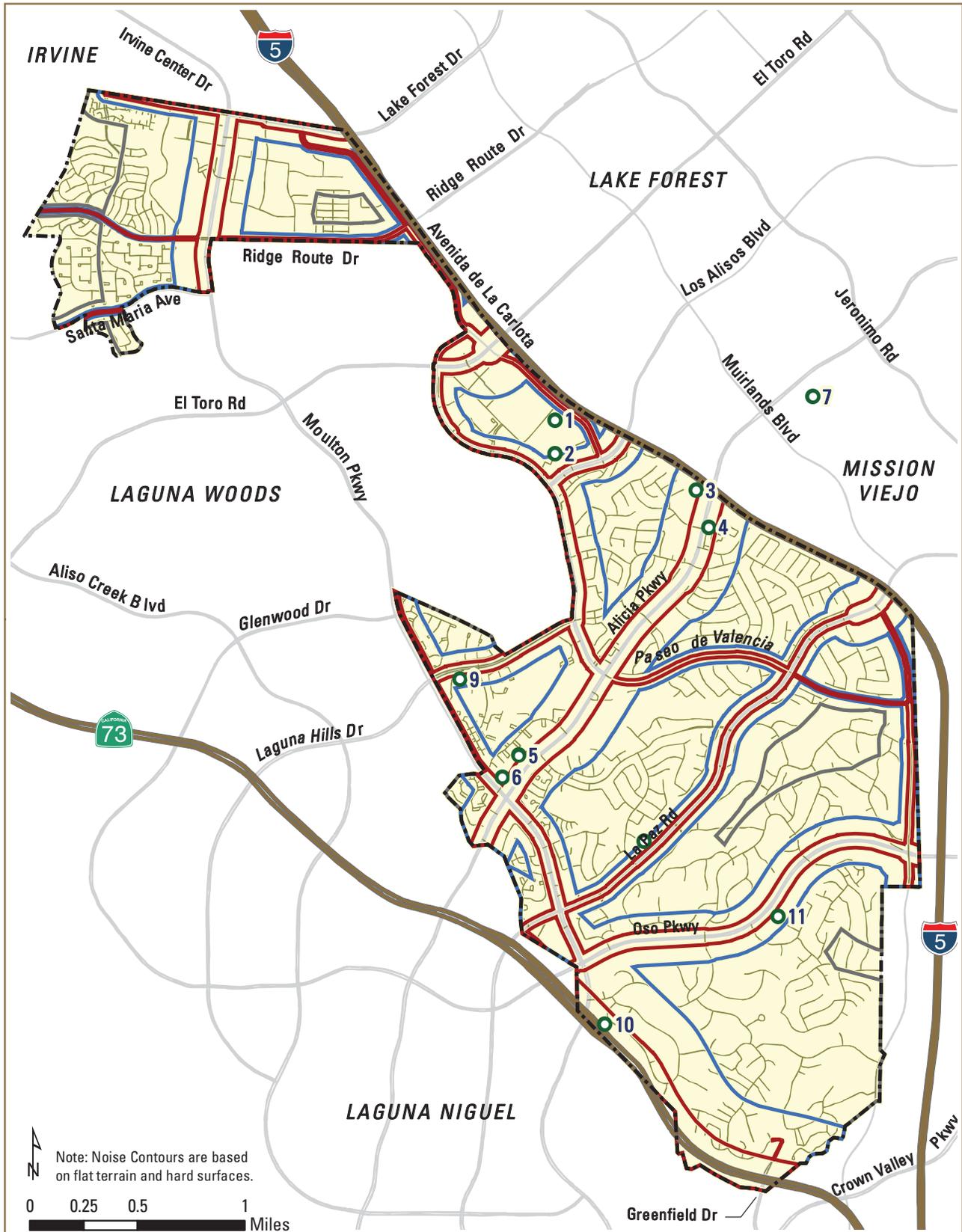
Noise Contours

- CNEL 70 — CNEL 60
- CNEL 65 ● Measurement Locations
- City Boundary
- Freeway/ Toll Road
- Major Streets
- Local Streets

Figure N - 2
Noise Contours 2008



Source: Urban Crossroads, 2008.



Note: Noise Contours are based on flat terrain and hard surfaces.

0 0.25 0.5 1 Miles

Noise Contours

- CNEL 70 — CNEL 60
- CNEL 65 ● Measurement Locations
- City Boundary
- Freeway/ Toll Road
- Major Streets
- Local Streets

Figure N - 3
Noise Contours 2030



Source: Urban Crossroads, 2008

The nonresidential exterior noise standard is always 65 dBA. Exempt from these standards are activities at any public or private educational facilities, or public park or playground; emergency equipment or work; construction activities during the day on Monday through Saturday; certain agricultural operations; and landscaping and maintenance. Schools, hospitals, and churches are protected from noise sources that exceed the specified noise limits.

TRANSPORTATION-RELATED NOISE

Laguna Hills contains a number of transportation-related noise sources including freeways, major roadways, and railroad operations. I-5, SR-73, the railroad, and major roadways create high levels of noise that affect the overall quality of life in the community and are the major contributors of noise in the City. Some locations, such as areas adjacent to I-5 at Los Alisos, are regularly impacted by transportation noise. Reducing transportation-related noise is necessary to improve the quality of life for noise sensitive land uses. Cost-effective strategies to reduce the influence of transportation-related noise sources are an essential part of the Noise Element.

NOISE CONTROL AT RECEPTION SITES

The most efficient and effective means of controlling noise from transportation is to reduce noise at the source. However, the City has little direct control over noise produced by transportation sources because State noise regulations preempt location regulations. Because the City cannot control the noise at the source, City noise programs focus on reducing the impact of transportation noise reception sites.

The most effective way to mitigate transportation noise impacts on the City is by using the site development permit process and implementing CEQA. During the planning stages of the development process, potential impacts from transportation noise will be identified and mitigation measures will be required as needed to meet the City's noise standards. Site planning, landscaping, natural topography and design, and construction noise barriers are the most common method of alleviating vehicular traffic and train noise impacts. Setbacks and buffer areas can also be used to achieve small noise reductions. The City can also use weight limitations on certain roadways and designate truck routes to reduce traffic noise in specific locations.

The City also encourages the construction and use of alternative modes of transportation such as alternative fuel vehicles, transit systems, and transit-oriented development (higher density, mixed use development near major rail and transit stops) to reduce transportation-related noise. Alternative transportation modes can emit less noise per passenger than their automotive counterparts and can reduce traffic congestion.

Noise Control at the Source

The California Vehicle Code contains noise regulations pertaining to the operation of all vehicles on public roads. These noise standards for cars, trucks, and motorcycles are enforced through coordination with the California Highway Patrol and the Orange County Sheriff's Department. The City also regulates traffic flow and coordinates with the California Highway Patrol and Orange County Sheriff's Department to enforce speed limits to reduce traffic noise.

NONTRANSPORTATION-RELATED NOISE

The City contains a variety of land uses, many of which generate noise. Noise from non-transportation-related sources includes industrial areas that involve heavy equipment and machinery, and commercial areas such as restaurants, bars, and entertainment establishments. Mechanical equipment such as heating, ventilating, and air conditioning units also generates noise throughout the City. Residential areas are also subject to noise from the use of pool equipment, landscape maintenance equipment, barking dogs, and other noise sources. Finally, construction activities throughout the City can temporarily elevate noise.

Application of the City's noise regulations is the best means to control non-transportation-related noise. The Community Development Department and Orange County Sheriff's Department cooperate to identify development or activities that violate noise regulations. The City's municipal code gives the City the authority to enforce the noise standards through penalties and other abatement tactics.

Noise generated by new development is effectively controlled through the site development permit process, compliance with CEQA, and compliance with the City noise standards contained in this Noise Element and the City's noise regulations. During preliminary stages in the development process, potential noise impacts will be identified and mitigation measures imposed.

When reviewing proposed mixed use and nonresidential projects, noise generation and potential impacts to surrounding development are considered. An acoustical analysis is required for projects that will generate noise potentially affecting sensitive receptors. Where significant impacts are identified, mitigation measures will be required. Mitigation measures that could be applied when reviewing projects include acoustically treated and/or quiet designs for furnaces, fans, motors, compressors, pumps, and other mechanical equipment. The City may also require limited delivery hours and/or hours of operation to minimize impacts to adjacent residential or other noise sensitive uses. In addition, all City departments must comply with State and federal

Occupational Safety and Health Administration (OSHA) standards. Any new equipment or vehicles purchased by the City will comply with local, State, and federal noise regulations, and the City will encourage landscaping contractors to utilize up to date noise-reducing equipment.

NOISE ORDINANCE

The City Noise Ordinance is designed to protect people from non-transportation noise sources such as construction activity, commercial and industrial operations, machinery, and pumps and air conditioners. Enforcing the ordinance includes requiring proposed development projects to show compliance with the ordinance, including operating in accordance with noise levels and hours of operation limits placed on the project site. The City also requires construction activity to comply with established work schedule limits. The ordinance is reviewed periodically for adequacy and amended as needed to address community needs and development patterns.

The City also has the opportunity to control noise and vibration transfers between adjacent land uses. Problems can arise when noise-producing uses are located immediately adjacent to sensitive uses, such as business park or light industrial uses near residences or schools. Additionally, increasing mixed use development throughout the City will place more sensitive residential uses alongside or above commercial uses, which could present challenges. The City's Zoning Ordinance or any Specific Plan developed following adoption of the General Plan will include specific standards that address noise and vibration transfer in mixed use development.

Goals and Policies

The goals and policies section sets both broad and specific direction for the future of the City based on identified issues, as captured in the Guiding Themes and expressed by the community, City staff, and decision makers.

Three major issue areas are addressed in the goals and policies of the Noise Element. These major issues are:

- Using land use planning and development techniques to reduce noise and ensure compatibility between different land uses;
- Utilizing a variety of techniques and strategies to reduce transportation-related noise; and
- Requiring site design and other measures to reduce or maintain noise at acceptable levels for non-transportation-related noise.

NOISE AND LAND USE PLANNING

Land use directly affects noise compatibility because higher noise levels associated with certain land uses can encroach upon more sensitive land uses. Noise-producing and noise sensitive uses will be planned and/or sufficiently buffered to ensure that sensitive uses are not exposed to unacceptable noise levels. Non-compatible land uses will incorporate noise attenuation and/or control measures in the development and design process to reduce noise.

Goal N-1: Reduce the effects of noise through proper land use planning and development techniques.

Policy N-1.1: Use the City's noise/land use compatibility matrix (Figure N-1) as a guide for future planning and development decisions.

Policy N-1.2: Use transitional and buffer areas to separate excessive noise-generating uses from residential and other noise sensitive land uses.

Policy N-1.3: Limit future residential and other noise sensitive land uses in areas exposed to high levels of noise and/or utilize strategies to reduce noise experienced by sensitive uses at the point of reception.

TRANSPORTATION-RELATED NOISE

Transportation-related noise sources are the major contributors of noise in Laguna Hills and affect the overall quality of life. Reduction of transportation-related noise through a variety of measures is necessary to deal with the detrimental effects attributable to excessive noise.

Goal N-2: Reduce the impact of transportation-related noise on residential areas and other sensitive land uses.

Policy N-2.1: Reduce new transportation-related noise impacts to noise sensitive land uses through the use of noise control measures.

Policy N-2.2: Require noise-reducing construction techniques and site design measures for new development in areas impacted by transportation-related noise.

Policy N-2.3: Encourage new development to provide facilities that support the use of alternative transportation modes, such as walking, bicycling, carpooling and, where applicable, transit to reduce automobile traffic and its associated noise.

Policy N-2.4: Consider using low-noise pavement surfaces on Mobility Element roadways that reduce motor vehicle traffic noise.

Policy N-2.5: Control truck traffic routing to reduce truck traffic impacts on noise sensitive land uses.

Policy N-2.6: Use traffic calming design and traffic control measures as needed to reduce vehicular speeds and associated noise levels in residential neighborhoods.

NONTRANSPORTATION-RELATED NOISE

Noise unrelated to vehicles, streets, and freeways also impacts the quality of life in Laguna Hills. Excessive noise from construction, business operations, and everyday activities negatively affects the community. Site design, regulation, and enforcement measures will reduce non-transportation-related noise.

Goal N-3: Reduce the impact of non-transportation-related noise on residential areas and other sensitive land uses.

Policy N-3.1: Ensure noise sources from construction activities, entertainment venues, private development/residences, landscaping activities, and special events impacting noise sensitive lands use are maintained at acceptable levels.

Policy N-3.2: Require that commercial and mixed use structures be designed to prevent transfer of noise and vibration to residential and other noise sensitive land uses.

Policy N-3.3: Require commercial and mixed use developments to locate loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noise sources away from residential development and, if necessary, to shield such noise sources with acoustic barriers.

Summary of Approach

The goals, policies, and programs in the Noise Element will help the City reduce noise from transportation and non-transportation-related sources. The Noise Element encourages the use of land use compatibility measures and noise reduction techniques to ensure that redevelopment and new development are compatible with established uses. Table N-3 identifies the three major issue areas guiding the Noise Element. These major issues represent the direction the City will take in its noise goals, policies, and programs to implement the vision of Laguna Hills as captured in the Guiding Themes and expressed in the Noise Plan.

Table N-3 Description of Actions to Address Noise Issues						
Issues	Element	Section	Policy	Programs	Figure	Table
Noise and Land Use Planning	Noise	Noise and Land Use Planning	N-1.1 through N-1.3	N-1 through N-4	Figure N-1 (Land Use Compatibility) Figure N-3 (Future Noise Contours)	Table N-2 (Noise Standards)
	Land Use	Respect for Existing Neighborhoods	LU-2.7	LU-6		
Transportation-Related Noise	Noise	Transportation-related Noise	N-2.1 through N-2.6	N-1, N-3, N-5		
Nontransportation-Related Noise	Noise	Nontransportation-related noise	N-3.1 through N-3.3	N-5		