CHAPTER 8 Noise Element

Introduction

Purpose

The Noise Element of the General Plan provides for the control and abatement of environmental noise to protect citizens from excessive exposure.

Guiding Principles for Noise

Goals and policies within the Noise Element support the Guiding Principles specified in Chapter 2 of the General Plan. The Guiding Principles speak to the need of protecting the County's unique natural environment and unique characteristics. The County of San Diego is characterized as a predominantly rural environment that contributes significantly to peace and tranquility that exist within the County. The Noise Element strives to preserve the quality of life by protecting residents from the obtrusive impacts of noise and noise-generating uses such as traffic, construction, airplanes, and certain industrial uses.

Relationship to Other General Plan Elements

A primary function of the Noise Element is to ensure that noise considerations are incorporated into the land use decision-making process. The Noise Element is closely related to the Land Use, Housing, Mobility, and Conservation and Open Space Elements. Recognition of the interrelationship of the Noise Element and these other Elements is necessary to prepare an integrated comprehensive General Plan. The following is a brief discussion of the relationship between the Noise Element and the other Elements of the General Plan.

- **Land Use—**The Noise Element establishes noise compatibility guidelines that are based on the Regional Categories established in the Land Use Element. In addition, noise compatibility concerns are taken into account during development of the Land Use Map.
- **Housing**—The Housing Element considers the provision of adequate sites for new housing and standards for housing stock. Since residential use is among the most noise sensitive, the noise exposure information provided in the Noise Element is taken into account when planning the location of new housing.
- **Mobility—**The transportation network is the primary source of noise within San Diego County and is closely correlated with both the Land Use and Noise Elements. Airports, depending upon the size and type, can have a significant noise impact, which directly affects the type and intensity of land use. In addition, noise impacts from roadways increase with vehicular travel speed and traffic volume. Noise exposure will be an important factor in the location and design of new transportation routes and facilities, as well as in the mitigation of noise produced from existing roadways on existing and planned land uses.
- **Open Space/Conservation—**Excessive noise can adversely affect biological resources, along with the enjoyment of recreational pursuits in parks and other designated open spaces, particularly in areas where a quiet environment is valued as part of the recreational or outdoor experience. As a result, noise levels are considered in the planning of habitat conservation areas and new recreational and

open space areas. Additionally, open space can be used to separate and buffer noise sensitive land uses from noise producers by the effective use of setbacks and landscaped berms.

Scope and Content of the Noise Element

The Noise Element establishes noise/land use compatibility standards and outlines goals and policies which can be used to achieve these standards. The first section of the Noise Element characterizes the noise environment in the unincorporated County and provides the context for the County's noise land use compatibility guidelines and standards. The second section describes the County's goals for achieving the standards and introduces policies designed to implement the goals. Implementation measures associated with the Noise Element are included separately in the Implementation Plan for the County's General Plan.

Background Information and Context

The County of San Diego is characterized as a predominantly rural environment with low-density development that contributes significantly to the perceived quality of life and the peace and tranquility that exist within the County. Major sources of noise include transportation- and non-transportation-related activities, as discussed below.

Transportation Noise Sources

The most common source of noise in most rural and semi-rural environments is transportation-related. Transportation noise sources include automobiles, trucks, other vehicles, aircraft operations, and railroads. Traffic on the County's roadways is the most significant and pervasive source of noise in the County. There are several key factors associated with roadway or traffic noise, including traffic volumes, the speed of the traffic; the type or "mix" of vehicles using a particular roadway; and pavement conditions.

Noise associated with freeways can have significant noise impacts to adjacent uses.

Another area of noise concern is the noise generated by private, military, and County general aircraft operations. Noise generated from aviation operations is concentrated around the airport buildings, runways, and along approach and departure routes.

Trains are another source of transportation-related noise. The extent of the noise impact from a passenger and freight train pass-by event will depend on many factors, including the frequency of train operations, the number of railway cars, the type of engine, and the number of grade crossings that require warning bells or horns. In addition, train pass-by events may cause adjacent land uses to be affected by groundborne vibration.

Non-transportation Noise Sources

Non-transportation-related noise generators are commonly called “stationary,” “fixed,” “area,” or “point” sources of noise. Industrial processing, mechanical equipment, pumping stations, and heating, ventilating, and air conditioning (HVAC) equipment are examples of fixed location non-transportation source noise sources within the County of San Diego. Some non-transportation sources are not stationary but are typically assessed as point or area sources due to the limited area in which they operate, such as truck deliveries, agricultural field machinery, and mining equipment.

Noise generated by industrial and commercial operations, maintenance, manufacturing, truck traffic (loading docks), and warehousing noise can affect surrounding noise sensitive land uses. Noise perceived as disruptive by residents in proximity to existing agricultural operations may result from the operation of agricultural machinery in the evening or early morning hours when many residents desire a quiet environment. In addition, operation of exterior exhaust and cooling system equipment typically used in greenhouse operations can be a source of noise that may affect surrounding land uses.

Extractive (mining) operations typically involve a range of noise-generating equipment, operations, and sometimes include blasting noise. Heavy equipment used in quarry and mining activities and blasting operations may generate noise levels that are incompatible with surrounding land uses. Additionally, off-site noise may be generated associated with the transportation of materials to and from the mining facility.

Non-transportation-related noise includes noise generated from industrial uses such as rock crushing

Some noise-generating activities such as blasting or pile-driving as part of mining or construction operations may also result in excessive levels of groundborne vibration that may affect nearby land uses.

Intermittent or temporary neighborhood noise from amplified music, public address systems, barking dogs, landscape maintenance, stand-by power generators, and construction activities are disturbing to residents but are difficult to attenuate and control.

Noise-Sensitive Land Uses

Noise-sensitive land uses include areas where an excessive amount of noise would interfere with normal activities. Primary noise-sensitive land uses include residential uses, public and private educational facilities, hospitals, convalescent homes, hotels/motels, daycare facilities, and passive recreational parks.

Existing and Future Noise Levels

Noise level contours are used as a guide for minimizing the exposure of community residents to noise. Noise contours represent lines of equal noise exposure, just as the lines on a weather map indicate equal temperature or atmospheric pressure. Contours are used to provide a general visualization of sound levels and should not be considered as absolute lines of demarcation.

Noise contours for major transportation noise sources in the County were developed for existing and future conditions. Existing roadway noise contours were determined from the 2007 traffic levels and are expressed in terms of the Community Noise Equivalent Level (CNEL). Refer to the "Noise Evaluation Measurement" section below for a more detailed explanation of this noise exposure index. Existing noise contours are shown on Figure N-1 (Existing Noise Contours). Figure N-1 also depicts the noise contours for the public airports and railroads in the County. The noise contours do not account for the attenuating effects of buildings, walls, structures, unique soil types, and terrain features that might intervene between the noise source and receiver. Future noise contours for roadways are presented on Figure N-2 (Future Noise Contours) for year 2030 conditions. These future contours are derived from traffic data for the year 2030 developed for the Mobility Element of the General Plan.

The noise contours shown for public airports are derived from information contained within the Airport Land Use Compatibility Plans (ALUCP) developed for each airport, which account for the future operations within each Airport Influence Area (AIA). Aircraft-related noise impacts associated with the smaller private airports scattered throughout the unincorporated County are not considered to be significant because activities at these airports are not anticipated to increase over the next 20 years.

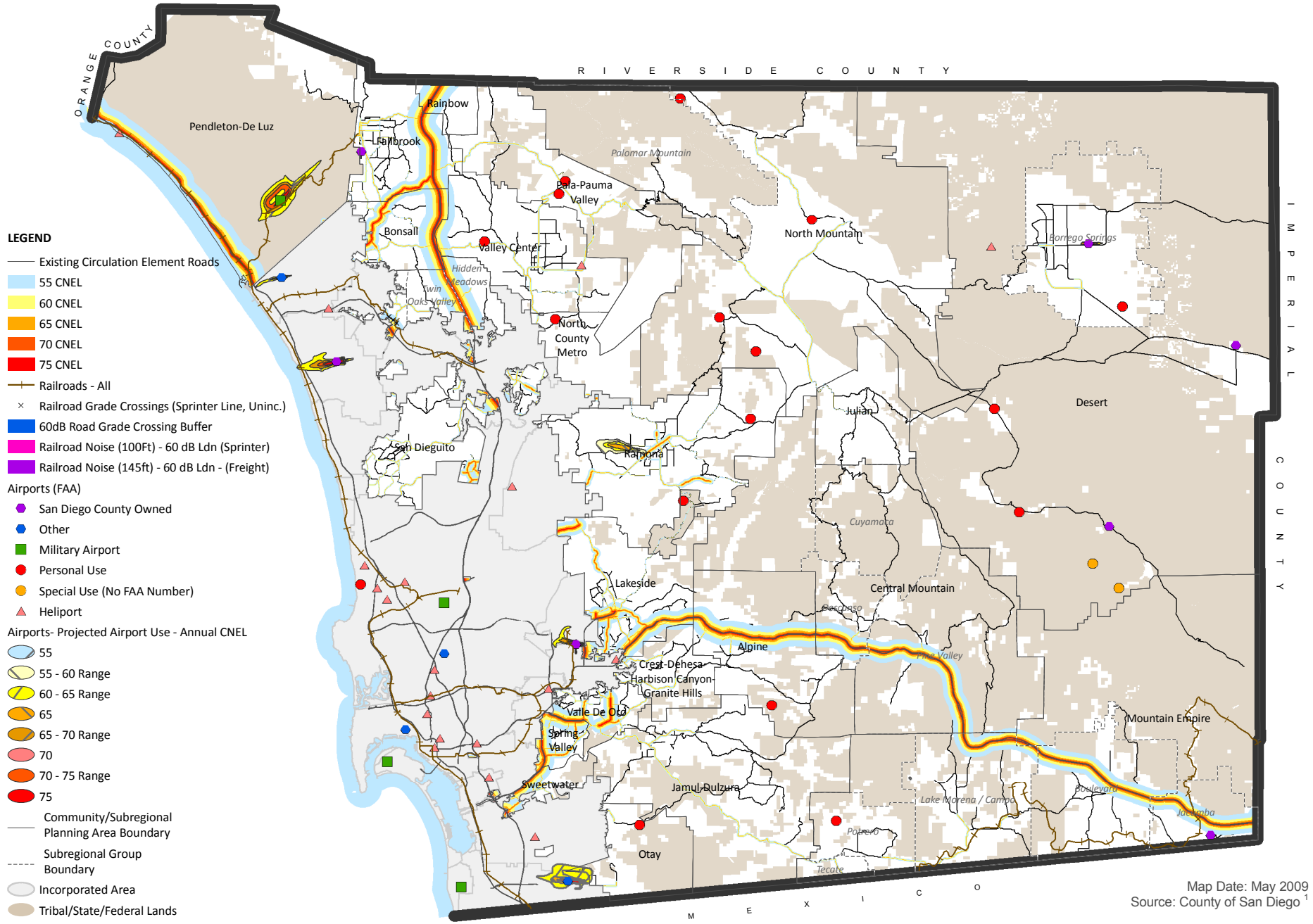
Noise Evaluation and Measurement

Quantification of Noise

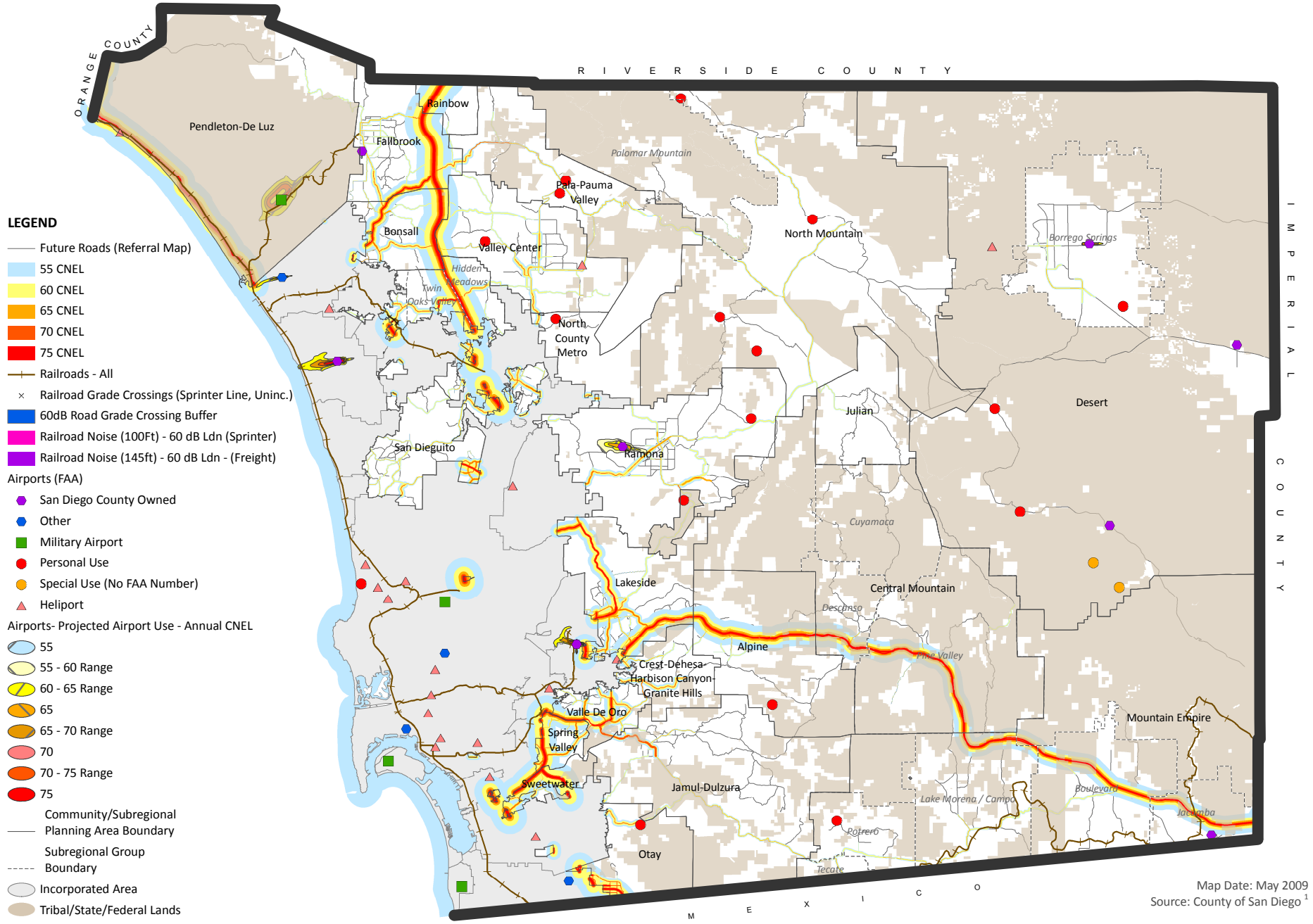
Noise is commonly defined as unwanted sound. Sound pressure magnitude is measured and quantified using a logarithmic ratio of pressures, the scale of which gives the level of sound in decibels (dB). To account for the pitch of sounds and an average human response to such sounds, a unit of measure called an A-weighted sound pressure level (dBA) is used.

A given level of noise may be more or less tolerable depending on the duration of exposure and the time of day during which the noise is experienced. For example, noise that occurs at night tends to be more disturbing than that which occurs during the day. Because of this fact, several measures of noise exposure, or indices, consider both the magnitude of the noise level and the time of day at which it occurs. The most commonly used indices for measuring community noise levels are the Equivalent Energy Level (L_{eq}), and the Community Noise Equivalent Level (CNEL).

- L_{eq}, the Equivalent Energy Level, is the average acoustic energy content of noise, measured during a prescribed period, such as one minute, 15 minutes, one hour, or eight hours. It is the decibel sound level that contains an equal amount of energy as a fluctuating sound level over a given period of time.
- *CNEL*, Community Noise Equivalent Level, is average equivalent A-weighted sound level over a 24-hour period. This measurement applies weights to noise levels during evening and nighttime hours to compensate for the increased noise-sensitivity of people at those times. CNEL is the equivalent sound level for a 24-hour period with a +5 dBA weighting applied to all sound occurring between 7:00 P.M. and 10:00 P.M. and a +10 dBA weighting applied to all sound occurring between 10:00 P.M. and 7:00 A.M.



EXISTING NOISE CONTOURS



FUTURE NOISE CONTOURS

San Diego County General Plan

Figure N-2

Noise Effects

Noise has a significant effect on quality of life. An individual's reaction to a particular noise depends on many factors such as the source of the noise, its loudness relative to the background noise level, and the time of day. The reaction to noise can also be highly subjective; the perceived effect of a particular noise can vary widely among individuals in a community. Because of the nature of the human ear, a sound must be about ten dB greater than the reference sound to be judged as twice as loud. In general, a three dB change in community noise levels is perceivable, while one to two dB changes generally are not perceived. Although the reaction to noise may vary, it is clear that noise is a significant component of the environment, and excessively noisy conditions can affect an individual's health and well-being. The effects of noise are often only transitory, but adverse effects can be cumulative with prolonged or repeated exposure. The effects of noise on a community can be organized into six broad categories: noise-induced hearing loss; interference with communication; effects on sleep; effects on performance and behavior; extra-auditory health effects; and annoyance.

Noise Standards

Noise exposure criteria are incorporated into land use planning to reduce future conflicts between noise and land use. This is achieved by specifying acceptable noise exposure ranges for various land uses throughout the County. The County uses the Noise Compatibility Guidelines listed in Table N-1 (Noise Compatibility Guidelines) to determine the compatibility of land use when evaluating proposed development projects.

The Noise Compatibility Guidelines indicate ranges of compatibility and are intended to be flexible enough to apply to a range of projects and environments. For example, a commercial project would be evaluated differently than a residential project in a rural area or a mixed-use project in a more densely developed area of the County.

A land use located in an area identified as "acceptable" indicates that standard construction methods would attenuate exterior noise to an acceptable indoor noise level and that people can carry out outdoor activities with minimal noise interference. Land uses that fall into the "conditionally acceptable" noise environment should have an acoustical study that considers the type of noise source, the sensitivity of the noise receptor, and the degree to which the noise source may interfere with sleep, speech, or other activities characteristic of the land use. For land uses indicated as "conditionally acceptable," structures must be able to attenuate the exterior noise to the indoor noise level as indicated in the Noise Standards listed in Table N-2 (Noise Standards). For land uses where the exterior noise levels fall within the "unacceptable" range, new construction generally should not be undertaken.

Table N-1 Noise Compatibility Guidelines

Land Use Category		Exterior Noise Level (CNEL)						
			55	60	65	70	75	80
A	Residential—single family residences, mobile homes, senior housing, convalescent homes							
B	Residential—multi-family residences, mixed-use (commercial/residential)							
C	Transient lodging—motels, hotels, resorts							
D*	Schools, churches, hospitals, nursing homes, child care facilities							
E*	Passive recreational parks, nature preserves, contemplative spaces, cemeteries							
F*	Active parks, golf courses, athletic fields, outdoor spectator sports, water recreation							
G*	Office\professional, government, medical\dental, commercial, retail, laboratories							
H*	Industrial, manufacturing, utilities, agriculture, mining, stables, ranching, warehouse, maintenance/repair							

	ACCEPTABLE—Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal construction, without any special noise insulation requirements.
	CONDITIONALLY ACCEPTABLE—New construction or development should be undertaken only after a detailed noise analysis is conducted to determine if noise reduction measures are necessary to achieve acceptable levels for land use. Criteria for determining exterior and interior noise levels are listed in Table N-2, Noise Standards. If a project cannot mitigate noise to a level deemed Acceptable, the appropriate county decision-maker must determine that mitigation has been provided to the greatest extent practicable or that extraordinary circumstances exist.
	UNACCEPTABLE—New construction or development shall not be undertaken.

* Denotes facilities used for part of the day; therefore, an hourly standard would be used rather than CNEL (refer to Table N-2).

Note: For projects located within an Airport Influence Area of an adopted Airport Land Use Compatibility Plan (ALUCP), additional Noise Compatibility Criteria restrictions may apply as specified in the ALUCP.

Table N-2 Noise Standards[Note]
1. The exterior noise level (as defined in Item 3) standard for Category A shall be 60 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
2. The exterior noise level standard for Categories B and C shall be 65 CNEL, and the interior noise level standard for indoor habitable rooms shall be 45 CNEL.
3. The exterior noise level standard for Categories D and G shall be 65 CNEL and the interior noise level standard shall be 50 dBA L_{eq} (one hour average).
4. For single-family detached dwelling units, "exterior noise level" is defined as the noise level measured at an outdoor living area which adjoins and is on the same lot as the dwelling, and which contains at least the following minimum net lot area: *(i)* for lots less than 4,000 square feet in area, the exterior area shall include 400 square feet, *(ii)* for lots between 4,000 square feet to 10 acres in area, the exterior area shall include 10 percent of the lot area; *(iii)* for lots over 10 acres in area, the exterior area shall include 1 acre.
5. For all other residential land uses, "exterior noise level" is defined as noise measured at exterior areas which are provided for private or group usable open space purposes. "Private Usable Open Space" is defined as usable open space intended for use of occupants of one dwelling unit, normally including yards, decks, and balconies. When the noise limit for Private Usable Open Space cannot be met, then a Group Usable Open Space that meets the exterior noise level standard shall be provided. "Group Usable Open Space" is defined as usable open space intended for common use by occupants of a development, either privately owned and maintained or dedicated to a public agency, normally including swimming pools, recreation courts, patios, open landscaped areas, and greenbelts with pedestrian walkways and equestrian and bicycle trails, but not including off-street parking and loading areas or driveways.
6. For non-residential noise sensitive land uses, exterior noise level is defined as noise measured at the exterior area provided for public use.
7. For noise sensitive land uses where people normally do not sleep at night, the exterior and interior noise standard may be measured using either CNEL or the one-hour average noise level determined at the loudest hour during the period when the facility is normally occupied.
8. The exterior noise standard does not apply for land uses where no exterior use area is proposed or necessary, such as a library.
9. For Categories E and F the exterior noise level standard shall not exceed the limit defined as "Acceptable" in Table N-1 or an equivalent one-hour noise standard.

Note: Exterior Noise Level compatibility guidelines for Land Use Categories A-H are identified in Table N-1, Noise Compatibility Guidelines.

In addition, the County has adopted community noise control standards as part of the County's Noise Abatement and Control Ordinance (County Code of Regulatory Ordinances, Title 3, Division 6, Chapter 4) and provides guidance for implementation of the County's noise policies and ordinance in the County's *California Environmental Quality Act* (CEQA) Guidelines for Determining Significance for Noise. The Noise Ordinance defines limits for activities that generate excessive noise and sets noise level limits for land uses. The County's CEQA significance guidelines provide guidance on the use of the General Plan Noise Element and the County Noise Abatement and Control Ordinance when considering the environmental impact of noise exposure to high or excessive noise levels.

Goals and Policies for Noise Element

Land Use Compatibility

CONTEXT

The following goals and policies are directed at preserving rural areas from the encroachment of urban noise. Promoting compatibility between land uses prevents exposure of residents from excessive noise levels while protecting facilities or operations that may generate noise but are essential to the economic viability of the County.

GOALS AND POLICIES

GOAL N-1

Land Use Compatibility. A noise environment throughout the unincorporated County that is compatible with the land uses.

Policies

N-1.1 **Noise Compatibility Guidelines.** Use the Noise Compatibility Guidelines (Table N-1) and the Noise Standards (Table N-2) as a guide in determining the acceptability of exterior and interior noise for proposed land uses.

N-1.2 **Noise Management Strategies.** Require the following strategies as higher priorities than construction of conventional noise barriers where noise abatement is necessary:

- Avoid placement of noise sensitive uses within noisy areas
- Increase setbacks between noise generators and noise sensitive uses
- Orient buildings such that the noise sensitive portions of a project are shielded from noise sources
- Use sound-attenuating architectural design and building features
- Employ technologies when appropriate that reduce noise generation (i.e. alternative pavement materials on roadways)

N-1.3 **Sound Walls.** Discourage the use of noise walls. In areas where the use of noise walls cannot be avoided, evaluate and require where feasible, a combination of walls and earthen berms and require the use of vegetation or other visual screening methods to soften the visual appearance of the wall.

N-1.4 **Adjacent Jurisdiction Noise Standards.** Incorporate the noise standards of an adjacent jurisdiction into the evaluation of a proposed project when it has the potential to impact the noise environment of that jurisdiction.

N-1.5 **Regional Noise Impacts.** Work with local and regional transit agencies and/or other jurisdictions, as appropriate, to provide services or facilities to minimize regional traffic noise and other sources of noise in the County.

GOAL N-2

Protection of Noise Sensitive Uses. A noise environment that minimizes exposure of noise sensitive land uses to excessive, unsafe, or otherwise disruptive noise levels.

Policies

N-2.1 **Development Impacts to Noise Sensitive Land Uses.** Require an acoustical study to identify inappropriate noise level where development may directly result in any existing or future noise sensitive land uses being subject to noise levels equal to or greater than 60 CNEL and require mitigation for sensitive uses in compliance with the noise standards listed in Table N-2.

N-2.2 **Balconies and Patios.** Assure that in developments where the exterior noise level on patios or balconies for multi-family residences or mixed-use developments exceed 65 CNEL, a solid noise barrier is incorporated into the building design of the balconies and patios while still maintaining the openness of the patio or balcony.

GOAL N-3

Groundborne Vibration. An environment that minimizes exposure of sensitive land uses to the harmful effects of excessive groundborne vibration.

Policy

N-3.1 **Groundborne Vibration.** Use the Federal Transit Administration and Federal Railroad Administration guidelines, where appropriate, to limit the extent of exposure that sensitive uses may have to groundborne vibration from trains, construction equipment, and other sources.

Noise Generators

CONTEXT

The policies in this section are directed at minimizing the noise impacts associated with the transportation and non-transportation-related noise generators. Transportation-related noise generators include vehicular traffic, aircraft, and railroads. Stationary or "non-transportation" noise generators include operations from industrial, commercial, agricultural, extractive, or similar facilities. Although commonly called "stationary," "fixed," or "point" sources of noise, these noise sources may not be fixed, as with truck deliveries, agricultural field machinery, or mining equipment.

GOALS AND POLICIES

GOAL N-4

Transportation-Related Noise Generators. A noise environment that reduces noise generated from traffic, railroads, and airports to the extent feasible.

Transportation-related noise includes noise generated from automobiles and railroads

Policies

N-4.1 **Traffic Noise.** Require that projects proposing General Plan amendments that increase the average daily traffic beyond what is anticipated in this General Plan do not increase cumulative traffic noise to off-site noise sensitive land uses beyond acceptable levels.

N-4.2 **Traffic Calming.** Include traffic calming design, traffic control measures, and low-noise pavement surfaces that minimize motor vehicle traffic noise in development that may impact noise sensitive land uses.

N-4.3 **Jurisdictional Coordination.** Coordinate with California Department of Transportation (Caltrans), the City of San Diego, and other adjacent jurisdictions, as appropriate, for early review of proposed new and expanded State freeways, highways, and road improvement projects within or affecting the unincorporated County to (1) locate facilities where the impacts to noise sensitive land uses would be minimized and to (2) develop and include noise abatement measures in the projects to minimize and/or avoid the impacts to noise sensitive land uses.

N-4.4 **State Motor Vehicle Noise Standards.** Promote the enforcement of State Motor Vehicle Noise Standards for cars, trucks, and motorcycles through coordination with the California Highway Patrol and local law enforcement as appropriate.

N-4.5 **Roadway Location.** Locate new or expanded roads designated in the Mobility Element in areas where the impact to noise sensitive land uses would be minimized.

N-4.6 **Road Improvement Projects.** For County road improvement projects, evaluate the proposed project against ambient noise levels to determine whether the project would increase ambient noise levels by more than three decibels. If so, apply the limits in the noise standards listed in Table N-2 for noise sensitive land uses that may be affected by the increased noise levels. For federally-funded roadway construction projects, use the limits in the applicable Federal Highway Administration Standards.

N-4.7 **Railway Jurisdictional Coordination.** Work with the San Diego Association of Governments (SANDAG), Caltrans, Metropolitan Transit System (MTS), California High-Speed Rail Authority, and passenger and freight train operators as appropriate to install noise attenuation features to minimize impacts to adjacent residential or other noise sensitive uses from railroad operations.

N-4.8 **Train Horn Noise.** Establish train horn "quiet zones" with new rail projects consistent with federal regulations, where applicable. Promote community programs for existing at-grade crossings by working with rail operators.

N-4.9 **Airport Compatibility.** Assure the noise compatibility of any development projects that may be affected by noise from public or private airports and helipads during project review by coordinating, as appropriate, with appropriate agencies such as the San Diego County Regional Airport Authority (SDCRAA) and the Federal Aviation Administration (FAA).

GOAL N-5

Non-transportation-Related Noise Sources. A noise environment that provides minimal noise spillovers from industrial, commercial, agricultural, extractive, and similar facilities to adjacent residential neighborhoods.

Policies

N-5.1 **Truck Access.** Design development so that automobile and truck access to industrial and commercial properties abutting residential properties is located at the maximum practical distance from residential zones.

N-5.2 **Noise-Generating Industrial Facilities.** Locate noise-generating industrial facilities at the maximum practical distance from residential zones. Use setbacks between noise generating equipment and noise sensitive uses and limit the operation of noise generating activities to daytime hours as appropriate where such activities may affect residential uses.

Temporary and/or Nuisance Noise

CONTEXT

Policies in this section are directed toward minimizing intermittent or temporary nuisance noise including, but not limited to, construction and maintenance equipment, landscaping equipment, trash collection vehicles, parking lot/street sweepers, barking dogs, amplified music, car alarms, off-highway vehicles, and special events.

GOALS AND POLICIES

GOAL N-6

Temporary and/or Nuisance Noise. Minimal effects of intermittent, short-term, or other nuisance noise sources to noise sensitive land uses.

Policies

N-6.1 **Noise Regulations.** Develop and regularly update codes and ordinances as necessary to regulate impacts from point, intermittent, and other disruptive noise sources.

N-6.2 **Recurring Intermittent Noise.** Minimize impacts from noise in areas where recurring intermittent noise may not exceed the noise standards listed in Table N-2, but can have other adverse effects.

N-6.3 **High-Noise Equipment.** Require development to limit the frequency of use of motorized landscaping equipment, parking lot sweepers, and other high-noise equipment if their activity will result in noise that affects residential zones.

N-6.4 **Hours of Construction.** Require development to limit the hours of operation as appropriate for non-emergency construction and maintenance, trash collection, and parking lot sweeper activity near noise sensitive land uses.

N-6.5 **Special Events.** Schedule special events sponsored by the County that may generate excessive noise levels to daytime hours when feasible.

N-6.6 **Code Enforcement.** Provide sufficient resources within the County for effective enforcement of County codes and ordinances.