

10

Noise

The purpose of San Ramon's Noise Element is to set forth policies that regulate the ambient noise environment and protect residents from exposure to unacceptable noise levels.

Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the intermittent disturbances of overhead aircraft, to the fairly constant noise generated by traffic on freeways. Noise is primarily a concern with regard to noise-sensitive uses such as residences, schools, churches, and hospitals.

Noise is commonly defined as sounds or a series of sounds that are undesirable, intrusive, irritating, and/or disruptive to daily life. Vehicles are the primary noise source in San Ramon, with the highest noise levels observed near Interstate 680 (I-680) and arterial roadways. Other noise sources include construction activities, landscaping and maintenance activities, parking lot activities, mechanical equipment, and loading/unloading activities. Additionally, military training activities at Camp Parks Reserve Forces Training Area are observed within portions of South San Ramon and the Dougherty Valley.

10.1 MEASUREMENT OF NOISE

Sound levels are usually measured and expressed in decibels (dB) which is a unit of measurement indicating the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, etc.

There are several methods of refining decibel scales to make them reflect human perception. Most commonly used in California is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Figure 10-1 shows the decibel noise levels in units of dBA associated with different common sounds, and illustrates typical sound levels, while Figure 10-2 provides noise level criteria for a variety of land uses. Denotation of a land use as "normally acceptable" in Figure 10-2 implies that the highest noise level in that band is the maximum desirable for existing or conventional construction that does not incorporate any special acoustic treatment.

Noise descriptors used for analysis need to account for human sensitivity to nighttime noise. Common descriptors include the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (DNL, symbol L_{dn}). Both reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the night (10 pm to 7 am) and the CNEL descriptor provides an additional evening (7 pm to 10 pm) weighting. The two descriptors

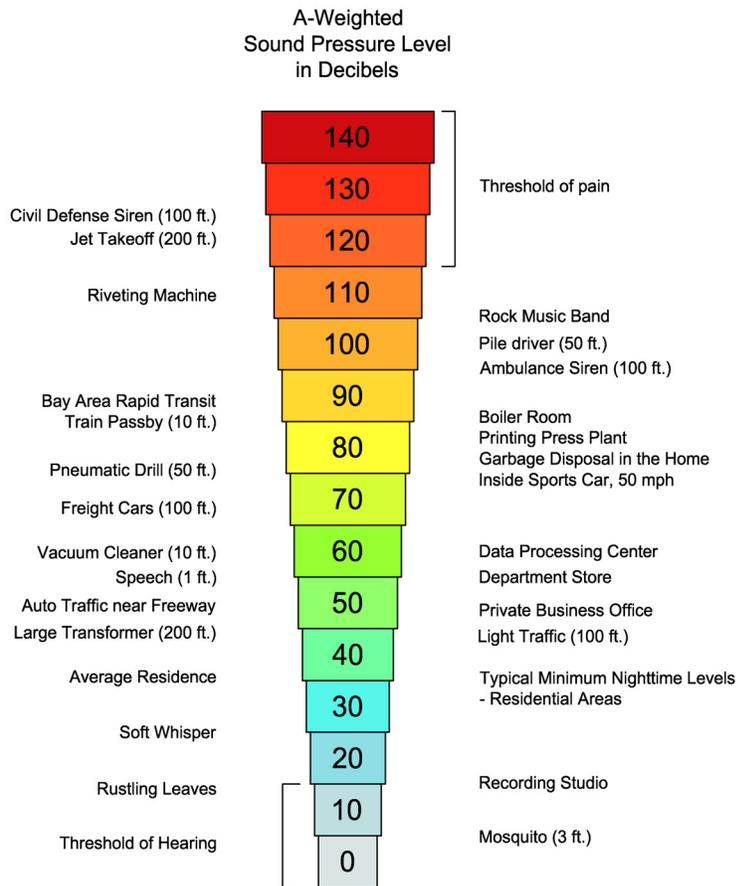
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are roughly equivalent. The CNEL descriptor is used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for state noise law.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived:

- A change in sound level of less than 3 dB generally cannot be perceived;
- A 3 dB change is considered a just-noticeable difference;
- A 5 dB change is required before any noticeable change in community response would be expected; and
- A 10 dB increase is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

Figure 10-1: Typical Sound Levels



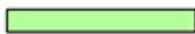
(n ft.) = Distance in feet between source and listener

Figure 10-1
Typical Sound Levels

Noise

Figure 10-2: Land Use Compatibility

LAND USE CATEGORY	COMMUNITY NOISE EXPOSURE DNL OR CNEL, dB					
	55	60	65	70	75	80
Residential	Green	Green	Yellow	Yellow	Orange	Red
Transient Lodging - Motels, Hotels	Green	Green	Yellow	Yellow	Orange	Red
Schools, Libraries, Churches, Hospitals, Nursing Homes	Green	Green	Yellow	Yellow	Orange	Red
Auditoriums, Concert Halls, Amphitheaters	Green	Green	Yellow	Yellow	Orange	Red
Sports Arena, Outdoor Spectator Sports	Green	Green	Yellow	Yellow	Orange	Red
Playground, Neighborhood Parks	Green	Green	Green	Green	Orange	Red
Golf Course, Riding Stables, Water Recreation, Cemeteries	Green	Green	Green	Green	Orange	Red
Office Buildings, Business, Commercial and Professional	Green	Green	Green	Green	Orange	Red
Industrial, Manufacturing, Utilities, Agriculture	Green	Green	Green	Green	Orange	Red

 Normally Acceptable

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

 Conditionally Acceptable

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

 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.

 Clearly Unacceptable

New construction or development clearly should not be undertaken.

NOISE IN SAN RAMON

Noise in San Ramon is the result of both traffic and other sources. The nature of this noise is outlined below.

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. Traffic volume has a lesser influence on traffic noise levels. The primary source of noise from automobiles is high frequency tire noise, which increases with speed. In addition, trucks and older automobiles produce engine and exhaust noise, and trucks also generate wind noise.

While tire noise from autos is generally located at ground level, truck noise sources can be located as high as ten to fifteen feet above the roadbed because of tall exhaust stacks and higher engines. For roads that are used heavily by trucks, sound walls are not as effective for mitigating such noise unless they are very tall.

According to common practice for residential areas, CNEL noise exposure up to 60 dB is considered “normally acceptable” for unshielded residential development. Noise levels above 60 up to 70 dB fall within the “conditionally unacceptable” range, and those in the range above 70 to 75 dB are considered “normally unacceptable.”

TRAFFIC NOISE LEVELS

The San Ramon Planning Area is subject to noise impacts from several transportation corridors, as illustrated in Figure 10-3. Noise contours are lines drawn around a noise source indicating equal levels of noise exposure.

Figure 10-4 illustrates future noise contours throughout the Planning Area. By far the greatest contributor to noise is traffic on I-680. The California Department of Transportation (Caltrans) has constructed sound walls adjacent to the freeway and existing nearby homes, but this measure has occasionally increased ambient noise levels for residences located uphill and at greater distances from the sound walls. This traffic noise thus presents the City with the challenge of providing adequate noise mitigation other than sound walls along the freeway or throughout the City. Other areas that will experience significant increases in ambient noise levels include Crow Canyon Road, Bollinger Canyon Road, San Ramon Valley Boulevard, Old Ranch Road, Dougherty Road, East Branch Parkway and Windemere Parkway.

To address local street issues, San Ramon adopted a Residential Traffic Calming Program (RTC) in 1998. In 2006, the RTC Program was amended to reflect current trends. The purpose of the RTC Program is to reduce vehicle speeds, improve safety, increase awareness, and enhance the quality of life within residential neighborhoods through implementation of traffic calming measures. Slowing traffic as well as providing alternative modes of transportation could reduce vehicular noise.

CAMP PARKS

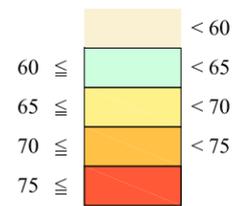
Camp Parks, an Army Reserve and National Guard training facility, consists of approximately 2,000 acres in Contra Costa and Alameda Counties. The installation occupies approximately 910 acres of the Planning Area adjacent to the Dougherty Valley and Tassajara Valley. Facilities include a live fire shoot house, rappel tower, training courses, learning centers, and bed space for more than 800 soldiers.

SAN RAMON GENERAL PLAN 2035



LEGEND

NOISE LEVEL (dBA CNEL)



Source: SoundPlan Version 7.0

POLITICAL BOUNDARIES *

- - - - Urban Growth Boundary
- - - - City Limits
- - - - Sphere of Influence
- - - - Planning Area Boundary
- - - - County Boundary

* The locations of political boundaries are shown adjacent to each other for ease of identification. Actual political boundaries are coterminous when shown as contiguous, parallel, or overlap.



Figure 10-4
Future Noise Contours

Noise

The U.S. Army prepared an Environmental Noise Management Plan for Camp Parks in 2005. The plan stated that helicopter and firearms training activities generate significant noise. The plan indicated that the incompatible use zone (Zone III) and normally incompatible use zone (Zone II), which are based on average noise exposure levels, were entirely contained within the installation boundaries. The plan noted that peak noise levels from individual training activities may be observed at nearby residential uses. As such, the plan recommended that neighboring jurisdictions require disclosure of noise levels as part of real estate development and transfer activities.

OTHER NOISE

Although traffic is the primary source of noise in San Ramon, other sources do exist. These sources include construction, landscaping and maintenance activities, parking lot activities, mechanical equipment, and loading/unloading activities. The policies of this Chapter address the full range of these sources.

The City's Noise Ordinance, adopted in 1987, establishes guidelines on limiting unnecessary and excessive noise. The standards in the Noise Ordinance works to reduce the potential impact noise may have to sensitive receptors and outlines remedies and penalties for noise violations. Additionally, the City's Zoning Ordinance provides noise reduction measures through separation and/or screening of noise-generating use.

GUIDING POLICY

10.1-G-1 Achieve an acceptable noise environment for the present and future residents of San Ramon.

IMPLEMENTING POLICIES

10.1-I-1 Minimize vehicular and stationary noise sources and noise emanating from intermittent activities.

The City's regulations restrict the hours of operation for a variety of noise sources, and State laws limit the noise levels of motor vehicles and some activities at industrial plants. The City's Residential Traffic Calming Program reduces vehicular noise through promoting alternative modes of transportation and implementing traffic-calming measures.

10.1-I-2 All projects that are exposed to noise greater than "normally acceptable" levels indicated in Figure 10-2 shall be required to submit a noise analysis. Applicable noise attenuation measures shall be implemented with the DNL reduced to 45 dB in all habitable rooms.

Noise attenuation measures may consist of conventional construction practices, open space and landscaping, building orientation and design, or other measures that buffer or mask sound. The City applies the standards of Title 24, Part II of the California Code of Regulations to all housing, thereby requiring an acoustical study if a proposed development will be located in an area exposed to a DNL (Day-Night Average Sound Level) in excess of 60 dB.

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- 10.1-I-3 Acoustical and vibration studies shall be prepared by qualified professionals in accordance with industry-accepted methodology. All applicable and feasible vibration reduction measures shall be incorporated into project plans.

Industry-accepted methodology means guidance issued by public agencies or private organizations. Examples include Caltrans, the Federal Highway Administration, and the Institute of Noise Control Engineering.

- 10.1-I-4 Alternatives to sound walls such as building orientation and landscaped buffers shall be considered during the design process. If deemed appropriate, sound walls shall be well-designed and appropriately sited.

Factors that should be considered in the design and siting of sound walls include height, decorative features, graffiti resistance, pedestrian mobility, and sight distances.

- 10.1-I-5 New development shall minimize their noise impacts on adjacent properties through appropriate means, including, but not limited to, the following actions:

- Screen and control noise sources, such as parking and loading facilities, outdoor activities and mechanical equipment,
- Increase setbacks for noise sources from adjacent dwellings,
- Retain or install fences, walls, and landscaping that serve as noise buffers,
- Use soundproofing materials and other building practices or materials,
- Encourage the use of commute alternatives,
- Control hours of operation, including deliveries and trash pickup, to minimize noise impacts, and
- Buffer noise along highways and arterial roadways through natural noise buffers and if necessary, install sound walls when compatible with neighborhood aesthetics and character.

- 10.1-I-6 Protect especially sensitive receptors such as schools, hospitals, and senior care uses, from excessive noise.

New development that may adversely impact sensitive receptors will be required to implement noise attenuation measures to limit excessive noise.

- 10.1-I-7 Implement the City's noise control standards to ensure appropriate regulation of common residential, commercial, and industrial noise sources.

- 10.1-I-8 Require new noise sources to use best available and practical control technology to minimize noise from all sources.

- 10.1-I-9 Continue to enforce the City's Noise Ordinance to reduce noise impacts.

Noise

10.1-I-10 Update and maintain the Noise Ordinance to improve the City's ability to reduce noise impacts.

10.1-I-11 Encourage new developments to provide facilities which support the use of alternative transportation modes such as walking, bicycling, carpooling and, where applicable, transit to reduce peak-hour traffic and vehicular noise.

Traffic and vehicular noise can be reduced using site design incentives like mixing of land uses, pedestrian/bicycle trail connections, park and ride lots, and designated carpool/vanpool parking areas.

10.1-I-12 Designate local truck routes to minimize truck traffic in noise-sensitive land use areas.

10.1-I-13 Encourage mixed-use and commercial developments to locate noise generating components such as loading areas, parking lots, driveways, trash enclosures, mechanical equipment, and other noisier components away from residential development.

Noise impacts can be reduced by identifying noise-generating components and by locating and/or screening them to minimize impacts to residential development.

10.1-I-14 Construction activities are exempt from the standards set forth in Figure 10-2, but must implement all practical noise attenuation measures and practices to limit adverse impacts on nearby land uses.

Noise attenuation measures and practices include limits on hours of operation, use of mufflers or engine shrouds, identification of truck haul routes, installation of temporary fencing or barriers, and locating staging areas as far as practicable from sensitive receptors.

10.1-I-15 Continue to enforce state laws and local ordinances that pertain to nuisance noise.

Nuisance noise includes car alarms, car stereos, car and motorcycle exhaust systems, barking dogs, and other sources that diminish the quality of life.

10.1-I-16 Require evaluation of potentially harmful noise sources such as pure tones. Prohibit or place restrictions on such sources if the evaluation indicates that they may be harmful.

A "pure tone" is defined as sound that can be judged as a single pitch or set of single pitches. Although not commonly found in suburban noise environments, pure tones can be harmful to human hearing and also may be perceived as highly annoying.

10.1-I-17 For purposes of city analyses of noise impacts, and for determining appropriate noise mitigation, a significant increase in ambient noise levels is assumed if the project causes ambient noise levels to exceed the following:

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- The ambient noise level is less than 60 dB L_{dn} and the project increases noise levels by 5 dB or more.
- The ambient noise level is 60-65 dB L_{dn} and the project increases noise levels by 3 dB or more.
- The ambient noise level is greater than 65 dB L_{dn} and the project increases noise levels by 1.5 dB or more.

10.1-I-18 Require disclosure of potential noise impacts as part of real estate developments and transfers of land ownership within the Suggested Noise Disclosure Area of Camp Parks.