IX. NOISE

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NOISE

PURPOSE

The Noise Element outlines policies to achieve the City's goals of protecting Roseville residents from excessive noise. This Element establishes acceptable noise levels for land uses affected by fixed and transportation noise sources. The City's intent is to provide a reasonable community noise environment, in balance with other social, economic, and environmental goals.

SETTING

Noise sources in Roseville can be characterized as "transportation-related" and "fixed." Transportation-related noise sources consist of roadway traffic noise, primarily from high-volume roadways, railroad noise, and aircraft overflight. Fixed noise refers to sources which originate from a specific, stationary location and include, but are not limited to, industrial facility noise; operations associated with commercial land uses; race track operations; and special events, such as softball and soccer games.

Noise levels in Roseville from transportation and fixed sources were documented through a community noise survey. The survey included a focus on areas where noise-sensitive land uses, which include residential areas, parks, and schools, that may be affected by community nose.[1]

Noise measurement sites were selected to be representative of typical conditions. The community noise survey was conducted at 19 locations, including nine long-term (24-hour) and 10 short-term (10 to 20 minutes) measurements. The community noise survey results indicate that typical noise levels in noise-sensitive areas range from 48 dB to 68 dB L_{dn}. Traffic on local roadways, SR 65 and I-80, railroad operations, distant commercial and industrial activities, and neighborhood activities are the controlling factors for background noise levels in most of the City.[2]

Roadway Noise

The City created estimates of transportation noise affecting the Planning Area to support the General Plan, based on noise measurements and industry standard analysis methods.[3] Existing road noise contours are generally reflected on Figure IX-1 and future road noise contours on Figure IX-2.[4] The City's noise estimates include areas affected by transportation noise from Interstate 80, Highway 65, future Placer Parkway, and the City's arterials.

Railroad Noise

Railroad activity in the City of Roseville includes freight and Amtrak operations on the Union Pacific Railroad Company (UPRR) tracks and activity within the UPRR J.R. Davis maintenance yard. The J.R. Davis yard is the largest rail facility on the west coast. Noise contours associated with railroad operations were developed using noise level measurements and accepted modeling techniques.

Noise levels associated with the maintenance yard include master and group retarder "squeal," recurring impulsive noises, and railroad line operations. The "squeal" occurs primarily at the south end of the yard and is a result of cars passing through retarders on their path to the classification yard after being pushed over the hump. The recurring impulsive noise generally occurs at the north end of the yard and is a result of freight train cars hitting together. Noise levels associated with railroad line operations are a result of warning horns, at-grade crossing bells, locomotive engine, and rail car noise.

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1 The main noise sources in the Planning Area are the major highways and high-volume roadways and the Union Pacific Railroad operations. Noise modeling techniques and noise measurements were used to develop generalized day-night average sound level (Ldn) noise contours for these major sources, as well as other secondary fixed noise sources in the Planning Area. The Ldn contours reflect the average equivalent sound level during a 24-hour day, with additional weight (10 dB) added to sound levels during the night (10:00 p.m. to 7:00 a.m.), when noise is most disruptive.

2 Please see the General Plan Environmental Impact Report for more detail.

3 The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop Ldn contours for all highways and major roadways in the City of Roseville General Plan Area. The FHWA Model is the analytical method presently favored for traffic noise prediction by most state and local agencies, including Caltrans.

4 The traffic noise model was updated by JC Brennan, Noise Consultant, in 2015 as part of the Amoruso Ranch Specific Plan.

Figure IX-1 | Existing Roadway Noise Contours

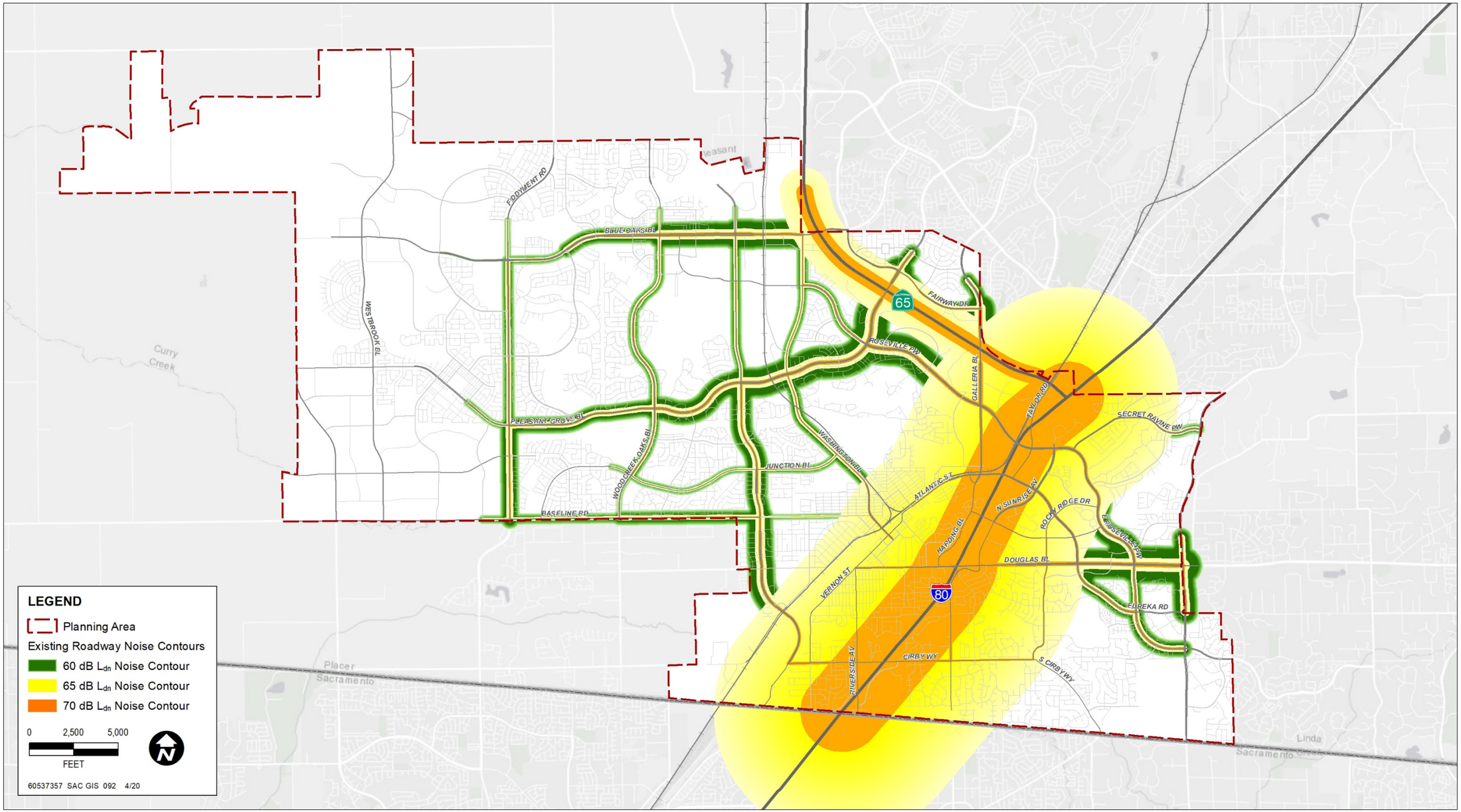
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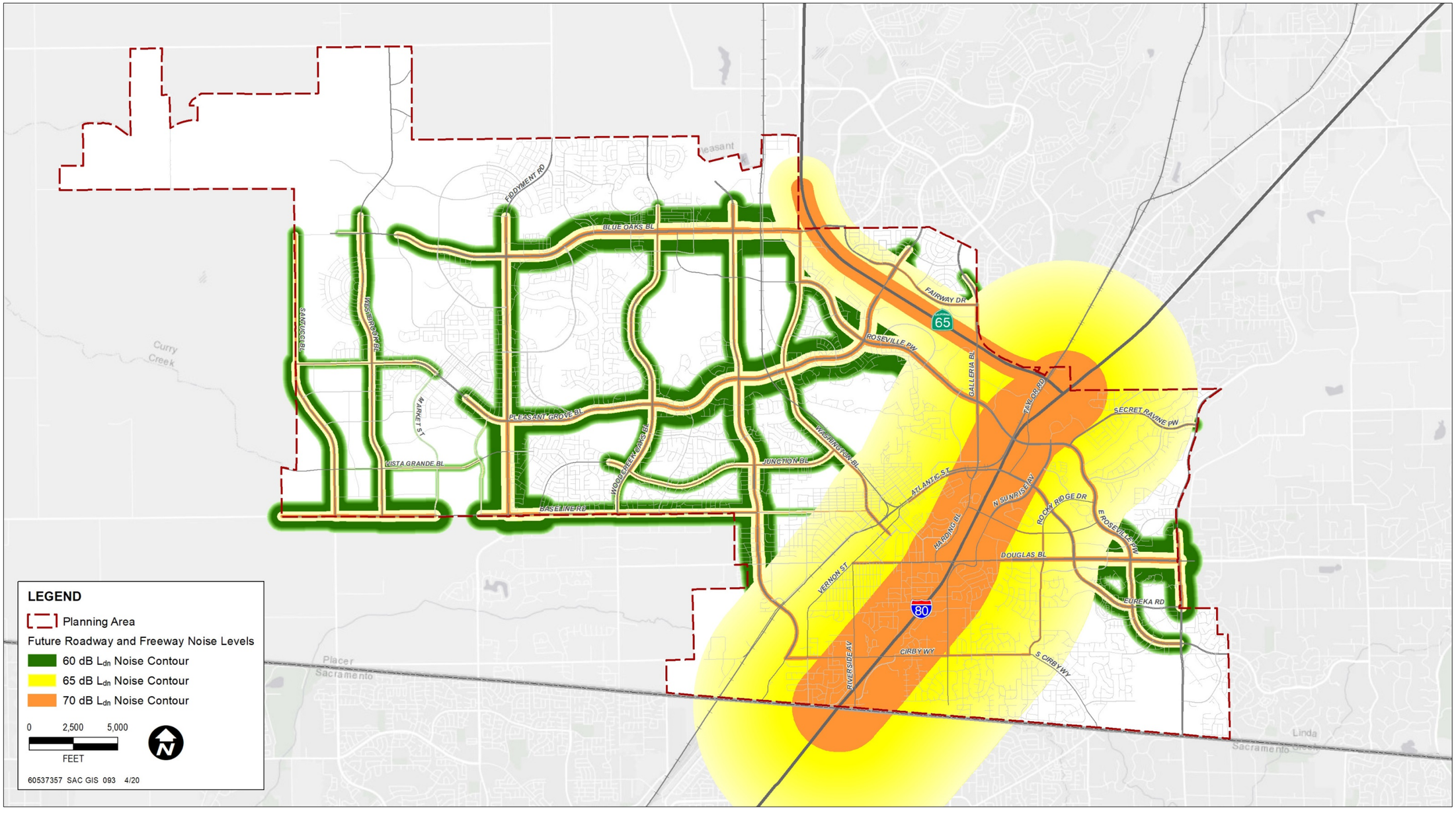
Figure IX-2 | Future Roadway Noise Contours



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Noise contours for the railroad activities are generally reflected on Figure IX-3. According to UPRR, railroad operations within Roseville are not anticipated to change substantially in the future. Therefore, significant modifications to the reflected noise contours are not anticipated.

Overflight Noise

Aviation noise is addressed through a combination of short-term and continuous site noise measurements of aircraft operations and review of adopted airport land use compatibility policies and noise contours. Several airports operate regionally that may affect the City of Roseville. These include McClellan Airfield, Sacramento International Airport and the Lincoln Airport. Occasional overflights from all three airports can be expected. According to Sacramento County Airport staff, the area in the vicinity of McClellan Airfield is subject to frequent large aircraft (over 75,000 pounds) operating under 3,000 feet above ground level. Based on current and historical experience, single event noise occurrences can cause annoyance to residential or other sensitive uses. However, no noise standards are exceeded by the aircraft overflight.

Fixed Noise Sources

Industrial processes are often recognized as a primary fixed noise source. Significant noise generation can occur even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and state employee health and safety regulations (federal Occupational Safety and Health Administration [OSHA] and California Occupational Safety and Health Administration [Cal-OSHA]). Exterior noise levels may, however, exceed locally-acceptable standards.

Commercial, recreational, and public service facility activities can also produce noise that affects adjacent sensitive land uses. These noise sources can be continuous and may contain tonal components that may be annoying to individuals who live in the vicinity. In addition, noise generation from fixed noise sources may vary based on climatic conditions, time of day, and existing ambient noise levels.

Numerous fixed noise sources are dispersed throughout the City. General noise contours for the primary identified existing fixed noise source locations in Roseville are reflected on Figure IX-4.

As development increases within the City of Roseville and adjacent communities, additional noise sources are expected to follow and overall noise levels are expected to increase.

To protect residents from excessive noise exposure, noise level standards for transportation-related noise sources are identified in this element. For most noise-sensitive land uses, a 60 dB L_{dn} exterior noise level standard is established. In the case of residential uses, the intent of this standard is to provide an acceptable noise environment for outdoor activities. Interior noise level standards for most noise-sensitive land uses are established at 45 dB L_{dn}. In the case of residential uses, the intent of this standard is to provide a suitable environment for indoor communication and sleep. Table IX-1 cites the noise level criteria for transportation-related noise sources.

Hourly average noise level (L_{eq}) and maximum noise level standards have also been established for new noise-sensitive projects affected by fixed (non-transportation) noise sources. The standards include a penalty for simple tone noises, noise consisting primarily of speech or music, or for recurring impulsive noises.

Based upon the comprehensive noise survey completed within the City, traffic noise along highways and major arterials and railroad noise from UPRR activities are, and will continue to be, the primary sources of noise in the community. The City will closely review land use and development proposals that are in close proximity to major roadways and railroad facilities for potential impacts associated with noise.

Recognizing that in increasingly urban areas it is difficult to maintain rural/suburban noise standards, and in order to facilitate the City's goals to encourage reinvestment and economic development in the Riverside and Downtown Specific Plan areas, the City may elect to allow new noise-sensitive land uses on a case by case basis in a mixed-use environment or in proximity to transportation sources. Noise levels would require mitigation to the extent feasible using building orientation, construction and design features; however ultimately, noise levels may exceed the noise standards identified in Table IX-1.

Fixed/industrial noise sources will also contribute to the City's noise environment. Future development of industrial and other significant fixed noise sources in close proximity to noise-sensitive uses, or encroachment of noise-sensitive uses upon existing or planned future fixed noise sources, could cause noise conflicts. Future land use decisions will evaluate the potential for noise impacts when noise-sensitive uses and fixed noise sources, such as industrial uses, are located within close proximity. In addition to residential areas, other noise-sensitive receptors include schools, religious institutions, hospitals and convalescent hospitals.

Vibration

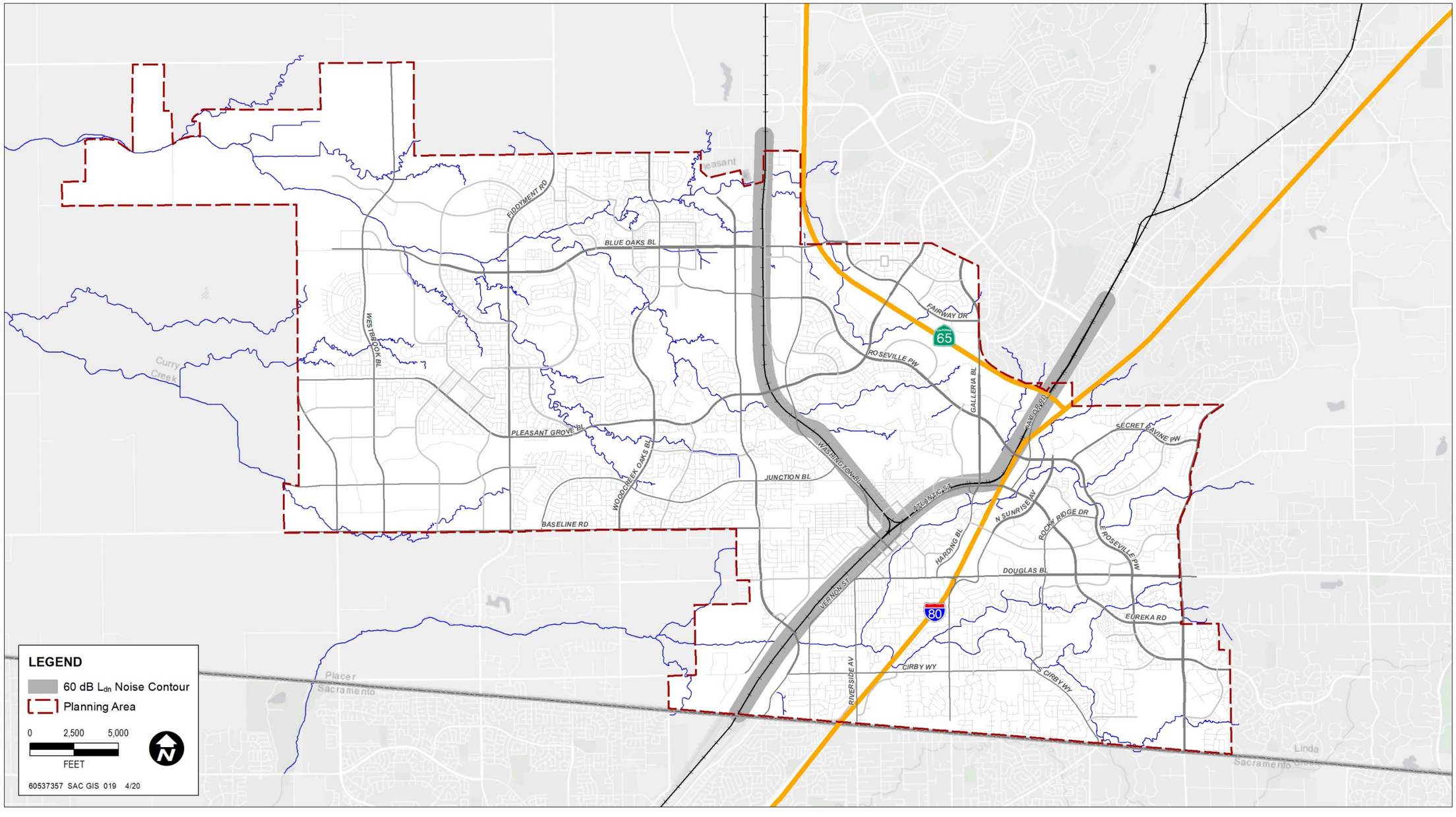
Vibration is the periodic motion of a medium (solid object, liquid, or gas) back and forth at a particular speed. The rumbling sound caused by the vibration of room surfaces is called groundborne noise. Sources of groundborne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration sources may be continuous, such as factory machinery, or intermittent, such as a heavy truck driving by.

Vibration levels are commonly expressed in peak particle velocity (PPV). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is typically used in the monitoring of transient and impact vibration and has been found to correlate well to the stresses experienced by buildings. The response of the human body to vibration relates well to average vibration amplitude. Therefore, vibration impacts on humans are evaluated in terms of vibration velocity. Similar to airborne sound, vibration velocity can be expressed in decibel notation, as vibration decibels (VdB).

ORGANIZATION

The contents of the Noise Element are focused on a single component, which is Noise and Vibration.

Figure IX-3 | Railroad Line Operations Noise Contours



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GOALS AND POLICIES

NOISE AND VIBRATION

Goal N1.1 **Protect City residents from the harmful and annoying effects of exposure to excessive noise.**

Goal N.12 **Protect the economic base of the City by preventing incompatible land uses from encroaching upon existing or planned noise-producing uses.**

Policy N1.1 *The City's exterior noise compatibility standards for uses affected by transportation noise sources are included as Table IX-1. Exterior noise levels shall be mitigated to the extent feasible using site planning, building orientation, and/or other construction techniques or design features. Noise barriers should only be used after other feasible noise reduction strategies are exhausted, and not where they would interrupt existing or future community pedestrian or bicycle connectivity.*

Policy N1.2 *The City's interior noise compatibility standards for uses affected by transportation noise sources are 45 dBA L_{dn} for noise-sensitive uses such as residences, lodging, hospitals, assisted living facilities, and other places where people normally sleep. For noise-sensitive uses where people do not sleep, such as offices, schools, and uses with similar noise sensitivity, noise levels should be no greater than 45 dBA L_{eq}. Proposed projects should incorporate noise reduction strategies, if necessary, to achieve these interior noise levels.*

Policy N1.3 *The City's exterior noise compatibility standards for uses affected by non-transportation-related noise are defined within the City's Noise Ordinance, and should be applied consistent with the Noise Ordinance.*

Policy N1.4 *The City will require new transportation improvement projects to be designed to limit noise impacts consistent with the standards contained in Table IX-1, to the extent feasible, through the use of appropriate attenuation techniques.*

Policy N1.5 *If existing noise levels exceed the noise compatibility standards in Table IX-1 or Policy N1.2, then feasible methods of reducing noise to levels consistent with standards should be considered, but are not required. However if existing noise levels exceed noise compatibility standards and a project results in a significant increase in noise (as defined below), then feasible methods of reducing noise to avoid a significant noise increase should be applied. In no case should a project result in a Clearly Unacceptable noise level according to Table IX-1.*

- *Where existing exterior noise is less than 60 dB, a ≥ 5 dBA increase in noise is significant.*
- *Where existing exterior noise is between 60 and 65 dBA, a ≥ 3 dB increase in noise is significant.*
- *Where existing exterior noise is greater than 65 dB a ≥ 1.5 dBA increase in noise is significant.*

Policy N1.6 *In order to facilitate reinvestment and economic development, if noise mitigation is found to be infeasible or in conflict with other City policies regarding community design, the City may elect to allow noise levels that exceed the noise standards*

identified in Table IX-1, although in no case should application of this policy result in a Clearly Unacceptable noise level according to Table IX-1.

Policy N1.7 *The City will work in cooperation with Caltrans and the Union Pacific Railroad to maintain noise level standards for both new and existing projects in compliance with Table IX-1.*

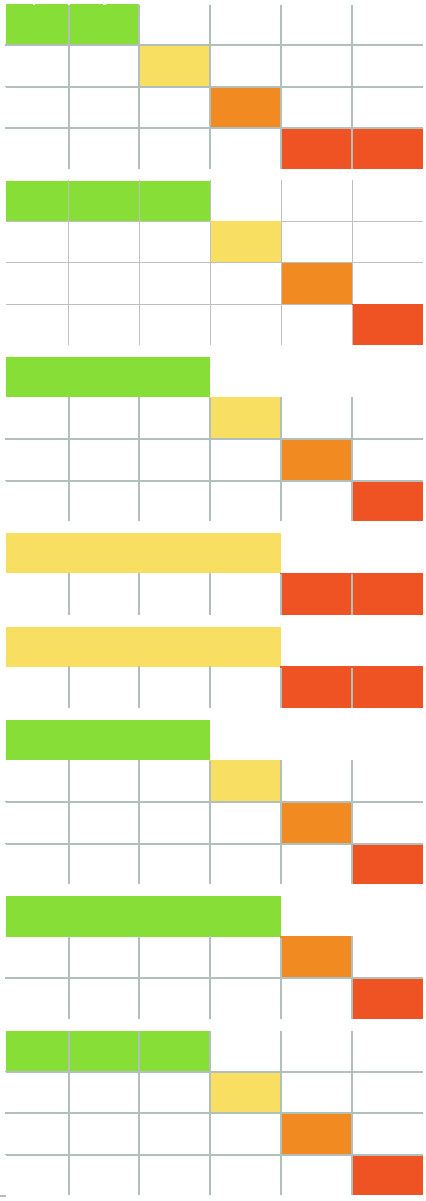
Policy N1.8 *Public events, such as school sporting events, community festivals, and similar community and temporary events, and noise associated with emergency vehicles, alarms, or signals are exempt from the noise standards outlined in this Element.*

Policy N1.9 *Construction-related noise that is consistent with the City's Noise Ordinance is exempt from the noise standards outlined in this Element.*

Policy N1.10 *Include all feasible measures necessary, as a part of proposed development and public infrastructure projects, to avoid substantial annoyance for adjacent vibration-sensitive uses, consistent with California Department of Transportation and Federal Transit Agency guidance.*

Table IX-1 | Exterior Noise Compatibility Standards for Uses Affected by Transportation Noise

Land Use Category*	Community Noise Exposure L_{dn} or CNEL, dBA
	55 60 65 70 75 80
Residential	
Lodging – Motels, Hotels	
Schools, Libraries, Places of Worship, Hospitals, Assisted Living	
Auditoriums, Concert Halls, Amphitheaters	
Sports Arena, Outdoor Spectator Sports	
Playgrounds, Neighborhood Parks	
Golf Courses, Riding Stables, Water Recreation, Cemeteries	
Office Buildings	



Interpretation

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 taken 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.

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 should generally not be undertaken.

* Land uses not listed on this table will be evaluated according to guidance for the land use category that is most similar with regard to noise sensitivity. The land use-noise compatibility standards apply to outdoor (exterior) activity areas associated with each land use. Outdoor activity areas are the portion of a noise-sensitive property where outdoor activities would normally be expected. Outdoor activity areas for the purposes of this element do not include gathering spaces alongside transportation corridors or associated public rights-of-way.

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