



2015 - 2020 Noise Element



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NOISE ELEMENT

PURPOSE

Noise represents a potential hazard to the City's residents, business people and visitors. This Element is designed to consider the land use patterns of the Land Use Element in the context of the noise it will generate, and the ambient (prevailing) noise levels in the community. The proper attenuation of noise is particularly critical to assure that the noise environment is controlled as the city grows. The Noise Element describes the current and future noise environment, identifies those areas where noise levels are expected to be unacceptable, and establishes policies and programs designed to reduce these noise levels in the long term.

BACKGROUND

California law governs the scope and content of Noise Elements. Government Code Section 65032(f) identifies the requirements for the evaluation of the noise environment in a community, while the California Environmental Quality Act (CEQA) allows jurisdictions to establish standards to determine whether noise levels will have an effect on the environment. In addition, the California Building Code establishes standards for acceptable noise levels inside new buildings. The City of Barstow implements these standards through its Building Department.

The Land Use and Circulation Elements have the most direct impact on the Noise Element. The distribution of land uses, and their relationship to noise sources, is critical to the quality of life of Barstow. Similarly, the number of vehicle trips generated on the City's roadways, particularly the two interstate highways that traverse the community, along with train traffic along the Burlington Northern Santa Fe railway, will continue to comprise the primary sources of noise in the community for the foreseeable future.

Development in general, and urbanization in particular, typically lead to increased levels of noise in the environment. Excessive noise levels have the potential to contribute to temporary and permanent physical impairments including hearing loss, fatigue, stress, annoyance, and anxiety. In order to prevent noise levels from becoming excessive, standards have been adopted and implemented through this Element to establish maximum acceptable levels of noise for all land uses.

Barstow is a generally quiet community that does not have a large portion of its land uses adversely affected by high noise levels. Exceptions to this tendency include lands located in close proximity to Interstates 15 and 40 and the Burlington Northern Santa Fe railway and its classification yard. Although the community does not currently have a significant number of noise-generating industrial land uses, efforts to attract industrial development may lead to the establishment of new industries that could generate potentially harmful noise levels. To address this concern, lands designated for industrial use have been located as far as practicable from existing residential land uses. In the event that industrial uses are proposed in the vicinity of residences noise analysis accompanied by appropriate mitigation measures shall be required of project applicants.

Many communities have noise ordinances designed to regulate excessive noise levels caused by sources such as gas-powered leaf blowers, motorcycles and off-road vehicles. These ordinances tend to place limits on the level and duration of noise that are permitted to be generated by such sources. Barstow does not currently have a local noise ordinance; consequently, state statute is relied upon to enforce noise-related issues.

COMMUNITY NOISE ASSESSMENT

Noise Rating Terminology

Noise levels are calculated on a logarithmic scale in decibels (dB), which is the unit of measurement that describes the amplitude, or strength, of sound. The measurements are weighted and added over a specified time period to reflect not only the magnitude of the sound, but also its duration, frequency and time of occurrence. An increase of 10 decibels indicates a sound energy that is ten times greater, which would be perceived by the human ear as being twice as loud.

The most common unit for measuring noise levels is the A-weighted decibel (dBA) scale, which gives less weight to the very low and high frequency components of sound, as does the human ear, resulting in an accurate correlation to the subjective reactions to noise. The most common sounds measure between 40 dBA (very quiet) and 100 dBA (very loud). A rural night-time environment typically measures about 25 dBA, while a jet engine measures 105 dBA.

Due to the logarithmic nature of the decibel scale, doubling the sound energy of a noise source only increases the decibel rating by 3dBA. Therefore, if the noise generated by one car is 72 dB, another car next to it will only increase the noise level by 3 dB, to 75 dB. A sound must be nearly 10 dBA higher than another sound before the human ear perceives it as being twice as loud. An increase of 3 dB is barely perceptible to most people, and in many cases, an increase of 5 dB must occur for the listener to consider it readily perceptible. Noise control measures should reduce noise by 5 to 10 dBA in most circumstances to effectively lower the perceived sound.

Community Noise Equivalent Level (CNEL)

Section 46026 of the California Health and Safety Code established a model noise ordinance that can be used by local communities to establish standards for appropriate levels of noise for all types of land uses. The model uses the Community Noise Equivalent Level (CNEL), which averages noise levels on a 24 hour basis; the CNEL uses a weighted scale that acknowledges the more sensitive evening and nighttime periods. Because of the decrease in ambient noise levels during the evening and nighttime, sounds appear to be louder, and may be more noticeable as a result.

Types of Noise

Noise sources can be classified as either “line sources” (such as a busy street) or “point sources” (a commercial air compressor). A number of factors affect noise as it travels through the air, including temperature, wind speed and direction, hard and soft ground surfaces, and intervening vegetation and walls. “Soft site” conditions are those that occur over natural surfaces, such as earth and vegetation, while “hard site” conditions are represented by hard ground surfaces, such as asphalt, concrete, and stone. A noise reduction rate of 4.5 dBA per doubling of distance is typically observed in soft site conditions, while a reduction of 3.0 dBA typically occurs in hard site conditions. Generally speaking, increasing the distance between noise-generating land uses such as roadways and industries and sensitive noise receptors such as schools and residences is one of the most effective means of mitigating adverse noise impacts. From this perspective, it makes sense for planners to designate land uses and primary transportation corridors with the objective of maintaining safe distances between noise generators and sensitive noise receptors.

EXISTING NOISE ENVIRONMENT

Barstow’s primary noise sources include highways (Interstates 15 and 40 and State Route 58) and the Burlington Northern Santa Fe railway. Average daily traffic along Interstate 15 ranges from 45,500 to 65,000 vehicles per day, depending upon the roadway segment. Interstate 40 averages 18,000 daily vehicle trips east of highway 15 and State Route 58 carries approximately 12,000 vehicles per day west of Interstate 15. With regard to rail traffic, approximately 90 trains come through Barstow, on average, each day.

To assess the existing noise environment and the likely noise impacts associated with development anticipated by the 2020 horizon year of the General Plan the City contracted with Vista Environmental to conduct a detailed community noise analysis. The full report of Vista Environmental is included as an appendix to the General Plan Master Environmental Impact Report. Among the tasks of the noise consultants was to conduct short-term and 24-hour field measurements of existing noise levels at various locations throughout the community. Additionally, the noise consultants were charged with mapping noise contours along the city’s main noise generating sources, primarily the highways, principal arterial roadways and railroad. Exhibit N-1 illustrates these noise contours, indicating the range of properties that lie within areas exposed to potentially harmful levels of noise. As the exhibit illustrates, very few noise-sensitive land uses are located within the existing 65 dBA noise contours. Moreover, as indicated by the Land Use Element, it is not anticipated that significant new development will occur within these contours during the duration of the General Plan time horizon. It appears, therefore, as though exposure to hazardous noise levels is and is expected to be minimal throughout the Barstow general plan area.

The City’s noise analysts have estimated that adverse impacts from operations-related noise (i.e. highways, railroads and arterial roadways) are currently minimal and are expected to

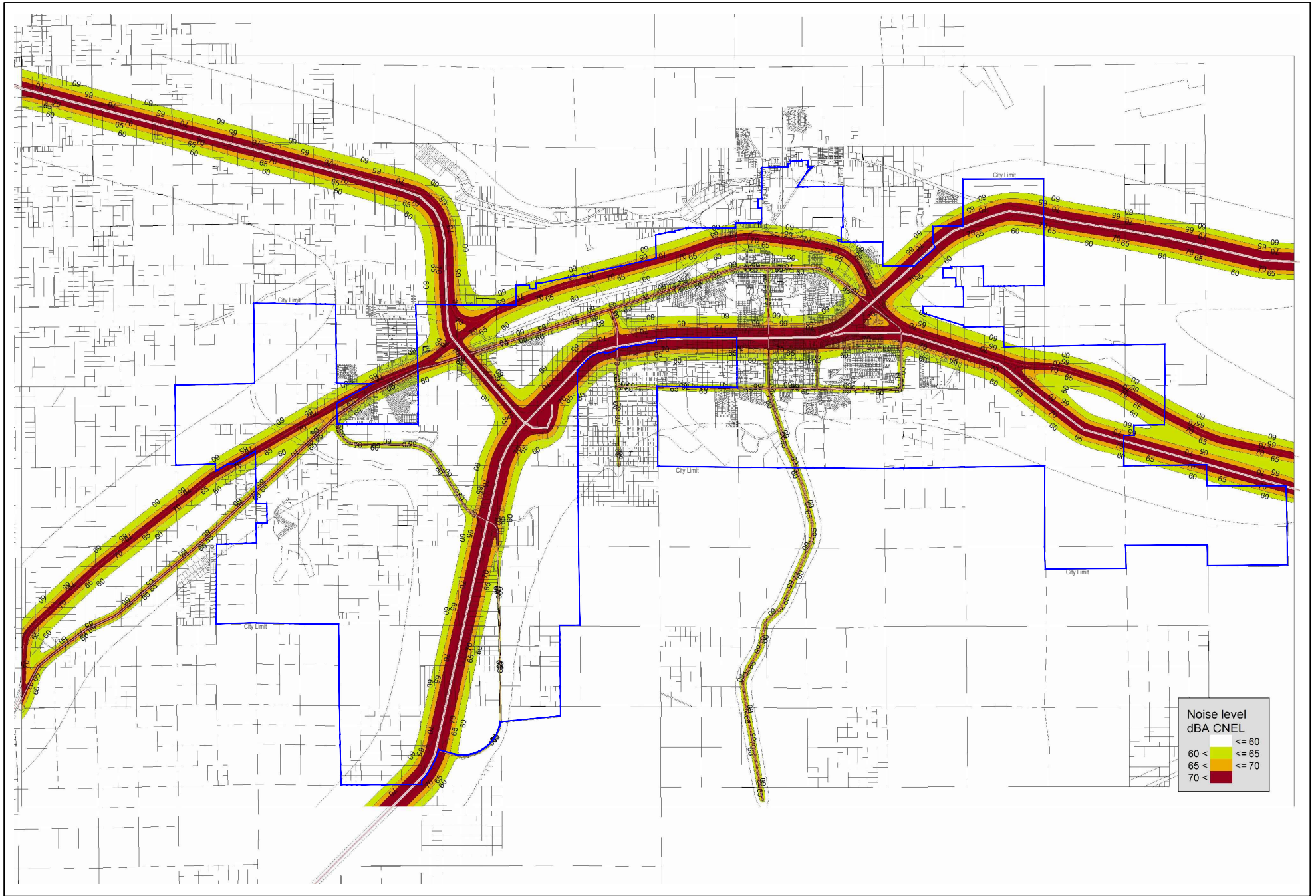


Exhibit N-1
Existing Noise Contours

remain so throughout the duration of the planning period, as illustrated by Exhibit N-2, which provides an estimate of noise contours under the growth parameters assumed by the General Plan. Development that is anticipated under the General Plan could, however, result in construction noise that, while temporary in duration, could generate adverse impacts if not properly mitigated. Construction activity can result in varying degrees of ground vibration, depending on the equipment used on the site. Operation of construction equipment causes ground vibrations that spread through the ground and diminish in strength with distance. Buildings in the vicinity of the construction site respond to these vibrations with varying results ranging from no perceptible effects at the low levels to slight damage at the highest levels. Implementation of the General Plan would result in the development of industrial, casino, commercial, and residential uses. This additional development would generate noise during construction activities at locations in close proximity to planned development; this impact would be short-term and would cease upon completion of construction. The Noise Element includes policies and action strategies designed to mitigate adverse noise impacts associated with the construction of new residential, commercial and industrial land uses.

The State of California has established interior and exterior noise standards for various land uses as illustrated in Table N-1. The goals, policies and strategies contained in the General Plan Noise Element are intended to ensure that these standards are adhered to in considering proposals for new residential, commercial and industrial development under the General Plan. Techniques for mitigating noise impacts encompass project features such as building design, siting of noise-sensitive uses a safe distance from high noise generators and incorporation of sound walls, landscape berms and other design attributes into proposed development projects.

Table N-1: State of California Interior and Exterior Noise Standards

Categories	Uses	CNEL (dBA)	
		Interior ¹	Exterior ²
Residential	Single-family, Duplex , Multi-family	45 ³	65
	Mobile Homes	--	65 ⁴
Commercial	Hotel, Motel, Transient Lodge	45	65 ⁵
	Commercial Retail, Bank, Restaurants	55	--
	Office Building, R & D, Professional & Government Offices	50	--
	Amphitheater, Concert Hall, Auditorium, Meeting Hall	45	--
	Industrial	Gymnasium (Multipurpose)	50
Industrial	Sports Club	55	--
	Manufacturing, Warehousing, Wholesale, Utilities	65	--
	Movie Theaters	45	--
Institutional	Hospitals, Schools, Classrooms	45	65
	Church, Library	45	--
Open Space	Parks and Outdoor Active and Passive Recreation Facilities	--	65

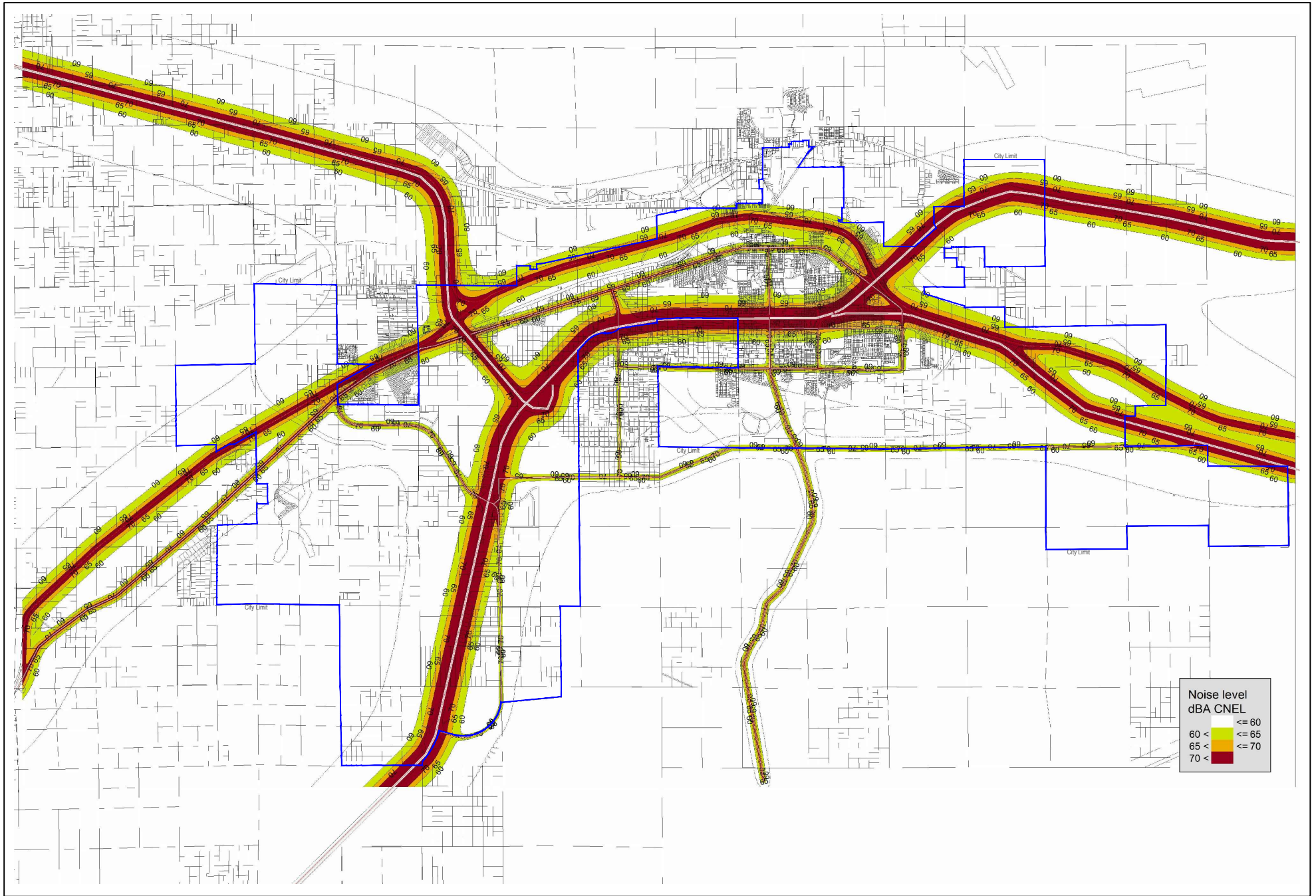


Exhibit N-2
Year 2020 Noise Contours

Notes:

¹ Indoor environment excluding: bathrooms, toilets, closets, and corridors.

² Outdoor environment limited to:

Private yard of single-family residence.

Multi-family private patio or balcony which is served by a means of exit from inside.

Mobile home park.

Hospital patio.

Park's picnic area.

School's playground.

Hotel and motel recreation area.

³ Noise level requirements with closed windows. Mechanical ventilation or other means of natural ventilation shall be provided as per Chapter 12, Section 1205 of the Uniform Building Code.

⁴ Exterior noise level should be such that interior noise level will not exceed 45 dBA CNEL.

⁵ Except those areas affected by aircraft noise.

Source: California Department of Health, 1976

NOISE GOALS, POLICIES AND STRATEGIES

GOAL 1: Provide an environment free of potentially hazardous sounds and noise.

POLICY 1.A: The City shall adhere to the State of California interior and exterior standards for desirable sound levels in various land use categories as shown in Table N-1.

STRATEGY 1.A.1: For projects that are expected to generate potentially harmful noise levels, conduct noise analyses and prepare projections and incorporate mitigation measures to ensure that exterior noise levels at property lines of sensitive noise receptors (eg. residential, institutional and open space) do not exceed 65 dBA.

Responsible Parties: Project applicants in consultation with City planning staff

STRATEGY 1.A.2: Endeavor to locate noise-sensitive land uses outside of the 60-65 dBA noise contours illustrated on Exhibit N-1.

Responsible Parties: Planning staff, Planning Commission

POLICY 1.B: Minimize the exposure of residents and visitors to temporary noise levels that are potentially harmful.

STRATEGY 1.B.1: Consider noise impacts and require noise mitigation mechanisms in approving public events that are likely to generate high levels of noise.

Responsible Parties: City Council, City Manager or designee

STRATEGY 1.B.2: Limit the hours of operation of activities that are likely to generate high noise levels.

Responsible Parties: City Council, City Manager or designee

GOAL 2: Minimize adverse noise impacts of development anticipated under the General Plan.

POLICY 2.A: Proposals for development as well as changes proposed to the Land Use Map shall include consideration of the potential noise impacts associated with such activities.

STRATEGY 2.A.1: Residential projects proposed adjacent to any street where the build out noise level at 50 feet from centerline is expected to exceed 65 dBA, as well as commercial and industrial projects proposed adjacent to sensitive receptors, or lands designated for sensitive receptors, including residential, school or hospital sites, shall be required to submit a noise analysis in conjunction with entitlement applications.

Responsible Parties: Project applicants

STRATEGY 2.A.2 Minimum requirements for noise analyses for proposed development projects shall be developed and distributed to applicants early in the development review process.

Responsible Parties: City planning and building staff

POLICY 2.B: Minimize noise and ground vibration associated with project construction.

STRATEGY 2.B.1: Exempt construction activities from the operational noise standards set forth in Table N-1 between the hours of 7:00 a.m. and 7:00 p.m. and enforce the standards outside of these hours.

Responsible Parties: City building and code compliance staff

STRATEGY 2.B.2: Pursuant to San Bernardino County Ordinance 87.0910 vibration levels shall be limited to 0.2 inches per second at the property line (or nearest sensitive receptor).

Responsible Parties: City building and public works staff