

9

Noise Element

Noise is a required General Plan element. The Noise element has a direct correlation with the land use, circulation, and housing elements. It guides land use and transportation facilities, since they are common sources of excessive noise levels.

9.1 NOISE CHARACTERISTICS AND MEASUREMENT

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 MEASUREMENT

Noise is commonly defined as undesirable or unwanted sound. Three aspects of community noise are used in assessing the noise environment:

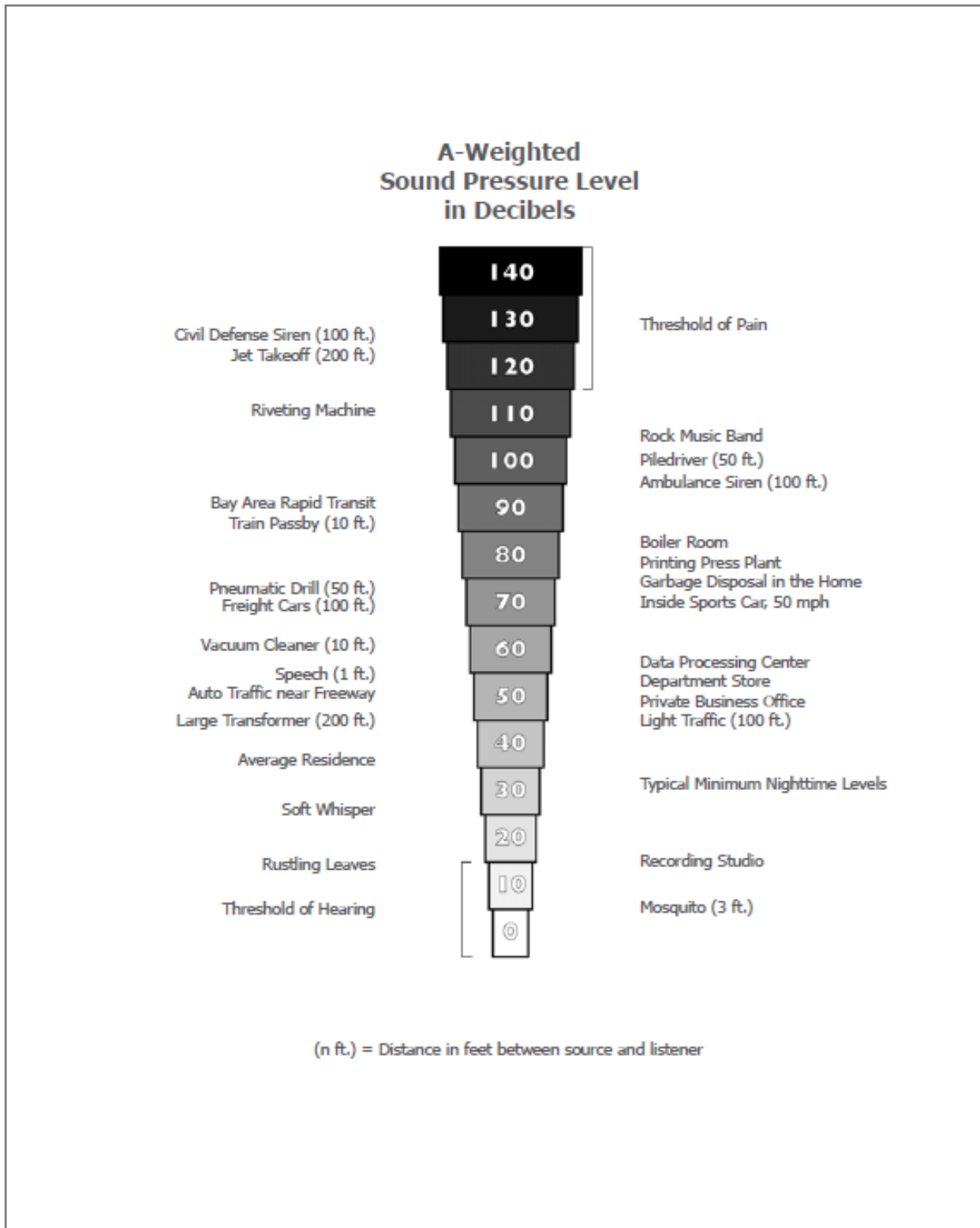
- **Level** (e.g., magnitude or loudness) of sound. Sound levels are measured and expressed in decibels (dB) with 10 dB roughly equal to the threshold of hearing. **Figure 9-1** shows the decibel levels associated with different common sounds.



Not all noise is bad, some is exciting like this celebration.

- **Frequency** composition or spectrum of the sound. Frequency is a measure of the pressure fluctuations per second, measured in units of hertz (Hz). The characterization of sound level magnitude with respect to frequency is the sound spectrum, often described in octave bands, which divide the audible human frequency range (e.g., from 20 to 20,000 Hz) into ten segments.
- **Variation** in sound level with time, measured as noise exposure. Most community noise is produced by many distant noise sources that change gradually throughout the day and produce a relatively steady background noise having no identifiable source. Identifiable events of brief duration, such as aircraft flyovers, cause the community noise level to vary from instant to instant. A single number called the equivalent sound level or L_{eq} describes the average noise exposure level over a period of time.

Figure 9-1: Typical Sound Levels



Source: California Office of Noise Control, 2004.

Transient noise events may be described by their maximum A-weighted noise level (dBA) or by their sound exposure level (SEL). SEL values may be summed on an energy basis to compute equivalent energy level (L_{eq}) values over any period of time. Hourly L_{eq} values are called Hourly Noise Levels.

REPORTING NOISE LEVELS

Measuring and reporting noise levels involves factoring in variations in sensitivity to noise during the daytime versus nighttime hours. Noise descriptors used for analysis need to account for human sensitivity to nighttime noise when background noise levels are generally lower than in the daytime and outside noise intrusions are more noticeable. Common descriptors include the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (DNL, symbol Ldn). Both reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The two descriptors 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 the General Plan Noise Element under State planning law.

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

- Except under special conditions, a change in sound level of 1 dB 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. A 5 dB increase is often considered a significant impact; and
- A 10 dB increase is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

9.2 NOISE GENERATION IN YUBA CITY

The major noise sources in Yuba City are related to vehicular traffic on State Route 20 and Highway 99. Other noise sources include overflights from the Sutter County Airport, railroad activities, and agricultural operations around the edges of the City. Noise produced by industrial facilities has a negligible effect on the City's noise environment. Although the City does not have a specific Noise Ordinance, noise is regulated by the City's Nuisance Ordinance, which governs the time of day that certain noise-generating activities may take place.

TRAFFIC NOISE

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. Conversely, traffic volume does not have a major 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 automobiles with modified mufflers 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 due to tall exhaust stacks and higher engines; sound walls are not effective for mitigating such noise unless they are very tall.

According to common practice, maximum noise levels of 60 dB are considered “normally acceptable” for unshielded residential development. Noise levels from 60 to 70 dB fall within the “conditionally unacceptable” range, and those in the 70 to 75 dB range are considered “normally unacceptable.”

Noise exposure contours for Yuba City were modeled by applying the Federal Highway Administration’s noise modeling procedure. These noise contours are conservative, meaning that the contours are modeled with minimal noise attenuation by natural barriers, buildings, etc. The noise level measured at a specific location may be lower than what is shown on the noise contour diagram.

TRAFFIC NOISE LEVELS

Existing noise conditions in Yuba City were measured at six locations for a 24-hour period between September 10 and September 11, 2001. These six locations were chosen based upon their proximity to relevant noise sources, including Highway 99, State Route 20, the railroad tracks, and the Sutter County Airport (see Table 9-1).

Figure 9-2 illustrates the results of the 2001 noise monitoring in Yuba City. Some of Yuba City’s existing residential neighborhoods are exposed to moderate noise levels from the City’s main traffic corridors, particularly along State Route 20 and Highway 99. As shown in Table 9-1, the highest noise levels were measured by Meter 2 (Colusa Avenue just west of Highway 99) and by Meter 5 (Colusa Avenue between Market and Shasta), both reflecting noise levels above the “normally unacceptable” range of 70 to 75 dB.

Table 9-1: Summary of Noise Measurement in Yuba City, 2001

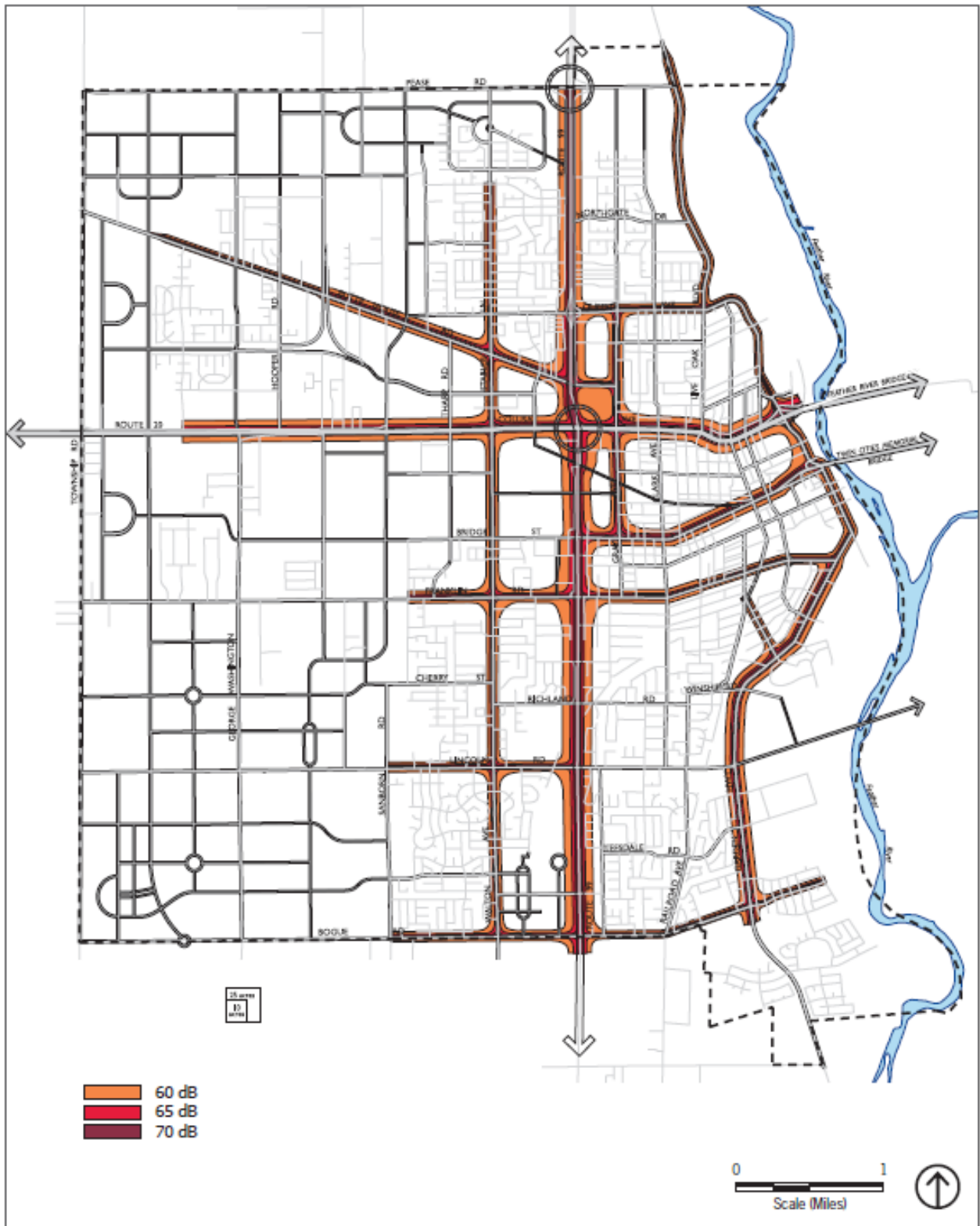
Meter Site	Location	Date	A-Weighted Noise Levels (dB)	
			<i>L_{dn}</i>	CNEL
1	Whyler Road 20 ft. east of Highway 99	Sept 10/11	73	73
2	Colusa Ave (Highway 20) just west of Highway 99	Sept 10/11	77	77
3	Samuel Drive at entrance to County Road Department	Sept 10/11	58	59
4	Reeves Avenue at Olive Street	Sept 10/11	64	65
5	Colusa Avenue (Highway 20) between Market and Shasta	Sept 10/11	75	76
6	Onstott Frontage Road just south of Portofino Drive	Sept 10/11	68	69

Source: Charles M. Salter Associates, 2001.

9.3 PROJECTED CONDITIONS UNDER GENERAL PLAN BUILDOUT

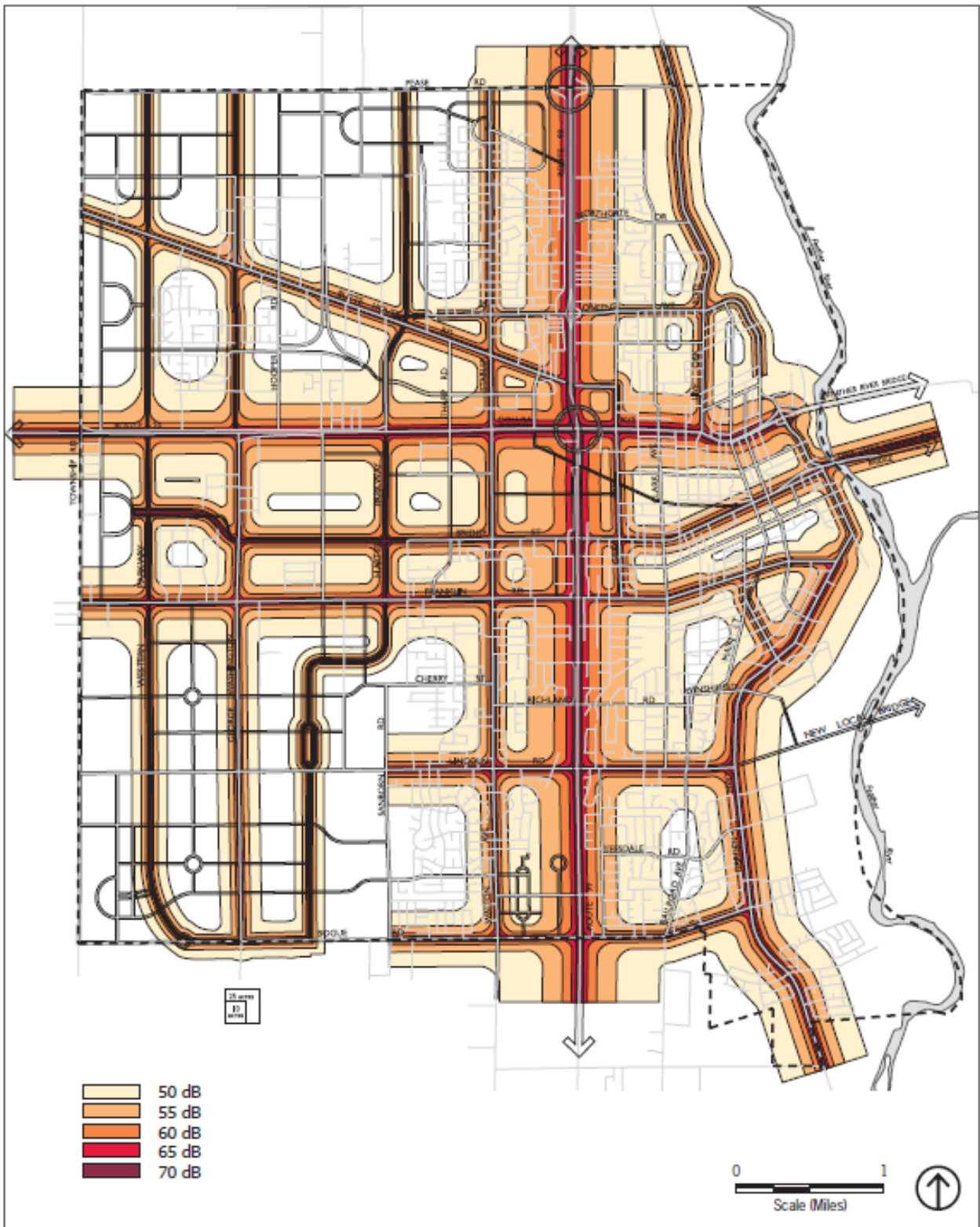
Future development within the Planning Area will result in new roads and increased traffic volumes, thus increasing noise levels in some areas. Future noise contours are illustrated in **Figure 9-3**. Increases in traffic levels can be counteracted by the implementation of alternate forms of transportation and land use design that factor in noise concerns. Locating noise-sensitive uses away from high-noise areas (e.g. major transportation routes) and buffering noise levels through design and landscaping features will help minimize future noise-related land use conflicts. Policies in this chapter establish review criteria for certain land uses to ensure that future noise levels will not exceed acceptable levels near noise-sensitive land uses.

Figure 9-2: Existing Noise Contours



Source: Charles Salter Associates, 2001.

Figure 9-3: Future Noise Contours



Source: Charles Salter Associates, 2003.

GOALS, POLICIES, AND IMPLEMENTATION

Goal NO 1-1. Strive to achieve an acceptable noise environment for the present and future residents of Yuba City by incorporating noise considerations into land use planning decisions and guide the location and design of transportation facilities to minimize the effects of noise on adjacent land uses.

Policy NO 1-1: Use the "normally acceptable" noise levels for new land uses as established in Figure 9-4 (Land Use Compatibility for Community Noise Environments) as review criteria.

Policy NO 1-2: Require a noise study and mitigation for all projects that have noise exposure greater than "normally acceptable" levels. Noise mitigation measures include, but are 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 fences, walls, and landscaping that serve as noise buffers,
- Use soundproofing materials and double-glazed windows, and
- Control hours of operation, including deliveries and trash pickup, to minimize noise impacts.

Policy NO 1-3: In making a determination of impact under the California Environmental Quality Act (CEQA), consider an increase of four or more DBA to be "significant" if the resulting noise level would exceed that described as normally acceptable for the affected land use in **Figure 9-4**.

Policy NO 1-4: Periodically conduct noise measurements throughout the community to monitor noise levels and provide base information for improvements.

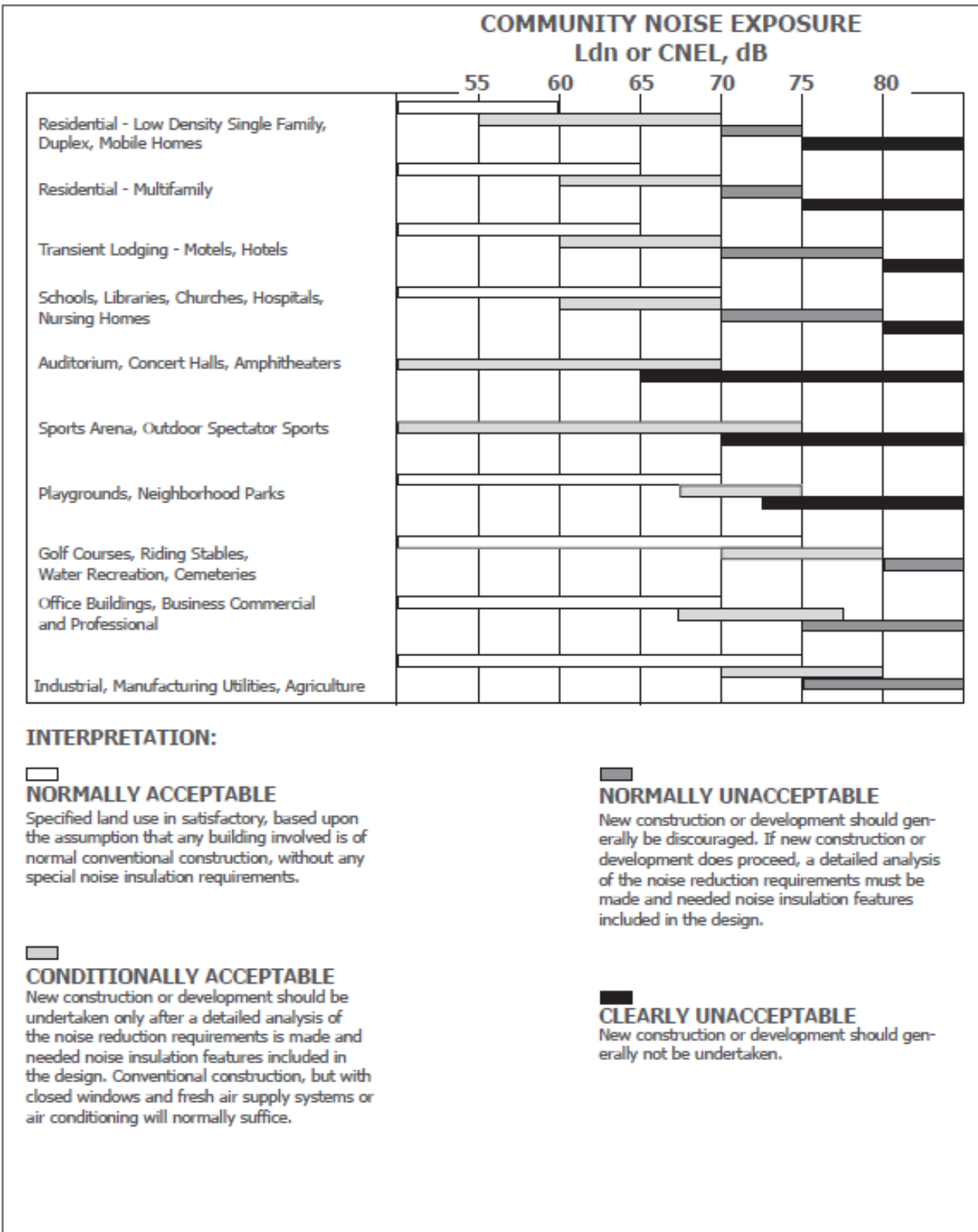
Policy NO 1-5: Provide appropriate buffers along major transportation facilities when adjacent to noise-sensitive land uses.

Policy NO 1-6: Protect especially sensitive uses, including schools, hospitals, and senior care facilities, from excessive noise, by enforcing "normally acceptable" noise level standards for these uses.

Policy NO 1-7: Discourage the use of sound walls. As a last resort, construct sound walls along highways and arterials when compatible with aesthetic concerns and neighborhood character. This would be a developer's responsibility.

Policy NO 1-8: The construction of sound walls will be considered where noise mitigation to acceptable levels by other means is not feasible.

Figure 9-4: Land Use Compatibility for Community Noise Environments



Source: California Governor's Office of Planning and Research, 1990.

Noise

- Policy NO 1-9: Require new noise sources to use best available control technology (BACT) to minimize noise from all sources.
- Policy NO 1-10: Minimize vehicular and stationary noise sources and noise emanating from temporary activities, such as construction.
- Policy NO 1-11: Maintain the City's Nuisance Ordinance to 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.
- Policy NO 1-12: Modify the City's Noise Ordinance to allow for outdoor music, entertainment and similar activities in support of the downtown and community events elsewhere in the City.

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