

13 Noise

This chapter presents background information on noise and describes the current noise environment in Humboldt County. Information on current noise levels was obtained from field monitoring at seven locations along Humboldt County's primary transportation corridor, Highway 101 and from recent noise measurements made during General Plan updates recent completed by the cities of Arcata and Eureka. Following the discussion of noise and noise measurement, and noise in Humboldt County, policy issues are presented. The Appendices include policy evaluation worksheets for noise.

13.1 NOISE AND NOISE 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. Excessive noise also can adversely affect the quality of life and the rural ambiance that attracts many visitors to the County.

NOISE MEASUREMENT

Three aspects of community noise are important in determining responses, and are therefore measured and described when 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 13-1 illustrates typical sound levels.
- *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 which 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.

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 L_{eq} values over any period of time. Hourly L_{eq} values are called Hourly Noise Levels.

REPORTING NOISE LEVELS

Reporting noise involves not only measurement over a period of time to account for variations in noise exposure, but also recognition of the different degrees of sensitivity to noise during daytime and nighttime hours. At night, exterior background noise levels are generally lower than in the daytime, and most household noise also decreases, making exterior noise intrusions more noticeable.

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 (L_{dn}). 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 State noise law.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure in the County 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 change is often considered a significant impact; and
- A 10 dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

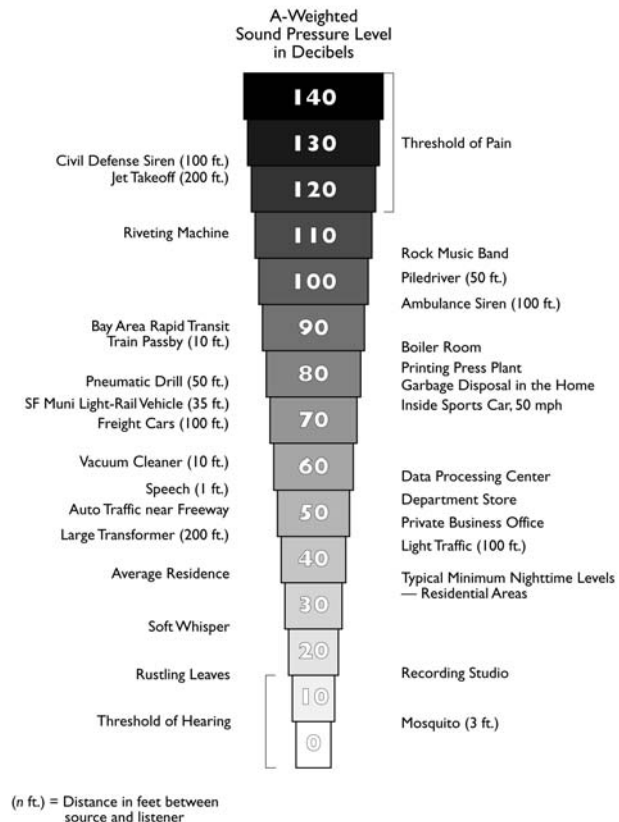


Figure 13-1
 Typical Sound Levels

13.2 NOISE GENERATION IN HUMBOLDT COUNTY

The major sources of noise in Humboldt County include highways, airports, rail, and on-site construction and industrial activities, and most of these noise hazards are found with incorporated areas of the County.¹ Key sources of noise in the County are the Highway 101 corridor and the Arcata-Eureka airport in McKinleyville. The County Sheriff's Department reports that while it is the only public body that fields noise complaints, such complaints are infrequent apart from special events (e.g., graduations).²

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 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 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.”

Traffic Noise Levels

Humboldt County is subject to noise impacts primarily from Highway 101—as illustrated in Table 13-1—which creates noise in nearby areas up to 500 feet away. Differences in elevation can amplify or dampen the perceived noise level: noise from a thoroughfare in a trough or valley between residential areas will be reflected upward and focused, as in a satellite dish, while noise from an elevated thoroughfare will be able to dissipate and be perceived as less of an annoyance. On flat ground, a buffer (such as a sound wall or dense vegetation) will greatly reduce the noise escaping to surrounding areas. The California Department of Transportation installs sound walls on State roads.

Consultants conducted noise surveys at various locations along Highway 101 over a 24-hour period spanning April 10 and 11, 2002. Monitoring sites included incorporated, unincorporated, and rural areas of the County. Distances to the 60-dB CNEL contour ranged from 121 feet at Richardson Grove (near the County's southern border) to 500 feet at Singley Road (south of the Eureka Community Planning Area).

¹ Humboldt County *General Plan Policy Background Study: Hazards*, May 1982, pp 2-21 and 2-22.

² Brenda, Humboldt County Sheriff's Department, personal communication, 26 March 2002.

Table 13-1: Traffic Noise Levels in Humboldt County on U.S. Hwy 101, April 10-11, 2002

<i>Location</i>	<i>Post Mile</i>	<i>Measurement Distance (ft.)</i>	<i>CNEL</i>	<i>Distance to 65 CNEL (ft.)</i>	<i>Distance to 60 CNEL (ft.)</i>
Richardson Grove	1.6	11	76	56	121
North of Rio Dell	55.0	23	79	186	400
Singley Rd.	64.4	30	78	232	500
Indianola cutoff	82.6	19	80	179	385
School Rd.	91.4	23	77	147	318
Westhaven Dr.	98.7	20	78	149	322
North of Orick city limits	122.0	20	73	69	149

Source: Charles Salter Associates, 2002.

COMMUNITY DATA

While Highway 101 and other roads (such as State Route 299, SR 255, SR 36, SR 1, and SR 96) are the most commonly expected sources of noise, communities often have local noise sources as well. Four airports (Murray Field, Rohnerville, Eureka/Arcata, and Willow Creek), two railroads (Northwestern Pacific, serving Arcata, Eureka, Fortuna, Loleta, Rio Dell, and Scotia; and Arcata/Mad River, serving Arcata and Blue Lake), the Redwood Acres Raceway in Eureka, and mills in Fairhaven, Scotia, and Samoa will require attention as well. Tire and muffler and metal fabricating shops are referred to in Eureka’s Noise Element as another, less constant source of daytime noise.

Noise levels are generally within acceptable limits even in the larger cities. Arcata’s General Plan EIR states that in noise sensitive areas, noise levels are in the range of 46 to 63 dB L_{dn}³; the City of Eureka’s General Plan Background Report reports that the distances from roadway centerlines to measured 60 dB contours (the limit acceptable for unshielded residential development) is at maximum 305 feet, less than one block.⁴

McKinleyville has projected traffic noise levels from 1999 to 2020 and predicts an increase in the 60 dB contour for many roadways: the contour range on various segments of Highway 101 will expand from 300-400 feet to 400-525 feet, for example.⁵ On all other measured roadways, the contour is expected to remain within 200 feet; however, for most of the roadways analyzed, the noise level will clearly be rising over time.

Fortuna’s 1993 General Plan includes maps of noise contours in 1988 and projected for buildout. While some areas (including a local hospital and some rest homes) will likely experience higher noise levels, other areas will apparently experience reduced noise levels. No CNEL figures are published for individual roadways.

³ City of Arcata *General Plan EIR*, Nov 1998, p 5-49.

⁴ City of Eureka *General Plan Background Report*, Feb 1997, pp 11-2 and 11-3.

⁵ *Draft Program EIR for the 1999 McKinleyville Community Plan*, pp 4-85 to 4-88.

Table 13-2 lists the three roadways in Arcata, McKinleyville, and Eureka with the widest 65-dB and 60-dB CNEL contours. All of these areas represent segments of U.S. Highway 101. It should be noted that in Arcata, the highway is separated from surface roads in a designated right-of-way, whereas in Eureka it is part of the City's street grid.

Table 13-2: Highest-Noise Roadways in Humboldt County Communities

<i>Community</i>	<i>Roadway</i>	<i>Distance to 65 dB CNEL (ft.)</i>	<i>Distance to 60 dB CNEL (ft.)</i>
Arcata	U.S. 101, Sunset Ave. to SR 299	382	823
	U.S. 101, Samoa Blvd. to Sunset Ave.	379	816
	U.S. 101, Bayside Rd. to Samoa Blvd.	361	778
McKinleyville	U.S. 101, SR 200 to School Rd.	185	400
	U.S. 101, School Rd. to Murray Rd.	185	400
	U.S. 101, Murray Rd. to Airport Rd.	150	350
Eureka	U.S. 101, end of 5 th St. to Murray Field	141	305
	U.S. 101, Sunset Ave. to SR 299	137	295
	U.S. 101, Harris St. to Wabash St.	125	270

Sources: City of Arcata General Plan EIR, 1998; City of Eureka General Plan Background Report, 1997; McKinleyville CPA EIR, 1999.

13.3 POLICY ISSUES

This section focuses on noise issues from a public policy perspective. In evaluating existing and future conditions and opportunities for development along the transportation corridors and around the airports, the County will need to consider noise exposure and options for improved noise control. The Critical Choices Report notes the lack of performance standards for noise control. Noise is a factor that should guide land use planning in the General Plan Update, and noise contours can help do this – a point affirmed by current General Plan policies. As background for the proposed policy option, the existing policies in the General Plan are presented. The policy evaluation worksheets for noise are in the Appendix. This worksheet is provided as a tool for members of the public to evaluate policy options and indicate preferences for accepting, modifying or rejecting these options.

EXISTING POLICIES

The current Humboldt County Framework Plan includes the following policies on noise; Appendix A includes a worksheet for community review of the existing policy framework, with columns to indicate whether the policy should be modified, expanded or deleted:

- Existing and potential incompatible noise levels in problem areas should be reduced through operational or source controls where the County has responsibility for such controls.

2. Existing and potential incompatible noise levels in problem areas should be reduced through land use planning, subdivision review, building code enforcement, and other administrative means.
3. The land use noise compatibility matrix (Figure 3-2) shall be utilized as the standard for General Planning and zoning purposes.
4. Provide for periodic review and revision of the Noise Element.
5. A local interagency program should be developed for the general public in the nature, extent, and solutions to noise problems in Humboldt County.
6. Coordinate noise control activities with those of other responsible jurisdictions.
7. Identify and evaluate potential noise problem areas on a continuing basis.

The County Zoning Code identifies noise as a performance requirement for cottage industries in the Coastal Zone, stating that “all noise generating operations shall be buffered so that they do not exceed the exterior ambient noise level anywhere on the site by more than 5 dB, or an equivalent standard which achieves comparable results.”⁶

POLICY OPTION

Option 13.1 Adopt a noise ordinance based on current zoning districts, tailored to community noise standards. The Critical Choices Report states that “the current Plan and ordinances lack clear and specific performance standards for noise.”⁷ While Humboldt is a largely rural county, allowing for the establishment of noise standards based on local standards that are tied to land use designations and zoning districts can protect public health and welfare in more heavily-populated unincorporated areas. As an example, sample noise ordinance language is included as Appendix C.

⁶ Humboldt County *Zoning Code*, printed 6 July 2000.

⁷ Humboldt County *Critical Choices Report*, drafted 21 March 2001.