

Introduction

The Noise Element of the La Habra Heights General Plan establishes guidelines for controlling noise in the City. The Noise Element examines the characteristics and effects of noise, describes state and federal guidelines related to noise control, evaluates the existing noise environment, and discusses how the General Plan will impact the future predicted noise environment. The Noise Element also identifies sensitive land uses and noise sources so mitigating plans and objectives can be applied. Most residents view the relatively quiet and noise-free environment of our City as an important amenity that must be preserved. In response to this desire, the following guiding principle was considered in preparation of this Element:

"The existing relatively quiet and minimal noise environment of our City will be preserved."

As mandated by the California Government Code 65302(f), this Noise Element follows the guidelines established by the State Department of Health Services, Office of Noise Control and requires that the Element analyze and project noise levels for:

- Highways and freeways;
- Primary arterials and major local streets;
- Passenger and freight on-line railroad operations and ground rapid transit systems;
- Commercial and general aviation, heliport, helistop, and military airport operations;
- Aircraft over-flights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operations;
- Local industrial plants, including, but not limited to, railroad classification yards;

- Other ground stationary sources identified by local agencies as contributing to the community noise environment.

Issues and Policies

From the above list, the major source of noise in our city continues to be traffic noise along the corridors adjacent to our two major north-south arteries, Hacienda Road and Harbor Boulevard. The impact of these two roadways on our City's environment is evident from the noise survey included in this Element.

Noise contours were used to illustrate noise levels in areas adjacent to major roadways. The contour lines recorded in CNEL (Community Noise Equivalent Level as defined below) units indicate a specific noise level (55 CNEL, 60 CNEL, 65 CNEL, and 70 CNEL) along a roadway in the same way weather maps use lines (referred to as isolines) to indicate areas with a specific air temperature. The noise contour maps are used to identify existing traffic noise levels in the City along these roadways as well as future noise levels anticipated from projected traffic volumes.

What is a CNEL and Leq?

The CNEL (Community Noise Equivalent Level) is based upon 24 one-hour noise measurements. The average noise levels for the late evening and early morning hours (the period between 10:00 PM and 7:00 AM) are weighted 10 decibels. This weighting penalty is to take into account an individual's increased sensitivity to noise during the early morning and late evening periods.

The Leq (Noise Level Equivalent or Equivalent Sound Level) is the average of the sound level energy for a one-hour period and employs an A-weighted decibel correction that corresponds to the optimal frequency response of the human ear. It is a method of quantifying and is used to determine the value of a steady-state sound which has the same A-weighted sound energy as that contained in the time-varying sound. The Equivalent Sound Level is a single value of sound level for any desired duration, which includes all of the time-varying sound energy in the measurement period.

Our City's previous General Plan noted that Fullerton Road, a major north-south route across our city, was planned to be replaced by an extension of Harbor Boulevard. That activity has since been completed and now Harbor Road is a four lane divided highway on our city's eastern border. Our "old Fullerton Road" has become, once again, a rural country road providing access primarily to the residents of La Habra Heights and those that traverse our streets going to the Hacienda Golf Club.

However, the widening and straightening of Harbor Boulevard has led to increased traffic volumes and vehicle speeds with a corresponding increase in noise levels along the roadway. The traffic noise along this roadway represents the greatest source of noise affecting the community.

The California Government Code states, "the General Plan and the parts and elements thereof shall comprise an integrated and internally consistent and compatible statement of policies." This element contains policies and programs designed to alleviate noise in the City. This element indicates those areas of the City that may be subject to exposure to high levels of noise. This element provides the framework for those areas where planning and development must consider the ambient noise environment in the formulation of development plans.

The Noise Element is closely related to the Circulation, Land Use, Conservation, Open Space, and Housing Elements of the La Habra Heights General Plan, particularly in that development and traffic have a direct bearing on noise in the local environment.

Issues & Policies

Issue – Traffic Noise

The main source of noise in the city is traffic on roadways. Traffic noise affects noise-sensitive land uses that may be located along and near

these routes. Because of the primarily low density residential nature of the city and the rural nature of our City roads, future development in La Habra Heights is not expected to result in major increases in traffic volumes and noise along city streets. However, increases in traffic volumes on our two major roadways are expected to come from growth outside the City resulting in increased noise levels along these roadways. As result, the following policies are recommended as a means to control noise in our community

Noise Element Policy 1. When noise levels exceed acceptable community noise standards, mitigating actions should be implemented.

Noise Element Policy 2. Introduce traffic calming techniques that will reduce the average vehicle speed on our two north-south roadways, Hacienda Road and Harbor Boulevard which will reduce the associated ambient noise from these sources.

Noise Element Policy 3. Enhance, as necessary, our building codes to require adequate structure insulation and additional setback requirements for homes impacted by the noise levels along our two major north-south arteries, Hacienda Road and Harbor Boulevard.

Noise Element Policy 4. Continue to develop and enhance regulations to protect residents from objectionable noise emanating from private property sources.

Legislated Policies

A number of federal, state, and local agencies have adopted standards and recommended noise criteria to protect people in both the working and home environments. A summary of major existing noise regulations are provided below:

The *Federal Highway Works Administration (FHWA)* has established noise exposure

standards for different land uses. These standards apply to the planning and design of federally-funded highway projects, and are expressed in terms of both Equivalent Noise Level (Leq) and L₁₀.

The *Department of Housing and Urban Development (HUD)* has adopted environmental criteria and standards for determining project acceptability and necessary mitigation measures to ensure that projects assisted by HUD provide a suitable living environment. Standards include maximum levels of 65 dB Ldn for residential areas.

The *Noise Control Act of 1972* authorized the Environmental Protection Agency (EPA) to publish descriptive data on the effects of noise and establish levels of sound "requisite to protect the public welfare with an adequate margin of safety." These levels are separated into health (hearing loss levels), and welfare (annoyance levels), with an adequate margin of safety.

The *California Vehicle Code* establishes noise standards for those areas not regulated by the federal government. State standards regulate the noise levels of motor vehicles and motorboats; establish noise impact boundaries around airports; regulate freeway noise affecting classrooms, sound transmission control, and occupational noise control; and identify noise insulation standards. The California Vehicle Code sets operational noise limits according to the type of vehicle and date of manufacture.

Sound Transmission Control Standards contained in the *California Administrative Code, Title 24, Building Standards, Chapter 2.35*, outline noise insulation performance standards to protect persons within new hotels, motels, apartment houses, and dwellings other than detached single-family dwellings. These standards require an interior noise level of 45 dB CNEL or less for residential projects (refer to the box above for a description of the CNEL). For

residential buildings or structures within the 60 dB CNEL of an airport, or vehicular or industrial noise source, an acoustical analysis must be conducted to show compliance with the standards. The following additional programs will either be continued or implemented as part of this General Plan.

Building Code Review. The City will periodically review, and if necessary, modify the Uniform Building Code (UBC) to reflect current technology and regulations. Review of policies and procedures will be undertaken by designated individuals to identify appropriate changes that should be considered. Following this review, amendments to the City's Building Code will be made as required.

Code Enforcement. The Building Code contains regulations regarding construction techniques and materials that may be effective in eliminating or reducing the spread noise levels. Code enforcement will also ensure that the City's noise control ordinance is adhered to. For this reason, ongoing code enforcement efforts are an important implementation program within the Noise Element.

Environmental Review. The City shall continue to evaluate the noise impacts of new development and provide mitigation measures prior to development approval, as required by the California Environmental Quality Act (CEQA). Environmental review shall be provided for major projects and those that will have a potential to adversely impact the environment. In compliance with CEQA, the City shall also assign responsibilities for the verification of the implementation of mitigation measures.

Noise Mitigation Plan

Characteristics of Noise

Noise levels may be described using a number of methods designed to evaluate the "loudness"

of a particular activity. The most commonly used units for measuring the level of sound is the decibel (dB, dBA), equivalent noise level (Leq), and the CNEL (Community Noise Equivalent Level). The predominant sound level criteria in use in California at the present time utilizes the Leq and the CNEL noise levels associated with typical activities is summarized in the box "What is a decibel?" below and are illustrated in Exhibit 6-1.

What is a decibel?

The decibel is a measurement of sound level pressure. The noise levels associated with various activities are provided below:

<u>Noise Level Activity in Decibels</u>	
Very quiet night	10 dB
Library	35 dB
Refrigerator	45 dB
Light traffic	45 dB
Air conditioner	60 dB
Freeway traffic (50 ft.)	80 dB

The dB (decibel) is the basic unit used for measuring the intensity of sound. Zero on the decibel scale represents the lowest limit of sound that can be heard while the eardrum may rupture at 140 dB.

The dBA (Decibels-A-Weighted) is a unit of measurement of sound level corrected to the A-weighted scale, as defined in ANSI S1.4-1971 (R1976), using a reference level of 20 micropascals (0.00002 Newton per square meter). Another definition of dBA is a unit of measure for decibels. It is a logarithmic measurement; every 3dB increase represents a doubling of the sound pressure. The "A" in dBA indicates that the measurement was taken with an A-weighted scale; sound pressure varies across the audible spectrum, and the A-weighted scale approximates the human ear's sensitivity to various frequencies.

The Leq (Noise Level Equivalent or Equivalent Sound Level) is the average of the sound level energy for a one-hour period and employs an A-

weighted decibel correction that corresponds to the optimal frequency response of the human ear. It is a method of quantifying and is used to determine the value of a steady-state sound which has the same A-weighted sound energy as that contained in the time-varying sound. The Equivalent Sound Level is a single value of sound level for any desired duration, which includes all of the time-varying sound energy in the measurement period. The major virtue of the Equivalent Sound Level is that it correlates reasonably well with the effects of noise on people, even for wide variations in environmental sound levels and time patterns. It is used when only the durations and levels of sound, and not their times of occurrence (day or night), are relevant. It is easily measurable by available equipment. It is also the measurement descriptor of the total outdoor noise environment, the Day-Night Sound Level (Ldn).

The Ldn (Day-Night Sound Level) is the A-weighted equivalent sound level for a 24-hour period with an additional 10 dB weighting imposed on the equivalent sound levels occurring during nighttime hours (10 pm to 7 am). Hence, an environment that has a measured daytime equivalent sound level of 60 dB and a measured nighttime equivalent sound level of 0 dB, can be said to have a weighted nighttime sound level of 60 dB (50 db [actual] + 10 dB [weighting]) and an Ldn of 60 dB.

The CNEL (Community Noise Level Equivalent) is based upon 24 one-hour Leq measurements. The average noise levels for the late evening and early morning hours (the period between 10:00 PM and 7:00 AM) are weighted 10 decibels. This weighting penalty is to take into account an individual's increased sensitivity to noise during the early morning and late evening periods.

Noise ordinances are typically specified in terms of the percent noise levels. Ordinances are designed to protect people from noise sources such as music, machinery and vehicular traffic. Noise ordinances do not apply to motor vehicle noise on public streets or other transportation

related noise. The State or Federal government preempts regulations governing traffic-related noise regulations. Local governments are empowered to enforce these regulations.

Noise and Land Use Compatibility

The State Office of Noise Control has prepared *Guidelines for the Preparation and Content of Noise Elements of General Plans*. These guidelines (shown in Exhibit 6-2) provide standards related to the compatibility of noise-sensitive land uses in areas subject to noise levels of 55 to 80 dB CNEL or Ldn. Since the majority of the City is developed as single-family residential development, only those standards that apply to such uses are relevant in this Noise Element. Ambient noise levels in residential areas are normally considered unacceptable if they exceed 70 dB CNEL. Ambient noise levels for residential land uses between 60-70 dB CNEL are generally unacceptable. Conditionally acceptable noise levels are between 55-70 dB CNEL.

Other Regulations Governing Noise Control

Other guidelines governing land use and noise compatibility have been prepared by a number of federal and state agencies including the Federal Highway Administration, the Environmental Protection Agency (EPA), the Department of Housing and Urban Development, the American National Standards Institute and the State of California. These guidelines, presented in the following paragraphs, are all based upon cumulative noise criteria such as Leg, Ldn or CNEL.

Environmental Protection Agency - In March 1974, the EPA published "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety" (EPA 550/9-74-004). This report indicates that 55 Ldn is the requisite level with an adequate margin of safety for areas with outdoor uses, including residential and recreational areas. The EPA "levels document" does not constitute a

standard, specification or regulation, but identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels.

Federal Highway Administration (FHWA)

- The FHWA has adopted and published noise abatement criteria for highway construction projects. The FHWA noise abatement criterion established an exterior noise goal for residential land uses of 67 Leq and an interior goal for residences of 52 Leq. The noise abatement criterion applies to private yard areas and assumes that typical wood frame homes with windows open provide a 10 dB noise reduction (outdoor to indoor) and 20 dB noise reduction with windows closed.

State of California - The State requires every city and county to adopt noise elements as part of their general plans. Such noise elements must contain a noise/land use compatibility matrix. A recommended (but not mandatory) matrix is presented in the "Guidelines for the Preparation and Content of Noise Elements of the General Plan," (Office of Noise Control, California Department of Health, February 1976). These guidelines are indicated in this Public Safety Element.

The **City of La Habra Heights** has existing ordinances that regulate potential construction noise sources (allowable day and hour of construction). These existing ordinances should be reviewed in light of this Noise Element.

Sources of Noise Affecting the City of La Habra Heights

Noise may affect all types of land uses and activities although some are more sensitive to noise levels than others. Land uses identified as noise sensitive in La Habra Heights include the elementary school, long-term care facilities, and those areas of the City that are developed as residential. The sources of noise in La Habra Heights fall into the following basic categories: freeway noise from the distant freeways; aircraft

over flights; traffic on local streets and the two major north/south roadways, and stationary sources. Each of these sources and their impacts on the noise environment of La Habra Heights are summarized in the following paragraphs.

Freeways. Portions of the City that may be affected by freeway noise are those areas with a direct line-of-sight. Noise from the SR-57 and SR-91 Freeways are also heard in the City.

Traffic Noise. Traffic noise on surface streets is a significant source within the community, especially from traffic using Harbor Boulevard and Hacienda Road. The most important variable that may affect traffic noise is the average daily traffic (ADT), travel speeds, and roadway gradient. Additional factors include the percentage of truck traffic, the time distribution of traffic, and the presence of buildings, landscaping, and topography that would attenuate the traffic noise in the same manner as a sound wall. In general, commercial traffic is limited to the two aforementioned north/south arterials.

Airports and Heliports. There are no airports located in La Habra Heights. The nearest general aviation airport is located in Fullerton. During field surveys aircraft did pass over the City on their landing approach pattern to Los Angeles International Airport (LAX)

Railroads. The City of La Habra Heights does not contain any railroads or spur lines. However, train noise from as far away as Fullerton is audible in the City.

Stationary Sources. The City of La Habra Heights is largely developed in residential uses. As a result, the stationary noise sources

are limited to those commonly found in a residential, neighborhood setting.

Mobile (Traffic) Noise Sources

As indicated previously, the two major North/South roadways in the City serve as a connection for those urban areas located north and south of the Puente Hills. Because of the limited number of north/south connections, these roadways are presently carrying relatively high traffic volumes. For this reason, these two roadways were selected for analysis of existing and future traffic noise.

The existing traffic noise levels from major roadways in the City were computed using the Highway Noise Model published by the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978). The FHWA model uses traffic volume, vehicle mix, vehicle speed, and roadway geometry to compute the Leq noise level. The model has been fashioned so that it computes equivalent noise levels in CNEL units for each of the time periods used. Weighting these noise levels and summing them results in the CNEL for the traffic projections used. The traffic mixes and time distributions for the two routes are also derived from actual traffic counts. The results of this analysis are shown in Noise Element Table 6-1 below and are depicted in Exhibit 6-3.

Table 6-1 indicates the average distance of a noise contour from the roadway centerline. For example, the 55 CNEL noise contour along the southerly segment of Harbor Boulevard extends 2,157 feet on either side of the roadway's centerline while the 70 CNEL contour extends just beyond the roadway's right-of-way (110 feet).

**Table 6-1
Traffic Noise Levels Along Major Arterial Roadways Serving the City**

Roadway Segment	Distance to CNEL Contour (in feet)				CNEL (dBA) 50' from Centerline
	55 CNEL	60 CNEL	65 CNEL	70 CNEL	
Harbor Boulevard					
Southerly City boundary to Kashlan Rd.	2,157	1,930	993	110	72.3
Fullerton Rd. to northerly City boundary	1,215	727	493	27	61.7
Hacienda Boulevard					
Southerly City boundary to West Rd.	1,201	693	373	19	61.3
West Rd. to Canada Sombre Rd.	501	320	110	0	60.5
Skyline Rd. to northerly City boundary	275	101	47	0	58.2
Source: FHWA Noise Prediction Model.1981					

Ambient Noise Environment

The noise environment in La Habra Heights was determined through a comprehensive noise measurement survey with ten sites selected for the measurement of the ambient noise levels. The measurement locations were selected based on their proximity to major noise sources and the noise sensitivity of the land use. Each site was monitored for a minimum of 15 minutes.

The quantities measured were the Equivalent Noise Level (Leg) and the Percent Noise Levels (L%). Percent Noise Levels are another method of characterizing ambient noise where, for example, L90 is the noise level exceeded 90% of the time, L50 represents the noise level exceeded 50%, and L10 is the level exceeded 10% of the time. L90 represents the background or minimum noise level, L50 represents the average noise level, and L10 the peak or intrusive noise levels. The results of this measurement survey are summarized below in Noise Element Table 6-2. The measurement locations are noted in Exhibit 6-3.

The results of the noise measurements survey indicate that, overall, the noise environment is

relatively quiet when considering the City's location in a larger urban setting. However, it is also evident that mobile noise sources have a major impact on the City. Key findings of the field surveys include the following:

- Those areas located near Hacienda Road and Harbor Boulevard (or those areas with a direct line-of-sight to these roadways) experience significantly greater levels of noise compared to other areas of the City.
- The widening and straightening of Harbor Boulevard has resulted in increased traffic volumes and vehicle speeds, causing increased traffic noise.
- Those neighborhoods that are located in the interior portions of the City experience substantially lower levels of traffic noise due to the attenuation provided by the local topography and landscaping.

The aircraft noise from over-flights approaching LAX was a source of continuous noise over the course of the measurement period.

**Table 6-2
Noise Measurement Survey Results**

Map Reference No. and Location	Measured Noise Levels (in dBA)			Noise Characteristics of the Measurement Site
	L10	L50	L90	
1. Adjacent to Harbor Blvd. @ Kashlan Rd.	73.3	71.7	69.5	Traffic on Harbor Blvd.
2. Fullerton Rd. near Harbor Blvd.	74.1	73.0	70.1	Traffic on Fullerton Rd. and Harbor Blvd.
3. Hacienda Rd. (at City Hall)	71.3	69.7	65.7	Traffic on Hacienda Rd.
4. Hacienda Rd. @ East Rd.	69.1	67.2	64.3	Traffic on Hacienda Rd.
5. West Rd. @ Los Palomas Dr.	65.5	62.3	59.4	Relatively quiet neighborhood
6. West Rd. @ Calle Jucca Dr.	62.3	60.1	58.7	Land mowers/aircraft
7. Hacienda Rd. @ West Skyline Dr.	67.1	65.3	62.1	Traffic
8. East Rd. @ Deep Canyon Rd.	61.5	59.3	52.1	Distant traffic, aircraft
9. East Rd. @ Fullerton Rd.	60.7	58.7	54.3	Equipment noise, passing truck
10. End of Skyline Dr. (northern terminus)	61.4	59.8	55.2	Distant traffic

Source: Blodgett/Baylosis Associates

Sources of Potential Noise Impacts

The potential noise impacts associated with the General Plan’s implementation may be segregated into two categories: the impact of future development on the surrounding land uses and the compatibility of future development with noise sensitive land uses. Three types of noise impacts are likely to occur:

- Construction noise impacts from any future development;
- Traffic noise impacts from new residential development and from other new development in the surrounding communities; and,
- Stationary noise impacts associated with onsite activities.

New development and on-going existing structure remodeling contemplated under the General Plan may result in increased noise levels due to increased traffic volumes, intensification of development in neighboring communities, equipment and appliance use, construction

noise, and other activities in open areas. However, a critical policy component of the General Plan is concerned with reducing potential noise impacts through proper land use planning. This is accomplished in the following ways.

- As much as possible, noise sensitive land uses will be discouraged from being located in areas subject to high ambient noise levels.
- Activities and/or land uses that generate high levels of noise will not be located near sensitive receptors. Sensitive receptors include the homes and schools located in the City.
- This Noise Element promotes measures that will reduce noise exposure through the use of site planning and construction techniques that consider noise exposure.

Short-term noise impacts associated with demolition and construction will increase ambient noise in the immediate area to levels of between 70-90 dBA at 50 feet from the noise source. Construction noise impacts will be

Noise Element

temporary and scattered throughout the City since individual development projects will be incremental over a long period of time. Noise levels from typical construction equipment at 50 feet from the noise source are shown in Noise Element Table 6-3.¹

The land use policy included in the La Habra Heights General Plan will not involve any commercial and industrial development and, as a result, there will not be an introduction of new sources of stationary noise typically associated with these uses. However, the potential noise levels from new residential development may lead to new sources of noise though the noise from new development will be comparable to that of the existing residential development. In addition, there are no land use plan changes that involve the introduction of commercial or industrial uses into noise sensitive areas within the City.

However, any new development along our two major roadways in the city must be subject to noise evaluation to determine the need for specific noise control measures in order to achieve an acceptable noise environment for residents. Land uses and activities, which may generate excessive noise, must also be regulated to prevent any adverse effect on our City's residents.

Activity or Equipment	Minimum Range (dBA)	Maximum Range (dBA)
Backhoes	70	95
Compactors	70	75
Concrete Mixers	75	88
Jack-hammers	80	92
Pavers	82	98
Front end Loaders	72	84
Tractors	88	90

Source: National Technical Information Service. 1971.

¹ Environmental Protection Agency. *Noise from Appliances and Construction Equipment*. 1982.

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