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October 14, 2021

Bobby Phan
BG Builder Inc.
5501 66th Ave #100
Sacramento, CA 95823

RE: Environmental Noise Study
Phan Apartment Homes at Sierra Vista Park, 3945 48th Avenue, Sacramento, CA

Dear Bobby:

The following report summarizes environmental noise measurements, analysis, and conclusions for the 48th Ave Affordable Housing Units project in Sacramento, California. Our analysis is based on the "1st BP Sub" drawings dated 2021/05/20, and the updated plans received 2021/09/10.

Executive Summary

It is our understanding that the project is currently going through an application process with the county to determine if the project is feasible. As part of the application process, the Sacramento County Office of Planning and Environmental Review (OPER) is requiring a noise study. The OPER provided the following comment regarding the noise study:

> "#7.d. Noise Report: Please provide a report by a qualified acoustical consultant describing what measures, if any, are necessary to assure compliance with the Noise Element of the County General Plan with regard to the impact of traffic noise from Highway 99 to the 26-multi-family units of the project."

According to the Sacramento County General Plan Noise Element (attached, see NO-1 and Table 1), Residential projects shall include noise mitigation to limit noise from traffic and railroad noise sources such that "sensitive outdoor areas" shall not exceed a Day-Night Level (Ldn) 65 dBA, and "sensitive indoor areas" shall not exceed Ldn 45 dBA.

- **Noise measurements conducted at the project site show the exterior Ldn levels are less than 60 dBA.**
- **Based on an exterior Ldn <= 60, normal multi-family construction techniques and components are expected to reduce the interior noise levels below Ldn 45 dBA.**
    - Normal construction techniques include standard insulated windows, wood framed exterior walls with insulation, wood framed flat or truss roofs with insulation, and standard doors with weatherstripping. Insulated windows and insulated exterior assemblies are typically required by California Title 24 for thermal and energy efficiency purposes.
    - The specific assemblies and windows have not yet been designed for this project, and the interior room layouts have not been finalized. However, we do not expect any special techniques, products, or considerations would be required to reduce the interior noise levels below Ldn 45 dBA.

- This assertion is based on past project experience where we have calculated interior noise levels of Ldn <=45 based on measured exterior noise levels of Ldn ~65 dBA and standard construction.

- This assertion is also supported by the California Office of Planning and Research – General Plan Guidelines – Appendix D: Noise Element Guidelines. This document provides guidelines for jurisdictions developing a local Noise Element. The OPR Noise Element Guidelines (Attached, see Figure 2 / page 374) indicate that multi-family residential is "Normally Acceptable" when the exterior noise level is Ldn <= 65 dBA. "Normally Acceptable" is defined as "Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements."

Regulatory Environment

The Sacramento County General Plan Noise Element (attached) provides guidelines for traffic and railroad noise under item NO-1 and Table 1, excerpted below:

Traffic And Railroad Noise Sources

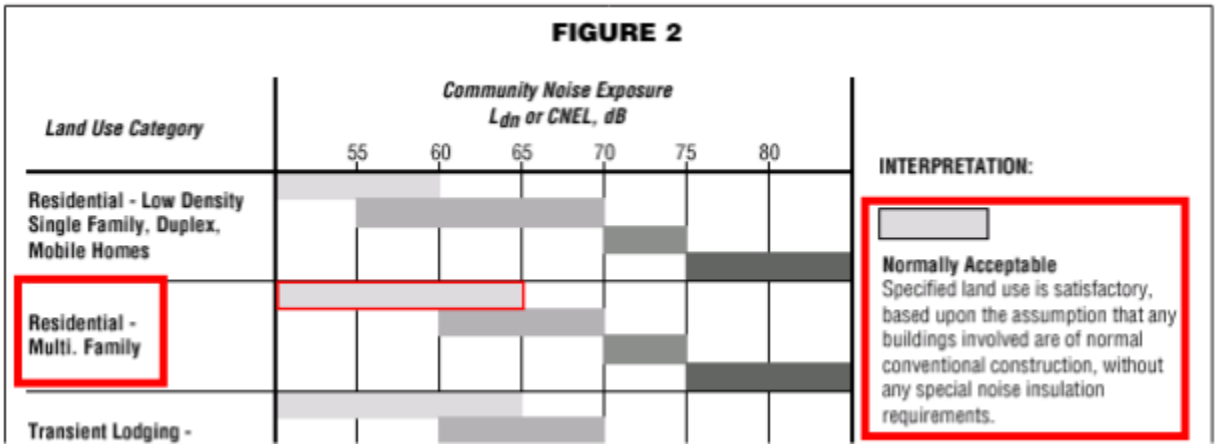
NO-1. The noise level standards for noise-sensitive areas of ***new*** uses affected by traffic or railroad noise sources in Sacramento County are shown by Table 1. Where the noise level standards of Table 1 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 1 standards.

Table 1
Noise Standards for New Uses Affected by Traffic and Railroad Noise
Sacramento County Noise Element

New Land Use	Sensitive[1] Outdoor Area - Ldn	Sensitive Interior[2] Area - Ldn	Notes
All Residential	65	45	5
Transient Lodging	65	45	3,5
Hospitals & Nursing Homes	65	45	3, 4, 5
Theaters & Auditoriums	---	35	3
Churches, Meeting Halls	65	40	3
Schools, Libraries, etc.	65	40	3
Office Buildings	65	45	3
Commercial Buildings	---	50	3
Playgrounds, Parks, etc.	70	---	
Industry	65	50	3

Notes:
1. Sensitive areas are defined in acoustic terminology section.
2. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
3. Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.
4. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
5. If this use is affected by railroad noise, a maximum (Lmax) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

The California Office of Planning and Research – General Plan Guidelines – Appendix D: Noise Element Guidelines (attached) also includes guidance for acceptable noise levels. The excerpted Figure 2, below, shows land-use compatibility based on a given exterior Ldn or CNEL noise level.



The Sacramento County Noise Element is also consistent with the California Building Code Section 1207.4, which states:

> Interior noise levels attributable to exterior noise sources shall not exceed 45 dB in any habitable room. The noise metric shall be either the day-night average sound level (Ldn) or the community noise equivalent level (CNEL), consistent with the noise element of the local general plan.

Relevant Noise Sources

Roadway Noise

Based on our on-site observations and inspection of maps and satellite photos of the area surrounding the project, the primary traffic noise source affecting the project site is State Route 99, approximately 460 - 580' east of the northeast corner of property.

Railroad Noise

The nearest railroad tracks appear to be approximately 3,600 ft west/southwest of the project site. Noise contours specifically for trains are not provided in the Sacramento Noise Element. However, our on-site measurements would include the influence of regular train activity. We did not observe any obvious train noise during our time on-site or in our measurement results.

Furthermore, the Sacramento County Noise Element Background document indicates that the distance to 65 dB Ldn is 344 feet (without horn) and 742 feet (with horn) with an estimated maximum 40 daily operations. The project site is significantly further than these distances, so the train noise level is expected to be less than Ldn 60 dBA, and not a significant noise source compared to SR99.

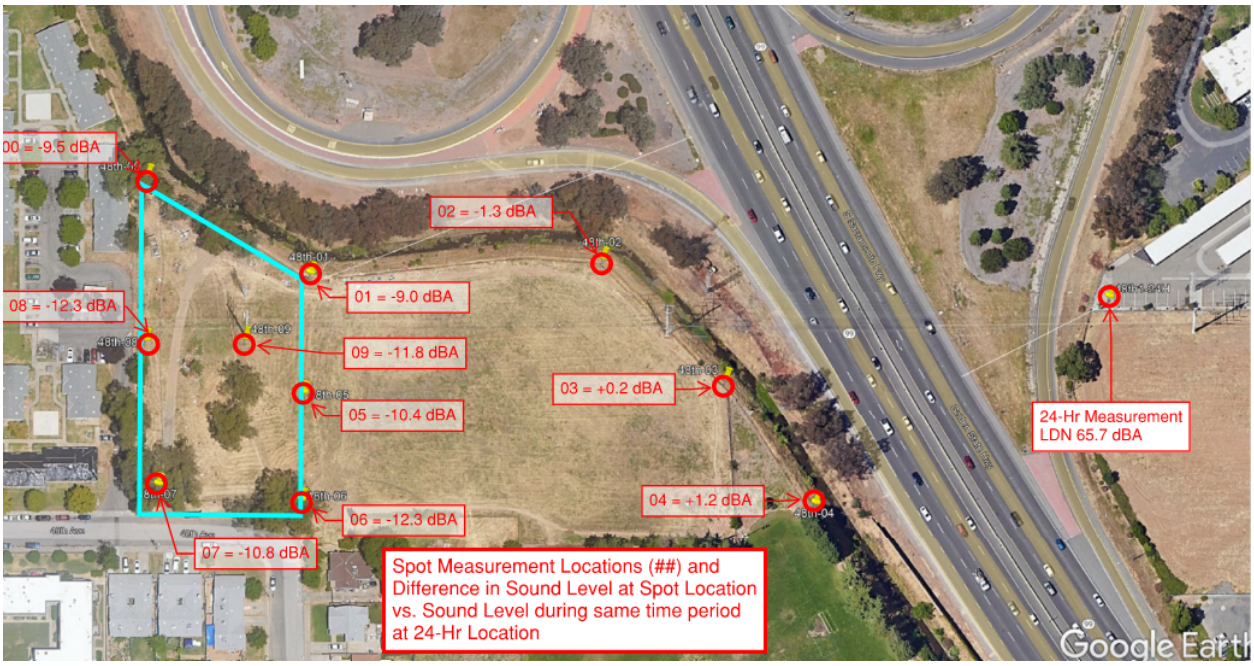
Aircraft Noise

The closest airport is the Sacramento Executive Airport. The Sacramento Noise Element indicates that the noise contours do not extend into the unincorporated area of Sacramento County (p. 21, Footnote A). Aircraft noise may be heard occasionally at the project site, but it is not expected to be a significant noise source compared to SR99.

Noise Measurements

To evaluate the noise environment at the project site, a 24-hour measurement was conducted from 2pm on September 24th, to 2pm on September 25th, 2021. The microphone was located on the west edge of the U-Haul Storage Facility at 6414 44th St. The equipment could not be securely located directly on the project site due to existing homeless encampments nearby. The 24-hr measurement was located approximately 180 feet from the northbound lane of SR99. The 24-hour measurement exhibited a Day-Night Level of Ldn 65.7 dBA.

To characterize the noise level at the project site, we took ten spot measurements at various locations on the project site and near the highway and on-ramp. The spot measurements were conducted from 2:55pm to 4:05pm on September 24th, 2021. The following figure shows the location of the project site (blue line), 24-hr measurement location, and spot measurement locations.



The spot measurements were conducted using a second sound level meter, so the noise levels at the spot locations could be compared to the same time-periods at the 24-hr location. The following table shows the A-weighted Equivalent Level (LAeq) measured simultaneously at the 24-hr location and each spot location, and the difference.

Spot Location	LAeq Level at 24-hr Location	LAeq Level at Spot Location	Difference
0	61.5	52	-9.5
1	62.3	53.3	-9
2	62.5	61.2	-1.3
3	61.5	61.7	0.2
4	60.6	61.8	1.2
5	61.4	51	-10.4
6	62.2	49.9	-12.3
7	61.1	50.3	-10.8
8	61.8	49.5	-12.3
9	62.1	50.3	-11.8

The noise levels at the project site were 9.0 to 12.3 dBA lower than the 24-hr location, jmeasured during the same time periods. The lower levels are due to the increased distance from the highway and local terrain. We expect the Ldn at the project site would show a similar differential as the spot measurements, since the primary noise source is SR99.

The spot measurements closer to the highway (#02, 03, 04) were similar to the noise levels at the 24-hr location (+/- 1.3 dBA, due to varying distance and terrain). The noise levels at the 24-hr location were also very consistent during the spot measurements, varying only +/- 1 dB.

The following table shows the Hourly A-weighted Equivalent Levels, and the calculated Ldn level including the 10 dB penalty for nighttime hours. The table also shows the calculated Ldn level at the project site, using the 9 dB differential from our spot measurements at the loudest point on the project site.

Date	Hour Starting	Hourly LAeq	LDN Penalty	LDN LAeq	Site Adjustment	LDN LAeq
24-Sep	14:00	62.2		62.2	-9.0	53.2
24-Sep	15:00	61.8		61.8	-9.0	52.8
24-Sep	16:00	62.4		62.4	-9.0	53.4
24-Sep	17:00	62.7		62.7	-9.0	53.7
24-Sep	18:00	63		63	-9.0	54
24-Sep	19:00	62.8		62.8	-9.0	53.8
24-Sep	20:00	62		62	-9.0	53
24-Sep	21:00	61.9		61.9	-9.0	52.9
24-Sep	22:00	60.5	10	70.5	-9.0	61.5
24-Sep	23:00	59.3	10	69.3	-9.0	60.3
25-Sep	0:00	58.5	10	68.5	-9.0	59.5
25-Sep	1:00	56.8	10	66.8	-9.0	57.8
25-Sep	2:00	56.7	10	66.7	-9.0	57.7
25-Sep	3:00	56.7	10	66.7	-9.0	57.7
25-Sep	4:00	57.5	10	67.5	-9.0	58.5
25-Sep	5:00	59.3	10	69.3	-9.0	60.3
25-Sep	6:00	59.7	10	69.7	-9.0	60.7
25-Sep	7:00	61.5		61.5	-9.0	52.5
25-Sep	8:00	62.1		62.1	-9.0	53.1
25-Sep	9:00	62.6		62.6	-9.0	53.6
25-Sep	10:00	62.1		62.1	-9.0	53.1
25-Sep	11:00	61.9		61.9	-9.0	52.9
25-Sep	12:00	62.3		62.3	-9.0	53.3
25-Sep	13:00	62.2		62.2	-9.0	53.2
	LAeq(24h)	61.2	LDN	65.7	**LDN**	**56.7**
				(Adjacent to SR99)		**(At Project Site)**

Conclusion

- **Based on our measurements, the Day-Night Level at the project site is less than 60 dBA. Therefore, the project site is "Normally Acceptable" for a multifamily residential development, and no special measures would be necessary to mitigate interior noise levels to Ldn 45 dBA or less.**

Test Equipment

The following table lists the acoustical test equipment used for our measurements.

Type	Manufacturer	Model	Serial
Sound Level Meter	NTi	XL2	A2A-14078-E0
Sound Level Meter	NTi	XL2	A2A-14080-E0
Calibrator	ACO Pacific	Model #521	85110
Microphone	Earthworks	M23	5893I
Microphone	Earthworks	M23	5894I
Microphone Weather Protection	iSEMcon	OPS-35	N/A
Microphone Weather Protection	iSEMcon	OPS-35	N/A

Comments

This report is based on our best understanding of the current design intent and project goals. If any of the project conditions or design goals change significantly, we reserve the right to modify our analysis and recommendations. Feel free to call if you have any questions or comments.

Sincerely,
RNS Acoustics

Prepared by:
Joe Erickson
Lead Acoustical Consultant

Reviewed By:
Ryan Sema
Principal

Enclosed:

Sacramento County Noise Element
California OPR – General Plan Guidelines – Appendix D: Noise Element Guidelines.

General Plan

Noise Element

Adopted December 15, 1993
Amended November 9, 2011
Amended December 13, 2017

County of Sacramento
Office of Planning and Environmental Review

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SACRAMENTO COUNTY GENERAL PLAN
NOISE ELEMENT

SECTION I

INTRODUCTION

Purpose of the Noise Element

The Noise Element of the Sacramento County General Plan provides a basis for comprehensive local policies to control and abate environmental noise and to protect the citizens of Sacramento County from excessive noise exposure. The fundamental goals of the Noise Element are as follows:

- To provide sufficient information concerning the community noise environment so that noise may be effectively considered in the land use planning process.

- To develop strategies for abating excessive noise exposure through cost-effective mitigation measures in combination with appropriate zoning to avoid incompatible land uses.

- To protect those existing regions of the planning area whose noise environments are deemed acceptable and also those locations throughout the community deemed "noise sensitive".

- To protect existing noise-producing commercial and industrial uses in Sacramento County from encroachment by noise-sensitive land uses.

Noise Element Requirements

The noise element requirements contained in California Government Code Section 65302(f) are summarized as follows:

- A noise element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all major sources of noise within the County.

- Noise contours shall be shown for major noise sources and stated in terms of the day/night average level (Ldn) or other appropriate noise descriptors. The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above.

- The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise. The noise element shall include policies, implementation measures and possible solutions that address existing and foreseeable noise problems, if any.

Acoustical Terminology

Acoustics The science of sound.

Ambient Noise The distinctive acoustical characteristics of a given area consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.

Attenuation The reduction of noise.

A-Weighting A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response. All noise level measurements and noise standards associated with this Noise Element are provided in terms of A-weighted sound levels.

Capacity Enhancing A roadway project which would increase roadway capacity. Examples include new roadway construction projects or widening projects. Projects which only re-stripe or otherwise alter roadway configuration without increasing capacity are not included in this definition

CNEL Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.

Decibel or dB Fundamental unit of sound, defined as ten times the logarithm of the ratio of the sound pressure squared over the reference pressure squared.

Frequency The measure of the rapidity of alterations of a periodic acoustic signal, expressed in cycles per second or Hertz.

Infill Project A project which is consistent with the General Plan Land Use Map designations, zoning, and community plan for the property in which at least 50% of the project site is bounded by similar uses and a project which would not expand the perimeter of the development area.

Ldn Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.

Leq Equivalent or energy-averaged sound level.

L50 Median noise level, or level exceeded 50% of time.

Lmax The highest root-mean-square (RMS) sound level measured over a given period of time.

Loudness A subjective term for the sensation of the magnitude of sound.

Noise Unwanted sound.

Noise Reducing Pavement

Pavement types for which local studies have identified noise-reducing benefits.

Sensitive Outdoor Areas

The primary outdoor activity area associated with any given land use at which noise-sensitivity exists and the location at which the County's exterior noise level standards are applied.

Single-Family Residential Uses: Normally considered to be back yard spaces, or distinct rear patio/deck areas of single-family residential uses. Front yard spaces, elevated balconies front courtyards, front decks, side yards, etc., are not commonly considered to be sensitive outdoor activity areas. Where the location of outdoor activity areas for large lot residential properties cannot be determined, the County's exterior noise level standards shall be applied within 50 feet of the rear of the residence.

Multi-family Residential Uses: Common outdoor recreation areas, such as pools, tot-lots, tennis courts, etc., of multi-family uses are considered to be the sensitive outdoor area. Individual patios and balconies of multi-family developments are not considered to be sensitive outdoor areas.

Residential Component of Mixed-Use Developments: Mixed use developments will commonly consist of residential units on elevated floors above office or commercial uses. As a result, such uses may not include a clearly delineated sensitive outdoor area, in which case satisfaction with the County's interior noise level standards will be considered adequate.

Small Lot Detached Single Family Developments: In higher density detached single family residential developments (RD-10 or greater density), outdoor activity areas may be small patios or courtyards, or the development may not propose outdoor areas. If small lot developments provide a common outdoor recreation area for the residents of the community (much like an apartment complex), the standards of the Noise Element shall be applied at that location. Otherwise, the standards shall be applied at individual patio/courtyard areas of these developments.

Fundamentals of Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second) they can be heard and hence are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in levels (dB) correspond closely to human perception of relative loudness. Figure 1 shows examples of noise levels for several common noise sources and environments.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by weighing the frequency response of a sound level meter by means of the standardized A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this document are in terms of A-weighted levels.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, Ldn, and shows very good correlation with community response to noise.

The Day-Night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

TABLE 1

TYPICAL A-WEIGHTED SOUND LEVELS OF COMMON NOISE SOURCES

Loudness Ratio Level	A-Weighted Sound Level (dBA)	
128	130	Threshold of pain
64	120	Jet aircraft take-off at 100 feet
32	110	Riveting machine at operators position
16	100	Cut-off saw at operators position
8	90	Bulldozer at 50 feet
4	80	Diesel locomotive at 300 feet
2	70	Commercial jet aircraft interior during flight
1	60	Normal conversation speech at 5-10 feet
1/2	50	Open office background level
1/4	40	Background level within a residence
1/8	30	soft whisper at 2 feet
1/16	20	Interior of recording studio

Noise in the community has been characterized as a health problem, not in terms of actual physiological damages such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities such as sleep, speech, recreation and tasks demanding concentration or coordination. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases, the acceptability of the environment for people decreases. This decrease in acceptability and the threat to public well-being are the bases for land use planning policies preventing exposures to excessive community noise levels.

To control noise from fixed sources which have developed from processes other than zoning or land use planning, many jurisdictions have adopted community noise control ordinances. Such ordinances are intended to abate noise nuisances and to control noise from existing sources. They may also be used as performance standards to judge the creation of a potential nuisance, or potential encroachment of sensitive uses upon noise-producing facilities. Community noise control ordinances are generally designed to resolve noise problems on a short-term basis (usually by means of hourly noise level criteria), rather than on the basis of 24-hour or annual cumulative noise exposures.

In addition to the A-weighted noise level, other factors should be considered in establishing criteria for noise sensitive land uses. For example, sounds with noticeable tonal content such as whistles, horns, droning or high-pitched sounds may be more annoying than the A-weighted sound level alone suggests. Many noise standards apply a penalty, or correction, of 5 dBA to such sounds. The effects of unusual tonal content are generally more of a concern at nighttime, when residents may notice the sound in contrast to low levels of background noise.

Because many rural residential areas experience very low noise levels, residents may express concern about the loss of "peace and quiet" due to the introduction of a sound which was not audible previously. In very quiet environments, the introduction of virtually any change in local activities will cause an increase in noise levels. A change in noise level and the loss of "peace and quiet" is the inevitable result of land use or activity changes in such areas. Audibility of a new noise source and/or increases in noise levels within recognized acceptable limits are not usually considered to be significant noise impacts, but these concerns should be addressed and considered in the planning and environmental review processes.

Background on Criteria for Acceptable Noise Exposure

The State Office of Planning and Research (OPR) Noise Element Guidelines include recommended exterior and interior noise level standards for local jurisdictions to identify and prevent the creation of incompatible land uses due to noise. The OPR guidelines contain a land use compatibility table which describes the compatibility of different land uses with a range of environmental noise levels in terms of Ldn. A noise environment of 60 dB Ldn or less is considered to be normally acceptable for residential uses according to those guidelines.

The U.S. Environmental Protection Agency (EPA) also offers guidelines for community noise exposure in the publication "Information on the Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety". These guidelines consider occupational noise exposure as well as noise exposure in the home. The "Levels Document" recognizes an exterior noise level of 55 dB Ldn as a goal to protect the public from hearing loss, activity interference, sleep disturbance and annoyance. The EPA notes, however, that this level is not a regulatory goal, but is a level defined by a negotiated scientific consensus without concern for economic and technological feasibility or the needs and desires of any particular community. The EPA and other Federal agencies have suggested land use compatibility guidelines which indicate that residential noise exposures of 55 to 65 dB Ldn are acceptable.

The U.S. Environmental Protection Agency has also prepared a Model Community Noise Control Ordinance, using Leq as the means of defining allowable residential noise level limits. The EPA model contains no specific recommendations for local noise level standards, but reports a range of Leq values as adopted by various local jurisdictions. The mean daytime residential noise standard reported by the EPA is 57 dBA (Leq); the mean nighttime residential noise standard is 52 dBA (Leq). Other state laws and regulations regarding noise control are directed towards aircraft, motor vehicles and noise in general.

The California Vehicle Code sets noise emission standards for new vehicles including autos, trucks, motorcycles and off-road vehicles. Performance standards also apply to all vehicles operated on public streets and roadways. Section 216 of the Streets and Highways Code regulates traffic noise received at schools near freeways.

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SACRAMENTO COUNTY GENERAL PLAN
NOISE ELEMENT

SECTION II

NOISE ELEMENT GOALS AND POLICIES

GOAL 1 **To protect the existing and future citizens of Sacramento County from the harmful effects of exposure to excessive noise. More specifically, to protect existing noise-sensitive land uses from new uses that would generate noise levels which are incompatible with those uses, and to discourage new noise-sensitive land uses from being developed near sources of high noise levels.**

GOAL 2 **To protect the economic base of Sacramento County by preventing the encroachment of noise-sensitive land uses into areas affected by existing noise-producing uses. More specifically, to recognize that noise is an inherent by-product of many land uses and to prevent new noise-sensitive land uses from being developed in areas affected by existing noise-producing uses.**

GOAL 3 **To provide the County with flexibility in the development of infill properties which may be located in elevated noise environments.**

GOAL 4 **To provide sufficient noise exposure information so that existing and potential future noise impacts may be effectively addressed in the land use planning and project review processes.**

Traffic And Railroad Noise Sources

NO-1. The noise level standards for noise-sensitive areas of ***new*** uses affected by traffic or railroad noise sources in Sacramento County are shown by Table 1. Where the noise level standards of Table 1 are predicted to be exceeded at new uses proposed within Sacramento County which are affected by traffic or railroad noise, appropriate noise mitigation measures shall be included in the project design to reduce projected noise levels to a state of compliance with the Table 1 standards.

Aircraft Noise Sources

NO-2. Proposals for new development within Sacramento County which may be affected by aircraft noise shall be evaluated relative to Table 4: *Land Use Compatibility for Aircraft Noise*, except in the following case. Development proposals which may be affected by aircraft noise from Sacramento International Airport shall be evaluated relative to the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

NO-3. New residential development within the 60 CNEL noise contours adopted by the County for land use planning purposes at any airport or Helipad within Sacramento County shall be prohibited. This policy is not applicable to Executive Airport.

NO-4. New residential development within adopted Airport Policy Area boundaries, but outside the 60 CNEL, shall be subject to the following conditions:

A. Provide minimum noise insulation to 45 dB CNEL within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within an Airport Policy Area.

C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento, recorded with the Sacramento County Recorder, and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within an Airport Planning Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of the subject Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within adopted Airport Policy Area boundaries, but would be subject to the conditions listed above.

Non-Transportation Noise Sources

NO-5. The interior and exterior noise level standards for noise-sensitive areas of new uses affected by existing non-transportation noise sources in Sacramento County are shown by Table 2. Where the noise level standards of Table 2 are predicted to be exceeded at a proposed noise-sensitive area due to existing non-transportation noise sources, appropriate noise mitigation measures shall be included in the project design

to reduce projected noise levels to a state of compliance with the Table 2 standards within sensitive areas.

NO-6. Where a project would consist of or include non-transportation noise sources, the noise generation of those sources shall be mitigated so as not exceed the interior and exterior noise level standards of Table 2 at existing noise-sensitive areas in the project vicinity.

NO-7. The "last use there" shall be responsible for noise mitigation. However, if a noise-generating use is proposed adjacent to lands zoned for uses which may have sensitivity to noise, then the noise generating use shall be responsible for mitigating its noise generation to a state of compliance with the Table 2 standards at the property line of the generating use in anticipation of the future neighboring development.

Construction Noise

NO-8. Noise associated with construction activities shall adhere to the County Code requirements. Specifically, Section 6.68.090(e) addresses construction noise within the County.

Transportation Projects

NO-9. For capacity enhancing roadway or rail projects, or the construction of new roadways or railways, a noise analysis shall be prepared in accordance with the Table 3 requirements. If projected post-project traffic noise levels at existing uses exceed the noise standards of Table 1, then feasible methods of reducing noise to levels consistent with the Table 1 standards shall be analyzed as part of the noise analysis. In the case of existing residential uses, sensitive outdoor areas shall be mitigated to 60 dB, when possible, through the application of feasible methods to reduce noise. If 60 dB cannot be achieved after the application of all feasible methods of reducing noise, then noise levels up to 65 dB are allowed.

If pre-project traffic noise levels for existing uses already exceed the noise standards of Table 1 and the increase is significant as defined below, feasible methods of reducing noise to levels consistent with the Table 1 standards should be applied. In no case shall the long-term noise exposure for non-industrial uses be greater than 75 dB; long-term noise exposure above this level has the potential to result in hearing loss.

A significant increase is defined as follows:

Pre-Project Noise Environment (Ldn)	Significant Increase

Less than 60 dB	5+ dB
60 - 65 dB	3+ dB
Greater than 65 dB	1.5+ dB

NO-10. For interim capacity enhancing roadway or rail projects, or the construction of new interim roadways or railways, it may not be practical or feasible to provide mitigation if the ultimate roadway or railway design would render the interim improvements ineffective or obsolete. An example would be a noise barrier constructed for an interim project which would need to be removed to accommodate the ultimate project. The following factors should be considered in determining whether or not noise mitigation will be implemented for interim projects, but in general, noise mitigation for interim projects would not be provided:

a. The severity of the impact
b. The cost and effectiveness of the mitigation.
c. The number of properties which would benefit from the mitigation.
d. The foreseeable duration between interim and ultimate improvements.
e. Aesthetic, safety and engineering considerations.

NO-11. If noise-reducing pavement is to be utilized in conjunction with a roadway improvement project, of if such paving existing adjacent to a proposed new noise-sensitive land use, the acoustical benefits of such pavement shall be included in the noise analysis prepared for the project.

General Noise Policy

NO-12. All noise analyses prepared to determine compliance with the noise level standards contained within this Noise Element shall be prepared in accordance with Table 3.

NO-13. Where noise mitigation measures are required to satisfy the noise level standards of this Noise Element, emphasis shall be placed on the use of setbacks and site design to the extent feasible, prior to consideration of the use of noise barriers.

NO-14. Noise analyses prepared for multi-family residential projects, town homes, mixed-use, condominiums, or other residential projects where floor ceiling assemblies or party-walls shall be common to different owners/occupants, shall be consistent with the State of California Noise Insulation standards.

NO-15. The County shall have the flexibility to consider the application of 5 dB less restrictive exterior noise standards than those prescribed in Tables 1 and 2 in cases where it is impractical or infeasible to reduce exterior noise levels within infill projects to a state of compliance with the Table 1 or 2 standards. In such cases, the rational for such consideration shall be clearly presented and disclosure statements

and noise easements should be included as conditions of project approval. The interior noise level standards of Tables 1 and 2 would still apply. The maximum allowable long-term noise exposure permissible for non-industrial uses is 75 dB.

Exemptions

NO-16. The following sources of noise shall be exempt from the provisions of this Noise Element:

a. Emergency warning devices and equipment operated in conjunction with emergency situations, such as sirens and generators which are activated during power outages. The routine testing of such warning devices and equipment shall also be exempt provided such testing occurs during daytime hours.

b. Activities associated with events for which a permit has been obtained from the County.

Table 1
Noise Standards for New Uses Affected by Traffic and Railroad Noise
Sacramento County Noise Element

New Land Use	Sensitive[1] Outdoor Area - Ldn	Sensitive Interior[2] Area - Ldn	Notes
All Residential	65	45	5
Transient Lodging	65	45	3,5
Hospitals & Nursing Homes	65	45	3, 4, 5
Theaters & Auditoriums	---	35	3
Churches, Meeting Halls	65	40	3
Schools, Libraries, etc.	65	40	3
Office Buildings	65	45	3
Commercial Buildings	---	50	3
Playgrounds, Parks, etc.	70	---	
Industry	65	50	3

Notes:

1. Sensitive areas are defined in acoustic terminology section.
2. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
3. Where there are no sensitive exterior spaces proposed for these uses, only the interior noise level standard shall apply.
4. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
5. If this use is affected by railroad noise, a maximum (Lmax) noise level standard of 70 dB shall be applied to all sleeping rooms to reduce the potential for sleep disturbance during nighttime train passages.

Table 2
Non-Transportation Noise Standards
Sacramento County Noise Element
Median (L50) / Maximum (Lmax)[1]

Receiving Land Use	Outdoor Area[2] Daytime	Outdoor Area[2] Nighttime	Interior[3] Day & Night	Notes
All Residential	55 / 75	50 / 70	35 / 55	
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5, 6
Theaters & Auditoriums	---	---	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	---	35 / 60	6
Office Buildings	60 / 75	---	45 / 65	6
Commercial Buildings	---	---	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	---	---	6
Industry	60 / 80	---	50 / 70	6

Notes:

1. The Table 2 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of Table 2, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2. Sensitive areas are defined acoustic terminology section.
3. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.
7. Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

Table 3
Requirements for Acoustical Analyses Prepared in Sacramento County

An acoustical analysis prepared pursuant to the Noise Element shall:

1. Be the responsibility of the applicant.
2. Be prepared by qualified persons experienced in the fields of environmental noise assessment and architectural acoustics.
3. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions.
4. Estimate projected future (20 year) noise levels in terms of the Standards of Tables 1 and 2, and compare those levels to the adopted policies of the Noise Element.
5. Recommend appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element.
6. Estimate interior and exterior noise exposure after the prescribed mitigation measures have been implemented.

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
RESIDENTIAL[1,8]					
• Single-family detached[2]	No[6]	No	No	No	No
• Two-family dwelling	No[6]	No	No	No	No
• Multi-family dwelling (3+ families)	No[6]	No	No	No	No
• Group Quarters & Rooming Houses	No[6]	No	No	No	No
• Mobile Home Parks or Courts	No[6]	No	No	No	No
• Agricultural/Residential (min. 2ac parcel size)	Yes[6,9]	Yes[6,9]	No	No	No
INDUSTRIAL MANUFACTURING					
• Food and kindred products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Textiles and apparel	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Transportation equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Lumber and wood products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Furniture and fixtures	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Paper and allied products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Printing and publishing	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Chemicals and allied products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Asphalt paving and miscellaneous petroleum	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Petroleum refining	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Rubber and plastics	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Stone, glass, clay, and concrete products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Primary and fabricated metals	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Electrical and electronic equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Leather products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Industrial, commercial, & computer equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Photo, optical and medical equipment	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Miscellaneous manufacturing	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
TRANSPORTATION, COMMUNICATIONS, & UTILITIES					
• Streets, roads, and highways	Yes	Yes	Yes	Yes	Yes

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
• Heavy rail lines: freight and passenger	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Light rail lines: passenger	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Trucking and rail freight terminals	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Warehousing and storage	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Passenger terminals and stations	Yes	Yes	Yes[3]	Yes[3]	No
• Water transportation: freight and passenger	Yes	Yes	Yes[3]	Yes[3]	No
• Parking lots	Yes	Yes	Yes[3]	Yes[3]	Yes
• Transportation services	Yes	Yes	Yes[3]	Yes[3]	No
• Radio, television, and telephone	Yes	Yes	Yes[3]	Yes[3]	No
• Cellular radio transmission antenna	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Courier service	Yes	Yes	Yes[3]	Yes[3]	No
• Electrical and natural gas generation and switching	Yes	Yes	Yes[3]	Yes[3]	Yes[3,7]
• Natural gas and petroleum pipelines and storage	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Water treatment plants	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Sewer treatment plants	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Sanitary landfills	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Recycling and transfer facilities	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Hazardous material facilities	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
WHOLESALE TRADE					
• Paints, varnishes, and supplies	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Chemicals and allied products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Petroleum terminals and wholesalers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Miscellaneous wholesale trade	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
RETAIL TRADE					
• Department and variety stores (single)	Yes	Yes	Yes[3]	Yes[3]	No
• Lumber, building materials, and nurseries	Yes	Yes	Yes[3]	No	No
• Grocery and drug stores	Yes	Yes	Yes[3]	Yes[3]	No
• Paint, glass, wallpaper, and hardware	Yes	Yes	Yes[3]	Yes[3]	No
• Auto, truck, boat, & recreational vehicle dealers	Yes	Yes	Yes[3]	Yes[3]	No
• Mobile home dealers	Yes	Yes	Yes[3]	Yes[3]	No

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
• Auto and truck service stations	Yes	Yes	Yes[3]	Yes[3]	No
• Fuel dealers	Yes	Yes	Yes[3]	Yes[3]	No
• Apparel and shoes	Yes	Yes	Yes[3]	Yes[3]	No
• Home furnishings	Yes	Yes	Yes[3]	Yes[3]	No
• Eating and drinking	Yes	Yes	Yes[3]	Yes[3]	No
• Miscellaneous retail trade	Yes	Yes	Yes[3]	Yes[3]	No
BUSINESS AND PERSONAL SERVICES					
• Auto, truck, boat, RV, and miscellaneous repair	Yes	Yes	Yes[3]	Yes[3]	No
• Mobile home repair	Yes	Yes	Yes[3]	Yes[3]	No
• Commercial laundries and cleaning	Yes	Yes	Yes[3]	Yes[3]	No
• Coin operated laundries	Yes	Yes	Yes[3]	Yes[3]	No
• Photographers, beauty and barber, shoe repair	Yes	Yes	Yes[3]	Yes[3]	No
• Funeral services	Yes	Yes	Yes[3]	Yes[3]	No
• Business Services	Yes	Yes	Yes[3]	Yes[3]	No
• Computer programming and data processing	Yes	Yes	Yes[3],[7]	Yes[3]	No
• Travel agencies	Yes	Yes	Yes[3]	Yes[3]	No
• Legal and engineering	Yes	Yes	Yes[3]	Yes[3]	No
• Banks, credit unions, and financial	Yes	Yes	Yes[3]	Yes[3]	No
• Hotels, motels, inns, bed and breakfast	Yes	Yes	Yes[3]	Yes[3],[4]	No
• Business parks and industrial clusters	Yes	Yes	Yes[3]	Yes[3]	No
• Office (for rent or lease)	Yes	Yes	Yes[3]	Yes[3]	No
• Business and vocational schools	Yes	Yes	Yes[3]	Yes[3]	No
• Construction businesses	Yes	Yes	Yes[3]	Yes[3]	No
• Miscellaneous personal services	Yes	Yes	Yes[3]	Yes[3]	No
SHOPPING DISTRICTS					
• Neighborhood shopping centers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Community shopping centers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Regional shopping centers	Yes	Yes	Yes[3]	Yes[3]	Yes[3]

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
PUBLIC AND QUASI-PUBLIC SERVICES					
• Post offices	Yes	Yes	Yes[3]	Yes[3]	No
• Government offices	Yes	Yes	Yes[3]	Yes[3]	No
• Government social services	Yes	Yes	Yes[3]	Yes[3]	No
• Elementary and Secondary schools	Yes	Yes[3,4]	No	No	No
• College and universities	Yes	Yes[3,4]	No	No	No
• Hospitals	Yes	Yes[3,4]	Yes[3,4]	No	No
• Medical and dental laboratories	Yes	Yes	Yes[3]	Yes[3]	No
• Doctor and dentist offices	Yes	Yes	Yes[3]	Yes[3]	No
• Museum and art galleries	Yes	Yes[3,4]	No	No	No
• Libraries	Yes	Yes[3,4]	No	No	No
• Churches	Yes	Yes[3,4]	No	No	No
• Cemeteries	Yes	Yes	Yes[3]	Yes[3]	No
• Jails and detention centers	Yes	Yes	Yes[3]	No	No
• Child care programs (six or more children)	Yes	Yes[3,4]	No	No	No
• Nursing care facilities	Yes	Yes[3,4]	No	No	No
RECREATION					
• Neighborhood parks	Yes	Yes	Yes[3]	No	No
• Community-wide and regional parks	Yes	Yes	Yes[3]	No	No
• Riding stables	Yes	Yes	Yes[3]	No	No
• Golf courses	Yes	Yes	Yes[3]	No	No
• Open space and natural areas	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Natural water areas	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Recreation and amusement centers	Yes	Yes	Yes[3]	Yes[3]	No
• Physical fitness and gyms	Yes	Yes	Yes[3]	Yes[3]	No
• Camps, campgrounds, & recreational vehicle parks	Yes	Yes	No	No	No
• Dance halls, studios, and schools	Yes	Yes	Yes[3]	Yes[3]	No
• Theaters - live performance	Yes	Yes[3,5]	Yes[3,5]	No	No
• Motion picture theater - single or double	Yes	Yes[3]	Yes[3]	No	No
• Motion picture theater complex - three or more	Yes	Yes[3]	Yes[3]	No	No

Table 4

Land Use Compatibility for Airport Noise for all public use airports except for Sacramento International Airport. In the case of Sacramento International Airport, use the Land Use Compatibility Plan prepared for Sacramento International Airport dated December 12, 2013, adopted herein by reference.

Land Use Designation	60-65 CNEL	65-70 CNEL	70-75 CNEL	75-80 CNEL	80-85 CNEL
• Professional sports	Yes	Yes	Yes	No	No
• Stadiums and arenas	Yes	Yes	Yes	No	No
• Auditoriums, concert halls, and amphitheaters	Yes	Yes[3],[5]	Yes[3],[5]	No	No
• Fairgrounds and expositions	Yes	Yes	Yes	No	No
• Racetracks	Yes	Yes	Yes	No	No
• Theme parks	Yes	Yes	Yes	No	No
AGRICULTURAL AND MINING					
• Row and field crops	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Tree crop	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Intensive livestock	Yes	Yes	Yes[3]	No	No
• Nursery products	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Poultry	Yes	Yes	Yes[3]	No	No
• Pasture and grazing	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Agricultural services	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Mining and quarrying	Yes	Yes	Yes[3]	Yes[3]	Yes[3]
• Oil and gas extraction	Yes	Yes	Yes[3]	Yes[3]	Yes[3]

Footnotes to Land Use Compatibility Table for Airport Noise:

A. This compatibility table does not apply to Borges-Clarksburg Airport, as no noise contours exist there. Also, it does not apply to Executive Airport, as the noise contours do not extend into the unincorporated area of Sacramento County.

B. These guidelines define only compatible land uses within noise contours. Where proposed land uses fall within the established Safety Areas or may penetrate any of the imaginary height surfaces, additional restrictions do apply, which can be found in the safety and height policy sections of this Plan.

1. Caretaker residences are a compatible use within all CNEL ranges, provided that they are ancillary to the primary use of a property, intended for the purpose of property protection or maintenance, and subject to the condition that all residential units be designed to limit

intruding noise such that interior levels do not exceed 45 CNEL, with windows closed, in any habitable room.

2. Second residential units are a compatible use within all CNEL ranges, subject to the condition that the proposed second unit be consistent with the provisions of Section 65852.1 and 65852.2 of the California Government Code.
3. Measures to achieve an interior noise level of 50 CNEL must be incorporated into the design and construction of portions where the public is received, office areas, and other areas where people work or congregate.
4. Measures to achieve an interior noise level of 45 CNEL must be incorporated into the design and construction of all noise sensitive areas including, but not limited to, rooms designed for the purpose of sleep, libraries, churches, and areas intended for indoor entertainment events.
5. Only indoor uses permitted.
6. Compatible at Sacramento International Airport and Franklin Field only if the residential use is directly related to agricultural uses, such as dwelling units for the land owner, the owner's immediate family, or for employees. All residential units shall be designed to limit intruding noise such that interior noise levels do not exceed 45 CNEL, with windows closed, in any habitable room.
7. Use not compatible at Mather Airport.
8. New residential uses within 60 CNEL are not compatible, with the exception of accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural. New residential development within the Mather Airport Policy Area boundaries but outside the 60 CNEL shall be subject to the following conditions:
    A. Provide minimum noise insulation to provide 45dB within new residential dwellings, including detached single family dwellings, with windows closed, in any habitable room.
    B. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.
    C. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and filed with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.
9. Compatible with McClellan Park and Mather Airfield only up to 70dB CNEL.

Appendix D

Noise Element Guidelines

Guidelines for the Preparation and Content of the Noise Element of the General Plan

The noise element of the general plan provides a basis for comprehensive local programs to control and abate environmental noise and to protect residents from excessive exposure. The fundamental goals of the noise element are:

- To provide sufficient information concerning the community noise environment so that noise may be effectively considered in the land use planning process. In so doing, the necessary groundwork will have been developed so that a community noise ordinance may be utilized to resolve noise complaints.
- To develop strategies for abating excessive noise exposure through cost-effective mitigating measures in combination with zoning, as appropriate, to avoid incompatible land uses.
- To protect those existing regions of the planning area whose noise environments are deemed acceptable and also those locations throughout the community deemed "noise sensitive."
- To utilize the definition of the community noise environment in the form of CNEL or Ldn noise contours as provided in the noise element for local compliance with the State Noise Insulation Standards. These standards require specified levels of outdoor to indoor noise reduction for new multifamily residential constructions in areas where the outdoor noise exposure exceeds CNEL (or Ldn) 60 dB.

The 1976 edition of the Noise Element Guidelines, prepared by the California Department of Health Services (DHS), was a result of SB 860 (Beilenson, 1975), which became effective January 1, 1976. SB 860, among other things, revised and clarified the requirements for the noise element of each city and county general plan and gave DHS the authority to issue guidelines for compliance thereto. Compliance with the 1976 version of these guidelines was mandated only for those noise elements that were not submitted to the Office of Planning and Research by the effective date of SB 860 and to subsequent revisions of previously submitted noise elements.

A comparison between the 1976 Noise Element Guidelines and this revised edition will not reveal substantial changes. The basic methodology advanced by that previous edition remains topical. Where necessary, code references have been updated and the text revised to reflect statutory changes.

D

Definitions

Decibel, dB: A unit of measurement describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

A-Weighted Level: The sound level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

L10: The A-weighted sound level that is exceeded ten percent of the sample time. Similarly, L50, L90, etc.

Leq: Equivalent energy level. The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period. Leq is typically computed over 1-, 8-, and 24-hour sample periods.

CNEL: Community Noise Equivalent Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of five decibels to sound levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night from 10 p.m. to 7 a.m.

Ldn: Day-Night Average Level. The average equivalent A-weighted sound level during a 24-hour day, obtained after the addition of 10 decibels to sound levels in the night after 10 p.m. and before 7 a.m. (Note: CNEL and Ldn represent daily levels of noise exposure averaged on an annual or daily basis, while Leq represents the equivalent energy noise exposure for a shorter time period, typically one hour.)

Noise Contours: Lines drawn about a noise source indicating equal levels of noise exposure. CNEL and Ldn are the metrics utilized herein to describe annoyance due to noise and to establish land use planning criteria for noise.

Ambient Noise: The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

Intrusive Noise: That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence, and tonal or informational content as well as the prevailing noise level.

Noisiness Zones: Defined areas within a community wherein the ambient noise levels are generally similar (within a range of 5 dB, for example). Typically, all other things being equal, sites within any given noise zone will be of comparable proximity to major noise sources. Noise contours define different noisiness zones.

D

Noise Element Requirements

Government Code Section 65302(f): A noise element shall identify and appraise noise problems in the community. The noise element shall recognize the guidelines established by the Office of Noise Control in the State Department of Health Services and shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

1. Highways and freeways.
2. Primary arterials and major local streets.
3. Passenger and freight online railroad operations and ground rapid transit systems.
4. Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
5. Local industrial plants, including, but not limited to, railroad classification yards.
6. Other ground stationary sources identified by local agencies as contributing to the community noise environment.

Noise contours shall be shown for all of these sources and stated in terms of community noise equivalent level (CNEL) or day-night average level (Ldn). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified in paragraphs (1) to (6), inclusive.

The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise.

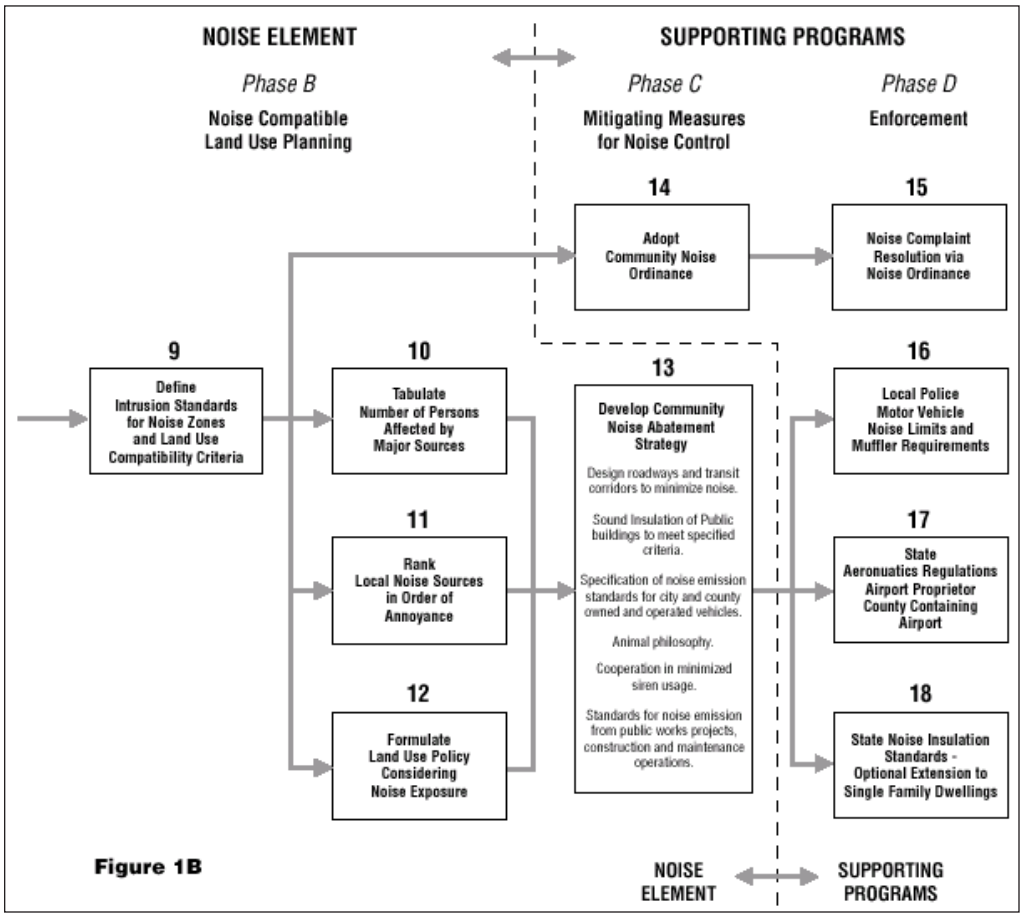


Figure 1B

The noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards.

Noise Element Development Process

The sequential steps for development of a noise element as an integral part of a community's total noise control program are illustrated in the flow diagrams of figures 1A and 1B. The concept presented herein utilizes the noise element as the central focus of the community's program and provides the groundwork for all subsequent enforcement efforts. The process may be described in terms of four phases:

Phase A: Noise Environment Definition

Phase B: Noise-Compatible Land Use Planning

Phase C: Noise Mitigation Measures

Phase D: Enforcement

These phases encompass a total of eighteen defined tasks, the first thirteen of which relate directly to the statutory requirements contained in Government Code §65302(f). The remainder relate to critical supportive programs (noise ordinances, etc.). Citations from §65302(f) are contained within quotation marks.

Phase A: Noise Environment Definition

The purpose of this phase is to adequately identify and appraise the existing and future noise environment of the community in terms of Community Noise Equivalent Level (CNEL) or Day-Night Average Level (Ldn) noise contours for each major noise source and to divide the city or county into noise zones for subsequent noise ordinance application.

Step 1:

Identify a specific individual or lead agency within the local government to be responsible for coordination of local noise control activities. This individual or agency should be responsible for coordinating all intergovernmental activities and subsequent enforcement efforts.

Step 2:

Review noise complaint files as compiled by all local agencies (police, animal control, health, airport, traffic department, etc.) in order to assess the following:

1. Location and types of major offending noise sources.
2. Noise-sensitive areas and land uses.
3. Community attitudes towards specific sources of noise pollution.
4. Degree of severity of noise problems in the community.
5. Relative significance of noise as a pollutant.

Step 3:

Specifically identify major sources of community noise based upon the review of complaint files and interagency discussion and the following statutory subjects:

1. Highways and freeways.
2. Primary arterials and major local streets.
3. Passenger and freight online railroad operations and ground rapid transit systems.
4. Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
5. Local industrial plants, including, but not limited to, railroad classification yards.
6. Other ground stationary noise sources identified by local agencies as contributing to the community noise environment. (§65302(f))

In addition, the land uses and areas within the community that are noise sensitive should be identified at the same time.

Step 4:

Given the identification of major noise sources and an indication of the community's attitude toward noise pollution (when available), it is advisable to conduct a community noise survey. The purposes of the survey are threefold:

First and foremost, to define by measurement the current noise levels at those sites deemed noise sources and to establish noise level contours around them. The noise contours must be expressed in terms of CNEL or Ldn.

Second, the collected data will form the basis for an analysis of noise exposure from major sources.

Finally, the survey should define the existing ambient noise level throughout the community. Intrusive noises over and above this general predetermined ambient level may then be controlled through implementation of a noise ordinance.

Step 5:

Given the definition of existing ambient noise levels throughout the community, one may proceed with a classification of the community into broad regions of generally consistent land uses and similar noise environments. Because these regions will be varying distances from identified major noise sources, the relative levels of environmental noise will be different from one another. Therefore, subsequent enforcement efforts and mitigating measures may be oriented towards maintaining quiet areas and improving noisy ones.

Step 6:

Directing attention once again to the major noise sources previously identified, it is essential to gather operations and activity data in order to proceed with the analytical noise exposure prediction. This data is somewhat source-specific but generally should consist of the following information and be supplied by the owner/operator of the source:

1. Average daily level of activity (traffic volume, flights per day, hours of operation, etc.).
2. Distribution of activity over day and night time periods, days of the week, and seasonal variations.
3. Average noise level emitted by the source at various levels of activity.
4. 4. Precise source location and proximity to noise-impacted land uses.
5. 5. Composition of noise sources (percentage of trucks on highway, aircraft fleet mix, industrial machinery type, etc.).

Step 7:

In addition to collecting data on the variables affecting noise-source emission for the existing case, future values for these parameters need to be assessed. This is best accomplished by correlating the noise element with other general plan elements (i.e. land use, circulation, housing, etc.) and regional transportation plans and by coordination with other responsible agencies (Airport Land Use Commission, Caltrans, etc.).

Step 8:

Analytical noise exposure modeling techniques may be utilized to develop source-specific noise contours around major noise sources in the community.

> "The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques..." (§65302(f))

Simplified noise prediction methodologies are available through the Department of Health Services for highway and freeway noise, railroad noise, simple fixed stationary and industrial sites, and general aviation aircraft (with less than twenty percent commercial jet aircraft activity—two engine jet only). Noise contours for larger airport facilities and major industrial sites are sufficiently complex that they must be developed via sophisticated computer techniques available through recognized acoustical consulting firms. (Airport contours generally have already been developed in accordance with requirements promulgated by Caltrans' Division of Aeronautics: Noise Standards, Title 21, Section 5000, et seq., California Code of Regulations.)

Although considerable effort may go into developing noise contours that, in some instances, utilize rather sophisticated digital programming techniques, the present state of the art is such that their accuracy is usually no better than +/- 3 dB. In fact, the accuracy of the noise exposure prediction decreases with increasing distance from the noise source. In the near vicinity of the source, prediction accuracy may be within the range of +/- 1 dB, while at greater distances this may deteriorate to +/- 5 dB or more. At greater distances, meteorological and topographic effects, typically not totally accounted for in most models, may have significant influence. Thus, while dealing with the concept of noise contours, it is best not to think of them as absolute lines of demarcation on a map (such as topographical contours), but rather as bands of similar noise exposure.

In addition to assessment of the present-day noise environment, it is recommended that the noise exposure data be projected through the time horizon of the general plan. The noise element should be updated and corrected every five years, or sooner as is necessary, and, at that time, the forecasted noise exposure should be projected an additional five years.

Phase B: Noise-Compatible Land Use Planning

A noise planning policy needs to be rather flexible and dynamic to reflect not only technological advances in noise control, but also economic constraints governing application of noise-control technology and anticipated regional growth and demands of the community. In the final analysis, each community must decide the level of noise exposure its residents are willing to tolerate within a limited range of values below the known levels of health impairment.

Step 9:

Given the definition of the existing and forecasted noise environment provided by the Phase A efforts, the locality preparing the noise element must now approach the problem of defining how much noise is too much. Guidelines for noise-compatible land use are presented in Figure 2. The adjustment factors given in Table 1 may be used in order to arrive at noise-acceptability standards that reflect the noise-control goals of the community, the particular community's sensitivity to noise (as determined in Step 2), and the community's assessment of the relative importance of noise pollution.

Step 10:

As a prerequisite to establishing an effective noise-control program, it is essential to know, in quantitative terms, the extent of noise problems in the community. This is best accomplished by determining, for each major noise source around which noise contours have been developed, the number of community residents exposed and to what extent. It is also useful to identify those noise-sensitive land uses whose noise exposure exceeds the recommended standards given in Figure 2. The exposure inventory can be accomplished by using recent census data, adjusted for regional growth, and tabulating the population census blocks within given noise contours.

Step 11:

Once the noise exposure inventory is completed, the relative significance of specific noise sources in the community (in terms of population affected) will become apparent. The local agencies involved may wish to use this information to orient their noise-control and abatement efforts to achieve the most good. Clearly, control of certain major offending sources will be beyond the jurisdiction of local agencies; however, recognition of these limitations should prompt more effective land use planning strategies.

Step 12:

A major objective of the noise element is to utilize this information to ensure noise-compatible land use planning:

> "The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise." (§65302(f))

The intent of such planning is to:

1. Maintain those areas deemed acceptable in terms of noise exposure.
2. Use zoning or other land use controls in areas with excessive noise exposure to limit uses to those which are noise compatible and to restrict other, less compatible uses.

Phase C: Noise Mitigation Measures

Step 13:

Based upon the relative importance of noise sources in order of community impact and local attitudes towards these sources, "[t]he noise element shall include implementation measures and possible solutions that address existing and foreseeable noise problems, if any" (§65302(f)).

Selection of these noise-mitigating measures should be coordinated through all local agencies in order to be most effective. Minimization of noise emissions from all local government-controlled or sanctioned activities should be a priority item. This includes low noise specifications for new city or county owned and operated vehicles (and noise reduction retrofitting where economically possible) and noise emission limits on public works projects. Local governments should insure that public buildings (especially schools) are sufficiently insulated to allow their intended function to be uninterrupted by exterior noise. Local agencies can work with state and federal bodies to minimize transportation noise, primarily through transitway design, location, or configuration modifications.

Additional measures might include such policies as limitation of siren usage by police, fire, and ambulance units within populated areas. Animal control units may be encouraged to minimize barking dog complaints through use of an improved public relations campaign termed "Animal Philosophy." This involves working with pet owners to determine why the dog barks and attempting solutions rather than just issuing citations. Local zoning and subdivision ordinances may require the use of noise-reducing building materials or the installation of sound-insulating walls along major roads in new construction and subdivisions.

In general, local noise reduction programs need to address the problems specific to each community, with the ultimate goals being the reduction of complaint frequency and the provision of a healthful noise environment for all residents of the community.

The remaining steps are beyond the scope of the noise element requirements, but pertain to coordination with other state noise-control programs and achievement of the goals set forth in the noise element through development of an active local noise-control effort.

Step 14:

While the noise element identifies problem areas and seeks to develop medium- and long-range solutions to them, a community noise ordinance is the only viable instrument for short-term or immediate solutions to intrusive noise. A model noise ordinance that can be tailored to the specific needs of a given community by simply incorporating those sections deemed most applicable has been developed by the Department of Health Services. The model ordinance also suggests a cure for non-stationary or transient types of noise events, for which noise contours are generally meaningless.

Phase D: Enforcement

To adequately carry out the programs identified in the noise element and to comply with state requirements for certain other noise-control programs, specific enforcement programs are recommended at the local level.

Step 15:

Adopt and apply a community noise ordinance for resolution of noise complaints.

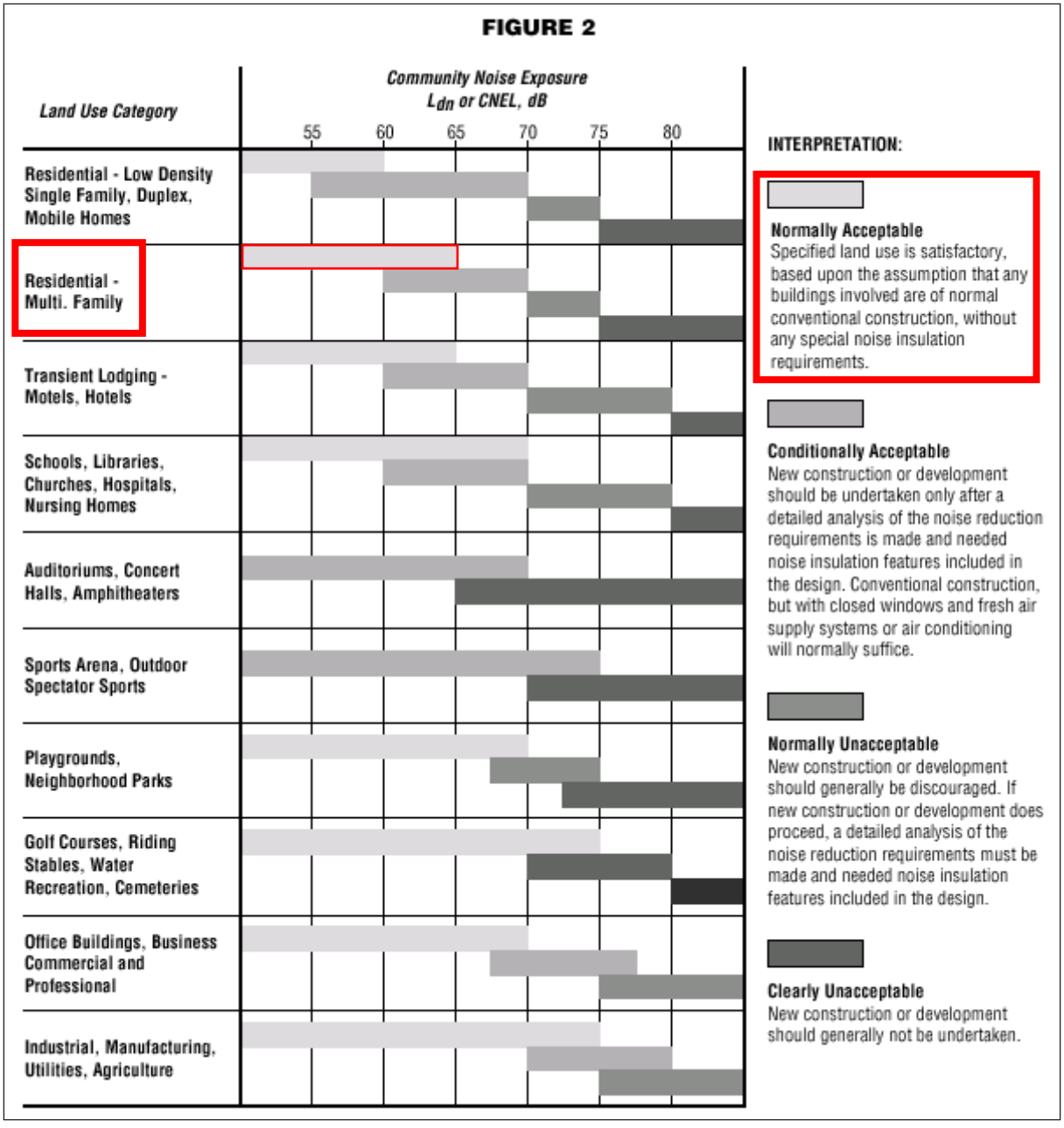


Table 1

Type of Correction	*Description*	*Amount of Correction to be Added to Measured CNEL in dB*
Seasonal Correction	Summer (or year-round operation)	**0**
	Winter only (or windows always closed)	**- 5**
Correction for Outdoor Residual Noise Level	Quiet suburban or rural community (remote from large cities and from industrial activity and trucking).	**+ 10**
	Quiet suburban or rural community (not located near industrial activity).	**+ 5**
	Urban residential community (not immediately adjacent to heavily traveled roads and industrial areas).	**0**
	Noisy urban residential community (near relatively busy roads or industrial areas.	**- 5**
	Very noisy urban residential community.	**- 10**
Correction for Previous Exposure and Community Attitudes	No prior experience with the intruding noise.	**+ 5**
	Community has had some previous exposure to intruding but little effort is being made to control the noise. This correction may also be applied in a situation where the community has not been exposed to the noise previously, but the people are aware that bona fide efforts are being made to control the noise.	**0**
	Community has had considerable previous exposure to the intruding noise and the noise maker's relations with the community are good.	**- 5**
	Community aware that operation causing noise is very necessary and it will not continue indefinitely. This correction can be applied for an operation of limited duration and under emergency circumstances.	**- 10**
Pure Tone or Impulse	No pure tone or impulsive character.	**0**
	Pure Tone or impulsive character present.	**+ 5**

Step 16:

Recent studies have shown that the most objectionable feature of traffic noise is the sound produced by vehicles equipped with illegal or faulty exhaust systems. In addition, such hot rod vehicles are often operated in a manner that causes tire squeal and excessively loud exhaust noise. There are a number of statewide vehicle noise regulations that can be enforced by local authorities as well as the California Highway Patrol. Specifically, Sections 23130, 23130.5, 27150, 27151, and 38275 of the California Vehicle Code, as well

as excessive speed laws, may be applied to curtail this problem. Both the Highway Patrol and the Department of Health Services (through local health departments) are available to aid local authorities in code enforcement and training pursuant to proper vehicle sound-level measurements.

Step 17:

Commercial and public airports operating under a permit from Caltrans' Aeronautics Program are required to comply with both state aeronautics standards governing aircraft noise and all applicable legislation governing the formation and activities of a local Airport Land Use Commission (ALUC). The function of the ALUC is, among other things, to develop a plan for noise-compatible land use in the immediate proximity of the airport. The local general plan must be reviewed for compatibility with this Airport Land Use Compatibility Plan and amended if necessary (Public Utilities Code §21676). Therefore, the developers of the noise element will need to coordinate their activities with the local ALUC to ensure that compatible standards are utilized throughout the community and that the noise element develops as part of a coherent master plan, of which the ALUP forms an integral component.

Step 18:

"The adopted noise element shall serve as a guideline for compliance with the State's noise insulation standards." (§65302(f))

Recognizing the need to provide acceptable habitation environments, state law requires noise insulation of new multifamily dwellings constructed within the 60 dB (CNEL or Ldn) noise exposure contours. It is a function of the noise element to provide noise contour information around all major sources in support of the sound transmission control standards (Appendix, Chapter 2-35, Part 2, Title 24, California Code of Regulations).

Relationship Of The Noise Element To Other General Plan Elements

The noise element is related to the land use, housing, circulation, and open-space elements. Recognition of the interrelationship of noise and these four other mandated elements is necessary in order to prepare an integrated general plan. The relationship between noise and these four elements is briefly discussed below.

- Land Use—A key objective of the noise element is to provide noise exposure information for use in the land use element. When integrated with the noise element, the land use element will show acceptable land uses in relation to existing and projected noise contours. Section 65302(f) states that: "The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise."
- Housing—The housing element considers the provision of adequate sites for new housing and standards for housing stock. Since residential land use is among the most noise sensitive, the noise exposure information provided in the noise element must be considered when planning the location of new housing. Also, state law requires special noise insulation of new multifamily dwellings constructed within the 60 dB (CNEL or Ldn) noise exposure contour. This requirement may influence the location and cost of this housing type. In some cases, the noise environment may be a constraint on housing opportunities.
- Circulation—The circulation system must be correlated with the land use element and is one of the major sources of noise. Noise exposure will thus be a decisive factor in the location and design of new transportation facilities and the possible mitigation of noise from existing facilities in relation to existing and planned land uses. The local planning agency may wish to review the circulation and land use elements simultaneously to assess their compatibility with the noise element.

- Open Space—Excessive noise can adversely affect the enjoyment of recreational pursuits in designated open space. Thus, noise exposure levels should be considered when planning for this kind of open-space use. Conversely, open space can be used to buffer sensitive land uses from noise sources through the use of setbacks and landscaping. Open-space designation can also effectively exclude other land uses from excessively noisy areas.

Selection Of The Noise Metric

The community noise metrics to be used in noise elements are either CNEL or Ldn (as specified in §65302(f)). A significant factor in the selection of these scales was compatibility with existing quantifications of noise exposure currently in use in California. CNEL is the noise metric currently specified in the State Aeronautics Code for evaluation of noise impacts at specific airports that have been declared to have a noise problem. Local compliance with state airport noise standards necessitates that community noise be specified in CNEL. The Ldn represents a logical simplification of CNEL. It divides the day into two weighted time periods (Day—7 a.m. to 10 p.m. and Night—10 p.m. to 7 a.m.) rather than the three used in the CNEL measure (Day—7 a.m. to 7 p.m., Evening—7 p.m. to 10 p.m., and Night—10 p.m. to 7 a.m.) with no significant loss in accuracy.

Criteria For Noise-Compatible Land Use

Figure 2 summarizes the suggested use of the CNEL/Ldn metrics for evaluating land use noise compatibility. Such criteria require a rather broad interpretation, as illustrated by the ranges of acceptability for a given land use within a defined range of noise exposures.

Denotation of a land use as "normally acceptable" on Figure 2 implies that the highest noise level in that band is the maximum desirable for existing or conventional construction that does not incorporate any special acoustic treatment. In general, evaluation of land use that falls into the "normally acceptable" or "normally unacceptable" noise environments should include consideration of the type of noise source, the sensitivity of the noise receptor, the noise reduction likely to be provided by structures, and the degree to which the noise source may interfere with speech, sleep, or other activities characteristic of the land use.

Figure 2 also provides an interpretation as to the suitability of various types of construction with respect to the range of outdoor noise exposure.

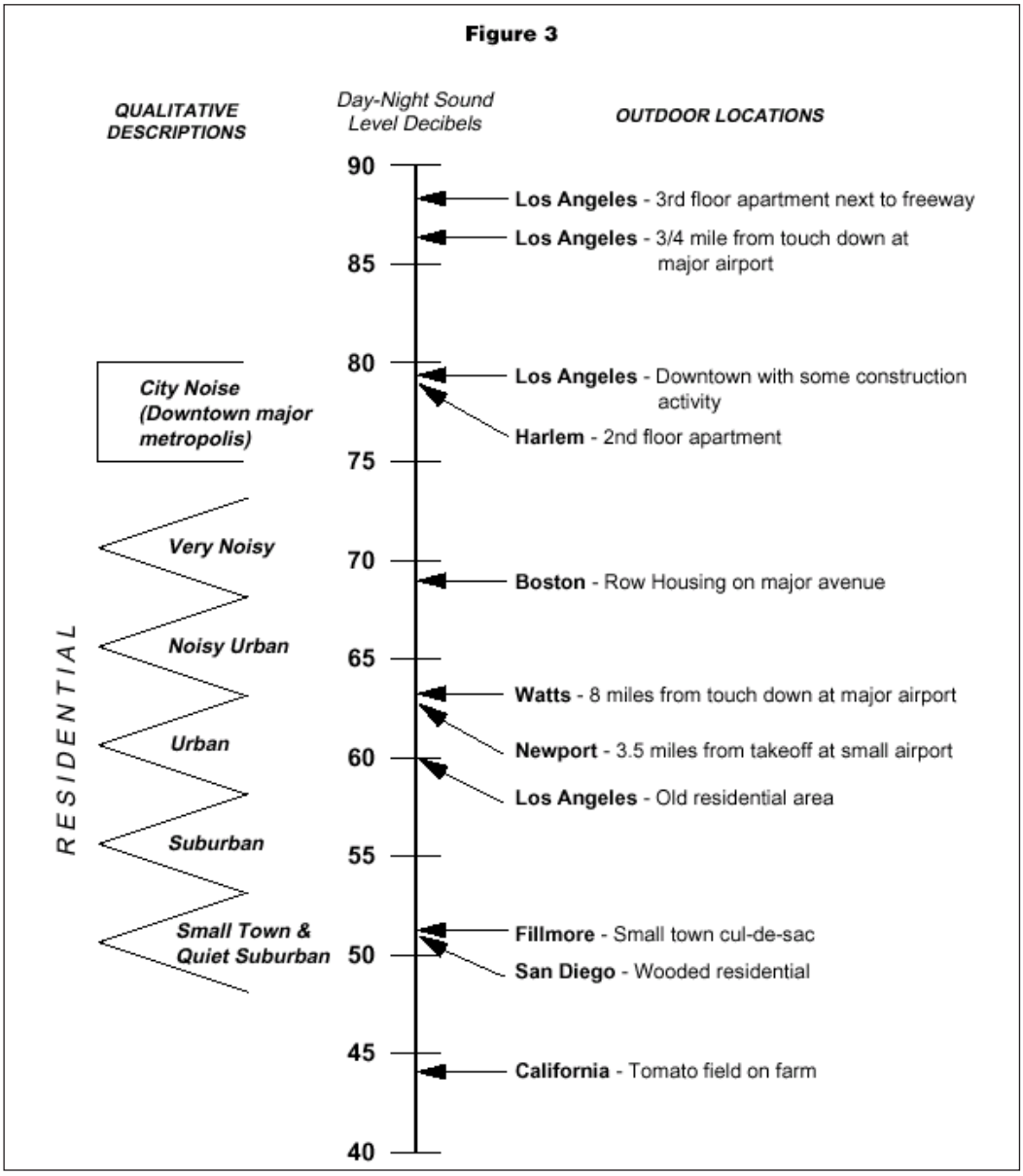
The objective of the noise compatibility guidelines in Figure 2 is to provide the community with a means of judging the noise environment it deems to be generally acceptable. Many efforts have been made to account for the variability in perceptions of environmental noise that exist between communities and within a given community.

Beyond the basic CNEL or Ldn quantification of noise exposure, one can apply correction factors to the measured or calculated values of these metrics in order to account for some of the factors that may cause the noise to be more or less acceptable than the mean response. Significant among these factors are seasonal variations in noise source levels, existing outdoor ambient levels (i.e., relative intrusiveness of the source), general societal attitudes towards the noise source, prior history of the source, and tonal characteristics of the source. When it is possible to evaluate some or all of these factors, the measured or computed noise exposure values may be adjusted by means of the correction factors listed in Table 1 in order to more accurately assess local sentiments towards acceptable noise exposure.

In developing these acceptability recommendations, efforts were made to maintain consistency with the goals defined in the federal EPA's "Levels Document" and the State Sound Transmission Control Standards for multifamily housing. In both of these documents, an interior noise exposure of 45 dB CNEL (or Ldn) is recommended to permit normal residential activity. If one considers the typical range of noise reduction provided by residential dwellings (12 to 18 dB with windows partially open), the 60 dB outdoor value identified as "clearly acceptable" for residential land use would provide the recommended interior environment.

Figure 3 has been included in order to better explain the qualitative nature of community noise environments expressed in terms of Ldn. It is apparent that noise environments cover a broad range and that, in general, it may be observed that the quality of the environment improves as one moves further away from major transportation noise sources.

Figure 3



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