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Noise

Although a common characteristic of life in any urban or suburban area, noise not only reduces the quality of life but can also affect the health of people who live and work in a community. The predominant sources of noise in Castro Valley are vehicular traffic and BART. Because Interstate 580 runs directly through Castro Valley, noise from traffic directly affects those parts of the community located along and upslope from the freeway. BART noise is also significant for the areas closest to the tracks. To a much lesser degree, there are noise impacts along the heavily trafficked streets – Castro Valley Boulevard, Lake Chabot Road, and Redwood Road and Center Street – that can affect nearby properties. This chapter is intended to ensure compliance with State requirements and also minimize the impacts of noise on Castro Valley residents, workers, and visitors.



I-580 is the main permanent source of noise in Castro Valley, due to high speed auto traffic, compounded by the high volume of traffic.



The BART line is another major noise source, although it only generates sound in short bursts whenever a train passes through the community.

Noise can be defined as a sound or series of sounds that are intrusive, irritating, objectionable, or otherwise disruptive to daily life. Background or ambient noise is, for the most part, the product of many distant noise sources, which together constitute a relatively stable noise background exposure. The individual contributors are usually unidentifiable. In a relatively dense suburban environment, background noise typically includes cars, trucks, horns, construction, trains, and voices. Noise levels are also affected by short duration single event noise sources such as aircraft flyovers, leaf blowers, motorcycles, barking dogs, and sirens, which are readily identifiable to the individual. When it consistently occurs at a very high volume level, background noise is called noise pollution. In addition to being intrusive and annoying, noise pollution may cause hearing loss, high blood pressure, communication interference, sleep interference, and other physiological responses.

People in residences, motels and hotels, schools, libraries, churches, hospitals, nursing homes, auditoriums, natural areas, parks and outdoor recreation areas are generally more sensitive to noise than are people in commercial and industrial establishments. Consequently, noise standards for these sensitive land uses are more stringent than for those at less sensitive uses. To protect various human activities in sensitive areas, lower noise levels are generally required.

This part of the Castro Valley Plan is intended to ensure continuing compliance with State requirements and promote a comprehensive program for achieving acceptable noise levels throughout Castro Valley.

11.1 NOISE CHARACTERISTICS AND MEASUREMENT

Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the temporary noise of construction activities, to the fairly constant noise generated by traffic on I-580 and Castro Valley Boulevard and by BART trains. The major noise source in Castro Valley is vehicle traffic. Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. The primary source of noise from automobiles is high frequency tire noise, which increases with speed. In addition, trucks and older automobiles produce engine and exhaust noise, and trucks also generate wind noise. While tire noise from autos is generally located at ground level, truck noise sources can be located as high

as ten to fifteen feet above the roadbed due to tall exhaust stacks and higher engines; sound walls are not effective for mitigating such noise unless they are very tall.

When noise levels are reported, they are expressed as a measurement over time in order to account for variations in noise exposure. A decibel (dB) is a unit of measurement that indicates the relative amplitude of a sound. The most common method of characterizing sound in California regulations is the A-weighted sound level or dBA. This scale gives greater weight to the sound frequencies to which the human ear is most sensitive. Because sensitivity to noise increases during the evening and at night, when excessive noise interferes with the ability to sleep, systems for describing environmental sound incorporate noise penalties to account for this difference. The Community Noise Equivalent Level, CNEL, is a measure of the cumulative noise exposure in a community, with a 5 dBA penalty added to evening (7:00 p.m. - 10:00 p.m.) and a 10 dBA addition to nocturnal (10:00 p.m. - 7:00 a.m.) noise levels. The Day/Night Average Sound Level, Ldn or DNL, is similar to the CNEL, with the exception that the evening time period weighting is dropped.

11.2 NOISE REGULATION

In addition to the provisions of this Plan, there are a number of other County policies and regulations applicable to noise conditions in the Castro Valley planning area. The Countywide Noise Element established interior and exterior noise average noise levels (Ldn) of 45 dBA and 55 DBA respectively for residential land uses based on Federal noise level standards. The Noise Element also references noise compatibility standards developed by the Association of Bay Area Governments, which identified a CNEL of 65 dBA or less as a basis for finding little noise impact on residential land uses, 65 to 70 dBA as a moderate impact, and any level above 70 dBA as a significant impact.¹

The County's Noise Ordinance (Chapter 6.60 of the County General Code, October 2006) implemented the Noise Element by establishing acceptable exterior noise standards for land uses that augment the requirements of the Alameda County Building Code, which establishes standards for interior noise levels consistent with the noise insulation standards in the California State Building Code, using the A weighted

¹ County of Alameda, Noise Element, adopted January 8, 1976, amended May 5, 1994

decibel scale (dBA). The Noise Ordinance allows higher levels of noise for commercial properties than for residential uses, schools, hospitals, churches, or libraries. The Building Code establishes a standard of 45 dBA inside of new residential construction and requires acoustic analysis to show that new structures have been designed so that interior noise levels attributable to exterior sources do not exceed 45 dB in any habitable room.

The County Noise Ordinance also regulates identifiable shorter duration noise sources such as the operation of audio equipment and electric or gas powered tools and noise from animals and birds. The Ordinance defines these occurrences as a Noise Disturbance if they cause frequent or continuous noise that is “plainly audible” at a distance of 50 feet from the source.

Table 11.1-1 shows the number of cumulative minutes that a particular external noise level is permitted, as well as the maximum noise allowed under the Alameda County General Code.

Table 11.1-1: Exterior Noise Standards

Cumulative Number of Minutes in any one hour time period	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Residential uses, schools, hospitals, churches, and libraries		
30	50 dBA	45 dBA
15	55 dBA	50 dBA
5	60 dBA	55 dBA
1	65 dBA	60 dBA
Maximum (0)	70 dBA	65 dBA
Commercial uses		
30	65 dBA	60 dBA
15	70 dBA	65 dBA
5	75 dBA	70 dBA
1	80 dBA	75 dBA
Maximum (0)	85 dBA	80 dBA

Source: Alameda County General Code, Chapter 6.60, Table 6.60.040B

11.3 NOISE SOURCES IN CASTRO VALLEY

The dominant sources of noise throughout the community are transportation-related. For roadways, more noise is generated as vehicle speed and weight increase, although the noise is continuous and background in nature. Interstate 580 is the main source of roadway noise in Castro Valley, although major thoroughfares with higher speeds, traffic volumes, and truck usage also generate notable levels of noise. These roadways include Castro Valley Boulevard, Lake Chabot Road (north of Strobridge Avenue and east of Interstate 580/Foothill Expressway), Grove Way (east of Center Street), and Redwood Road/"A" Street. Areas above I-580/Foothill Expressway are exposed to traffic noise levels ranging from 68 to 73 dBA at a distance of 50 feet of the roadway during the day and 59 to 69 dBA at night according to noise measurements conducted by Illingworth & Rodkin for the Eden Area General Plan in 2006. Other roadways with higher than acceptable noise levels were 158th Avenue and Lake Chabot Road near I-580. Noise levels 50 feet from the roadway measured 64 to 69 dBA on 158th Avenue and 70 to 75 dBA on Lake Chabot Road.

BART trains are another transportation feature that generates significant levels of noise, although for a short duration. In Castro Valley, the BART trains are located within the median of I-580 so these noise sources impact the same areas. Depending on meteorological conditions, residents living some distance from BART may also hear trains.

Eden Medical Center Castro Valley is the most significant noise source in the planning area that is not part of the transportation system. In addition to generating vehicle traffic, a noise source that is not regulated by the County Noise Ordinance, the noise impacts from hospital operations include loading dock activities, mechanical equipment, and flights to and from the helistop. A log of helicopter operations during a 21-month period in 2006-08 recorded 149 helicopter flights, about a third of which occurred between the hours of 7 p.m. to 7 a.m.²

² Alameda County, Draft Environmental Impact Report, Sutter Medical Center, Castro Valley, Replacement Hospital Project (SCH No. 2008052019), December 2008, Appendix E.2, Noise Appendix 2: Helicopter Operations

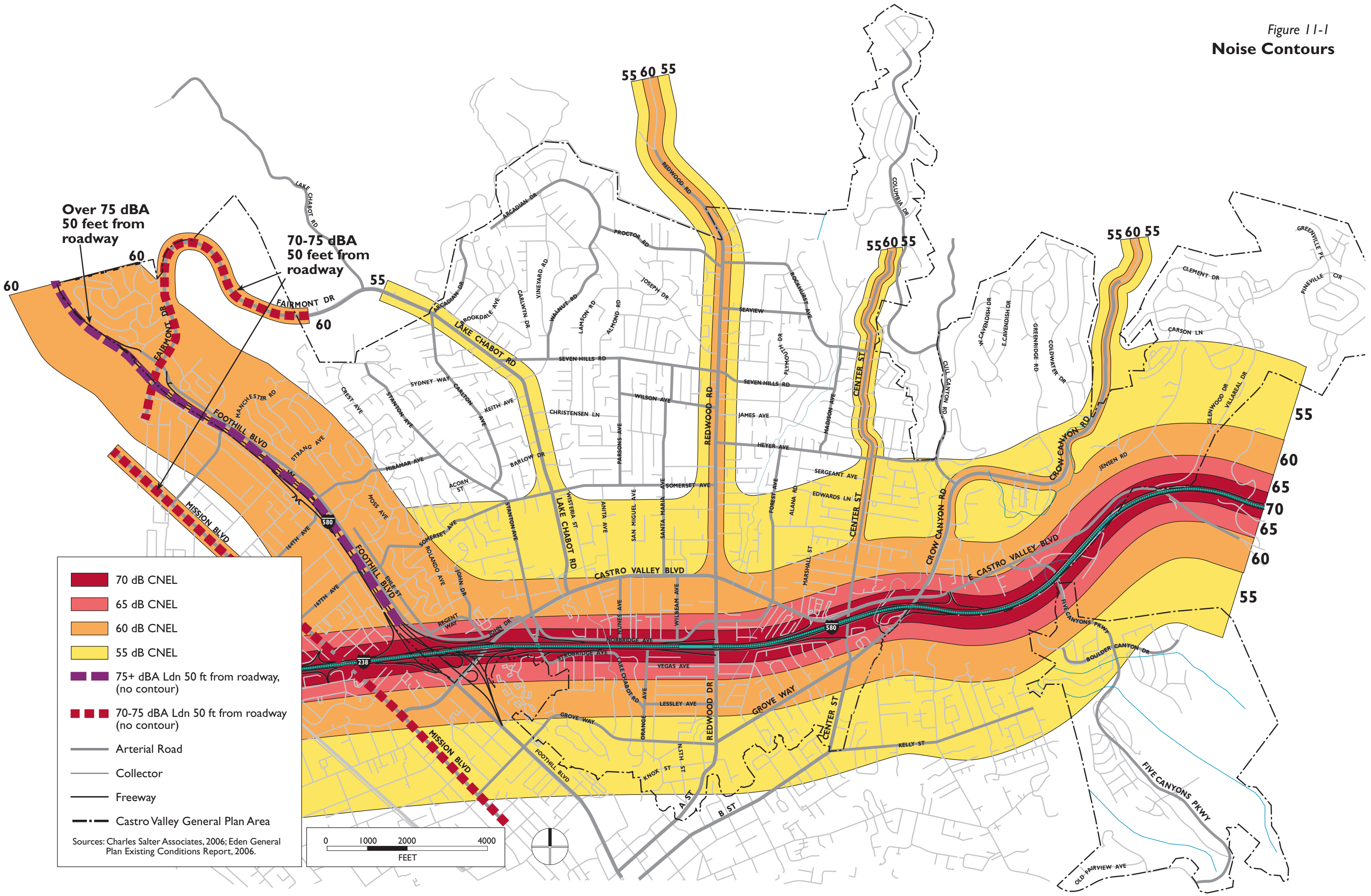
11.4 2025 PROJECTED NOISE CONDITIONS

Due to population, job growth, and economic development expected in Castro Valley under the updated General Plan, automobile traffic is anticipated to increase on the community's arterial streets. In addition, continued development near Dublin and Livermore will increase automobile traffic on I-580 and may increase the frequency of BART trains. However, increased traffic congestion may lower speeds on local roads and I-580, which would reduce noise levels. In addition, proposed infill development will increase temporary point sources of noise from construction activities. Because the Plan proposes to increase residential development closer to and within the Central Business District, it will also increase the proportion of Castro Valley's future population that would be exposed to the higher noise levels generated along the I-580 corridor.

Figure 11-1 shows the expected future levels of noise generated by Castro Valley's transportation corridors in 2025. As the map shows, noise levels above 70 dBA are only expected around I-580, with noise levels gradually dissipating to below 55 dBA about a half mile from the highway. The major surface streets in Castro Valley will generate some noise as well, with land near Lake Chabot Road experiencing up to 55 dBA and property along Redwood Road, Center Street, and Crow Canyon Road receiving up to 60 dBA in noise. The Central Business District is largely in a 60 dBA zone, because of sound from I-580 and BART operations.

Eden Medical Center will continue to generate noise that affects residential areas to the north and west but some features incorporated in the new hospital should help to reduce the impact of mechanical equipment and loading dock activities. Despite the construction of a sound wall along Stanton Avenue, the noise received by nearby residents from delivery trucks using the loading dock on the west side of the new hospital will exceed County noise standards. The Stanton Avenue sound wall and a sound barrier around the central utility yard will reduce noise from mechanical equipment to levels that meet the county's exterior noise standards. In addition to the sound barrier around the yard, enclosures will be installed around emergency generators and boilers and rooftop HVAC equipment. The new helistop, 185 feet northeast of the current location, is not expected to increase noise levels but helicopter overflights at night will continue to disturb nearby residents.

Figure 11-1
Noise Contours



NOISE GOAL

- GOAL 11.1-1** **Protect residents and workers in Castro Valley from noise that affects comfort and health. Reduce noise to within established noise limits to the maximum extent feasible; curtail the increase of noise levels in the future; and mitigate noise impacts on sensitive uses through siting and design.**

NOISE POLICIES

- Policy 11.1-1** **Siting of Noise-Sensitive Uses.** Avoid siting new noise-sensitive uses in areas with projected noise levels greater than 70 dBA. Where such uses are permitted, require incorporation of mitigation measures to ensure that interior noise levels are acceptable.
- Policy 11.1-2** **Traffic Speeds and Noise Standards.** Establish traffic speed limits at levels that will not produce noise levels that exceed established County noise standards.

NOISE ACTIONS

- Action 11.1-1** **Noise Mitigation Measures and Project Planning.** Require the incorporation of noise mitigation measures in project site planning and design to meet County noise standards, including measures such as:
- Designing and siting buildings so that openings, decks, and outdoor open space areas associated with sensitive land uses (residential, schools, hospitals, convalescent homes, parks, etc.) and noise-sensitive interior spaces are shielded from I-580, arterial roads, and other noise sources;
 - Double pane or triple pane windows; and
 - Construction of perimeter sound walls.



Require noise mitigation measures for projects near I-580.



Amend County noise regulations to allow higher noise levels in the transit-oriented development district.

Action 11.1-2

Noise Regulations for Residential Areas Near BART Stations. Amend County Noise Ordinance to accommodate noise levels only in the transit-oriented development district to allow longer periods of noise levels above 50 dBA, up to a maximum noise level of 70 dBA, for exterior areas of new residential development. Require noise mitigation to minimize outdoor noise levels and to fully achieve the standards for indoor noise.

Action 11.1-3

Mitigation Requirements for New Noise Sensitive Uses. Require that applicants for new noise-sensitive development in areas subject to noise levels that exceed County standards obtain the services of a professional acoustical engineer to provide a technical analysis and design of mitigation measures.

Action 11.1-4

Restriction of Vehicle Speeds at I-580 Entrance/Exit Points. Design any adjustments to intersections along Castro Valley Boulevard and at entrance and exit points to I-580 in such a way as to prevent vehicle speeds that would exceed County noise standards.

Action 11.1-5

Short-Term Noise Impacts of Construction. Develop standard conditions of approval applicable to all construction projects to reduce the short-term impacts of noise generated by construction equipment and traffic.

Action 11.1-6

Sound Walls. Work with Caltrans to identify appropriate locations and design of noise-reducing structures near I-580.