Chapter 6

NOISE ELEMENT

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Noise Element

I. PURPOSE & INTENT

Noise is often defined as unwanted or undesired sound. Excessive noise levels are not only a potential annoyance but can constitute a health threat, potentially resulting in temporary or permanent hearing loss and mental distress. Physical health, psychological well-being, social cohesion, property values, and economic productivity can all be affected by excessive amounts of noise. The noise environment is an integral component of the quality of life for Santa Clarita Valley residents.

The Noise Element of the Area Plan is a comprehensive program for including noise management in the planning process, providing a tool for planners to use in achieving and maintaining land uses that are compatible with existing and future environmental noise levels. The Noise Element identifies current noise conditions within the planning area, and projects future noise impacts resulting from continued growth allowed by the Land Use Element. The Element identifies noise-sensitive land uses and noise sources, and defines areas of noise impact for the purpose of developing programs to ensure that residents in the Santa Clarita Valley will be protected from excessive noise intrusion. As development proposals are reviewed in the future, the City and County will evaluate each proposal with respect to the Noise Element to ensure that noise impacts are reduced through planning and project design. Through implementation of the policies and programs of the Noise Element, current and future adverse noise impacts will be reduced or avoided in order to protect the general health, safety, and welfare of the community.

II. BACKGROUND

The issues in the Noise Element include those set forth in California Government Code Section 65302(f), which requires that the Noise Element of the Area Plan "identify and appraise noise problems in the community." Noise Elements are required to address noise generated from highways and freeways, arterials and major streets, rail operations and transit, aviation and airports, industrial plants, and other stationary noise sources. Noise contours must be shown for all these sources, and the noise contours are to be used as a guide for establishing a pattern of land uses that minimizes the exposure of residents to excessive noise. The California Office of Planning and Research has developed guidelines to assist local agencies in the development of a Noise Element. This Noise Element has been prepared in conformance with the State's General Plan Guidelines and Government Code requirements. The Element quantifies the community noise environment in terms of noise exposure contours for both near and long-term levels of growth and traffic activity.

The Noise Element is directly related to the Land Use and Circulation Elements, because traffic on highways and arterial roadways has been identified as a major source of noise that has the potential to affect sensitive land uses. Within the context of a noise analysis, sensitive land uses are those in which persons occupying the use are particularly sensitive to the effects of noise, including housing, schools, medical facilities, libraries, social care facilities, and similar facilities. The Noise Element contains policies that are intended to protect sensitive land uses from noise that exceeds recommended levels. Analysis of noise from mobile sources, including traffic on streets and highways, airport activity, and rail operations, has been completed for the Noise Element based on projected traffic volumes identified in the Circulation Element. The Noise Element is consistent with policies of the Safety Element because it contains policies and guidelines designed to protect residents from noise exceeding recommended levels. The Noise Element is also consistent with the Conservation and Open Space Element because policies in the Noise Element address noise compatibility between sensitive receptors adjacent to parks, sports and recreation uses, and entertainment centers.

The City of Santa Clarita adopted a Noise Element as part of the first comprehensive General Plan on June 25, 1991, and subsequently amended the Noise Element on May 23, 2000. The 2000 Noise Element contained guidelines for acceptable noise levels in residential, commercial, and industrial areas, along with goals and policies designed to protect residents from excessive noise levels. The City has also adopted provisions in the Municipal Code establishing noise standards for various uses and circumstances. Chapter 11.40 of the City's Municipal Code contains restrictions on "noisy street hawking and advertising." Chapter 11.44 (the City's Noise Ordinance) establishes noise limits for residential, commercial and manufacturing zones during daytime and nighttime hours, and addresses noise from machinery, construction, and amplification equipment.

The stated purpose of this code section is, in part, "to prohibit unnecessary, excessive and annoying noises from all sources," and the Ordinance contains provisions for enforcement and violations.

The Board of Supervisors adopted the first Noise Element for Los Angeles County in 1974. The County also regulates noise in Chapter 12.08 of the County Code, which sets forth acceptable exterior noise levels for noise sensitive areas and for residential, commercial, and industrial uses within the County's jurisdiction. The County's first noise control ordinance was adopted in 1977. In 2001, the County amended Title 13 of the County Code to prohibit loud, unnecessary and unusual noise that disturbs the peace or quiet of any neighborhood. In addition to these Countywide provisions, local communities throughout the County may address local noise concerns in their individual Area, Community, or Neighborhood Plans. Within unincorporated portions of the Santa Clarita Valley, noise policies will be adopted through the Santa Clarita Valley Area Plan, developed in conjunction with the *One Valley One Vision* planning effort by the City of Santa Clarita and the County of Los Angeles.

This Noise Element update was prepared in conjunction with a noise analysis and technical report prepared by Mestre Greve Associates, a noise consultant retained to assist with the element. Their final report, entitled *One Valley One Vision Noise Element of the General Plan (Technical Appendix)*, was used as the primary reference. This Technical Appendix contains detailed information on the methodology, analysis, and sources of information referenced in the Noise Element.

III. FUNDAMENTAL CONCEPTS FOR NOISE ANALYSIS

This section of the Noise Element presents background information on the characteristics of noise, in order to provide an understanding of how noise levels are measured for planning purposes.

Sound Level and Frequency

Sound is produced when an action causes air pressure to vibrate in all directions around the source, similar to waves produced in a pond when a stone is thrown into the water. When people hear sounds, they are actually detecting the changes in air pressure on their eardrums. Sound can be described technically in terms of the sound pressure (amplitude) and frequency (similar to pitch). Sound pressure is a direct measure of the magnitude of a sound without consideration for other factors that may influence its perception.

The range of sound pressures that occur in the environment is so large that it is convenient to express these pressures as sound pressure levels on a logarithmic scale, which compresses the wide range of sound pressures to a more usable range of numbers. The standard unit of measurement of sound is the decibel (dB), which describes the pressure of a sound relative to a reference pressure.

The frequency (pitch) of a sound is expressed as Hertz (Hz), or cycles per second. The normal audible frequency for young adults is 20 Hz to 20,000 Hz1.[1] Community noise, including aircraft and motor vehicles, typically ranges between 50 Hz and 5,000 Hz. The human ear is not equally sensitive to all frequencies, with some frequencies judged to be louder for a given signal than others. As a result of this, various methods of frequency weighting have been developed. The most common weighting is the A-weighted noise curve (dBA). The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear. In the A-weighted decibel, everyday sounds normally range from 30 dBA (very quiet) to 100 dBA (very loud). Most community noise analyses are based upon the A-weighted decibel scale. Examples of various sound environments, expressed in dBA, are presented in Figure N-1.

Propagation of Noise

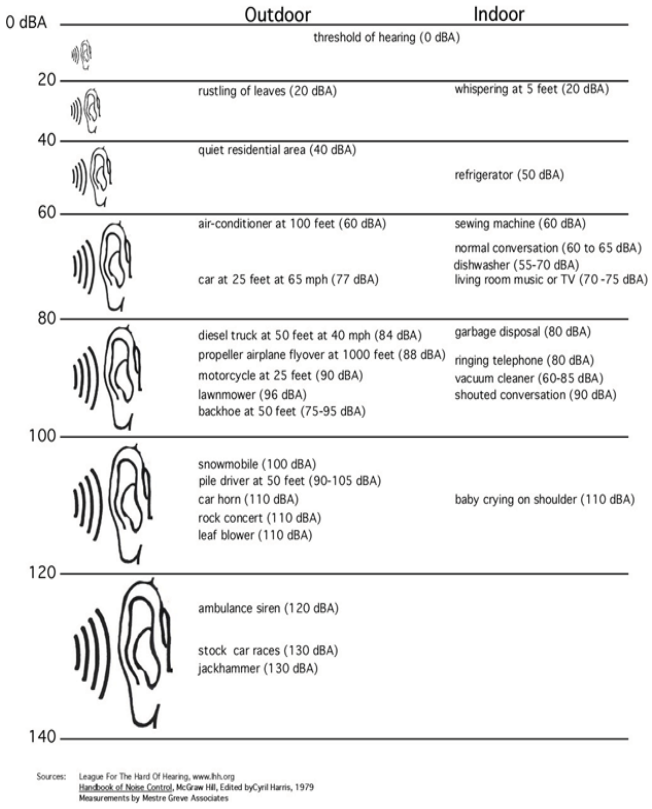
Outdoor sound levels decrease as the distance from the source increases, and as a result of wave divergence, atmospheric absorption, and ground attenuation. Sound radiating from a source in a homogeneous and undisturbed manner travels in spherical waves. As the sound wave travels away from the source, the sound energy is dispersed over a greater area, decreasing the sound power of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the sound levels received by the observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations in sound. Atmospheric absorption

1 Young adults are considered a good baseline population for measuring normal hearing, because hearing is typically at its best within this group and deteriorates with age.

becomes important at distances of greater than 1,000 feet. The degree of absorption varies depending on the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest (i.e., sound carries farther) at high humidity and high temperatures. Turbulence and gradients of wind, temperature, and humidity also play a role in determining the degree of sound attenuation. Certain conditions, such as air temperature inversions, can channel or focus the sound waves, resulting in higher noise levels than would result from simple spherical spreading. Absorption effects in the atmosphere vary with frequency, with higher frequencies more readily absorbed than lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated. More information on atmospheric conditions affecting the noise environment is included the Technical Appendix. However, for purposes of land use planning based on consideration of the effects of continuous noise sources, local weather conditions are typically not a factor in land use decisions because they are changeable and intermittent.

Figure N-1: Typical Sound Levels in A-Weighted Decibels



Duration of Sound

Annoyance from a noise event increases with increased duration of the noise event; in general, the longer the noise event lasts, the more annoying it is. The "*effective duration*" of a sound is the time between when a sound rises above the background sound level until it drops back below the background level. Psycho-acoustic studies have determined the relationship between duration and annoyance, and the amount that a sound must be reduced in order to be judged equally annoying for an increased duration. Duration is an important factor in describing sound in a community setting.

The relationship between duration and noise level is the basis of the equivalent energy principal of sound exposure. Reducing the *acoustic energy* of a sound by one half results in a 3 dB reduction. Doubling the duration of the sound increases the total energy of the event by 3 dB. This equivalent energy principal is based on the premise that the potential for a noise to impact a person is dependent on the total acoustical energy content of the noise. Defined in subsequent sections of this element, noise metrics such as CNEL, DNL, LEQ and SENEL are all based on the equal energy principle.

Change in Noise

The concept of change in ambient sound levels can be understood with an explanation of the receptor's reaction to sound. The human ear is a far better detector of relative differences in sound levels than absolute values of levels. Under controlled laboratory conditions, listening to a steady unwavering pure tone sound that can be changed to slightly different sound levels, a person can just barely detect a sound level change of approximately one decibel for sounds in the mid-frequency region. When ordinary noises are heard, a young healthy ear can detect changes of two to three decibels. A five-decibel change is readily noticeable, while a 10 decibel change is judged by most people as a doubling or a halving of the loudness of the sound. It is typical in environmental documents to consider a 3 dB change as potentially discernable.

Masking Effect

The tendency for one sound to limit a listener from hearing another sound is known as the masking effect. The presence of one sound effectively raises the threshold of audibility for the second sound. For a signal to be heard, it must exceed the threshold of hearing for that particular individual *and* exceed the masking threshold for the background noise.

The masking characteristics of sound depend on many factors, including the spectral (frequency) characteristics of the two sounds, the sound pressure levels, and the relative start time of the sounds. Masking effect is greatest when the frequencies of the two sounds are similar or when low frequency sounds mask higher frequency sounds. High frequency sounds do not easily mask low frequency sounds.

Factors Influencing Human Response to Sound

Many factors influence sound perception and annoyance. These factors include not only physical characteristics of the sound, but also secondary influences such as sociological and external factors. Molino, in the *Handbook of Noise Control*, describes human response to sound in terms of both acoustic and non-acoustic factors. These factors are summarized in Table N-1.

Table N-1: Factors Affecting Human Response to Noise

Primary Acoustic Factors	• Sound level • Frequency • Duration
Secondary Acoustic Factors	• Spectral complexity • Fluctuations in sound level • Fluctuations in frequency • Rise-time of the noise • Localization of noise source
Non-Acoustic Factors	• Physiology • Adaptation and past experience • How the listener's activity affects annoyance • Predictability of when a noise will occur • Whether the noise is necessary • Individual differences and personality

Source: C. Harris, 1979

Sound rating scales are developed in reaction to the factors affecting human response to sound. Nearly all of these factors are relevant in describing how sounds are perceived in the community. Many non-acoustic parameters play a prominent role in affecting individual response to noise. Background sound, an additional acoustic factor not specifically listed, is also important in describing sound in rural settings. Researchers have identified the effects of personal and situational variables on noise annoyance, and have identified a clear association of reported annoyance and various other individual perceptions or beliefs. Thus, it is important to recognize that non-acoustic factors as well as acoustic factors contribute to human response to noise.

Sound Rating Scales

The description, analysis, and reporting of community sound levels is made difficult by the complexity of human response to sound, and the large number of sound-rating scales and metrics developed to describe acoustic effects. Various rating scales have been developed to approximate the human subjective assessment to the "loudness" or "noisiness" of a sound. Noise metrics have also been developed to account for additional parameters such as duration of sound, and the cumulative effect of multiple noise events.

Noise metrics are categorized as single event metrics and cumulative metrics. Single event metrics describe the noise from individual events, such as one aircraft flyover. Cumulative metrics describe the noise in terms of the total noise exposure throughout the day. Noise metrics used in this study are described below.

Single Event Metrics

- **Frequency Weighted Metrics (dBA)**. In order to simplify the measurement and computation of sound loudness levels, frequency weighted networks have obtained wide acceptance. The A-weighting (dBA) scale has become the most prominent of these scales and is widely used in community noise analysis. Its advantages are that it has shown good correlation with community response and is easily measured. The metrics used in the Noise Element are all based on the dBA scale.

- **Maximum Noise Level** or **Lmax** is the highest noise level reached during a noise event. For example, as an aircraft approaches, the sound of the aircraft begins to rise above ambient noise levels. The closer the aircraft gets the louder it is, until the aircraft is at its closest point directly overhead. Then, as the aircraft passes, the noise level decreases until the sound level again settles to ambient levels. Such a history of a flyover is plotted at the top of Figure N-2. It is this metric to which people generally instantaneously respond when an aircraft flyover or a loud vehicle like a truck or motorcycle passes by.

- **Single Event Noise Exposure Level (SENEL)** or **Sound Exposure Level (SEL)** is computed from dBA sound levels, and is used to quantify the total noise associated with an event such as an aircraft overflight or a train pass-by.

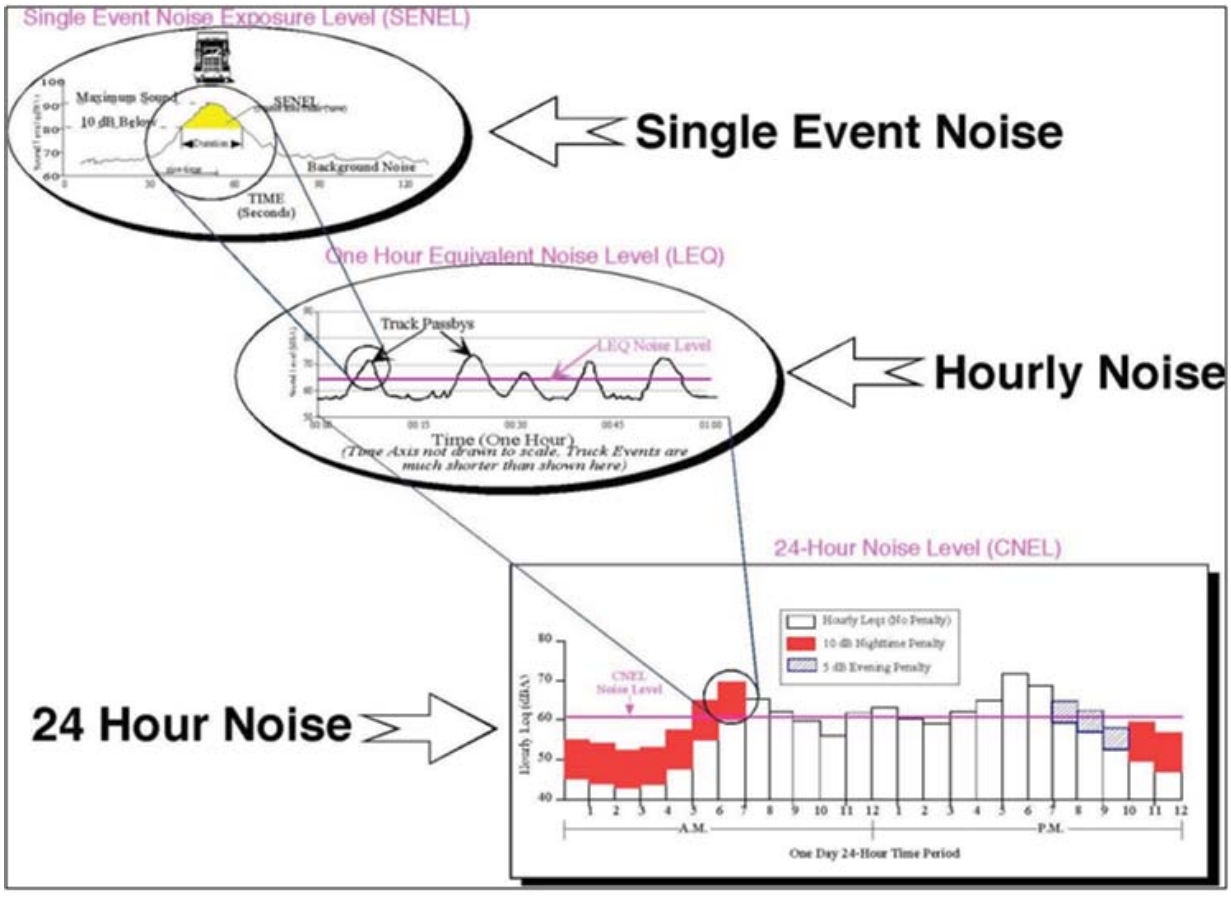
Referring again to the top of Figure N-2, the shaded area, or the area within 10 dB of the maximum noise level, is the area from which the SENEL is computed. The SENEL value is the integration of all the acoustic energy contained within the event. Speech and sleep interference research can be assessed relative to SENEL data. The SENEL metric takes into account the maximum noise level of the event and the duration of the event. Single event metrics are a convenient method for describing noise from individual aircraft events. This metric is useful in that airport noise models contain aircraft noise curve data based upon the SENEL metric. In addition, cumulative noise metrics such as LEQ, CNEL and DNL can be computed from SENEL data.

Cumulative Metrics

Cumulative noise metrics assess community response to noise by including the loudness of the noise, the duration of the noise, the total number of noise events, and the time of day these events occur into one single number rating scale.

- **Equivalent Noise Level (Leq)** is the sound level corresponding to a steady-state A-weighted sound level containing the same total energy as several SEL events during a given sample period. Leq is the "energy" average noise level during the time period of the sample. It is based on the observation that the potential for noise annoyance is dependent on the total acoustical energy content of the noise. This is graphically illustrated in the middle graph of Exhibit N-2. Leq can be measured for any time period, but is typically measured for 15 minutes, 1 hour or 24-hours. Leq for a one-hour period is used by the Federal Highway Administration for assessing highway noise impacts. Leq for one hour is called Hourly Noise Level (HNL) in the California Airport Noise Regulations and is used to develop Community Noise Equivalent Level (CNEL) values for aircraft operations.

Figure N-2: Single and Cumulative Noise Metric Definitions



Source: Mestre Greve Associates, 1998

- **Community Noise Equivalent Level**, or **CNEL** is a 24-hour, time-weighted energy average noise level based on the A-weighted decibel. It is a measure of the overall noise experienced during an entire day. The term "time-weighted" refers to the penalties attached to noise events occurring during certain sensitive time periods. In the CNEL scale, noise occurring between the hours of 7 p.m. and 10 p.m. is penalized by approximately 5 dB. This penalty accounts for the greater potential for noise to cause communication interference during these hours, as well as typically lower ambient noise levels during these hours. Noise that takes place during the night (10 p.m. to 7 a.m.) is penalized by 10 dB. This penalty was selected to attempt to account for the higher sensitivity to noise in the nighttime, and the expected further decrease in background noise levels that typically occur in the nighttime.

  CNEL is graphically illustrated at the bottom of Figure N-2. Examples of various noise environments in terms of CNEL are presented in Figure N-3. The State's General Plan Guidelines specify the use of CNEL or Ldn by local planning agencies in preparation of the General Plan Noise Element for purposes of land use compatibility planning. This Area Plan Element uses CNEL for that purpose.

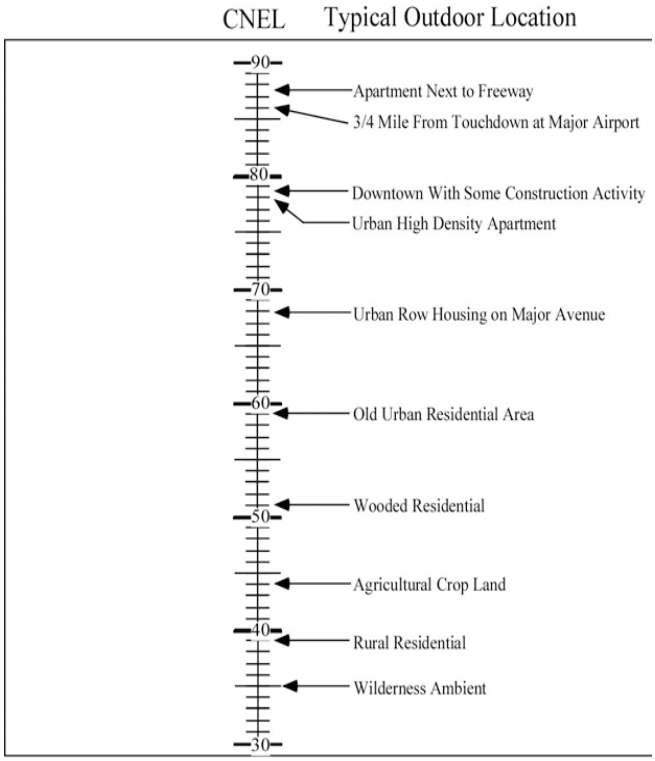
- The **Daily Noise Level (DNL)** index is very similar to CNEL, but does not include the evening (7 p.m. to 10 p.m.) penalty that is included in CNEL. It does include the nighttime (10 p.m. to 7 a.m.) penalty. Typically, DNL is about 1 dB lower than CNEL, although the difference may be greater if there is an abnormal concentration of noise events in the 7 p.m. to 10 p.m. time period. DNL is specified for use in all states except California.

- **L(%)**, **Lmax** and **Lmin** are statistical methods of describing noise which accounts for variance in noise levels throughout a given measurement period. L(%) is a way of expressing the noise level exceeded for a percentage of time in a given measurement period. For example, since five minutes is 25% of 20 minutes, L(25) is the noise level that is equal to or exceeded for five minutes in a 20-minute measurement period. It is L(%) that is used for most Noise Ordinance standards. Lmax represents the loudest noise level that is measured. The Lmax only occurs for a fraction of a second with all the other noise less than the Lmax level. Lmin represents the quietest noise level during a noise measurement. All other noise during the measurement period is louder than the Lmin.

IV. HEALTH EFFECTS OF NOISE

Noise, often described as unwanted sound, is known to have several adverse effects on humans. From these known adverse effects of noise, criteria have been established to help protect the public health and safety and prevent disruption of certain human activities. These criteria are based on effects of noise on people such as hearing loss (not a factor with typical community noise), communication interference, sleep interference, physiological responses, and annoyance. Each of these potential noise impacts on people is briefly discussed below.

Figure N-3: Examples of Typical Outdoor CNEL Levels



Source: Adapted from "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare With an Adequate Margin of Safety," EPA, 1974.

Hearing Loss

Hearing loss is generally not a concern in community noise problems, even very near a major airport or a major freeway. The potential for noise induced hearing loss is more commonly associated with occupational noise exposures in heavy industry, very noisy work environments with long term exposure, or certain very loud recreational activities such as target shooting, motorcycle or car racing. The Occupational Safety and Health Administration (OSHA) identifies a noise exposure limit of 90 dBA for eight hours per day to protect workers from hearing loss (higher limits are allowed for shorter duration exposures). Noise levels in neighborhoods, even in very noisy neighborhoods, are not sufficiently loud to cause hearing loss.

Communication Interference

Communication interference is one of the primary concerns in environmental noise problems, and includes speech interference and interference with activities such as watching television. Normal conversational speech is in the range of 60 to 65 dBA, and any noise in this range or louder may interfere with speech. There are various methods of describing speech interference as a function of distance between speaker and listener and voice level.

Sleep Interference

Sleep interference is a major noise concern in noise assessment and is most critical during nighttime hours. Sleep disturbance is one of the major causes of annoyance due to community noise. Noise can make it difficult to fall asleep, create momentary disturbances of natural sleep patterns by causing shifts from deep to lighter stages, and cause awakening. Noise may even cause awakening that a person may not be able to recall.

Extensive research has been conducted on the effect of noise on sleep disturbance, with varying results. Recommended values for desired sound levels in residential bedroom space range from 25 to 45 dBA, with 35 to 40 dBA being the norm. In 1981, the National Association of Noise Control Officials published data on the probability of sleep disturbance with various single event noise levels. Based on laboratory experiments conducted in the 1970s, this data indicated that noise exposure from a 75 dBA interior noise level event will cause noise-induced awakening in 30 percent of the cases. More information on these studies is contained in the Technical Appendix.

Physiological Responses to Noise

Physiological responses are those measurable effects of noise on people that are realized as changes in pulse rate, blood pressure, and other vital signs. While such effects can be induced and observed, the extent to which these physiological responses cause harm or are a sign of harm is unknown. Generally, physiological responses are a reaction to a loud short-term noise such as a rifle shot or a very loud jet over flight.

Health effects from noise have been studied around the world for over thirty years. Scientists have attempted to determine whether high noise levels can adversely affect human health in ways other than auditory damage, which is well documented. These research efforts have covered a broad range of potential impacts, from cardiovascular response to fetal weight and mortality. While a relationship between noise and health effects seems plausible, it has yet to be conclusively demonstrated by multiple scientific studies. Health effects from noise may also be associated with a wide variety of other environmental stressors. Isolating the effects of aircraft noise alone as a source of long-term physiological change has proved to be difficult in studies completed to date. More information on these studies is contained in the Technical Appendix.

Annoyance

Annoyance is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. Noise that one person considers tolerable can be unbearable to another of equal hearing capability. The level of annoyance depends both on the characteristics of the noise (including loudness, frequency, time, and duration), and how much activity interference (such as speech interference and sleep interference) results from the noise. However, the level of annoyance is also a function of the attitude of the receiver. Personal sensitivity to noise varies widely. It has been estimated that two to 10 percent of the population is highly susceptible to annoyance from any noise not of their own making, while approximately 20 percent are unaffected by noise. Attitudes may also be affected by the relationship between the person affected and the source of noise, and whether attempts have been made to abate the noise.

Various studies have correlated annoyance levels to CNEL levels, including a well-known analysis developed by Theodore Schultz. Schultz developed a curve that estimates the percent of a populace that can be expected to be annoyed by various DNL (CNEL in California) values for residential

land use with outdoor activity areas. At 65 dB DNL, the Schultz curve predicts approximately 14% of the exposed population reporting themselves to be "highly annoyed." At 60 dB DNL this decreases to approximately 8% of the population.

However, the Schultz curve and recent updates include data showing that some communities report much higher percentages of population highly annoyed at these noise exposure levels. A 1981 study in Orange County of communities near John Wayne Airport found that populations in some areas were approximately 5 dB CNEL more sensitive to noise than the average population predicted by the Schultz curve. While the precise reasons for this increased noise sensitivity were not identified, it is possible that non-acoustic factors, including the socio-economic status of the surveyed population, may have played a role in increasing the sensitivity of these communities during the period of the survey. Also, it should be noted that annoyance levels have never been correlated statistically to single event noise exposure levels in airport related studies. More information on these studies is contained in the Technical Appendix.

School Room Effects

Interference with classroom activities and learning from aircraft noise is an important consideration, and the subject of much recent research. Studies from around the world indicate that noise from vehicle traffic, railroads, and aircraft operations can have adverse effects on reading ability, concentration, motivation, and long term learning retention among students who are subjected to such noise.[2] A complicating factor in this research is the extent of background noise from within the classroom itself. The studies that indicated the most adverse effects examined cumulative noise levels equivalent to 65 CNEL or higher, and single event maximum noise levels ranging from 85 to 95 dBA. In other studies, the level of noise was unstated or ambiguous. According to these studies, a variety of adverse school room effects can be expected from *interior* noise levels equal to or exceeding 65 CNEL and or 85 dBA SEL. Some interference with classroom activities can be expected with noise events that interfere with speech. As discussed in other sections of this element, speech interference begins at 65 dBA, which is the level of normal conversation. Typical building design and construction materials attenuate outdoor noise by 20 dBA with windows closed, and 12 dBA with windows open. Thus, some interference of classroom activities can be expected at outdoor levels of 77 to 85 dBA.

V. ANALYSIS OF EXISTING AND FUTURE NOISE ENVIRONMENT IN THE PLANNING AREA

The Noise Element of the City of Santa Clarita General Plan, adopted in May 2000, identified roadways as the primary source of noise in the City. While traffic noise is still the major noise source in the City, other sources of noise have also become a concern. The City of Santa Clarita and County of Los Angeles retained a noise consultant, Mestre Greve Associates, to conduct a noise study for the *One Valley One Vision (OVOV)* planning effort. This study evaluated existing noise conditions throughout the planning area, and projected future noise levels based upon growth and traffic projections developed through the OVOV planning effort. This section of the element describes existing sources of noise in the Santa Clarita Valley, and the methodology used to analyze noise levels.

Methodology

Twenty sites in the OVOV planning area were selected for measurement of the existing noise environment. A review of noise complaints, discussions with City and County staff, and identification of major noise sources in the community provided the initial basis for development of the community noise survey. The measurement locations were selected on the basis of proximity to major noise sources and noise sensitivity of the land use. The measurement locations are depicted in Figure N-4.

Noise measurements were made of the short-term Leq values. These measurements provide a short 'snapshot' view of the noise environment. The noise measurements were made at an average human receptor height of about five feet above the ground. Measurements were made on August 7 and 8, 2007. The measurements were made with a Bruel & Kjaer Type 2236 Sound Level Meter, and calibrated every few hours. These noise measurement systems meet the American National Standards Institute "Type 1" specifications, which is the most accurate for community noise measurements. The meter and calibrator have current certification traceable to the National Institute of Standards and Technology (NIST).

2 For more information, see "Effects of Aircraft Noise: Research Update on Selected Topics," by Vincent Mestre, published by the Transportation Research Board of the National Academies, 2008.

Results

The results of the noise measurements for existing conditions are shown in Figures N-5a, N-5b, and N-5c. These figures also depict the date and time of the measurement. The cause of the loudest event is identified and the most predominant noise source(s) are identified. The quantities measured were the Equivalent Noise Level (Leq), the maximum noise level (Lmax) and the minimum noise levels (Lmin).

When examining the noise data shown in Exhibit N-5, it is important to note that this data is intended to identify noise levels over a broad range of the study area; it is not an assessment of impacts at these sites. The noise levels measured cover a wide range of noise exposure throughout the planning area. In almost all cases, the major sources of noise were motor vehicles. The quietest environment was in a residential area in the foothills, where noise levels were often below 50 dBA. The loudest events were generated by buses and trucks, and these events would push the noise levels into the mid 80 dBA range. In general, aircraft noise, industrial noise, and commercial noise sources did not appear to contribute significantly to the noise levels measured.

A detailed discussion of the noise measurements at each of the 20 sites is presented in the Noise Study prepared by Mestre Greve Associates in 2008.

Noise Contour Maps

Noise contour maps of the planning area were prepared to show both existing and anticipated future noise levels. The contour map of existing noise levels was based on field measurements described above. Based on this data, the consultant concluded that the noise environment in the Santa Clarita Valley is attributable primarily to roadways, which include both surface streets and freeways. The Union Pacific Railroad, which runs from the southern portion of the City to the center of the City and then directly to the east, is also a major noise source. The Agua Dulce Airport is located in the study area; however, sporadic airplane or helicopter operations that occur across the OVOV study area were not determined to be loud enough and consistent enough to be substantial noise generators.

The noise contours for the planning area are presented in Figure N-6 for existing conditions as of August, 2007, and in Figure N-7 for build-out conditions projected for the City's General Plan and the County's Area Plan. The existing contours are based on the existing conditions of traffic volumes and other sources of noise in the community derived from field measurements. The future contours represent a year 2030 scenario, based on traffic volumes estimated by a traffic study performed by Austin Foust, a traffic consultant. The traffic noise contours, including the average daily traffic, are also presented in a tabular form in the Appendix to the Noise Element.

The noise contours for arterial roadways and highways were generated using a mathematical model developed by the Federal Highway Administration ("Traffic Noise Model," Version 2.5, April 14, 2004). The Traffic Noise Model (TNM) uses traffic volume, vehicle mix, average vehicle speed, roadway geometry, and sound propagation path characteristics to predict hourly A-weighted Leq values adjacent to a road. Vehicle mix is reported in terms of the number of automobiles, medium trucks, and heavy trucks. The truck categories are defined in the TNM model by number of axles and weight. In order to compute a CNEL value for roadways, the hourly data for a 24-hour period are used according to the CNEL formula. Vehicle distribution over the 24 hour day must be known, including the percent of vehicles in the daytime period (7 a.m. to 7 p.m.), evening period (7 p.m. to 10 p.m.), and night period (10 p.m. to 7 a.m.). The mix of automobiles, medium trucks and heavy trucks has an effect on noise levels. The assumption used to model noise is based on known traffic mix data. For arterial roadways, the vehicle mix data are obtained from mix data collected by the County of Orange during extensive surveys of 53 intersections within the County. This survey is the most comprehensive conducted in Southern California, and is considered representative for the vast majority of arterial highways throughout Southern California. Caltrans conducts periodic traffic counts on freeways and publishes them on their website (www.dot.ca.gov/hq/traffops/saferesr/trafdata/). The various truck percentages reported by Caltrans were used for the projections on Interstate 5, State Route 14 and State Route 126. The traffic mix data used for the Noise Element are contained in the Noise Study prepared for the project by Mestre Greve Associates, included as the Technical Appendix.

The Southern Pacific Railroad line handles two types of trains in the Santa Clarita Valley, Metrolink commuter rail and freight. In terms of rail noise, freight is the more dominant noise source. Published train schedules were consulted in 2008 and it was determined that 24 Metrolink trains run through the Santa Clarita Valley each day. No precise numbers of daily freight train operations could be provided; however, it was estimated that up to five freight

trains pass through the planning area each day. According to the Multi-County Goods Movement Action Plan prepared for Los Angeles County in April 2008, the number of freight trains expected to use the Union Pacific rail line from Los Angeles through the Santa Clarita Valley by 2025 ranges from 27-49 trains per day. Based on this information, the model included 48 freight trains per day. Metro, which operates the Metrolink system, has also prepared an updated draft 2008 Long Range Transportation Plan (LRTP) that shows proposed rail facilities and increased operations throughout its service area. The list of projects for North Los Angeles County in the LRTP includes adding reverse commute service on the Antelope Valley line, expanding capacity on existing trains, and adding four Metrolink trains from the Santa Clarita Valley to Los Angeles. These two documents contain the most recent available data on existing and future planned rail operations in the Santa Clarita Valley, and were used to generate the existing and projected train noise contours shown on Figures N-6 and N-7.

Noise contours on the contour map exhibits represent lines of equal noise exposure, just as the contour lines on a topographic map show lines of equal elevation. The contours shown on the map are for the 60, 65 and 70 dB CNEL noise levels. These noise contour maps can be used as a guide for land use planning decisions. The 60 CNEL contour defines the Noise Referral Zone. This is the noise level for which noise considerations should be included when making land use policy decisions.

The contours presented in this report are a graphic representation of the existing and future projected noise environment. These distances to contour values are also shown in tabulated format in the Noise Element Technical Appendix. However, it should be understood when consulting these maps and tables that topography and intervening buildings or barriers have a very complex effect on the propagation of noise, because barriers deflect sound waves. The effect of topography and building placement on specific development sites was not considered when preparing the noise contour maps for the entire planning area; therefore, the contours present a worst-case projection of existing and future noise levels, and should be considered in conjunction with local conditions when evaluating specific development plans.

Projected Noise Impacts from City General Plan and County Area Plan Buildout

Because of continued growth and development allowed by the City General Plan and County Area Plan, traffic levels will change throughout the planning area in future years, and the resulting noise levels will also undergo a corresponding change. In order to evaluate the future estimated noise levels, a comparison was made between the existing noise levels and future noise levels within the OVOV planning area (i.e., cumulative noise increase), based on the anticipated growth permitted by the updated City General Plan and County Area Plan update.

Table N-2 shows the expected incremental traffic noise level increases on the primary arterial roadways that were analyzed in the OVOV traffic study. The traffic study divided up the arterial roadway network into 318 roadway links; the roadway segment numbers on Table N-2 correspond to the segment number identified by the traffic engineer. However, only those arterial roadway links on which discernable changes in noise levels are projected are included on Table N-2; roadway links with negligible change in noise levels are not listed. Also, since the traffic study did not include local and collector streets, these streets were not included in the noise model. Such streets carry substantially less traffic, with lower speed limits, than arterial streets, which reduces the noise generated.

A significance threshold of five (5) dB is often used to evaluate a change in environmental noise that occurs slowly over a long period of time. A total of 29 roadway links were identified that showed a change in noise level of 5 dB or more between the existing conditions and future build-out of the City General Plan and County Area Plan. The noise analysis also compared projected future noise levels under the OVOV planning effort with the noise levels anticipated to be generated under build-out of the City General Plan and County Area Plan that were in effect prior to the Plans updated through the OVOV effort. Table N-2 shows roadway links that will experience an increase of one (1) dB with the updated City General Plan and County Area Plan, as compared to the previously adopted City General Plan and County Area Plan. As shown by the minus signs in the fourth column of Table N-2, many roadway segments will experience decreased noise impacts under the updated City General Plan and County Area Plan, as compared with the previously adopted City General Plan and County Area Plan. The land uses listed in the fifth column of Table N-2 were based on observations from aerial photographs and on-site visits. It should be noted that the land use listed on

the table may not be the same as the zoning designation, as these are generalized land use categories rather than Area Plan designations or zones.

The Santa Clarita Valley will experience population growth in upcoming years and, as a result, noise levels will increase along many roadways. Some of the roadway links bordered by residential uses that will experience much of the noise increase include portions of Pico Canyon Road, Via Princessa, Golden Valley Road, and Lost Canyon Road. However, with development under the updated City General Plan and County Area Plan, the noise levels will go down on more roadways than will go up in comparison to the currently adopted City General Plan and County Area Plan. There are only three roadway links out of the 318 links that in the entire roadway network where the noise levels with the updated City General Plan and County Area Plan increase by one (1) dB or more, in comparison to the previously adopted City General Plan and County Area Plan. For purposes of evaluating environmental noise, a difference of three (3) dB is barely discernable. Only one roadway link, Ridge Route north of Castaic, will experience a noise increase of 3 dB in comparison to the previously adopted City General Plan and County Area Plan. This area is primarily developed and planned for commercial uses, which are not considered to be sensitive to that level of noise increase. Therefore, although the Santa Clarita Valley will experience substantial increases in traffic over existing levels and corresponding increases in traffic noise, the updated City General Plan and County Area Plan will result in slightly lower noise levels for more streets than would otherwise occur under the previously adopted City General Plan and County Area Plan.

Even for the residential areas where the noise levels are projected to increase by more than one (1) dB over existing conditions, the Noise Study determined that in most cases residences are currently protected by existing sound walls or are set back far enough from the roadway so that future noise levels generated by build-out under the updated City General Plan and County Area Plan will be consistent with the Noise and Land Use Compatibility Guidelines. Therefore, noise impacts in these areas from City General Plan and County Area Plan build out were determined to be minimal.

Noise levels were also projected for the railroad line that passes through the Santa Clarita Valley. Both Metrolink and freight trains utilize the railroad line. In future years both the operations of freight and Metrolink are expected to increase. A moderate increase in the CNEL noise level of 2.4 dB is projected to occur between existing levels and build-out of the City General Plan and County Area Plan. This level of noise increase is expected to occur with build-out under either the previously adopted City General Plan and County Area Plan or the updated City General Plan and County Area Plan. The projected 2.4 dB increase for rail-generated noise is not considered to be a substantial noise increase that would adversely affect community noise levels.

Table N-2: Projected Noise Increases Along Roadway Links in CNEL (dB) - Based on City General Plan and County Area Plan Build-out

Segment No.	Roadway Link	Cumulative Increase[3]	Change Due to OVOV[4]	Land Use
2	Agua Dulce n/o Davenport	6.4	0.0	Sparse Residential
3	Agua Dulce n/o SR-14	6.7	0.0	Open Space
4	Agua Dulce s/o SR-14	4.8	1.8	Open Space
8	Ave Stanford s/o Vanderbilt	5.3	0.8	Commercial
29	Chiquito Cyn (Long Cyn) n/o SR-126	11.0	-0.3	Open Space
41	Copper Hill e/o Haskell	5.3	-0.2	Residential
43	Davenport e/o Sierra Hwy	4.8	1.8	Commercial
53	Dockweiler w/o Sierra Hwy	6.8	-0.2	Sparse Residential
55	Franklin e/o Wolcott Way	9.0	0.0	Open Space
57	Golden Valley s/o Plum Cyn	7.8	0.0	Residential
59	Golden Valley n/o Soledad	5.0	0.0	Commercial / Industrial
68	Hasley Cyn w/o Del Valle	6.4	0.7	Open Space
72	Henry Mayo e/o Commerce Center	5.1	-0.3	Residential
77	Lake Hughes e/o Castaic	6.1	-0.7	Mixed
78	Lake Hughes e/o Ridge Route	5.4	-2.3	Commercial
84	Lost Cyn n/o Jakes Way	n/a	1.1	Residential
85	Lost Cyn n/o Canyon Park	n/a	1.1	Residential
87	Lost Cyn s/o Via Princessa	7.4	-0.4	Residential
98	Magic Mtn w/o The Old Road	7.3	0.1	Open Space
99	Magic Mtn e/o The Old Road	5.0	0.2	Office
105	Magic Mtn e/o Valencia	5.3	0.2	Mixed
128	Newhall Ranch e/o Bouquet Cyn	8.2	0.2	Mixed
143	Pico Cyn w/o Stevenson Ranch	9.9	0.0	Residential
161	Ridge Route n/o Lake Hughes	8.5	-0.1	Mixed
162	Ridge Route n/o Castaic	2.0	3.0	Commercial
172	San Martinez Grande Cyn n/o SR-126	7.0	-1.5	Open Space
233	Stevenson Ranch n/o Poe	-0.7	1.4	Open Space
238	The Old Road n/o Hillcrest	6.4	-0.3	Mixed
254	Ave. Tibbitts s/o Newhall Ranch	5.8	0.0	Commercial
262	Valencia w/o The Old Road	5.8	0.1	Residential
276	Via Princessa e/o Oak Ridge	5.7	0.0	Residential
279	Via Princessa w/o Rainbow Glen	11.3	0.7	Residential
280	Via Princessa e/o Rainbow Glen	7.6	0.5	Residential
283	Via Princessa n/o Lost Cyn	6.8	0.2	Residential
290	Wiley Cyn e/o Orchard Village	5.8	0.34	Residential
295	Wolcott n/o SR-126	7.8	0.0	Open Space

[3] "Cumulative Increase" refers to projected noise levels over existing conditions based on development allowed by the OVOV City General Plan and County Area Plan Update.

[4] "Change Due to OVOV" refers to the net increase or decrease in projected noise levels between the City General Plan and County Area Plan in effect prior to OVOV, and the OVOV update. A minus sign in this column indicates that future noise levels are projected to be less under the OVOV Plans than under the previously adopted Plans.

VI. OTHER NOISE ISSUES IN THE PLANNING AREA

In addition to traffic-generated noise impacts, several other noise-related issues were identified during preparation of the Noise Element, based on discussions with staff. Some of these additional noise issues may be addressed in local planning decisions by the City of Santa Clarita and the County of Los Angeles, as described below. With regard to other noise issues that are outside the authority of local planning agencies, the discussion below is provided for informational purposes only.

High-Speed Rail Line

A high-speed rail line is being planned by the California High-Speed Rail Authority to connect northern and southern California. The anticipated route of this railway would run from Sacramento to Los Angeles, and would likely traverse the Santa Clarita Valley in the area of the Antelope Valley Freeway (State Route 14) corridor. As the planning for this project proceeds, a separate Environmental Impact Report will be required to evaluate potential impacts of the proposed high-speed rail line, including noise. At this time, the precise route of the future high-speed rail line through the planning area is not known, and the type of train and corresponding noise levels have not been determined. Therefore, no substantive planning in regard to future noise impacts from high-speed rail can be addressed in the Noise Element at this time. However, a policy has been included in the Element that calls for the City and County to participate in the review of the high-speed rail plan documents to ensure adequate mitigation of noise and other impacts, if and when the rail project is approved.

High Density Residential Development Adjacent to Railroad

As part of the OVOV strategy to encourage Transit-Oriented Development (TOD) in the Santa Clarita Valley, higher density residential housing, and mixed-use commercial districts that may contain residential uses, are planned in proximity to portions of the railroad corridor currently used for freight and Metrolink passenger service. Most notably, this will occur in the areas where the railroad parallels Railroad Avenue and along Soledad Canyon Road, especially in the vicinity of the Soledad Metrolink Station, which is well-suited for future transit-oriented development to occur. The TOD strategy will provide residents with ready access to public transit for commuting to work and service centers that are accessible by Metrolink, thereby decreasing dependence on single-use automobile trips, and reducing vehicle emissions and vehicle-generated noise.

Developing residential uses along railroad corridors presents special challenges with respect to noise. First, constructing sound walls along railroads is often not feasible because of height restrictions. Sound walls that are constructed may provide some protection for lower residential floors, but provide little or no protection for the upper floors. Secondly, although the CNEL noise scale is the best scale to use for environmental noise, it is not the only measurement to consider when dealing with train events (and, to a similar extent, aircraft noise). Train noise is what is referred to as "single event noise". When a train passes a residence, it generates loud levels of noise for a short period of time, and then there will be no railroad noise for an extended period of time. The CNEL scale accounts for the number of trains, the time of day that they occur, and how loud the trains are; but it can be argued that the annoyance and activity disruption that is generated by the single event of a train is not fully accounted for in such CNEL measurements. For example, if a train passes by and awakens a resident, his or her main focus is on that one train and not on the other factors that go into the CNEL scale calculation. The use of CNEL (or the similar Ldn scale) for noise and land use planning is required by State code. In most instances, the use of the CNEL scale provides the best correlation with how people view the noise environment.

One of the actions the City and County can take to address potential annoyance from train noise is to require disclosure to potential buyers and renters of homes near the railroad. This notification would provide information to buyers and renters about the location and type of noise sources in the area, and the fact that there may be loud events generated by these sources. A policy has been included in this Element to address disclosure requirements for residents near the railroad.

In many cases, high-density residential and mixed uses developments contain few outdoor private areas where quiet can be anticipated. Generally, dwellings in such developments might be provided with small balcony or patio areas, but there is little expectation that the noise levels for these private outdoor areas will be low. A noise barrier, often made of glass, is the only way to provide noise protection for a small balcony area adjacent to a noise source such as a freeway or railroad. Balcony barriers are often disliked by residents because they create a "closed-in" feeling. In order

to address this issue, it is recommended that the design of high- density residential uses include one or more outdoor areas in the complex where peace and quiet can be found. Such an area may be provided in communal courtyards, or a pool area where people can sit and relax. It is important to provide noise protection for these areas. Such common outdoor areas can often be protected through site design, such as by locating buildings or parking structures between noise sources and common open space. A policy has been included in the Element to encourage site designs for multi-family and mixed-use projects that promote the inclusion of common recreational or open space areas that are protected from noise.

Mixed-Use Developments that Combine Residential and Non-Residential Uses

The City General Plan and County Area Plan Land Use Maps developed through the OVOV planning effort shows several areas that can be developed with mixed uses. In addition, the City of Santa Clarita Unified Development Code allows mixed uses in certain zone districts, with discretionary approval of a development plan. The commercial/residential interface that can occur in mixed-use developments presents special challenges in terms of noise mitigation. The primary concern is that some commercial uses may operate through the evening hours and into the nighttime hours. Clubs, theaters, late-night restaurants, and banquet facilities are some examples of commercial uses that could locate in a mixed-use area and generate noise into nighttime hours. Another characteristic of commercial areas is that the tenants in a building often change over time. For example, a bookstore that did not operate at night could be replaced by a popular restaurant where operations could extend through the evening and into nighttime hours. Because of changes in use, the noise levels that are reviewed when a development plan is approved may change over time. For these reasons, it is difficult to properly soundproof residences that are constructed in a mixed-use development.

It would be desirable to take some additional action in mixed-use developments so that residents would view the noise environment as favorable. Putting time limits on the commercial uses might be viable in some cases, but it may also deter some commercial uses from locating in or near a mixed-use development. The State requires that buildings be designed to meet a 45 CNEL indoor noise standard for multi-family residences. It would not be possible to set an indoor noise standard more restrictive than the State standard, because the State law has precedence.

Buyer and renter notification is often the only recourse in trying to improve the noise acceptability for residents in mixed-use projects. The notification should inform the potential residents that commercial uses are located nearby, that their hours of operation may change from time to time, and that the use within the commercial area, along with the noise generation potential, may also change over time. A policy has been included in this Element to encourage proper notification of residents in mixed-use developments of potential noise levels.

Agua Dulce Airport

The Agua Dulce Airport is located in the northeast quadrant of the Santa Clarita Valley, in a populated rural area under the jurisdiction of the County of Los Angeles. The airport is privately owned but is open to the public. The airport has a single 4,600 foot-long runway and serves general aviation aircraft only. There are many noise restrictions in place for flight operations. No night operations are allowed at the airport. Aircraft are not allowed to fly within 1,000 feet of the Agua Dulce Elementary School, which is located one mile southwest of the airport. If aircraft depart to the north on Runway 4, they are to avoid flying over the homes 2,000 feet northeast of the end of the runway. Finally, touch-and-go practices are not allowed at the airport. A 65 CNEL noise contour has been generated for the airport by the County of Los Angeles and is included in the Technical Appendix. The noise contour barely extends past the ends of the runway and does not impact any residences. Therefore, no significant noise effects from airport operations were identified in the Noise Study.

Six Flags Magic Mountain Theme Park

Six Flags Magic Mountain is an amusement park located in the western quadrant of the Santa Clarita Valley planning area. The park operates a large number of thrill rides including a number of roller coasters, has live entertainment, and periodically puts on firework displays. The fireworks displays occur predominantly during the summer months and at Thanksgiving and Christmas. With the exception of the display on July 4th, which typically lasts 15 minutes, the displays last between one and two minutes. All displays occur before 10:00 p.m. Fireworks are an impulsive noise source, which means, under Section 12.08.190 of the County's Noise Ordinance, that it is of short duration, usually less than one second and of high intensity, with an abrupt onset and rapid decay.

The noise levels and hours of operation around the park vary considerably depending on the time of day, the day of the week, the presence of holidays, and the season of the year. The noise levels generated by park activities can be heard for a considerable distance around the park at certain times. People buying or renting homes in the area may be surprised later when they can hear park activities. A buyer/renter notification program may be appropriate for new developments that locate in the area, and a policy has been included in the Element to encourage proper notification, where appropriate.

Special Events

Special events, such as outdoor concerts, may be held in the planning area on an irregular or regular basis. The noise levels as they impact surrounding parcels would be limited by the Los Angeles County Noise Ordinance and the Santa Clarita Noise Ordinance. The noise ordinances apply to any events that are held on private property. The City of Santa Clarita Noise Ordinance consists of Chapter 11.44 of Municipal Code. The limits contained in the ordinance would apply to any special event, with only "lawfully conducted parades" and "emergency work" exempted from the Ordinance. The Los Angeles County Noise Ordinance is contained in Chapter 12.08 of the County Code. Similar to the City of Santa Clarita Noise Ordinance, the Los Angeles County Ordinance contains specific noise limits that cannot be exceeded at the property boundary. The limits vary depending on the time of day and land uses involved. Finally, it should be noted that the noise ordinances are contained in the City or County codes, and are not part of the Noise Element of the Area Plan. Control of noise sources on private property is usually regulated through the imposition of a city or county regulation, and is not typically part of an Area Plan.

Emergency Vehicles

Noise generated by emergency vehicles is not under the control of the City or the County. Both the City and County noise ordinances exempt emergency operations from noise regulation. The State has preempted local jurisdictions from controlling noise generated by emergency equipment. The use of sirens on police vehicles, ambulances, and fire trucks cannot be controlled by the City or County. Similarly, emergency flights of helicopters and airplanes cannot be controlled by the City or County. Therefore, noise from these sources is not subject to policies in the Noise Element. However, the location of heliports and helipads is subject to zoning requirements for discretionary review, and to environmental review pursuant to the California Environmental Quality Act.

VII. PLANNING STRATEGIES TO MINIMIZE NOISE IMPACTS

The information on existing and future projected noise levels described in the previous sections of this Element has been used as a guideline for the development of policies to ensure that land uses are compatible with the noise environment. This information will also provide baseline levels and noise source identification for enforcement of local noise regulations.

The most basic planning strategy to minimize adverse impacts on new land uses due to noise is to avoid designating sensitive land uses in areas that are subject to high levels of noise. Uses such as schools, hospitals, child care, senior care, congregate care, churches, and all types of residential use should be located outside of any area anticipated to exceed acceptable noise levels as defined by the Noise and Land Use Compatibility Guidelines, or should be protected from noise through sound attenuation measures such as site and architectural design and sound walls. The State of California has adopted guidelines for acceptable noise levels in various land use categories (California Office of Planning and Research, General Plan Guidelines 2003, Appendix C). The City of Santa Clarita and the County of Los Angeles have adopted these guidelines in a modified form as a basis for planning decisions based on noise considerations. The modified guidelines are shown in Figure N-8. Modifications were made to eliminate overlap between categories in the table, in order to make the guidelines easier for applicants and decision makers to interpret and apply to planning decisions.

As described earlier in this Element, most residential uses throughout the planning area have generally been designed with adequate setbacks from noise sources such as arterial roadways, or have been protected by sound walls. This measure has already been implemented throughout the planning area and will continue to be applied in the future, based on the policies in the Element. However, future residential development next to Interstate 5 may require increased wall height for sound attenuation, based on projected traffic volumes. Excessive wall height needed for noise control is subject to both engineering and aesthetic constraints. Sound wall heights greater than 16 feet are generally considered to

be infeasible, and the appearance of walls this high may not be acceptable in rural residential areas. Therefore, a policy has been included in the Element that prohibits residential buildings within 150 feet of the Interstate 5 (I-5) centerline. The policy references the centerline because the right-of-way width for I-5 varies throughout the planning area. It should be noted that the recommendation to require a separation between freeways and residential uses for purposes of noise attenuation is in accordance with other adopted State guidelines. The California Air Resources Board (CARB) has identified airborne pollutants generated from diesel exhaust as a potential health risk to residents next to freeways, and has also adopted recommended spacing criteria for residential uses adjacent to freeways.

For uses that are not classified as noise sensitive but which may be subject to potentially significant noise impacts, site planning and design standards can be used to reduce noise impacts. Through the design and environmental review processes, mitigation measures may be applied such as buffer zones to increase separation between uses; earthen berms, walls, and other noise attenuation devices; site planning and building orientation to shield outdoor spaces; orienting windows away from noise sources; and use of acoustical building materials and double-paned windows. Policies encouraging these measures have also been included in the Element.

For uses that are subject to single event noise levels, such as noise generated by trains, mixed uses, or entertainment uses, it is recommended that adequate disclosure of these noise sources be provided to potential renters and homebuyers. A policy has been included in the Element with suggested disclosure language.

VIII. SUMMARY OF NOISE PLANNING ISSUES

Based on the existing conditions and projected growth as described in the background sections of the Noise Element, the major noise issues for the Santa Clarita Valley are summarized below. Policies and objectives in this Element have been developed to address these issues.

1. Existing and projected noise generated by traffic on freeways, highways, and arterial streets were evaluated, and noise levels should be considered in land use planning for adjacent areas.

2. Existing and projected noise generated by Metrolink and freight rail were evaluated, and noise levels should be considered in land use planning for areas adjacent to the railroad.

3. Residential neighborhoods and other noise sensitive land uses should be protected from excessive noise.

4. Potential noise impacts from any future high-speed rail project should be evaluated and mitigated through the appropriate environmental review process.

5. Proposed new development projects should be reviewed to ensure that noise impacts are mitigated to acceptable levels.

6. Coordination with other agencies should be ongoing to ensure that noise impacts from freeway projects and other public improvements are mitigated.

7. Compatibility of land uses in mixed-use developments with respect to noise should be considered in future land use decisions.

8. Adequate disclosure should be required to residents who may be affected by possible noise sources that cannot be abated.

9. Consistency between the City of Santa Clarita and the County of Los Angeles with respect to the Noise and Land Use Compatibility Guidelines contained in Figure N-8 is intended to maintain a safe and healthy noise environment for all Santa Clarita Valley residents.

IX. GOALS, OBJECTIVES, AND POLICIES

The goals, objectives, and policies which apply to noise are:

Goal N-1: Noise Environment

A healthy and safe noise environment for Santa Clarita Valley residents, employees, and visitors.

Objective N-1.1

Protect the health and safety of the residents of the Santa Clarita Valley by the elimination, mitigation, and prevention of significant existing and future noise levels.

- **Policy N-1.1.1:** Use the Noise and Land Use Compatibility Guidelines contained in Figure N-8, which are consistent with State guidelines, as a policy basis for decisions on land use and development proposals related to noise.
- **Policy N-1.1.2:** Continue to implement the adopted Noise Ordinance and other applicable code provisions, consistent with state and federal standards, which establish noise impact thresholds for noise abatement and attenuation, in order to reduce potential health hazards associated with high noise levels.
- **Policy N-1.1.3:** Include consideration of potential noise impacts in land use planning and development review decisions.
- **Policy N-1.1.4:** Control noise sources adjacent to residential, recreational, and community facilities, and those land uses classified as noise sensitive.
- **Policy N-1.1.5:** Monitor and update data and information regarding current and projected noise levels in the planning area.
- **Policy N-1.1.6:** Provide development review comments on projects proposed by other agencies and special districts that may generate noise impacts affecting land uses within the Santa Clarita Valley, including any freeway and high-speed rail projects.

Goal N-2 : Reduction of Noise from Traffic

Protect residents and sensitive receptors from traffic-generated noise.

Objective N-2.1

Prevent and mitigate adverse effects of noise generated from traffic on arterial streets and highways through implementing noise reduction standards and programs.

- **Policy N-2.1.1:** Encourage owners of existing noise-sensitive uses, and require owners of proposed noise sensitive land uses, to construct sound barriers to protect users from significant noise levels, where feasible and appropriate.
- **Policy N-2.1.2:** Encourage the use of noise absorbing barriers, where appropriate.
- **Policy N-2.1.3:** Where appropriate, coordinate with the California Department of Transportation (Caltrans) to ensure that sound walls or other noise barriers are constructed along Interstate 5 and State Route 14 in the immediate vicinity of residential and other noise sensitive developments, where setbacks and other sound alleviation devices do not exist.
- **Policy N-2.1.4:** Reduce significant noise levels related to through-traffic in residential areas by promoting subdivision circulation designs to contain a hierarchy of streets which efficiently direct traffic to highways.
- **Policy N-2.1.5:** Encourage employers to develop van pool and other travel demand management programs to reduce vehicle trip-generated noise in the planning area.
- **Policy N-2.1.6:** Work with the City of Santa Clarita Transit to improve and expand current public transit services and routes to reduce vehicle trips and resulting noise levels.
- **Policy N-2.1.7:** Require vehicle owners to properly maintain their equipment to avoid generating excessive noise levels.

Goal N-3: Residential Neighborhoods

Protect residential neighborhoods from excessive noise.

Objective N-3.1

Prevent and mitigate significant noise levels in residential neighborhoods.

- **Policy N-3.1.1:** Require that developers of new single-family and multi-family residential neighborhoods in areas where the ambient noise levels exceed 60 CNEL provide mitiga-

tion measures for the new residences to reduce interior noise levels to 45 CNEL, based on future traffic and railroad noise levels.

- **Policy N-3.1.2:** Require that developers of new single-family and multi-family residential neighborhoods in areas where the projected noise levels exceed 65 CNEL provide mitigation measures (which may include noise barriers, setbacks, and site design) for new residences to reduce outdoor noise levels to 65 CNEL, based on future traffic conditions. This requirement would apply to rear yard areas for single-family developments, and to private open space and common recreational and open space areas for multi-family developments.

- **Policy N-3.1.3:** Through enforcement of the applicable Noise Ordinance, protect residential neighborhoods from noise generated by machinery or activities that produce significant discernable noise exceeding recommended levels for residential uses.

- **Policy N-3.1.4:** Require that those responsible for construction activities develop techniques to mitigate or minimize the noise impacts on residences, and adopt standards that regulate noise from construction activities that occur in or near residential neighborhoods.

- **Policy N-3.1.5:** Require that developers of private schools, childcare centers, senior housing, and other noise sensitive uses in areas where the ambient noise level exceeds 65 dBA (day), provide mitigation measures for these uses to reduce interior noise to acceptable levels.

- **Policy N-3.1.6:** Ensure that new residential buildings shall not be located within 150 feet of the centerline for Interstate 5.

- **Policy N-3.1.7:** Ensure that design of parks, recreational facilities, and schools minimize noise impacts to residential neighborhoods.

- **Policy N-3.1.8:** As a condition of issuing permits for special events, require event promoters to mitigate noise impacts to adjacent sensitive uses through limiting hours of operation and other means as appropriate, which may include notification to affected residents.

- **Policy N-3.1.9:** Implement a buyer and renter notification program for new residential developments where appropriate, to educate and inform potential buyers and renters of the sources of noise in the area and/or new sources of noise that may occur in the future. As determined by the reviewing authority, notification may be appropriate in the following areas:

  a. Within one mile of Six Flags Magic Mountain theme park, potential buyers and renters should receive notice that noise may occasionally be generated from this facility and that the frequency and loudness of noise events may change over time.

  b. Within 1,000 feet of the railroad, potential buyers and renters should receive notice that noise may occasionally be generated from this facility and that the frequency and loudness of noise events may change over time.

  c. Within 200 feet of commercial uses in mixed-use developments, potential buyers and renters should receive notice that the commercial uses within the mixed-use developments may generate noise in excess of levels typically found in residential areas, that the commercial uses may change over time, and the associated noise levels and frequency of noise events may change along with the use.

  d. Within 1,000 feet of the Saugus Speedway, in the event speedway operations are resumed in the future.

Goal N-4: Commercial and Industrial Noise

Protection of sensitive uses from commercial and industrial noise generators.

Objective N-4.1

Prevent, mitigate, and minimize noise spillover from commercial and industrial uses into adjacent residential neighborhoods and other noise sensitive uses.

- **Policy N-4.1.1:** Implement and enforce the applicable Noise Ordinance to control noise from commercial and industrial sources that may adversely impact adjacent residential neighborhoods and other sensitive uses.

- **Policy N-4.1.2:** Require appropriate noise buffering between commercial or industrial uses and residential neighborhoods and other sensitive uses.

- **Policy N-4.1.3:** Adopt and enforce standards for the control of noise from commercial and entertainment establishments when adjacent to residential neighborhoods and other sensitive uses.

X. IMPLEMENTATION OF THE NOISE ELEMENT

The County of Los Angeles will implement the goals, objectives and policies of the Noise Element of the Santa Clarita Valley Area Plan through the following actions:

- **Action 1:** On the Land Use Map, designate areas that are subject to noise for appropriate land uses, in order to reduce exposure of persons and property to hazardous conditions.

- **Action 2:** Implement the noise provisions of the County Code.

- **Action 3:** As part of the review process for new discretionary development applications, require consistency with the goals and policies of the Noise Element, including the guidelines for land use and noise compatibility, through requiring detailed noise analysis and mitigation of interior and exterior noise levels for residential and other sensitive uses, where appropriate.

- **Action 4:** Review and provide input on projects undertaken by other agencies, including Caltrans and high speed rail projects, which may affect the noise environment to ensure that acceptable noise levels are maintained to protect residents.

- **Action 5:** In the design of County facilities that have the potential to generate noise, such as parks, outdoor concert or sports venues, or transit facilities, ensure that noise impacts are mitigated to protect adjacent sensitive land uses.

- **Action 6:** During construction within public right-of-way for road widening or other improvements, control noise impacts on adjacent sensitive uses through hours of operation, noise reduction requirements on equipment, and other appropriate measures.

- **Action 7:** Through code enforcement, monitor noise conditions throughout the unincorporated portions of the Santa Clarita Valley, and enforce noise regulations, as needed, to protect public safety and welfare.

- **Action 8:** Ensure compliance with building standards for noise attenuation, such as insulation and window types, through plan review and inspection procedures on all new construction, pursuant to adopted codes and ordinances.

- **Action 9:** Review any proposed Area Plan Amendments to ensure compliance with applicable goals and policies of the Noise Element; coordinate this review with the City of Santa Clarita, as appropriate.

- **Action 10:** Monitor the effectiveness of the Noise Element in achieving the goals of protecting property, public health, and safety; initiate amendments thereto as needed to meet changing conditions, needs, and policies, coordinating such amendments with the City of Santa Clarita, as appropriate.

- **Action 11:** Work with owners of commercial and industrial uses to encourage businesses to limit employee exposure to loud noise, and to reduce noise spillover onto adjacent businesses and properties.

- **Action 12:** Require the provision of disclosures to potential renters and buyers of residences in areas subject to noise events, where appropriate.

- **Action 13:** Control noise from special events through conditions of approval and enforcement.

- **Action 14:** Where feasible, assist or cooperate in the building of sound walls to mitigate noise impacts on sensitive land uses.