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## 3.6 - Noise

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### 3.6.1 - Summary

This section discusses the existing and projected future noise environment in the proposed incorporation area. The major noise sources in the proposed incorporation area consist of traffic on highways and local streets; railroad and aircraft movements; commercial and industrial uses; and active recreation areas of parks and outdoor play areas of schools. These noise sources are discussed individually below.

### 3.6.2 - Environmental Setting

#### Fundamentals of Sound and Environmental Noise

##### *Introduction*

Sound can be described in terms of amplitude (loudness) and frequency (pitch). The standard unit of sound amplitude measurement is the decibel (dB). The decibel scale is a logarithmic scale that describes the intensity of the pressure vibrations that make up a sound. The pitch of the sound is correlated to the frequency of the sound's pressure vibration. Because humans are not equally sensitive to a given sound level at all frequencies, a special scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) does this by placing more importance on frequencies that are more noticeable to the human ear.

Noise is typically defined as unwanted sound. A typical noise environment consists of a base of steady "background" noise that is made up of many distant and indistinguishable noise sources. Superimposed on this background noise is the sound from individual local sources. These can vary from an occasional aircraft or train passing by to virtually continuous noise from, for example, traffic on a major highway. Table 3.6-1 lists representative noise levels for typical sources of environmental noise.

##### *Noise Exposure and Community Noise*

An individual's noise exposure is a measure of noise over a period of time. A noise level is a measure of noise at a given instant in time. The noise levels presented in Table 3.6-1 are representative of measured noise at a given instant in time; however, they rarely persist consistently over a long period of time. Rather, community noise varies continuously over a period of time with respect to the contributing sound sources of the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and corresponding atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short duration single event noise sources (e.g., aircraft flyovers, motor vehicles, sirens, etc.), which are readily identifiable to the individual.

**Table 3.6-1: Representative Environmental Noise Levels**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
Quiet Rural Area during Nighttime		Bedroom at Night, Concert Hall (background)
	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: Caltrans, 1998.

These successive additions of sound to the community noise environment vary the community noise level from instant to instant, requiring the measurement of noise exposure over a period of time to legitimately characterize a community noise environment and evaluate cumulative noise impacts. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon people is largely dependent upon the volume of the noise, as well as the time of day when the noise occurs. Several rating scales have been developed to analyze the adverse effect of noise on people. Since environmental noise fluctuates over time, these scales consider that the effect of noise upon

people is largely dependent upon the volume of the noise, as well as the time of day when the noise occurs. Those that are applicable to this analysis are as follows:

- $L_{eq}$ : The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The  $L_{eq}$  is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- $L_{dn}$ : the Day Night Average Level is a 24-hour average  $L_{eq}$  with a 10-dBA “weighting” added to noise during the hours of 10:00 p.m. to 7:00 a.m. to account for noise sensitivity in the nighttime.
- $L_{max}$ : The instantaneous maximum noise level for a specified period of time.
- $L_{min}$ : The minimum noise level experienced during a given period of time.
- $L_{50}$ : The noise level that is equaled or exceeded 50 percent of the specified time period. The  $L_{50}$  represents the median sound level.
- DNL: 24-hour day and night, A-weighted noise exposure level, which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dBA to take into account the greater annoyance of nighttime noises.
- CNEL: Similar to the DNL, the Community Noise Equivalent Level (CNEL) adds a 5-dBA “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dBA penalty between the hours of 10:00 p.m. and 7:00 a.m.

Noise caused by natural sources and human activities is usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the  $L_{eq}$  is below 60-dBA, moderate in the 60- to 70-dBA range, and high above 70-dBA. Examples of settings with low daytime background noise levels are isolated, natural settings that can produce noise levels as low as 20 dBA and quiet, suburban, residential streets that can produce noise levels around 40 dBA. Noise levels above 45-dBA at night can disrupt sleep. Examples of moderate-level noise settings are urban residential or semi-commercial areas (typically 55- to 60-dBA) and commercial locations (typically 60 dBA). People may consider louder environments adverse, but most people living or working in urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA) accept the higher noise levels commonly associated with these land uses.

### **Effects of Noise on People**

The effects of noise on people can be placed into three categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise in the last category. There is no complete, satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise.

Thus, an important way of predicting a human reaction to a new noise environment is the way it compares with the existing environment to which one has adapted: the so-called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. In describing increases in A-weighted noise level, the following relationships occur:

- Except in carefully controlled laboratory experiments, a change of 1-dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected.
- A 10-dBA change is subjectively heard as approximately a doubling in loudness, and can cause adverse response.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. The human ear perceives sound in a non-linear fashion; hence, the decibel scale was developed. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple additive fashion; rather, they combine logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

### **Noise Attenuation**

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6.0 to 7.5 dBA per doubling of distance from the source, depending on environmental conditions (such as atmospheric conditions and noise barriers, either vegetative or manufactured). Widely distributed noise, such as a large industrial facility spread over many acres or a street with moving vehicles, would typically attenuate at a lower rate, approximately 4.0 to 6.0 dBA.

Other factors such as the weather or the shielding of a receptor from a noise source can help intensify or reduce the noise level at any given location. For roadway noise, a commonly used rule of thumb is that for every doubling of distance from the source, the noise level is reduced by about 3.0 dBA at

acoustically “hard” locations (i.e., the area between the noise source and the receptor is almost completely composed of asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically “soft” locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6.0 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5.0 dBA, while a solid wall or berm reduces noise levels by 5.0 to 10.0 dBA. The manner in which older homes in California were constructed generally provides a reduction of exterior-to-interior noise levels of about 20.0 to 25.0 dBA with closed windows. The exterior-to-interior reduction of newer residential units is generally 30.0 dBA or more.

### **Sources of Noise**

Land uses within the proposed incorporation area include a range of residential, commercial, institutional, industrial, recreational, and open space areas. The major noise sources in the proposed incorporation area consist of traffic on highways and local streets, railroad and aircraft movements, commercial and industrial uses, and active recreation areas of parks and outdoor play areas of schools. These noise sources are discussed individually below.

#### ***Transportation Noise Sources***

##### ***Highways***

Business 80 (also known as the Capital City Freeway) abuts the northwestern edge of the proposed incorporation area. The Sacramento County Noise Element Background Report (County of Sacramento 2007) provides 24-hour noise levels for various segments of Business 80 and other roads throughout Sacramento County. Noise levels modeled for these roadways provide estimates of the highest traffic volumes using the Federal Highway Administration Highway Noise Prediction Model (FHWA-RD-77-108). The calculated noise levels for roadways within the proposed incorporation area at 100 feet are presented in Table 3.6-2 along with the distances to various noise level contours. Freeways and major surface streets were the greatest sources of traffic noise. Table 3.6-2 shows that Business 80 had an  $L_{dn}$  of 74.7 dBA at 100 feet. Additionally, it was shown that an  $L_{dn}$  of 70.0 dBA would not be reached until the receptor was 206 feet away from roadway centerline; and  $L_{dn}$  of 65.0 dBA would not occur until 445 feet; 60.0 dBA at 958 feet; and not until 2,063 feet would the  $L_{dn}$  of 55.0 dBA be reached.

##### ***Arterial Roadways***

The proposed incorporation area contains several arterial roadways (see Section 3.10, Traffic/Transportation) that were modeled in support of the Sacramento County Noise Element Background Report (County of Sacramento 2007). Table 3.6-2 presents the ambient noise data for

Table 3.6-2: Traffic Noise Levels and Noise Contours

Roadway, Segment	Lanes	Median Width (feet)	Average Daily Traffic Volume	Design Speed (mph)	Distance from Centerline of Roadway				
					L <sub>dn</sub> at 100 feet	Distance to Contour (feet)			
						70 L <sub>dn</sub>	65 L <sub>dn</sub>	60 L <sub>dn</sub>	55 L <sub>dn</sub>
Business 80, I-80 Split/Howe	6	10	144,000	55	74.7	206	445	958	2,063
Howe Ave, Fair Oaks/Hurley	6	0	65,538	40	67.9	72	155	334	720
Watt Ave, I-80/US-50	6	0	61,775	40	67.6	69	149	321	692
Fair Oaks Blvd, Watt/Eastern	4	0	44,370	40	66.0	54	116	250	538
Howe Ave, Hurley/Arden	6	0	38,487	40	65.6	—	109	234	505
Fair Oaks Blvd, Howe/Munroe	6	0	39,030	40	65.6	—	110	237	510
Arden Way, Howe/Watt	4	0	33,295	40	64.7	44	96	206	445
Fair Oaks Blvd, Eastern/Manzanita	4	0	32,783	40	64.7	44	95	204	440
Fulton Ave	4	0	32,382	40	64.6	—	94	203	436
Fair Oaks Blvd, Munroe/Watt	4	0	31,251	40	64.4	—	92	198	426
Marconi Ave, Howe/Fair Oaks	4	0	27,807	40	63.9	—	85	183	394
El Camino Ave, Howe/Watt	4	0	27,201	40	63.8	—	84	180	389
El Camino Ave, Watt/Walnut	4	0	22,706	40	63.1	—	74	160	345
Arden Way, Watt/Eastern	4	0	21,086	40	62.7	—	71	152	328
Alta Arden Expressway	4	0	20,033	40	62.5	—	68	147	317
Auburn Blvd, Fulton/Watt	2	0	14,545	40	61.0	—	54	117	252
Howe Ave, Arden/Auburn	4	0	6,861	40	57.9	—	—	72	155
Auburn Blvd, Howe/Fulton	2	0	2,947	40	54.1	—	—	40	87

Notes:  
 “—” = contour is located within the roadway right-of-way  
 Source: Sacramento County 2007

each of these roadways. The same 24-hour traffic distribution was assumed, and each of the roadways had no median and a design speed of 40 miles per hour. The loudest arterials were the roadways containing six lanes and/or an average daily traffic (ADT) of more than 35,000 and include Fair Oaks Boulevard, Watt Avenue, Howe Avenue, and Arden Way.

**Railroads**

*Freight and Passenger Heavy Rail*

The heavy rail operators within the County consist of the Union Pacific Railroad (UPRR), Burlington Northern Santa Fe (BNSF), and Amtrak. The UPRR is located approximately 1,000 feet northwest of the proposed incorporation area. Because the numbers of daily operations on the heavy rail tracks has varied considerably in recent years (between 20 and 40 trains per day), the County General Plan Background Report provides distances to the 65-dBA L<sub>dn</sub> contour for a range of railroad operations. The results are reported in Table 3.6-3 and, as shown, the proposed incorporation area is outside the 65-dBA L<sub>dn</sub> contour.

**Table 3.6-3: Estimated Daily Operations and Distances to Railroad Noise Contours**

Daily Operations	Distance to 65-dBA L <sub>dn</sub> (feet)	
	Without Horn	With Horn
20	217	467
25	252	542
30	284	612
35	315	679
40	344	742

Source: Sacramento County 2007

*Light Rail*

The unincorporated portion of Sacramento County is served by Regional Transit Light Rail along the Folsom Boulevard/Highway 50 corridor between the City of Rancho Cordova and Folsom, and along the Auburn Boulevard corridor between the City of Sacramento and Watt Avenue, with future service proposed to Sacramento International Airport and to Elk Grove. The Light Rail does not pass through the proposed incorporation area.

*Airports*

The McClellan Park, formerly McClellan Air Force Base, is located approximately 1.25 miles north of the proposed incorporation area’s northern boundary. The McClellan Air Force Base Comprehensive Land Use Plan (CLUP) was developed to govern the relationship between the airport and the land uses that surrounding it. The CLUP defines policies and guidelines intended to safeguard the general welfare of populations near the airport by protecting them from adverse effects of aircraft noise. Figure 12 of the CLUP shows the noise contours adopted for McClellan Air Force

Base. Areas within the airport's 65 dB CNEL noise contour are considered incompatible with the following land uses: single-family dwellings, multi-family dwellings, trailer parks, and schools of standard construction. Within the proposed incorporation area, the airport's 65-dB CNEL includes the majority of the area north of El Camino Avenue and west of Watt Avenue. It is recognized by the Sacramento County General Plan that some areas within the 65-dB CNEL noise contour are substantially developed; however, these long-standing developments are considered to be "legal nonconforming" uses. Furthermore, the Sacramento County General Plan establishes criteria indented to resolve compatibility for infill projects that are technically inconsistent with the CLUP but similar to existing land use.

### **Stationary Noise Sources**

The production of stationary noise is a result of many processes and activities, even when the best available noise control technology is applied. Noise exposures within industrial facilities are controlled by federal and state employee health and safety regulations (OSHA), but exterior noise levels may exceed locally acceptable standards. Commercial, recreational and public service facility activities can also produce noise that affects adjacent sensitive land uses.

From a land use planning perspective, fixed-source noise control focuses on two goals: to prevent the introduction of new noise-producing uses in noise-sensitive areas, and to prevent encroachment of new noise-sensitive uses upon existing noise-producing facilities. The first goal can be achieved by applying noise performance standards to proposed new noise-producing uses. The second goal can be met by requiring that new noise-sensitive uses close to noise-producing facilities include mitigation measures to ensure compliance with those noise performance standards. Descriptions of existing representative fixed noise sources in the proposed incorporation area are provided below. These uses are intended to be representative of the relative noise generation of such uses, and are intended to identify specific noise sources, which should be considered in the review of development proposals. Site-specific noise analyses should be performed where noise-sensitive land uses are proposed close to these (or similar) noise sources, or where similar sources are proposed to be located near existing noise-sensitive land uses.

### **General Service Commercial and Light Industrial Uses**

Noise sources associated with general service commercial uses such as automotive repair facilities, wrecking yards, tire installation centers, car washes, loading docks, etc. are found at various locations within the proposed incorporation area. Noises produced by these types of uses are dependent on many factors and, therefore, are difficult to quantify precisely. Nonetheless, noise generated by these uses contribute to the ambient noise environment in the immediate vicinity of these uses, and should be considered where either new noise-sensitive uses are proposed nearby or where similar uses are proposed in existing residential areas.



### *Parks and School Playing Fields*

There are several parks and schools throughout the proposed incorporation area. Noise generated by these uses depends on the age and number of people utilizing the facility at a given time, and the types of activities they are engaged in. School playing field activities tend to generate more noise than those of neighborhood parks, as the intensity of school playing field usage tends to be higher. At a distance of 100 feet from an elementary school playing field being used by 100 students, average and maximum noise levels of 60.0 and 75.0 dBA, respectively, can be expected. At organized events such as high school football games with large crowds and public address systems, the noise generation is often significantly higher. As with general service commercial uses, the noise generation of parks and school playing fields is variable.

### *Organized Outdoor Activities*

Organized outdoor activities, such as softball and soccer games, produce unacceptable noise levels in residential areas. Parks containing facilities for such activities are located throughout the proposed incorporation area. Crowd noise from softball games has been measured at up to 70.0 dBA at 350 feet from the bleachers. Area residents may complain about crowd noise, particularly if the event persists beyond 10 p.m. In general, organized outdoor activities should be evaluated to determine whether crowd noise will exceed acceptable noise levels at adjacent residential uses, and such activities should be regulated as appropriate.

### *Car Washes*

Several commercial car washes are located throughout the proposed incorporation area. Noise is generated at car wash facilities by high-pressure water nozzles, automated washing equipment, vacuums, and large blow dryers. Noise measurements of various car wash facilities indicate typical noise average noise levels of 70.0 to 80.0 dBA at a distance of 50 feet from the wash tunnels are common. The principal noise source identified for car washes are the blowers used for drying the vehicles.

### *Public Address Systems*

Public address (PA) systems at businesses such as automobile dealerships, auction yards, industrial facilities, and recreational areas are considered potentially significant noise sources in the proposed incorporation area. Noise levels produced by public address systems are a function of voice level, volume setting, amplifier power, shielding, wind direction, and other atmospheric effects. According to Sacramento County's Division of Environmental Health staff, PA system noise levels of 55.0 to 60.0 dBA have prompted complaints from nearby residents in the past. The use of public address systems near noise-sensitive developments is thus a concern. The Sacramento County noise control ordinance currently regulates noise from public address systems.

### *Automotive Repair Facilities*

There are many automotive repair facilities in the proposed incorporation area providing a variety of services. Typically, the most significant noise levels are generated by pneumatic tools. Noise

measurement data collected at various locations indicate that a typical impact wrench produces a maximum noise level of 73.3-dBA at a distance of 50 feet.

#### *Shopping Center Loading Docks*

Shopping centers and grocery stores are often located near residential developments, and loading dock activities usually involve heavy trucks and forklifts. Loading dock activities commonly take place in the early morning hours involving several medium and heavy trucks at a time. Recent noise measurements of loading dock activities at several locations in Sacramento County resulted in maximum truck passage noise levels ranging from 69.0 to 74.0 dBA at a distance of 100 feet. Smaller delivery trucks produced maximum levels of 67.0 dBA at 50 feet. Maximum forklift noise levels ranged from 60.0 to 70.0 dBA at 100 feet.

#### *Childcare Centers*

Childcare centers are potentially significant noise sources in the proposed incorporation area, and have generated public concern and complaints at some locations. Children using the outdoor play areas of day care centers often speak in elevated voices, or shout to be heard and/or recognized. The noise produced by equipment used at outdoor play areas, such as swings, slides, etc., is not usually significant relative to the noise generated by the children. Noise measurements of childcare facilities indicate average noise levels of 55.0 to 60.0 dBA at a distance of 50 feet from the play areas with seven children playing. With 20 and 40 children playing, average noise levels are predicted to be 60.0 and 63.0 dBA, respectively, at a distance of 50 feet.

#### *Heating, Ventilating and Air Conditioning (HVAC) Systems*

HVAC noise sources include fans, pumps, cooling towers, compressors, condensers, and boilers. HVAC equipment is associated with virtually every type of inhabited structure, including residential, commercial, and industrial uses. Large HVAC components are often housed in mechanical equipment rooms that reduce the transmitted noise. However, HVAC equipment must sometimes be located outdoors to provide adequate ventilation or heat exchange.

#### ***Sensitive Receptors***

Various standards have been promulgated to address the compatibility of land uses and noise levels in Sacramento County. The applicable standards are presented below in Section 3.6.3, Regulatory Framework. Special emphasis is placed on land uses that are considered to be sensitive to high noise levels.

Sensitive noise receptors typically include residences, schools, childcare centers, hospitals, long-term health care facilities, convalescent centers, and retirement homes. Each of these land use types currently occurs within the proposed incorporation area.

In certain circumstances, jurisdictions may allow uses to be built in areas where applicable noise standards may be exceeded. In these cases, a jurisdiction may find “conditionally acceptable” noise levels to be appropriate, as long as other measured conditions are met. For example, a jurisdiction

may accept conditionally acceptable exterior noise levels (usually measured at outdoor activity areas of a receptor) as long as an acoustic analysis is conducted showing that interior noise levels would be within the “acceptable” range. The acceptable noise level may differ depending on the type of receptor and its location. Residents living in very urban environments will usually accept a higher level of noise than residents in quieter suburban areas.

### **3.6.3 - Regulatory Framework**

In order to limit population exposure to physically and/or psychological damaging noise levels, the State of California and Sacramento County have established standards and ordinances to control noise.

#### **Federal**

There are no federal noise requirements or regulations that bear directly on local actions within the proposed incorporation area. However, there are federal regulations on noise sources for projects where federal funding is involved. The Federal Highway Administration (FHWA) requires abatement of highway traffic noise for highway projects, and the Federal Transit Administration (FTA) and Federal Railroad Administration (FRA) each recommend thorough noise and vibration assessments through comprehensive guidelines for any mass transit or high-speed railroad projects that would pass by residential areas. For housing constructed with assistance from the U.S. Department of Housing and Urban Development, minimum noise insulation standards must be achieved. The Federal Aviation Administration (FAA) has prepared guidelines for acceptable noise exposure in its Noise Compatibility Planning program for airports. According to Part 150 of the guidelines, exterior aircraft exposures of 65.0 dBA CNEL or less and an interior exposure of 45.0 dBA CNEL or less are considered acceptable for residential uses.

#### **State**

The California Department of Health Services’ (DHS) Office of Noise Control has studied the correlation of noise levels and their effects on different land uses. As a result, the DHS has established four categories for judging the severity of noise intrusion on specified land use: normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable. Noise in the normally acceptable category places no undue burden on affected receptors and would need no mitigation. As noise rises into the conditionally acceptable range, some mitigation of exposure, as established by an acoustic study, would be necessary. At the next level, noise intrusion is so severe that it is classified as normally unacceptable and would require extraordinary noise reduction measures to avoid disruption. Finally, noise in the clearly unacceptable category is so severe that it cannot be mitigated.

Title 24 of the California Code of Regulations establishes standards governing interior noise levels that apply to all new multi-family residential units in California. The standards require that acoustical studies be performed prior to construction at building locations where future  $L_{dn}$  exceeds 60.0 dBA.

Such acoustical studies are required to establish mitigation measures that will limit maximum  $L_{dn}$  values to 45.0 dBA in any inhabitable room.

### Sacramento County General Plan Noise Element

The proposed incorporation area lies within the north central portion of Sacramento County and the new city would adopt Sacramento County's General Plan Noise Element upon incorporation. Brief summaries of the General Plan Noise Element and the Noise Control Ordinance follow.

#### Noise Element

The Noise Element of the Sacramento County General Plan identifies compatible noise environments for different types of land uses in the County. Table 3.6-4 illustrates the noise/land use compatibility guidelines for those types of land uses proposed as part of the project and the existing land uses that could be affected by project-related noise. These guidelines are to be used when evaluating the noise effects of a proposed project.

**Table 3.6-4: Land Use Compatibility Guidelines for Community Exterior Noise Environments**

Land Use Category	Community Noise Exposure, DNL		
	Acceptable <sup>a</sup>	Conditionally Acceptable <sup>b</sup>	Unacceptable <sup>c</sup>
Residential (AR-1 and AR-2)	Up to 60	60 to 75	Above 75
Agricultural/Residential (5-10 acres)	Up to 65	65 to 75	Above 75
Schools, Libraries, Churches	Up to 60	60 to 70	Above 70
Notes: <sup>a</sup> Specified land use is satisfactory. No noise mitigation measures are required. <sup>b</sup> Use should be permitted only after careful study and inclusion of protective measures as needed for intended use and to satisfy policies of the Noise Element. <sup>c</sup> Development is not feasible in accordance with the Noise Element. Use is prohibited. Source: Sacramento County, 1993.			

The Noise Element establishes specific policies for transportation and non-transportation noise sources. Applicable policies include the following:

- **Policy NO-1:** Noise created by new transportation noise sources should be mitigated so as not to exceed 60 DNL at the outdoor activity areas of any affected residential lands. When a practical application of the best available noise-reduction technology cannot achieve the 60 DNL noise standard, then an exterior noise level of 65 DNL may be allowed in outdoor activity areas.
- **Policy NO-2:** Noise created by new non-transportation noise sources shall be mitigated so as not to exceed any of the noise level standards of [Table 3.6-5], as measured immediately within the property line of any affected residentially designated lands.

**Table 3.6-5: Noise Level Performance Standards for Residential Areas Affected By Non-Transportation Noise**

Noise Descriptor	Exterior Noise Level Standards (dBA) <sup>a,b</sup>	
	Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
L <sub>50</sub>	Up to 60	60 to 75
L <sub>max</sub>	Up to 65	65 to 75

Notes:  
<sup>a</sup> These standards are for planning purposes and vary slightly from the standards contained the County Noise Ordinance that are for enforcement purposes.  
<sup>b</sup> These standards apply to new or existing residential areas affected by new or existing non-transportation sources.  
 Source: Sacramento County, 1993.

- **Policy NO-3:** Where proposed non-transportation noise sources are likely to produce noise levels exceeding the performance standards of [Table 3.6-5] at existing or planned residential uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.
- **Policy NO-6:** The compatibility of proposed non-residential projects with existing and future noise levels due to transportation sources shall be evaluated through a comparison with [Table 3.6-4] and [Table 3.6-6], which defines acceptable interior noise levels.

**Table 3.6-6: Acceptable Noise Levels in Unoccupied Rooms Affected by Transportation Noise**

Location	Average Sound Level (dBA) <sup>a</sup>
Classrooms	30 to 45
Libraries	40 to 45

Notes:  
<sup>a</sup> L<sub>eq</sub> in the worst-case hour during periods of use.  
 Source: Sacramento County, 1993.

**Noise Control Ordinance**

The County’s Noise Ordinance sets limits for exterior noise levels on designated agricultural and residential property. The standards found in the County’s Noise Control Ordinance are based on the duration of noise on private property over one-hour periods.

The ordinance is primarily concerned with regulating noise other than the noise generated by transportation noise sources such as passing cars or aircraft flyovers. The ordinance limits the duration of sound based on many factors, including the type of source, tonal characteristics of the source, ambient noise levels, time of day, etc., by utilizing a system of noise criteria not to be exceeded based on the duration of noise over any given hour. Table 3.6-7 summarizes the County’s exterior noise standards that would apply to the project.

**Table 3.6-7: Sacramento County Noise Standards (Exterior)**

Cumulative Period of Time (minutes per hour)	Daytime (dBA) 7:00 a.m. to 10:00 p.m.	Nighttime (dBA) 10:00 p.m. to 7:00 a.m.
30	55	50
15	60	55
5	65	60
1	70	65
0	75	70

## Notes:

<sup>a.</sup> A cumulative duration of 30 minutes in an hour is equivalent to the  $L_{50}$  for that hour. Likewise, a cumulative duration of 15 minutes in an hour is equivalent to the  $L_{25}$ , a cumulative duration of 5 minutes in an hour is equivalent to the  $L_{8,3}$ , and a cumulative duration of 1 minute in an hour is equivalent to the  $L_{1,6}$ . The noise level not to be exceeded at all in a given hour represents the maximum noise level or  $L_{max}$ .

Source: Sacramento County, 1987.

In recognition of ambient noise, the ordinance allows the standards set forth in Table 3.6-7 to be adjusted in 5-dBA increments to encompass the ambient noise level. For example, if the ambient noise level for a given hour was 57-dBA, the daytime  $L_{50}$  noise standard would be increased to 60 -dBA. The Noise Control Ordinance also states that each of the standards identified in Table 3.6-7 should be reduced by 5-dBA for impulsive or simple tone noises, or for noises consisting of speech or music.<sup>1</sup>

Under Section 6.68.090, the following activities are exempt from the provisions of the County's Noise Control Ordinance described above:

- a. Outdoor gatherings, public dances, shows, and sporting events. These activities may require a license or permit.
- b. Activities on parks, public playgrounds, and school grounds owned and operated by public entity or private school.
- c. Emergency activities and equipment.
- d. Agricultural activities between 8:00 a.m. and 8:00 p.m. or whenever using equipment to protect crops.
- e. Construction, demolition, or similar activity provided they occur between 6:00 a.m. and 8:00 p.m. Monday through Friday, and 7:00 a.m. and 8:00 p.m. on weekends.
- f. Residential property maintenance provided it occurs between 6:00 a.m. and 8:00 p.m. Monday through Friday, and 7:00 a.m. and 8:00 p.m. on weekends.
- g. U.S. airports, aircraft, and armed service facilities.

<sup>1</sup> "Impulsive noise" means a noise characterized by brief excursions of sound pressures whose peak levels are very much greater than the ambient noise level, such as might be produced by the impact of a pile driver, punch press or a drop hammer, typically with a duration of one second or less. "Simple tone noise" or "pure tone noise" means a noise characterized by the presence of a predominant frequency or frequencies such as might be produced by whistle or hum.

- h. Noise and land use regulations related to airports.
- i. School activities, including bands, athletic, and entertainment events.

### 3.6.4 - Project Impact Analysis

#### Methodology for Analysis

Noise impacts can be broken down into three categories. The first is “audible” impacts, which refers to increases in noise level that are perceptible to humans. Audible increases in noise levels generally refer to a change of 3-dBA or more since this level has been found to be barely perceptible in exterior environments. A change of 5-dBA is readily audible to most people in an exterior environment. The second category, “potentially audible,” refers to a change in noise level between 1- and 3-dBA. This range of noise levels was found to be noticeable to sensitive people in laboratory environments. The last category includes changes in noise level of less than 1-dBA that are typically “inaudible” to the human ear except under quiet conditions in controlled environments. Only “audible” changes in noise level are considered potentially significant.

Mobile-source noise (i.e., vehicle noise) is preempted from local regulation, but is still subject to CEQA. Here, a change of 5-dBA would denote a significant impact if their resultant noise level were to remain within the objectives of the General Plan (e.g., 65-dBA CNEL at a residential location), or 3-dBA if the resultant level were to meet or exceed the objectives of the General Plan. (Note that Caltrans defines a noise increase as substantial when the predicted noise levels with the project would exceed existing noise levels by 12-dBA  $L_{eq}$ .) Also, note that an impact is only potentially significant if it affects a receptor. An increase in noise in an uninhabited location would not denote a significant impact.

#### Thresholds of Significance

For the purposes of this EIR, to determine whether noise impacts are significant environmental effects, the following questions are analyzed and evaluated. Would the project:

- Expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?
- Expose persons to or generate excessive groundborne vibration or groundborne noise levels?
- Result is a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?
- Result is a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?
- For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

- For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

### 3.6.5 - Impact Statements and Mitigation Discussions

#### Noise Levels in Excess of Standards

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**Impact 3.6-1:** The project would not expose persons to or generate noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

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#### ***Impact Analysis***

The project would not directly authorize the development of new noise-sensitive land uses and the new city would adopt of all County policies related to noise and associated ordinances upon incorporation. Given the urbanized nature of the proposed incorporation area, existing sensitive receptors in the vicinity of the project area would not experience any changes to the ambient noise environment as a result of the project when compared to continued build-out of the existing County General Plan under the current zoning ordinance provisions. In addition, given the small fraction of remaining un-developed lands within the proposed incorporation area, a higher build-out intensity on these remaining vacant lands is not expected to change existing General Plan land uses or introduce new uses that would substantially increase ambient noise levels because they would still have to abide by adopted noise policies and regulations.

For sensitive land uses currently subject to excess noise levels (e. g. residential areas along Business 80), the project would not involve any land use changes that would worsen the pre-existing noise levels. These areas would continue to exceed County noise criteria, which would in turn be adopted by the new city upon incorporation. However, since these areas are part of the existing condition and are not directly a result of the project, the impact is not significant. In this context, it is reasonable to conclude that the proposed incorporation would not expose people to noise levels in excess of standards established in the local general plan or noise ordinance.

#### ***Cumulative Impacts***

Given the very low projected growth within the proposed incorporation area, it is expected that the noise environment along local roadways would not change substantially over the planning period from its current condition. As a result, there are no cumulatively considerable noise impacts.

#### ***Significance Determination Before Mitigation***

Less than significant impact.

#### ***Mitigation Measures***

No mitigation is required.

#### ***Significance Determination After Mitigation***

Less than significant impact.



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## Groundborne Vibration

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**Impact 3.6-2:**        **The project would not expose persons to or generate excessive groundborne vibration or groundborne noise levels.**

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### ***Impact Analysis***

The project does not entail any physical ground disturbance or construction activity (e.g., pile driving). As a result, the project would not expose existing residences or structures to excessive groundborne vibration or groundborne noise levels.

### ***Significance Determination Before Mitigation***

No impact.

### ***Mitigation Measures***

No mitigation is required.

### ***Significance Determination After Mitigation***

Less than significant impact.

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## Permanent Increase in Ambient Noise Levels

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**Impact 3.6-3:**        **The project would not create substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.**

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### ***Impact Analysis***

The project involves no change in existing land use within the proposed incorporation area compared with existing conditions and those permitted by the currently adopted General Plan. Since the project area is generally built out with less than 2 percent of the total area remaining vacant, no large transportation improvements would be required within the proposed incorporation area to accommodate new growth within the new city. Rather, any future roadway widening will be in response regional circulation issues and would be required with or without the incorporation. As a result, it is reasonable to conclude that the project would not result in a substantial permanent increase in the ambient noise environment.

### ***Cumulative Impacts***

Cumulative development within the incorporation area would not require the expansion of local roadways beyond planned capital improvement projects to maintain adequate roadway capacity; therefore, no cumulatively considerable changes in existing traffic noise contours are expected.

### ***Significance Determination Before Mitigation***

No impact.

### ***Mitigation Measures***

No mitigation is required.

**Significance Determination After Mitigation**

No impact.

**Temporary or Periodic Increase in Ambient Noise Levels**

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**Impact 3.6-4:** The project would not create a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

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**Impact Analysis**

As previously indicated, the project would not involve any construction activities or permanent structures that could result in a substantial temporary or periodic increase in ambient noise levels.

**Significance Determination Before Mitigation**

No impact.

**Mitigation Measures**

No mitigation is required.

**Significance Determination After Mitigation**

No impact.

**Public Airport Noise Levels**

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**Impact 3.6-5:** For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, the project may not expose people residing or working in the project area to excessive noise levels.

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**Impact Analysis**

The a portion of the project is located within the McClellan Air Force Base CLUP's 65-dB CNEL noise contour. Because the area within the noise contour is mostly developed with both conforming and non-conforming uses, the Sacramento County General Plan has established criteria to resolve compatibility for infill projects that are technically inconsistent with the CLUP but similar to surrounding existing land uses. While only small parcels of land remain undeveloped within the airport's noise contour, future development may still occur, resulting in the exposure of people residing or working in the incorporation area to excessive noise levels. Accordingly, mitigation is proposed that would require the new city to adopt criteria similar to those listed in the Sacramento County General Plan regarding development within the airport's 65-dB CNEL noise contour. Implementation of the proposed mitigation would reduce impacts to less than significant.

**Significance Determination Before Mitigation**

Potentially significant impact.

**Mitigation Measures**

**MM 3.6-5** As a contingency for incorporation approval, LAFCo shall require the new city to adopt criteria similar to those listed in the Sacramento County General Plan regarding infill development within the airport's 65-dB CNEL noise contour.

**Significance Determination After Mitigation**

Less than significant impact.

**Private Airstrip Noise Levels**

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**Impact 3.6-6:** For a project within the vicinity of a private airstrip, the project would not expose people residing or working in the project area to excessive noise levels.

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**Impact Analysis**

The project is not located near a private airstrip.

**Significance Determination Before Mitigation**

No impact.

**Mitigation Measures**

No mitigation is required

**Significance Determination After Mitigation**

No impact.

